IN THE MATTER OF AN APPLICATION TO AN BORD PLEANÁLA

FOR APPROVAL OF THE FOYNES TO LIMERICK ROAD (INCLUDING ADARE BYPASS) COMPRISING:

- (I) FOYNES TO RATHKEALE PROTECTED ROAD SCHEME, 2019;
- (II) RATHKEALE TO ATTYFLIN MOTORWAY SCHEME, 2019;
 (III) FOYNES SERVICE AREA SCHEME, 2019.

ABP Ref. ABP-306146-19 and ABP-306199-19

Supplementary Information submitted to An Bord Pleanála on Monday 15th February 2021

Foynes to Limerick Road (including Adare Bypass)

Supplementary Information

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1. INTRODUCTION

This Supplementary Information to the application documentation submitted in relation to the proposed Foynes to Limerick Road (including Adare Bypass) development provides updated and supplemental information to that which is included in the Environmental Impact Assessment Report (EIAR). The information contained herein does not affect the assessments carried out within the EIAR and the Natura Impact Statement (NIS) and does not alter the residual impacts as presented in the EIAR and does not alter the conclusion stated in the NIS that the proposed development will not have any adverse effects on any European site.

2. CUMULATIVE IMPACT ASSESSMENT UPDATE

As defined in the European Commission "Guidance on the preparation of the Environmental Impact Assessment Report" (2017), cumulative effects are changes to the environment that are caused by activities/projects in combination with other activities/projects. Cumulative effects were assessed in section 17.4 of Chapter 17 of the EIAR Interactions and Cumulative Effects.

A search in relation to plans and projects that may have the potential to result in cumulative impacts was carried out as part of the Environmental Impact Assessment Report for the proposed development and the corresponding data sources include those listed in section 17.2.2 of the EIAR.

Since 12 December 2019, when the application for development consent was submitted to the Board, an updated review has been carried out of applications contained in the planning files for:

- Limerick City and County Council;
- Clare County Council;
- An Bord Pleanála Website;
- Department of Housing, Planning and Local Government EIA Portal.

Arising from this review, there are a number of further developments and a plan which have been added to the list of plans and projects considered for the assessment of cumulative impacts / in combination effects.

(A) Projects:

(1) Aughinish Alumina Ltd.

A ten year permission for development on site of c. 7 hectares located adjoining the existing Aughinish Alumina Ltd. plant for the provision of a Borrow Pit with an extraction area of c. 4.5 hectares was uploaded to the EIA Portal in August 2020. The permission (Planning Application: 17714) was granted on 31st November 2017 and following an appeal to An Bord Pleanála, permission was upheld by the Board on 13th November 2018. The permission comprises the extraction of c. 374,000m³ of rock over a 10 year period, extraction to occur between April and September each year. The Borrow pit at Aughinish Alumina is located 3.km north west of the main cutting associated with the

proposed road development at Mulderricksfield. Both projects have incorporated mitigation measures within their respective EIARs to reduce the impacts associated with Noise and Vibration on their immediate environment, in addition both extractive areas are sufficiently separated from each other such that in the event that simultaneous rock extraction were to occur, cumulative noise and vibration impacts will not significantly impact common sensitive locations. Therefore, it is confirmed that significant cumulative impacts will not arise as a result.

There will be no potential combined impact on the Askeaton Groundwater body and groundwater resources as a result of the proposed Road development and its large cutting into the bedrock groundwater table at Craggs, as the Aughinish Island Aquifer is hydrogeological isolated from the mainland Askeaton Groundwater body with no hydraulic connectivity between the sites. There will also be no combined impact on groundwater quality due to no hydraulic connectivity between sites and also due to the proposed construction mitigation measures and drainage design that includes sealed drainage, and no drainage outfall discharges to groundwater.

In respect to Surface Waters the Aughinish borrow site is downstream in the estuarine reaches of the Shannon but within the Robertstown River catchment. The potential drainage runoff from the Borrow site will be to the tidal creek which may drain into the Robertstown River and the Shannon Estuary SAC. The proposed road development has a number of surface drainage outfalls and culverts within the Robertstown estuary that will eventually flow into the Shannon Estuary via the Robertstown River to the West of Aughinish Island. The downstream impact of the proposed road development of surface hydrology flows and water quality will be imperceptible on the Robertstown River and Shannon Estuary SAC and therefore there will be no combined adverse hydrological impact from the two projects.

There will be no significant in-combination impacts on hydrology or hydrogeology from the proposed development and the borrow pit development at Aughinish Island and consequently no potential hydrological or hydrogeological combined impact on any European designated Site of qualifying interest.

In relation to air quality, both projects have outlined extensive mitigation measures to minimise the release of dust and heavy metals from the facility in the EIARs. Given these mitigation measures and the distance from the projects to the nearest residential receptors, the cumulative impact of these projects and the proposed development is not likely to result in any significant environmental effects.

Therefore, it is confirmed that significant cumulative impacts will not arise as a result.

(2) Infill of Land (Ref. 20954)

An application was submitted to Limerick City and County Council regarding the infilling of 2.27ha of land using inert soil and stone. The proposed site for infill is located at Ballinroche, Crecora, approximately 3km south east of the eastern tie in of the proposed road development, and is not likely to result in any significant environmental effects.

A waste licence will be required for the development and a new site entrance will be provided. Further information was submitted in January 2021 which provided an

update to the description of the works. It is now proposed to reduce the area of infill to an area of 0.76 ha of the land on the northern part of the site. This will be carried out over a period of 5 years.

The site is upgradient of the proposed road within the Maigue River catchment draining to a small tributary of the Maigue River. The potential impact of infill could be local raising of groundwater table and potential for flooding locally and water quality impacts. The combined effect of the proposed road development with this relatively small scale infill development will not result in any combined impact on flooding, the surface or groundwater regime both upstream and downstream of the sites and will not result in any combined hydrological and hydrogeological impacts on any European sites or water dependent key ecological receptors.

Due to the small scale of the works, dust and air emissions will be minor and will lead to air emissions which are not likely to result in any significant cumulative effects.

The proposed 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 development. Thus, there are no likely significant direct, indirect cumulative impacts on noise and vibration.

(3) Limerick City & County Council (Ref. 198011)

On 3rd March 2020, LCCC were granted Part 8 approval (with conditions) was issued for the construction of a new road of 1.7km in length, and other ancillary works, at Buanacloka, Dromdarrig, Caheranardish, Monateen, and Mungret, Co. Limerick.

This project is a minor, new road development situated at the south-western periphery of Limerick City, at a distance of c. 4.5km north-east of the eastern end of the proposed development. An EIA Screening and AA Screening were undertaken as part of the application, which determined that significant impacts would not arise.

This 1.7km new road drains to the Barnakyle River System which is a tributary of the Maigue River and drains to the Maigue downstream of the proposed road development. Given the proposed design of the Foynes to Limerick road and the measures proposed to protect against flooding and water quality impact both during construction and operation the proposed Foynes to Limerick road development will not have a adverse impact on the downstream watercourses or groundwater aquifers (Limerick City Southwest groundwater body) including the Maigue River and the receiving Shannon Estuary.

Consideration of this small road project in combination with the proposed road development will not result in any combined impact on surface hydrology or hydrogeology and consequently will not result in any combined impact on the hydrological regime within any European site including the Lower River Shannon cSAC and the Askeaton Fen complex SAC or any key ecological water dependent receptors. The proposed Foynes to Limerick Road is considered due to its improved road drainage system over the existing N21 and N69 road is likely to result in a slight positive impact on Water quality in the receiving surface waters.

It has already been acknowledged that the proposed road development, taking into account both the construction and operation phases, will have a significant negative impact on carbon emissions and climate. However, given the distance of this project from the proposed development, the additional impact will be minor and the in combination cumulative impact will remain as having a significant negative impact on carbon emissions and climate.

The proposed 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 development. Thus, there are no likely significant direct, indirect cumulative impacts on noise and vibration.

It is therefore considered highly unlikely that there will be any cumulative impacts from the interaction of the proposed Foynes to Limerick Road development with the minor road development described.

(4) IDA Ireland (Ref. 201128)

On 4th November 2020, IDA Ireland submitted an application for planning permission for an office / light industrial building development at IDA Raheen Business Park, Raheen, Co. Limerick. On 18th December 2020, LCCC issued a request for further information (RFI) to the applicant in relation to traffic and pedestrian issues, public lighting and surface water disposal, to which the applicant has not yet responded. The project is situated c. 4.5km north-east of the eastern end of the proposed development.

This office / light industrial building development at IDA Raheen Business park is connected to the storm drainage system that eventually discharges to a canal that drains into the Barnakyle River System, which is a tributary of the Maigue River and drains to the Maigue well downstream of the proposed road development. This small scale development within a services business park will not result in any in-combination hydrological or hydrogeological impacts with the proposed Foynes to Limerick Road.

It has already been acknowledged that the proposed road development, taking into account both the construction and operation phases, will have a significant negative impact on carbon emissions and climate. However, given the distance of this project from the proposed development, the additional impact will be minor and the in combination cumulative impact will remain as having a significant negative impact on carbon emissions and climate.

The proposed 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 development. Thus, there are no likely significant direct, indirect cumulative impacts on noise and vibration.

Assuming the project were to proceed, because of the nature and location of this project, it is considered highly unlikely that cumulative impacts would have the potential to arise in combination with the proposed development.

(5) Great Southern Greenway Extension

An extension to the Great Southern Greenway walking & cycling route was submitted as a Part 8 application (Reference 178002) in 2017. The section from Rathkeale to Ballingarrane along the former Limerick to Kerry line will include development of approximately 3km section to include the provision of a rolled gravel surface path and all associated drainage, fencing, signage and repair works to structures. The separate Greenway extension application was approved by Limerick City and County Council in August 2017, subject to a condition that the proposed works shall not be constructed until the Foynes to Rathkeale section of the Foynes to Limerick Road commences, in the interest of proper planning and orderly development.

As the proposed Foynes to Limerick Road development crosses the route of this proposed greenway extension, an underpass will be provided to allow the planned development of the greenway. Given the minor nature of the works to extend the Greenway in the vicinity of the proposed road development, and the limited interactions between the two developments, there will be no cumulative effects.

(B) Housing Developments:

(6) Affordable Housing Development, Deerpark and Rathkeale Road, Adare

Permission was granted in January 2021 to Limerick City and County Council for the provision of 31 no. units and 8 no. plots for affordable housing at two separate development locations. The unit mix comprises: 2 no. single bedroom units, 17 no. 2 bedroom units, 12 no. 3 bedroom units, new street connecting proposed scheme with existing Deerpark estate, new street connections to the N21, associated footpaths, the reconfiguration of the existing carpark (33 no. spaces) and the provision of new car parking (59 no. spaces), hard landscaping, soft landscaping and all associated site works. The proposed development is located 1.1km south of the proposed road development on the N21.

The proposed housing project is located within a locally important bed rock aquifer within the Patrickswell groundwater body and is up gradient of the proposed road development. Although excavations, infilling and some dewatering may be required at the housing development 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 proposed Foynes to Limerick Road in combination with the proposed residential housing development in Adare on hydrogeology.

The proposed road development in combination with this housing development both drain to the Maigue River. The residential site is located upgradient 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 discharged. These developments which are subject to storm water management and water quality protection measures will not result in any likely significant direct or indirect cumulative impact on surface hydrology and will not result in any hydrological and hydrogeological regime change in any European site or water dependent key ecological receptor.

It has already been acknowledged that the proposed road development, taking into account both the construction and operation phases, will have a significant negative impact on carbon emissions and climate. However, given the distance of this project from the proposed development, the additional impact will be minor and the in combination cumulative impact will remain as having a significant negative impact on carbon emissions and climate.

Due to the nature of the proposed development and the separation between the two developments, no cumulative impacts are likely.

(7) Rockspring Developments Limited (Ref. 201430)

On 23rd December 2020, Rockspring Developments Limited submitted an application for planning permission for a residential development comprising 99 no. units, and associated ancillary works, at Baunacloka, Raheen, Co. Limerick. A decision in respect of same is pending, due 25th February 2021. This project situated at the south-western periphery of Limerick City, at a distance of c. 4.5km north-east of the eastern end of the proposed development.

The proposed housing project at Baunacloka Raheen is located the Limerick City Southwest groundwater body which is a locally important bedrock aquifer that is generally moderately productive but remote from the proposed road development with no groundwater connection. Although excavations, infilling and some dewatering may be required at the housing development 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 Foynes to Limerick Road development in combination with the proposed residential housing development at Baunacloka Raheen on hydrogeology.

The proposed road development in combination with this housing development both eventually drain to the Maigue River estuary well downstream of the sites. The residential site is not hydraulically connected with road drainage catchment and only interact downstream in the Maigue estuarine and such housing developments will be required to manage on site its storm water and discharge to the public foul sewer where it will be treated discharged. These developments which are subject to storm water management and water quality protection measures will not result in any likely significant direct or indirect cumulative impact on surface hydrology and will not result in any hydrological and hydrogeological regime change in any European site or water dependent key ecological receptor.

It has already been acknowledged that the proposed road development, taking into account both the construction and operation phases, will have a significant negative impact on carbon emissions and climate. However, given the distance of this project from the proposed development, the additional impact will be minor and the in combination cumulative impact will remain as having a significant negative impact on carbon emissions and climate.

The proposed 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 development. Thus, there are no likely significant direct, indirect cumulative impacts on noise and vibration.

Because of the nature and location of this project, it is considered highly unlikely that cumulative impacts would have the potential to arise in combination with the proposed development.

(8) Dwellings Developments (Cois na Cille) Ltd. (Ref. 201114)

On 30th October 2020, Dwelling Developments (Cois na Cille) Ltd. submitted an application for planning permission for a residential development comprising 96 no. residential units and associated ancillary works at Skehacreggaun, Mungret, Co. Limerick. On 18th December 2020, LCCC issued a request for further information (RFI) to the applicant in relation to flood risk, archaeology, car parking, traffic and pedestrian issues, public lighting, surface water disposal and noise, to which the applicant has not yet responded. The project is situated c. 5km from the proposed road development.

The proposed housing project at Skehacreggaun, Mungret is located within Limerick City Southwest groundwater body which is a locally important bedrock aquifer that is moderately productive and is not hydrogeologically connected directly except downstream as groundwater flow to the Estuary. Although excavations, infilling and some dewatering may be required at the housing development 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 Foynes to Limerick Road in combination with the proposed residential housing development on hydrogeology.

The proposed Road development in combination with this housing development both drain to the Maigue River. The residential site is located upgradient 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 discharged. These developments which are subject to storm water management and water quality protection measures will not result in any likely significant direct or indirect cumulative impact on surface hydrology and will not result in any hydrological and hydrogeological regime change in any European site or water dependent key ecological receptor.

It has already been acknowledged that the proposed road development, taking into account both the construction and operation phases, will have a significant negative impact on carbon emissions and climate. However, given the distance of this project from the proposed development, the additional impact will be minor and the in combination cumulative impact will remain as having a significant negative impact on carbon emissions and climate.

The proposed 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 development. Thus, there are no likely significant direct, indirect cumulative impacts on noise and vibration.

(9) Housing Development in Mungret (Ref. 201115)

Construction of 96no. residential units, creche and community building including external play area. Provision of shared communal and private open space, car parking, bicycle parking store and racks, bin storage, vehicular and pedestrian access, public lighting, site landscaping, services, signage, ESB substation and all associated site development works. Development to include access onto the Mungret Road (R859).

The proposed housing project at Skehacreggaun, Mungret is located within Limerick City Southwest groundwater body which is a locally important bedrock aquifer that is moderately productive and is not hydrogeolocically connected directly except downstream as groundwater flow to the Estuary. Although excavations, infilling and some dewatering may be required at the housing development 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 Foynes Limerick Road Development in combination with the proposed residential housing development on hydrogeology.

The proposed road development in combination with this housing development both drain to the Maigue River. The residential site is located upgradient 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 discharged. These developments which are subject to storm water management and water quality protection measures will not result in any likely significant direct or indirect cumulative impact on surface hydrology and will not result in any hydrological and hydrogeological regime change in any European site or water dependent key ecological receptor.

It has already been acknowledged that the proposed road development, taking into account both the construction and operation phases, will have a significant negative impact on carbon emissions and climate. However, given the distance of this project from the proposed development, the additional impact will be minor and the in combination cumulative impact will remain as having a significant negative impact on carbon emissions and climate.

The proposed 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 development. Thus, there are no likely significant direct, indirect cumulative impacts on noise and vibration.

(10) Housing Development Mungret (Ref. 201195)

The construction of 66no. residential units comprising 12no. 2-bed semi-detached bungalows, 27 no. 3-bed 2 storey semi-detached/terraced dwelling houses, 18no. 1-bed apartments and 9no. 2-bed apartments, with associated secure bicycle parking and bin storage. Vehicular access to the proposed development will be via Baunacloka Heights, which is part of the Mungret Gate development currently under construction. The development will also include two pedestrian accesses onto the R510 and all associated site works including 97no. car parking spaces, foul and storm drainage with attenuation, public lighting, landscaping and amenity areas.

The proposed housing project at Mungret is located within Limerick City Southwest groundwater body which is a locally important bedrock aquifer that is moderately productive and is not hydrogeolocically connected directly except downstream as groundwater flow to the Estuary. Although excavations, infilling and some dewatering may be required at the housing development 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 Foynes to Limerick Road Development in combination with the proposed residential housing development on hydrogeology.

The proposed Road development in combination with this housing development both drain to the Maigue River system. The residential site is located upgradient 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 discharged. These developments which are subject to storm water management and water quality protection measures will not result in any likely significant direct or indirect cumulative

impact on surface hydrology and will not result in any hydrological and hydrogeological regime change in any European site or water dependent key ecological receptor.

The proposed 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 development. Thus, there are no likely significant direct, indirect cumulative impacts on noise and vibration.

Due to the distance between the project and the proposed road development it is not likely to result in significant effects.

(C) Plans:

There is one regional plan which has been considered for the assessment of cumulative impacts / in combination effects as follows:

(11) Southern Regional Assembly Regional Spatial and Economic Strategy (RSES)

The Southern Regional Assembly RSES provides the framework through which the National Strategic Outcomes (NSOs) of the National Planning Framework (NPF) will be delivered for the region. It is a strategic document which sets out high-level requirements and policies in the form of Regional Policy Objectives (RPOs). It includes three Metropolitan Area Strategic Plans (MASPs) for Cork, Limerick-Shannon and Waterford metropolitan areas.

The proposed road development is situated within the area of this RSES. Therefore, the potential for cumulative impacts due to the proposed development in combination with the development trends and projects promoted in the RSES arises, particularly in relation to any projects in the immediate environs of the project. This section discusses objectives in the RSES, and plans and projects identified in the RSES which may be of relevance to the cumulative impact assessment for the proposed road development.



Plate 2.1 Limerick Shannon MASP (Map 3.4 RSES)

Limerick-Shannon Metropolitan Area is identified as a hub for future compact growth, with housing and employment development concentrated within the existing footprint of the built-up area, particularly on infill / brownfield sites. None of the regeneration areas identified in the MASP are situated in the footprint of the proposed development. Shannon Foynes Port is identified as a strategic employment location / regional asset in the Limerick-Shannon MASP.

The RSES (p. 91) identifies "well established networks of settlements in the Region that are strategically driving sub-regional growth", of which:

- The 'Galway-Ennis-Shannon-Limerick Economic Network' is identified as "A potential network of Key Towns and Metropolitan Areas sharing assets on the Atlantic Economic Corridor".
- The 'North Kerry / West Limerick / Shannon Estuary / Clare' network is acknowledged as having an economic role, tying in with the Shannon Estuary Coastal Network, as identified in the Shannon Integrated Framework Plan.

The RSES discusses the Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary, a land and marine-based framework plan to guide the future development and management of the Shannon Estuary. It is an explicit objective of the RSES to *"support and promote the delivery of the Strategic Development Locations as set out in the SIFP for the Shannon Estuary subject to the implementation of mitigation measures outlined in the SEA and AA undertaken on SIFP and zoned in the Local Authority Development Plans"* (p. 127).

Chapter 6 of the RSES deals with transport. It identified Shannon-Foynes Port as a Tier 1 Port of national significance, which will be the subject of targeted investment to

increase capacity. It is an objective of the RSES to "strengthen investment to deliver actions under National Ports Policy and investment in sustainable infrastructure projects that [...] Strengthen and develop the strategic international, national and regional economic roles of our Tier 1 Ports (Port of Cork and Shannon-Foynes Port)" (p. 165). The policy of continued investment in Shannon-Foynes Port is highlighted in RPO 146, which supports "capital infrastructure projects in the Shannon Foynes Port Company Infrastructure Development Programme including capacity extension works and infrastructure investment towards deep water berthage on Foynes Island and offshore resources" (p. 166). Improved access to the region's ports are regional policy objectives at RPO 144, 145 and 146.

The Southern Regional Assembly RSES itself has been subject to SEA and AA and many of the policy objectives under consideration are expected to bring about positive impacts for population dynamics and material assets as a result, as the objectives proposed emphasise coordinated spatial planning, balanced growth and consolidation/ densification of existing built-up areas, both urban and rural. The RSES is the regional tier within the planning framework, guided at the national level by the NPF, it will be supported by further robust local level planning through CCDP and LECPs. The RSES states that at project level, all applications for development consents for projects emanating from RSES objectives that may give rise to likely significant effects on the environment will need to be accompanied by an Ecological Impact Assessment Report (ECIA), Environmental Report (ER), Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS) as relevant.

The proposed Foynes to Limerick Road development has been assessed in the Strategic Environmental Assessment (SEA) Statement prepared in respect of the RSES and no further cumulative impacts arise as between the proposed road development and the RSES.

3. NATURA IMPACT STATEMENT – IN-COMBINATION EFFECTS

Section 7.5 of the NIS considered in-combination effects by examining all proposed and existing large-scale plans and projects within 10 km of the proposed road development. The projects and plans (as listed in Section 2 above) which have been granted approval or in respect of which applications for approval were submitted after the finalisation of the EIAR and NIS, are now considered for the assessment of cumulative impacts / in combination effects by the Project Ecologist.

(A) Projects:

(1) Aughinish Alumina Ltd.

A ten year permission for development on site of c. 7 hectares located adjoining the existing Aughinish Alumina Ltd. plant for the provision of a Borrow Pit with an extraction area of c. 4.5 hectares was uploaded to the EIA Portal in August 2020. The permission (Planning Application: 17714) was granted on 31st November 2017 and following an appeal to An Bord Pleanála, permission was upheld by the Board on 13th November 2018. The permission comprises the extraction of c. 374,000m³ of rock over a 10 year period, extraction to occur between April and September each year. The Borrow pit at Aughinish Alumina is located 3.km northwest of the main cutting associated with the

proposed road development at Mulderricksfield. In view of the distance between the proposed borrow pit and the proposed road development, the potential for incombination effects on European sites is confined primarily to the issue of water quality and disturbance arising from the proposed works.

The proposed borrow pit location is outside of the Lower River Shannon SAC but the potential drainage runoff from the Borrow site will be to a tidal creek which may drain into the Robertstown River and the Shannon Estuary SAC. Both projects have incorporated mitigation measures within their respective NIS's to avoid impacting on water quality within the SAC. The Project Hydrologist has concluded there will be no significant in-combination impacts on hydrology or hydrogeology from the proposed development and the borrow pit development at Aughinish Island. Consequently it can be concluded there is no potential for any in-combination effects on the hydrological or hydrogeological condition of any European Site or their qualifying interests.

The extraction works at the proposed Aughinish Alumina borrow pit are confined to occurring between April and September each year to reduce the impacts associated with Noise and Vibration on their immediate environment in particular with regards to potential disturbance to wintering waterfowl associated with the River Shannon and River Fergus Estuaries Special Protection Area.

Subject to the successful implementation of the prescribed mitigation for both the proposed road development and the proposed borrow pit at Aughinish Alumina, there will be no adverse cumulative effects on the integrity of any European site.

(2) Infill of Land (Ref. 20954)

An application was submitted to Limerick City and County Council regarding the infilling of 2.27ha of land using inert soil and stone. A waste licence will be required for the development and a new site entrance will be provided. Further information was submitted in January 2021 which provided an update to the description of the works. It is now proposed to reduce the area of infill to an area of 0.76 ha of the land on the northern part of the site. This will be carried out over a period of 5 years.

The proposed site for infill is located approximately 3km south east of the eastern tie in of the proposed road development and over 5km from the nearest European Site. Due to the small scale of the works, the distance from the proposed site to a European Site and the lack of pathways, there is considered no potential for any in-combination effects on any European Site.

(3) Limerick City & County Council (Ref. 198011)

On the 3rd of March 2020, LCCC were granted Part 8 approval (with conditions) for the construction of a new road of 1.7 km in length, and other ancillary works, at Buanacloka, Dromdarrig, Caheranardish, Monateen, and Mungret, Co. Limerick.

This project is a minor, new road development situated at the south-western periphery of Limerick City, at a distance of c. 4.5 km north-east of the eastern end of the proposed development. An AA Screening was undertaken as part of the application, which screened out potential significant effects on any European Sites. Due to the nature and

location of this project, there is no potential for in-combination effects with the proposed road development.

(4) IDA Ireland (Ref. 201128)

On the 4th of November 2020, IDA Ireland submitted an application for planning permission for an office / light industrial building development at IDA Raheen Business Park, Raheen, Co. Limerick. On the 18th of December 2020, LCCC issued a request for further information (RFI) to the applicant in relation to traffic and pedestrian issues, public lighting and surface water disposal, to which the applicant has not yet responded.

The project is situated c. 4.5 km north-east of the eastern end of the proposed development. An AA Screening was undertaken as part of the application, which screened out potential significant effects on any European Sites. Due to the nature and location of this project, there is no potential for in-combination effects with the proposed road development.

(5) Great Southern Greenway Extension

An extension to the Great Southern Greenway walking & cycling route was submitted as a Part 8 application (Reference 178002) in 2017. The section from Rathkeale to Ballingarrane along the former Limerick to Kerry line will include development of approximately 3km section to include the provision of a rolled gravel surface path and all associated drainage, fencing, signage and repair works to structures. The separate Greenway extension application was approved by Limerick City and County Council in August 2017, subject to a condition that the proposed works shall not be constructed until the Foynes to Rathkeale section of the Foynes to Limerick Road commences, in the interest of proper planning and orderly development.

As the proposed Foynes to Limerick Road development crosses the route of this proposed greenway extension, an underpass will be provided to allow the planned development of the greenway. Given the nature and scale of this greenway project and its location along a disused railway line, it will not give rise to any effects on European Sites which would have the potential to combine with such effects arising from the proposed road development. Thus, there is no potential for in-combination effects in relation to this project.

(B) Housing Developments:

(6) Affordable Housing Development, Deerpark and Rathkeale Road, Adare

Permission was granted in January 2021 to Limerick City and County Council for the provision of 31 no. units and 8 no. plots for affordable housing at two separate development locations. The unit mix comprises: 2 no. single bedroom units, 17 no. 2 bedroom units, 12 no. 3 bedroom units, new street connecting proposed scheme with existing Deerpark estate, new street connections to the N21, associated footpaths, the reconfiguration of the existing carpark (33 no. spaces) and the provision of new car parking (59 no. spaces), hard landscaping, soft landscaping and all associated site works. The proposed development is located 1.1km south of the proposed road development on the N21. Due to the nature of the proposed development and the separation between the two developments, there will be no in-combination effects with the proposed road development.

(7) Rockspring Developments Limited (Ref. 201430)

On 23rd December 2020, Rockspring Developments Limited submitted an application for planning permission for a residential development comprising 99 no. units, and associated ancillary works, at Baunacloka, Raheen, Co. Limerick. A decision in respect of same is pending, due 25th February 2021.

This project location is situated at the south-western periphery of Limerick City, at a distance of c. 4.5 km north-east of the eastern end of the proposed development. An AA Screening and NIS were prepared for this project application on the basis of potential impacts on water quality within the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA without mitigation. Specific measures were detailed to ensure that water quality was protected in receiving waters and in any European Sites. Due to the nature and location of this project, with the application of the prescribed mitigation within the NIS there is no potential for in-combination effects with the proposed road development.

(8) Dwellings Developments (Cois na Cille) Ltd. (Ref. 201114)

On the 30th of October 2020, Dwelling Developments (Cois na Cille) Ltd. submitted an application for planning permission for a residential development comprising 96 no. residential units and associated ancillary works at Skehacreggaun, Mungret, Co. Limerick. On the 18th of December 2020, LCCC issued a request for further information (RFI) to the applicant in relation to flood risk, archaeology, car parking, traffic and pedestrian issues, public lighting, surface water disposal and noise, to which the applicant has not yet responded. The project is situated c. 5 km from the proposed road. An NIS has yet to be submitted in relation to the proposed housing development as the Screening Report concluded that there is an unknown risk to effects on water quality within the Lower River Shannon cSAC and River Shannon and River Fergus Estuaries SPA without mitigation. However, the development will be subject to storm water management and water quality protection measures which will avoid any likely significant direct or indirect impact on surface hydrology. On this basis no impact is expected on the hydrological and hydrogeological regime in the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA, or on any other European site and there is no potential for any in-combination effect with the proposed road development.

(9) Housing Development in Mungret Ref. 201115

Construction 96no. residential units, Creche and Community Building including external play area. Provision of shared communal and private open space, car parking, bicycle parking store and racks, bin storage, vehicular and pedestrian access, public lighting, site landscaping, services, signage, ESB substation and all associated site development works. Development to include access onto the Mungret Road(R859). The planning application is accompanied by a Natura Impact Statement. Due to the nature and location of this project, with the application of the prescribed mitigation within the NIS there is no potential for in-combination effects with the proposed road development.

(10) Housing Development Mungret Ref. 201195

The construction of 66no. residential units with associated secure bicycle parking and bin storage. Vehicular access to the proposed development will be via Baunacloka Heights, which is part of the Mungret Gate development currently under construction.

The development will also include two pedestrian accesses onto the R510 and all associated site works including 97no. car parking spaces, foul and storm drainage with attenuation, public lighting, landscaping and amenity areas.

While no Screening Report or NIS has been submitted to date for this scheme, the development will be subject to storm water management and water quality protection measures which will avoid any likely significant direct or indirect impact on surface hydrology. On this basis no impact is expected on the hydrological and hydrogeological regime in the Lower River Shannon cSAC and River Shannon and River Fergus Estuaries SPA or any other European site, and there is no potential for an incombination effect from the proposed road development.

(C) Plans:

There is one regional plan which has been added to the list considered for the assessment of cumulative impacts / in combination effects as follows:

(11) Southern Regional Assembly Regional Spatial and Economic Strategy (RSES)

The Southern Regional Assembly RSES provides the framework through which the National Strategic Outcomes (NSOs) of the National Planning Framework (NPF) will be delivered for the region. It is a strategic document which sets out high-level requirements and policies in the form of Regional Policy Objectives (RPOs). It includes three Metropolitan Area Strategic Plans (MASPs) for Cork, Limerick-Shannon and Waterford metropolitan areas.

The Southern Regional Assembly RSES itself has been subject to AA which has set out specific requirements to mitigate any significant impacts on European Sites. All projects which have not yet been completed or proposed (i.e. for which planning documents are not available) will be subject to the statutory planning process, including Appropriate Assessment (AA) and corresponding cumulative impact assessments.

The proposed Foynes to Limerick Road development has been assessed in the Natura Impact Report (NIR) prepared in respect of the (the draft) RSES and no further cumulative impacts arise as between the proposed road development and the RSES. In the circumstances, there are no in-combination effects on the integrity of any European site arising as a result of the interaction of the proposed road development with the RSES.

Conclusion

Following further assessment of all projects or plans which have been granted approval or applications have been submitted for approval since 12 December 2019, it is concluded that there will be no residual adverse effects on any European site arising from the proposed road development in combination with other plans and projects.

4. APPENDIX 12.2, VOLUME 4 OF THE EIAR

Table 12.6 of Chapter 12 Noise and Vibration of the EIAR includes the measured and derived L_{den} values and a summary of all survey data for each of the survey locations illustrated in Figures 12.1 – 12.23 of Volume 3 of the EIAR.

Appendix 12.2 as outlined in Appendix A of this document, provides a supplemental Appendix to Chapter 12 of the EIAR. The tables provided within Appendix A contain the full survey results for all survey locations and comprise the base data used for the derivation of Table 12.6 in the EIAR. Appendix 12.2 as provided in Appendix A of this document should be read as Appendix 12.2 of Volume 4A of the EIAR.

5. SUPPLEMENTARY INFORMATION WITHIN THE BRIEFS OF EVIDENCE

Supplementary information was referenced in the Briefs of Evidence provided on behalf of Limerick City and County Council, which is additional to the information presented in the application documentation (including Environmental Impact Assessment Report, Natura Impact Statement and Response to Request for Information).

This supplementary information has been extracted from the relevant Briefs of Evidence and is provided in Appendix B:

- Brief of Evidence Engineering Brief of Evidence Part A
- Brief of Evidence Planning and Policy Context
- Brief of Evidence Traffic Analysis
- Brief of Evidence Air Quality and Climate
- Brief of Evidence Noise and Vibration
- Brief of Evidence The Landscape
- Brief of Evidence Archaeology, Architecture and Cultural Heritage
- Brief of Evidence Soils and Geology
- Brief of Evidence Hydrology and Hydrogeology
- Brief of Evidence Biodiversity Bats
- Brief of Evidence Biodiversity Vertigo

6. SUPPLEMENTARY INFORMATION REGARDING QUARRIES

It was noted to the Inspector at the Oral Hearing on Thursday 11th February that the quarries listed in Chapter 4 of the EIAR and the Soils and Geology Brief of Evidence, have planning permission or are registered under section 261 of the Planning and Development Act, 2000. Furthermore, it was emphasised to the inspector that the EIAR commits that 'only those quarries that conform to all necessary statutory consents may be used in the construction phase by the appointed Contractor'.

7. SUPPLEMENTARY FIGURES TO VOLUME 3 OF THE EIAR

The following three Figures are provided in addition to those in Volume 3 of the EIAR, illustrating supplementary information to that already contained in the application documentation. The Figures are provided in Appendix C Supplementary Figures.

In addition to Figure 4.71 of Volume 3 of the EIAR, a supplementary Figure, Figure 4.71a, is provided in Appendix C Supplementary Figures to this document, illustrating the permitted haulage routes and access points for the construction stage of the proposed road development. The Supplementary Figure is titled Figure 4.71a Permitted Haulage Routes.

Figure 10.3 of Volume 3 of the EIAR is replaced by Figure 10.3 Rev A, provided in Appendix C to this document, illustrating the location of the pond outfall within the HGV area.

Figure 12.17 of Volume 3 of the EIAR is replaced with Figure 12.17 Rev A, also provided in Appendix C to this document, which includes an additional label illustrating noise monitoring location ATT23b adjacent to property D56-016.

APPENDIX A

APPENDIX 12.2 - Baseline Noise Survey Results

As outlined in section 4 of the supplemental information document, Table 12.6 of Chapter 12 Noise and Vibration of the EIAR includes the measured and derived L_{den} values and a summary of all survey data for each of the survey locations illustrated in Figures 12.1 – 12.23 of Volume 3 of the EIAR.

Appendix 12.2 provides a supplemental Appendix to Chapter 12 of the EIAR. The tables provided within Appendix A contain the full survey results for all survey locations and comprise the base data used for the derivation of Table 12.6 in the EIAR. Appendix 12.2 as provided in Appendix A of this document should be read as Appendix 12.2 of Volume 4A of the EIAR.

APPENDIX 12.2 Baseline Noise Survey Results

The survey results are presented in terms of the following three parameters.

- **L**_{Aeq} is the A-weighted equivalent continuous steady sound level during the sample period and effectively represents an average value.
- L_{A10} is the A-weighted sound level that is exceeded for 10% of the sample period; this parameter gives an indication of the upper limit of fluctuating noise such as that from road traffic.
- **L**_{A90} is the A-weighted sound level that is exceeded for 90% of the sample period; generally used to quantify background noise.

The results for all attended and unattended survey locations, along with the derived L_{den} values, are included in Tables A12.2.1 to A12.2.32.

Survey Location Ref	Date	Start time (hh:mm)	Duration (hh:mm)	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)		Derived dB L _{den}	
				L _{Aeq}	LAF10	LAF90	
ATT1	19/02/2018	13:24	00:15	57	61	46	64
	19/02/2018	14:37	00:15	59	63	47	
	19/02/2018	17:11	00:15	64	67	55	
ATT2	19/02/2018	10:40	00:15	63	68	43	64
	19/02/2018	11:38	00:15	64	69	46	
	19/02/2018	12:39	00:15	65	70	47	
ATT3	19/02/2018	10:20	00:15	54	58	45	60
	19/02/2018	11:20	00:15	57	60	49	
	19/02/2018	12:19	00:15	57	60	49	
ATT4	19/02/2018	10:01	00:15	49	51	44	54
	19/02/2018	11:01	00:15	49	53	44	
	19/02/2018	12:00	00:15	49	52	43	
ATT5	19/02/2018	13:43	00:15	60	64	41	65
	19/02/2018	16:30	00:15	62	66	50	
	19/02/2018	17:30	00:15	62	66	47	
ATT6	19/02/2018	16:52	00:15	56	59	50	59
	19/02/2018	17:50	00:15	53	57	45	
	19/02/2018	14:05	00:15	56	60	41	
ATT7	20/02/2018	11:05	00:15	55	59	42	59
	20/02/2018	10:08	00:15	53	57	45	
	20/02/2018	12:02	00:15	54	59	41	
ATT8	20/02/2018	12:44	00:15	51	55	40	58
	20/02/2018	11:41	00:15	55	59	44	
	20/02/2018	10:47	00:15	54	58	43	
ATT9	20/02/2018	12:20	00:15	57	59	46	59
	20/02/2018	11:23	00:15	54	58	44	
	20/02/2018	10:26	00:15	56	59	46	
ATT10	05/03/2018	11:06	00:15	48	51	39	54
	05/03/2018	11:49	00:15	51	54	44	
	05/03/2018	12:32	00:15	51	53	42	
ATT11	05/03/2018	11:33	00:15	59	64	39	65
	05/03/2018	11:29	00:15	61	66	41	
	05/03/2018	12:10	00:15	60	65	39	

Survey Location Ref	Date	Start time (hh:mm)	Duration (hh:mm)	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)		Derived dB L _{den}	
				L _{Aeq}	L _{AF10}	LAF90	
ATT12	05/03/2018	13:03	00:15	50	55	30	53
	05/03/2018	14:27	00:15	45	49	32	
	05/03/2018	15:33	00:15	46	51	31	
ATT13	05/03/2018	13:32	00:15	47	51	29	48
	05/03/2018	14:47	00:15	51	42	28	
	05/03/2018	15:52	00:15	49	43	29	
ATT14	05/03/2018	13:59	00:15	49	51	31	49
	05/03/2018	15:12	00:13	39	43	32	
	05/03/2018	16:13	00:15	43	46	36	
ATT15	07/03/2018	13:43	00:15	50	53	43	49
	07/03/2018	14:33	00:15	41	43	37	
	07/03/2018	15:15	00:15	41	44	34	
ATT16	07/03/2018	10:08	00:15	52	54	44	55
	07/03/2018	11:23	00:13	51	54	43	
	07/03/2018	12:21	00:15	52	54	42	
ATT17	07/03/2018	10:28	00:15	64	69	47	68
	07/03/2018	11:41	00:15	63	68	45	
	07/03/2018	12:41	00:15	63	68	47	
ATT18	07/03/2018	10:59	00:12	58	62	50	63
	07/03/2018	11:59	00:15	58	62	45	
	07/03/2018	12:59	00:15	59	63	48	
ATT19	07/03/2018	14:09	00:15	55	46	30	50
	07/03/2018	14:54	00:15	56	48	33	
	07/03/2018	15:39	00:15	54	47	34	
ATT20	05/02/2018	12:36	00:15	45	45	32	48
	05/02/2018	13:42	00:15	47	45	29	
	05/02/2018	14:42	00:15	48	47	34	
ATT21	05/02/2018	11:43	00:15	40	43	35	45
	05/02/2018	13:00	00:15	42	44	39	
	05/02/2018	14:01	00:15	37	40	32	
ATT22	08/03/2018	14:10	00:15	40	43	35	47
	08/03/2018	14:57	00:15	44	47	37	
	08/03/2018	15:42	00:10	40	42	35	
ATT23	08/03/2018	14:34	00:15	39	41	33	45
	08/03/2018	15:20	00:15	40	41	33	
	08/03/2018	16:01	00:15	40	42	35	

Survey Location Ref	Date	Start time (hh:mm)	Duration (hh:mm)	Mea	sured Nois (dB re.2x1)	se Levels 0⁻⁵Pa)	Derived dB L _{den}
				L _{Aeq}	L _{AF10}	L _{AF90}	
ATT23b	21/08/2018	09:51	00:15	41	44	36	46
	21/08/2018	10:31	00:15	40	42	37	
	21/08/2018	11:09	00:15	40	43	37	
ATT24	05/02/2018	12:16	00:15	46	48	36	49
	05/02/2018	13:22	00:15	44	47	35	
	05/02/2018	14:22	00:15	45	47	41	
ATT25	07/02/2018	11:18	00:15	57	61	38	61
	07/02/2018	12:17	00:15	55	58	36	
	07/02/2018	10:15	00:15	58	62	41	
ATT26	07/02/2018	10:33	00:15	56	59	41	60
	07/02/2018	11:37	00:15	56	59	40	
	07/02/2018	12:39	00:15	56	59	39	
ATT27	07/02/2018	12:00	00:15	65	64	38	63
	07/02/2018	11:00	00:15	65	62	39	
	07/02/2018	12:59	00:15	65	62	36	
ATT28	06/02/2018	15:37	00:15	63	67	39	66
	06/02/2018	15:01	00:15	63	68	42	
	06/02/2018	14:02	00:15	63	66	42	
ATT29	06/02/2018	15:18	00:15	60	64	38	63
	06/02/2018	14:20	00:15	59	63	38	
	06/02/2018	13:39	00:15	59	62	40	
ATT30	06/02/2018	14:40	00:15	53	57	42	58
	06/02/2018	15:58	00:15	52	57	40	
	06/02/2018	13:13	00:15	53	57	43	
ATT31	08/03/2018	11:04	00:15	45	47	40	51
	08/03/2018	12:04	00:15	48	51	40	
	08/03/2018	12:55	00:15	48	49	40	
	08/03/2018	10:45	00:15	48	51	40	54
ATT32	08/03/2018	11:46	00:15	55	60	40	
	08/03/2018	12:21	00:15	45	47	39	
	08/03/2018	10:23	00:15	53	56	47	57
ATT33	08/03/2018	11:26	00:15	53	57	47	
	08/03/2018	13:16	00:15	53	55	45	

Survey Location Ref	Date	Start time (hh:mm)	Duration (hh:mm)	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)		Derived dB L _{den}	
				L _{Aeq}	L _{AF10}	L _{AF90}	
ATT35	08/02/2018	14:00	00:15	63	66	53	66
	08/02/2018	15:00	00:15	64	66	58	
	08/02/2018	16:00	00:14	65	67	59	
ATT36	08/02/2018	14:18	00:15	62	65	56	65
	08/02/2018	13:20	00:15	62	65	56	
	08/02/2018	15:35	00:15	63	66	58	
ATT37	08/02/2018	13:00	00:15	66	69	60	69
	08/02/2018	14:37	00:15	66	70	60	
	08/02/2018	15:18	00:15	67	70	61	
ATT38	08/02/2018	12:00	00:15	65	69	56	67
	08/02/2018	11:18	00:15	64	67	54	
	08/02/2018	10:17	00:15	63	67	53	
ATT39	08/02/2018	10:00	00:15	66	69	56	68
	08/02/2018	11:00	00:15	66	69	54	
	08/02/2018	12:00	00:15	65	69	56	
ATT40	08/02/2018	10:35	00:15	61	65	54	65
	08/02/2018	11:36	00:15	62	66	54	
	08/02/2018	12:40	00:15	61	64	53	
ATT41	13/02/2018	13:11	00:07	57	59	54	61
	13/02/2018	13:27	00:09	59	61	55	
	13/02/2018	14:07	00:15	58	60	52	
	13/02/2018	14:44	00:15	59	62	52	
ATT42	13/02/2018	13:47	00:15	53	55	48	58
	13/02/2018	14:26	00:14	55	58	50	
	13/02/2018	15:11	00:11	54	56	49	
ATT43	13/02/2018	11:21	00:11	50	52	46	53
	13/02/2018	12:01	00:15	48	50	44	
	13/02/2018	12:38	00:15	47	49	41	
ATT44	13/02/2018	10:57	00:15	45	47	41	50
	13/02/2018	11:42	00:15	46	49	42	
	13/02/2018	12:20	00:15	46	48	42	
ATT45	12/03/2018	10:12	00:15	49	51	39	54
	12/03/2018	11:19	00:15	50	53	39	
	12/03/2018	12:21	00:15	48	52	38	

Survey Location Ref	Date	Start time (hh:mm)	Duration (hh:mm)	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)		Derived dB L _{den}	
				L _{Aeq}	L _{AF10}	LAF90	
ATT46	12/03/2018	10:35	00:15	46	44	35	50
	12/03/2018	11:41	00:15	51	50	37	
	12/03/2018	12:41	00:15	53	50	37	
ATT47	12/03/2018	10:58	00:15	62	66	48	66
	12/03/2018	12:00	00:15	62	66	50	
	12/03/2018	13:02	00:15	63	67	53	
ATT48	12/03/2018	13:30	00:15	50	53	39	54
	12/03/2018	14:12	00:15	52	56	39	
	12/03/2018	15:05	00:15	48	49	41	
ATT49	21/08/2018	10:12	00:15	43	41	37	51
	21/08/2018	10:50	00:15	50	53	40	
	21/08/2018	11:30	00:15	49	52	38	
ATT50	12/03/2018	13:48	00:12	47	50	41	54
	12/03/2018	14:29	00:15	50	53	43	
	12/03/2018	14:44	00:15	51	55	40	
ATT51	10/05/2018	11:38	00:15	49	49	40	
	10/05/2018	12:26	00:15	50	51	41	51
	10/05/2018	13:09	00:15	50	48	38	
ATT52	10/05/2018	11:07	00:15	49	47	39	50
	10/05/2018	12:01	00:15	49	49	38	
	10/05/2018	12:47	00:15	49	47	37	
ATT53	13/03/2018	10:57	00:15	42	44	39	49
	13/03/2018	11:59	00:15	45	47	40	
	13/03/2018	12:59	00:15	44	47	40	
ATT54	13/03/2018	10:36	00:15	46	47	41	51
	13/03/2018	11:39	00:15	48	51	41	
	13/03/2018	12:39	00:15	46	49	41	
ATT55	13/03/2018	11:19	00:15	51	49	37	50
	13/03/2018	12:19	00:15	45	47	39	
	13/03/2018	13:19	00:15	45	48	40	
ATT56	12/04/2018	14:35	00:15	46	49	38	52
	12/04/2018	15:16	00:15	46	49	37	
	12/04/2018	15:56	00:15	47	50	38	
ATT57	12/04/2018	14:13	00:15	48	51	38	53
	12/04/2018	14:55	00:15	49	52	41	
	12/04/2018	15:36	00:15	50	52	37	

Survey Location Ref	Date	Start time (hh:mm)	Duration (hh:mm)	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)		Derived dB L _{den}	
				L _{Aeq}	L _{AF10}	L _{AF90}	
ATT58	13/04/2018	10:23	00:15	46	50	33	50
	13/04/2018	11:40	00:15	43	47	31	
	13/04/2018	12:43	00:15	42	46	33	
ATT59	13/04/2018	11:16	00:14	50	54	33	54
	13/04/2018	12:20	00:15	47	51	32	
	13/03/2018	10:57	00:15	42	44	39	
ATT60	13/04/2018	10:53	00:15	51	54	35	57
	13/04/2018	12:02	00:15	54	57	41	
	13/04/2018	13:06	00:15	51	56	35	
ATT61	08/05/2018	10:45	00:15	49	53	41	55
	08/05/2018	11:40	00:15	49	53	42	
	08/05/2018	12:33	00:15	50	54	45	
ATT62	12/04/2018	09:16	00:15	65	68	56	68
	12/04/2018	11:23	00:15	65	68	57	
	12/04/2018	12:21	00:15	65	68	56	
ATT63	12/04/2018	10:42	00:12	51	54	47	56
	12/04/2018	11:44	00:15	51	53	46	
	12/04/2018	12:42	00:15	51	52	45	
ATT64	12/04/2018	10:59	00:15	65	68	58	67
	12/04/2018	12:03	00:14	70	68	56	
	12/04/2018	13:01	00:15	65	67	58	
ATT65	08/05/2018	11:16	00:13	55	57	51	59
	08/05/2018	12:01	00:15	55	57	50	
	08/05/2018	12:53	00:15	57	59	52	
ATT66	11/04/2018	12:15	00:14	60	63	55	62
	11/04/2018	13:19	00:15	59	61	55	
	11/04/2018	14:32	00:10	59	61	53	
ATT67	11/04/2018	09:41	00:15	57	60	46	62
	11/04/2018	10:37	00:15	58	61	48	
	11/04/2018	11:37	00:15	59	62	51	
ATT68	11/04/2018	09:22	00:15	53	57	47	59
	11/04/2018	10:20	00:13	56	58	44	
	11/04/2018	11:17	00:15	55	59	49	
ATT69	11/04/2018	09:03	00:15	58	60	54	59
	11/04/2018	10:01	00:15	56	58	51	
	11/04/2018	10:58	00:15	55	58	52	

Survey Location Ref	Date	Start time (hh:mm)	Duration (hh:mm)	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)		Derived dB L _{den}	
				L _{Aeq}	L _{AF10}	L _{AF90}	
ATT70	11/04/2018	12:37	00:15	54	55	49	57
	11/04/2018	13:54	00:14	54	56	48	
	11/04/2018	14:45	00:15	56	58	51	
ATT71	11/04/2018	12:59	00:15	57	59	52	59
	11/04/2018	14:11	00:15	57	59	53	
	11/04/2018	15:03	00:15	53	55	49	
ATT72	13/04/2018	14:23	00:15	67	70	54	69
	13/04/2018	15:00	00:15	67	70	57	
	13/04/2018	15:38	00:15	67	70	55	
ATT73	13/04/2018	14:05	00:14	75	80	56	77
	13/04/2018	14:42	00:15	75	79	61	
	13/04/2018	15:20	00:15	76	80	60	

Table A12.2.2 Unattended Survey Results – UML 1

Dete	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)			
Date	Time	L _{Aeq}	L _{AF10}		
19-Feb-18	09:46	65	65		
19-Feb-18	10:00	61	63		
19-Feb-18	11:00	58	62		
19-Feb-18	12:00	59	62		
19-Feb-18	13:00	60	61		
19-Feb-18	14:00	57	61		
19-Feb-18	15:00	59	63		
19-Feb-18	16:00	61	64		
19-Feb-18	17:00	61	64		
19-Feb-18	18:00	60	63		
19-Feb-18	19:00	57	61		
19-Feb-18	20:00	56	60		
19-Feb-18	21:00	56	60		
19-Feb-18	22:00	53	58		
19-Feb-18	23:00	49	53		
20-Feb-18	00:00	48	52		
20-Feb-18	01:00	45	46		
20-Feb-18	02:00	47	45		
20-Feb-18	03:00	48	47		
20-Feb-18	04:00	48	51		
20-Feb-18	05:00	54	58		
20-Feb-18	06:00	57	61		
20-Feb-18	07:00	62	65		
20-Feb-18	08:00	61	65		
20-Feb-18	09:00	61	64		
20-Feb-18	10:00	60	63		
	Day		61		
	Evening		56		
	Night		51		
	Lden		61		

Table A12.2.3 Unattended Survey Results – UML 2

Dete	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)				
Date	Time	L _{Aeq}	L _{AF10}			
21-Feb-18	16:31	46	49			
21-Feb-18	17:00	50	52			
21-Feb-18	18:00	45	48			
21-Feb-18	19:00	45	43			
21-Feb-18	20:00	39	43			
21-Feb-18	21:00	37	39			
21-Feb-18	22:00	34	34			
21-Feb-18	23:00	33	32			
22-Feb-18	00:00	33	33			
22-Feb-18	01:00	32	32			
22-Feb-18	02:00	32	33			
22-Feb-18	03:00	32	33			
22-Feb-18	04:00	31	32			
22-Feb-18	05:00	34	33			
22-Feb-18	06:00	40	44			
22-Feb-18	07:00	50	51			
22-Feb-18	08:00	49	52			
22-Feb-18	09:00	48	49			
22-Feb-18	10:00	47	48			
22-Feb-18	11:00	45	49			
22-Feb-18	12:00	45	48			
22-Feb-18	13:00	43	47			
22-Feb-18	14:00	47	48			
22-Feb-18	15:00	48	52			
22-Feb-18	16:00	50	53			
22-Feb-18	17:00	46	49			
22-Feb-18	18:00	52	49			
	Day		48			
	Evening		41			
	Night		34			
	Lden		47			

Table A12.2.4 Unattended Survey Results – UML 3

Data	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)			
Date	rime	L _{Aeq}	L _{AF10}		
19-Feb-18	09:19	45	47		
19-Feb-18	10:00	47	49		
19-Feb-18	11:00	46	48		
19-Feb-18	12:00	46	48		
19-Feb-18	13:00	48	50		
19-Feb-18	14:00	44	45		
19-Feb-18	15:00	46	48		
19-Feb-18	16:00	48	50		
19-Feb-18	17:00	45	46		
19-Feb-18	18:00	42	44		
19-Feb-18	19:00	42	44		
19-Feb-18	20:00	42	44		
19-Feb-18	21:00	42	44		
19-Feb-18	22:00	41	43		
19-Feb-18	23:00	38	40		
20-Feb-18	00:00	38	39		
20-Feb-18	01:00	36	37		
20-Feb-18	02:00	35	36		
20-Feb-18	03:00	36	37		
20-Feb-18	04:00	37	39		
20-Feb-18	05:00	41	43		
20-Feb-18	06:00	45	47		
20-Feb-18	13:39	44	42		
20-Feb-18	14:00	40	42		
20-Feb-18	15:00	41	42		
20-Feb-18	16:00	42	43		
20-Feb-18	17:00	46	46		
20-Feb-18	18:00	43	44		
20-Feb-18	19:00	42	44		
20-Feb-18	20:00	42	44		
20-Feb-18	21:00	43	46		
20-Feb-18	22:00	43	46		
20-Feb-18	23:00	40	43		
21-Feb-18	00:00	42	46		
21-Feb-18	01:00	39	42		

Date	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
		L _{Aeq}	L _{AF10}
21-Feb-18	02:00	39	39
21-Feb-18	03:00	39	40
21-Feb-18	04:00	39	42
21-Feb-18	05:00	42	45
21-Feb-18	06:00	43	45
21-Feb-18	07:00	50	51
21-Feb-18	08:00	49	51
21-Feb-18	09:00	48	50
21-Feb-18	10:00	45	48
21-Feb-18	11:00	45	48
21-Feb-18	12:00	45	48
21-Feb-18	13:00	47	49
21-Feb-18	14:00	48	50
21-Feb-18	15:00	50	52
Day			46
Evening			42
Night			40
Lden			48

Table A12.2.5 Unattended Survey Results – UML 4

Date	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
		L _{Aeq}	L _{AF10}
20-Feb-18	13:52	62	67
20-Feb-18	14:00	63	68
20-Feb-18	15:00	64	68
20-Feb-18	16:00	67	69
20-Feb-18	17:00	65	69
20-Feb-18	18:00	63	68
20-Feb-18	19:00	63	67
20-Feb-18	20:00	61	66
20-Feb-18	21:00	59	64
20-Feb-18	22:00	57	61
20-Feb-18	23:00	54	56
21-Feb-18	00:00	54	56
21-Feb-18	01:00	50	49
21-Feb-18	02:00	50	46
21-Feb-18	03:00	52	47
21-Feb-18	04:00	53	53
21-Feb-18	05:00	57	59
21-Feb-18	06:00	60	66
21-Feb-18	07:00	66	70
21-Feb-18	08:00	65	69
21-Feb-18	09:00	64	69
21-Feb-18	10:00	63	68
21-Feb-18	11:00	63	68
21-Feb-18	12:00	63	68
21-Feb-18	13:00	64	69
21-Feb-18	14:00	64	69
21-Feb-18	15:00	65	70
Day			64
Evening			61
Night			55
Lden			65

Table A12.2.6 Unattended Survey Results – UML 5

Date	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
		L _{Aeq}	L _{AF10}
20-Feb-18	14:13	43	45
20-Feb-18	15:00	40	43
20-Feb-18	16:00	43	46
20-Feb-18	17:00	44	45
20-Feb-18	18:00	45	46
20-Feb-18	19:00	42	44
20-Feb-18	20:00	40	41
20-Feb-18	21:00	39	41
20-Feb-18	22:00	39	39
20-Feb-18	23:00	46	40
21-Feb-18	00:00	33	36
21-Feb-18	01:00	33	34
21-Feb-18	02:00	31	33
21-Feb-18	03:00	31	33
21-Feb-18	04:00	30	32
21-Feb-18	05:00	31	34
21-Feb-18	06:00	40	44
21-Feb-18	07:00	45	48
21-Feb-18	08:00	43	45
21-Feb-18	09:00	42	44
21-Feb-18	10:00	42	44
21-Feb-18	11:00	42	44
21-Feb-18	12:00	43	43
21-Feb-18	13:00	36	37
21-Feb-18	14:00	41	44
21-Feb-18	15:00	42	43
Day			43
Evening			40
Night			38
Lden			46

Table A12.2.7 Unattended Survey Results – UML 6

Date	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
		L _{Aeq}	L _{AF10}
21-Feb-18	16:31	46	49
21-Feb-18	17:00	50	52
21-Feb-18	18:00	45	48
21-Feb-18	19:00	45	43
21-Feb-18	20:00	39	43
21-Feb-18	21:00	37	39
21-Feb-18	22:00	34	34
21-Feb-18	23:00	33	32
22-Feb-18	00:00	33	33
22-Feb-18	01:00	32	32
22-Feb-18	02:00	32	33
22-Feb-18	03:00	32	33
22-Feb-18	04:00	31	32
22-Feb-18	05:00	34	33
22-Feb-18	06:00	40	44
22-Feb-18	07:00	50	51
22-Feb-18	08:00	49	52
22-Feb-18	09:00	48	49
22-Feb-18	10:00	47	48
22-Feb-18	11:00	45	49
22-Feb-18	12:00	45	48
22-Feb-18	13:00	43	47
22-Feb-18	14:00	47	48
22-Feb-18	15:00	48	52
22-Feb-18	16:00	50	53
22-Feb-18	17:00	46	49
22-Feb-18	18:00	52	49
Day			48
Evening			41
Night			34
Lden			47
Table A12.2.8 Unattended Survey Results – UML 7

Data	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date		L _{Aeq}	L _{AF10}
21-Feb-18	16:07	45	49
21-Feb-18	17:00	47	50
21-Feb-18	18:00	46	48
21-Feb-18	19:00	42	45
21-Feb-18	20:00	37	39
21-Feb-18	21:00	41	38
21-Feb-18	22:00	41	43
21-Feb-18	23:00	36	39
22-Feb-18	00:00	35	38
22-Feb-18	01:00	36	40
22-Feb-18	02:00	33	35
22-Feb-18	03:00	39	39
22-Feb-18	04:00	34	35
22-Feb-18	05:00	39	42
22-Feb-18	06:00	42	44
22-Feb-18	07:00	48	49
22-Feb-18	08:00	46	48
22-Feb-18	09:00	43	46
22-Feb-18	10:00	45	48
22-Feb-18	11:00	44	46
22-Feb-18	12:00	45	48
22-Feb-18	13:00	45	46
22-Feb-18	14:00	64	64
22-Feb-18	15:00	44	46
22-Feb-18	16:00	47	49
22-Feb-18	17:00	48	50
Day			53
Evening		41	
Night		38	
	Lden		51

Table A12.2.9 Unattended Survey Results – UML 8

Deta	Time	Measured Noise Lev	/els (dB re.2x10⁻⁵Pa)
Date	Time	L _{Aeq}	L _{AF10}
22-Feb-18	17:58	58	61
22-Feb-18	18:00	55	59
22-Feb-18	19:00	53	56
22-Feb-18	20:00	52	55
22-Feb-18	21:00	52	55
22-Feb-18	22:00	50	53
22-Feb-18	23:00	46	50
23-Feb-18	00:00	46	50
23-Feb-18	01:00	45	47
23-Feb-18	02:00	41	39
23-Feb-18	03:00	37	38
23-Feb-18	04:00	42	42
23-Feb-18	05:00	48	51
23-Feb-18	06:00	53	57
23-Feb-18	07:00	59	62
23-Feb-18	08:00	58	61
23-Feb-18	09:00	56	59
23-Feb-18	10:00	56	59
23-Feb-18	11:00	54	57
23-Feb-18	12:00	55	59
23-Feb-18	13:00	56	60
23-Feb-18	14:00	57	60
23-Feb-18	15:00	57	60
23-Feb-18	16:00	57	60
23-Feb-18	17:00	56	60
23-Feb-18	18:00	56	59
Day			56
Evening		52	
Night		47	
	L _{den}		57

Table A12.2.10 Unattended Survey Results – UML 9

Data	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date		L _{Aeq}	L _{AF10}
05-Feb-18	09:19	44	47
05-Feb-18	10:00	43	46
05-Feb-18	11:00	44	46
05-Feb-18	12:00	45	45
05-Feb-18	13:00	42	45
05-Feb-18	14:00	42	45
05-Feb-18	15:00	44	47
05-Feb-18	16:00	45	48
05-Feb-18	17:00	45	49
05-Feb-18	18:00	43	47
05-Feb-18	19:00	40	45
05-Feb-18	20:00	40	44
05-Feb-18	21:00	39	41
05-Feb-18	22:00	39	40
05-Feb-18	23:00	38	40
06-Feb-18	00:00	37	38
06-Feb-18	01:00	38	38
06-Feb-18	02:00	39	39
06-Feb-18	03:00	36	38
06-Feb-18	04:00	39	41
06-Feb-18	05:00	45	46
06-Feb-18	06:00	45	48
06-Feb-18	07:00	50	52
06-Feb-18	08:00	48	51
06-Feb-18	09:00	46	48
06-Feb-18	10:00	48	51
Day			46
Evening		40	
Night		41	
	L _{den}		48

Table A12.2.11 Unattended Survey Results – UML 10

Data	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)		
Date	Time	L _{Aeq}	L _{AF10}
05-Feb-18	10:00	52	48
05-Feb-18	11:00	51	48
05-Feb-18	12:00	54	54
05-Feb-18	13:00	52	50
05-Feb-18	14:00	54	53
05-Feb-18	15:00	55	54
05-Feb-18	16:00	56	54
05-Feb-18	17:00	54	54
05-Feb-18	18:00	55	55
05-Feb-18	19:00	52	49
05-Feb-18	20:00	52	45
05-Feb-18	21:00	46	37
05-Feb-18	22:00	42	31
05-Feb-18	23:00	47	36
06-Feb-18	00:00	39	37
06-Feb-18	01:00	44	35
06-Feb-18	02:00	34	35
06-Feb-18	03:00	32	33
06-Feb-18	04:00	42	36
06-Feb-18	05:00	48	39
06-Feb-18	06:00	47	42
06-Feb-18	07:00	54	51
06-Feb-18	08:00	54	53
06-Feb-18	09:00	55	53
06-Feb-18	10:00	52	52
Day			54
Evening		50	
Night		44	
	Lden		54

Table A12.2.12Unattended Survey Results – UML 11

Data	Measured Noise Levels (dB re.2x10⁻⁵Pa)		
Date	Time	L _{Aeq}	L _{AF10}
05-Feb-18	10:33	42	44
05-Feb-18	11:00	44	47
05-Feb-18	12:00	47	45
05-Feb-18	13:00	42	43
05-Feb-18	14:00	41	42
05-Feb-18	15:00	42	41
05-Feb-18	16:00	45	43
05-Feb-18	17:00	55	53
05-Feb-18	18:00	38	40
05-Feb-18	19:00	34	36
05-Feb-18	20:00	35	36
05-Feb-18	21:00	36	36
05-Feb-18	22:00	31	32
05-Feb-18	23:00	31	33
06-Feb-18	00:00	33	35
06-Feb-18	01:00	33	35
06-Feb-18	02:00	33	35
06-Feb-18	03:00	31	32
06-Feb-18	04:00	33	35
06-Feb-18	05:00	41	39
06-Feb-18	06:00	37	40
06-Feb-18	07:00	44	45
06-Feb-18	08:00	45	46
06-Feb-18	09:00	42	43
06-Feb-18	10:00	42	44
06-Feb-18	11:00	45	47
Day			46
Evening		34	
Night		36	
	L _{den}		45

Table A12.2.13 Unattended Survey Results – UML 12

Deta Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)		
Date	Time	L _{Aeq}	L _{AF10}
06-Feb-18	11:00	48	51
06-Feb-18	12:00	48	50
06-Feb-18	13:00	47	50
06-Feb-18	14:00	48	51
06-Feb-18	15:00	49	52
06-Feb-18	16:00	51	54
06-Feb-18	17:00	51	53
06-Feb-18	18:00	49	52
06-Feb-18	19:00	48	50
06-Feb-18	20:00	47	50
06-Feb-18	21:00	45	49
06-Feb-18	22:00	42	46
06-Feb-18	23:00	39	42
07-Feb-18	00:00	38	39
07-Feb-18	01:00	38	38
07-Feb-18	02:00	33	31
07-Feb-18	03:00	28	28
07-Feb-18	04:00	33	35
07-Feb-18	05:00	41	44
07-Feb-18	06:00	45	48
07-Feb-18	07:00	49	52
07-Feb-18	08:00	48	51
07-Feb-18	09:00	47	50
07-Feb-18	10:00	47	49
07-Feb-18	11:00	48	51
Day			49
Evening		46	
Night		39	
	Lden		49

Table A12.2.14 Unattended Survey Results – UML 13

Dete	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date	Time	L _{Aeq}	L _{AF10}
06-Feb-18	12:00	57	59
06-Feb-18	13:00	57	60
06-Feb-18	14:00	57	60
06-Feb-18	15:00	58	62
06-Feb-18	16:00	60	64
06-Feb-18	17:00	59	63
06-Feb-18	18:00	58	61
06-Feb-18	19:00	57	59
06-Feb-18	20:00	55	57
06-Feb-18	21:00	53	54
06-Feb-18	22:00	49	47
06-Feb-18	23:00	48	44
07-Feb-18	00:00	45	38
07-Feb-18	01:00	48	35
07-Feb-18	02:00	40	31
07-Feb-18	03:00	25	27
07-Feb-18	04:00	40	35
07-Feb-18	05:00	50	48
07-Feb-18	06:00	54	54
07-Feb-18	07:00	58	62
07-Feb-18	08:00	60	63
07-Feb-18	09:00	58	61
07-Feb-18	10:00	57	59
07-Feb-18	11:00	56	58
Day			58
Evening			54
Night		48	
L _{den}			58

Table A12.2.15 Unattended Survey Results – UML 14

Dette	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date		L _{Aeq}	L _{AF10}
10-May-18	10:20	47	49
10-May-18	11:00	46	47
10-May-18	12:00	46	45
10-May-18	13:00	48	47
10-May-18	14:00	47	45
10-May-18	15:00	47	47
10-May-18	16:00	47	46
10-May-18	17:00	46	47
10-May-18	18:00	51	54
10-May-18	19:00	52	57
10-May-18	20:00	49	48
10-May-18	21:00	49	48
10-May-18	22:00	47	50
10-May-18	23:00	48	48
11-May-18	00:00	48	51
11-May-18	01:00	49	52
11-May-18	02:00	46	49
11-May-18	03:00	50	54
11-May-18	04:00	48	52
11-May-18	05:00	51	54
11-May-18	06:00	52	55
11-May-18	07:00	54	57
11-May-18	08:00	54	57
11-May-18	09:00	49	49
11-May-18	10:00	47	48
Day			49
Evening		50	
Night		49	
	Lden		56

Table A12.2.16Unattended Survey Results – UML 15

		Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date	Time	L _{Aeq}	L _{AF10}
06-Feb-18	13:00	49	51
06-Feb-18	14:00	47	48
06-Feb-18	15:00	44	47
06-Feb-18	16:00	42	46
06-Feb-18	17:00	43	45
06-Feb-18	18:00	45	47
06-Feb-18	19:00	45	47
06-Feb-18	20:00	43	45
06-Feb-18	21:00	41	43
06-Feb-18	22:00	41	44
06-Feb-18	23:00	33	36
07-Feb-18	00:00	37	39
07-Feb-18	01:00	34	37
07-Feb-18	02:00	39	43
07-Feb-18	03:00	37	41
07-Feb-18	04:00	41	45
07-Feb-18	05:00	42	45
07-Feb-18	06:00	45	48
07-Feb-18	07:00	51	53
07-Feb-18	08:00	54	56
07-Feb-18	09:00	53	55
07-Feb-18	10:00	53	55
07-Feb-18	11:00	50	52
07-Feb-18	12:00	51	52
07-Feb-18	13:00	50	52
Day			50
Evening		43	
Night		40	
Lden		50	

Table A12.2.17 Unattended Survey Results – UML 16

Dut		Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date	Time	L _{Aeq}	L _{AF10}
21-Feb-18	18:00	57	61
21-Feb-18	19:00	55	59
21-Feb-18	20:00	54	58
21-Feb-18	21:00	53	57
21-Feb-18	22:00	51	56
21-Feb-18	23:00	50	55
22-Feb-18	00:00	48	52
22-Feb-18	01:00	48	49
22-Feb-18	02:00	47	49
22-Feb-18	03:00	48	51
22-Feb-18	04:00	50	56
22-Feb-18	05:00	51	56
22-Feb-18	06:00	54	59
22-Feb-18	07:00	59	62
22-Feb-18	08:00	59	62
22-Feb-18	09:00	57	61
22-Feb-18	10:00	64	59
22-Feb-18	11:00	55	59
22-Feb-18	12:00	56	59
22-Feb-18	13:00	56	60
22-Feb-18	14:00	56	60
22-Feb-18	15:00	56	60
22-Feb-18	16:00	57	60
22-Feb-18	17:00	57	60
22-Feb-18	18:00	57	59
Day			58
Evening		54	
Night		50	
	L _{den}		59

Table A12.2.18 Unattended Survey Results – UML 17

Deta		Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date	Time	L _{Aeq}	L _{AF10}
07-Feb-18	16:00	67	70
07-Feb-18	17:00	68	70
07-Feb-18	18:00	67	70
07-Feb-18	19:00	65	68
07-Feb-18	20:00	64	68
07-Feb-18	21:00	63	67
07-Feb-18	22:00	62	66
07-Feb-18	23:00	59	64
08-Feb-18	00:00	58	63
08-Feb-18	01:00	56	60
08-Feb-18	02:00	56	60
08-Feb-18	03:00	56	61
08-Feb-18	04:00	56	61
08-Feb-18	05:00	59	64
08-Feb-18	06:00	60	64
08-Feb-18	07:00	65	68
08-Feb-18	08:00	67	69
08-Feb-18	09:00	65	68
08-Feb-18	10:00	64	67
08-Feb-18	11:00	64	67
08-Feb-18	12:00	64	67
08-Feb-18	13:00	64	68
08-Feb-18	14:00	65	68
08-Feb-18	15:00	65	68
08-Feb-18	16:00	65	68
Day			66
Evening		64	
Night			58
	L _{den}		67

Table A12.2.19 Unattended Survey Results – UML 18

Deta		Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date	Time	L _{Aeq}	L _{AF10}
07-Feb-18	17:00	52	49
07-Feb-18	18:00	51	48
07-Feb-18	19:00	50	46
07-Feb-18	20:00	49	45
07-Feb-18	21:00	48	43
07-Feb-18	22:00	47	40
07-Feb-18	23:00	45	36
08-Feb-18	00:00	43	32
08-Feb-18	01:00	41	26
08-Feb-18	02:00	42	29
08-Feb-18	03:00	42	29
08-Feb-18	04:00	42	30
08-Feb-18	05:00	45	36
08-Feb-18	06:00	42	36
08-Feb-18	07:00	47	44
08-Feb-18	08:00	51	48
08-Feb-18	09:00	50	46
08-Feb-18	10:00	47	43
08-Feb-18	11:00	49	44
08-Feb-18	12:00	50	46
08-Feb-18	13:00	50	45
08-Feb-18	14:00	51	46
08-Feb-18	15:00	52	47
08-Feb-18	16:00	52	48
08-Feb-18	17:00	58	50
Day			52
Evening		49	
Night		43	
	Lden		52

Table A12.2.20 Unattended Survey Results – UML 19

Dete	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date	Time	L _{Aeq}	L _{AF10}
12-Feb-18	15:00	53	55
12-Feb-18	16:00	53	54
12-Feb-18	17:00	54	56
12-Feb-18	18:00	55	57
12-Feb-18	19:00	56	58
12-Feb-18	20:00	54	56
12-Feb-18	21:00	54	56
12-Feb-18	22:00	48	47
12-Feb-18	23:00	44	41
13-Feb-18	00:00	44	41
13-Feb-18	01:00	44	47
13-Feb-18	02:00	42	44
13-Feb-18	03:00	34	38
13-Feb-18	04:00	45	48
13-Feb-18	05:00	45	43
13-Feb-18	06:00	48	44
13-Feb-18	07:00	52	51
13-Feb-18	08:00	52	52
13-Feb-18	09:00	51	49
13-Feb-18	10:00	50	48
13-Feb-18	11:00	50	49
13-Feb-18	12:00	50	46
13-Feb-18	13:00	51	51
13-Feb-18	14:00	53	52
Day			52
Evening			54
Night			44
L _{den}			55

Table A12.2.21 Unattended Survey Results – UML 20

Dete	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date	Time	L _{Aeq}	L _{AF10}
12-Feb-18	15:00	59	62
12-Feb-18	16:00	60	62
12-Feb-18	17:00	61	63
12-Feb-18	18:00	60	62
12-Feb-18	19:00	60	62
12-Feb-18	20:00	60	62
12-Feb-18	21:00	59	61
12-Feb-18	22:00	50	53
12-Feb-18	23:00	47	50
13-Feb-18	00:00	44	48
13-Feb-18	01:00	46	51
13-Feb-18	02:00	45	49
13-Feb-18	03:00	41	45
13-Feb-18	04:00	49	53
13-Feb-18	05:00	47	50
13-Feb-18	06:00	47	51
13-Feb-18	07:00	56	59
13-Feb-18	08:00	54	58
13-Feb-18	09:00	55	58
13-Feb-18	10:00	55	57
13-Feb-18	11:00	53	55
13-Feb-18	12:00	51	53
13-Feb-18	13:00	53	55
13-Feb-18	14:00	54	56
13-Feb-18	15:00	54	56
Day			57
Evening		58	
Night			46
	Lden		59

Table A12.2.22 Unattended Survey Results – UML 21

Data	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date	Time	L _{Aeq}	L _{AF10}
12-Feb-18	16:00	58	61
12-Feb-18	17:00	59	61
12-Feb-18	18:00	59	61
12-Feb-18	19:00	57	60
12-Feb-18	20:00	56	59
12-Feb-18	21:00	56	59
12-Feb-18	22:00	49	51
12-Feb-18	23:00	46	50
13-Feb-18	00:00	44	48
13-Feb-18	01:00	45	50
13-Feb-18	02:00	45	49
13-Feb-18	03:00	41	43
13-Feb-18	04:00	47	51
13-Feb-18	05:00	46	50
13-Feb-18	06:00	48	52
13-Feb-18	07:00	53	56
13-Feb-18	08:00	53	55
13-Feb-18	09:00	52	55
13-Feb-18	10:00	52	54
13-Feb-18	11:00	51	54
13-Feb-18	12:00	50	53
13-Feb-18	13:00	51	54
13-Feb-18	14:00	51	54
13-Feb-18	15:00	52	54
13-Feb-18	16:00	51	54
Day			55
Evening		56	
Night			46
Lden			57

22
2

		Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date	Time	L _{Aeq}	L _{AF10}
14-Feb-18	14:02	49	50
14-Feb-18	15:00	47	48
14-Feb-18	16:00	49	50
14-Feb-18	17:00	51	51
14-Feb-18	18:00	52	53
14-Feb-18	19:00	51	52
14-Feb-18	20:00	47	48
14-Feb-18	21:00	47	48
14-Feb-18	22:00	44	46
14-Feb-18	23:00	55	54
15-Feb-18	00:00	41	44
15-Feb-18	01:00	40	43
15-Feb-18	02:00	56	58
15-Feb-18	03:00	59	62
15-Feb-18	04:00	49	51
15-Feb-18	05:00	51	53
15-Feb-18	06:00	45	48
15-Feb-18	07:00	50	53
15-Feb-18	08:00	55	58
15-Feb-18	09:00	55	58
15-Feb-18	10:00	52	54
15-Feb-18	11:00	51	52
15-Feb-18	12:00	53	55
15-Feb-18	13:00	52	55
15-Feb-18	14:00	53	56
Day			52
Evening		48	
Night			50 Note 1
Lden		56	

Note 1: Values recorded during 02:00 and 03:00hrs are determined to be outlier values and excluded from L_{night} value.

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Data	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date	Time	L _{Aeq}	L _{AF10}
21-Aug-18	10:00	50	49
21-Aug-18	11:00	43	43
21-Aug-18	12:00	44	43
21-Aug-18	13:00	42	43
21-Aug-18	14:00	40	41
21-Aug-18	15:00	53	46
21-Aug-18	16:00	50	48
21-Aug-18	17:00	44	46
21-Aug-18	18:00	48	46
21-Aug-18	19:00	40	42
21-Aug-18	20:00	38	40
21-Aug-18	21:00	40	42
21-Aug-18	22:00	38	40
21-Aug-18	23:00	37	40
22-Aug-18	00:00	36	39
22-Aug-18	01:00	36	38
22-Aug-18	02:00	37	40
22-Aug-18	03:00	38	40
22-Aug-18	04:00	35	38
22-Aug-18	05:00	45	50
22-Aug-18	06:00	44	39
22-Aug-18	07:00	44	45
22-Aug-18	08:00	43	43
22-Aug-18	09:00	43	42
Day			47
Evening			39
Night			40
L _{den}			48

Table A12.2.25	Unattended Survey Results – UML 24
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Dut		Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date	Time	L _{Aeq}	L _{AF10}
14-Feb-18	15:00	43	44
14-Feb-18	16:00	45	47
14-Feb-18	17:00	44	46
14-Feb-18	18:00	45	46
14-Feb-18	19:00	52	55
14-Feb-18	20:00	39	41
14-Feb-18	21:00	44	47
14-Feb-18	22:00	39	40
14-Feb-18	23:00	50	54
15-Feb-18	00:00	36	38
15-Feb-18	01:00	41	42
15-Feb-18	02:00	59	60
15-Feb-18	03:00	61	63
15-Feb-18	04:00	53	56
15-Feb-18	05:00	51	55
15-Feb-18	06:00	45	48
15-Feb-18	07:00	48	51
15-Feb-18	08:00	57	60
15-Feb-18	09:00	57	60
15-Feb-18	10:00	49	52
15-Feb-18	11:00	48	50
15-Feb-18	12:00	54	56
15-Feb-18	13:00	56	59
15-Feb-18	14:00	51	54
Day			52
Evening			47
Night			48 Note 1
L _{den}			55

Note 1: Values recorded during 02:00 and 04:00hrs are determined to be outlier values and excluded from Lnight

Data	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date	Time	L _{Aeq}	L _{AF10}
14-Feb-18	16:00	50	51
14-Feb-18	17:00	47	50
14-Feb-18	18:00	47	49
14-Feb-18	19:00	52	54
14-Feb-18	20:00	41	44
14-Feb-18	21:00	45	48
14-Feb-18	22:00	40	42
14-Feb-18	23:00	52	55
15-Feb-18	00:00	40	43
15-Feb-18	01:00	42	44
15-Feb-18	02:00	67	68
15-Feb-18	03:00	65	67
15-Feb-18	04:00	57	61
15-Feb-18	05:00	55	57
15-Feb-18	06:00	45	49
15-Feb-18	07:00	50	52
15-Feb-18	08:00	60	62
15-Feb-18	09:00	61	64
15-Feb-18	10:00	55	57
15-Feb-18	11:00	51	54
15-Feb-18	12:00	59	62
15-Feb-18	13:00	59	62
15-Feb-18	14:00	57	58
15-Feb-18	15:00	49	52
15-Feb-18	16:00	45	47
Day			56
Evening		48	
Night			50 Note 1
	Lden		58

Note 1: Values recorded during 02:00 and 04:00hrs are determined to be outlier values and excluded from Lnight

Table A12.2.27 Unattended Survey Results – UML 26

Dete	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)	
Date	Time	L _{Aeq}	L _{AF10}
22-Feb-18	19:02	55	57
22-Feb-18	20:00	54	55
22-Feb-18	21:00	52	47
22-Feb-18	22:00	52	45
22-Feb-18	23:00	48	35
23-Feb-18	00:00	45	37
23-Feb-18	01:00	31	33
23-Feb-18	02:00	37	34
23-Feb-18	03:00	35	34
23-Feb-18	04:00	38	41
23-Feb-18	05:00	45	38
23-Feb-18	06:00	51	44
23-Feb-18	07:00	57	59
23-Feb-18	08:00	60	64
23-Feb-18	09:00	57	59
23-Feb-18	10:00	56	58
23-Feb-18	11:00	57	58
23-Feb-18	12:00	55	56
23-Feb-18	13:00	58	59
23-Feb-18	14:00	59	61
23-Feb-18	15:00	57	59
23-Feb-18	16:00	57	59
23-Feb-18	17:00	58	60
23-Feb-18	18:00	58	59
23-Feb-18	19:00	56	58
Day			57
Evening		54	
Night			45
	L _{den}		57

Table A12.2.28 Unattended Survey Results – UML 27

Dete		Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)		
Date	Time	L _{Aeq}	L _{AF10}	
15-Feb-18	17:00	44	47	
15-Feb-18	18:00	45	47	
15-Feb-18	19:00	43	46	
15-Feb-18	20:00	43	46	
15-Feb-18	21:00	42	45	
15-Feb-18	22:00	38	40	
15-Feb-18	23:00	38	42	
16-Feb-18	00:00	34	36	
16-Feb-18	01:00	33	34	
16-Feb-18	02:00	33	35	
16-Feb-18	03:00	34	37	
16-Feb-18	04:00	38	39	
16-Feb-18	05:00	38	41	
16-Feb-18	06:00	42	44	
16-Feb-18	07:00	44	47	
16-Feb-18	08:00	47	50	
16-Feb-18	09:00	46	48	
16-Feb-18	10:00	47	49	
16-Feb-18	11:00	47	49	
16-Feb-18	12:00	54	57	
16-Feb-18	13:00	47	49	
16-Feb-18	14:00	46	49	
16-Feb-18	15:00	45	48	
16-Feb-18	16:00	45	48	
16-Feb-18	17:00	45	48	
Day			47	
Evening			42	
Night			37	
Lden			47	

Table A12.2.29 Unattended Survey Results – UML 28

Dete		Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)		
Date	Time	L _{Aeq}	L _{AF10}	
22-Feb-18	19:14	47	48	
22-Feb-18	20:00	46	48	
22-Feb-18	21:00	58	48	
22-Feb-18	22:00	50	46	
22-Feb-18	23:00	44	47	
23-Feb-18	00:00	43	46	
23-Feb-18	01:00	40	43	
23-Feb-18	02:00	39	42	
23-Feb-18	03:00	40	43	
23-Feb-18	04:00	45	47	
23-Feb-18	05:00	44	47	
23-Feb-18	06:00	48	50	
23-Feb-18	07:00	51	52	
23-Feb-18	08:00	59	53	
23-Feb-18	09:00	57	53	
23-Feb-18	10:00	53	54	
23-Feb-18	11:00	51	53	
23-Feb-18	12:00	52	54	
23-Feb-18	13:00	53	55	
23-Feb-18	14:00	56	59	
23-Feb-18	15:00	50	53	
23-Feb-18	16:00	51	53	
23-Feb-18	17:00	56	53	
23-Feb-18	18:00	48	50	
23-Feb-18	19:00	49	51	
Day			54	
Evening			53	
Night			44	
Lden			55	

Table A12.2.30 Unattended Survey Results – UML 29

Dete	-	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)		
Date	Time	L _{Aeq}	L _{AF10}	
15-Feb-18	18:00	49	52	
15-Feb-18	19:00	51	53	
15-Feb-18	20:00	51	53	
15-Feb-18	21:00	50	53	
15-Feb-18	22:00	48	51	
15-Feb-18	23:00	45	48	
16-Feb-18	00:00	46	49	
16-Feb-18	01:00	44	48	
16-Feb-18	02:00	42	46	
16-Feb-18	03:00	45	49	
16-Feb-18	04:00	46	50	
16-Feb-18	05:00	48	51	
16-Feb-18	06:00	51	53	
16-Feb-18	07:00	56	57	
16-Feb-18	08:00	56	57	
16-Feb-18	09:00	58	56	
16-Feb-18	10:00	54	56	
16-Feb-18	11:00	55	56	
16-Feb-18	12:00	55	56	
16-Feb-18	13:00	55	56	
16-Feb-18	14:00	53	55	
16-Feb-18	15:00	52	54	
16-Feb-18	16:00	52	54	
16-Feb-18	17:00	50	53	
16-Feb-18	18:00	50	52	
Day			54	
Evening			50	
Night			46	
Lden			55	

Table A12.2.31 Unattended Survey Results – UML 30

Date	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)		
		L _{Aeq}	L _{AF10}	
15-Feb-18	18:00	63	65	
15-Feb-18	19:00	63	65	
15-Feb-18	20:00	63	66	
15-Feb-18	21:00	62	65	
15-Feb-18	22:00	60	64	
15-Feb-18	23:00	57	61	
16-Feb-18	00:00	58	62	
16-Feb-18	01:00	55	59	
16-Feb-18	02:00	53	58	
16-Feb-18	03:00	55	60	
16-Feb-18	04:00	55	60	
16-Feb-18	05:00	58	63	
16-Feb-18	06:00	62	65	
16-Feb-18	07:00	66	68	
16-Feb-18	08:00	66	68	
16-Feb-18	09:00	66	68	
16-Feb-18	10:00	66	68	
16-Feb-18	11:00	67	69	
16-Feb-18	12:00	67	69	
16-Feb-18	13:00	66	68	
16-Feb-18	14:00	67	69	
16-Feb-18	15:00	67	70	
16-Feb-18	16:00	67	69	
16-Feb-18	17:00	64	67	
16-Feb-18	18:00	64	66	
Day			66	
Evening			62	
Night			57	
Lden			67	

Table A12.2.32 Unattended Survey Results – UML 31

	Time	Measured Noise Levels (dB re.2x10 ⁻⁵ Pa)		
Date		L _{Aeq}	L _{AF10}	
07-Feb-18	15:00	68	72	
07-Feb-18	16:00	65	67	
07-Feb-18	17:00	65	68	
07-Feb-18	18:00	63	66	
07-Feb-18	19:00	63	66	
07-Feb-18	20:00	62	65	
07-Feb-18	21:00	60	64	
07-Feb-18	22:00	60	64	
07-Feb-18	23:00	58	62	
08-Feb-18	00:00	58	61	
08-Feb-18	01:00	56	59	
08-Feb-18	02:00	57	59	
08-Feb-18	03:00	56	59	
08-Feb-18	04:00	56	59	
08-Feb-18	05:00	58	63	
08-Feb-18	06:00	61	65	
08-Feb-18	07:00	64	67	
08-Feb-18	08:00	64	67	
08-Feb-18	09:00	63	67	
08-Feb-18	10:00	63	66	
08-Feb-18	11:00	63	67	
08-Feb-18	12:00	63	66	
08-Feb-18	13:00	63	66	
08-Feb-18	14:00	63	66	
Day			64	
Evening			62	
Night			58	
L _{den}			66	

APPENDIX B

Supplementary Information Extracted from the Relevant Briefs of Evidence

As per section 5 of the Supplementary Information document, any supplementary information which was referenced in the Briefs of Evidence provided on behalf of Limerick City and County Council, which is additional to the information presented in the application documentation (including the Environmental Impact Assessment Report, Natura Impact Statement and Response to Request for Information) is extracted in this Appendix.

This supplementary information has been extracted from the relevant Briefs of Evidence and is provided in Appendix B as follows:

- Brief of Evidence Engineering Brief of Evidence Part A
- Brief of Evidence Planning and Policy Context
- Brief of Evidence Traffic Analysis
- Brief of Evidence Air Quality and Climate
- Brief of Evidence Noise and Vibration
- Brief of Evidence The Landscape
- Brief of Evidence Archaeology, Architecture and Cultural Heritage
- Brief of Evidence Soils and Geology
- Brief of Evidence Hydrology and Hydrogeology
- Brief of Evidence Biodiversity Bats
- Brief of Evidence Biodiversity Vertigo

IN THE MATTER OF AN APPLICATION TO AN BORD PLEANÁLA

FOR APPROVAL OF THE FOYNES TO LIMERICK ROAD (INCLUDING ADARE BYPASS) COMPRISING:

- (I) FOYNES TO RATHKEALE PROTECTED ROAD SCHEME, 2019;
- (II) RATHKEALE TO ATTYFLIN MOTORWAY SCHEME, 2019;
 (III) FOYNES SERVICE AREA SCHEME, 2019.

ABP Ref. ABP-306146-19 and ABP-306199-19

Supplementary Information submitted to An Bord Pleanála Monday 15th February 2021

> Brief of Evidence <u>Engineering - Part A</u> Summary of the Proposed Development Project Need & Justification Alternatives

By Seamus MacGearailt, B.Eng. C.Eng. F.I.E.I. F.Cons.E.I., Roughan & O'Donovan – Aecom Alliance Consulting Engineers

Traffic Pressures and Road Safety on the N21

Slide 7 (Not included in the EIAR)



5.1.1 The projected traffic flows are then compared to the capacity thresholds for different road types in accordance with the relevant design standard below.

Table 2.2b – Road Types and Capacities				
Road Type	Width	Traffic Capacity (AADT)		
Type 3 Single	7.0m	5,000		
	6.0m + 0.5m hard strips			
Type 2 Single	8.0m	8,600		
	7.0m + 0.5m hard strips			
Type 1 Single	12.3m	11,600		
	7.3m + 2.5m hard shoulders			
Type 2 Dual	16.6	20,000		
	2 x 7.0m + 0.5m hard strips			
Type 1 Dual	21.6	42,000		
	2 x 7.0m + 2.5m hard shoulders			
Motorway	21.6	52,000		
	2 x 7.0m + 2.5m hard shoulders			

Ref: TII Road Design Standard DN-GEO-03031 Table 6.1

https://www.tiipublications.ie/library/DN-GEO-03031-10.pdf



TII Publications Rural Road Link Design DN-GEO-03031 June 2017

Type of Road 1.	Capacity ² (AADT) for Level of Service D	Edge Treatment	Access Treatment	Junction Treatment at Minor Road	Junction Treatment at Major Road
Type 3 Single (6.0m) Carriageway (National Secondary Roads Only)	5,000	0.5m hard strip. Cycle Facilities Footways	Minimise number of accesses to avoid standing vehicles and concentrate turning movements.	Simple Priority Junctions⁵	Priority junctions, with ghost islands where necessary ⁵ or roundabouts.
Type 2 Single (7.0m) Carriageway	8,600	0.5m hard strips. Cycle Facilities Footways	Minimise number of accesses to avoid standing vehicles and concentrate turning movements.	Priority junctions, with ghost islands where necessary ⁵ .	Priority junctions, with ghost islands ⁵ roundabouts ³ , compact grade separation where necessary.
Type 1 Single ⁴ (7.3m) Carriageway	11,600	2.5m hard shoulders	Minimise number of accesses to avoid standing vehicles and concentrate turning movements.	Priority junctions, with ghost islands where necessary ⁵ .	Ghost islands⁵ or roundabouts or, compact grade separation where necessary
Type 3 Dual ^{3,4} (7.0m + 3.5m) Divided 2+1 lanes Primarily for retro fit projects	14,000	0.5m hard strips. Cycle Facilities Footways where required.	Minimise the number of accesses to avoid standing vehicles and concentrate turning movements.	Restricted number of left in/left out or ghost island priority junctions. ^{5,7}	Priority junctions ^{5,7} , u-turn facility with right turn ⁵ , at-grade roundabouts, compact grade separation
Type 2 Dual ^{3,4} Divided 2 +2 Lanes (2x7.0m) Carriageways.	20,000	0.5m hard strips Cycle Facilities Footways	No gaps in the central reserve. Left in / Left out	No gaps in the central reserve. Left in / Left out	At-grade roundabouts and compact grade separation
Type 1 Dual⁴ Divided 2+2 Lanes⁵ (2x7.0m) Carriageways	42,000	2.5m hard shoulders	No gaps in the central reserve. Left in / Left out	No gaps in the central reserve. Left in / Left out	At-grade roundabouts and full-or compact grade separation.
Motorway Divided 2 +2 Lane ⁶ (2X7.0m)	52,000	2.5m hard shoulders	Motorway Regulations	No gaps in the central reserve.	Motorway standards Full-grade separation.
Wide Motorway Divided 2+2 Lane (2X7.5m)	55,500	3m hard shoulders	Motorway Regulations	No gaps in the central reserve	Motorway standards Full-grade separation

Table 6.1: Recommended Rural Road Layouts

Notes:

1. For details of the standard road cross-sections, see DN-GEO-03036 and the relevant TII Publications Standard Construction

Details. Capacity figures are indicative for general guidance. The appropriate cross section shall be selected with reference to the TII Project Appraisal Guidelines. 2

The Type 3 Dual Carriageway cross-section shall only be considered where an existing road is to be upgraded on-line. The Type 2 Dual Carriageway cross-section shall be utilised for offline alignments. This road type may be used as an Express Road with the following conditions - access and junction control. 3.

4

This junction type is not permitted on Express Roads. Should the traffic assessment indicate that more than 2 lanes are required in each direction for a Standard Motorway or Type 1 Dual Carriageway, the additional lanes shall be a minimum width of 3.5m subject to curve widening. Right turns off the Major Road only permitted at priority junctions located at single lane sections of Type 3 Dual Carriageways, right turns onto the Major Road are not permitted (see DN-GEO-03060). 5. 6.

7.

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Supplemental Information in Relation to Route Options

Route Corridor Option 1 – The direct route from Foynes to Limerick

6.1 Inspector, on screen I am showing images to illustrate the challenges posed for any route option that would follow along or close to the existing N69 in the Kilcornan area. These images are supplemental to the EIAR and are provided to explain in more detail the difficulties that would have been associated with such a route option.





(These images were not published in the EIAR but are included here to elaborate further on the issues that would be involved with this route option).

6.2 There are 3 locations where there are Special Areas of Conservation that are located right beside the existing road. In two cases, at Ballyvogue and Glennameade, the SAC is on both sides of the road, and presumably extends underneath it as well.

Location No.1 - Askeaton Fen Complex at Ballyvogue



Location No.3 - Askeaton Fen Complex at Glennameade









- 6.3 To highlight the difficulties of developing an improved or new road along the existing N69 corridor, as an example I have shown the very significant additional impediments presented by the very extensive frontage development over a 2km length through the Kilcornan area which consists of the following obstacles as you travel from west to east:
 - Cluster of 11 dwelling houses on both sides of the road at Tooreen.
 - Kilcornan National School and sports facilities (GAA and Soccer) at Tooreen on the southern side of the road.
 - Entrance to Curraghchase Forest Park on the southern side.
 - The Kilcornan House pub on the northern side (closed for several years), with associated former petrol station, go-kart track and various other buildings.
 - Cluster of 10 dwelling houses, mainly on the northern side of the road at Boherboy.
 - Kilcornan Cemetery on the southern side.
 - Kilcornan Church on the northern side.
 - Cluster of 10 dwelling houses, mainly on the northern side of the road in the vicinity of Kilcornan Church.

In addition there are 6 local road junctions along this short 2km section of the N69.

Frontage along N69 at Toreen










6.4 It would not be possible to upgrade the existing N69 to the required EU TEN T Regulation standard for the route to Foynes Port through the Kilcornan area as described above, and an off-line route would be necessary. There is only a very narrow gap of 230m between the two SACs on either side of the route at Curraghchase, and a new road through this gap would pass through a woodland, the former go-karting track and would require the demolition of 3 dwelling houses. Indirect impacts to the hydrological regime that connects the SACs (numbered 1, 2 and 3 on the following map) would also be probable. Such a possible alignment is shown in the following image, which illustrates the basis for Option 1, the Red Route as shown in Figure 3.5 of the EIAR.





Figure 3.5 of the EIAR

Preliminary Health and Safety Plan for Works



Foynes to Limerick Road (including Adare Bypass)

Preliminary Safety & Health Plan

February 2021









Comhairle Cathrach & Contae Luimnigh Limerick City & County Council





Preliminary Safety & Health Plan

[Prepared in Accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013-2019]

Foynes to Limerick Road (including Adare Bypass)

Preliminary Safety & Health Plan

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1. GENERAL

1.1 Scope and Purpose of Preliminary Safety and Health Plan

For the purposes of this Contract, i.e. the Foynes to Limerick Road (including Adare Bypass) Project, this document shall constitute the Preliminary Safety and Health Plan as required by regulation 12 of the Safety, Health and Welfare at Work (Construction) Regulations, 2013-2019 (hereinafter referred to as the Construction Regulations).

This document has been prepared for the purpose of providing information to the Project Supervisor for the Construction Stage [PSCS] who will further develop it for the Safety and Health Plan for the construction site, as required by Regulation 16 of the Construction Regulations. This document is also being provided to the Contractor for information prior to his appointment as PSCS.

1.2 Client

The Contracting Authority for this project is:

Limerick City and County Council, Customer Services County Hall Dooradoyle Limerick

The contact within the organisation is David Leahy (Tel. 061 951000)

1.3 **Project Supervisor for the Design Process**

Roughan & O'Donovan Consulting Engineers (ROD) have been appointed by Limerick City and County Council to act as Project Supervisor Design Process [PSDP] until the end of the planning stage of the contract. During the preparation of the contract documents until the award of the main contract a separate consultant will undertake the role of PSDP after which the main Contractor will be engaged to fulfil the PSDP role.

(Tel: 01 294 0800, Fax: 01 294 0820).

1.4 **Project Supervisor for the Construction Stage (PSCS)**

The Contractor shall be appointed as PSCS for the works.

1.5 Requirement for Notification by the PSCS

The project is of such a scale and duration that written notice (Form AF2) is to be sent to the HSA by the PSCS before work begins as required by Regulation 22 of the Construction Regulations.

1.6 Related Documents

This Preliminary Safety and Health Plan should be read in conjunction with the following documents:

- i) Traffic Signs Manual 2019 Chapter 8 Temporary Traffic Measures and Signs for Roadworks;
- ii) Safety, Health and Welfare at Work Act 2005;
- iii) S.I. No. 291 Safety, Health and Welfare at Work (Construction) Regulations, 2013-2019;
- iv) S.I. No. 299 Safety, Health and Welfare at Work (General Application) Regulations 2007 2012.

2. DESCRIPTION OF THE PROJECT

The proposed Foynes to Limerick Road (including Adare Bypass) development, is located in west County Limerick in a predominantly rural area located close to a number of settlements including Foynes, Askeaton, Rathkeale, Croagh, Adare and Patrickswell.

The route commences south of the village of Foynes in the townland of Corgrig / Ardaneer on the N69 National Secondary Road (Limerick to Tralee national road) and extends eastwards for 6.5km towards the town of Askeaton. At the townland of Ballyclogh a roundabout junction will be provided where the route diverges:

- Eastwards for 2.1 km, to connect with the exiting N69 Limerick to Tralee road, which will also be the access point for the town of Askeaton, and;
- South towards the town of Rathkeale for approximately 9.3km where it merges with the existing N21 (Limerick to Tralee) road on the northern outskirts of the town of Rathkeale.

At Rathkeale a roundabout junction will be provided, and the road will connect with a realigned section of the existing N21 (Limerick - Tralee) to the west, and the proposed M21 Rathkeale to Adare section of the proposed road development to the east. From the new junction at Rathkeale, the road continues east and to the north of the existing N21 for approximately 2km before extending northeast across primarily agricultural land, broadly parallel to the existing N21. At Croagh a grade separated Junction to the east of the village is proposed with a link road connecting to the existing N21.

The road continues northeast of Croagh through the townlands of Clonshire and Gortnagrour crossing the Foynes Limerick rail line and the Greanagh River to the northwest of Adare. From here the road heads eastward crossing the Blackabbey Road (L-1422), Station Road (L-1423), bridging the River Maigue and then the Foynes to Limerick rail line again. East of the rail line and north east of the village of Adare a junction will be provided to allow for access to Adare. From here the road continues east through agricultural land to merge with the existing N21 terminating at the Attyflin Junction (M20 Junction 5). This entire section of road up to the Attyflin Junction including the online section west of the junction itself is to be reclassified as part of the M21 motorway as part of this proposed road development.

The proposed road development can be summarised under the main elemental headings as follows:

Roads

- 15.6km of Type 2 Dual Carriageway Protected Road, extending from Foynes to Rathkeale, with an intermediate roundabout junction at Ballyclogh, 6.3km east of Foynes, and 9.3 km north of Rathkeale;
- 1.9km of Single Carriageway Road from Ballyclogh towards Askeaton;
- 17.5km of Dual Carriageway M21 Motorway, of which 15.5km is new construction or widening of the existing road, from Rathkeale to Attyflin; and
- 0.6km of Single Carriageway Road connecting the existing N21 to the proposed M21 and Foynes to Rathkeale Protected Road at a roundabout junction at Rathkeale.

Junctions

- 2 grade-separated junctions at Adare and Croagh, including structures, link roads and roundabouts (six in total);
- 5 at-grade roundabout type junctions, providing access points at Foynes, Ballyclogh, Askeaton, and two at Rathkeale.

Structures

- 3 railway bridges;
- In excess of 200m long clear-span bridge over the River Maigue at Adare

- 4 other large river bridges (over Robertstown, Deel and Greanagh twice);
- 18 river / stream bridges (including Ahacronane and Clonshire);
- 16 overbridges / underbridges;
- 22 underpasses; and
- 1 retaining wall.

Other Works

- Drainage works in accordance with sustainable drainage design principles and guidance;
- The treatment of surface water run-off prior to outfall discharge, spill containment measures and attenuation treatment facilities;
- Alterations to high voltage 220kV and 110kV electricity lines;
- Diversion of existing services and utilities including overhead and underground electricity lines, transmission gas mains, watermains and communication cables;
- Earthworks including excavation of approximately 3 million m3 of soil and rock with processing into suitable construction material, and limited excavation and deposition of soft material within the site in landscaping works;
- Importation of a large volume of approximately 1 million m3 of earthworks materials will be required as due to the flat and low-lying topography with a high groundwater level the proposed road development cannot achieve an earthworks balance within the lands to be acquired;
- Construction of farm access tracks with accommodation works ancillary to the proposed road development;
- Provision of landscape planting, signage, lighting and other works ancillary to the construction and operation of the proposed road development;
- A terminal service area for HGVs near Shannon-Foynes Port;
- Accommodation of the Great Southern Trail Greenway (GST) walking and cycling route on the former railway line, where crossed north of Rathkeale; and
- The acquisition of 9 dwelling houses (of which 2 are currently uninhabitable) and 1 ruin for the construction of the proposed road development.

2.1 Location of the Works

The proposed road development extends from Foynes, at the western end to the existing M20 motorway, at Attyflin, a short distance east of Adare. In general, the proposed road development is located in central County Limerick in a predominantly rural area located close to a number of communities, including from west to east: Foynes, Askeaton, Rathkeale, Croagh, Adare and Patrickswell.

The total length of the proposed road development will be approx. 35km (comprising 15.6km of Type 2 Dual Carriageway from Foynes to Rathkeale, 1.9km of single carriageway link road from Ballyclogh towards Askeaton, 17.5km of dual carriageway M21 Motorway from Rathkeale to Attyflin, of which 14km is new build (and the remainder of which is improvement of existing N21 to Motorway standard).



Figure 1 Route of the proposed road development (red).

2.2 The Existing Environment

The project is located entirely within County Limerick. The project runs through predominantly agricultural lands but does have sections that run though areas of fen, woodland and forestry. The area is also rich in Archaeological and Cultural heritage and interfaces with a number of sensitive ecological sites. The project will cross the River Maigue within the Lower River Shannon SAC at Islandea. The boundary also extends to include the estuary of the River Deel upstream as far as the N69 at Askeaton and the estuary of the River Ahacronane upstream as far as the N69 at Rincullia. The Askeaton Fen Complex SAC to the west of the project includes a number of individual sites scattered to the north and south of the N69 between Askeaton and Kildimo. The fens occur in basins between undulating hills of limestone in an otherwise intensive agricultural landscape.

Roads

The most significant roads that the project interface with are:

- M21 to the east of the Project;
- N21 at Adare Croagh and Rathkeale;
- N69 at Foynes and Askeaton; and
- R518 at Rathkeale and north of Rathkeale.

All of the National and Regional Roads listed above have high levels of road frontage with high levels of HGV and agricultural traffic utilising them. There are also a number of other Regional and Local roads that the project interfaces with.

Streams and Rivers

- The Maigue;
- Robertstown;
- Deel;
- Greanagh;
- Ahacronane; and
- Clonshire.

Rail Line

Although the Foynes Limerick rail line is not live, Irish Rail maintains this line and has undertaken studies looking at reopening this line. The project interfaces with the line at the following locations:

- Crossing at Ch. 11+300 Cloonreask;
- Crossing Ch. 58+000 Gortnagrour;
- Crossing Ch. 61+250 Ardshanbally; and
- Runs parallel to the rail line between Ch. 61+900 and Ch. 64+900.

2.3 Description of the Works

The Scope of Works for this Design and Build Contract include design and construction of the elements of infrastructure listed elsewhere in this section and involve, but are not limited to, the following:

Site

- Access and egress points;
- Site boundary fencing for security and safety barriers and traffic management for road / lane closures;
- Storage areas for fuel and combustibles;
- Welfare facilities;
- Working near watercourses;
- Working in areas of seasonal flooding;
- Working in areas of peat and very soft ground;
- Working on or adjacent to public roads;
- Delivery of materials to site;
- Working near high voltage power lines;
- Working over high pressure gas mains; and
- Liaison with Limerick City and County Council, private Landowners, business owners and public and private service providers (Irish Rail, Gas Networks Ireland, Irish Water, ESB, Eir etc.).

Construction Methods

- Construction and road traffic management;
- Demolition of existing infrastructure;
- Temporary safety barriers;
- Constuction of Bridges over Rail lines, roads and rivers
- Excavation for foundations (including in areas of soft ground and/or high water table);
- Lifting of pre-fabricated elements;
- In-situ concrete construction:
- Pavement construction;
- Earthworks including works in soft ground;
- Traffic management;
- Working with hazardous materials;
- Piling, rock blasting and rock coring;
- Use of heavy plant;
- Locating existing utility services;

- Working near or adjacent to live services (overhead and underground);
- Installation and removal of lighting; and
- Installation and removal of fencing.

The full scope of the works and the obligations of the Contractor are to be ascertained by reference to the Contract as a whole.

2.4 Time for Completion of Project

The estimated period of time for completion of the whole of the works is approximately 30 - 36 months (2.5 – 3 years).

It is anticipated that there will be a 2-3 month lead-in period for the Design. It is anticipated that the early programmed construction of watercourse crossings and earthworks in areas of soft ground will facilitate further earthworks construction including the distribution of materials along the mainline, during the subsequent earthworks' seasons.

3. OTHER WORK ACTIVITIES ON SITE

3.1 Statutory and Other Bodies on the Site

The following is a non-exhaustive list of Utility companies affected by the works that will require advance notification:

- Limerick City and County Council County Drainage Departments;
- Limerick City and County Council Roads and Traffic Department;
- Irish Rail;
- Irish Water;
- Gas Networks Ireland
- Eir; and
- ESB.

3.2 PSCS Coordinator of other Works and Activities

Other works and activities may take place on site and adjacent to the site over the course of the contract. In the event of any other works or activities being undertaken on-site, the Contractor will be PSCS for these works and activities for the duration of the Contract.

The PSCS will be responsible for organising cooperation between contractors to ensure that the works are co-ordinated in a safe manner with a view to protecting persons at work and preventing accidents and injury to health. It is anticipated that weekly PSCS/PSDP co-ordination meetings will take place on site.

The other known works and activities that may take place on site and adjacent to the site over the course of the works are summarised in the Sections 3.2.1 to 3.2.4.

3.2.1 Archaeological Investigations

Archaeological investigations may be undertaken on site during the same period as the works, although it is currently envisaged that these will be completed prior to the commencement of the works. Such works include excavations for the examination of archaeological features and may require the use of heavy excavators.

3.2.2 ESB Diversions

Two high voltage overhead power lines are anticipated to be relocated, although it is currently envisaged that these will be completed prior to the commencement of the works. This will include the dismantling of electricity poles and pylons, construction of new foundations and

the erection of new structures. Cranes, excavators and concrete trucks will used on site for these works.

Some other MV diversions are anticipated to be completed by ESB prior to commencement of the works.

3.2.3 Gas Networks Ireland Diversions

At two locations, at Rincullia (Ch.4+190) and to the north-east of Croagh Village (Ch.54+700), diversions of a high-pressure gas main will be required along with protection of transmission and distribution mains at other locations. It is currently envisaged that the diversions will be completed prior to the commencement of the works but may require interface with main contract due to the nature of the diversions required. This will include the constuction of bypass mains that will need to remain active during the diversion of the mains, excavation for new mains, removal of existing infrastructure and installation of new high-pressure mains.

3.2.4 Fencing and Accommodation Works

It is anticipated that the site will be fenced and cleared of trees in advance of the main construction contract. Where this cannot be undertaken in advance of the main works contract there will be sections that will require the construction of walls, fences, installation of access and other accommodation works on private lands. These lands will be fenced and secured at the outset of the works, with appropriate provision for the safe control of farm animals during the fencing works. Care will be required to manage constuction with the affected landowners with regard to management of livestock, access routes, securing of open excavations, notification periods, utility diversions and other works on or near private lands and houses.

4. WORK INVOLVING PARTICULAR RISKS

4.1 Risks to Safety, Health and Welfare

The following is a list summarising those particular risks referred to in Schedule 1 of the Construction Regulations which are considered relevant to the proposed works and are deemed to be reasonably foreseeable to the PSDP.

- 1. Work which puts persons at work at risk of
 - a. falling from a height,
 - b. burial under earthfalls, or
 - c. engulfment in swampland,

where the risk is particularly aggravated by the nature of the work or processes used or by the environment at the place of work or construction site;

- 2. Work which puts persons at work at risk from chemical or biological substances constituting a particular danger to the safety and health of such persons or involving a statutory requirement for health monitoring;
- 3. Work near high voltage power lines;
- 4. Work exposing persons at work to the risk of drowning;
- 5. Work on wells, underground earthworks and tunnels;
- 6. Work involving the use of explosives;
- 7. Work involving the assembly or dismantling of heavy prefabricated components.

The following is a non-exhaustive list of the work related to the project which will involve particular risks to the safety, health and welfare of persons in the construction of the works:

- Transmission of Coronavirus (Covid 19);
- Working adjacent to high volumes of live traffic along the M21, N21, N69 and other regional and local roads. This will require the provision of temporary traffic management;

- Working adjacent to and, where required, diverting existing utilities including buried electrical cables and telecommunication cables;
- Working in confined spaces including drainage culverts and pipe networks;
- Working in areas of deep peat and soft ground;
- Working in areas of deep cuttings, including a rock cutting at Barrigone, which is anticipated to be up to 19m deep
- Works involving site clearance and demolition of farm buildings, dwelling houses, masonry walls and fencing. This work includes demolition of buildings which have been identified to contain asbestos containing material;
- Risk of electrocution from medium and low voltage overhead electrical cables;
- Work involving removal of asbestos watermains;
- Work involving the use of heavy machinery, including excavators, tractors and trucks;
- Work involving exposure of workers to excessive noise and vibration and the consequent effects on health;
- Risk of injury from working adjacent to farm animals;
- Risk of contracting Weil's and Lyme's disease;
- Works involving interaction with the public.

The above list is non-exhaustive and represents those risks that have been identified by the PSDP during the design process following completion of a risk assessment for the scheme, which could not practicably be eliminated by revising the design. In addition, it should be noted that a number of risks may arise out of working methods proposed by the Contractor and as such cannot be determined by the PSDP.

4.2 Specific Measures for Reducing Particular Risks

It is envisaged at the commencement of the works that the following non-exhaustive list of specific measures for reducing particular risks will be addressed by the PSCS in the Construction Stage Safety and Health Plan.

- All workplaces should follow the HSE Guidelines on Social Distancing. Additional measures will be required to ensure the containment of the Coronavirus (Covid-19). These include health awareness, promotion of good hygiene, adopting a 'No Hand-Shake Policy', effective cleaning / disinfection arrangements, careful management of Supply Chain. For the most up to date information, the HSE website www2.hse.ie/conditions/coronavirus/coronavirus.html should be monitored;
- Measures will be required to ensure that safe access is provided to areas of bog/soft ground. It is assumed that low ground pressure tracked equipment, bog mats, floating roads, etc., will be used in areas of bog and soft alluvium. Excavation dewatering measures may be required. The Background Information contains details in relation to water levels. Stability of all excavations for structures should be assessed by a competent geotechnical engineer following excavation to the structure foundation depth. Safety barriers should be provided at the top of all excavations to prevent falls and vehicles coming too close to the edge of the excavation. Trench supports, propping, shoring and piling should be used where required;
- Measures will be required for the provision of temporary traffic management where works are required along public roads - sufficient lateral clearances will be required to achieve adequate working space for vehicles and machinery, especially in proximity to live traffic lanes, pedestrians and cyclists, so as not to trap or crush persons or cause damage. Where lateral clearance is not achievable the Contractor should use a convoy vehicle to control traffic;
- The stability of any temporary excavations or temporary works should be secured;
- Measures will be required for the protection of workers and the public during blasting in deep rock cuttings, such as the rock cuttings at Barrigone and Croagh;

- Measures will be required for the protection of workers from falling from bridges. Temporary false works and scaffolding with handrails and toe boards will be required for construction of the bridges until parapets are constructed. Securely fixed ladders will be required at all access points;
- Measures will be required to locate the exact position of all public and private service utilities prior to excavation work commencing with continued liaison with service providers such as, but not limited to, ESB, Gas Networks Ireland, Irish Water, Limerick City and County Council and Eir. Limerick City and County Council intends to divert some high voltage power lines and Gas Networks Ireland transmission mains as advance works. Diversion of other utilities will also be required.
- Measures will be required to set up goal posts under overhead power lines to establish safe crossing points for plant;
- Measures will be required to ensure that a buffer is provided for personnel and machinery when working adjacent to lakes, streams/watercourses and lands that flood on a seasonal basis, including the River Maigue and its tributaries as well as the River Deel. For these works the Contractor should be aware of the inherent dangers of working next to water and have the correct PPE and water safety measures in place to prevent drowning. Works in these areas should be scheduled to avoid works during times of heavy rainfall. Bridge spans have been maximised for bridge foundations adjacent to rivers. For deep excavations which could potentially fill with water, adequate dewatering and pumping methods should be employed to reduce the risk of drowning;
- Measures will be required (including geophysical & walkover surveys) to determine the presence of swallow holes prior to construction commencing in areas of karst;
- Measures will be required for site clearance and demolition works, including demolition of buildings which may contain asbestos containing material;
- Measures will be required for the safe excavation of fens, bogland and soft ground;
- Measures will be required for safe piling and testing of piles;
- Measures will be required for rock blasting in areas of rock cut and the safe use of explosives;
- Measures will be required for diversion of watermains including asbestos concrete mains. A detailed method statement should be prepared for the removal of hazardous materials such as asbestos. These works should be scheduled where possible to avoid interaction with other activities and reduce the chance of exposure to other works and the public;
- Measures will be required to ensure that all construction works are fenced off and secured, including works proposed near residential areas where children could gain access to the site;
- Securing of the site and compound against unauthorised access and vandalism;
- Measures will be required in the planning and delivery of plant and materials to site.

5. LOCATION OF EXISTING SERVICES TO FACILITATE ADEQUATE WELFARE FACILITIES

The site for this project extends over a length of 35km and the exact location of the Contractor's main compound is to be established. The locations of existing electricity lines, foul sewers and water supply which could be used for the main welfare facilities at the main compound are indicated on Utility drawings included in the Background Information that will be provided as part of the contract. It is noted that the Contractor may need to identify appropriate welfare facilities such as portable toilets at other locations along the site.

6. COORDINATION OF DESIGN

6.1 **Project Review & Coordination Meetings**

Project and coordination review meetings will be arranged by the PSCS on a regular basis. The meeting will be attended by the PSDP and all Contractors working on the site for the purposes of coordinating the following;

- Exchange of Safety Statements between Contractors to inform each other and their respective employees and of any risks to their safety, health and welfare arising from the work activity;
- Review the progress of work;
- Agree phasing of any ground investigations, archaeological investigations, fencing and service diversion works;
- Arrange cooperation between contractors;
- Arrange access arrangements to the site;
- Temporary traffic management arrangements;
- Welfare and site security arrangements.

6.2 PSCS/PSDP Liaison

Procedures will be required for liaison between the PSCS, the PSDP, Contractors and the various Designers for considering the following:

- (a) Safety and health implications of the exact scope and location of the project;
- (b) Unforeseen eventualities during project execution resulting in substantial design change and which might affect particular risks, time for completion, or have other safety and health implications;
- (c) The provision of information for the Safety File.

6.3 Safety File

Pursuant to regulation 13 of the Construction Regulations, the Project Supervisor for the Design Process is required to:

'prepare a written safety file appropriate to the characteristics of the project, containing relevant safety and health information, including any information provided under regulation 21, to be taken into account during any subsequent construction work following completion of the project and promptly deliver the safety file to the client on completion of the project.'

In order to prepare the safety file, the PSDP must receive the appropriate information from designers, the PSCS and other duty-holders.

Regulation 21 requires the PSCS to

'co-ordinate arrangements among contractors to ensure the provision of relevant information, in writing, necessary for the project supervisor for the design process to complete the safety file referred to in regulation 13, monitor the implementation of the arrangements and take any necessary corrective action, as set out in regulation 20, and provide in writing to the project supervisor for the design process all relevant information necessary for that project supervisor to complete the safety file referred to in regulation 13.'

The following is a non-exhaustive list of contents that are required to be included in the safety file. It is not intended to be a complete list and in no way relieves the PSCS of his obligations under the regulations.

- Safety and Health Plan for the construction site prepared by the PSCS;
- As Built Drawings;

- Relevant Certificates from Suppliers / Manufacturers / Specialist Contractors etc;
- SI information for contaminated land;
- Details of Location and Nature of Utilities and Services and details of relevant procedures and precautions to be followed; and
- Details regarding the specification of gates, fences, etc.

6.4 Design Assumptions

The Designer has made assumptions in the design as to the methods of construction of the Works. Any variation in these methods proposed by the Contractor, which would require substantial change in the design or have safety and health implications, will require to be considered in the Safety and Health Plan to be prepared by the PSCS.

Any design changes arising from unforeseen eventualities during construction which might affect particular risks, the time for completion or have other safety and health implications must be notified to the PSDP.

A copy of the designers' assessment of risks and hazards is included in Appendix A of this plan.

APPENDIX A

Designers' Assessment of Risks and Hazards

Made (Design/Project Engin	eer)	[.]): МН		ИН	Scheme Name - Foynes to Limerick Road (including Adare Bypass)	
Checked:		МС			Project Number - 14.131	
Date Jan-21						
2020 TII Project Management Phase 3/4 Guidelines Phase Design/ EAIF						
Identified Hazard or Risk.	E	pos	ed Pa	rty	Evaluation, Design Decisions and / or Alternative Actions	Is the risk of a
(P) indicates a Particular Risk listed in Schedule 1 of the Regulations	Contractor	Public	End User	Maintainer	<i>Description of risk or hazardous activity</i> Describe the design decisions, assumed construction methods and / or alternative actions	substantial or unusual nature such that information should be provided to the PSDP?
Work which puts persons at work at risk of falling from a height (P)	*			~	Bridges over local roads, railways and watercourses required along the scheme. A number of high embankments are located within the scheme. These have been graded to be 1:3 side slopes to minimise the risk during construction and in the operational phase of the scheme. A number of underpasses, culverts and bridges are incorporated into the scheme design, Residual risk remains because it is impossible to eliminate the possibility of falls. Temporary false works and scaffolding with handrails and toe boards are required for the construction of the bridge. Securely fixed ladders are required at all access points.	Νο
Work which puts persons at work at risk of falling from a height (P)	~	~			Construction material falling from height. Residual risk remains because it is impossible to eliminate the possibility of falling objects. Adequate working space and planning should be provided. Temporary works and scaffolding provided with protection measures, which shall include handrails with netting and toe boards to prevent materials dropping from height. Suitability qualified banks men required for all crane lifting/ movement of materials operations within the site.	No
Work which puts persons at work at risk of burial under earthfalls (P)	*				Construction work in deep cuttings, installation of structural foundations and installation of drainage pipelines, Sewers and other buried services is unavoidable The design includes cuttings with the largest of these at Barrigone (up to 19m) and Craogh (Up to 12m). The cuttings are largely formed in rock, with the potential for rock falls during construction and particularly where blasting occurs. A residual risk remains in relation to this hazard because it is impossible to eliminate the risk of burials or earthfalls. Safety barriers to be provided at the top of all excavations to prevent falls and vehicles coming too close to the edge of the excavation. Trench supports, propping, shoring and piling to be used where required. All safety measures legally required are to be followed in the use of explosive, including alerting the public to blast times and notifying An Garda Síochána.	Yes

Identified Hazard or Risk.		cpose	ed Pa	rty	Evaluation, Design Decisions and / or Alternative Actions	Is the risk of a
(P) indicates a Particular Risk listed in Schedule 1 of the Regulations	Contractor	Public	End User	Maintainer	<i>Description of risk or hazardous activity</i> Describe the design decisions, assumed construction methods and / or alternative actions	substantial or unusual nature such that information should be provided to the PSDP?
Work which puts persons at work at risk of engulfment in swampland (P)	*				Construction work is anticipated with bogs, fens,marshy conditions and areas of wet unstable ground. The design has included for excavation and replacement in areas provide a stable foundation for the road where in soft ground. These excavations are likely to be below the water table level and as suchmay require bunding and de-watering. A residual risk remains in relation to this hazard because it is impossible to eliminate the risk of engulfment. Trench supports to be used where required. Ground investigation has been carried out in areas that peat deposits have been encountered to obtain an accurate assessment of the likely depths of peat to determine the optimal treatment solution.	Yes
Work which puts persons at work at risk from chemical or biological substances (P)	*				For durability reasons many structural elements must be waterproofed and concrete impregnation will be required. Sheet bonded waterproofing to be provided. Individual protective measures of persons applying waterproofing, surface impregnation and anti graffiti coating are necessary to limit contact with any potentially harmful substances and reduce the risk of falls during application. Others should be kept clear of such areas when this work is in progress.	No
1. Work which puts persons at work at risk from chemical or biological substances constituting a particular danger to the safety and health of such persons or involving a statutory requirement for health monitoring; this may include the presence, anticipated or otherwise, of contaminated ground.	~				(i) Project safety protocols will include guidance for all site operatives including briefings at appropriate times. (ii) The location of possible contaminaiton incidence has been identified in the EIAR . (iii) Wherever contaminated ground conditons are anticipated or encountered, at the construction stage the ground conditions will be closely monitored to check if any waste material is exposed during excavations, with provision for any such material to be tested on site and disposed into licensed landfill facilities It should be noted that nearby borehole BHA 26 showed no evidence of any infill or contamination in this vicinity.	Yes
Work with ionising radiation (P)	1				Nuclear density gauge may be used to test compaction during the construction stage of pavement layers and are a source of ionising radiation. PSCS / testing organisation will need to comply with its RPII Licence conditions and Radiation Safety Procedures.	Νο

Identified Hazard or Risk.		cpose	ed Pa	irty	Evaluation, Design Decisions and / or Alternative Actions	Is the risk of a	
(P) indicates a Particular Risk listed in Schedule 1 of the Regulations	Contractor	Public	End User	Maintainer	<i>Description of risk or hazardous activity</i> Describe the design decisions, assumed construction methods and / or alternative actions	substantial or unusual nature such that information should be provided to the PSDP?	
Work near high voltage power lines (P)	*				High voltage power lines both underground and overhead cross the project at various locations. ESBI and ESB have been contacted to determine the extent of the impact on overhead lines. Bot 220kV and 110kv transmission lines are impacted by the scheme and require new towers and polests to be constructed by ESBI to provide headroom for the road developement. Othe hogh Voltae lines alos cross the road roject wherealterations are not required but are close to hte prposed road and need to be protected during constuction. A number of low to medium voltage lines are directly impacted by the works and will require diversion as part of the works. Details of utilities will be provided to the contractor prior to the works commencing.	Yes	
Work exposing persons at work to the risk of drowning (P)	~				Works are proposed over rivers, streams, within deep excavations and in proximity of lands laibel to floodigs. The design has where possible minimised river and steam crossings however a number of river and stream crossings are unavoidable. there are a number of significant rivers and watercourses that require crossings, incuding the Maigue, the Greanaghat two locations, the Deel, the stream at Robertsown, Clonshire and Ahacronane. For these works the Contractor should be aware of the inherent dangers of working next to water and have the correct PPE and water safety measures in place to prevent drowning. For deep excavations which could potentially fill with water, adequate dewatering and pumping methods shall be employed to reduce the risk of drowning.	Yes	
Work involving the use of explosives (P)	~	~			Blasting work may be required at cutigns along the lengthof the project. The Contractor shall be made aware of any environmental restrictions in place and give consideration to the weight and type of explosive charges used. All safety measures legally required are to be followed in the use of explosive, including alerting the public to blast times and notifying An Garda Síochána.	Yes	
Work involving the assembly or dismantling of heavy prefabricated components (P)	~				Works involving the assembly or dismantling of heavy prefabricated components are likely to arise with the installation of piling, installation of precast bridge beams, precast service chambers and temporary safety barriers. Residual risk remains because it is impossible to eliminate handling and heavy prefabricated items will be required for construction over roads and crossings of watercourses. Attachment points should be provided on items to be handled. Self-release shackles should be provided. Weight details should be provided on elements. Suitability qualified banks men required for all crane lifting/ movement of materials operations within the site while PPE shall be provided.	Νο	

Identified Hazard or Risk.		cpose	ed Pa	irty	Evaluation, Design Decisions and / or Alternative Actions	ls the risk of a
(P) indicates a Particular Risk listed in Schedule 1 of the Regulations	Contractor	Public	End User	Maintainer	<i>Description of risk or hazardous activity</i> Describe the design decisions, assumed construction methods and / or alternative actions	substantial or unusual nature such that information should be provided to the PSDP?
Confined Spaces	~				Work within confined spaces is anticipated for a number of construction activities and in particular within service chambers, sewer and stormwater manholes and in structures; Any construction workers who will be carrying out work in confined spaces shall have approved confined space training.	No
Construction Traffic	*	*			Construction traffic will be unavoidable with project of this type. While efforts to avoid interaction will be require the residual risk remains in relation to this hazard. Operatives and construction staff should be made aware of construction traffic routes. Barriers, fencing and signage should also be in place to prevent the general public from coming into contact with construction traffic and machinery. Dedicated access and egress points to the site should be signed and made aware to the public and operatives. Limitations on site access will also be in place. Traffic management procedures will need to be detailed in Construction Health and Safety Plan. All site operative to have safety induction training and task specific briefings. Personal Protective Equipment (PPE) should be used.	Νο
Railway					No Live Railways affected. Contractor to liaise with Irish Rail with regard to maintenance and access to rail lands.	No
Demolition	~				Demolition of part of a number of houses and farm buildings is proposed. For the demolition of buildings a method statement will need to be prepared and operatives made aware of the proposed sequence of demolition to avoid worker being inside buildings being demolished and ensure that methods used do not put operatives in the way of falling material. The risk of unidentified and identified asbestos within buildings to be demolished exists and plans to deal with this including disposal and demolition plans will need to be prepared by the contractor to deal with this risk.	Yes
Dust	~	*			Large amounts of dust may be generated by cold milling of existing pavement and general excavation in dry / windy weather conditions. Dust will be generated by the cold milling of pavement and excavation operations. Dust masks should be worn by operatives in proximity to the works. Watering of open excavations will need to be undertaken where dust could be a concern in the vicinity of residential areas.	Νο

Identified Hazard or Risk.	E	kpose	ed Pa	irty	Evaluation, Design Decisions and / or Alternative Actions	Is the risk of a substantial or unusual nature such that information should be provided to the PSDP?
(P) indicates a Particular Risk listed in Schedule 1 of the Regulations	Contractor	Public	End User	Maintainer	<i>Description of risk or hazardous activity</i> Describe the design decisions, assumed construction methods and / or alternative actions	
Excavations	~				Excavation works will be integral to the undertaking this project and as a result a residual risk remains in relation to this hazard. Stability of all excavations for structures will be assessed by a competent geotechnical engineer following excavation to the structure foundation depth. Excavation dewatering measures will be provided where required. Safety barriers to be provided at the top of all excavations to prevent falls and vehicles coming too close to the edge of the excavation. Trench supports to be used where required.	No
Flooding	~				Areas adjacent to rivers, watercourses and fen areas within the scheme have the potential for flooding. The Contractor shall be made aware of the extent of the flooding area and avoid leaving operatives, material and plant in these areas during expected times of heavy rain fall. It should be noted that in the vicinity of fen areas changes to waterlevel may be delayed after a rainfall event after being fed by underground streams. Work in these areas shall be scheduled to avoid works in winter and during times or heavy rainfall. Measures to prevent drowning and sufficient buoyancy aids shall also be provided.	Yes
Live Traffic	*				Interaction with live traffic will be unavoidable with project of this type; Although most of the project will be built offline, there will be significant interfaces with existing high speed roads at the construction of junctions at Adare, Croagh, Rathkeale, Askeaton and Foynes with online modifications to the M21/N21, N21 and N69. There will also be a number of crossings of the existing national road network. Traffic management procedures will need to be detailed in Construction Health and Safety Plan. All site operative to have safety induction training and task specific briefings. Adequate traffic control measures will need to be put in place for all operations with diversion clearly signposted and installed to the required standards to avoid the public walking or driving out into live traffic or construction works.	Yes
Presence of Asbestos	~				Structures being demolished could also contain asbestos sheeting and piping. The Contractor is to be made aware of these risks and prepare a detailed method statement for the removal of hazardous materials such as asbestos. These works should be scheduled where possible to avoid interaction with other activities and reduce the chance of exposure to other works and the public.	Yes

Identified Hazard or Risk.		kpose	ed Pa	rty	Evaluation, Design Decisions and / or Alternative Actions	Is the risk of a
(P) indicates a Particular Risk listed in Schedule 1 of the Regulations	Contractor	Public	End User	Maintainer	<i>Description of risk or hazardous activity</i> Describe the design decisions, assumed construction methods and / or alternative actions	substantial or unusual nature such that information should be provided to the PSDP?
Slips, Trips	*				Slips, trips and falls are a risk on uneven ground or where the construction works require an existing public route to be diverted. All site operatives are expected to receive safety induction training. Furthermore, appropriate signage should be erected to make site personnel aware of potential trip/slip hazards. Footway diversions should be well sign posted and follow routes that does not put the general public at risk of slips, trips or falls.	Νο
Unauthorised Access	~	~			Works are proposed near to residential areas along the scheme, particularly at Strokestown and as such the potential for unauthorised access is increased. Appropriate measures should be put in place prior to and during the construction phase to avoid unauthorised access to the construction site particularly in the vicinity of schools and residential areas where children could gain access to the site.	Yes
Vibration	~				White Finger or other occupational hazards associated with pneumatic tools trimming pavement layers at joints Appropriate safety equipment and PPE should be provided to site staff using or affected by vibrating machinery. Assumed that the Contractor will take measures such as rotating operatives to reduce exposure.	No
Welfare	~				Ineffective/insufficient welfare facilities Contract documents to require a minimum provision of welfare facilities that the contract has to provide under the contract.	No
Weils Disease and other mammal borne diseases	~				The inherent to the nature of construction activity, particularly adjacent water means that this hazard cannot be eliminated. Operatives are to be made aware of personal hygiene and risks.	No
Work involving exposure of workers to excessive noise	~	~			The use of heavy machinery, jackhammers, blasting, large construction plant and vehicles could potentially expose workers to excessive noise. Use of quieter machinery and silencers or alternative construction methods to be considered where applicable. Contractor may consider the use of quieter machinery and silencers/mufflers or alternative construction methods to be considered. Personal protective equipment to protect against hearing damage should be provided.	No

Identified Hazard or Risk.		pose	ed Pa	rty	Evaluation, Design Decisions and / or Alternative Actions	Is the risk of a
(P) indicates a Particular Risk listed in Schedule 1 of the Regulations	Contractor	Public	End User	Maintainer	<i>Description of risk or hazardous activity</i> Describe the design decisions, assumed construction methods and / or alternative actions	substantial or unusual nature such that information should be provided to the PSDP?
Existing Services / Diversion of Services	*	~			There are a number of services present including gas transmission mains At two locations, at Rincullia (Ch.4+190) and to the north-east of Croagh Village (Ch.54+700), diversions of a high-pressure gas main will be required along with protection of transmission and distribution mains at other locations. It is currently envisaged that the diversions will be completed prior to the commencement of the works but may require interface with main contract due to the nature of the diversions required. This will include the constuction of bypass mains that will need to remain active during the diversion of the mains, excavation for new mains, removal of existing infrastructure and installation of new high-pressure mains.	Yes

Prepared by Morgan Hart Checked by M Conroy Approved by S MacGearailt

IN THE MATTER OF AN APPLICATION TO AN BORD PLEANÁLA

FOR APPROVAL OF THE FOYNES TO LIMERICK ROAD (INCLUDING ADARE BYPASS) COMPRISING:

- (I) FOYNES TO RATHKEALE PROTECTED ROAD SCHEME, 2019;
- (II) RATHKEALE TO ATTYFLIN MOTORWAY SCHEME, 2019;
 (III) FOYNES SERVICE AREA SCHEME, 2019.

ABP Ref. ABP-306146-19 and ABP-306199-19

Supplementary Information submitted to An Bord Pleanála on Monday 15th February 2021

> Brief of Evidence Planning and Policy Context

By Maria Woods Senior Planner Limerick City and County Council

and

John O'Malley Kiaran O'Malley Town Planning Consultants

Maria Woods Senior Planner Limerick City and County Council

Policy Context

European Policy Context

Trans-European Transport Network (TEN T)

- · Strategic Networks Connecting rail, roads, ports and airports within EU
- Regulation (EU) No 1315/2013 (amended on a number of occasions) consists of two layers:

- Comprehensive Network: main transport links across all EU regions to be completed by 2050

- Core Network: most strategically important connections of the comprehensive network to be completed by 2030. In Ireland, the Core Network comprises the transport links from the Border near Dundalk via Dublin on to Cork, with a connection to Limerick (Plate 2.1 EIAR) and Shannon Foynes Port (Plate 2.2 EIAR).

2

Modified alignments of the Core Network Corridors

North Sea – Mediterranean

 Shannon Foynes/Dublin/Cork – Le Havre/Calais/Dunkerque/Zeebrugge /Terneuzen/Gent/Antwerpen/ Rotterdam/Amsterdam

Atlantic

3

- Shannon Foynes/Dublin/Cork Le Havre – Rouen – Paris
- Shannon Foynes/Dublin/Cork Saint Nazaire – Nantes – Tours – Dijon



Figure 1 Modified Core Network Corridors under Connecting Europe Facility 2 [CEF2 Regulation pending]

EIAR: Plate 2.2

 Ten-T Core (Orange) and Comprehensive Network (Green) in the Mid West Region



Project Ireland 2040 National Planning Framework February 2018

NSO2: 'Inter-Urban Roads' maintaining the strategic capacity and safety of the national road network including planning for future capacity enhancements.

NSO4: 'Ports' improve land transport connections to the major ports including: Enhancing road connectivity to Shannon-Foynes Port, including local bypasses;



5

National Development Plan

 The proposed Foynes to Limerick Road (including Adare Bypass) is included in the TII National Roads Programme 2018-2027 in Figure 5.2 of the NDP

22		Initiation of the second secon
ID	Route	e Scheme Name
1	N2	N2 Slane Bypass
2	N4	N4 Collooney to Castlebaldwin
3	N5	N5 Westport to Turlough
4	N5	N5 Ballaghaderreen to Scramoge
5	N6	N6 Galway City Ring Road
6	N7	M7 Naas to Newbridge
7	N8	N8/N25 Dunkettle Road Interchange
8	N11	N11 Jn 4 M50 to Kilmacanogue (Parallel Road)
9	N11	N11 Gorey to Enniscorthy incl N30 link
10	N20	M20 Limerick Cork Scheme
11	N20	N20 Mallow Relief Road
12	N21	N21/N69 Limerick Foynes
13	N22	N22 Ballyvourney to Macroom
14	N25	N25 New Ross PPP
15	N28	N28 Cork to Ringaskiddy
16	N52	N52 Ardee Bypass
17	N56	N56 Mountcharles to Inver
18	N56	N56 Dungloe to Glenties
19	N59	N59 Moycullen Bypass
20	N59	N59 Oughterard-Maam Cross-Clifden
21	N59	N59 Westport to Mulranny
22	N69	N69 Listowel Bypass
23	N86	N86 Tralee to An Daingean
Plate 2.8a	National	Roads Programme 2018-2027 (NDP) in the Mid-West Region

National Port Policy 2013

- Shannon Foynes is one of three Tier 1 Ports of National Significance in Ireland.
- The largest bulk goods port handling approx. 20% of all sea-borne trade in the State.
- The proposed road development will improve road access at Shannon Foynes Port and support continued commercial development at this Tier 1 Port, which is a key strategic objective of National Ports Policy.
- Section 4.4 notes that "effective hinterland connections are critically important to any port's ability to facilitate large volumes of traffic" and that all TEN-T core ports must be connected to both the TEN-T core road and rail networks.



Climate Action Plan 2019

- The proposed road development will enabling HGC traffic accessing the port and other origins and destinations served by the proposed road to bypass the towns and villages on the existing N69 and N21 routes.
- This will deliver improvements in these settlements in terms of public safety, reduced congestion, air quality and amenity facilitating better public transport services and improved provision for active modes such as walking and cycling.



7

Programme for Government – Our Shared Future' (Government of Ireland 2020)

- Balanced regional development is identified as one of the 'missions' in the Programme:
- Page 14: "We will continue to invest in new roads infrastructure to ensure that all parts of Ireland are connected to each other".
- Page 15: ambitious emission reduction targets and need to significantly decarbonise our transport fleet

Regional Policy Context







10



- RPO 140 (International Connectivity),
- RPO 142 (Ports),
- RPO 143 (Ports and Airports),
- RPO 144 (Port Infrastructure),
- RPO 146 (High-Quality International Connectivity Ports) and
- RPO 167 ('National Road Projects').



11

MASP

MASP Policy Objective 8: "Foynes to Limerick Road Scheme (including Adare Bypass)"

Section 8.6 refers / Shannon MASP Policy Objective 16(b).

"The N69 route to Foynes does not meet the standards of reliability and connectivity required to serve a port to support foreign and indigenous investment, nor to maximise tourism potential. The delivery of the Foynes to Limerick Road Improvement Scheme is a key infrastructural project. Connectivity to the motorway network will be critical to increasing the Ports economic impacts in the future."



Vision:

The Strategy will deliver a high-quality, accessible, integrated and more sustainable transport network that supports the role of the Limerick Shannon Metropolitan Area as the major growth engine of the Mid-West Region, an internationally competitive European city region and main international entry to the Atlantic Corridor.

Objective RS4 National Roads:

Construct the N69/M21 Foynes to Limerick Road (including Adare Bypass) to TEN-T standard.



County Policy Context

- Extended...
- Chapter 8 relevant policies:
 - Enhanced connectivity with the Estuary
 - Bypass of Adare



15

Local Policy Context

- Adare Local Area Plan 2015 – 2021

Objective T 1: Adare Bypass: "It is an objective of the Council to provide a bypass for Adare to relieve traffic congestion in the village for the convenience and safety of road users".

- Askeaton Local Area Plan 2015 – 2021

Refers to the Foynes to Limerick Road Improvement Scheme providing a high quality road connection between Foynes Port and Limerick.

- Draft Southern Environs Local Area Plan 2021-2027

Objective TM O12: "Support delivery of strategic road infrastructure identified in the RSES including: Foynes to Limerick Road Scheme (including Adare Bypass);

15

John O'Malley from Kiaran O'Malley Town Planning Consultants

Issues pertaining to planning and policy that were raised in the submissions and objections received by An Bord Pleanála and responses
Existing Road Network

Regulation (EU) No. 1315/2013 specifies the requirement for high quality roads on the TEN-T network and provides that only (a) a motorway or (b) an express road may be considered as road option types on the Core Network.



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Map No. 8.4 Limerick County Development Plan 2010-2016 (as extended)

This is a road classification map indicating the existing strategic regional roads in County Limerick and is included for the purposes of objective IN O16 in relation to prevention of access onto strategic regional roads.



Limerick County Council	Strategic Regional Roads	November Map No.
County Development Plan 2010 - 2016	Ordinance Samey Island COMA University Council 2010/01	2010 8.4

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ABP Ref. ABP-306146-19 and ABP-306199-19

Supplementary Information submitted to An Bord Pleanála on Monday 15th February 2021

> Brief of Evidence Traffic Analysis

By Philip Shiels, B.Eng. C.Eng. M.I.E.I. Roughan & O'Donovan – Aecom Alliance Consulting Engineers

Supplementary Information in Relation to the Existing Situation

3.1 Figure 1 below shows the existing road network and key settlements along both the N69 and N21 corridors. The N69 corridor passes through or close to a number of settlements including Askeaton, Kilcornan, Kildimo, Clarina and Mungret. While the N21 passes through Croagh and Adare. Figure 2 below shows the location of all residential and commercial address points in County Limerick (2017 GeoDirectory) and highlights the dispersed nature of housing within the county and the importance of both corridors in providing access to these areas and not just the key settlements along the corridors.

Slide 2 (Not included in the EIAR)



Figure 1

Existing Road Network

Slide 3 (Not included in the EIAR)



Figure 2 Location of Residential/Commercial Addresses (GeoDirectory)

Level of Service

3.2 The Level of Service of a road is a quality measure describing operational conditions within a traffic stream. Six LOS are defined from A to F, with LOS A representing the best operating conditions (i.e. free-flow operations) and LOS F the worst. At LOS D, freedom to manoeuvre within a traffic stream in more noticeably limited and the driver experiences reduced physical and physiological comfort levels. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions.

Public Transport – N21 Corridor

3.3 In terms of public transport there are approximately 30 daily bus services in each direction serving the N21 corridor between Tralee/Killarney and Limerick/Dublin (Bus Eireann 13, 14, 321 and Dublin Coach 300). Of the settlements and hinterlands served by the N21 between Rathkeale and Attyflin, only 0.8% of all commuting trips (2016 CSO Census) are undertaken by bus, with over 84% of trips undertaken by private motor vehicles. It is worth noting that as part of the same traffic stream, buses experience the same extent of delay as private vehicles on the N21 corridor.

Distribution of N21 Corridor (Commuting Trips)

3.4 Figure 4 shows the distribution of commuting trips (i.e. where people travel to work) of residents who live in the Electoral Districts along the N21 corridor between Rathkeale and Patrickswell. The figure shows the dispersed range of destinations of residents, some of which may not be feasible by public transport or may require multiple transfers

between public transport services or active modes and this reflects the high use of private motor vehicles to access these destinations.



Slide 4 (Not included in the EIAR)

Figure 4 N21 Distribution of Commuting Trips (All Modes of Transport)

Public Transport – N69 Corridor

3.5 There are 4 daily bus services in each direction serving the N69 corridor between Glin and Limerick (Bus Eireann 314 service). Of the settlements and hinterlands served by the N69 between Foynes and Mungret, 2.9% of all commuting trips (2016 CSO Census) are undertaken by bus while over 84% of trips undertaken by private motor vehicles.

Distribution of N69 Corridor (Commuting Trips)

3.6 The distribution of commuting trips (i.e. where people travel to work) of residents who live in the Electoral Districts along the N69 corridor between Foynes and Mungret is illustrated in Figure 6. The dispersed range of destinations of residents and unfeasible public transport alternatives reflects the high use of private motor vehicles to access these destinations.



Slide 5 (Not included in the EIAR)

Figure 6 N69 Distribution of Commuting Trips (All Modes of Transport)

Road Safety

3.7 From a safety perspective, both the N69 and N21 corridors have an existing collision rate in excess of the national average. Figure 7 shows the location and severity of collisions (Road Safety Authority data 2008 – 2016) along both the N69 and N21 corridors. Between 2008 and 2016, there was 1 fatal, 5 serious and 95 minor casualties recorded on the N69 corridor. On the N21 corridor there were 7 fatal, 17 serious and 123 minor casualties.

Slide 6 (Not included in the EIAR)



Figure 7 N69 & N21 Corridor Collisions (RSA Data 2008 – 2016)

3.8 TII Standard GE-STY-01022 Network Safety Analysis is used to identify sections of the national road network which have a high concentration of collisions and to rank the safety of the road network. The ranking is based on the collision rate (number of collisions per 100 million vehicle kilometres travelled) on road sections of approximately 1km compared against the national average collision rate for a similar road type. Figure 8 shows the ranking of both the N69 and N21 corridor based on data between 2016 and 2018 (3 years inclusive). The figure highlights that several sections, most notably on the N69 corridor, have a collision above or twice above the average rate.

Slide 7 (Not included in the EIAR)



Figure 8 N69 & N21 Corridor Collisions (TII Network Safety Analysis)

Supplementary Information in Relation to Traffic Growth between 2017-2020

4.1 Overview

- 4.1.1 The base year traffic model used to inform the EIAR, was developed based on traffic survey data from 2017. The following sections provide an overview of the changes that have occurred in relation to traffic levels since 2017. The following two areas are assessed in this section:
 - Traffic growth between 2017 2020; and
 - Potential impact of COVID-19 on traffic levels.

4.2 Traffic Growth Between 2017 - 2020

- 4.2.1 Transport Infrastructure Ireland (TII) have a network on permanent traffic counters located throughout the country which are referred to as Traffic Monitoring Units (TMU). One such unit is located on the N69 approximately 3km west of Askeaton (TII TMU Site 1692). Traffic data from this TMU site for each year between 2013 and 2020 is presented in Figure 9. The figure shows both Annual Average Daily Traffic (AADT), which is the average daily 24 hour flow between Monday and Sunday and the Annual Average Weekly Traffic (AAWT) which is the average daily 24 hour flow between Monday and Friday.
- 4.2.2 Figure 9 shows that traffic levels, both AADT and AAWT, have increased year on year up to and including 2019, but reduced in 2020 due to the travel restrictions associated with COVID-19.



Slide 8 (Not included in the EIAR)

- Figure 9
- N69 TII TMU AADT & AAWT (2013 2020)
- 4.2.3 Figure 10 shows that HGV levels at the N69 TII TMU site for an average working day (Mon-Fri) between 2013 and 2020. The figure shows that HGV levels have also been

increasing year on year between 2013 and 2019, and that there was only a minimal drop off in levels in 2020.



Slide 9 (Not included in the EIAR)

Figure 10 N69 TII TMU – HGV Levels (2013 – 2020)

4.2.4 A TII TMU site (Site 20212) is also located on the N21 east of Adare. Figure 11 shows that traffic levels, both AADT and AAWT at this site have also increased year on year up to and including 2019 but reduced in 2020 due to the COVID-19 travel restrictions.



Slide 10 (Not included in the EIAR)

Figure 11 N21 TII TMU – AADT & AAWT (2013 – 2020)

4.3 Potential Impact of COVID-19 on Traffic Levels

- 4.3.1 While no submissions were received specifically in relation to the potential impact of COVID-19, this aspect has been considered as part of this Brief of Evidence in order to inform the fulsome consideration of the project.
- 4.3.2 Figure 12 shows the impact of COVID-19 on 2020 traffic levels at the TII permanent traffic counter on the N69 east of Foynes (Site 1692) compared to traffic levels in 2018 (traffic data is missing for 2019 so 2018 was used for comparison purposes). The figure shows that during the first lockdown period in March/April 2020 traffic levels reduced by over 65% from approx. 6,600 to 2,200 vehicles per day.
- 4.3.3 Traffic levels increased between May and August 2020 as travel restrictions were lifted and were in line with or above 2018 levels during September 2020. When national travel restrictions were reintroduced in October 2020 to combat the second wave of COVID-19, traffic levels reduced by approx. 30%. Due to schools, construction and manufacturing remaining open during the second national lockdown, the impact on travel levels was significantly less compared to the first national lockdown.



Slide 11 (Not included in the EIAR)

Figure 12 Weekly Average Daily Traffic (2018 v 2020) - N69 East of Foynes (TII TMU 1692)

4.3.4 Figure 13 shows the impact of COVID-19 on 2020 HGV traffic levels on the N69 east of Foynes (Site 1692) compared to traffic levels in 2018. During the first national lockdown HGV traffic levels reduced by approx. 39%, however HGV traffic levels soon increased and have fluctuated at or 2018 levels since.

Slide 11 (Not included in the EIAR)



Figure 13 Weekly Average HGV Traffic (2018 v 2020) - N69 East of Foynes (TII TMU 1692)

- 4.3.5 COVID-19 has had a similar impact throughout the country on traffic levels. Excluding the immediate impact of the travel restrictions introduced nationally in March/April 2020, HGV traffic levels have in general been at or in excess of previous years. General traffic levels have followed the pattern of government travel restrictions, with the easing of restrictions showing traffic levels returning to similar levels as previous years even with a large cohort of people still working from home during this period.
- 4.3.6 With the implementation of the COVID-19 vaccination programme in 2021, it is likely that traffic levels will return to volumes in line with traffic levels experienced in previous years. However, changes in travel behaviour related to an increase in remote/flexible working may lead to a potential change in travel demand and travel patterns over time, including changes in overall travel demand, changes in the time of day of travel and changes in trip distance. These changes will likely vary throughout the country in terms of urban/rural travel demand and also by the type of travel on specific corridors (e.g. commuter routes), however freight demand is unlikely to be impacted.
- 4.3.7 The potential impact on the project may be limited, as the N21 corridor carries high volumes of traffic throughout the day and not just in the AM and PM commuting peaks. In addition, freight demand will increase on the corridor as direct access is provided to Foynes Port. The TII low traffic growth sensitivity scenario takes into account a lower projected travel demand throughout the country. The analysis of this scenario shows that the traffic demand for the project still warrants the upgrade of the road to the proposed design standard.

Supplementary Information in Relation to the Road Cross Section (Foynes to Rathkeale)

5.2.1 Figure 16 illustrates the typical road cross section for a Type 1 Single Carriageway, a Type 2 Dual Carriageway and a Type 1 Dual Carriageway. There are a limited number of Type 2 Dual Carriageways in Ireland at present and in general people are more familiar with the Type 1 Dual Carriageway as this is the typical cross section of the majority of 2 lane motorways in Ireland.

Slide 12 (Not included in the EIAR)



Figure 16 Comparison of Cross Sections (Type 1 Single, Type 2 Dual & Type 1 Dual)

FOR APPROVAL OF THE FOYNES TO LIMERICK ROAD (INCLUDING ADARE BYPASS) COMPRISING:

- (I) FOYNES TO RATHKEALE PROTECTED ROAD SCHEME, 2019;
- (II) RATHKEALE TO ATTYFLIN MOTORWAY SCHEME, 2019;
 (III) FOYNES SERVICE AREA SCHEME, 2019.

ABP Ref. ABP-306146-19 and ABP-306199-19

Supplementary Information submitted to An Bord Pleanála on Monday 15th February 2021

Brief of Evidence Air Quality and Climate

By Edward Porter, B.Sc. Che., Ph.D. Chem. M.R.S.C. AWN Consulting

- 4.16 In the last two years, several important changes have been implemented, including the Climate Action Plan 2019. For the sake of completeness, it should also be noted that the Draft Climate Action & Low Carbon Development (Amendment) Bill 2020 has been published, as well as Ireland's declaration of a climate and biodiversity emergency in May 2019 and the European Parliament's approval of a resolution declaring a climate and environment emergency in Europe in November 2019. In addition to the policy changes, there has been a significant increase in society's concerns in regard to climate change and the challenges Ireland faces in meeting the EU 2020 and 2030 targets. Thus, the baseline environment should be viewed as a more sensitive environment for the assessment of impacts than that outlined at the time of the EIAR due to the above considerations.
- 4.20 In October 2020, the Climate Action and Low Carbon Development (Amendment) Bill 2020 was published. Whilst, of course, the Bill does not become law unless and until it is enacted, it is noteworthy that its objective is stated as being 'for the purpose of pursuing the transition to a climate resilient and climate neutral economy by the end of the year 2050'.
- 4.21 The National Long Term Climate Action Strategy may include the following:
 - Projected greenhouse gas emission reductions and the enhancement of sinks for a minimum of 30 years;
 - Projected sector specific greenhouse gas emission reductions and enhancement of removals by sector;
 - Carbon budgets;
 - Decarbonisation targets;
 - Local authority climate action plans; and
 - An assessment of potential opportunities in relevant sectors.

Baseline Climate Environment

- 4.25 It is now clear that Ireland will struggle to meet targets set under Regulation (EU) 2018/842, which has set binding annual greenhouse gas emission reductions from 2012 to 2030. Ireland has been set a 30% reduction in emissions by 2030 compared to 2005 levels under this regulation which translates to approximately 32 Mt CO_{2eq} for Ireland's non-ETS emissions in 2030. This more stringent 2030 limit results in a higher level of impact than that previously assessed and in accordance with EPA guidance, the magnitude of the impact of this proposed road development is now deemed to be of a "medium" level.
- 4.26 As outlined in European Commission publications "Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment" (2013) the assessment of the impact of the scheme on climate should be context-specific. Within the context of global or EU-wide emissions, the GHG emissions associated with the scheme are small. However, given the various policy changes and the increase in baseline sensitivity in Ireland, in addition to Ireland's failure to meet the targets set in legislation since 2016, and in the absence of specific sectoral budgets for the transport sector, the proposed road development, based on an assessment of both the construction phase and operational phase, has conservatively been determined as

likely to have a significant negative impact on carbon emissions and climate. As a result of this conclusion, investigations have been undertaken into additional mitigation measures that could be included in the Schedule of Commitments to further reduce the climate impact of the proposed development. These are outlined in Section 5 of this Brief of Evidence.

4.27 This conclusion is in line with the Institute of Environmental Management and Assessment (IEMA) guidance note on "Assessing Greenhouse Gas Emissions and Evaluating their Significance" (IEMA, 2017) which advises that all carbon emissions contribute to climate change and in the absence of a defined threshold (e.g. national sector specific targets and trajectories), any increase (or decrease) to carbon emissions may be considered as significant.

FOR APPROVAL OF THE FOYNES TO LIMERICK ROAD (INCLUDING ADARE BYPASS) COMPRISING:

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Brief of Evidence Noise and Vibration

By Jennifer Harmon, B.Sc., Dip. MIOA AWN Consulting Table relating to Benchmark Criteria for Road Traffic Noise used within the WHO *Environmental Noise Guidelines for the European Union, 2018.*

Noise Source	Benchmark Level	Outcome, level for benchmark and quality	Quality of Evidence to support benchmark	Recommended Level
Road Traffic	IHD: 5% increase RR	IHD: * 59.3 dB L _{den}	High	53 dB L _{den}
	10 % HA	% HA: ** 53.3 dB L _{den}	Moderate	

* IHD: 5% increase in relevant risk of Incidence of Ischaemic Heart Disease

** % HA: Percentage of Community Highly Annoyed by Road Traffic Noise

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Brief of Evidence
<u>The Landscape</u>

By Mark Boyle, BAgrSc(LH), MLArch, MILI Director, Murray and Associates 3.1 Overview of Landscape and Visual Aspects

Additional photograph taken on site in January 2021:

Adare Village – Photograph by the author taken in January 2021, illustrating the streetscape of the village with low traffic and no HGV's.

4. **RESPONSES TO SUBMISSIONS**

4.3 Landscape/Visual Effects on Properties

- 4.3.5 The specific visual effects applying to each submission that raised the issue of visual impact (see 4.2.7 above) is highlighted in the following.
 - Submission / objection No. ENV-29 states an objection as they "have no details of provisions made to consider the impact this will have on [their] property." This dwelling (ref. D60-013) was assessed in Chapter 11 of the EIAR and it was noted at the time of the assessment that the property was "partially enclosed by vegetation to all sides" which would have had the effect of reducing the exposure of views from the house to the north towards the proposed road and east to the proposed accommodation track. Based on this analysis, in the EIAR (Table 11.9, Chapter 11, Volume 2), it was concluded that impacts on this dwelling would be imperceptible. Upon recent review of field work in advance of this hearing, there appears to have been change in the landscape of this property since the assessment was carried out, with some hedgerow or trees which were to the north of the property having been removed, which means that views of the property are now more open to the north across the existing agricultural landscape and it will have more open views of the proposed mainline on fill to the north, some 165m from the property. Views of the bridge over the River Maigue to the northeast and an accommodation track to the east are screened by an existing hedge and tree line. SLM 17 (see section 11.5.2 of Volume 2 and Figure 11.19 of Volume 3) is proposed and includes the following planting measures: "...appropriate riparian planting, taking into account the Project Ecologist's recommendations... Screen planting to mitigate the visual impacts of the road will, where possible, be in keeping with the riparian character of this location and parkland trees

should be included in hedgerows. Noise barriers to be screened with hedgerow or shrub species." In this instance, taking these measures into account and the distance of this dwelling from the mainline (165m), the effects on views from this dwelling are considered to be permanent, slight and negative.

APPENDIX B TO BRIEF OF EVIDENCE – ILLUSTRATIONS

4. RESPONSES TO SUBMISSIONS 4.3.5 Landscape / Visual Effects on Properties



Marked-Up Photograph presented with ENV-18



Photograph from similar location on site, taken by author in January 2021.

FOR APPROVAL OF THE FOYNES TO LIMERICK ROAD (INCLUDING ADARE BYPASS) COMPRISING:

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ABP Ref. ABP-306146-19 and ABP-306199-19

Supplementary Information submitted to An Bord Pleanála on Monday 15th February 2021

Brief of Evidence Archaeology, Architecture and Cultural Heritage

> By Faith Bailey IAC Archaeology



Additional images provided showing the location of Goings Cross

FOR APPROVAL OF THE FOYNES TO LIMERICK ROAD (INCLUDING ADARE BYPASS) COMPRISING:

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Supplementary Information submitted to An Bord Pleanála on Monday 15th February 2021

> Brief of Evidence Soils and Geology

By Fintan Buggy B Sc., M Sc., MICE, MIEI. Roughan & O'Donovan – Aecom Alliance Consulting Engineers



Location of Licensed Quarries suitable sources for importation of fill - Slide 5 (Not included in the EIAR)

EIAR Fig 4.71a Permitted Haulage Routes – Slide 6





Enlargement extracted from Figure 4.4 of Volume 3 of the EIAR



Photograph of Trial Pit TP 04-02



Location of Major Cuttings Likely to Require Blasting – Slide 8 (Not included in the EIAR)

FOR APPROVAL OF THE FOYNES TO LIMERICK ROAD (INCLUDING ADARE BYPASS) COMPRISING:

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ABP Ref. ABP-306146-19 and ABP-306199-19

Supplementary Information submitted to An Bord Pleanála on Monday 15th February 2021

> Brief of Evidence Hydrology and Hydrogeology

> > By Anthony Cawley Hydro Environmental

- 4.12 To ensure certainty of continued water supply and quality to the Craggs/Barrigone Group Water Scheme during the construction phase, in the unlikely event of hydrological impact, Limerick City and County Council have confirmed that a pipe connection to the Public Mains will be provided as a back-up supply. Such a temporary connection has been agreed with Irish Water and they have confirmed that the flow capacity is available to meet the existing demands of the group scheme with its 63 connections. The cost associated with the construction of this temporary connection from the Group Water Scheme Reservoir to the existing public water supply on the N69 at Clondrinagh will covered by the Limerick City and County Council. It will be constructed before construction works commence on the proposed road development. This will ensure that the Group Water Scheme will have a guaranteed supply in the unlikely event it is required.
- 4.13 In the unlikely event that the Craggs/Barrigone source is permanently impacted through loss of well yield due to the construction works, and a suitable alternative borehole cannot be found, Limerick City and County Council have further confirmed that a permanent connection of the Public Water Supply to the Limerick City Regional Supply Scheme at Clarina will be facilitated. The cost of this permanent connection, in the unlikely case that it is required, will borne by Limerick City and County Council / Irish Water. The temporary connection network will remain in place in the event of the permanent connection being required.
- 4.14 The routings for the proposed temporary and permanent connections are shown in Figures TWM and PWM attached to this brief of evidence. I refer also to the environmental appraisals which have been conducted in relation to the temporary and potential permanent water connections, for impacts on ecology, architecture and cultural heritage, noise and vibration, air quality and climate, landscape and human health. These appraisals are presented at Appendices A to F to this brief of Evidence.

Figures

Figure TWM:Barrigone Group Water Scheme – Temporary ConnectionFigure PWM:Barrigone Group Water Scheme – Permanent Connection
on N69




Appendices

Environmental Appraisals relating to provision of temporary and potential permanent water main connections in relation to the Craggs Barrigone Group Water Scheme.

- A: Ecology
- **B:** Architecture and Cultural Heritage
- C: Noise and Vibration
- D: Air Quality and Climate
- E: Landscape and Visual
- F: Human Health

Memo re Connection of Craggs-Barrigone Water Supply Scheme EirEco Environmental Consultants

Potential Ecological Impacts

In relation to the Craggs-Barrigone Water Supply Scheme proposed connections (either temporary or permanent) as a result of the proposed Foynes to Limerick Road (including Adare Bypass), the following appraisal has been made of potential impacts on the natural environment.

- The proposed connection pipeline will entail initially a temporary watermain being laid between the existing private group scheme reservoir and the existing N69 road at Clondrinagh. Limerick City Regional Water Supply Scheme at Clarina (Refer Figure TWM).
- Provision is being made for the installation of an additional permanent watermain connection to be installed on the existing N69 road between Kildimo and Clarina. This will only be required in the event that (i) the source for the Craggs Barrigone Group Water Scheme is permanently impacted through loss of yield due to construction works for the proposed road project, and (ii) that a suitable alternative borehole cannot be found. (Refer Figure PWM).
- In the case of the temporary connection, the proposed pipeline will be laid within the compulsorily acquisition alignment of the proposed road project as far as Ballyellinan, after which it will follow the existing L-1220 road north to the N69 at Clondrinagh.
- In all cases pipe-laying works will be confined to the road and entail the excavation of a trench no greater than 1m in depth within which the pipe will be laid and subsequently back-filled.
- The section of pipeline route along the existing L-1220 road north to the N69 at Clondrinagh is
 remote from any designated conservation areas and presents no risk of giving rise to any
 impact, significant or otherwise, on such areas.
- For the permanent connection, should it be required, the new section of pipeline between Kildimo and Clarina will cross the Lower River Shannon cSAC at Ferry Bridge. As the works will be confined to the roadbed over its entire length including across the bridge and, as all works will be carried out in accordance with the Environmental Operating Plan for the proposed Foynes to Limerick Road (including Adare Bypass), this section of pipeline also present presents no risk of giving rise to any impact, significant or otherwise, to any ecological receptor and, for the avoidance of doubt, the possibility can be excluded of any likely significant effect on the Lower River Shannon cSAC or on any designated conservation area.

Signed:

Paul Merephy

Paul Murphy EirEco Consultants

Date: February 2021



4th February 2021

Connection of Craggs-Barrigone Water Supply Scheme: Archaeological, Architectural and Cultural Heritage Review

In relation to the Craggs-Barrigone Water Supply Scheme proposed connection (either temporary or permanent) as a result of the proposed Foynes to Limerick Road Scheme, the following observation are offered in relation to potential impacts on the archaeological, architectural and cultural heritage resource.

- The proposed connection pipeline will entail a 250mm or 300mm water main being laid between the existing private group scheme reservoir and the Limerick City Regional Water Supply Scheme at Clarina.
- The proposed pipeline will be laid within the CPO of the proposed road as far as Ballyellinan after which it will follow the existing L-1220 road north to the N69 at Clondrinagh. For the permanent connection, a new section of pipeline will be required over 4.2km between Kildimo and Clarina.
- The pipe-laying works will be confined to the road and entail the excavation of a trench no greater than 1m in depth within which the pipe will be laid and subsequently back-filled.
- The section of temporary pipeline will travel along the L-1220, which is a road that was established during the latter half of the 19th century. There are no recorded monuments or protected structures located within the vicinity of the temporary pipeline where it runs along the road. In the townland of Tomdeely South, a late 19th century bridge crosses the former railway. The structure remains in good condition and the pipeline will be laid within the road where it crosses the structure.

Given the construction of the road is likely to have led to the removal of any archaeological features that may have survived along its length, no negative impacts are predicted upon the archaeological resource as a result of the construction of the scheme. Similarly, no direct impacts are predicted upon the architectural heritage resource.

• The section of permanent pipeline will travel for 4.2km between Kildimo and Clarina, along the existing N69. This is a modern, well established road that has been subject to upgrade and widening (in sections) during recent years. There are no recorded monuments located within the vicinity of the permanent pipeline where it runs along the road.

Unit G1, Network Enterprise Park, Kilcoole, Co. Wicklow A63 KT32, Ireland T: +353 (0)1 2018380 E: archaeology@iac.ie 9 Stranmillis Road, Belfast, Co. Antrim BT9 5AF

T: +44 (0)28 906 83136 E: archaeologybelfast@iac.ie Directors: Rob Lynch, Pat Gormley Company Reg. No. 288812 VAT Reg. No. IE 8288812U • Where the road crosses the Maigue River, it is via the Ferry Bridge, which is a protected structure listed as RPS 257 in the Limerick County Development Plan. The bridge is also listed in the National Inventory of Architectural Heritage (Ref: 21901217) as having regional significance. It is a late 18th century triple span masonry structure. The proposed pipeline will be installed beneath the existing roadway where it travels across the deck of the structure.

Given the construction of the road is likely to have led to the removal of any archaeological features that may have survived along its length, no negative impacts are predicted upon the archaeological resource as a result of the construction of the scheme.

With regards to Ferry Bridge, the height of the bridge arches (especially the central arch) is considerable and appropriate engineering solutions will be required in order to lay the pipeline along the bridge deck and prevent any direct impacts on the apex of the arches. The pipeline may not be attached to either façade of the bridge structure.

This assessment has been carried out by Faith Bailey of IAC Archaeology.

Faith Bailey Associate Director Senior Archaeologist & Cultural Heritage Consultant

Potential Noise and Vibration Impacts

In relation to the Craggs-Barrigone Water Supply Scheme proposed connection (either temporary or permanent) as a result of the proposed Foynes to Limerick Road (including Adare Bypass). The following appraisal has been made of potential noise and vibration impacts.

Description of Works:

- The proposed connection pipeline will entail initially a temporary watermain being laid between the existing private group scheme reservoir and the existing N69 road at Clondrinagh. Limerick City Regional Water Supply Scheme at Clarina (Refer Figure TWM).
- Provision is being made for the installation of an additional permanent watermain connection to be installed on the existing N69 road between Kildimo and Clarina. This will only be required in the event that (i) the source for the Craggs Barrrigone Group Water Scheme is permanently impacted through loss of yield due to construction works for the proposed road project, and (ii) that a suitable alternative borehole cannot be found. (Refer Figure PWM).
- In the case of the temporary connection, the proposed pipeline will be laid within the compulsorily acquisition alignment of the proposed road project as far as Ballyellinan, after which it will follow the existing L-1220 road north to the N69 at Clondrinagh.
- In all cases pipe-laying works will be confined to the road and entail the excavation of a trench no greater than 1m in depth within which the pipe will be laid and subsequently back-filled.

Potential Noise and Vibration Impacts:

The section of pipeline route along the existing L-1220 road north to the N69 at • Clondrinagh will entail trench excavation to no more than 1m in depth confined to the roadway. There are several residential properties along the section of the L-1220 Road where works are required, typically at distances of 20m from the road edge. Highest construction noise levels will occur during the initial works where surface breaking will be undertaken. This activity will be temporary in nature in the vicinity of any one property as the works progress in a linear direction. The shallow trench required for the pipeline will result in limited excavation and backfilling activities and hence construction noise levels will be lower during these phases, albeit clearly perceptible at the closest properties. Noise mitigation measures will be incorporated, as required, to reduce noise impacts in accordance with the Environmental Operating Plan for the proposed Foynes to Limerick Road (including Adare Bypass). The overall impact is determined to be moderate to significant, and temporary. Vibration impacts associated with the pipeline construction activities will below construction vibration limit values set in the Foynes to Limerick Road Scheme EIAR in line with similar activities assessed within Chapter 12 of the EIAR. The impact will be slight and temporary.

For the permanent connection, should it be required, the new section of pipeline between Kildimo and Clarina will cross the Lower River Shannon cSAC at Ferry Bridge. The works will be confined to the road footprint over its entire length including across the bridge and will similarly entail trench excavation to no more than 1m in dept. There are several residential properties along the section of the N69 Road where works are required, typically at distances of 10m to 50m from the road edge. The same noise and vibration impact as those associated with the temporary pipeline discussed above, will apply in this area.

Signed:

male Harron

Jennifer Harmon AWN Consulting

Dated : February 2021

Potential Air Quality & Climate Impacts

In relation to the Craggs-Barrigone Water Supply Scheme proposed connection (either temporary or permanent) as a result of the proposed Foynes to Limerick Road (including Adare Bypass), the following appraisal has been made of the potential air quality and climate impacts.

Description of Works:

- The proposed connection pipeline will entail initially a temporary watermain being laid between the existing private group scheme reservoir and the existing N69 road at Clondrinagh. Limerick City Regional Water Supply Scheme at Clarina (Refer Figure TWM).
- Provision is being made for the installation of an additional permanent watermain connection to be installed on the existing N69 road between Kildimo and Clarina. This will only be required in the event that (i) the source for the Craggs Barrrigone Group Water Scheme is permanently impacted through loss of yield due to construction works for the proposed road project, and (ii) that a suitable alternative borehole cannot be found. (Refer Figure PWM).
- In the case of the temporary connection, the proposed pipeline will be laid within the compulsorily acquisition alignment of the proposed road development as far as Ballyellinan, after which it will follow the existing L-1220 road north to the N69 at Clondrinagh.
- In all cases pipe-laying works will be confined to the road and entail the excavation of a trench no greater than 1m in depth within which the pipe will be laid and subsequently back-filled.

Potential Impacts:

- The section of pipeline route along the existing L-1220 road north to the N69 at Clondrinagh will entail trench excavation to no more than 1m in depth confined to the roadway and, as such, air quality, dust and greenhouse gas emissions due to these activities will not be significant.
- For the permanent connection, the new section of pipeline between Kildimo and Clarina will cross the Lower River Shannon cSAC at Ferry Bridge. As the works will be confined to the road bed along its entire length including across the bridge, and as all works will be carried out in accordance with the Environmental Operating Plan and the Dust Management Plan for the proposed Foynes to Limerick Road, air quality, dust and greenhouse gas emissions due to these activities will not be significant.

Signed:

Dr. Edward Porter

AWN Consulting Date: February 2021

Landscape and Visual Effects

In relation to the Craggs-Barrigone Water Supply Scheme proposed connections (either temporary or permanent) as a result of the proposed Foynes to Limerick Road (including Adare Bypass), the following appraisal has been made of potential landscape and visual impacts.

- The proposed connection pipeline will entail initially a temporary watermain being laid between the existing private group scheme reservoir and the existing N69 road at Clondrinagh. Limerick City Regional Water Supply Scheme at Clarina (Refer Figure TWM).
- Provision is being made for the installation of an additional permanent watermain connection to be installed on the existing N69 road between Kildimo and Clarina. This will only be required in the event that (i) the source for the Craggs Barrrigone Group Water Scheme is permanently impacted through loss of yield due to construction works for the proposed road project, and (ii) that a suitable alternative borehole cannot be found. (Refer Figure PWM).
- In the case of the temporary connection, the proposed pipeline will be laid within the compulsorily acquisition alignment of the proposed road project as far as Ballyellinan, after which it will follow the existing L-1220 road north to the N69 at Clondrinagh.
- In all cases pipe-laying works will be confined to the road and entail the excavation of a trench no greater than 1m in depth within which the pipe will be laid and subsequently back-filled.

Landscape and Visual Effects:

There will be no adverse landscape and visual effects arising from this proposal, as it does not affect any sensitive landscapes and will only give rise to temporary visual disruption of the road network, which is not a visually sensitive environment.

Signed:

Mark Boyle Murray & Associates Date: February 2021

Human Health Impacts

In relation to the Craggs-Barrigone Water Supply Scheme proposed connections (either temporary or permanent) as a result of the proposed Foynes to Limerick Road (including Adare Bypass), the following appraisal has been made of potential impacts on human health.

- The proposed connection pipeline will entail initially a temporary watermain being laid between the existing private group scheme reservoir and the existing N69 road at Clondrinagh. Limerick City Regional Water Supply Scheme at Clarina (Refer Figure TWM).
- Provision is being made for the installation of an additional permanent watermain connection to be installed on the existing N69 road between Kildimo and Clarina. This will only be required in the event that (i) the source for the Craggs Barrrigone Group Water Scheme is permanently impacted through loss of yield due to construction works for the proposed road project, and (ii) that a suitable alternative borehole cannot be found. (Refer Figure PWM).
- In the case of the temporary connection, the proposed pipeline will be laid within the compulsorily acquisition alignment of the proposed road development as far as Ballyellinan, after which it will follow the existing L-1220 road north to the N69 at Clondrinagh.
- In all cases pipe-laying works will be confined to the road and entail the excavation of a trench no greater than 1m in depth within which the pipe will be laid and subsequently back-filled.

Human Health Impacts:

Having reviewed the appraisal memoranda prepared by Jennifer Harmon, on potential noise and vibration impacts, and Dr. Edward Porter on impacts on air quality and climate, and having given the matter further due consideration, I conclude that no potential negative human health impacts will arise during the construction or operational phases for the proposed watermain connections.

Signed:

Mah bforgan.

Dr. Martin Hogan

Date: February 2021

IN THE MATTER OF AN APPLICATION TO AN BORD PLEANÁLA

FOR APPROVAL OF THE FOYNES TO LIMERICK ROAD (INCLUDING ADARE BYPASS) COMPRISING:

- (I) FOYNES TO RATHKEALE PROTECTED ROAD SCHEME, 2019;
- (II) RATHKEALE TO ATTYFLIN MOTORWAY SCHEME, 2019;
 (III) FOYNES SERVICE AREA SCHEME, 2019.

ABP Ref. ABP-306146-19 and ABP-306199-19

Supplementary Information submitted to An Bord Pleanála on Monday 15th February 2021

> Brief of Evidence Biodiversity – Bats

By Tina Aughney Bat Eco Services (Images not provided within the EIAR)



Example 1: Alternative Bat Roosts – Habitat Rocket Bat Boxes

Plate 1:

Example of Habitat Rocket bat box erected in Thurles, Co. Tipperary as part of bat mitigation measures for a proposed development.



Example 2: Alternative Bat Roosts – Schwegler Woodcrete Summer Bat Boxes

Plate 2a: Example of woodcrete summer bat boxes suitable for erecting on trees.



Plate 2b:

Leisler's bats roosting in a woodcrete summer bat box (Bat Box Scheme in woodland, Ballina, Co. Mayo).



Example 3: Alternative Bat Roosts – Bat Tubes

Plate 3a: Example of inserted of bat tubes into parapet walls of Kilmore Bridge, Moynalty, Co. Meath as part of bat mitigation measures.







Plate 4:

Example of slow dismantling of a tree idented to have Potential Bat Roost (PBR) value (completed under the supervision of a bat specialist).

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Supplementary Information submitted to An Bord Pleanála on Monday 15th February 2021

> Brief of Evidence Biodiversity – Vertigo snail

By John Brophy B.A., M.Sc., CEcol, M.C.I.E.E.M. BEC Consultants Ltd



(Image not provided within the EIAR)

Figure A4 (Adapted from EIAR Appendix 7.4B, Figure 3 to include boundary of proposed land-take for habitat protection (blue line) and revised CPO boundary (pink line)): Map of Lismakeery Fen, Co. Limerick showing locations positive/negative for *V. moulinsiana*, habitat suitability, road footprint, land-take for habitat protection and proposed CPO boundary.

APPENDIX C Supplementary Figures

As per section 7 of the Supplementary Information document, the following three Figures are provided in addition to those in Volume 3 of the EIAR, illustrating supplementary information to that already contained.

In addition to Figure 4.71 of Volume 3 of the EIAR, a supplementary Figure, Figure 4.71a is provided, illustrating the permitted haulage routes and access points for the construction stage of the proposed road development. The supplementary figure is titled 4.71a Permitted Haulage Routes.

Figure 10.3 of Volume 3 of the EIAR is replaced by Figure 10.3 Rev A, illustrating the location of the pond outfall within the HGV area.

Figure 12.17 of Volume 3 of the EIAR is replaced with Figure 12.17 Rev A, which includes an additional label illustrating noise monitoring location ATT23b adjacent to property D56-016.



DO NOT SCALE USE FIGURED DIMENSIONS ONLY



