

10 Landscape and Visual

10.1 Introduction

This chapter has been prepared by Brady Shipman Martin and comprises the Landscape and Visual Assessment chapter of the EIS for the proposed M7 Osberstown Interchange and the R407 Sallins Bypass in County Kildare.

The proposed scheme involves the construction of a grade separated interchange on the M7 at Osberstown, a regional road comprising the Sallins Bypass and associated link roads and side roads. This assessment is to be read in conjunction with the Chapter 4 - *Description of the Proposed Scheme*, all other chapters of the EIS, and related figures contained in Volume 3.

The chapter sets out the methodology to be followed (Section 10.2), describes the receiving environment (Section 10.3), reviews predicted impacts (Section 10.4), sets out mitigation measures proposed (Section 10.5) and describes anticipated residual impacts (Section 10.6).

10.2 Methodology

10.2.1 Introduction

The methodology has regard to Section 50 sub-section 2 and 3 of the Roads Act 1993 as amended, and the following guidance publications:

- EPA: Guidelines on the Information to be contained in Environmental Impact Statements, 2002.
- EPA: Advice Notes on Current Practice (in the preparation of Environmental Impact Statements) 2003.
- LI/IEMA: Guidelines on Landscape and Visual Impact Assessment, 3rd Ed. 2013.
- NRA: Environmental Impact Assessment of National Road Schemes - A Practical Guide.
- NRA: A Guide to Landscape Treatments for National Road Schemes in Ireland, 2006.
- NRA: Guidelines for Protection and Preservation of Trees, Hedgerows and Scrub Prior to, during and Post Construction of National Road Schemes.
- NRA Design Manual for Roads and Bridges, 2009.

The findings and recommendations of other chapters of this EIS have also been considered in the preparation of this assessment. In particular, close liaison and consultation has taken place with the Project Design Team and with respect to Ecology, Noise and Vibration, Architecture & Archaeology and Cultural Heritage.

10.2.2 Landscape

Landscape has two separate but closely related aspects. The first is visual impact, *i.e.* the extent to which a new structure in the landscape can be seen.

The second is landscape character impact, i.e. effects on the fabric or structure of the landscape.

Landscape character is derived from the appearance of the land, and takes account of natural and man-made features such as topography, landform, vegetation, land use and built environment and their interaction to create specific patterns that are distinctive to particular localities.

The landscape along the proposed scheme has been sub-divided, for the purposes of the assessment, into units of differing character using site-based assessments and judgments, together with information gleaned from relevant publications. The assessment which follows in Section 10.4 Predicted Impacts on the Landscape and Visual describes the likely nature and scale of changes to individual landscape elements and characteristics, together with the significance of such changes.

Landscape planning designations, including National and County designations or listings are considered and assessed for impacts, where appropriate. Historic demesne landscapes as defined by the National Inventory of Architectural Heritage (NIAH) are also considered, as are protected structures or other features identified during site visits.

10.2.3 Visual Impact

Likely visual impact is considered under ‘Visual Intrusion’ and ‘Visual Obstruction’ where:

- Visual Intrusion is an impact on a view without blocking.
- Visual Obstruction is an impact on a view involving blocking thereof.

While the majority of visual receptors within this study area will be residential properties, the assessment also includes other properties, amenity walks, protected views, protected structures and general users within the general environment. Some receptors have been grouped together where it is considered likely that they will experience a similar level and nature of impact. The receptors are numbered in geographical sequence from south of the proposed M7 Osberstown Interchange to the northern end of the proposed R407 Sallins Bypass where it ties-in with the existing R407 Clane Road, north of the town of Sallins.

All receptors that for reasons of aspect, openness, topography or other consideration are likely to experience an appreciable impact, have been assessed. Other receptors (all of which are outside of 250 m of the centreline of main alignment) that are not considered to have an appreciable impact have not been included. While these receptors may have sight of some element of the proposed scheme or its associated traffic, the proposed scheme would comprise a very small element of the receptor’s overall panorama and as a result of the context, distance, aspect, elevation and/or intervening screening, the proposed scheme will not give rise to significant impact from such locations.

Photomontage Views have been prepared from a number of locations along the proposed scheme. In each instance ‘As Existing’, ‘As Proposed: Pre-establishment and ‘As Proposed: Post-establishment’ versions are included.

The extent to which significant additional illumination will be visible in the night-time landscape is also taken into account. The introduction of lighting may impact individual views and also may impact the character of the landscape.

10.2.4 Significance Assessment Criteria

The significance criteria as set out in the EPA Guidelines have been used for the purpose of this assessment, see Table 10.1 Landscape and Visual Impact Assessment Criteria. The significance of landscapes is considered against their designation (national, county, local, *etc.*). Where not designated or otherwise protected, landscapes are considered as being of local significance.

Views from properties are all considered on an equal basis without varying degrees of significance. Views from historic properties and other structures of recorded significance are also considered.

Table 10.1: Landscape and Visual Impact Assessment Criteria

Significance Level	Criteria
Profound	An impact which obliterates sensitive characteristics
Significant	An impact which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Moderate	An impact that alters the character of the environment in a manner that is consistent with existing and emerging trends.
Slight	An impact which causes noticeable changes in the character of the environment without affecting its sensitivities.
Imperceptible	An impact capable of measurement but without noticeable consequences.

As per the EPA Guidelines, impacts are considered as being negative, neutral or positive in nature. Impacts are also considered as being direct, indirect and/or cumulative, as appropriate.

Duration of impact is considered as being Temporary (up to one year), Short-term (from 1 to 7 years), Medium-term (7 to 15 years), Long-term (from 15 to 60 years) or Permanent (in excess of 60 years).

In assessing landscape and visual impact, three basic stages are considered, namely:

- **Construction Stage:** considers the period involving the active construction of the road up to completion of the works and opening of the proposed road development to use.
- **Pre-establishment Stage:** considers the period from the initial operation of the proposed road development where landscaping and mitigation planting is newly established. The impact is assessed in the year the proposed road development would open to traffic.
- **Post-establishment Stage:** considers the impact as assessed in the fifteenth year after opening before which time proposed landscaping will have developed as effective mitigation, as designed. The development of planting to effective visual screening usually requires a period of five to seven years after planting.

10.3 Receiving Environment

10.3.1 Introduction

Naas, the primarily urban settlement in the area, is separated from the small town of Sallins by the existing alignment of the M7 Motorway. The motorway curves around the north and west of Naas, passing a variety of business, industrial and retail parks off Monread Road as well as residential and green field areas, before passing under the R407 Naas to Sallins Regional Road and continuing to the immediate northwest of Millennium Business Park. The motorway also crosses the Naas Branch of the Grand Canal north of the prominent old Leinster Mills complex.

Planting along the M7 Motorway has developed significantly over recent years and as such views both to and from the motorway are increasingly screened by vegetation – particularly when in-leaf. Lands north and northwest of the motorway are generally in agricultural use, with new and old residential properties prominent both located along local roads and within stand-alone sites.

Sallins is a small town located on the Grand Canal over 1 km north of the M7 Motorway. The existing R407 Naas to Clane Road passes through the centre of the town where it bridges over the canal at Sallins Harbour. The Dublin to Cork railway line also runs through Sallins and the River Liffey flows in a south – north direction approximately 1 km west of the town.

The surrounding landscape is typical of lowlands of northeast Kildare being visually flat and sub-divided by strong hedgerows and tree-lines. The landscape is punctuated by small stands of mature trees – often associated with older or historic properties, *e.g.* Osberstown House and Osberstown Hill House or with the corridor of the River Liffey, which add character and diversity.

The River Liffey and the Grand Canal, including the Naas Branch are significant features of the landscape. Though neither is widely visible within the landscape, they offer amenity, biodiversity, landscape and recreational value and include features such as the Leinster Aqueduct and bridges which are of cultural and historic significance.

10.3.2 Landscape Planning Context

The landscaping planning context is considered under the Kildare County Development Plan 2011 – 2017; the Naas Town Development Plan 2011-2017; the Sallins Local Area Plan 2009; the National Inventory of Architectural Heritage (Historic Gardens and Designed Landscapes) and the National Inventory of Outstanding Landscapes of Ireland.

10.3.2.1 Kildare County Development Plan 2011-2017

The Kildare County Development Plan (Plan) states under Section 12.4.1 Country Houses and Demesnes, that:

“Piecemeal development of demesnes can be detrimental to the historical and architectural importance of the demesne and country house.

It is an objective of the Council to prohibit development in gardens or landscapes which are deemed to be an important part of the setting of a protected structure...” (Chapter 12, page 194 of the Plan).

Policy PS3 of the Plan (page 207) requires “*that new works will not obscure views of the principal elevations of protected structures.*” Policy PS16 (page 208) seeks to “*protect and retain important elements of the built heritage including historic gardens, stone walls, landscapes and demesnes, and cartilage features.*”

Policy CH2 of the Plan (page 210) will have “*regard to the historic gardens and designed landscape sites in County Kildare identified in the National Inventory of Architectural Heritage.*” Osberstown House and Osberstown Hill House are listed in the Inventory (see Section 10.3.4 below) and are located close to the alignment of the proposed scheme.

Under Architectural and Archaeological Objectives of the Plan, Objective AAO12 (page 211) states that the local authority will “*co-operate with Waterways Ireland in the management, maintenance and enhancement of the Royal Canal and Grand Canal and associated structures/features.*” It is noted that the proposed scheme crosses the Grand Canal west of Sallins and within 500 m of the Leinster Aqueduct.

Objective AAO16 of the Plan (page 212) requires “*that planning applications take into consideration the impacts of the development on their landscapes and demonstrate that the development proposal has been designed to take account of the heritage resource of the landscape*”.

As well as including a number of structures within Sallins town centre, the Record of Protected Structures for County Kildare (Section 12.10 of the Plan) also records the other sites (see Table 10.2) that are in the vicinity of the proposed scheme.

Table 10.2: Extracts from Record of Protected Structures (Section 12.10 of Kildare County Development Plan)

RPS No.	NIAH Ref.	Structure Name	Townland	Description	6”Map
B14-12		Millicent Church and Lych Gate	Millicent Demesne	Church and Lych Gate	14
B14-13		Castlesize House	Castlesize	House	14
B14-26		Millicent House	Millicent	House	14
B14-27		Millicent Estate Houses	Millicent South	House	14
B14-34		Gate Lodge and entrance gates / walls to east of Castlesize House	Castlesize	Gate Lodge and Entrance gates and walls	14
B14-37	11901404	Thatched House, Millicent South	Millicent South	Thatched House	14
B19-13		Leinster Aqueduct	Waterstown / Osberstown	Aqueduct	19
B19-14		Osberstown House	Osberstown	House	19

Map 13.2 of the Plan (page 255) indicates that the Grand Canal, including the Naas Branch, has designated as a proposed Natural Heritage Area (pNHA Site No. 02104). See Chapter 14 - *Ecology* of this EIS for more detail information on natural heritage.

Section 13.6 of the Plan (page 257) describes nature and biodiversity outside of designated sites and recognises locally important biodiversity areas and the value of woodlands, trees and hedgerows and watercourses *etc.*

It is the policy of the authority (pages 261 & 262 of the Plan) to promote the protection of woodlands, trees and hedgerows (TW1 & TW3); to minimise removal of such features for development and encourage appropriate replanting (TW4); to recognise the importance of townland boundaries (TW6) and to protect trees that are important components of demesne landscapes (TW7). Likewise in relation to inland waterways, rivers, streams, canals floodplains, *etc.* policies (page 262 & 263 of the Plan) will seek to enhance and protect such features (IW1 to IW9 generally) and consider of the effect of lighting proposals on bats (IW3). Similar polices are set out (NHO1 to NHO11, page 263 & 264 of the Plan) in relation to natural heritage and biodiversity.

Landscape, Recreation and Amenities are considered under Chapter 14 of the Plan and also includes the Landscape Character Assessment (LCA) of the County (2004). The landscape of the county has been divided into 15 LCAs.

The wider area around the proposed scheme is set within the large LCA of the 'Northern Lowlands', which typifies the landscape of much of the northeast of the county. While generally of uniform character the Northern Lowland LCA is dissected by the narrow LCA of the 'River Liffey Valley' and the linear LCA of the 'Grand Canal Corridor' – see Plate 10.1.



Plate 10.1: Landscape Character Areas (Extract from Map 14.1 Kildare County Development Plan)

The majority of the proposed scheme is located within the River Liffey Valley LCA, which is described (with the Grand Canal Corridor LCA) in Table 14.1 of the Plan as:

“Water corridors and river valley areas represent potentially vulnerable linear landscape features, as they are often highly distinctive in the context of the general landscape. In many cases landscape sensitivities may be localised or site-specific within this character area. Canal corridors are characterised by generally open views to surrounding pasture and agricultural lands. The canal banks are sometimes wooded although large sections blend into open pasturelands.” (page 269 of the Plan).

Under Landscape Sensitivity (Section 14.2.1 of the Plan), ratings were applied to the LCAs as *“a measure on the ability of the landscape to accommodate change or intervention without suffering unacceptable effects to its character and values.”*

Map 14.2 of the Plan indicates that ‘River Valleys and Canal Corridors’ are considered to be of High Sensitivity, while the wider ‘Northern Lowland – Naas and Environs’ is considered to be of Low Sensitivity. Nevertheless, the Plan (at Section 14.4.2) acknowledges that while landscape sensitivity is an important consideration, each development and location needs to be assessed in its own right stating that:

“In order to determine the likely perceived impact of a particular development on the landscape, the potential impact of the development must be viewed in light of the sensitivity of the area. However, all developments are unique and at micro / local level landscapes vary in terms of their ability to absorb development and each site should be assessed on its individual merits.” (page 270 of the Plan).

The sensitivity of the landscape of the River Liffey Valley and the Grand Canal Corridor is further reinforced in that they are identified as being Areas of High Amenity (Section 14.5 of the Plan) and also the location for a number of protected views (Section 14.6.1 of the Plan). That said, the council also recognises:

“...the need to protect the character of the county by protecting views and scenic routes. However, it is acknowledged that in certain circumstances, some development may be necessary. In this regard, appropriate location, siting and design criteria should strictly apply. All proposals should be assessed taking into account the overall character of the scenic route and the character of the landscapes through which the route passes.” (Section 14.6, page 270 of the Plan).

Table 14.2 (and Map 14.3) of the Plan identifies the Scenic Routes in County Kildare and selected views close to the alignment of the proposed scheme are included in Table 10.3.

Table 10.3: Extracts from Tables 14.3 & 14.6 Protected Views to and from the Grand Canal and the River Liffey (Section 14.6 & Map 14.3 of Kildare County Development Plan)

View Reference	Bridge Townland/Location
RL 6	Millicent Bridge, Castlesize
GC 5	Digby Bridge, Aghpaudeen

Note: While not expressly noted in the table, as a Protected Structure, views to and from the Leinster Aqueduct are similarly considered.

General policies of the Council for the consideration, protection and enhancement of the landscape are set out under Policies LA1 to LA6 (page 281 of the Plan). Similar landscape objectives (LO1 to LO10) are set out under Section 14.10 of the Plan.

Policies that focus on the control of development along, and protection of, Water Corridors (*e.g.* Liffey and Grand Canal) are set out at Policies WC1 to WC7 (page 282 of the Plan). Section 14.9 of the Plan details policies in relation to Scenic Views and policies WV1 to WV4 under sub-section 14.9.2 considers Water Course and Canal Waterway Views, as set in Table 10.4.

Table 10.4: Policies in relation to Water Course and Canal Corridor Views (Section 14.9.2 of Kildare County Development Plan)

Policy	Description
WV1:	To curtail any further development along the canal and river banks that could cumulatively affect the quality of a designated view.
WV2:	To preserve and enhance the scenic amenity of the river valleys and canal corridors and the quality of the vistas available from designated views.
WV3:	To restrict development on floodplains of the rivers in the county.
WV4:	To prevent inappropriate development along canal and river banks and to preserve these areas in the interests of biodiversity, built and natural heritage and amenity by creating or maintaining buffer zones, where development should be avoided.

Sections 14.11, 14.12 and 14.13 of the Plan relate to Recreation and Amenities and again highlight the existing and potential value of waterways and canals as part of the network of biodiversity, green infrastructure and open space in the county. These features also allow for activities such as walking, cycling, fishing, boating, etc. Objective RAO11 of the Plan seeks:

“To preserve the pedestrian link between the River Liffey and the Grand Canal at the Leinster Aqueduct and to explore making the existing underpass fully accessible as recommended in the report Towards a Liffey Valley Park Strategy.” (page 292 of the Plan).

10.3.2.2 Naas Town Development Plan 2011-2017

The indicative location of and objective of the proposed M7 Osberstown Interchange, together with the proposed short link road (Distributor Link Road) south to the existing local and regional road all lie within the boundary of the area of the Naas Town Development Plan and are illustrated on Map 14.1 Land Use Zoning Objectives of the Plan.

The lands south of the M7 Motorway are zoned “*Q: Enterprise & Employment*”, while the lands immediately north of the motorway (at Osberstown) are zoned “*I: Agricultural*” on Map 14.1 Land Use Zoning Objectives of the Naas Town Development Plan.

There are no protected structures identified within the context of the proposed scheme in the Naas Town Development Plan, (Map 11.1b of the Plan).

There are no views or prospects within the context of the proposed scheme identified to be preserved in the Naas Town Development Plan, (Map 11.4 of the Plan).

10.3.2.3 Sallins Local Area Plan (LAP) 2009

The current local area plan for Sallins, which dates back to 2009, is currently under review and a Background Issues Paper for the new LAP was published by Kildare County Council in February 2013. The Paper notes the presence of an objective for a bypass of Sallins in the existing LAP, and also that the Grand Canal is a designated proposed Natural Heritage Area (pNHA).

In the current local area plan for Sallins, the majority of the landtake for the proposed scheme (excluding the area for the M7 Osberstown Interchange) falls within the western limit of the LAP Boundary.

An indicative alignment for the objective to develop an R407 Bypass of Sallins is shown to the west of the town on Land Use Zoning Objectives Map of the LAP.

The vast majority of the lands along the proposed alignment of the R407 Sallins Bypass are zoned “I: Agriculture”. Lands located along the northern side of the Grand Canal and to either side of the River Liffey and extending east towards Sallins are zoned “F: Open Space and Amenity”. Lands east of the proposed alignment and between the Grand Canal and the River Liffey are zoned “H: Office/Light Industry & Warehousing”.

The LAP recognises the diversity of natural and semi-natural habitats within the Sallins environs, including river, canal and grassland. The Grand Canal is a “designated Natural Heritage Area (No. 02104)”, (Section 6.1, page 15 of LAP).

There are no views or prospects within the context of the proposed scheme identified for Protection in the LAP, (MAP 1, page 17 of the LAP).

There are no items of built heritage identified within the context of the proposed scheme in the LAP, (MAP 2, page 19 of the LAP).

In discussing open space the LAP states, that:

“The Grand Canal and the River Liffey are major assets for the town and this plan will ensure their protection and enhancement with the appropriate land use zoning along these water corridors.” (Section 7.4, page 19 of LAP).

Objective TR10 of the LAP states that:

“To require consultation with Waterways Ireland in relation to any works planned for bridges, roads, cycle paths, footpaths or surface drainage works in close proximity to the canal”. (Section 6.1, page 31 of the LAP).

Under Amenity and Recreation, Chapter 7, (page 35) the LAP sets an objective (AR1) to “develop the riverside and canal-side” to include, *inter alia*, “linear park(s)” and “a high-quality well-lit cyclist and pedestrian route”. Objective AR7 states that “any development along the Liffey Valley will be required to take cognisance of the Liffey Valley Strategy ‘Towards a Liffey Valley Park’”, and that “large planning applications ... should have a visual impact assessment.”

There are no trees or woodlands within the landtake of the proposed scheme identified for Preservation in the LAP. Trees along Osberstown Road to the east of the proposed scheme are identified for protection (Objective NH5, page 39 & Map 1 of LAP). In terms of views and prospects, it is an objective of the LAP:

“To preserve views and prospects to and from the River Liffey and Grand Canal and to ensure that further development along either of the water systems does not affect the quality of either the scenic viewpoint or the waterways amenity. New development adjacent to the riverside amenity area shall be restricted where such development could present a negative visual effect or disrupt the vistas available.” (Section 10.2, page 39 of the LAP).

10.3.2.4 Features of Cultural Heritage Interest (Landscape)

The National Inventory of Architectural Heritage (NIAH) records properties under its listings for Historic Gardens and Designed Landscapes. Based on a desktop analysis, the properties listed are given a historic feature richness index (FRI) rating ranging between 1 (lowest value) to 16 (highest value) depending on the quality of the extant features and the state of their preservation. Where virtually no recognisable features remain, properties are considered as having ‘0’ historic feature richness. Where the FRI rating is 5 or above, landscape elements retained on the ground continue to demonstrate the original landscape design intent and structure. Properties with a low rating (i.e. FRI of less than 5) will have experienced significant loss and/or alteration of their original layout.

Nevertheless, even where a lower rating has been recorded, individual features may continue to have a landscape significance, e.g. peripheral mature woodland, avenues, parkland trees etc. A more detailed consideration of cultural and architectural features is provided in Chapter 8 - *Archaeology and Cultural Heritage* and Chapter 9 - *Architectural Heritage* of the EIS.

The NIAH records that two properties close to the proposed scheme, i.e. Osberstown House and Osberstown Hill are recorded in the Inventory for their Historic Gardens and Designed Landscapes. Details of this desktop analysis are provided in Table 10.2.

Table 10.2: NIAH: Historic Gardens and Designed Landscapes

	Osberstown House	Osberstown Hill
Site Status	Main features substantially present - peripheral features unrecognisable	Main features unrecognisable - peripheral features visible
Initial Overview		
Site Footprint Visible	Yes	Yes
Boundary Defined	Yes	Yes
Significant Development	No	No
Feature Richness Index	4	2
Architectural Features		
Principal Building	Yes	Yes

	Osberstown House	Osberstown Hill
Garden Structures	No	No
Gateways and Gatehouses	No	No
Buildings of Indeterminate Purpose	No	No
Movement Within Site		
Entrances have changed	No	Yes
Drive position has changed	No	Yes
Avenues	No	No
Woodland Drives or Walks	No	No
Landscape Features		
Woodlands	Yes	No
Woodland Footprint Changed	No	No
Orchards	Yes	No
Parkland	Yes	Yes
Formal Garden	Yes	No
Kitchen / Walled and Productive Gardens	No	No
Vistas	No	No
Allees	No	No
Natural and Naturalistic Water Features	No	No
Artificial Water Features	No	No
Other Features	No	No

The two properties listed in Table 10.2 above, and especially Osberstown House (which is also recorded as a Protected Structure, Ref.: B19-14 Record of Protected Structure of County Kildare), lie relatively close to the proposed road development. Even where such properties are not impacted in terms of landtake, impacts may arise in terms of their setting, associated features, or on designed views etc. Any impact on the architectural and historic setting of the properties is considered in Chapter 8: *Archaeology & Cultural Heritage* and Chapter 9: *Architectural Heritage* of the EIS respectively.

In addition to the properties listed in Table 10.2, two further nearby demesnes / estate landscapes, i.e. Oldtown Demesne (FRI = 5) and Millicent House (FRI = 5) are sufficiently distant and screened from the proposed scheme so as not to be impacted by the proposed scheme.

10.3.2.5 Inventory of Outstanding Landscapes in Ireland

The *Inventory of Outstanding Landscapes in Ireland* (Inventory) prepared by An Foras Forbartha in 1977 remains the only National Assessment of landscape quality published for Ireland. Many of the areas highlighted in the Inventory were subsequently given protection within the statutory County Development Plans and these plans in many instances designate additional areas (as noted under Sections 10.3.2.1, 10.3.2.2 & 10.3.2.3 above). No area identified in the Inventory lies within the context of the proposed scheme.

10.3.3 Summary of Receiving Landscape, Significance and Sensitivity

The proposed scheme is located within the wider context of a landscape that is typical of northeast County Kildare and one that is not especially significant or sensitive. This reduced significance and sensitivity is reinforced in the area of the proposed interchange by the presence of the existing M7 Motorway and the emerging business park land uses to the south thereof.

Nevertheless, the local landscape along much of the proposed R407 Sallins Bypass is of greater significance and sensitivity because of the presence of features such as:

- The River Liffey corridor.
- The Grand Canal.
- Views from Liffey and Canal Bridges.
- Protected (and Historic) Structures, including Osberstown House and Leinster Aqueduct.
- Residential properties generally.
- Amenity and recreation facilities, (*i.e.* Grand Canal, River Liffey and Open Space at Castlesize Drive).

Despite the presence of such features, views to and from this relatively flat, pastoral landscape, are often strongly confined by tree-lines, hedgerows and other plantings.

10.4 Predicted Impacts on Landscape and Visual

10.4.1 General Introduction

The proposed road development crosses a generally rural landscape where residential development is varyingly dispersed and clustered, particularly along Osberstown Road. Development is more densely clustered in a residential estate-style manner along the western side of Sallins and where the proposed link road ties in at Millbank.

In this landscape, construction associated with a major road, such as that proposed, will inevitably give rise to significant negative impacts in terms of disturbance to both the landscape and visual environment. These landscape and visual impacts will be most pronounced during the construction and initial operation stages, after which landscape mitigation will be increasingly effective in reducing such impacts.

The main elements that have potential for significant landscape and visual impact during the construction stage are:

- Tree, hedgerow and vegetation removal.
- General landscape disturbance including disturbance to existing property boundaries.
- General construction activity, site compounds, construction traffic.
- Construction of earthworks, including embankments and cuttings.

- Construction of major junctions, elevated structures such as bridges.
- Local re-alignments of existing regional and local roads.

The main elements that have potential for significant landscape and visual impact during the operational stage are:

- The presence of significant embankments and to a lesser degree deep cuttings.
- The presence of elevated structures such as junctions and bridges.
- Disturbance to existing landscape patterns, new landscape areas.
- Traffic.
- Illumination.
- Noise Barriers.

In addition, there are elements such as signage, roadside barriers, culverts, attenuation ponds, fencing *etc.* However, given their low elevation and low off-road visibility these features will have little or no landscape or visual impact and the presence of similar features is a common and accepted aspect of all road developments.

10.4.2 Landscape Impacts

Landscape impacts are most pronounced where the scheme crosses distinctive and/or historic landscapes and/or where the route impacts on particular landscape features of note. Therefore, while much of the scheme has typical landscape impact, particular sections of the proposed scheme give rise to localised moderate impact where it passes to the fore of the historic landscape setting of Osberstown House and localised significant impact where it crosses the more sensitive landscape of the River Liffey Corridor and the Grand Canal.

Landscape Impacts are set out in Table 10.3 on a section by section basis.

Table 10.3: Landscape Impacts

Location and Description	Construction Stage Impact	Pre-establishment Impact	Post-establishment Impact	Mitigation Measures
M7 Osberstown Interchange				
<p>New grade-separated M7 Osberstown Interchange, including Distributor Link Road south to L3012 Western Distributor Road (Millennium Park).</p> <p>Existing landscape heavily influenced by existing M7 and business park uses.</p>	<p>Loss of up to 4 km of existing semi-mature M7 roadside plantings and 250 m of plantings within Business Park. Major earthworks, construction of new (replacement) bridge structure.</p> <p>Elevated on/off ramp embankments.</p> <p>Moderate negative short-term impact</p>	<p>New grade-separated interchange with new landscaping.</p> <p>New elevated bridge structure.</p> <p>Illumination at and approaching roundabouts</p> <p>New traffic arrangement / movement</p> <p>Slight negative short-term impact</p>	<p>Established interchange with developed landscape proposals</p> <p>Slight neutral residual impact</p>	<p>Minimise loss of existing M7 roadside plantings – particularly where more mature to east.</p> <p>Reinstate strong planting onto outer aspect of interchange (on/off ramp) side slopes.</p> <p>Minimise loss of existing landscaping within Business Park – reinstate to tie-in and reconnect as appropriate.</p> <p>Minimise extent of lighting and use light-spill cut-off fittings.</p>
R407 Sallins Bypass Ch. 0+100 to Ch. 1+255 (Dublin to Cork Railway Line)				
<p>New curving alignment passing through outer remnant demesne landscape associated with Osberstown House.</p> <p>Bypass alignment generally at or near existing grade moving to shallow cutting to underpass railway line.</p> <p>Osberstown Road elevated onto high embankment to bridge over proposed bypass and to tie back into existing road network.</p>	<p>Mainline loss of up circa 140 m of existing hedgerow / tree-line from 3 existing field boundaries and either side of Osberstown Road.</p> <p>Loss of 640 m of roadside hedgerow along Osberstown Road.</p> <p>Major earthworks, construction of new carriageway and in bridging of Osberstown Road over proposed Sallins Bypass.</p> <p>Landscape already impacted by construction of existing M7 Motorway.</p> <p>Moderate negative short-term impact</p>	<p>New Bypass carriageway at or near grade.</p> <p>Elevated alignment for Osberstown Road and bridge</p> <p>No illumination proposed</p> <p>New traffic arrangement / movement</p> <p>Moderate negative short-term impact</p>	<p>Established carriageway alignment with developed landscape proposals</p> <p>Slight neutral residual impact</p>	<p>Minimise loss of plantings in existing hedgerows / treelines.</p> <p>Protect and retain mature oak tree north of proposed bypass at Ch. 0+540.</p> <p>Provide ‘false-cutting’ mounded effect on Osberstown House side of bypass carriageway (Ch. 0+540 to Ch. 0+900).</p> <p>Provide strong landscaping along bypass alignment from Ch. 0+100 to Ch. 0+540. and from Ch. 0+900 to Ch. 1+255</p>

Location and Description	Construction Stage Impact	Pre-establishment Impact	Post-establishment Impact	Mitigation Measures
R407 Sallins Bypass Ch. 1+255 to Ch. 1+700 (Grand Canal)				
New alignment rising to bridge over tree and hedgerow lined narrow corridor of Grand Canal. Bypass alignment circa 350 m east of Leinster Aqueduct.	Loss of up circa 60 m of existing hedgerow / tree-line from tree-lines/hedgerows either side of canal. Major elevated earthworks approaching new bridge. New elevated bridge over narrow canal corridor. Significant negative short-term impact	New elevated bridge with min 5.3 m clearance over canal. No illumination proposed New traffic movement over canal Significant negative short-term impact	Established carriageway alignment with developed landscape proposals. Bridging structure remains visible along short section of canal. Moderate negative residual impact	Minimise loss of plantings in existing hedgerows / tree-lines and protect where possible. Long bridging setback from canal-side pathways/roads. Provide strong landscaping along elevated embankments, particular approaching bridge so as to tie back to existing field network.
R407 Sallins Bypass Ch. 1+700 to Ch. 3+440 (River Liffey Crossings)				
New alignment with embankments rising to bridge over River Liffey in two rural and somewhat isolated locations. Bypass alignment circa 550 m southeast of protected view from Millicent Bridge.	Loss of up circa 530 m of existing hedgerow / tree-line (with only small length of riverside vegetation) from tree-lines/hedgerows. Major elevated earthworks approaching new bridges. Two new elevated bridges over river corridor. Significant negative short-term impact	Two new elevated bridges over river. Long sections of elevated embankment. Proposed illumination limited to proposed Sallins Link Road Roundabout. New traffic movement through and over river corridor. Increased awareness of presence of road/traffic in rural setting. Significant negative short-term impact	Established carriageway alignment with developed landscape proposals. Elevated embankments and bridging structures remain visible along short section of river. Continued awareness of presence of road/traffic in rural setting. Significant - Moderate negative residual impact	Minimise loss of plantings in existing hedgerows / tree-lines and protect where possible. Long bridging of river channels to allow for continuity of river corridor landscape. Protect and retain wherever possible all river edge planting/landscape. Provide strong landscaping along elevated embankments, particular approaching bridges so as to tie back to existing river corridor network.
R407 Sallins Bypass Ch. 3+440 to Ch. 3+670 (including works to existing R407)				
Tie-in alignment to existing R407 Clane Road at or near existing grade.	Loss of up circa 35 m of field hedgerow.	New roundabout junction on R407.	Established carriageway alignment with developed landscape proposals.	Minimise impact on wall and tree-line on west side of existing R407 – move alignment on existing R407 east of appropriate.

Location and Description	Construction Stage Impact	Pre-establishment Impact	Post-establishment Impact	Mitigation Measures
<p>New roundabout junction with existing R407 Clane Road.</p>	<p>Loss of up to 500 m of existing roadside boundary, including part with stone wall and tree-lined. New entrance arrangement to Deerpark/Easkey House. Moderate negative short-term impact</p>	<p>Proposed illumination extents out from Sallins to new roundabout. New entrance to Deerpark/Easkey House. Slight - Moderate negative short-term impact</p>	<p>Roundabout junction on R407. Imperceptible residual impact</p>	<p>Provide strong landscaping along re-arranged alignment of existing R407.</p>
<p>Sallins Link Road Ch. 0+000 to Ch. 1+280</p>				
<p>New link road off elevated roundabout on proposed R407 Sallins Bypass. Majority of alignment on elevated embankment. Link road ties into existing urban fabric of Sallins at Millbrook.</p>	<p>Loss of up circa 300 m of field hedgerow / tree-line. Impact on small open space at Castlesize Drive. Moderate negative short-term impact</p>	<p>Proposed illumination extents out from Sallins to new roundabout (Sallins Link Road Roundabout). Loss of end of open space at Castlesize Drive Slight negative short-term impact</p>	<p>Established carriageway alignment with developed landscape proposals. Integrated into emerging urban fabric on west side of Sallins. Slight - Imperceptible residual impact</p>	<p>Avoid / minimise impact small open space at Castlesize Drive. Provide strong landscaping along alignment – modified as appropriate to urban / rural setting.</p>

10.4.3 Visual Impacts - Overview

Visual impacts vary greatly along the proposed scheme. For the most part the proposed road alignment gives rise to little or no visual impact – even during the initial construction stage. Nevertheless, by reason of elevation, openness, proximity to property, or visual context, other sections of the proposed scheme will give rise to levels of significant visual impact.

A detailed analysis of the construction and operation stage visual impacts are provided in Table 10.4 (see **Figures 10.1a to 10.1d, V3**). This assessment takes account of visual impacts during construction as well as at the pre-establishment and post-establishment stages of operation. The following provides an overview of the visual impacts of the proposed road development on a section by section basis that takes account of particular visual corridors and/or viewsheds. Properties/visual receptors are referenced and identified on **Figures 10.1a to 10.1d, V3**.

Photomontage view locations are shown in **Figure 10.2 V3**.

10.4.3.1 M7 Osberstown Interchange.

The proposed grade-separated M7 Osberstown Interchange, including Distributor Link Road to L3012 Western Distributor Road (Millennium Park).

Residential properties in the vicinity of the proposed interchange (including Osberstown House) are generally well setback (over 250m) and well-screened from the proposed structure. Nevertheless, works on the construction of the elevated ramps and on and off-ramp tie-ins to the existing motorway carriageway will be visible from properties to the northwest/west (Properties R3 & R4). Properties near Leinster Mills along Canal Bank Road (Properties R2) are also well-screened and sufficiently distant so as not to be impacted. While the interchange is entirely screened from Osberstown House (Property R8) by mature planting, the structure and associated traffic will be openly visible as a significant feature from the external walk around the east side of the walled garden. Until roadside planting matures, traffic using the interchange will also be visible in views south/southwest over the walled garden – mainly during winter months.

A Photomontage View (**Figure 10.3a**) towards the interchange has been provided from the field immediately adjoining the path outside of the garden wall. The view is presented in ‘As Existing’ (**Figure 10.3a**), ‘As Proposed: Pre-establishment’ (**Figure 10.3b**), and ‘As Proposed: Post-establishment’ (**Figure 10.3c**), versions.

The construction of the interchange will be most visually prominent from Millennium Park, from the existing Western Distributor Road and most especially from the M7 Motorway. Nevertheless, visual impact from these locations will not be significant. The predicted impacts in this section are as follows:

- Construction Stage Visual Impact: Moderate Short-term Negative
- Pre-establishment Stage Visual Impact: Moderate Short-term Negative
- Post-establishment Stage Visual Impact: Slight Neutral Residual Impact

10.4.3.2 R407 Sallins Bypass: M7 Interchange to Osberstown Local Road. Ch. 0+100 to Ch. 1+100.

The proposed R407 Sallins Bypass alignment curves through open pastureland to southeast of Osberstown House, crossing the Osberstown Local Road, which is bridged over the bypass.

Osberstown House (Property R8).

Imposing period house (and Protected Structure) with walled gardens and designed landscape setting. ‘Garden elevation’ fronts east/southeast towards bypass route. Ground level view is partly obscured by feature wall at end of garden however, view beyond is open and directed by parkland planting towards a background view of the Dublin / Wicklow Mountains. This existing view is severed by the M7 Motorway which is elevated over the Canal Road circa 600m east/southeast from the house. While previously the motorway was openly visible from the house, it is being increasingly screened by maturing roadside plantings.

The alignment of the proposed bypass passes to the south of a significant hedgerow / tree-belt that provides for good visual screening from Ch. 0+250 to Ch. 0+525. The land remaining between the proposed bypass and the tree-belt is to be planted to woodland which will further improve screening.

From Ch. 0+525 to Ch. 0+900 the proposed scheme crosses open agricultural parkland in the centre of the view, circa 290 m from the house. Construction of the route will be particularly prominent – as will traffic from upper floors of the property. Mitigation of visual impact (see Section 10.5 below) includes for provision of a minimum 2.0 m high berm along the house side of the road. The berm is to have a steep (1 in 2) roadside face with a shallow (circa 1 in 5) house-side face – giving the effect of the road being in a ‘false – cutting’ with significant screening, see **Figure 10.1a, V3** and Landscape Sections 10.1, 10.2 and 10.3 on **Figure 10.1e, V3**. Semi-mature parkland trees are to be provided along the shallow slope of the berm to reflect the existing framed view from the house and the parkland nature of the pastureland. Nevertheless upper aspects of traffic will be visible in views from the houses – most especially from upper floors.

Three Photomontage Views (**Figures 10.4, 10.5 and 10.6**) from Osberstown House towards the bypass alignment have been provided from garden ground level and from the upper floor balcony (2 views: wide angle and 50 mm). No photomontage view was prepared from the M7 Motorway as the property is effectively screened by roadside planting. The garden ground level view is presented in ‘As Existing’, (**Figure 10.4a**), ‘As Proposed: Pre-establishment’ (**Figure 10.4b**) and ‘As Proposed: Post-establishment’ (**Figure 10.4c**) versions. The two balcony level views are presented in ‘As Existing’, (**Figures 10.5a and 10.6a**), ‘As Proposed: No Mitigation’ (**Figures 10.5b and 10.6b**); ‘As Proposed: Pre-establishment’ (**Figures 10.5c and 10.6c**) and ‘As Proposed: Post-establishment’ (**Figures 10.5d and 10.6d**) versions. The without and with mitigation versions are provided to illustrate the landscape and screening effect of the proposed ‘false-cutting’ berm. The predicted impacts in this section are as follows:

- Construction Stage Visual Impact: Significant Short-term Negative.
- Pre-establishment Stage Visual Impact: Significant Short-term Negative.

- Post-establishment Stage Visual Impact: Moderate Negative Residual Impact.

Osberstown Local Road (Properties R10 & R15)

Property R10 lies immediately west of the proposed scheme while Property R15 lies immediately alongside the eastern tie-in of the Osberstown Local Road Realignment.

Property R10 is notably exposed to the works, particularly to the north where the local road is realigned over the proposed bypass, necessitating relocation of the existing entrance and drive to the property as well as the loss of the garden boundary. While protection during construction, re-instatement of features and screen planting are proposed, significant/profound visual impact will still arise from this property.

The existing roadside boundary to Property R15 is to be protected and retained. Nevertheless, significant works are proposed in the vicinity of the property and headlight / noise barrier and screen planting will be required post-construction. The predicted impacts in this section are as follows:

- Construction Stage Visual Impact: Profound/Significant Negative. Short-term
- Pre-establishment Stage Visual Impact: Profound/Significant Negative. Short-term
- Post-establishment Stage Visual Impact: Significant/Slight Residual Impact. Negative

10.4.3.3 R407 Sallins Bypass: Osberstown Local Road north to Canal (Ch. 1+100 to Ch. 1+550)

The proposed bypass alignment runs north through relatively open landscape passing under (in cutting) the Dublin to Cork railway line before rising onto an embankment approaching the Grand Canal.

Three properties (Properties R16, R17 & R18) lie south of the railway and east of the proposed scheme. Property R16 is to be acquired in the construction of the proposed scheme. Properties R17 and R18 are set back from the proposed scheme however, the existing low roadside hedgerow will allow for relatively open viewing of the works. Post construction the intervening land is to be planted to woodland, which will provide effective screening. The predicted impacts in this section are as follows:

- Construction Stage Visual Impact: Significant Short-term Negative
- Pre-establishment Stage Visual Impact: Significant / Moderate Short-term Negative
- Post-establishment Stage Visual Impact: Slight Negative Residual Impact

10.4.3.4 R407 Sallins Bypass: Grand Canal Ch. 1+550 to Ch. 1+850

The proposed bypass alignment bridges over a tree and hedgerow lined corridor of the Grand Canal. The proposed scheme is circa 350 m east of Leinster Aqueduct (Protected Structure).

Grand Canal (LR2), Leinster Aqueduct (LR3) and Residential Properties R21, R22, R23 & R24

The landscape is flat and visually confined. Nevertheless, 5 canal side residential properties are located close to either side of the bridging location. Three properties are located between 50 to 150 m west of the bridging location (R22, R23, R24), with the garden of the nearest property (R22) immediately along the toe of road embankment. Two further properties located north of the canal (R25 & R26) are less than 150 m east of the bridging location and have more open views along the canal and the bridging site.

Despite the presence of existing vegetation, all 5 properties will experience visual impact both during construction and in operation, when high-level traffic will be particularly impacting.

Two Photomontage Views (**Figures 10.7** and **10.9**) have been prepared from either side of the canal bridging location. The views are presented in ‘As Existing’ (**Figures 10.7a** and **10.9a**), ‘As Proposed: Pre-establishment’ (**Figures 10.7b** and **10.9b**) and ‘As Proposed: Post-establishment’ (**Figures 10.7c** and **10.9c**) versions.

The narrow corridor of the Grand Canal, Canal Road and towpath (LR2) allow for focused linear views along the waterway. In this context the proposed high level bridging will be prominent and will give rise to significant visual impact along a short stretch (less than 500 m) of the canal for boating, cycling and walking users *etc.* At circa 400 m distant the proposed road development will not give rise to significant visual impact from the Leinster Aqueduct (LR3 – a Protected Structure), which is partly screened by the curving alignment of the canal. However, the elevated section road to the north of the canal, including night-time illumination, will be visible to the northeast from the Aqueduct. See Photomontage View **Figure 10.8**. The view is presented in ‘(As Existing **Figure 10.8a**), ‘As Proposed: Pre-establishment’ (**Figure 10.8b**) and ‘As Proposed: Post-establishment’ (**Figure 10.8c**) versions. The predicted impacts in this section are as follows:

- Construction Stage Visual Impact: Profound/Significant Short-term Negative
- Pre-establishment Stage Visual Impact: Profound/Significant Short-term Negative
- Post-establishment Stage Visual Impact: Significant/Moderate Negative Residual Impact

10.4.3.5 R407 Sallins Bypass: River Liffey (Ch. 1+850 to 3+440)

This is where the proposed bypass alignment is on embankments, rising to bridge over River Liffey in two rural and somewhat isolated locations (Ch. 1+980 & Ch. 3+050). At the nearest point the alignment of the proposed bypass alignment runs circa 550 m southeast of protected view from Millicent Bridge over river.

While not especially visible away from the immediate river corridor, the embankments and bridges – and elevated traffic – will interrupt the visually attractive rural and curving alignment of the river corridor.

Views from Millicent Bridge, Millicent House and Castlesize House are adequately screened by intervening vegetation. The predicted impacts in this section are as follows:

- Construction Stage Visual Impact: Significant Short-term Negative
- Pre-establishment Stage Visual Impact: Significant Short-term Negative
- Post-establishment Stage Visual Impact: Moderate/Slight Negative Residual Impact

10.4.3.6 R407 Sallins Bypass: Existing R407 Clane Road. (Ch. 3+440 to 3+670 and tie-in)

The proposed scheme northern tie-in, to existing R407 Clane Road is at or near existing grade. The new roundabout junction with the existing R407 Clane Road has some impact on an attractive stone wall and mature trees. Open setting but views dominated by existing R407 Clane Road. Entrance and drive to Residential Property R35 to be relocated with significant disturbance. The predicted impacts in this section are as follows:

- Construction Stage Visual Impact: Significant / Slight Short-term Negative
- Pre-establishment Stage Visual Impact: Moderate / Slight Short-term Negative
- Post-establishment Stage Visual Impact: Slight / Imperceptible Neutral Residual Impact

10.4.3.7 Sallins Link Road: Ch. 0+000 to 1+280 (from Proposed R407 Sallins Bypass to Sallins)

This is the proposed link road off the elevated roundabout on proposed R407 Sallins Bypass. The majority of the alignment is on embankments of 2 m elevation. This comprises a section of generally low-visibility alignment that ties-in to existing urban fabric of Sallins at Millbank. Significant visual impact is limited to construction stage and to impact on open space/properties at Castlesize Drive. The predicted impacts in this section are as follows:

- Construction Stage Visual Impact: Overall: Moderate Short-term Negative
- Construction Stage Visual Impact: Castlesize Drive: Significant Short-term Negative

- Pre-establishment Stage Visual Impact: Overall: Slight Short-term Negative
- Pre-establishment Stage Visual Impact: Castlesize Drive: Significant Short-term Negative
- Post-establishment Stage Visual Impact: Overall: Imperceptible Neutral Residual Impact
- Post-establishment Stage Visual Impact: Castlesize Drive: Imperceptible Neutral Residual Impact

10.4.4 Visual Impacts - Assessment

A detailed analysis of construction and operation stage visual impacts is provided in Table 10.4 (see also **Figures 10.1a to 10.1d, V3**). This assessment takes account of visual impacts during construction as well as at the pre-establishment and post-establishment stages of operation of the proposed scheme.

Table 10.4 Visual Impact Assessment (see Figures 10.1a to 10.1d, V3)*R = Residential & other Property Receptors**LR = Landscape / Amenity Receptors**- = Negative impact + = Positive impact*

Ref No.	Property, Distance to Proposed Road and Chainage	Construction Stage Impact	Pre-establish Stage Impact	Post-establish Stage Impact
R1	Millennium Park and associated business park and commercial lands. At southern tie-in of proposed scheme, Ch. 0+000.	Slight -	Imperceptible	Imperceptible
R2	Residential and other properties, including Leinster Mills, located along Naas spur of Grand Canal south of M7	Slight - / Imperceptible	Slight - / Imperceptible	Imperceptible
R3	Residential Property. Over 100 m from off-ramp tie-in on existing M7. Ch. 0+050 (M7 Osberstown Interchange eastbound diverge slip)	Moderate -	Slight - / Moderate -	Imperceptible
R4	Residential Property. Circa 250 m from end of off-ramp tie-in on existing M7. Ch. 0+000 (M7 Osberstown Interchange eastbound diverge)	Slight - / Imperceptible	Slight - / Imperceptible	Imperceptible
R5	Two residential properties fronting Osberstown Local Road. Circa 400 m from M7 Osberstown Interchange. Ch. 0+050 (R407 Sallins Bypass).	Imperceptible	Slight -	Imperceptible
R6	Two residential properties fronting Osberstown Local Road. Circa 275 m from M7 Osberstown Interchange. Ch. 0+050 (R407 Sallins Bypass).	Imperceptible	Slight -	Imperceptible
R7	Residential property fronting Osberstown Local Road. Circa 280 m from R407 Sallins Bypass. Ch. 0+150 (R407 Sallins Bypass).	Imperceptible	Imperceptible	Imperceptible
R8	Osberstown House. Circa 200 m from M7 Osberstown Interchange. Ch. 0+350 to 0+900 (R407 Sallins Bypass).	Significant -	Significant -	Moderate -
R9	Residential property fronting Osberstown Local Road. Circa 300 m from R407 Sallins Bypass. Ch. 0+800 (R407 Sallins Bypass).	Slight -	Slight -	Imperceptible
R10	Residential property fronting Osberstown Local Road. Located immediately alongside R407 Sallins Bypass and fronting realigned local road. Ch. 0+900 to 1+050 (R407 Sallins Bypass)	Profound -	Profound -	Significant -

Ref No.	Property, Distance to Proposed Road and Chainage	Construction Stage Impact	Pre-establish Stage Impact	Post-establish Stage Impact
R11	Residential property fronting Canal Road. Circa 120 m from R407 Sallins Bypass. Ch. 0+750.	Moderate -	Moderate -	Imperceptible
R12	Two residential properties fronting Canal Road. Circa 250 m from R407 Sallins Bypass. Ch. 0+850.	Imperceptible	Imperceptible	Imperceptible
R13	Residential properties fronting Canal Road. Circa 100 m from Osberstown Local Road tie-in and circa 200 m from R407 Sallins Bypass. Ch. 0+850.	Slight -	Imperceptible	Imperceptible
R14	Oldbridge residential estate. Circa 200 m from local road tie-in and circa 300 m from R407 Sallins Bypass. Ch. 0+900.	Imperceptible	Imperceptible	Imperceptible
R15	Residential property closely fronting Osberstown Local Road. Circa 100 m from R407 Sallins Bypass and immediately alongside Osberstown Local road tie-in. Ch. 0+950 (Sallins Bypass)	Significant -	Significant -	Slight -
R16	Residential property to be acquired. Ch. 1+150.	Acquired	Acquired	Acquired
R17 R18	Two residential properties fronting Local Canal Road. Less than 100 m from R407 Sallins Bypass – Ch. 1+200.	Significant	Significant / Moderate	Slight -
R19	Osberstown Hill House. 125 m from R407 Sallins Bypass – Ch. 1+200.	Moderate -	Moderate -	Slight -
R20	New residential house – 270 m from R407 Sallins Bypass – Ch. 1+500.	Moderate -	Moderate -	Slight -
R21	Two residential properties, including old canal side cottage. 400m from proposed bridge over canal – Ch. 1+600.	Slight -	Slight -	Imperceptible
R22	Residential property fronting Canal Road and canal. 150 m from proposed bridge over canal – Ch. 1+600.	Significant -	Significant -	Moderate -
R23	Residential cottage fronting Canal Road and canal. 120 m from proposed bridge over canal – Ch. 1+600.	Significant -	Significant -	Moderate -
R24	Residential property fronting Canal Road and canal. Immediately west of proposed bridge over canal – Ch. 1+600.	Profound -	Profound -	Significant -

Ref No.	Property, Distance to Proposed Road and Chainage	Construction Stage Impact	Pre-establish Stage Impact	Post-establish Stage Impact
R25	Residential property fronting canal towpath and canal. 100 m from proposed bypass/bridge over canal – Ch. 1+550.	Significant -	Significant -	Moderate -
R26	Residential property fronting canal towpath and canal. 100 m from proposed bypass/bridge over canal – Ch. 1+550.	Profound -	Profound -	Moderate -
R27	Sallins Pier and Sallins Wharf residential estates. Circa 300 m + from R407 Sallins Bypass (Ch. 1+300 to 1+700) & 250 m from Sallins Link Road (Ch. 0+900 to 1+110).	Imperceptible	Imperceptible	Imperceptible
R28	Millbank residential estate and associated properties. Immediately alongside Sallins Link Road – Ch. 0+900 to 1+250.	Slight -	Slight +	Slight +
R29	Properties and open space at cul-de-sac end of Castlesize Drive. Immediately alongside Sallins Link Road – Ch. 0+750 to 0+850. Direct impact on adjoining property with some loss of end of garden	Significant -	Significant -	Slight -
R30	Remainder of Castlesize & Liffey residential estates. 100 m + from Sallins Link Road – Ch. 0+600 to 0+900 & over 300 m from R407 Sallins Bypass (Ch. 2+250 to 2+800).	Slight -	Imperceptible	Imperceptible
R31	Residential properties along westside of Clane Road – 300 m+ from Sallins Bypass Ch. 3+100 to 3+400.	Imperceptible	Imperceptible	Imperceptible
R32	Northernmost residential property along westside of Clane Road – 300 m from Sallins Bypass Ch. 3+450 to 3+650.	Slight -	Slight -	Imperceptible
R33	Residential properties along eastside of Clane Road – 250 m+ from Sallins Bypass Ch. 3+450 to 3+650.	Slight -	Slight -	Imperceptible
R34	Residential properties west of Liffey – along local road south off Millicent Road – 500 m+ from Sallins Bypass Ch. 2+900 to 3+350.	Imperceptible	Imperceptible	Imperceptible
R35	Deerpark (or Easkey) House, Clane Road. 50 m north of tie-in roundabout on R407 Clane Road and immediately fronting realigned R407 Clane Road and entrance. Ch. 3+500 to 3+650.	Significant -	Moderate -	Slight -

Ref No.	Property, Distance to Proposed Road and Chainage	Construction Stage Impact	Pre-establish Stage Impact	Post-establish Stage Impact
LR1	Grand Canal – Naas Spur, including associated towpath and Canal Local Road. Generally 200 m + from R407 Sallins Bypass – Ch. 0+700 to 1+300. Eastern tie-in of re-aligned Osberstown Local Road runs adjacent to canal.	Slight -	Imperceptible	Imperceptible
LR2	Grand Canal, including associated towpath & Canal Local Road. R407 Sallins Bypass bridges over canal with a minimum 5.3 m clearance – Ch. 1+540 to 1+600.	Locally Significant -	Locally Significant -	Locally Moderate -
LR3	Leinster Aqueduct. R407 Sallins Bypass bridges over canal some 350 m east of feature and continues north of canal – Ch. 1+550 to 1+900.	Locally Moderate -	Locally Moderate -	Locally Slight -
LR4	River Liffey. R407 Sallins Bypass has 2 bridges over the river at Ch. 1+975 and Ch. 3+050.	Locally Moderate -	Locally Moderate -	Locally Slight -
LR5	Open Space Castlesize Drive. Sallins Link Road crosses southern end. Ch. 0+800.	Locally Significant -	Locally Moderate -	Locally Slight -
LR6	Sports Pitches at Castlesize with link from Millbank. Sallins Link Road crosses southern end. Ch. 0+825 to 0+950.	Locally Slight -	Locally Slight +	Imperceptible
LR7	Sallins Town Centre. Significant removal of through traffic – potential for improved street / townscape environment	Imperceptible	Locally Moderate +	Locally Significant +

10.4.5 Impact from Illumination

It is not proposed to illuminate the full proposed scheme; nevertheless illumination is required at a number of locations, namely the M7 Osberstown Interchange, the Sallins Link Road and associated roundabout with R407 Sallins Bypass (Sallins Link Road Roundabout), and at the proposed R407 Sallins Bypass roundabout tie-in with existing R407 Clane Road (Clane Road Roundabout), refer to **Figure 1.2 V3** for proposed road lighting extents. In the latter situation roadside illumination already extends north of the proposed Clane Road Roundabout.

Significant illumination will be required at the proposed M7 Osberstown Interchange in a manner which is typical of such infrastructure. That said, the interchange is not particularly open to, or visible from, residential property – with some potential for impact limited to Property R3 and from the vicinity of the walled garden at Osberstown House (Property R8).

The proposed Sallins Link Road Roundabout is elevated within an open but not widely viewed landscape. That said, illumination will be visible in the landscape from Properties R22, R23, R24, R25 and R26 and amenities LR3 and LR4.

Illumination along the proposed Sallins Link Road will result in a general increase in the visual perception of lighting in the landscape to the immediate west of Sallins.

Impact will also arise from vehicle lighting, however, solid fencing is proposed where this could have a direct impact on residential amenity (*e.g.* R15, R26 *etc.* – See Tables 10.5 & 10.6).

10.4.6 Summary of Landscape and Visual Impacts

The proposed road development will give rise to some level of significant landscape and visual impact – primarily related to Osberstown House; the crossing of Osberstown Local Road; and in the crossing of the Grand Canal. Otherwise, initially significant landscape and visual impact can be directly mitigated and the proposed scheme readily assimilated into its setting.

Apart from landscape and/or visual impact, the proposed scheme also has direct impact on four residential properties; namely Property R10 at Osberstown Local Road; Property R24 at the Grand Canal, Property R29 in Castlesize Drive and Property R35 (Deerpark House) at the R407 Clane Road tie-in.

Additional illumination is not a major feature of the proposed road development, nevertheless, the introduction of the road and its associated traffic will accentuate the level of residual and permanent change of the landscape along the corridor.

By contrast the removal in through traffic from the centre of Sallins has the potential for significant improvement in the amenity, social and visual character of the town and its streetscapes.

10.5 Mitigation Measures

Consideration was given to avoidance of significant landscape and visual impact during the route selection and design process for the proposed road development. Nevertheless, all road construction projects give rise to some degree of unavoidable landscape and visual impact and measures are proposed to mitigate such impacts wherever possible.

While, not entirely a national road scheme, mitigation of landscape and visual impacts has regard to the approach as set out in the following NRA guidance documents:

- Guidelines for the Creation and Maintenance of an Environmental Operating Plan.
- A Guide to Landscape Treatments for National Road Schemes in Ireland.
- Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes.
- Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads.

In the following sections significant and detailed mitigation proposals are set out for both the Construction Stage and Operational Stage of the proposed road development.

10.5.1 Mitigation Measures – Construction Stage

During the construction stage, an Environmental Operating Plan (EOP) will be drawn up by the main contractor using the NRA's 'Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan'.

Adherence to this plan will be a contract requirement and this will ensure good working practices are followed so as to minimise and manage any significant, negative environmental impacts arising from construction.

As well as other items, the EOP will include the mitigation set out within this chapter and incorporate them as part of their implementation.

General mitigation will ensure that the works will have continuous monitoring under the Environmental Operating Plan so as to ensure adequate protection of areas outside of the construction works. Specific measures shall ensure that:

- Site machinery shall operate within the proposed road development construction area.
- Storage areas shall be located so as to avoid impacting further on existing residential and other property, woodlands, trees, hedgerows, drainage patterns, *etc.*
- Solid site hoarding shall be provided where construction works adjoin residential property to the extent and heights as indicated in Table 10.5 and/or as shown on **Figures 10.1a to 10.1d, V3**.
- Where construction compounds are located within 200 m of residential properties, solid hoarding or similar, of minimum 2.0 m in height shall be provided for visual and general screening.
- Construction compounds shall be fully-decommissioned and reinstated to their pre-construction condition at the end of the construction contract.

Side slopes and other landscape areas along the proposed road development shall be prepared for soiling, and either seeded and/or planted at the earliest possible opportunity as set out in this Section of the EIS and **Figures 10.1a to 10.1d, V3**. As such, scope exists for undertaking some areas of seeding and planting prior to the end of the main construction works. However, due to construction programming and seasonal restrictions, it is also likely that significant planting works will not be undertaken until the end of the major construction phase.

10.5.2 Mitigation Measures – Operation Stage

10.5.2.1 Introduction

Measures proposed to mitigate the landscape and visual impacts of the operation stage of the project are considered under General Measures and Specific Measures. General measures are described in the following section, while specific measures are set out in detail in Table 10.5 in Section 10.5.2.3, which describes location specific measures; and in Table 10.6 which describes scheme-wide measures. The measures are also identified on **Figures 10.1a to 10.1e, V3**.

10.5.2.2 General Mitigation Measures

While not entirely a national road scheme, the landscape mitigation proposals shall take account of the approaches and principles as set out in *A Guide to Landscape Treatments for National Road Schemes in Ireland*, in particular to Chapter 4: Components of the Roadside Landscape; Chapter 5: Soil Geographic Factors; and Chapter 6: Landscape Treatments. Unless otherwise qualified elsewhere in this EIS, seeding and planting proposals, including species and planting type and species shall be in accordance with Chapter 6 of these Landscape Guidelines.

General measures will be applied over the entire proposed road development, depending on the nature of the particular road section. Where feasible such measures shall include for the re-connection of field boundaries with tree-lines and hedgerows established along the boundary of the proposed road development (see Landscape Guidelines, Section 6.2.1: Hedgerows & Tree-lined Hedgerows). Trees within such hedgerows shall be randomly spaced in a visually naturalistic manner.

This approach will be locally modified to incorporate other landscape treatments, which may negate the requirement for the hedgerow, *e.g.* blocks of native woodland planting (see Landscape Guidelines, Section 6.2: Tree and Shrub Treatments) or naturalising grassland meadows (see Landscape Guidelines, Section 6.1: Grassland Treatments) where it is considered appropriate to have open sections along the carriageway. Open sections shall allow for views to the wider landscape where they do not impinge on requirements for screening residential or other amenity.

Proposals will ensure that planting is distributed along the entire proposed road development and the associated local road realignments and will vary from typical rural, randomly tree-lined hedgerow reinstatement to wide plantings of landscape and screen planting to the establishment of larger areas of new woodland for integration of the development into the wider landscape. Shrub planting will be used at the edges of the tree planting. This will increase the density and diversity of the plantings and improve the biodiversity structure (see Landscape Guidelines, Section 6.2: Tree and Shrub Treatments).

Treatments will take into consideration the assessment and recommendations of Chapter 14 - *Ecology* and will ensure that in general, species which are locally indigenous and native are utilised in the proposed plantings. However, detailed proposals in terms of their nature and approach will consider the locally impacted environment and in terms of species may include non-native plants, *e.g.* beech, chestnut or lime at old demesnes or a more ornamental approach where existing garden or ornamental plantings are disturbed.

Where areas are in cut or fill, a grass or meadow sward will generally be established over the entire slope except in areas of cutting through stable rock (see Landscape Guidelines, Section 4.2: Cuttings and Embankments). Stable rock slopes will be retained as an exposed face for natural colonisation and as a local landscape feature. In general it is not proposed to plant either cut or fill slopes in their entirety, but to encourage a more naturalistic and locally sympathetic grouping of plantings within a naturalising grass sward.

Along the length of the proposed road development, landscape areas within junctions and small areas of severed fields, plots or other property acquired for the construction of the proposed road development will be varyingly treated including being planted in copse like fashion with native or semi-native woodland species (see Landscape Guidelines, Section 4.6: Additional Plots and Other Areas). Such woodland blocks dispersed along the proposed road development will assist in the improvement of the longer-term visual character of the proposed road development and local surrounds. Particular attention shall be given to an appropriate extent and scale of planting in and surrounding junctions (see Landscape Guidelines, Section 4.3: Junctions, Interchanges and Roundabouts) and embankments (see Landscape Guidelines, Section 4.2.2: Embankments).

Certain areas along the length of the proposed road development have been set aside for drainage requirements/ pollution control/attenuation. Where such works are of a linear nature, disturbed sections of hedgerow will be reinstated / planted to match the existing. Where attenuation ponds are proposed these will be fenced and will be treated with appropriate hedgerow screen planting along the development boundary to minimise their impact.

In general the proposed planting will generally be established using bare-root transplants, whips and feathered trees which adapt readily to disturbed ground conditions. A proportion, totalling not less than 5% of 'Half-standard' (6-8 cm girth & 200 cm-250 cm tall) and a further 5% 'Standard' (8-10cm girth & 250cm-300 cm tall) trees shall be used to supplement these plantings especially in the vicinity of residential areas. All planting mixes will take cognisance of, and include native and local species as identified in Chapter 14 - *Ecology*. These requirements have been adapted and further detailed as appropriate to particular areas as set out in Tables 10.5 and 10.6.

Tree species utilised will be selected from a list of primarily native, naturalised and indigenous species (except where the proposed road development is contiguous with plantings containing other species such as conifers or beech *etc.*), which will include alder, common ash (if allowable at the planting time), common birches, common oaks, mountain ash, Scots pine and willow species. Planting sizes will be from 75 cm to 400 cm in height and tree species will be planted at average 2.0 m centres within the wider planting mix.

Shrub planting species utilised will be selected from a list of primarily native and indigenous species, which will include, blackthorn, elder, hawthorn, hazel, holly, guelder rose, spindle, willows and other plants found naturalised in the affected localities. Planting sizes will vary from 30 to 75 cm in height and shrub species will be planted at between 1.0 and 1.5 m centres depending of landscape type, see Tables 10.5 and 10.6.

Hedge planting will be primarily of blackthorn and hawthorn interspersed with other species such as elder, hazel, holly and those found locally. Hawthorn within hedgerows shall be planted at between 75 to 90 cm in height and at 500 mm centres in each of 2 double staggered rows. The hedgerow will be interspersed with standard-sized randomly spaced tree species such as alder, common ash (if allowable) and oaks and Wild Cherry, as appropriate to particular locality.

Areas to be seeded to naturalising meadow will be thinly topsoiled (5cm layer) and seeded with a locally appropriate seed mix.

Mainline and side road verges will be cultivated, topsoiled minimum 20 cm deep and stone buried to remove stones down to 25 mm diameter prior to seeding to a low-maintenance grass sward.

The detailed lighting design shall be completed in a manner, which will minimise glare and light pollution that in combination with extensive landscaping as proposed at junctions will ensure that light-spill effect is minimised. It is noted that the proposed road development includes for a minimum of roadside illumination, effectively restricted to roundabouts, the proposed interchange and along the link to Sallins.

In specific locations barriers and earth bunds will be provided to reduce the impact of noise. Such barriers will also have the effect of providing immediate visual screening of traffic from properties.

Such features shall, wherever possible, be integrated within the proposed landscaping measures. Chapter 11 – *Noise and Vibration* outlines the assessment of noise and the requirements for such mitigation. The noise mitigation measures are proposed as either barriers or bunding or as a combination of such features.

10.5.2.3 Specific Mitigation Measures

Specific mitigation measures are set out on **Figures 10.1a to 10.1e, V3**, Tables 10.5 and Table 10.6. The measures include construction-related aspects such as avoidance / minimising impact on property boundaries and landscape features as well as provision of screen hoarding during the construction phase for those properties particularly impacted by the works.

Other landscape-related measures are described in detail in Tables 10.5 and 10.6.

Table 10.5: Specific Landscape and Visual Mitigation Measures (see Figures 10.1a to 10.1e, V3 and Table 10.6) *Note Proposed Road Development has been abbreviated to PRD in the following Table.*

Reference	Chainage and Location	Description
LM-1	M7 Osberstown Interchange / Millennium Park	Protect and retain existing roadside (M7) boundary vegetation where appropriate. Replace removed vegetation with Landscape Treatment Type 1 on lower slope of embankments and Boundary Hedgerow Type 1 along new boundary fence. Planting may be modified to reflect Business Park character.
LM-2	M7 Osberstown Interchange / Millennium Park	Establish area of Landscape Treatment Type 1 between road Scheme and attenuation Pond. Planting may be modified to reflect Business Park character.
LM-3	M7 Osberstown Interchange / Northwest quadrant	Protect and retain existing roadside (M7) boundary vegetation where appropriate. Replace removed vegetation with Landscape Treatment Type 1 on full slope of embankments and Boundary Hedgerow Type 1 along new boundary fence.
LM-4	M7 Osberstown Interchange / Northeast quadrant	Protect and retain existing roadside (M7) boundary vegetation where appropriate. Provide for full protection and retention of semi-mature woodland planting located on and at base of existing M7 embankment – from Ch. 0+450 (on-ramp) back to M7 Overbridge (over canal) as important screening of M7 from Osberstown House.

		Replace any removed vegetation with Landscape Treatment Type 1 on full slope of embankments and Boundary Hedgerow Type 1 along new boundary fence.
LM-5	M7 Osberstown Interchange / Northeast quadrant & south of R407 Sallins Bypass Ch. 0+100 to 0+450	Establish new native woodland copse using Landscape Treatment Type 3.
LM-6	Osberstown. R407 Sallins Bypass – south side Ch. 0+400 to 0+550	Establish new Boundary Hedgerow Type 1 along fence-line connecting LM-5 (above) to retained length of existing hedgerow.
LM-7	Osberstown. North of R407 Sallins Bypass Ch. 0+100 to 0+500	Establish Screen Woodland Type 1 between PRD and existing retained tree-line/hedgerow.
LM-8	Osberstown. North of R407 Sallins Bypass Ch. 0+500 to 0+920	Retain and protect, using 2.0 m high secure fencing, existing mature Oak tree (Ch. 0+530 approx.). Provide for ‘false-cutting’ berm effect rising to 2.0 m over highest level of road carriageway (<i>i.e.</i> over southern edge of M7 bound (south bound) carriageway). Berm to be constructed at commencement of works, using topsoil. Berm to have 1 in 2 minimum steep slope facing road (inner side) and circa 1 in 5 shallow slope facing Osberstown House (outer side). Outer slope to be seeded to low-maintenance meadowgrass. Semi-mature (20-25 cm girth min.) lime, oak and / or chestnut trees to be established in parkland manner on shallow slope (See Figures 10.1a and 10.1e, V3) Inner slope to be planted to shrubs using Landscape Treatment Type 2 (without trees).
LM-9	Osberstown. South/East of R407 Sallins Bypass Ch. 0+550 to 0+920	Establish new Boundary Hedgerow Type 2 (without trees) along fence-line.
LM-10	Osberstown. South of Osberstown Local Road & East of R407 Sallins Bypass Ch. 0+920 to 1+050	Establish Screen Planting Type 1 along fence-line and on embankment slopes. Provide for solid 1.0 m high anti-headlight fencing (for residential properties R10 & R15) at top of embankment from Ch. 0+350 to 0+410 on south side of realigned Osberstown Local Road. Fencing may be replaced by noise barrier requirements.
LM-11	Osberstown. Property R10 South of Osberstown Local Road & West of R407 Sallins Bypass Ch. 0+920 to 1+050	Protect existing boundaries to south and east of property. Relocate existing entrance, gates and driveway and provide for new boundary (wall or other as agreed with property owner). Remove redundant section of existing driveway and restore to garden (as agreed with property owner). Provide for Screen Planting Type 1 on embankment slopes. Provide for solid 1.0 m high screen fencing along top of embankment from Ch. 0+100 to 0+210 on south side of realigned Osberstown Local Road.

		Fencing may be replaced by noise barrier requirements.
LM-12	Osberstown. West and either side of Osberstown Local Road Ch. 0+000 to 0+210	Where removed, establish new Boundary Hedgerow Type 1 along fence-line. Provide for Landscape Treatment Type 2 on slope of embankments.
LM-13	Osberstown. West of R407 Sallins Bypass Ch. 1+100 to 1+550	Establish new Boundary Hedgerow Type 2 along fence-line.
LM-14	Osberstown. North and East of Osberstown Local Road and at tie-ins Ch. 0+250 to 0+500	Establish new Boundary Hedgerow Type 2 along fence-line and/or Landscape Treatment Type 2 on slope of embankments and between PRD and fence-line.
LM-15	Osberstown. East of R407 Sallins Bypass Ch. 1+080 to 1+250	Establish new copse of Landscape Treatment Type 2 in area between PRD and boundary of existing local road. Tree species to be setback 10 m from boundary with existing road.
LM-16	Osberstown. East of R407 Sallins Bypass Ch. 1+280 to 1+330	Establish new copse of Landscape Treatment Type 2 in area between PRD and boundary of existing local road.
LM-17	Osberstown. Both sides of R407 Sallins Bypass Ch. 1+400 to Canal Bridge (Ch. 1+600)	Ensure minimum disturbance/removal of vegetation at canal crossing. Provide for protection and retention of planting on boundary of residential property R24. Where removed provide for minimum 2.4 m high solid hoarding prior to construction of PRD. On completion of works, remove hoarding and replace with mature 'instant' hedging, minimum 2.0 m high. Establish Landscape Treatment Type 2 on slope of embankments along PRD. Establish new copse of Landscape Treatment Type 2 in area east of PRD (<i>i.e.</i> between PRD boundary and existing local road).
LM-18	Osberstown. West side of R407 Sallins Bypass / Sallins Link Road Roundabout. Ch. 1+600 (Canal Bridge) to Ch. 1+950	Establish Landscape Treatment Type 1 on slope of embankments along PRD and new Boundary Hedgerow Type 2 along fence-line.
LM-19	Osberstown. Southeast side of R407 Sallins Bypass / Sallins Link Road Roundabout.	Establish Landscape Treatment Type 2 on slope of embankments along PRD and new Boundary Hedgerow Type 2 along fence-line.

	Ch. 1+600 (Canal Bridge) to Ch. 0+300 on Sallins Link Road.	Provide 1 m high solid screen fencing at the top of embankment along southeast side of Sallins Link Road Roundabout to screen potential impact of headlights from property R26.
LM-20	Osberstown. South side of Sallins Link Road. Ch. 0+300 to Ch. 0+920	Establish Landscape Treatment Type 2 on circa 100 m long sections of slope of embankments along PRD and new Boundary Hedgerow Type 2 along fence-line.
LM-21	Sallins. Tie-in of Sallins Link Road at Millbank. Ch. 0+900 to end.	Establish appropriate 'urban street' landscape treatment with street trees and tie in to existing streetscape.
LM-22	Osberstown / Castlesize / Sallins. Northside of Sallins Link Road. Ch. 0+300 to Ch. 0+900 Sallins Link Road.	Establish Landscape Treatment Type 2 on slope of embankments along PRD and new Boundary Hedgerow Type 2 along fence-line. Prior to commencement of road construction provide for permanent 2.4 metre high boundary wall along landtake at rear of property (P29) and open space in Castlesize estate. Boundary treatments to allow for retention of pedestrian access to open space opposite Millbank (Ch. 0+960).
LM-23	Osberstown. Northeast side of R407 Sallins Bypass / Sallins Link Road Ch. 1+800 to Ch. 1+950 Sallins Bypass & Ch. 0+050 to 0+300 Sallins Link	Retain where possible, sections of existing hedgerow within land-take and tie-in with landscape treatments. Establish Landscape Treatment Type 2 on slope of embankments along PRD. Establish new native woodland copse on lands around attenuation area using Landscape Treatment Type 3.
LM-24	Two River Liffey Crossings on Sallins Bypass (Ch. 1+950 to 2+000 & Ch. 3+000 to 3+100)	Retain and protect where possible existing vegetation within landtake – especially along river edge and landtake boundaries. Reinstate all damaged areas having regard to recommendations of Chapter 14 Ecology.
LM-25	Brideschurch. Both sides Sallins Bypass (Ch. 2+000 to 3+000)	Establish Landscape Treatment Type 2 on slope of embankments over 1.5 m high along either side PRD. Establish new Boundary Hedgerow Type 1 along fence-line.
LM-26	Castlesize. Both sides Sallins Bypass (Ch. 3+100 to 3+650)	Establish Landscape Treatment Type 2 on slope of embankments over 1.5 m high along either side PRD. Establish new Boundary Hedgerow Type 1 along fence-line.
LM-27	Castlesize. Southwest side of Clane Road	Except where removed for roundabout, retain and protect existing mature trees and associated stone wall boundary.

	Roundabout & south to tie-in on Clane Road towards Sallins.	Reinstate section of removed stone along new roadside boundary and plant semi-mature (20-25 cm girth) Sycamore at 5 m spacings to turn southwest corner of roundabout.
LM-28	Bodenstown. Full length of east side of Clane Road & Roundabout.	Establish new Boundary Hedgerow Type 1 along fence-line. Establish small area of Landscape Treatment Type 2 east of roundabout.
LM-29	Castlesize. Northwest side of Clane Road Roundabout & north to tie-in on Clane Road towards Clane.	Retain and protect, where possible, existing boundary and mature trees along west side of existing Clane Road, including within Property R35 (Deerpark or Easkey House). Minimise disturbance on boundary and garden of Property R35. Relocate existing entrance, gates and driveway and provide for new front boundary (wall or other as agreed, with property owner). Consider aligning new drive along northern property boundary so as to minimise impact on garden. Remove redundant section of existing driveway and restore to garden (as agreed with property owner). Establish new Boundary Hedgerow Type 1 along fence-line north of Property R35.
LM-30	Castlesize / Bodenstown. Clane Road Roundabout	Provide for appropriate feature landscape design / treatment for Sallins gateway roundabout.

Table 10.6: Specific Landscape and Visual Mitigation Elements and Treatments (refer to Table 10.5 above and Figures 10.1a to 10.1e, V3) *Note Proposed Road Development has been abbreviated to PRD in the following Table.*

Reference	Chainage and Location	Description
Verges	All Roads, including proposed road development, local road realignments and tie-ins.	All verges / tie-ins shall be finished to even free-draining gradients with minimum 100 mm topsoil over minimum 200 mm subsoil. Topsoil shall be stone-buried or raked to be free of rubble and stones over 25 mm diameter. Verges to be seeded to low-maintenance seed mix.
Cut slopes and Embankments	Generally	Cut slopes and embankments shall be finished to even gradients, topsoiled unless otherwise stated in this table, Table 10.5 above or elsewhere in this EIS. Slopes shall be free of rubble and stones over 50mm diameter. All such rubble/stone shall be removed or buried. Unless otherwise stated in this EIS slopes shall be seeded to a non-agricultural meadowgrass.
Interchanges and Junctions, including LM-IN Figures 10.1a	Generally	Specific landscape treatments to be provided at interchanges, junctions, roundabouts etc. Measures to have regard to safety and sightlines.

Reference	Chainage and Location	Description
to 10.1d, V3		In general screening (Type 1 or 2) shall be provided to mitigate the effect of elevated structures and / or traffic unless otherwise stated in this table, Table 10.5 above or elsewhere in this EIS. Where appropriate specific feature landscape measures may be applied to reflect the entrance/gateway character of such features.
Ponds, swales, 'V-drains' etc. LM-AA (see Figures 10.1a to 10.1d, V3)	Generally	All slopes shall be evenly graded and free of rubble and stones over 50 mm diameter. Slopes shall be seeded to non-agricultural meadowgrass allowing for natural development over time. Steep slopes on pond edges and 'V-drains' shall be hydro-seeded, where appropriate. Areas around ponds shall be a diverse landscape of meadowgrass / species-rich meadowgrass and plantings of low-canopy woodland and shrub planting. Hedgerow (without tree species) shall be established along all non-roadside boundaries.
Noise barriers / bunds	Generally	Unless otherwise stated in this EIS, low-canopy woodland, hedgerow and/or shrub planting of native species shall be established as either a narrow planting of 2.0 m minimum width or double-staggered hedgerow along the full external face of such barriers. Low-canopy and/or shrub planting of native species shall be established on the full external face of bunds. The planting shall include alder, ash (if allowable), birch, blackthorn, elder, hawthorn, holly, wild cherry and/or willow species as appropriate. Plants shall be minimum 100 cm to 120 cm in height at planting.
Plants and Planting Areas	Generally	All tree species over 6 cm in girth and/or over 150 cm in height, together with all Pine, shall be appropriately staked and tied. All failed, dead or defective plants shall be replaced before the end of each and every year of defect aftercare. Full planting area to free of stones over 50 mm in diameter.
Grass	Generally	Grass areas shall provide full sward cover within 12 months of seeding. Any failed, bare or defective areas shall be re-seeded between March – May and/or August – September in each and every year of defect aftercare.
Unauthorised Access, Parking and/or Encampment	Generally	Landscape proposals shall avoid creating areas considered as being suitable for unauthorised parking and shall use landscape proposals to deter and prevent such use.
Headlight Impacts	Generally	Outside of illuminated areas (<i>i.e.</i> within the town of Sallins), landscape proposals shall use specific treatments to avoid and/or reduce the potential impact of headlights on residential and other sensitive property. The measures, which may include low-level solid fencing, shall apply equally to the mainline, junctions, roundabouts, tie-ins and local and link roads.
Lighting	Generally	Proposed road lighting design shall meet the requirements of BS5489-1: 2003, Code of Practice for Design of Road Lighting, Lighting of Roads and Public Amenity Areas and shall comply with the requirements of the NRA DMRB TD 34-91.

Reference	Chainage and Location	Description
		The detailed lighting design shall be completed in a manner, which will minimise glare and light pollution that in combination with extensive landscaping as proposed at junctions will ensure that light-spill effect is minimised.
Fill Areas and/or Surplus Areas	Generally	Any post-construction surplus lands shall be treated to a diverse range of planting and non-planting proposals to include a minimum 50% Landscape Treatment Type 1 and/or Type 2 and/or Type 3, as locally appropriate. The remaining area shall be treated as locally appropriate meadowgrass / species-rich meadowgrass.
Screen Planting Type 1	As noted in Table 10.5, planting at 1.0m centres for visual screening shall be of a minimum of 5m in width. The planting shall extend for a minimum of 100m to either side of any adjoining residential property or amenity.	Planting will include a minimum of 5% of 'standard-sized' trees (8-10 cm girth); 5% of half-standard trees (6-8 cm girth); 15% of 'whips' (minimum 150 cm in height), together with a further 10% of evergreen Scots Pine of minimum 60 cm in height at planting. Standard and Half-standard tree species shall be ash (if allowable) – otherwise Alder and / or Wild Cherry. Standard and half-standard trees and Pine to be planted at average 2.5 m centres throughout. The planting shall include a dense under-storey (at average 1 plant/metre) of woodland transplants and shrubs. Transplants, which shall include 20% Hawthorn, shall be between 90 cm to 120 cm in height) Shrub species shall be 30 cm to 50 cm in height and include a minimum of 10% holly.
Screen Planting Type 2	As noted in Table 10.5, Planting at 1.0m centres for visual screening shall be of a minimum of 5m in width. The planting shall extend for a minimum of 100m to either side of any adjoining residential property or amenity.	Planting shall include a minimum of 5% of 'standard-sized' trees (8-10 cm girth); 5% of half-standard trees (6-8 cm girth); 15% of 'whips' (minimum 150 cm in height). Standard and half-standard tree species shall be ash (if allowable) – otherwise Alder and / or Wild Cherry. Standard and half-standard trees shall be planted at average 2.5 m centres throughout. The planting shall include a dense under-storey (at average 1 plant/metre) of woodland transplants and shrubs. Transplants, which shall include 30% hawthorn, shall be between 90 cm to 120 cm in height) Shrub species shall be 30 cm to 50 cm in height and include a minimum of 20% holly.
Boundary Hedgerow Type 1	As noted in Table 10.5, General double staggered hedgerow with tree planting	Primarily blackthorn (20%) and hawthorn (40%) hedgerow interspersed with other species such as elder, hazel, holly and those found locally. Hawthorn plants shall be of between 75 cm to 90 cm in height and planted at 50 cm centres in each of two double staggered rows, 25 cm apart. Other plants shall be interspersed and of between 30 cm to 50 cm in height. The hedgerow shall be interspersed with 'standard-sized' (8-10 cm girth) randomly planted ash (if allowable – otherwise Wild Cherry) and/or oak trees planted at random naturalistic spacings but averaging 1 tree per 25 linear metre.
Boundary Hedgerow Type 2	As noted in Table 10.5, Double staggered	Primarily blackthorn (25%) and hawthorn (60%) hedgerow interspersed with other species such as elder, hazel, holly and those found locally.

Reference	Chainage and Location	Description
	hedgerow with little or no tree species	Hawthorn plants shall be of between 75 cm to 90 cm in height and planted at 50 cm centres in each of two double staggered rows, 25 cm apart. Other plants shall be interspersed and of between 30 cm to 50 cm in height. Limited tree species, such as birch and mountain ash may be included as 'whips' at 150 cm metres in height.
Landscape Treatment Type 1	As noted in Table 10.5, General low-canopy woodland planted at average 1.5m centres	Area to be planted to native or indigenous woodland. Planting shall include a proportion, totalling not less than 5% of 'Half-standard' trees (6-8 cm girth & 200 cm-250 cm tall) and a further 5% 'Standard' trees (8-10 cm girth & 250 cm to 300 cm tall) to be used to supplement a general planting of 10% tall whips (150 cm minimum) 10% whips (120 – 150 cm) 25% transplants (90-120 cm), and shrub plantings. Species to include alder, ash (if allowable), birch, blackthorn, hawthorn, hazel, holly, mountain ash, oak, Scots Pine and willows as locally appropriate. Half-standard and Standard-sized trees to be alder, ash (if allowable), mountain ash and/or oak.
Landscape Treatment Type 2	As noted in Table 10.5, Semi-natural low-canopy woodland with limited tree species planted at average 1.5m centres	Area to be planted to native or indigenous semi-natural woodland with limited or tree species. Planting shall include a proportion, totalling not less than 15% whips (120 – 150 cm) 30% transplants (90-120 cm) and shrub plantings. Species to include alder, birch, blackthorn, hawthorn, hazel, holly, mountain ash and willows as locally appropriate. If locally appropriate tree species may be omitted entirely.
Landscape Treatment Type 3	As noted in Table 10.5, High-canopy Woodland planted at average 1.5 m centres	Area to be established as native semi-natural high-canopy woodland containing higher percentage ash, oak and/or Scots pine. Planting shall include a proportion, totalling not less than 5% of 'Half-standard' trees (6-8 cm girth & 200 cm to 250 cm tall) and a further 5% 'Standard' trees (8-10 cm girth & 250 cm to 300 cm tall) to be used to supplement a general planting of 10% tall whips (150cm minimum) 10% whips (120 – 150 cm) 25% transplants (90-120 cm), and shrub plantings. Species to include alder, ash (if allowable), birch, blackthorn, hawthorn, hazel, holly, mountain ash, oak, Scots pine and willows as locally appropriate. Half-standard and Standard-sized trees to be ash (if allowable), and/or oak and Scots Pine to be minimum 10% of planting.
Construction Screening	Specifically as indicated on Figures 10.1a to 10.1d, V3	Provide for solid screening hoarding of the heights stated for the duration of the construction stage for those properties most particularly impacted by the works.

10.6 Residual Impacts

As with all such developments, the proposed road development, by the means of its very presence will have a permanent effect and therefore some degree of residual impact on the landscape and visual character of its immediate corridor.

Nevertheless, it is considered that with the gradual establishment of proposed landscape mitigation measures, the proposed road development will be successfully integrated within its landscape setting in the longer-term.

It is considered that some level of moderate residual impact will remain at Osberstown House, in crossing the Grand Canal and in crossing the River Liffey corridor.

Likewise, after planting and mitigation measures have established and developed residual visual impact will be limited to a small number of properties, including Osberstown House (Property R8); the house at the crossing of Osberstown Local Road (Property R10) and for properties at the crossing of the Grand Canal (Properties R22 to R26). Otherwise the severity and prominence of visual intrusion will be gradually and increasingly mitigated.

10.7 References

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