

APPENDIX 6.1 SUMMARY OF MITIGATION MEASURES PROPOSED

Ecological Receptor	Ecological Valuation	Impacts with Potentially Significant Effects	Potential Significance of Effects	Mitigation/Compensation Measures	Significance of Residual Effects
Designated Sites					
River Boyne and Blackwater SAC	International	None	International	None	None
River Boyne and Blackwater SPA	International	None	International	None	None
Rye Water Valley/Carton SC	International	None	International	None	None
Trim pNHA	National	None	National	None	None
Balrath Woods pNHA	National	None	National	None	None
Royal Canal pNHA	National	None	National	None	None
Rye Water Valley/Carton pNHA	National	None	National	None	None

Ecological Receptor	Ecological Valuation	Impacts with Potentially Significant Effects	Potential Significance of Effects	Mitigation/Compensation Measures	Significance of Residual Effects
Habitats					
Depositing/lowland Rivers (FW2)	Local importance (higher value)	Pollution in the local environment from construction run off Loss of habitat	Local importance (higher value)	Management of run-off through SuDS measures. Fuel, chemical and hazardous materiel storage and handling. Emergency response to accidental spillages. Effluent from the site directed to existing foul sewer network.	None
Dry calcareous and neutral grassland (GS1)	Local importance (higher value)	Permanent loss of habitat (c. 1.3ha)	Local importance (higher value)	Wildflower meadow planting.	None
Hedgerows (WL1)	Local importance (higher value)	Permanent loss of habitat (c. 222.3m)	Local importance (higher value)	Native hedgerow planting. Fencing off of retained hedgerows. Buffer zone of 5m between construction works and hedgerows.	None
Immature woodland (WS2)	Local importance (higher value)	Permanent loss of habitat	Local importance (higher value)	Native tree planting. Fencing off of retained trees or wrapped with hessian sacking. Arborist to assess condition of and advise on any repair works to trees that are to be retained.	None
Other artificial lakes and ponds (FL8)	Local importance (higher value)	None, area to be retained	Local importance (higher value)	None	None
Treelines (WL2)	Local Importance (higher value)	Permanent loss of habitat (removal of 4 trees)	Local importance (higher value)	Native tree planting Fencing off of retained trees or wrapped with hessian sacking Arborist to assess condition of and advise on any repair works to trees that are to be retained.	None

Ecological Receptor	Ecological Valuation	Impacts with Potentially Significant Effects	Potential Significance of Effects	Mitigation/Compensation Measures	Significance of Residual Effects
Fauna Species					
Badger	Local importance (higher value)	Loss of foraging / commuting areas	Local importance (higher value)	Pre-construction checks for new setts.	None
Hedgehogs and other small mammals	Local importance (higher value)	Loss of foraging / commuting areas	Local importance (higher value)	Landscape planting.	None
Breeding birds	Local importance (higher value)	Disturbance and mortality during breeding season Habitat loss	Local importance (higher value)	Seasonal vegetation clearance. Landscape planting.	None
Bats	Local importance (higher value)	Disturbance and mortality Increased light levels Foraging/commuting habitat loss	Local importance (higher value)	Placement of artificial roosts prior to felling of suitable bat roost trees. Felling of trees following seasonal restrictions. Roost presence/absence surveys prior to felling of suitable bat roost trees. Soft felling of suitable bat roost trees. Directional lighting to control light spill. Light levels during construction kept to a minimum where feasible.	None
Otters	County importance	Water quality impact from pollution event	County importance	Protect receiving surface water environment during construction. Protect receiving surface water environment during operation.	None
Amphibians	Local importance (higher value)	Direct mortality Water quality	Local importance (higher value)	Pre-construction survey to assess if amphibians are present. If present, shall be removed and translocated to the nearest suitable area.	None

Ecological Receptor	Ecological Valuation	Impacts with Potentially Significant Effects	Potential Significance of Effects	Mitigation/Compensation Measures	Significance of Residual Effects
Fish	Local importance (higher value)	Habitat loss Pollution Habitat severance/Barrier Effect	Local Importance (higher value)	<p>All sections of river/stream to be protected from site clearance and construction works with a 5m buffer.</p> <p>No instream works between October-June.</p> <p>Prior to any stream diversions, fish will be electrofished to capture and transfer from original channel to new one.</p> <p>All temporary crossing structures will be designed in accordance with the IFI guidelines as mentioned above.</p>	None

APPENDIX 6.2 PROTECTED SITES FOR NATURE CONSERVATION IN THE VICINITY OF THE PROPOSED DEVELOPMENT

European sites in the vicinity of the proposed development are listed below in **Table 1**, along with their qualifying/special conservation interests, reference to the most recent conservation objectives document, and their location relative to the proposed development site.

Other nationally protected sites for nature conservation in the vicinity of the proposed development are listed below in **Table 2**, along with the nature conservation interests for which they are designated, and their location relative to the proposed development site

Table 1 European sites in the vicinity of the proposed development

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
Special Area of Conservation (SAC)	
<p>River Boyne and Blackwater SAC [002299]</p> <p>7230 Alkaline fens</p> <p>91EO Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)</p> <p>1099 River lamprey <i>Lampetra fluviatilis</i></p> <p>1106 Salmon <i>Salmo salar</i></p> <p>1355 Otter <i>Lutra lutra</i></p> <p>NPWS (2020) <i>Conservation objectives River Boyne and Blackwater SAC [002299]</i>. Generic Version 7.0. Department of Culture, Heritage and the Gaeltacht.¹</p>	c.11.5km northwest of the proposed development
<p>Rye Water Valley/Carton SAC [001398]</p> <p>7220 Petrifying springs with tufa formation (<i>Cratoneurion</i>)*</p> <p>1014 Narrow-mouthed Whorl Snail <i>Vertigo angustior</i></p> <p>1016 Desmoulin's Whorl Snail <i>Vertigo moulinsiana</i></p> <p>NPWS (2020) <i>Conservation objectives for Rye Water Valley/Carton SAC [001398]</i>. Generic Version 7.0. Department of Culture, Heritage and the Gaeltacht.</p>	c.13.5km south of the proposed development
Special Protection Area (SPA)	
<p>River Boyne and Blackwater SPA [004232]</p> <p>A229 Kingfisher <i>Alcedo atthis</i></p> <p>NPWS (2020) <i>Conservation objectives for River Boyne and Blackwater SPA [004232]</i>. Generic Version 7.0. Department of Culture, Heritage and the Gaeltacht.</p>	c.11.5km northwest of the proposed development

¹ The versions of the conservation objectives documents referenced in this table are the most recent published versions at the time of writing

Nationally protected sites in the vicinity of the proposed development

Designated Site Name [Code] and its nature conservation features	Location Relative to the Proposed Development Site
proposed Natural Heritage Area (pNHA)	
<p>Trim pNHA [001357]</p> <p>This site is highly significant due to the presence of Strawberry Clover. It is one of only a few inland locations in Ireland where this coastal plant species can be found.</p>	<p>c. 13km northwest of the proposed development site.</p>
<p>Balrath Woods pNHA [001579]</p> <p>The site is important as a woodland in an area in a woodland poor county. The occurrence of a nationally rare plant, Common winter green <i>Pyrola minor</i> in Balrath Woods also enhances the importance of this site.</p>	<p>c. 13.3km northeast of the proposed development site.</p>
<p>Royal Canal pNHA [002103]</p> <p>This site supports a diverse range of species, also provides a refuse for agriculturally impacted species along its route. The rare and legally protected opposite-leaved pondweed <i>Groenlandia densa</i> (Flora Protection Order 1987) is present at a site in Dublin which enhances the importance of the site.</p>	<p>c. 14.5km southwest of the proposed development site.</p>
<p>Rye Water Valley/Carton pNHA [001398]</p> <p>Listed under similar conservation objectives as its SAC designation.</p>	<p>c. 13.6km south-east of the proposed development site.</p>

APPENDIX 6.3 DESK STUDY FLORA AND FAUNA RECORDS

There were no desktop records of protected, rare, or other notable plant species. Desktop records of protected, rare, or other notable fauna species are listed below in Table 1. In relation to amphibian, reptile and mammal species those which are protected under the Wildlife Acts, the Habitats Directive and/or are listed as threatened (Vulnerable to Critically Endangered) on the relevant national Red Lists are included. In the case of bird species, only those species listed in Annex I of the Birds Directive or on the Birds of Conservation Concern in Ireland (BoCCI) Red List are included in the table below. For invertebrate species, those which are listed as threatened (Vulnerable to Critically Endangered) on the relevant national Red List are included.

Records of protected, red-listed or notable fauna from the desktop study in the vicinity of the study area

Common Name/ Scientific Name	Legal Status ²	Red List Status ³	Source
Amphibians			
Common frog <i>Rana temporaria</i>	HD_V, WA	Least concern	NBDC online database record
Mammals			
Badger <i>Meles meles</i>	WA	Least concern	NBDC online database record

² HD_II/IV/V = Habitats Directive Annexes II/IV/V; WA = Wildlife Acts; BD_I/II/III = Birds Directive Annex I/II/III; OSPAR = Convention for the protection of the marine environment of the North-east Atlantic 1992

³ Mammal Red-list from Marnell, F., Kingston, N. & Looney, D. (2009) *Ireland Red List No. 3: Terrestrial Mammals* and Marnell, F., Looney, D. & Lawton, C. (2019) *Ireland Red List No. 12: Terrestrial Mammals*.

Birds from Colhoun, K. & Cummins, S. (2013) Birds of Conservation Concern in Ireland 2014-2019. *Irish Birds* 9:523-544.

Amphibians, reptiles and fish from King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., Fitzpatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. (2011) *Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish*.

Non-Marine Molluscs from Byrne, A., Moorkens, E.A., Anderson, R., Killeen, I.J. & Regan, E.C. (2009) *Ireland Red List No. 2 – Non-Marine Molluscs*.

Butterflies from Regan, E.C., Nelson, B., Aldwell, B., Bertrand, C., Bond, K., Harding, J., Nash, D., Nixon, D., & Wilson, C.J. (2010) *Ireland Red List No. 4 – Butterflies*.

Moths from Allen, D., O'Donnell, M., Nelson, B., Tyner, A., Bond, K.G.M., Bryant, T., Croy, A., Mellon, C., O'Boyle, J., O'Donnell, E., Rolston, T., Sheppard, R., Strickland, P., Fitzpatrick, U., & Regan, E. (2016) *Ireland Red List No. 9: Macro-moths (Lepidoptera)*.

Damselflies and dragonflies from Nelson, B., Ronayne, C. & Thompson, R. (2011) *Ireland Red List No.6: Damselflies & Dragonflies (Odonata)*.

Water beetles from Foster, G. N., Nelson, B. H. & O Connor, Á. (2009) *Ireland Red List No. 1 – Water beetles*.

Leisler's bat <i>Nyctalus leisleri</i>	HD_IV, WA	Least concern	NBDC online database record
Common pipistrelle <i>Pipistrellus pipistrellus</i>	HD_IV, WA	Least concern	NBDC online database record
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	HD_IV, WA	Least Concern	NBDC online database record
Common Name/ Scientific Name	Legal Status	Red List Status	Source
Hedgehog <i>Erinaceus europaeus</i>	WA	Least concern	NBDC online database record NPWS record (O02)

Moths from Allen, D., O'Donnell, M., Nelson, B., Tyner, A., Bond, K.G.M., Bryant, T., Croy, A., Mellon, C., O'Boyle, J., O'Donnell, E., Rolston, T., Sheppard, R., Strickland, P., Fitzpatrick, U., & Regan, E. (2016) *Ireland Red List No. 9: Macro-moths (Lepidoptera)*.

Damselflies and dragonflies from Nelson, B., Ronayne, C. & Thompson, R. (2011) *Ireland Red List No.6: Damselflies & Dragonflies (Odonata)*.

Water beetles from Foster, G. N., Nelson, B. H. & O Connor, Á. (2009) *Ireland Red List No. 1 – Water beetles*.

Common Name/ Scientific Name	Legal Status	Red List Status	Source
Birds			
Barn owl <i>Tyto alba</i>	WA	Red	NBDC online database record
Black-headed gull <i>Chroicocephalus ridibundus</i>	WA	Red	NBDC online database record
Common redshank <i>Tringa totanus</i>	WA	Red	NBDC online database record
Corn crane <i>Crex crex</i>	BD_I, WA	Red	NBDC online database record
Eurasian curlew <i>Numenius arquata</i>	BD_II, WA	Red	NBDC online database record
European golden plover <i>Pluvialis apricaria</i>	BD_I, II (II), III (III), WA	Red	NBDC online database record

Common Name/ Scientific Name	Legal Status	Red List Status	Source
Grey partridge <i>Perdix perdix</i>	WA	Red	NBDC online database record
Grey wagtail <i>Motacilla cinerea</i>	WA	Red	NBDC online database record
Northern lapwing <i>Vanellus vanellus</i>	BD_II (II), WA	Red	NBDC online database record
Yellowhammer <i>Emberiza citrinella</i>	WA	Red	NBDC online database record
Barn swallow <i>Hirundo rustica</i>	WA	Amber	NBDC online database record
Common coot <i>Fulica atra</i>	BD_II (I), III (II), WA	Amber	NBDC online database record
Common grasshopper warbler <i>Locustella naevia</i>	WA	Amber	NBDC online database record
Common kestrel <i>Falco tinnunculus</i>	WA	Amber	NBDC online database record
Common kingfisher <i>Alcedo atthis</i>	BD_I, WA	Amber	NBDC online database record
Common linnet <i>Carduelis cannabina</i>	WA	Amber	NBDC online database record
Common snipe <i>Gallinago gallinago</i>	BD_II (I), III (III), WA	Amber	NBDC online database record

Common Name/ Scientific Name	Legal Status	Red List Status	Source
Common starling <i>Sturnus vulgaris</i>	WA	Amber	NBDC online database record
Common swift <i>Apus apus</i>	WA	Amber	NBDC online database record
Eurasian teal <i>Anas crecca</i>	BD_II (I), III (II), WA	Amber	NBDC online database record
Eurasian tree sparrow <i>Passer montanus</i>	WA	Amber	NBDC online database record
Eurasian woodcock <i>Scolopax rusticola</i>	BD_II (I), III (III), WA	Amber	NBDC online database record
European greenfinch <i>Carduelis chloris</i>	WA	Amber	NBDC online database record
European robin <i>Erithacus rubecula</i>	WA	Amber	NBDC online database record
Goldcrest <i>Regulus regulus</i>	WA	Amber	NBDC online database record
House martin <i>Delichon urbicum</i>	WA	Amber	NBDC online database record
House sparrow <i>Passer domesticus</i>	WA	Amber	NBDC online database record
Little grebe <i>Tachybaptus ruficollis</i>	WA	Amber	NBDC online database record
Mew gull <i>Larus canus</i>	WA	Amber	NBDC online database record
Sand martin <i>Riparia riparia</i>	WA	Amber	NBDC online database record
Sky lark <i>Alauda arvensis</i>	WA	Amber	NBDC online database record

Common Name/ Scientific Name	Legal Status	Red List Status	Source
Spotted flycatcher <i>Muscicapa striata</i>	WA	Amber	NBDC online database record
Stock pigeon <i>Columba oenas</i>	WA	Amber	NBDC online database record
Stonechat <i>Saxicola torquata</i>	WA	Amber	NBDC online database record
Tufted duck <i>Aythya fuligula</i>	BD_II (I), III (II), WA	Amber	NBDC online database record
Invertebrates			
Wood white butterfly	none	Near threatened	NBDC online database record

APPENDIX 6.4 EXAMPLES OF VALUING IMPORTANT ECOLOGICAL FEATURES

International Importance:

- 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.
- Proposed Special Protection Area (pSPA).
- Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).
- Features essential to maintaining the coherence of the Natura 2000 Network.⁴
- Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
- Resident or regularly occurring populations (assessed to be important at the national level)⁵ of the following:
 - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or
 - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
- Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
- World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).
- Biosphere Reserve (UNESCO Man & The Biosphere Programme).
- Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
- Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
- Biogenetic Reserve under the Council of Europe.
- European Diploma Site under the Council of Europe.
- Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 1988).⁶

⁴ See Articles 3 and 10 of the Habitats Directive

⁵ It is suggested that, in general, 1% of the national population of such species qualifies as an internationally important population. However, a smaller population may qualify as internationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

⁶ Note that such waters are designated based on these waters' capabilities of supporting salmon (*Salmo salar*), trout (*Salmo trutta*), char (*Salvelinus*) and whitefish (*Coregonus*)

National Importance:

- Site designated or proposed as a Natural Heritage Area (NHA).
- Statutory Nature Reserve.
- Refuge for Fauna and Flora protected under the Wildlife Acts.
- National Park.
- Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
- Resident or regularly occurring populations (assessed to be important at the national level)⁷ of the following:
 - Species protected under the Wildlife Acts; and/or
 - Species listed on the relevant Red Data list.
- Site containing 'viable areas'⁸ of the habitat types listed in Annex I of the Habitats Directive

⁷ It is suggested that, in general, 1% of the national population of such species qualifies as a nationally important population. However, a smaller population may qualify as nationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

⁸ A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

County Importance:

- Area of Special Amenity.⁹
- Area subject to a Tree Preservation Order.
- Area of High Amenity, or equivalent, designated under the County Development Plan.
- Resident or regularly occurring populations (assessed to be important at the County level)¹⁰ of the following:
 - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
 - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
 - Species protected under the Wildlife Acts; and/or
 - Species listed on the relevant Red Data list.
- Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
- County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local Biodiversity Action Plan, if this has been prepared.
- Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
- Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

⁹ It should be noted that whilst areas such as Areas of Special Amenity, areas subject to a Tree Preservation Order and Areas of High Amenity are often designated on the basis of their ecological value, they may also be designated for other reasons, such as their amenity or recreational value. Therefore, it should not be automatically assumed that such sites are of County importance from an ecological perspective.

¹⁰ It is suggested that, in general, 1% of the County population of such species qualifies as a County important population. However, a smaller population may qualify as County important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

Local Importance (higher value):

- Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;
- Resident or regularly occurring populations (assessed to be important at the Local level)¹¹ of the following:
 - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
 - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
 - Species protected under the Wildlife Acts; and/or
 - Species listed on the relevant Red Data list.
- Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;
- Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.

Local Importance (lower value):

- Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;
- Sites or features containing non-native species that are of some importance in maintaining habitat links.

¹¹ It is suggested that, in general, 1% of the local population of such species qualifies as a locally important population. However, a smaller population may qualify as locally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

APPENDIX V DEVELOPMENTS IN THE VICINITY TO BE CONSIDERED FOR CUMULATIVE IMPACTS ON THE PROPOSED DEVELOPMENT

Competent Authority	Applicant	Description of Development	Address	Decision Date
An Bord Pleanála	Rockture 1 Ltd.	913no. residential units	Lands north of the R147/Dublin Road, Dunshaughlin, Co. Meath	23/04/2019
An Bord Pleanála	Loughglynn Developments Ltd.	212no. residential units	Grangend, Dunshaughlin, Co. Meath	Decision due 16/09/2020
Meath County Council	Castlethorn Construction	Extension of Duration for 142no. residential units – under construction currently	Roestown, Cookstown & Readsland, Dunshaughlin Co. Meath	08/08/2019
Meath County Council	Aldi Stores Ltd.	Singe story retail area and car park	Lagore Road and Main street Dunshaughin Co. Meath	20/11/2019
Meath County Council	Lidl Ireland	2no. retail untis with a café/restaurant and carpark	Main Street, Dunshaughlin	18/09/2017
Meath County Council	Aspect Developments	Construction of 96no. houses and creche	East of Seachnails Road and south east of Junction with Ratoath Road, Dunshaughlin, Co. Meath	28/02/2018
Meath County Council	Rockture Ltd.	Construction of 96no. houses, creche and parking spaces	The Willows, Dublin Road, Dunshaughlin Co. Meath	09/07/2018
Meath County Council	Jackie Green construction	Extension of duration for a 2 story office block, car park and landscaping	Dunshuaghlin Business Park, Dublin Road, Dunshaughlin, Co. Meath	04/10/2019
Meath County Council	Kingscroft Development Ltd.	Extension of duration for 94no houses	Johnstown & Rath Hill, Dunshaughlin, Co. Meath	05/03/2020