

19 SUMMARY OF MITIGATION MEASURES

19.1 INTRODUCTION

The following environmental commitments are an integral element of the application for Approval.

The purpose of this chapter of the EIS is to provide a summary of the main commitments under each of the environmental headings listed. Full details of the various commitments should be obtained by reference to the individual chapters and to this EIS and NIS as a whole.

19.1.1 Commitments: Introduction

No	EIS Ref	Description of Commitment
1	New	All mitigation measures, controls, procedures, monitoring and other requirements described in the EIS and NIS and any other conditions attached to approvals as may be granted by An Bord Pleanála for the proposed road project will be implemented in full.
2	New	The Contractor will be required to provide appropriate staff training in the implementation of the environmental protection measures, mitigation measures, monitoring and audit requirements, procedures, and the emergency response as set out in the EIS and the NIS.
3	New	A protocol for regular communication with statutory agencies such as National Parks and Wildlife Service (NPWS) and Cork County Council (CCC) and other third parties shall be established, by the Contractor.
4	New	CCC will appoint an Environmental Manager (EM) as part of the Employers Site Representative staff. The EM will report directly to the Client and will monitor site operations and audit the Contractor's operations (including the implementation of the environmental commitments). The EM will be the Employer's liaison for environmental organisation including the NPWS and IFI.
5	New	Chapter 3: Description of the Proposed Road Development of the EIS sets out the construction details including environmental management measures to be followed. Prior to the commencement of works the Contractor will be required to develop a Construction Environmental Management Plan (CEMP). The Contractor will be required to incorporate all the mitigation and management measures detailed in the EIS and NIS for the construction stage into the CEMP and include any additional requirements stipulated by An Bord Pleanála should the proposed road project be approved. It will be a requirement of the contract documents that prior to the commencement of work on site that the Contractor submits a CEMP to CCC and that this CEMP is assessed by the Employer's Site Representative Staff, including the Environmental Manager to ensure that it fully addresses the environmental requirements of the proposed road project as set out in the EIS, NIS and any conditions imposed by An Bord Pleanála.
6	3.12.1.1	Before earthworks commence the Contractor(s) shall prepare the Environmental Operating Plan (EOP) which shall set out the Contractors approach to managing environmental issues and provide a documented account to the implementation of the environmental commitments as set out in the EIS and any approval/consent as may be granted. To oversee the implementation of the EOP the Contractor will be required to appoint a responsible Environmental Manager/Ecologist/Ecological Clerk of Works to ensure that the mitigation measures included in the EIS, NIS and

No	EIS Ref	Description of Commitment
		the EOP are executed in the construction of the work and to monitor that the mitigation measures are implemented successfully.
7	3.13.1.1	An Outline Construction and Demolition (C&D) Waste Management Plan has been prepared (Refer to Appendix 17A) and it will be a requirement of the Contractor to update and maintain this Plan for the duration of the construction phase. The Plan shall be incorporated into the EOP.
8	3.13	<p>The works will be carried out by the Contractor in compliance with the following documents/guidelines:-</p> <ul style="list-style-type: none"> ▪ Construction industry guidelines (such as CIRIA C502 Environmental Good Practice on site). ▪ CIRIA Guidance - Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532), (Masters- Williams et al (CIRIA, 2001). ▪ Control of Water Pollution from Linear Construction Projects. Technical guidance (C648), CIRIA (E. Murnane, A. Heap and A. Swain. (CIRIA, 2006). ▪ PPG 6 Working at Demolition and Construction Sites (Environment Agency, 2012). ▪ PPG 26 Safe Storage – Drums and Intermediate Bulk Containers (Environment Agency, 2012). ▪ PPG 7 Safe Storage –The Safe Operation of Refuelling Activities (Environment Agency, 2011b). ▪ BS 5228-1:2009+A1:2014 <i>Code of practice for noise and vibration control on construction and open sites – Part 1: Noise</i>. And BS 5228-2:2009+A1:2014 <i>Code of practice for noise and vibration control on construction and open sites – Part2: Vibration</i> (together referred to as B.S. 5228). ▪ <i>Control of Dust from Construction and Demolition Activities’ (BRE 2003),</i> ▪ NRA Environmental Construction Guidelines (various dates):- <ul style="list-style-type: none"> ○ Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Water (IFI, 2016); ○ Guidelines for the Treatment of Badgers prior to the Construction of a National Road Scheme; ○ Guidelines on Provisions for the Conservation of Bats during the Planning and Construction of Roads; ○ Best Practice Guidelines for the Treatment of Bats during the Construction of National Road Schemes; ○ Guidelines for the Crossing of Watercourses during the construction of National Roads Scheme; ○ Guidelines for the Testing and Mitigation of the Wetland Archaeological Heritage for National Road Schemes; ○ Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub prior to, during and post-construction of National Schemes; ○ Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes; ○ Guidelines on the Management of Noxious Weeds and non- native Plant Species on National Roads; ○ Guidelines for the Treatment of Noise and Vibration in National Road Schemes; ○ Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes; ○ Guidelines for the Treatment Otters Prior to the Construction of National

No	EIS Ref	Description of Commitment
		<p>Road Schemes;</p> <ul style="list-style-type: none"> ○ Guidelines on the Implementation of Landscape Treatments on National Road Schemes in Ireland; ○ Guidelines for the Management of Waste from National Road Construction Projects; and ○ Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan.
9	3.12.1/3.10	<p>Once appointed the main Contractor shall be required to provide a detailed programme prior to commencement of the works. This shall set out:-</p> <ul style="list-style-type: none"> ▪ The overall programme of construction; ▪ Programming of the key elements and phases of construction; ▪ Programming of environment mitigation and monitoring; and ▪ The duration of each element and phase. <p>The programme will be regularly updated to reflect any changes in programmed activities and shall provide the basis for notification to residents and local communities where sensitive activities would be likely to involve temporary disturbance to access or non-routine events such as blasting of rock or piling or temporary local road diversions.</p> <p>The timing and scheduling of blasting activities for the road will be included in the programme agreed with CCC in advance of commencement on site.</p>
10	3.12.1.1	<p>All on site drainage, erosion and sediment control measures for the construction works shall be in place and functioning prior to the commencement of earthworks/site clearance.</p>
11	3.12.1.3	<p>The Contractor will be required to adhere to the following measures for all temporary construction compounds:-</p> <ul style="list-style-type: none"> ▪ Each temporary compound will have a dedicated Waste Storage Area for construction waste generated; ▪ In order to minimise any impact on surface water and groundwater from material spillage, all oils, solvents, paints and other potential contaminants used during construction will be stored within suitably designed bunded areas, at least 100m from watercourse and in accordance with Guidance Note for the Control of Pollution (Oil Storage) (England) Regulations 2001 by the Department of Environment Food and Rural Affairs (DEFRA) in the UK; ▪ Oil and fuel storage tanks will be stored on designated areas of hardstanding, and these areas will be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30mm for rainwater ingress); and ▪ Drainage from the office facilities will be connected to a foul sewer and surface water drain. Oil interceptors will be installed in the compound vehicle parking areas to control runoff. Pollution control measures will be implemented elsewhere in the compounds where required (for example, chemical storage areas).
12	3.12.1.4	<p>The following restrictions will apply to stockpiles:-</p> <ul style="list-style-type: none"> ▪ Topsoil stripping over large areas in advance of main excavation works will not be permitted. It will be restricted to the minimum required for efficient earthworks operations; ▪ Each construction area will be top-soiled as soon as practicable thus limiting both the amount and the length of time for which materials have to be stockpiled; ▪ Stockpiles will not be located within 10m of any watercourse or within 50m of a

No	EIS Ref	Description of Commitment
		sensitive watercourse or water body; <ul style="list-style-type: none"> ▪ Run-off from a stockpile will be collected via a shallow toe drain, which will discharge to a settlement pond which will be designed to have a retention time of at least 5 hours. Sediment build-up will be removed at regular intervals by manual means only and will be disposed of at appropriately licensed facilities only; and ▪ Stockpiles of non-granular materials shall be limited in height to not more than 2m.
13	3.13.1.2	Prior to commencing works, the Contractor shall prepare an Environmental Emergency Response Plan/Contingency Plan. The Plan will detail the procedures to be undertaken in the event of the release of any sediment into a watercourse, a serious spillage of chemical, fuel or hazardous wastes (e.g., Concrete) or other such risks that could lead to a pollution incident, including flood risks.
14	3.13.2.1	Normal working times will be 07.00 to 20.00 hours Monday to Friday and 07.00 to 14.00 hours on Saturdays. Works other than the pumping out of excavations, security and emergency works will not be undertaken outside these working hours without the written permission of the Local Authority. Any approval for night working will give consideration to the potential disruptive effects there may be on nearby residences and significant restrictions on noise and other adverse environmental emissions may be conditioned to any approval granted.
15	3.13.5.1	In the event that material from the quarry is used, the construction phase haulage of material from the quarry will access the Land Made Available (LMA) and avoid using local roads where possible. Where the proposed route crosses an existing Regional or Local Roads, 'crossing points' will be formed to ensure that construction vehicles can cross safely from one side to the other. These 'crossing points' will be within the LMA and priority will be given to vehicles on the public road network.
16	3.14.4	Lighting will be provided as illustrated on Drawings series PL001 - PL005 and in accordance with the measures set out in Section 12.7.2.5 of Chapter 12: Terrestrial Ecology for the protection of bats and birds.
17	3.14.5	Emergency Accesses and crossovers will comply with TII Publication DN GEO-03031. Emergency telephones will be provided on the M28 in accordance with NRA policy at an approximate spacing of 1.5km in accordance with UK DMRB TA 73. Vehicular restraints (safety barriers) will be provided along the proposed road project in compliance with TII Publication DN-REQ-03034. Police Observation Platforms on Motorways will be designed in accordance with TII publication DN GEO-03027.

19.1.2 Traffic and Transportation

No	EIS Ref	Description of Commitment
1	5.11.1	<p>The successful Contractor will be required to submit a Construction Traffic Management Plan (CTMP) to be agreed with CCC and appropriate emergency services, i.e., An Garda Síochána, ambulance services and fire services in order that potential road closures and restrictions and diversions are carried out safely and efficiently and to the satisfaction of the relevant stakeholders.</p> <p>The CTMP shall incorporate the controls as set out in Section 5.11.3.4 of the EIS.</p>
2	5.11.1/5.11.2 /5.11.7	<p>All local roads will remain open to traffic at all times during the construction stage. This includes the existing N28 and other key routes in the area, with the exception of Bloomfield Interchange to Carr's Hill Interchange where specific mitigation measures will apply.</p> <p>The Contractor will be required to strictly limit road closures to critical works only.</p>
3	5.11.5	<p>The Contractor will be required to manage the deliveries so that:-</p> <ul style="list-style-type: none"> ▪ Material will be transported along haul route through the site as much as possible. ▪ HGV drivers are instructed not to use unsuitable local roads. ▪ HGV trips will be scheduled to avoid peak traffic periods during the day. ▪ Deliveries will, for the most part will be confined to using the existing N28 route.
4	5.11.2	<p>The following specific measures will be applied by the Contractor for traffic management in the area of Bloomfield Interchange to Carr's Hill Interchange:-</p> <ul style="list-style-type: none"> ▪ The existing N28 will remain open to two-way traffic at all times, except for short term managed road closures for critical works, such as the proposed demolition of the Maryborough Hill overbridge. This will entail careful phasing and sequencing of the works along the N28 in order to maintain traffic flows. ▪ All traffic movements will be accommodated on the section of the works between Bloomfield Interchange and Rochestown Road. Phasing of the works will be carefully planned and sequenced to maintain traffic flows at all times. An illustrative outline of a possible construction sequence is described in Section 5.11.6.2 in Chapter 5. ▪ Local road closures will not be permitted, except for critical works. Any road closures permitted will be for limited periods, e.g., night-time or weekend. ▪ Works on the local road network at the northern end of the project will not coincide. ▪ A designated construction order and sequence shall apply to the proposed works between Rochestown Road and Carr's Hill.
5	5.11.3.1/ 3.13.1.3	<p>Construction related traffic will be restricted from entering the local road network during the AM (07.45-09.00) and PM (17.00-18.00) commuter peak periods.</p>
6	5.11.3.2/ 5.11.3.3/ 3.12.1.2	<p>All CTMPs prepared for road closures, temporary diversion of traffic and night or weekend working will be subject to the approval of CCC and will be prepared in consultation with the emergency services, e.g., An Garda Síochána, ambulance services and fire services. Any approval for night/weekend working will give consideration to the potential disruptive effects there may be on nearby residences and significant restrictions on noise and other adverse environmental emissions may be conditioned to any approval granted.</p>
7	5.11.6	<p>It is a requirement of the Contractor to manage the order and sequence of the works at the northern end (Bloomfield to Carr's Hill) so that maximum local road capacity is maintained throughout the construction period, as described in Section 5.11.6.</p>

No	EIS Ref	Description of Commitment
8	Appendix 1A	For the works around the R613, consultation with the COMAH establishments impacted will also be carried out.
9	5.11	The specific mitigation measures as set out in Section 5.11 of Chapter 5: Traffic and Transportation will be implemented in full.

19.1.3 Socio- Economic and Community

No	EIS Ref	Description of Commitment
1	7.5.1.2	Best practice management will be put in place, by the Contractor, to minimise disruption to those working in the area or passing through to workplaces elsewhere. The Contractor will be required to update and implement the CTMP as described in Chapter 5: Traffic and Transportation and Section 19.1.2 above.
2	7.5.1.3	Where widening of the roadway along the route is likely to affect entrances to homes and farms within the land take area, entrances will be reinstated and will be maintained during construction by the Contractor. Otherwise, reasonable temporary access will be provided.
3	7.5.2.2	Directional signage to by-passed settlements such as Shanbally in line with TII signage policy will be provided.
4	7.5.2.3	Pedestrian crossings will be provided as shown on the GA Series Drawings in Volume 5 .
5	7.5	The specific mitigation measures as set out in Section 7.5 of Chapter 7: Socio Economic and Community will be carried out.

19.1.4 Agricultural Land Uses

No	EIS Ref	Description of Commitment
1	8.5.1	A Project Liaison Officer (PLO) will be appointed by the local authority. The PLO will be required to carry out the duties listed in A4.3 of the NRA Project Management Guidelines (2010).
2	8.5.1	Existing accesses to property, including homes, farms and farm facilities will, where practicable, be maintained during construction, otherwise reasonable temporary access will be provided. Any lands temporarily acquired will, before return to the landowner, be subsoiled to alleviate compaction and minimise risk of impeded crop growth.
3	8.5.1	All drainage likely to be affected or disturbed during the construction phase will be identified and reinstated. Any disruption to water supply will be reinstated immediately by the Contractor or an alternative source supplied until the source is reinstated, unless otherwise agreed with the landowner.
4	8.5.1	All machinery coming from outside of the State will be cleaned and disinfected on entry to the country and will be sprayed with appropriate disinfectant prior to arrival on site. The Contractor will verify to the PLO that this has been done. The PLO will liaise with the local District Veterinary Office (DVO) to establish the location of any restricted herds along the route of the proposed road project. Where the PLO has been informed of a restricted herd along the route, it will require the Contractor to disinfect machinery and personnel before leaving the land concerned. The number of accesses across the working strip will be reduced to one in the case of lands having restricted herd status. The Contractor will arrange for disinfectant mats/baths to be replenished with disinfectants, as required.
5	8.5.1	In the event of an outbreak of a Notifiable Disease, the proposed road project will be subject to such operational restrictions as are imposed by DAFM.
6	8.5.2	All agricultural lands, temporarily acquired, will be re-instated to pre-construction conditions unless otherwise agreed with the landowner. Ducting will be provided to allow for the provision of services (electrical/water) across severed areas unless otherwise agreed with the landowner and where practicable. Where required, suitable stock proof fencing shall be erected along the proposed road project. Where any fences, walls or hedges are damaged they will be made stock proof immediately, unless otherwise agreed with the landowner.
7	8.5	The specific mitigation measures as set out in Section 8.5 of Chapter 8: Agricultural Land Uses will be implemented in full.

19.1.5 Surface Water (Hydrology), Groundwater (Hydrogeology) and Aquatic Ecology

No	EIS Ref	Description of Commitment
1	9.6.1	The drainage system standards as set out in TII DN-DNG-03065 – Road Drainage and the Water Environment and as described in Section 9.6 of the EIS shall be implemented in full.
2	10.7 / 11.8	To ensure the mitigation measures are effective for the protection of surface water and groundwater monitoring will be carried out as outlined in Chapter 10: Aquatic Ecology and Chapter 11: Soils, Geology and Hydrogeology .
3	9.7.1.3/ 10.5.1.1	Sediment control measures to be incorporated by the Contractor, during the construction phase will be consistent with the following guidance: <ul style="list-style-type: none"> ▪ Technical Guidance C648: Control of Water Pollution from Linear Construction Projects, (CIRIA, 2006); ▪ Technical Guidance C532: Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors (CIRIA, 2001); ▪ PPG 6 Working at demolition & construction sites (Environment Agency, 2012); and ▪ Guidelines for the protection of Fish during Construction Works in and adjacent to Waters (IFI, 2016).
4	10.5.1.1	The level of suspended solids in any discharges to fisheries waters (Woodbrook, Donnybrook and Glounatouig streams) as a consequence of construction works shall not exceed 25 mg/l ¹ nor result in the deposition of silts on gravels or any element of aquatic flora and fauna (as per IFI (2016) guidelines).
5	9.6.9/9.6.8 and 10.5.1.4/ 10.5.1.5	The design and the construction of all culvert, stream crossings and bridge structures shall:- <ul style="list-style-type: none"> ▪ Be carried out in line with the guidelines and standards of Transport Infrastructure Ireland (TII) and Inland Fisheries Ireland (IFI) ▪ Prevent impact to river morphology and impoundment or alteration of surface water flow hydrodynamics; ▪ Have obtained Section 50 Consent under Section 50 of the Arterial Drainage Act; ▪ Maintain or improve on provisions for aquatic and mammalian species migration; ▪ Have been agreed with IFI; and ▪ Supervised by the Contractors appointed Ecologist/Ecological Clerk of Works.
6	3.12.1.3	Foul drainage from all site offices/ compound will be discharged to the existing network or will be contained and disposed of in an appropriate manner to prevent pollution of nearby watercourses.
7	9.7.1.1	In order to avoid causing flooding during the construction phase all existing surface water drainage and discharge points will be maintained. In order to avoid materials and substances entering Cork Harbour as a result of flooding, the working platform within the Service Area site will be above a level of 3.30 m OD for the duration of the works. Dewatering of excavations will be treated prior to any discharge to Cork Harbour.
8	9.7.1.2/ 10.5.1.2/ 11.5.1	The mitigation measures for the protection against accidental spillages as outlined in Section 9.7.1.2 Chapter 9: Hydrology and Drainage, Section 10.5.1.2 Chapter 10: Aquatic Ecology and Section 11.5.1 Chapter 11: Soils, Geology and Hydrogeology will be implemented in full.

¹ The standard is expressed as an average concentration over a period of 12 months and does not apply to suspended solids with harmful chemical properties. <http://www.irishstatutebook.ie/eli/1988/si/293/made/en/print>

No	EIS Ref	Description of Commitment
9	9.7.1.2/ 10.5.1.2/ 10.5.1.6	<p>The following procedures will be followed to reduce the potential risk of oil or chemical spillage:-</p> <ul style="list-style-type: none"> ▪ The storage of oils, fuel, chemicals, hydraulic fluids, etc. will not occur within 100m of all watercourses and will be undertaken in accordance with current best practice for oil storage (Enterprise Ireland, BPGCS005) on an impervious base within a bund and appropriately secured; ▪ Fuel, oil and chemical storage will be sited on an impervious base within a bund and secured. The base and bund walls will be impermeable to the material stored and of adequate capacity. PPG 26 “Safe storage – drums and intermediate bulk containers” (Environment Agency, 2011a) shall be implemented to ensure safe storage of oils and chemicals. ▪ The safe operation of refuelling activities shall be in accordance with PPG 7 “Safe Storage – <i>The safe operation of refuelling facilities</i>” (Environment Agency, 2011b). ▪ Guidelines for the protection of Fish during Construction Works in and adjacent to Waters (IFI, 2016); and ▪ During stream diversions or culvert placement works, an emergency spill kit and oil spill containment equipment will be available in near proximity to the works.
10	11.5.1	<p>The retention capacity of bunded areas will be as follows:-</p> <ul style="list-style-type: none"> ▪ To a volume not less than 25% of the total volume of substance which could be stored within the bunded area. ▪ All hazardous materials on site will be stored within secondary containment designed to retain at least 110% of the storage contents. ▪ Temporary bunds for oil/diesel storage tanks will be used on the site during the construction phase of the project as appropriate. <p>Safe materials handling of all potentially hazardous materials will be emphasised to all construction personnel employed during this phase of the project and an emergency response plan will be in place, in case of accidental spillage.</p> <p>Spill kits will be retained on site to ensure that any spillages or leakages are dealt with immediately.</p>
11	11.5.1/ 10.5.1.6	<p>An emergency plan to deal with accidental spillages will be kept on site during the construction period. The pollution control methods are to be agreed with CCC prior to the commencement of the works. Spill kits will be retained on site to ensure that any spillages or leakages are dealt with immediately.</p>
12	10.5.1.3 / 9.7.1.2	<p>The measures outlined in Section 10.5.1.3 will be adhered to when using concrete. Where in situ concrete is required, the control measures outlined in PPG 6 - Working at demolition & construction sites (Environment Agency, 2012) and Guidelines for the protection of Fish during Construction Works in and adjacent to Waters (IFI, 2016)., shall be adhered to.</p> <p>Placing of concrete in or near watercourses will be carried out only under the supervision of the Contractors appointed Ecologist/ Ecological Clerk of Works.</p>
13	10.5.1.7	<p>Abstraction from local water courses for use as dust suppression will not take place. Wheel washes will be self-contained systems that do not require discharge of the wastewater to water bodies and water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods (See Chapter 13: Air and Climatic Factors).</p>
14	10.5.1.10	<p>Instream works where required will be undertaken between the period 1st of May to 30th September (as directed by IFI during the consultation for the design implementation for the proposed road).</p>

No	EIS Ref	Description of Commitment
15	Appendix 12C/ 10.5.1.8	All contractors and sub-contractors shall follow basic biosecurity measures as outlined for aquatic species by IFI (http://www.fisheriesireland.ie/fisheries-research-1/73-biosecurity-protocol-for-field-survey-work-1/file).
16	9.7/10.5/ 11.5	The mitigation measures for the protection against suspended solids/sediment as outlined in Chapter 9: Hydrology and Drainage , Chapter 10: Aquatic Ecology and Chapter 11: Soils, Geology and Hydrogeology will be implemented in full.

19.1.6 Aquatic Ecology

No	EIS Ref	Description of Commitment
1	10.5	The specific mitigation measures as set out in Section 19.1.5 above and Chapter 10: Aquatic Ecology will be implemented in full to ensure protection of aquatic ecology.

19.1.7 Soils, Geology and Hydrogeology

No	EIS Ref	Description of Commitment
1	19.1.5	The specific mitigation measures as set out in Section 19.1.5 above and Section 11.5.1 of Chapter 11: Soils, Geology and Hydrogeology will be implemented in full to ensure protection of groundwater.
2	11.5.1	Removed soil will be reused on site subject to testing. Chemical analysis will be carried out to assess whether fill material presents a risk to human and/or environmental receptors and to determine a suitable on-site or off-site disposal route.
3	11.5.1	Accidental Spillage and Erosion control and sediment control measures outlined in Chapter 9: Hydrology and Drainage , Chapter 10: Aquatic Ecology and summarised above under Section 19.1.6 will be implemented in full to protect groundwater during Excavation of Unconsolidated Material and from accidental spillages.
4	11.5.1 / 3.12.1.4	Restrictions that apply to stockpiling of material as outlined under Section 3.12.1.4 of Chapter 3: Description of the Proposed Road Development will be implemented in full.
5	11.5.1/ 3.12.1.4	In order to mitigate against compaction and erosion of soil as a result of access road required to access the works area during the construction stage, the topsoil will be removed and stored as per the restrictions set out in Section 3.12.1.4 of the EIS. Following the removal of the access road upon completion of the construction phase, the soil surface will be scarified and the topsoil replaced and reseeded.
6	11.5.1/ Appendix 17A	Waste material excavated during the construction works will be removed to a suitably licensed facility (refer to Chapter 17: Material Assets and the Outline Construction and Demolition Waste Management Plan - Appendix 17A).
7	11.5.1	To determine the extent of karstification, a geophysical survey will be required prior to construction as part of the further SI so that the risk can be adequately managed.
8	11.5.1	Karst features will require protection from surface water run-off and the construction of the drainage shall be undertaken in accordance with the guidelines in the following publications; <i>Drainage Design for National Road Schemes - Sustainable Drainage Options</i> , NRA (2014) and Method C – Groundwater Protection Response (GWPR) for the Use of Permeable Drain Systems on Road Schemes as detailed in the TII Publication - <i>Road Drainage and the Water Environment, DN-DNG-03065</i> . In particular the

No	EIS Ref	Description of Commitment
		<p>following shall be implemented by the Contractor:-</p> <ul style="list-style-type: none"> ▪ A closed drainage system required in areas of extreme (rock at or near surface) vulnerability (Ch.7, 340-7,825 and Ch. 5,240-5,920). ▪ Where possible, drainage shall be 15m set back from karst features at Ch. 6,500, Ch. 7,000, and at the swallow hole at Ch. 9,150. ▪ Where possible, drainage shall be at least 15m set back from potential karst features between Ch.7, 825-Ch. 7,900 and Ch. 10,900-Ch. 11,300 should karst features be encountered during the geophysical surveys, to be included as part of further SI, within potential karst areas. ▪ Within the area of significant cut between Ch. 12,020-Ch. 12,450 a minimum consistent thickness of 1m of either natural or man-made material beneath the invert level of the point of discharge. ▪ Lining of attenuation ponds with a suitable membrane, where there is less than 1.5m of low permeability soils beneath the base of the pond and the top of the groundwater table. ▪ Where rockhead is exposed during construction, any fissures or cavities encountered will be cleaned of loose soils and backfilled with granular fill material in order to maintain the flow path to rock and to support the road pavement. ▪ Where an embankment is to be created, a geotextile will be placed at the base to prevent sudden, catastrophic failures.
9	11.5.1/ 11.8	<p>The Contractor will be required to implement a monitoring programme as outlined in Section 11.8 to monitor the impact of the areas of cut on groundwater levels in private wells. The monitoring programme will be carried out prior to, during and post construction to demonstrate that construction of the road is not impacting on the groundwater levels and to monitor seasonal low and high water table levels.</p> <p>If the groundwater quality or groundwater level at individual wells is identified as having been impacted a new well will be provided in agreement with the well owner.</p>
10	11.5.2	<p>The use of stabilisation techniques such as rock bolting, rock netting, shotcrete are required as part of the detailed design stage for areas of slope instability on cut sections, particularly in the area between boreholes RC1064 and RC1025, (Ch. 5,000) where a disparity in rock quality suggests that there is a fault zone in close proximity to this cut (Ch. 4,640 to Ch. 5,960).</p>
11	11.5.2	<p>The following guidance documents regarding fuel filling station activities shall be adhered to during the operational phase of the proposed Service Area.</p> <ul style="list-style-type: none"> ▪ PPG2 (above ground storage tanks), PPG3 (Use and design of oil separators in surface water drainage systems), PPG7 (Refuelling Activities), PPG26 (drums and bulk containers) and PPG27 (underground storage tanks). ▪ The Institute of Petroleum Guidelines for Soil, Groundwater and Surface Water Protection and Vapour Emission Control at Petrol Fillings Stations, June 2002; ▪ Draft Code of Practice for assessing the Risks from Petrol at Relevant Petrol Stations under The Dangerous Substances (Petrol Stations) Regulations 1999, and ▪ DEFRA (UK) Groundwater Protection Code: Petrol Stations and other fuel dispensing facilities involving underground storage tanks, November 2002.
12	11.5.2	<p>In order to prevent the contamination of groundwater through infiltration of contaminated surface water run-off the drainage system as described in Chapter 9: Hydrology and Drainage will be implemented in full.</p>
13	11.5	<p>The specific mitigation measures as set out in Section 11.5 of Chapter 11: Soils, Geology and Hydrogeology and outlined above in Section 19.1.6 will be implemented in full.</p>

19.1.8 Terrestrial Ecology

No	EIS Ref	Description of Commitment
1	Chapter 12/Appendix 12B	A site ecologist/Ecological Clerk of Works will be employed by the Contactor for the duration of the works to oversee ecological mitigation measures.
2	Appendix 12B	The measures set out in the Habitat and Species Management Plan contained in Appendix 12B of this EIS will be implemented in full and lead and monitored by the site ecologist/Ecological Clerk of Works.
3	Appendix 12B	All of the proposed translocation works will be monitored and will involve the participation of and will be led by a suitably qualified ecologist/Ecological Clerk of Works. An ecologist/ Ecological Clerk of Works will monitor and co-ordinate all matters of the translocation works, as follows:- <ul style="list-style-type: none"> ▪ Preparation of receptor site at Shanbally; ▪ Identification of pennyroyal populations at Raffeen and Shanbally; ▪ Selection and removal of pennyroyal vegetative material at Raffeen and Shanbally; ▪ Excavation of aggregate materials from donor sites at Raffeen quarry and Shanbally; ▪ Transport, tipping and re-grading of excavated aggregate material within the receptor site; and ▪ Ongoing monitoring during the project's construction phase to assess establishment of pennyroyal plants, drainage within the proposed translocations areas and monitor the growth rate of ruderal and shrub species within the receptor area.
4	12.7.1.5	The measures set out in the Outline Invasive Species Management Plan contained in Appendix 12C of this EIS will be implemented in full and supervised by the site ecologist/Ecological Clerk of Works. The plan will be updated by the Contractor following a preconstruction IAS survey.
5	12.7.1.1	Specific measures set out in Table 12.40 to Table 12.60 for each ecological receptor shall be implemented in full.
6	12.7.1.2 / 13.5.1	Mitigation measures as outlined in Section 12.7.1.2 and Section 13.5.1 of the EIS to control airborne pollutants/dust during the construction phase shall be implemented in full.
7	12.7.1.6	The Contractor shall implement the <i>NRA Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes (2006a)</i> , <i>NRA Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes (2006b)</i> and <i>NRA Guidelines for Crossing of Watercourses During the Construction of National Road Schemes (2005)</i> to ensure the protection of non-volant mammals.
8	12.7.1.7 & 12.7.1.8	If 36 months have lapsed from the time the baseline surveys were completed for this EIS and the grant of approval and commencement of construction, a pre-construction otter and badger survey will be completed in accordance with the <i>NRA Guidelines (2006a & 2006b)</i> . Where dense vegetation prevents adequate determination of the presence or absence of holts or setts, these areas will require monitoring during vegetation clearance to ensure that any setts present will be found and treated appropriately.
9	12.7.1.9	Measures for the protection of badgers during the construction stage will be carried out in accordance with the mitigation outlined in Section 12.7.1.9 . No construction machinery will be used within 30m of badger setts (extended to 50m for active setts during the breeding season, December to June inclusive).

No	EIS Ref	Description of Commitment
		Evacuation and destruction of active badger setts will be carried out under the supervision of an appropriately qualified ecologist under licence from the NPWS. Evacuation and destruction will be undertaken during the period 1 st July to 30 th November.
10	12.7.1.10	The location of any depots, spoil heaps or other additional site usage during clearance and construction will avoid any disturbance to the location of active badger setts and will also avoid areas identified for the installation of mammal underpasses and mitigation.
11	12.7.1.11	Exclusion and destruction of any otter holts will be undertaken under licence, in accordance with the NRA <i>Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes</i> (2006b).
12	12.7.1.12	<p>The NRA Guidelines (<i>Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes</i> and the <i>Guidelines for the Treatment of Bats during the Construction of National Road Schemes</i>) will be implemented by the Contractor.</p> <p>The Contractor shall ensure that there is no disturbance to trees and vegetation (1st March to 31st August inclusive).</p> <p>If bats are found during the pre-construction surveys of mature broadleaved trees they shall be felled, under supervision by a bat expert, in the period late August to late October, or early November, in order to avoid disturbance of any roosting bats as per <i>NRA Guidelines</i> (NRA 2006a and 2006b) and also to avoid the bird breeding seasons.</p> <p>Trees with ivy-cover, once felled, will be left intact onsite for 24 hours prior to disposal to allow any bats beneath foliage to escape overnight.</p> <p>Any trees and treelines along approach roads and planned site access tracks shall be retained. An exclusion zone of at least 7m or equivalent to the tree canopy drip zone to protect retained trees from root damage by machinery will be provided. Such protected trees will be fenced off by adequate temporary fencing prior to other works commencing.</p> <p>Severed linear features such as hedgerows and treelines shall be reconnected to the specific landscape measures and ecological landscape measures using semi-mature trees under-planted with hedgerow species to compensate for the loss of treelines and hedgerows as illustrated in the Habitat and Species Management Plan (12B in Volume 4) and the Specific Landscape Measures Figure 16.5 in Volume 5 of the EIS. Native species will be used as specified in Section 12.7.1.12 of Chapter 12.</p> <p>Mitigation measures for loss of semi natural habitats (including woodlands) will be carried out in accordance with the measures specified in the Habitat and Species Management Plan (Appendix 12B) and Table 12.40 of the EIS.</p> <p>Bat boxes will be provided along the route (on trees or buildings) to mitigate against the loss of potential roosting features and foraging/commuting habitat coupled with the wider loss of commuting territory. The appropriate number of bat boxes to compensate for loss of potential roosting features shall be calculated following pre-construction Potential Roost Feature (PRF) inspection/presence absence surveys.</p> <p>Structures identified in Chapter 12: Terrestrial Ecology with potential to support bat roosting and foraging that are scheduled for removal shall be re-surveyed by a suitably qualified bat specialist immediately prior to demolition to determine if any bats are present.</p> <p>If a roost is discovered in a building to be removed three Schwegler bat boxes or similar shall be erected adjacent to the site one month prior to works to provide alternative roost sites for the bats.</p>

No	EIS Ref	Description of Commitment
		Demolition of these structures shall preferably be undertaken between November and March.
13	12.7.2.1	Underpasses and ledges will be constructed in accordance with the NRA Guidelines (NRA, 2006a and 2006b) at the locations listed in Table 12.41 and Figure 12.7 of Chapter 12: Terrestrial Ecology . Where engineering difficulties arise i.e. in areas of cut, underpasses will be moved to the nearest suitable location, but not more than 250m away.
14	12.7.2.2	Mammal proof fencing will be provided in accordance with NRA Guidelines (NRA 2006a and 2006b). It will be recessed and tied into bridge, culvert and mammal underpass locations to guide badgers and other mammals safely under the road and prevent them accessing the road carriageway.
15	12.7.2.3	The Contractor will be required to create and secure 4 no. artificial setts within the LMA/CPO line at the locations shown on Figure 12.7 .
16	12.7.2.4	Quarterly monitoring will be carried out to determine the success of the mammal mitigation measures employed. Monitoring will be continued for a minimum of one year after construction ceases, in accordance with the NRA Guidelines.
17	12.7.2.5	Lighting restrictions for bats and other taxa as outlined in Section 12.7.2.5 of the EIS will be implemented during the operation phase of the proposed road project.
18	12.7.2.7	The Contractor shall ensure that there is no disturbance to trees and vegetation (1 st March to 31 st August inclusive). If works must proceed during this season a derogation licence will be applied for from the Wildlife Licencing Unit of the NPWS.
19	12.9/ Appendix 12B	Monitoring outlined in Section 12.9 and in the Habitat and Species Management Plan (See Appendix 12B in Volume 4) will be carried out by Contractor during the construction stage and CCC once the road is open to traffic. The monitoring will include:- <ul style="list-style-type: none"> ▪ Monitoring of mammal proof fencing to determine defects, gaps and weaknesses; ▪ Monitoring of mammal underpasses to determine usage, efficacy and functionality for mammals in the surrounding locality; ▪ Monitoring of tree, woodland and landscape planting established for the project; ▪ Monitoring of bat boxes erected along the road project in addition to a condition assessment of landscape planting. Seasonal inspection of bat boxes shall be undertaken (excluding mid-June to mid-August, the lactation period of females, where any disturbance at this time can be detrimental to survival of young) to monitor bat usage and in wintertime for general wear and tear and to remove droppings following use the previous summer. This shall be undertaken by a licensed bat-handler². ▪ Monitoring of habitat creation measures at Raffeen Quarry; ▪ Monitoring of invasive species populations within the project and environs; and ▪ Monitoring of attenuation and mitigation measures, such as silt traps and hydrocarbon interceptors to attenuate run-off to watercourses and waterbodies.
20	12.7	The specific mitigation measures as set out in Section 12.7 of Chapter 12: Terrestrial Ecology , the NIS in Volume 3 and outlined above in Section 19.1.6 will be implemented in full.

² National Roads Authority (2006d): Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. National Roads Authority, Dublin.

19.1.9 Air and Climatic Factors

No	EIS Ref	Description of Commitment
1	13.5.1	<p>A Dust Risk Assessment and a Dust Minimisation Plan will be prepared by the Contractor and incorporated into the EOP in accordance with the NRA Air Quality Guidelines and the NRA <i>Guidelines for the Creation and Maintenance of an Environmental Operating Plan</i> (NRA, 2007).</p> <p>The plan will be based upon the industry guidelines in the Building Research Establishment document entitled '<i>Control of Dust from Construction and Demolition Activities</i>' (BRE 2003), as referenced in the NRA Guidelines.</p>
2	13.5.1	<p>The Contractor will be required to maintain monthly dust levels below the guideline of 350mg/m²/day as an annual average at sensitive receptors. Where dust levels are found to be above this threshold, the mitigation measures in the area shall be reviewed as part of the Dust Minimisation Plan.</p>
3	13.5.1	<p>The following specific measures will be applied in the vicinity of Raffeen Quarry in the event that material is extracted from the quarry:-</p> <ul style="list-style-type: none"> ▪ Site traffic in these areas will be restricted to 20km/hr to minimise dust re-suspension. ▪ All material handling will be carried out to minimise drop heights from plant to plant or from plant to stockpile. ▪ Water bowsers will be used across the areas as required on roads, stockpiles and material handling systems.
4	13.5.1	<p>Mitigation measures to minimise CO₂ emissions from transport during the construction phase, as set out in Section 13.5.1 will be implemented during the construction phase including implementation of TMP, local sourcing of construction materials.</p>
5	13.5.1	<p>As part of the EOP/ CEMP, the Contractor will be required to implement an Energy Management System for the duration of the works.</p>
6	13.5	<p>The specific mitigation measures as set out in Section 13.5 of Chapter 13: Air and Climatic Factors will be implemented in full.</p>

19.1.10 Noise and Vibration

No	EIS Ref	Description of Commitment
1	14.6.1.1	<p>Prior to and during the construction phase the Contractor will be required to:-</p> <ul style="list-style-type: none"> ▪ Install temporary acoustic barriers at the locations adjacent to the Maryborough overpass shown in Drawing TM0010 (barriers 3m high). ▪ Install additional screening at the piling machine at Maryborough Hill that will be capable of providing a reduction of 10dB(A) at the nearby noise sensitive locations. ▪ Reinstate and upgraded the existing wall and fence (2m high) shown on Drawing No. TM0001 to provide an acoustic screen for the construction phase, prior to the installation of AB01. ▪ Construct acoustic noise barriers AB01 to AB04, AB06 to AB08, AB10 to 14 and AB26, AB27 and AB28 as early as possible during the construction phase.
2	14.6.1.1	The Contractor will be required to set out an acoustic barrier construction schedule to maximise acoustic screening for the construction phase and to minimise the duration of activities in each area.
3	14.6.1.1	Contractors will employ the Best Practicable Means to minimise noise emissions and will be obliged to comply with the general recommendations of <i>BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise. And BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part2: Vibration (together referred to as B.S. 5228).</i>
4	14.6.1.1	A noise and vibration monitoring programme will be implemented for the duration of the construction phase (to include vibration monitoring at Castle Warren).
5	14.6.1.1	For works outside normal working hours or the Contractor’s method statement for any proposed works indicates that the levels set out in Table 14.1 of Chapter 14: Noise and Vibration may be exceeded, permission for these works shall be sought from CCC in advance of any works taking place. The application for such works will require a detailed noise control plan and follow up report to be prepared.
6	14.6.1.1/ 3.10	<p>Blasting will only be permitted between 0900 and 1800 hrs Monday to Friday inclusive. Blasting will not be permitted on Weekends or Bank Holidays.</p> <p>In the advance of any blasting operation the Contractor will inform occupants of all dwellings within 500m of the blast that blasting will take place and the duration of blasting operations.</p> <p>The timing and scheduling of blasting activities for the road will be agreed with CCC in advance of commencement on site.</p> <p>Air overpressure from any blast will not exceed 125 dB (linear) max peak, with a 95% confidence limit when measured at the nearest air overpressure sensitive location. No individual air overpressure value shall exceed the limit value by more than 5 dB (Lin).</p>
7	14.6.1.1	The measures specified in Section 14.6.1.1 will be incorporated into the Contractors CEMP.
8	14.6.2	Low road noise surfacing will be used along the entire mainline of proposed M28 Road Project and at the additional locations listed in Table 14.14 .
9	14.6.2	<p>Acoustic mitigation measures (noise barrier/walls) will be installed at the locations listed in Table 14.15 and shown on Figure 14.9 in Volume 5.</p> <p>Acoustic mitigation will be provided in accordance with the relevant standards (listed in Section 14.2.3 of Chapter 14) and where proprietary barriers are used they will be required to have a design life of 30 years with no gaps or leaks in the structure.</p>
10	14.6	The specific mitigation measures as set out in Section 14.6 of Chapter 14: Noise and Vibration will be implemented in full.

19.1.11 Cultural Heritage

No	EIS Ref	Description of Commitment
1	11.5.1	Archaeological mitigation measures will be carried out in advance of the construction in accordance with Section 11.5.1 of the EIS.
2	11.5.1.1	A geophysical survey will be undertaken, by a competent geophysical archaeologist, to assess the greenfield lands within the proposed CPO (where not already undertaken), subject to approval by the appointed TII Project Archaeologist in consultation with the National Monuments Service and under ministerial direction.
3	11.5.1.1	The geophysical survey will also seek to identify whether any archaeological features or deposits survive within the proposed CPO at the locations listed in Section 15.5.1.1 of the EIS & located on Figures 15.1a-h in Volume 5 . (AH1, AH2, AH3, AH4, AH5, AH7, AH8, AH9, AH13, AH15, AH16, AH17, AH20, AH21, AH23, AH24, AH25, AH26, AH28, AH31, AH34, AH35, AH38, AH40, AH42 to AH45, AH46, AH47, AH48, AH49, AH50, AH51, AH52, AH53, AH54 to AH60, AH63, AH64, AH65, AH66, AH67, AH68, AH69).
4	15.5.1.1	The use of Ground Penetrating Radar (GPR) will be explored as a means to assess the area where the Service Area is proposed.
5	15.5.1.2	A detailed programme of archaeological test excavation will be undertaken, by suitably qualified archaeologists, under ministerial directions within the land acquisition area. Where sites of archaeological significance are identified, due regard will be given to the feasibility of preserving such remains <i>in-situ</i> . Where preservation <i>in-situ</i> is not deemed feasible, all features of agreed archaeological significance will, subject to ministerial directions, be preserved by record (by means of archaeological excavation, post-excavation analysis, reporting and dissemination).
6	15.5.1.2 / 15.5.3	Any archaeological features revealed by the test-trenching, or by any other means, which will be directly impacted by the proposed works, will be preserved by record by means of archaeological excavation, recording and publication of results. Where deemed appropriate by the National Monuments Service (DAHRRGA) archaeological features or sites revealed by the test trenching, which will be directly impacted by the proposed works, may be preserved <i>in-situ</i> (by avoidance or design). If features are to be left <i>in-situ</i> , details plans will be required as to the layout and extent of these features/ sites as well as a geographical location. Before and after photographs will be required as well as a full report on the preservation of the site and how this was achieved, by the National Monuments Service. In accordance with the Code of Practice between the National Roads Authority (now TII) and the Minister for Arts, Heritage, Gaeltacht and Islands in 2000 where possible all archaeological excavation will be completed pre-construction, or if not, then during the early stages of construction phase.
7	15.5.1.2	A wade survey will be undertaken at all of the (active) watercourses where they are traversed by the proposed road (AH30, AH32, AH36, AH39, AH41 and AH70). The survey will be carried out by a qualified underwater archaeologist under ministerial directions.
8	15.5.2	Appropriate measures outlined in Section 15.5.2 including photographic records, scaling and written descriptions will be undertaken in order to mitigation for potential impacts to architectural heritage (BH 5, 10, 19, 20 22 and 23).
9	15.5.2	Appropriate screening will be put in place to mitigate the visual impacts identified at Castle Warren (BH11), the Martello Tower (BH1), Ring House (BH3), and the farm complexes in Ballinrea and Carrigaline Middle (BH7 & BH8) as illustrated on Figure 16.5 in Volume 5 entitled " Specific Landscape Measures ".

No	EIS Ref	Description of Commitment
10	15.5.3	Vibration monitors will be installed within the grounds of the 18 th century Country House and the earlier medieval structures at Castle Warren (AH22 / BH11) prior to commencement of works, with alerts to identify any undue level of vibration at the structure during construction of the road (refer to Chapter 14: Noise and Vibration)
11	15.5	The specific mitigation measures as set out in Section 15.5 of Chapter 15: Cultural Heritage will be implemented in full.

19.1.12 Landscape and Visual

No	EIS Ref	Description of Commitment
1	16.5.1	The Contractor shall implement the Specific Landscape Measures (SLM) as set out in Table 16.10 and illustrated on Figure 16.5 of Chapter 16: Landscape and Visual . Where cuttings and embankments are not present the SLM will require a minimum width of 5m planting.
2	16.5.2	All trees, shrubs and other plant material shall comply with the standards set out in National Plant Specification (NPS) prepared by the Committee on Plant Supply and Establishment and published with the backing of the Joint Council of Landscape Industries (JCLI, 1989). All trees, shrubs, transplants, hedging material and ground cover planting shall be maintained and guaranteed for a period against death, deformation, die-back, or disease other than that caused by malicious damage.
3	16.5.2	Road verge or bank planting will consist of 'bare root transplants', 'whips' and 'feathered trees', will adapt more easily to the disturbed ground and exposed site conditions. All plants are to be positioned in the locations and in the required numbers and centres indicated on the agreed planting plan.
4	16.5.2	Woodland Mix Landscape mitigation planting of road verges and slopes and as compensation for loss of existing screening and loss of woodland, individual trees and hedgerows along the proposed M28 Road Project will exclusively use Irish native species that reflect the existing vegetation of the area. Core species will include; Hybrid Oak, Scots Pine, Hawthorn, Hazel, Holly, Blackthorn, Goat Willow, Alder, Rowan and Birch. Additional species at certain locations will include; Blackthorn, Broom, Elder, and Grey Willow. Woodland Mix areas will be planted as whips and feathered transplants at a standard size of 60-90cm or 90-120cm augmented by semi-mature individual trees. Species shall be randomly planted in groups. The majority of species used will be quickly maturing species and will have formed dense woodland within ten years. The canopy will reach at least 7 to 10m, in places where groups of trees are planted. In addition to whip and feathered transplants individual semi-mature trees shall be used to provide screening at SLM locations where limited roadside space is available or where early effect is required as set out in Table 16.10 .
5	16.5.2	Individual semi-mature tree planting using the core native species (Hybrid Oak and Scots Pine) shall include standard (2.5-3.0 m) and heavy standard (3.5-4.25 m) trees located in locations to provide specific screening and early effect as per Table 16.10 and Figure 16.5 .
6	16.5.2	Shrub planting shall consist of native species from the core and additional species listed above to provide woodland understorey, woodland edge and scrub areas. Shrub planting mixes shall complement areas of woodland and be used at locations consistent with the ecological assessment mitigation measures.

No	EIS Ref	Description of Commitment
		Hedgerows shall be reinstated at interrupted field boundaries or where new boundaries with fields are created using native hawthorn, blackthorn and holly that shall be the predominant species used. Shrub planting shall also be planted to soften the appearance of noise barriers.
7	16.5.2	The road verges will be seeded with a general (Grade II) grass seed mix. Areas away from designated sight lines where mowing regimes are not required to be of a regular nature will be seeded with wild grasses and meadow flowers. Grass and wildflower mixes using seed from Irish native sources shall be employed to provide quality areas of low maintenance, rapid establishment, and visual appearance.
8	16.5.2	The construction Contractor will adhere to the NRA's <i>Draft Guidelines on the Implementation of Landscape Treatment on National Road Schemes in Ireland, 2011</i> . Storage areas will be located so to avoid impacting on existing residential properties, trees, hedgerows, drainage patterns etc. and such areas will be fully re-instated prior to or at the end of the construction contract.
9	16.5.2	The following measures will be implemented by the Contractor to mitigate potential visual impacts by night:- <ul style="list-style-type: none"> ▪ Use of directional down light style cut-off luminaries to prevent up lighting and reduce glare and sky glow; ▪ Use of baffles where street lights are located in close proximity to properties to reduce light spill on to properties and to reduce glare and sky glow; and ▪ Use of lighting control systems to reduce the amount of light spill, sky glow, and visual appearance during the construction phase where works take place in proximity to properties.
10	New	Noise mitigation features (barriers) will be, wherever possible, integrated within the proposed landscaping measures.
11	16.5	The specific mitigation measures as set out in Section 16.5 and Figure 16.5 of Chapter 16: Landscape and Visual will be implemented in full.

19.1.13 Material Assets

No	EIS Ref	Description of Commitment
1	17.7	Further investigations into services will be necessary during the detailed design stage. Methods such as ground penetrating radar (GPR) and silt trenching in the verge areas can be used to verify or locate existing services.
2	17.5.2	Waste arising from the construction phases will be dealt with in accordance with the provisions of the Waste Management Act and amendments. The Contractor is required to meet the 70% target set by the Southern Region Waste Management Plan 2015-2021 for the material reuse, recycling and recovery.
3	17.5.2	Any material that cannot be re-used on site will be sampled, tested and treated at appropriately authorised facility.
4	3.12.1.4	Restrictions that apply to stockpiling of material as outlined under Section 3.12.1.4 of Chapter 3: Description of the Proposed Road Development will be implemented in full.
5	17.5.2	Construction waste will be managed in accordance with the measures outlined in Chapter 17 - Section 17.5.2 and the Outline Construction and Demolition Waste Management Plan in Appendix 17A . The Outline C&D Waste Management Plan will be updated by the contractor in advance to construction works and will be prepared having regard to: <ul style="list-style-type: none"> ▪ Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (Department of Environment Heritage and Local Government, July 2006); ▪ CIRIA document 133 Waste Minimisation in Construction; and ▪ TII guidelines including Guidelines for the Management of Waste from National Roads Construction Projects (Revision 1, 12 November 2014). The Contractor will have regard to the By-product notifications (under Article 27 of the EC Waste Directive Regulations 2011) which provide an opportunity for reuse of surplus clean soil & stone material arising from construction activity. An EOP will be prepared in advance of the works to incorporate these measures.
6	17.5.2	The Contractor will be required to ensure that the facility to which the waste is brought to is authorised in accordance with the Waste Management Legislation.
7	17.7	The Contractor shall develop a record keeping system that will ensure that details of all arising's, movement and treatment of C&D waste are recorded. All materials being transferred from the site, whether for recycling or disposal, shall be subject to a documented tracking system which can be verified and validated
8	17.5.3	Specific measures for management of operational waste will be carried out in line with Section 17.5.3 of the EIS.
9	17.5.3	The Waste Management Plan for the operation phase will be prepared in accordance with "NRA Guidelines for the Management of Waste from National Road Construction Projects" and the British Standard BS 5906 "Waste Management in Buildings Code of Practice". Waste arising as a result of the operation of the road and Service Area will be dealt with in accordance with the provisions of the Waste Management Act and amendments.
10	17.5	The specific mitigation measures as set out in Section 17.5 of Chapter 17: Material Assets will be implemented in full.