Bonneagar Iompair Éireann

Transport Infrastructure Ireland

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M3 Motorway Service Area

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Contents

1 Introduction

1.1 *Overview*

The M3 Motorway Service Area (MSA) entails the development of a service area on the M3 Motorway between Junction 4 (Clonee) & Junction 7 (Blundelstown). The purpose of a service area is to provide rest and refuelling facilities for users of the M3. The MSA will include an amenity building (including a convenience shop, restaurant, washrooms and tourist information), fuel facilities, parking and picnic area.

Halcrow Barry Ltd. were appointed by Transport Infrastructure Ireland (TII) (formerly the National Roads Authority (NRA)) in July 2015 to undertake all services necessary to purposefully deliver the site selection, preliminary design, planning and Environmental Impact Assessment (EIA) in accordance with the NRA 2010 Project Management Guidelines[1] (PMG) Phases 2, 3 and 4 in the development of the M3 MSA.

This report outlines the findings of the Site Selection Study and identifies the preferred site for the M3 MSA.

On approval of the preferred site, a preliminary design and Environmental Impact Statement (EIS) for the scheme will be undertaken which will be submitted to An Bord Pleanála (ABP) for planning approval.

The M3 MSA is being developed in line with TII's National Policy as outlined in the Service Area Policy (NRA, August 2014).

[1] This report contains numerous references to documents published by TII/NRA. The documents are referenced according to the title of the document at the time of publication. Therefore the documents published prior to August 2015 include 'NRA' in the title rather than 'TII'.

2 Background to the Project

2.1 TII Policy

The construction of the motorway network since 2000 to present has dramatically changed the driving experience in Ireland. An integral part of a safe motorway network is the provision of suitable services and facilities for road users to avail of at reasonable intervals. In fact, this need has recently been given legal standing by European Union regulations under the Trans-European Transport Networks (TEN-T) policy. This legal requirement is further emphasised in the following EU Regulations and Directives:

Policy	Regulation/Directive
Trans-European Transport Networks	Regulation (EU) No 1315/2013
Driving Time and Rest Periods	Regulation (EU) No 561/2006
Road Infrastructure Safety Management	Directive 2008/96/EC
Intelligent Transport Systems	Directive 2010/40/EU

In Ireland, the Service Area Policy (NRA, 2014) sets out the national policy with regard to the provision of MSAs on the national road network.

The policy targets the provision of Service Areas at regular intervals on the dual carriageway/motorway network. The proposals for the location of MSAs on the national road network can be seen in Figure 2.1 overleaf.

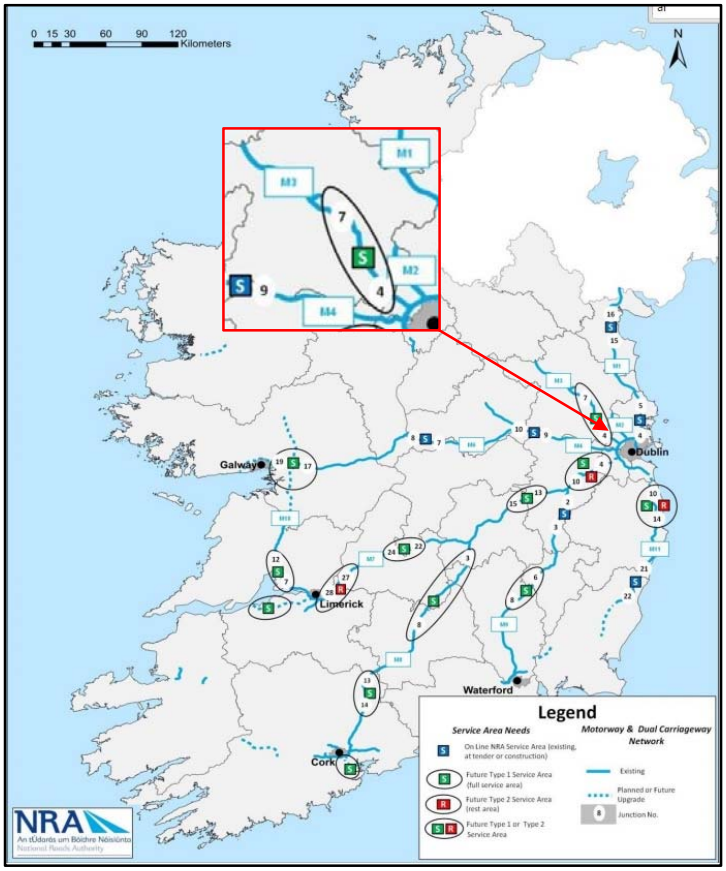


Figure 2.1 Service Area Policy – Service Area Needs

As shown in Figure 2.1, the policy identifies the need for a service area to be located on the M3 between Junction 4 (Clonee) and Junction 7 (Blundelstown). This length of motorway is thus considered the study area for the M3 MSA. The Study Area is shown in detail on Drawing Y15112-M3-SSR-001 in Appendix A.

2.2 Project description/ Facilities to be provided

The TII policy identifies the possibility of developing two different types of MSA depending on the characteristics of the motorway network at any given location. The types of service areas are as follows:

Type 1 (Full Service Areas) - including an amenity building together with fuel facilities, parking toilet and picnic facilities.

Type 2 (Rest Areas) –including parking, picnic and toilet facilities.

A Type 1 MSA is specified within the policy at this location on the M3 to serve traffic travelling in both directions of the motorway.

As set out in the TII policy, the key needs of road users to be addressed by Type 1 MSA include:

- Areas for commercial vehicles to park allowing drivers take their mandatory break and rest periods (including overnight parking);
- Areas for all road users to park and rest in order to reduce fatigue; and
- Access to facilities for road users including:
    - fuel stations;
    - toilets;
    - Showers;
    - convenience shops;
    - restaurant/food outlets tourist information;
    - play areas for children;

Once in place, service areas will need to continuously develop in order to meet the evolving needs of road users. Future needs are likely to include parking areas with enhanced security and the ability for advance booking of safe and secure parking for commercial vehicles.

The proposed M3 MSA will incorporate all of the above mentioned elements and will be designed in accordance with NRA TA 70. "The Location and Layout of On-line Service Area" (NRA, 2014).

In addition to the above, a motorway junction will be constructed as part of the development which will provide access from the motorway to the MSA. The junction type is subject to further design and specific constraints at particular locations but the most likely junction type is a standard dumbbell arrangement (Refer to 3.3.5 Key Assumptions).

Other notable elements of the MSA will include a waste water treatment plant, controlled local road access, landscaping and Garda enforcement area.

2.3 Implementation of TII policy

The M3 MSA is being developed as part of the TIIs Tranche 4 MSAs. Tranche 4 includes 3 no. MSAs at the following locations:

- M3 (between Junctions 4 and 7) – Clonee to Blundelstown;

- M18 (between Junctions 7 and 12) – Sixmilebridge to Ennis; and
- M6 (between Junction 17 and 19) – Athenry to Oranmore.

Other MSAs have been developed in a number of Tranches as follows:

- Tranche 1 MSAs are located on the M1 at Lusk and Castlebellingham and on the M4 at Enfield. These service areas are in operation since 2010;
- Tranche 2 MSAs are located on the M9 at Kilcullen, M11 at Gorey and M6 at Athlone. These service areas are currently at construction stage and will commence operation in 2016; and
- Tranche 3 MSAs incorporates MSAs on the N28 and N69. These MSAs are currently in the planning stage.

2.4 M3 MSA Indicative Programme

The current projected timeline (subject to funding) for the development of the M3 MSA is as follows:

- August 2015 to September 2016 – Site Selection, Preliminary design, EIA, CPO;
- October 2016 to February 2017 – ABP Oral Hearing and ABP Consideration of Planning Application;
- 2016/2017 – Public Procurement for Construct and Operate Contract;
- 2017/2018 – Construction;
- Late 2018 – Operation.

3 Methodology

3.1 *Introduction*

The objective of the Site Selection Study is to determine the optimum site for a service area within the defined study area.

To determine the preferred site, a particular methodology that follows a systematic and consistent approach has been adopted.

This methodology generally follows the principles and guidelines developed by the TII for road schemes as set out in the NRA PMG. However where required Halcrow Barry, utilising the experience of previous TII MSAs projects, have adapted the approach to meet the needs of a MSA scheme.

3.2 *Reference documents*

As mentioned the methodology generally follows the principles and guidelines set out in the NRAs PMG. Other documents and guidelines that have been referenced in the site selection study are as follows:

- NRA Service area Policy;
- NRA DMRB;
- NRA TA 70;
- NRA Project Appraisal Guidelines (PAG);
- NRA Environmental Impact Assessment of National Road Schemes –A Practical Guide;
- Environmental Protection Agency (EPA) Environmental Impact Assessment Guidance;
- Meath County Council Development Plan 2013 – 2019;
- Office of Public Works (OPW) Preliminary Flood Risk Assessment;
- Office of Public Works (OPW) Eastern CFRAM;
- Geological Survey of Ireland Datasets (GSI);
- Department of Arts, Heritage and the Gaeltacht (DAHG) Records of Monuments & Places;
- DAHG National Inventory of Archaeological Heritage.

3.3 Key assumptions

3.3.1 Turn in rate

The turn in rate is defined as the percentage of vehicles using the motorway that will turn in to the MSA to avail of the facilities.

The turn in rate of 12 % is assumed to be the standard rate adopted for the M3 MSA. This rate is adopted following a review of recorded turn in rates for the Tranche 1 MSAs, and having consideration for the characteristics of the motorway network in the region. In determining a turn in rate 'TRL Report 441, 'Turning flows at Motorway Service Areas' was also considered.

3.3.2 Base Year, Opening Year, Design Year

The base year, opening year and design year are as follows:

Base Year: 2014

Opening Year: 2018

Design Year: 2043

3.3.3 Traffic volumes & growth

The traffic volumes are based on existing count data from the mainline motorway, with no traffic expected to be generated by the scheme.

Traffic volumes were obtained from Eurolink counter at Blackbull Toll Plaza (between Junction 5 and 6) and immediately north of Junction 6 Dunshaughlin. These counters in 2014 recorded figures of 15,601 AADT with 5.22% HCV and 15,224 AADT with 7.53% HCV.

Traffic growth is assumed to be in line with national traffic growth forecasts as outlined in the medium growth scenario in Unit 5.5 of NRA PAGs. The traffic volumes for the M3 MSA are therefore:

M3 between Junctions 5 & 6 (Medium Growth)			
Year	2014	2018 (Opening Year)	2043
AADT	15,601	16,289	19,979
%HCV	5.2	5.2	4.5
HCV	815	841	903
Cars & LGV's	14,786	15,448	19,076

Table 3.1: Traffic volumes and growth for M3 between Junction 5 Pace and Junction 6 Dunshaughlin. Figures taken from traffic data provided by Eurolink Motorway Operations.

M3 between Junctions 6 & 7 (Medium Growth)			
Year	2014	2018 (Opening Year)	2043
AADT	15,224	15,891	19,432
%HCV	7.5%	7.5%	6.5%
HCV	1,147	1,185	1,271
Cars & LGV's	14,077	14,706	18,160

Table 3.2: Traffic volumes and growth for M3 between Junction 6 Dunshaughlin and Junction 7 (Blundelstown). Figures taken from traffic data provided by Eurolink Motorway Operations.

3.3.4 *Online facility*

The M3 MSA is to be developed on the basis that it is an online MSA i.e. the MSA is directly accessible from the motorway and is not located at an existing junction.

The provision of an online MSAs is consistent with the TII policy which identifies a preference for such facilities, having regard for public convenience, control over the quality, extent and nature of services to be provided, and the ability of the Authority to respond to emerging law, such as the ITS Directive and the TEN-T Regulations.

3.3.5 *Single Sided Facility*

The M3 MSA is being developed on the basis that it is a single sided facility. A single sided facility is required where traffic volumes are less than 40,000 vehicles per day (NRA TA 70 paragraph 3.4) in the year of opening of the facility. This assumption is made following analysis of traffic flows and has been discussed and agreed with TII, as outlined in TA 70.

A single sided MSA is a facility that is located on one side of the motorway but can be accessed from both carriageways (both directions of travel) by means of a grade separated junction.

3.3.6 *Required Site Area*

For the purpose of this assessment, a site area of approximately 15 hectares (ha) was taken at each of the site locations. It can be assumed that the site boundaries would follow existing field boundaries or physical constraints as far as is practical.

The figure of 15ha is adopted following a review of the TII MSAs developed to date. This area should be more than adequate to accommodate all of the proposed features including landscaping and other environmental mitigation features. It is a conservatively high estimate and it is recognised that the area required will change or be refined in

subsequent stages as the design develops. However to assess sites on an equal basis, all were considered to be 15 ha in size.

A rectangular shape of 300m X 500m has generally been adopted but these dimensions are flexible and can be adjusted to account for local constraints where required.

3.3.7 *Other Site Requirements*

Water supply - it is assumed that water supply will be provided from public mains supply. It may be possible that onsite well will supply water needs of the MSA which will be investigated at subsequent stages.

Wastewater discharge – it is assumed that the wastewater will be treated onsite followed by pumping via a rising main to the local sewer network. An initial review of the study area and consultation with Meath County Council and Irish Water considered this option as the most likely solution. Alternative treatment and discharge options i.e. discharge to ground or local stream, will be considered further during the preliminary design stage and the preferred solution at the preferred site will ultimately be adopted. Details of the treatment and discharge will be subject to agreement with Irish Water and Meath County Council. Consultation with the aforementioned bodies is ongoing.

Local access road – A local controlled access road is required to facilitate staff and emergency access.

3.4 Description of Methodology

3.4.1 *Preamble*

The methodology developed followed a step by step approach:

i. Identify constraints
ii. Geometric appraisal
iii. Identification of potential sites
iv. Evaluation of potential sites under various Engineering, Environmental and Economic considerations
v. Determination of preferred site

3.4.2 *Description of steps to determine preferred site.*

i. Identify Constraints

The significant constraints within the Study Area were identified. Physical features such as the road network, rivers/streams, service and utility infrastructure, as well as the significant environmental features were all recorded and mapped.

Information on existing features and constraints were sourced from national databases, as-built motorway construction information and various third parties, before being confirmed by site visits.

ii. Geometric Appraisal

The geometric appraisal encompassed a broad analysis of the geometry of the motorway through the study area. This included a review of the existing horizontal and vertical curvature parameters to determine if the service area diverge and merge lanes could be incorporated into the existing motorway alignment in such a way that they would not adversely affect the safety of existing road users. It also included an assessment of weaving lengths between the existing junctions, such that vehicles would not be forced to perform potentially unsafe manoeuvres in entering/exiting the service area.

A primary constraint in identifying possible suitable locations is the necessity to avoid conflict between traffic using the service area slip roads and traffic using the slip roads of the nearest adjacent junction. NRA Standard TD 22 "Layout of Grade Separated Junctions" (NRA, 2009) identifies that ideally a minimum distance of 2km should be provided from one junction to the next to allow for sufficient lengths for streams of vehicles to safely merge and diverge between the junctions. Where a new junction is being constructed and the minimum distance of 2km is not achievable, this may be reduced to 1km as a relaxation from standard where the traffic figures are sufficiently low in the design year. A Departure from Standard may be applied for through the TII departures process where the traffic figures are higher.

On the M3 Motorway based on a medium growth rate, the design year AADT would be 19,979 which is less than 50% of the capacity (AADT) for the Level of Service D as given in Table 6/1 of TD9 (AADT of 52,000). Therefore a weaving length of between 1km and 2km would be considered a relaxation from standard.

The geometric appraisal ultimately identified lengths of motorway where an MSA junction could be accommodated and these are shown in drawing Y15112-M3-SSR-002.

iii. Identification of Sites

From the geometric appraisal outlined above, a number of locations where a junction could be located on the existing motorway were identified. The next step was the identification of sites which involved a review of these locations and surrounding area in order to determine if and where a site for a MSA could be accommodated.

The identification of sites involved the identification of an area of approximately 15ha that could accommodate a MSA, having consideration for the local constraints and features.

Local constraints that influenced the location of potential sites were river streams, dwellings, topography, existing field boundaries, HV voltage electricity pylons, etc.

iv. Evaluation of Potential Sites under various Engineering, Environmental and Economic Considerations-Multi Criteria Analysis

The potential sites were assessed against each other under three main headings; 1.) Engineering, 2.) Environmental, and 3.) Economic. The various sub-elements of these assessment criteria are listed in Table 3.3, and are discussed further in Sections 3.5 herein.

Engineering	Environmental	Economic
1.) Traffic Volumes	1.) Air Quality	1.) Benefit Cost Ratio
2.) Road Safety	2.) Noise	
3.) Physical Characteristics of the Site	3.) Landscape & Visual	
4.) Service & Utility connections	4.) Agriculture	
5.) Geotechnical	5.) Non- Agricultural Properties/ Material Assets	
6.) Distance to adjacent on-line service area or locally available facilities	6.) Ecology	
	7.) Archaeology	
	8.) Cultural & Architectural Heritage	
	9.) Human Beings/ Socio Economic	
	10.) Planning	
	11.) Geology & Hydrogeology	
	12.) Hydrology	
	13.) Waste	

Table 3.3. Site Selection Assessment Criteria

The criteria above have been identified utilising TII's and HB's extensive experience in the site selection of MSA and similar projects.

A qualitative ranking system, similar in nature to that outlined in the NRA's 'Environmental Impact Assessment of National Road Schemes –A Practical Guide', has been developed to compare specific site characteristics, as shown in Table 3.4.

Table 3.4: Qualitative Ranking System

Extreme Positive	Severe Negative
Major Positive	Major Negative
Moderate Positive	Moderate Negative
Minor Positive	Minor Negative
Neutral	

The above site specific ranking system was then used to determine, compare and contrast the relative advantages and disadvantages of each location in relation to the other, as opposed to a set of universal or general criteria. Where no relative advantage or disadvantage has been identified between the site locations for a particular criterion, each of the assessed sites has been given a neutral ranking.

For the environment assessment, where all sites may have an overall negative impact for a particular criteria but one site has been assessed as having an advantage over other sites, this site will be assigned a baseline neutral ranking with subsequent sites ranking either minor negative, moderate negative or major negative from this baseline.

For each of the criteria, a qualitative approach was adopted to assign the relative rankings of each site. Therefore, judgement was applied in arriving at the rankings assigned. A description of each criteria is provided in Section 3.5.

v. Determination of Preferred Site

The above ranking system was then used to determine which of the potential sites best met the criteria. The assessment was carried out by comparing the merits of each site against each other as opposed to being compared against a set of general/national criteria/values. The sites that rated best in comparison to each other are therefore given the best ranking, i.e. positive, the sites that compare worst against each other are given the lowest, i.e. negative ranking. A fair and unbiased qualitative assessment of each site's merits has been undertaken based on all the information available.

To draw a conclusion as to which site represents the best option considering all of the criteria put together, judgement was applied and a qualitative assessment undertaken to arrive at the preferred option. Since no single site ranked highest or equal highest in each and every criteria, it follows that the chosen preferred site had to be a compromise of all the competing factors.

3.5 Description of Assessment Criteria

3.5.1 Engineering

1) Traffic - The traffic volumes and likely turn in rates of the section of motorway in which each of the potential sites are located was considered. It is deemed preferable to locate a service area on a section of motorway which has the highest traffic volumes turning into the MSA as in this way, the service area will serve the highest possible number of road users.

2) Road Safety - A Road Safety Impact Assessment as per NRA TD 18 has been undertaken for the M3 MSA. The RSIA considered the safety implications of the development of an MSA at each of the potential site locations. The RSIA also identifies a site preference or ranking in terms of road safety of the potential sites that are being considered.

3) Physical Characteristics of Site - This criteria considers a number of the physical features and constraints at or in the vicinity of the site which will be a factor in the development of a MSA. The factors considered include:

    - Land Availability & Setting
    - Terrain
    - Conflicts with existing utilities and services
    - Surface water features
    - Motorway structures and other motorway features
    - Flooding

4) Service and utility connections - This criteria considers the potential for the MSA to be served by surrounding infrastructure. Key requirements of an MSA are for water supply, waste water discharge, connection to the local road network, telecommunications, electrical supply and an outfall for surface water runoff.

5) Geotechnical - The existing ground/geotechnical conditions can become a significant engineering challenge in the development of a service area.

6) Distance to adjacent online service area or locally available services - The location of adjacent online service areas has been considered in the site selection process. On consideration it is recognised that the location of adjacent online service area or locally available services is not a major differentiator between potential sites within the same study area. The potential sites being considered are on the same stretch of motorway and therefore the relative location of the nearest MSA is similar to within a few km.

This criteria is therefore not considered further and excluded from the assessment tables provided.

It is noted that there is no online MSA along the existing M3 Motorway close to the study area. However, there is a site currently under construction just off the M3 motorway approx. 7.5km south of the existing Toll Plaza and 10km south of Rathbeggan Lakes. This petrol station (Maxol) would only be able to serve southbound traffic. There is also a local off-line fuel facilities run by Topaz at Bracetown on R147 along with petrol stations within Dunshaughlin or on the R147 south of Dunshaughlin. Further off line facilities are located on the R154 in Batterstown and R147 north of Tara.

The above mentioned petrol/service stations are not considered comparable to a Type 1 NRA MSA in terms of facilities and services provided.

3.5.2 Environmental

1) Air - Assessment of air quality for each of the M3 MSA site options was conducted through a calculation of the index of overall change in exposure of the nearby population to NOx and PM10. The index is calculated based on the number of sensitive receptor locations within 50 m of road links (new or existing) that would experience a significant change in traffic as a result of the M3 MSA scheme. A significant change in traffic is defined as an increase or decrease in traffic of 10% or more, and 50 m represents the distance within which detectable impacts of road traffic might be found.

2) Noise - Reference has been made to guidance documents for the assessment of noise for new national road schemes, namely the "Guidelines for the Treatment of Noise and Vibration in National Road Schemes" (NRA, 2004) and "Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes" (NRA, 2014). The methodology outlined in both documents has been broadly used to compare and rank the sites under consideration

   In order to compare the potential sites and to determine any preferences in terms of noise, the assessment of potential impact is based primarily upon property counts in the vicinity of each site, likely changes in noise environment, and a review of the mitigation measures.

3) Landscape & Visual impact - The methodology for the landscape and visual assessment has been prepared with regard to the NRA guidelines "A Guide to Landscape Treatments for National Road Schemes in Ireland" (NRA, 2006)and the EPA guidance documents on the preparation of an EIS (EPA, 2002 & 2003).

Landscape has two separate but closely related aspects both assessed as part of the site selection process. The first is the visual, 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. The methodology for the preparation of Landscape and Visual Impact assessment included a desktop review of the study area to identify landscape planning designations and a roadside survey to identify key receptors.

4) Agriculture - The methodology for the preparation of agriculture report was based on a desktop review of the study area, local knowledge of agriculture along the M3 scheme and a roadside survey to identify agricultural and property constraints and current land use and farming activity.

   The evaluation of the site options comprised a qualitative and quantitative assessment of agricultural property at each of the proposed site options. The qualitative assessment includes a description of land use, land quality, farm activity and soils information. The quantitative assessment of the lands within the site option boundary includes the following:

   - Landtake (ha)
   - Land use (% area)
   - Grassland / Tillage lands under land quality (% area)
   - Farm houses within site option boundary (No.)
   - Farm buildings, farm yards (No.)
   - Key agricultural enterprises – Type(s) (No.)

5) Non Agricultural Properties/ Material Assets - This section assesses the impact of the proposed development on non-agricultural properties and material assets. The assessment is based on a desk study, and on information gathered during the roadside survey to identify agricultural and property constraints. The desk study included an inspection of the land registry records, wind shield surveys, consultation with service providers, examination of aerial photographs and inspection of planning records to assess the degree of impact on non-agricultural properties or other material assets

6) Ecology - The assessment is based on a desk study utilising a variety of existing data sources including recent aerial imagery, National Parks and Wildlife Service on-line mapping services showing the designated area boundaries and other online data sources including the National Biodiversity Data Centre, Bat Conservation Ireland, Botanical Society of Britain and Ireland and BirdWatch Ireland websites. The assessment and evaluation of the various site options is based on the impact

assessment criteria defined within the "Guidelines for Assessment of Ecological Impacts on National Road Schemes" (NRA 2008).

7) Archaeology - The site selection constraints study has been undertaken in accordance with "Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes". In accordance with the "Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA 2008) an impact rating for each of the options on features of archaeological significance has been given; they are categorised as being either a positive or negative, direct or indirect impact, or as having no predicted impact. A significance impact or rating level for impacts is given i.e. slight, moderate, significant and profound in accordance with the criteria provided in the published EPA guidance documents on the preparation of an EIS (EPA 2002 & 2003) and NRA Environmental Impact Assessment guidelines.

8) Architectural & Cultural Heritage - The site selection study has been undertaken in accordance with the NRA "Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes" (NRA 2005). In accordance with the "Environmental Impact Assessment of National Road Schemes – A Practical Guide" (NRA 2008), an impact rating for each of the options on features of architectural and cultural heritage significance has been given; they are categorised as being either a positive or negative, direct or indirect impact, or as having no predicted impact. A significance impact or rating level for impacts is given i.e. slight, moderate, significant and profound in accordance with the criteria provided in the published EPA guidance documents on the preparation of an EIS (EPA, 2002 & 2003) and NRA Environmental Impact Assessment guidelines.

9) Human Beings/Socio Economic - The methodology for the assessment of the potential impact on Human Beings / Socio Economic was based on a desktop review of the study area, planning history records and full review of development plans and, where they exist, local area plans. The assessment addresses impacts at a strategic level rather than for individuals or identifiable properties that have been considered for Site Selection purposes within criteria concerned with Agriculture, Agronomy and Property. Socio Economic Impact on Human Beings is considered from the perspective of severance of identifiable settlements and business units.

The site selection criteria as a whole reflect each of the disciplines engaged to undertake the environmental assessment and design of the eventual preferred MSA site. Those disciplines in turn reflect the grouped format structure of an EIA. Any environmental effect ultimately affects the quality of life of human beings either directly in the form of human health matters e.g. road safety, air and water quality or indirectly e.g. loss of habitat and therefore reduction in biodiversity or

loss/disturbance of archaeological remains and therefore a negative impact on the heritage value of the environment and collective memory. As such Human Beings as a site selection metric/criteria pervades all other site selection criteria and is considered inherent in the site selection process for that reason. Human Health Impacts are considered under separate criteria i.e. Road Safety, Noise, Air Quality assessments.

10) Planning - The methodology for the assessment of the potential impacts on Planning was based on a desktop review of the study area to identify constraints like Land Use Zoning, live planning applications / permissions and identify anomalous land uses and rank accordingly.

11) Geology and Hydrogeology - The site selection study has been undertaken in accordance the EPA guidance documents on the preparation of an EIS (EPA, 2002 & 2003). An application of these guidelines to Geology, and Hydrogeology is outlined in "Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes" (NRA, 2009).

12) Hydrology - The site selection assessment for hydrology has been undertaken in accordance with the EPA guidance documents on the preparation of an EIS (EPA, 2002 & 2003) and the NRA document *"*Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes*"* (NRA, 2009).

13) Waste - The assessment has been prepared for the provision of waste management for each of the proposed MSA sites in accordance with the NRA "Guidelines for the management of waste from National Road Construction Projects"

3.5.3 *Economic*

1) Benefit Cost Ratio - The Benefit Cost Ratio (BCR) is given by the ratio of the discounted sum of all future benefits to the discounted sum of all costs. It is one of a number of indicators that describe the efficiency of an investment and provides a means to compare alternative investments. Thus:

$$BCR = PVB/PVC$$

The Present Value of Benefits (PVB) represents the value in the present value year of all the benefits that will accrue over the appraisal period. It is calculated according to the following formula:

$$PVB = \sum_{y=year\ 0}^{y=year\ n} \frac{B_y}{(1+r)^{y-p}}$$

Where B_y is the benefit occurring in each year, from the first year in which benefits are accrued (*Year 0*) discounted as appropriate, up to the limit of the appraisal period (*year n*).

The Benefit (B) in any given year is calculated as follows:

B = (CSi * DU) + ((1-P) * NR) + (Akm * a * f * c) + R

Where:

- CSi is the average consumer surplus associated with each user of the MSA
- DU is the number of daily users of the MSA
- (1-P) is equal to 1 minus the overall profitability rate in the retail sector as a % of NR (for example if the profitability in the retail sector is 35%, 1-P = .65)
- NR is the net revenue after cost of sales
- Akm – represents the distance between Service Areas
- a – represents the accident rate associated with road usage
- f – represents the proportion of accidents attributable to fatigue
- c – represents the established monetary values associated with casualties
- R – represents the residual value associated with the project

The Present Value of the stream of Costs (PVC) represents the value in the present value year of all the costs that will accrue over the appraisal period, comprising mainly construction and maintenance costs. It is calculated in a similar way to the approach for calculation of PVB. For some schemes, it is possible that construction costs may have been incurred prior to the present value year. In such cases, this would require an inflation of the scheme costs to the present value year using the discount rate.

The approach to calculating PVC is therefore:

$$PVC = \sum_{y=year\ 0}^{y=year\ n} \frac{C_y}{(1+r)^{y-p}}$$

where C_y is the cost incurred in year y, discounted as appropriate, up to the limit of the appraisal period *year n. Year 0* is the first year that costs are incurred, which may be prior to the present value year.

The Costs (C) in any given year is calculated as follows:

$$C=OPC + K$$

Where:

- OPC are the operating and maintenance costs
- K represents the capital construction costs

The Benefits (B) and Costs (C) outlined above are defined in the NRAs Project Appraisal Guidelines Unit 11 – Development of Business Case for Service Areas.

At the site selection stage key differentiators between the potential sites which affect the BCR calculation are primarily the number of daily users of MSA (DU) and the construction cost (K).

3.6 Consultation

The site selection study incorporated consultation with the public, landowners and various third parties.

3.6.1 Statutory Consultation

Statutory consultees were issued with information letters inviting comment relating to the proposals.

Other stakeholders, including Meath County Council, Planning and Water Services sections, Irish Water and ESB were consulted to establish their requirements.

3.6.2 Briefing of Local Area Municipal District Councillors

Public consultation in the form of a briefing with local Councillors in Ashbourne and Ratoath Municipal Districts were held on the 12th and 14th October respectively. At the meetings, Halcrow Barry provided a presentation on the project to local Councillors which comprised the following items:

- TII Service Area Policy;
- Site Selection Methodology;
- Assessment Criteria and Scoring System;

- The M3 MSA Study Area;
- The M3 Geometric Appraisal;
- Key Issues relating to the potential sites;

3.6.3 *Meetings with Potential Affected Landowners*

Landowner Consultation meetings were held on Thursday 22nd October 2015 in Dunshaughlin Civic Offices between 11am and 3pm. The meeting were used to:

- inform the landowners of the proposals;
- confirm details of what was currently farmed on their holding (e.g. Dairy, Beef, Sheep, Equine or Crops etc.);
- discover any particular local issues with the land of significance (e.g. flooding, local springs, disposal of motorway construction material to raise field levels etc.) that would not be known by the Design Team;
- present to the landowner how a proposed site, were it to be chosen, would impact upon their holding.

Halcrow Barry met with 14 Landowners during this session and subsequently separately with four other Landowners who were unable to attend on the day.

3.6.4 *Public Information Evening*

An advertisement was placed on Meath County Council's website on the 16th October 2015 and in the local publication, the Meath Chronicle, published on the 21st October 2015. The website notice was also placed in prominent locations in Dunshaughlin in advance of the event. The locations included:

- Dunshaughlin Library;
- Dunshaughlin SuperValu;
- Dunshaughlin Pharmacy;
- Dunshaughlin Post Office;
- Madden's Hardware Store;
- St. Seachnall National School;
- Gaelscoil na Ríthe

Radio readouts were also issued to a local radio station, LMFM for broadcast.

The public information meeting took place in Dunshaughlin Civic Offices on Thursday 22nd of October where members of the public were invited to comment on the drawings and meet with TII, Westmeath National Roads Office and Halcrow Barry.

3.6.5 *Submissions Received*

A total of 82 submissions were received on or before the 6th November 2015. In summary of the 82 submissions received 86% were opposed to the development of a MSA at either location 1 or 2 while 20% were opposed to location 4. Further details are as follows:

- One was in favour of a MSA north of Dunshaughlin (location 4) as it would encourage motorists to stay on the Motorway and avoid travelling through Dunshaughlin to avoid paying the toll;
- Seventy submissions were against location 1;
- Seventy submissions were against location 2;
- Seventeen were against location 4;
- One submission had no observation to make pending the provision of more detailed information;
- A letter template from residents from Raynestown was submitted on forty four separate occasions;
- A feedback form template from residents from Raynestown was submitted on eleven separate occasions;
- A letter template from members of the Tara Skryne Preservation Group was submitted on six separate occasions.

The main issues raised in the submissions received was the proximity of the proposed development to Dublin, environmental impacts on nearby residents, the cumulative impact of the proposed development on residents of Raynestown following the construction of the M3 and East West Interconnector and the impact upon the Cultural Heritage and Landscape of the Tara Skryne Valley.

Issues raised by Landowners, Councillors and the General Public during the Public Consultation phase have been considered and incorporated in the overall assessment of the individual sites and subsequent ranking of sites when compared to one another.

3.7 *Site visits*

A number of site visits were undertaken by the project team through the course of the Site Selection Study.

These site visits did not include entering private land. Sufficient visibility of the sites under consideration was available from public roads and overbridges to support the assessment.

4 Evaluation of Study Area

4.1 Features and Constraints

The study area runs from Junction 4 to Junction 7 a distance of 25km. The towns located in the vicinity of the study area are Dunboyne and Dunshaughlin.

The section of the M3 Motorway under consideration is designed to a Rural Motorway Standard (D2M) and the route passes through 4 No. major grade separated junctions and a Toll Plaza at Black Bull. A number of local roads and the existing R147 cross over/under the motorway.

The study area commences in close proximity to the Hill of Tara at the Blundelstown Grade Separated Junction. The M3 route crosses River Tolka around the Black Bull Toll Plaza.

During the consultation meeting with Meath County Council, it was confirmed that the Tara Skyrne Valley Landscape Conservation Plan developed in 2010 is a draft plan. The Tara Skryne Valley Landscape Conservation Area covers a section of the M3 Motorway, over a length of 8km south of the Blundelstown Grade Separated Junction.

Planning permissions around the Study Area were reviewed through the Meath County Council website. It was observed that there were a number of granted planning applications related to borrow pits, which also subsequently received waste permits. Details of such areas are discussed in Chapter 5 and the Study Area is shown in detail on Drawing Y15112-M3-SSR001.

4.2 Geometric Appraisal

The main geometric constraints encountered in the identification of suitable locations were achievable weaving distances in relation to adjacent junctions, ramp lengths and the avoidance of existing structures.

The geometric appraisal included an assessment of existing structures and toll infrastructure which might constrain the development of the proposed service area. While a given location may appear initially promising, quite often the frequency of bridge structures along the mainline roadway results in inadequate site frontage to allow for access to the location, or inadequate forward visibility on the approaches to the location. Hence, an assessment of both these existing structures as well as the mainline road geometry in the vicinity of each location was necessary at this stage, with sections deemed to have insufficient frontage being excluded from further consideration.

A description of the locations and the geometric constraints associated with each is summarised in the Table 4.1 below:

Approximate Chainage	Feature
Ch 14.7 to 15.8  **Figure 4.2.1** – Proposed MSA Location 1	**Location 1** Approx. 1.1km section with proposed junction between Ch: 14.7 north of Rathbeggan Overbridge to Ch: 15.8 south of Raynestown Overbridge. Dumb-bell Grade Separated Junction with Type A Diverge and Type B Merge. The proposed MSA junction is provided outside the 2km weaving length required as per the TII DMRB TA70/14 and TD22/06. Type A Diverge comprises of 180m direct taper and slip road with minimum length of 295m, i.e. Desirable Minimum Stopping sight Distance of the Mainline. Type B Merge comprises of 230m auxiliary lane and 75m direct taper. The mainline alignment is straight (R=12,000) and Desirable Minimum Stopping Sight Distance is achieved. The vertical gradient of the mainline is nearly flat, i.e. 0.3%-0.6% gradient. There are no Relaxations/ Departures associated with location 1 with respect to weaving length. Two potential service area sites identified, one each on either side of the motorway, further discussed in Section 5.
Ch 16.2 to 17.3  **Figure 4.2.2** – Proposed MSA Location 2	**Location 2** Approx. 1.1km section with proposed junction between Ch: 16.2 north of Raynestown Overbridge to Ch: 17.3 south of Derrockstown Overbridge. Dumb-bell Grade Separated Junction with Type A Diverge and Type B Merge. The proposed MSA junction is provided outside the 2km weaving length required as per the TII DMRB TA70/14 and TD22/06. Type A Diverge comprises of 180m direct taper and slip road with minimum length of 295m, i.e. Desirable Minimum Stopping sight Distance of the Mainline. Type B Merge comprises of 230m auxiliary lane and 75m direct taper. The mainline is on a horizontal curvature of R=2,900 and Desirable Minimum Stopping Sight Distance is achieved. The vertical gradient of the mainline is nearly flat, i.e. 0.3% gradient.

	There are no Relaxations/ Departures associated with location 2 with respect to weaving length. Two potential service area sites identified, one each on either side of the motorway, further discussed in Section 5.
Ch 15.9 to 17.4  **Figure 4.2.3** – Proposed MSA Location 3	**Location 3** Approx. 1.5km section with the proposed junction between Ch: 15.9 to Ch: 17.4 close to the bridge over the existing N3. The mainline is on a horizontal curvature of R=2,900 and Desirable Minimum Stopping Sight Distance is achieved. The vertical gradient of the mainline is relatively flat, i.e. 0.72 and 0.55% gradients. A relaxation from standard would be required with regarded to weaving length from Junction 6 Dunshaughlin. Two potential service area sites identified, one each on either side of the motorway.
Ch 23.8 to 24.9  **Figure 4.2.4** – Proposed MSA Location 4	**Location 4** Approx. 1.1km section with the proposed junction between Ch: 23.8 to Ch: 24.9 close to the bridge over the existing R147. Dumb-bell Grade Separated Junction with Type A Diverge and Type B Merge. The proposed MSA junction is provided outside the 2km weaving length required as per the TII DMRB TA70/14 and TD22/06. Type A Diverge comprise of 180m direct taper and slip road with minimum length of 295m, i.e. Desirable Minimum Stopping sight Distance of the Mainline. Type B Merge comprise of 230m auxiliary lane and 75m direct taper. The mainline is nearly straight (R=2890/3150) and Desirable Minimum Stopping Sight Distance is achieved. The vertical gradient of the mainline is 2%, which would be equal to the maximum gradient recommended within TA70/14. There are no Relaxations/ Departures associated with location 4 with respect to weaving length. Two potential service area sites identified, one each on either side of the motorway, further discussed in Section 5.
Ch 25.7 to 27.0	**Location 5** Approx. 1.3km section with the proposed junction between Ch: 25.7 to Ch: 27.0 north of Junction 6 Dunshaughlin.

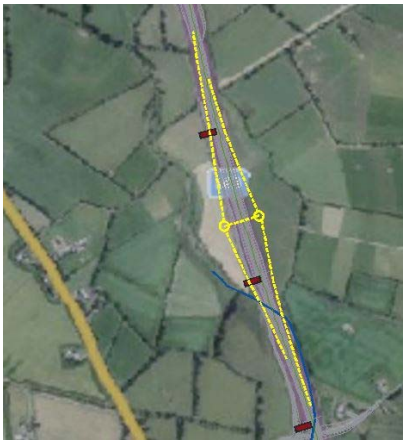
 **Figure 4.2.5** – Proposed MSA Location 5	The mainline is on a horizontal curvature of R=1500. The vertical gradient of the mainline is relatively flat, i.e. <2% gradients. There are no Relaxations/ Departures associated with location 5 with respect to weaving length. Two potential service area sites identified, one each on either side of the motorway.
Ch 28.5 to 29.8  **Figure 4.2.6** – Proposed MSA Location 6	**Location 6** Approx. 1.3km section with the proposed junction between Ch: 28.5 to Ch: 29.8 south of Junction 7 Blundelstown. The mainline is on a horizontal curvature of R=6500m. The vertical gradient of the mainline is relatively flat, i.e. <2% gradients. There are no Relaxations/ Departures associated with location 6 with respect to weaving length. Two potential service area sites identified, one each on either side of the motorway.

Table 4.1: Summary of Geometric Appraisal

4.3 Further Assessment of Potential Sites

On examination of the local constraints and features at the locations identified in the geometric appraisal, locations 3, 5 and 6 were discounted from further consideration. The reasons for this are outlined as follows:

Location 3

Location 3 encompasses the stretch of motorway between Ch: 15.9 at Derrockstown Overbridge to Ch: 17.4 south of Rath Hill Overbridge.

The recently constructed Dunshaughlin Burial Ground is located immediately to the east along this stretch of motorway. The close proximity of the burial ground to the motorway precludes the construction of a grade separate junction and associated slip roads at this location.

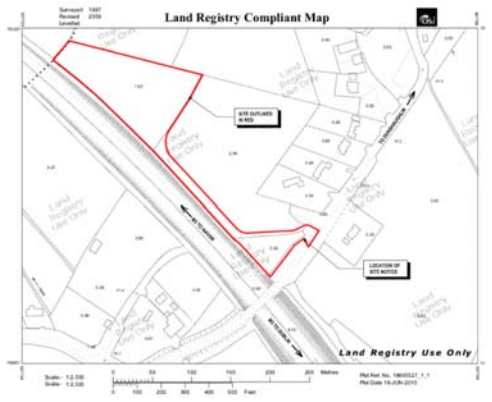


Figure 4.3: Dunshaughlin Burial Ground recently constructed along the M3 Motorway north of L22090 Derrockstown Overbridge

It was also found that unlike the other sites considered, a desirable minimum weaving distance between the proposed Service Area Junction and adjacent existing grade separated junctions (Junction 6) was not achieved and would require a Relaxation from Standard.

Location 3 was therefore dropped from further consideration following the geometric appraisal and the consideration of adjacent constraints.

Site Locations 5 and 6

Locations 5 and 6 are located within an area where the landscape was identified as of "exceptional value" and "high sensitivity" with National/ International Importance (Appendix 7 – Landscape Character Assessment of Meath Co Co Development Plan).

The "exceptional value" and "high sensitivity" is recognised in the (Draft) Tara Skyrne Valley Landscape Conservation Plan. Both location 5 and 6 are situated within an area identified in this Plan.

Previous studies and investigations along the M3 motorway corridor have identified a number of sites of archaeological interests, which are not recorded on the DoE Database of Archaeological Monuments. Geophysical surveys undertaken as part of the M3 Motorway construction show extensive sites of interest within the perimeter of the Draft Tara Skyrne Valley Landscape Conservation Plan.

The Tara Complex is also identified on the Tentative List of potential nominees to the World Heritage List submitted to UNESCO.

In addition location 5 located south east of the village of Tara is situated in area along the M3 where poor ground conditions are encountered with levels of peat of up to 6m in depth. Furthermore, this location was used as a deposition area for surplus peat excavated during the construction of the M3 Motorway.

Location 6 is approximately 1.5km from the Hill of Tara and 1km from Skryne Church which have protected panoramic views (Appendix 12 – Protected Views and Prospects of Meath Co Co Development Plan). It was also used as a deposition area for peat and clay arising from the construction of the M3.

Considering the above, locations 5 and 6 along the M3 Motorway were excluded from more detailed assessment for a potential MSA based the cumulative significant negative Geotechnical, Archaeological, Cultural Heritage and Landscape impacts associated with constructing a MSA within this region.

Site Locations 1, 2 and 4

On consideration of the local constraints and features, location 1, 2 and 4 were considered suitable for the next phase of the site selection process.

5 Evaluation of Potential Sites

5.1 *Description of Potential Sites*

On consideration of the local constraints and features at location 1, 2 and 4, the potential sites at each location were identified. A total of 6 sites were identified, two at each location.

These sites are shown on drawing Y15112-M3-SSR-003 and Y15112-M3-SSR-004 in Appendix A.

The sites are described in Sections 5.1.1 to 5.1.6.

5.1.1 *Site 1A*

Site 1A, is situated on the western side of the existing M3 Clonee to Blundelstown Scheme, approximately 2.9km northwest of Blackbull Toll Plaza and 4.6km south west of Dunshaughlin. The land topography is favourable, being largely flat or mildly undulating throughout. The section of road onto which the site fronts is on shallow embankment which ranges from approximately 1m above the surrounding ground level to approximately 3m above ground level at the northern end of the site frontage.

The available site area is adequate for a single sided service area facility, however, there are several hedgerows along stream/ditches/field boundaries through the site.

The design of the grade separated junction would have a potential impact on the 1050mm diameter culvert and a mammal crossing at approximately Ch: 15.4 and will need to be incorporated/extended in the design. It is anticipated that approximately 400m of existing access track along the motorway boundary (north side) will need to be re-routed.

There is a stream that runs through the site which ultimately flows into a motorway culvert crossing. This stream could be used as an outfall subject to the requisite Environmental Assessment and implementation of environmental controls. The Tolka River is located approximately 320m to the south of the proposed site with streams from the site flowing into the river, and drainage from the site is likely to lead towards the river.

There are adequate electrical and telecom services available in the vicinity of the site location. The electrical supply for the proposed MSA site could be extended from the existing LV/MV lines located 150m north to the site boundary. The tele-communication connection could be provided from the local road within 100m of the proposed site.

The nearest foul water services with sufficient capacity are located in Dunshaughlin via R147 where a pump station is located some 3.95km northwest of the site location. Following discussions with Meath County Council and Irish Water, it was agreed that the best watermain connection would be to an existing 200mm dia watermain in the vicinity of Dunshaughlin Business Park. This 200mm Water main on R147 will require a 4.3km connection including a crossing of the motorway. There is no ESB line throughout the site and there is no impact on the gas services. There is an accommodation access road available to the south of the proposed site. This would need to be extended approximately 50m to the site boundary.

This site comprises of improved agricultural grassland used for grazing livestock and fodder production. The lands are of good agricultural quality and the farming enterprises are generally beef and sheep farming. There are no dwelling houses present within the site option. Lands on Site 1A were formerly part of the farm holdings on Site 1B before being severed by the M3 motorway scheme.

The Site encompasses a very mature treeline which runs through the centre of the site. There are two further hedgerows in the eastern part of the site. These features may support roosting bats and badger setts. The River Tolka flows less than 500mwest of the site and drainage from the site is likely to lead towards the river. Development on this site could also result in a loss of aquatic habitat and associated biota.

The fields at the southern end are part of the Rathbeggan Lakes property. Rathbeggan lakes are located approximately 300m south of the proposed southern boundary. This property provides a range of leisure and family activities centred around fishing on their man-made lakes. Access to all lands is via access gates onto a shared access accommodation track to the overbridge structure located south-east of the site. Farming enterprises are likely beef farming and lands are used for grazing and fodder production. There is one residential property immediately north-west area of the proposed site boundary and ribbon development involving approximately 12 residential houses further north-west of the site. There is proposed Strategic Rail Corridor from Pace to Navan just west of site, however there will be no impact from the development of a MSA.

The closest receptor is a two story residential property located circa 50m of the Motorway Service Area boundary which would likely experience significant / profound visual impact from the motorway junction and main body of the development. Other adjacent houses are approximately 250-300m away from the proposed boundary, which given the distance would significantly reduce environmental impacts on these receptors.

There are no planning applications or permissions within the proposed Site 1A.

The proposed site falls under low aquifer vulnerability. Locally important aquifer comprising bedrock which is generally moderately productive in local zones. Consultation with Landowners highlighted the presence of a well at the end of an accommodation road north of Rathbeggan Lane.

The Site 1A is located between Raynestown and Rathbeggan, south of Dunshaughlin within landscape Character Area 11: South East Lowlands (MCC Development Plan – Appendix 7: Landscape Character Assessment). This landscape is identified as being of 'very high value'; and of 'moderate sensitivity'. Site 1A would also come within 150m of Rathbeggan Lakes (Fishing and Amenity site) with a significant impact on character of the facility. One two storey residential property, located immediately west of the M3 would be within c.50m of the site and would likely experience significant/profound visual Impact.

There are no direct impact on any recorded archaeological monuments or architectural heritage features or buildings.

The geology mainly consist of Dinintian upper impure limestones. No karst features are recorded within the study area.

5.1.2 *Site 1B*

Site 1B, is situated on the eastern side of the existing M3 Clonee to Blundelstown Scheme, approximately 2.8km northwest of Blackbull Toll Plaza and 4.5km south west of Dunshaughlin. The land topography is favourable, being largely flat or mildly undulating throughout. The section of road onto which the site fronts is on shallow embankment which ranges from approximately 1m above the surrounding ground level to approximately 3m above ground level and goes in shallow cut (up to 2m) at the northern end of the site frontage.

The available site area is adequate for a single sided service area facility, however, there are several hedgerows along stream/ditches/field boundaries through the site.

The design of the grade separated junction would have a potential impact on the 1050mm dia culvert and a mammal underpass at approximately Ch: 15.4 and will need to be incorporated/extended in the design. It is anticipated that approximately 400m of existing access track along the motorway boundary (north side) will need to be rerouted.

There is a stream that runs through the site flows into the motorway culvert crossing and motorway outfall. This stream could be used as an outfall subject to the requisite Environmental Assessment and implementation of environmental controls.

There are adequate electrical and telecom services available in the vicinity of the site location. The electrical supply for the proposed MSA site could be extended from the existing LV/MV lines located 150m north to the site boundary. The tele-communication connection could be provided from the local road within 400m of the proposed site.

The nearest foul water services with sufficient capacity are located in Dunshaughlin via R147 where a pump station is located some 3.5km northwest of the site location. Following discussions with Meath County Council and Irish Water, it was agreed that the best watermain connection would be to an existing 200mm diameter watermain in the vicinity of Dunshaughlin Business Park. This 200mm Water main on R147 will require a 3.8km connection.

There is no ESB line throughout the site and there is no impact on the gas services. There is an access road along the motorway boundary edge available within the site.

The lands on this site comprise improved agricultural lands that are used for grazing livestock, cereal crops and fodder production. The lands are of good agricultural quality and the farming enterprises are tillage and livestock (sheep and beef) farming. Access to lands is via direct farm access onto R147 and an access accommodation track on the local road (L22091). There are no dwelling houses present within the site option. There is a one residential property immediately south-west (opposite side of the M3) of the site and there is ribbon development involving approximately 16 residential houses on Raynestown (L22091) road (East of M3). There is a field of allotments to the south east of the site associated with Rathbeggan Lakes

The site encompasses two mature treelines in the southern half. These structures may support roosting bats and badger setts. A drain or stream rises within the site and runs in a south-easterly direction through the site to join with the River Tolka c1.5km downstream.

There is an existing access road (for drainage maintenance and field access) that runs along the motorway boundary and part of this will be removed by the proposed slip roads.

There was a granted planning application and waste permit for a borrow pit falling within the site, used during the construction of the M3 Motorway.

The proposed site falls under low aquifer vulnerability. Locally important aquifer comprising bedrock which is generally moderately productive in local zones.

The Site 1B is located between Raynestown and Rathbeggan, south of Dunshaughlin within landscape Character Area 11: South East Lowlands (MCC Development Plan – Appendix 7: Landscape Character Assessment). This landscape is identified as being of 'very high value'; and of 'moderate sensitivity'. Site 1B would be openly visible in views south from a number of properties - One two storey residential property, located immediately west of the M3 would be within c.50m of the site and would likely experience significant/profound visual Impact.

There are no direct impact on any recorded archaeological monuments or architectural heritage features or buildings. The surrounding area has a slight negative potential due to the presence of a Bronze Age Ring Ditch excavated as part of the M3 Motorway Scheme.

The geology mainly consist of Dinintian upper impure limestones. No Karst features are recorded within the study area.

5.1.3 *Site 2A*

Site 2A, is situated on the western side of the existing M3 Clonee to Blundelstown Scheme, approximately 4.0km northwest of Blackbull Toll Plaza and 3.3km south east of Dunshaughlin town. The land topography is favourable, being largely flat or mildly undulating throughout and slight gradient towards the stream to south. The section of road onto which the site fronts is on shallow embankment which ranges from approximately 1m above the surrounding ground level to approximately 2m above ground level and goes in shallow cut (up to 3m) at the northern end of the site frontage.

The available site area is adequate for a single sided service area facility, however, there are several hedgerows along stream/ditches/field boundaries through the site.

The design of the grade separated junction would have a potential impact on the 2.4 x 1.8m box culvert and mammal underpass at approximately Ch: 16.5 along the M3 motorway and will need to be incorporated/extended in the design. It is anticipated that the culvert would need to be extended 5m on both sides to accommodate the proposed MSA grade separated junction.

There are adequate electrical and telecom services available in the vicinity of the site to serve an MSA development. An ESB connection can be provided from the local road which is approximately 900m south of the proposed site boundary. Potentially telecom facilities can be provided from the local road approximately 500m south of site boundary.

The nearest foul water services with sufficient capacity are located in Dunshaughlin via R147 where a pump station is located some 2.6km northwest of the site location. Following discussions with Meath County Council and Irish Water, it was agreed that the best watermain connection would be to an existing 200mm dia watermain in the vicinity of Dunshaughlin Business Park. This 200mm Water main on R147 will require a 2.9km connection including a crossing of the motorway. A stream runs along the southern boundary of the site. A drain runs in a south-westerly direction from the site which joins to the River Tolka approximately 700m downstream and may be used as an outfall subject to the requisite Environmental Assessment and implementation of environmental controls.

A 220kV high voltage ESB line runs perpendicular to the motorway through the site. There are two pylons 40m from motorway to west and 250m from motorway to east. The grade separated junction and MSA Site Layout could be designed to avoid this constraint in agreement with ESB/ ESBi.

There is a local access road (field access) to the south of the site that could potentially be upgraded and extended further into the site. This would require a 400m extension to provide access to an MSA at Site 2A.

The site comprises improved agricultural grassland used for grazing livestock and fodder production. Lands are of good agricultural quality farming enterprises are mostly sheep farming and land use is mainly livestock grazing. Access to lands is via farm holdings on local roads (L2209 & L22091). There are no dwelling houses or farmyards present within the site option.

The site encompasses a number of hedgerows and treelines of mature trees which may support roosting bats and badger setts. A drain runs in a south-westerly direction from the site which joins to the River Tolka approximately 700m downstream. Development on this site could also result in a loss of aquatic habitat and associated biota

There are no residential properties in the immediately area of the site boundary. There are a group of houses 450m to the north. There is proposed Strategic Rail Corridor from Pace to Navan just west of site, however there will be no impact of the development of MSA.

There are no planning applications or permissions within the proposed Site 2A. However, there are planning permissions for two borrow pit sites located south of the site 2A, which could have a minimal impact due the slip road of the proposed grade separated junction.

The proposed site falls under low aquifer vulnerability. Locally important aquifer comprising bedrock which is generally moderately productive in local zones.

Site 2A is located between Derrockstown and Rathbeggan, south of Dunshaughlin within landscape character area 11: South East Lowlands (MCC Development Plan – Appendix 7: Landscape Character Assessment)). This landscape is identified as being of 'very high value'; and of 'moderate sensitivity'. There are no protected views pertaining to the sites (MCC Development Plan – Appendix 12 and Map 9.5.1 of County Development Plan). Development at Site 2A including the required Grade Separated Junction and associated illumination would be well setback from residential properties either along the R147 (c.250m+) to east or Derrockstown Road (c.350m+) to the north or Raynestown Road (c.500m+) to south.

There is no direct impact on any recorded archaeological monuments or architectural heritage features or buildings along this site. The surrounding area has a slight negative potential due to the presence of a burnt mound excavated as part of the M3 Motorway Scheme.

The geology consist of Dinintian upper impure limestones. There are no karst recorded within the Study Area.

5.1.4 *Site 2B*

Site 2B, is situated on the eastern side of the existing M3 Clonee to Blundelstown Scheme, approximately 4.0km northwest of Blackbull Toll Plaza and 3.3km south east of Dunshaughlin town. The land topography is favourable, being largely flat or mildly undulating throughout and slight gradient towards the stream to south. The section of road onto which the site fronts is on shallow embankment which ranges from approximately 1m above the surrounding ground level to approximately 2m above ground level and goes in shallow cut (up to 3m) at the northern end of the site frontage.

The available site area is adequate for a single sided service area facility, however, there are several hedgerows along stream/ditches/field boundaries through the site.

The design of the grade separated junction would have a potential impact on the 2.4 * 1.8m box culvert and mammal underpass at approximately Ch: 16.5 along the M3 motorway and will need to be incorporated/extended in the design. It is anticipated that the culvert would need to be extended 5m on both sides to accommodate the proposed MSA grade separated junction.

There are adequate electrical and telecom services available in the vicinity of the site location. An ESB connection can be provided from the MV lines just 10m north of

the proposed site boundary. Potentially telecom facilities can be provided from the R147 road approximately 100m south of site boundary.

The nearest foul water services with sufficient capacity are located in Dunshaughlin via R147 where a pump station is located some 2.1km northwest of the site location. Following discussions with Meath County Council and Irish Water, it was agreed that the best watermain connection would be to an existing 200mm dia watermain in the vicinity of Dunshaughlin Business Park. This 200mm Water main on R147 will require a 2.4km connection. There is a stream that runs southbound of the site which may be used as an outfall subject to the requisite Environmental Assessment and implementation of environmental controls.

A 220kV high voltage ESB line runs perpendicular to the motorway through the site. There are two pylons 40m from motorway to west and 250m from motorway to east. The grade separated junction could be designed to avoid this constraint in agreement with ESB/ ESBi.

Local access could be potentially provided from the R147 through access road approximately 100m to the site boundary.

The site comprises of improved agricultural grassland and tillage lands used for fodder production and cereals respectively. Lands are of good agricultural quality and farming enterprises are tillage and livestock based. Access to lands is via either an access accommodation track from the local road (L2209) or access onto the R147. Some of the lands on Site 2B were formerly part of farm holdings east of the M3 before being severed by the M3 motorway scheme.

The site encompasses dividing mature treelines which may support roosting bats and badger setts.

There are no buildings within the proposed site. There are 4 residential properties in the immediately area of the site boundary with a further 4-6 residential properties on the opposite side of the R147. Out of these, there is one house within 50m of the site and a second within 150m, while there are a bigger group of houses 350m to the south.

There is an equine enterprise located on one of the affected farm holdings. The holding consists of lands and stables and is used in conjunction with the main holding at Kilbride. This sensitive enterprise is involved in the breeding, breaking in and pre-training of high value thoroughbred horses for racing.

During the construction of the M3 Motorway, there was a planning application for a borrow pit over a 4.5ha area within the site under consideration and subsequently a waste permit was also granted. The borrow pit was used for the disposal of topsoil and overburden storage from construction activities on the M3 Motorway. This area would be impacted upon by the proposed MSA development. There is potential for excavation of contaminated material from the borrow pit.

The proposed site falls under low aquifer vulnerability. Locally important aquifer comprising bedrock which is generally moderately productive in local zones.

Site 2B is located in Derrockstown, Ballinlough and Raynestown, south of Dunshaughlin within landscape Character Area 11: South East Lowlands (MCC Development Plan – Appendix 7: Landscape Character Assessment). This landscape is identified as being of 'very high value'; and of 'moderate sensitivity'. There are no protected views pertaining to the sites (MCC Development Plan – Appendix 12 and Map 9.5.1). Development at Site 2B including the required Grade Separated Junction and associated illumination would be well setback from residential properties either along Derrockstown Road (c.250m+) to the north or Raynestown Road (c.400m+) to south. However the proposed MSA and associated illumination would be between 50 and 150m of a number of residential properties located west of the R147. These properties would likely experience significant visual impact.

There is no direct impact on any recorded archaeological monuments or architectural heritage features or buildings along this site.

The geology consist of Dinintian upper impure limestones. There are no karst recorded within the Study Area.

5.1.5 *Site 4A*

Site 4A, is situated on the western side of the existing M3 Clonee to Blundelstown Scheme, approximately 3.5km northwest of Dunshaughlin town. The land topography is favourable, being largely flat throughout and slight gradient towards the watercourses. The section of road onto which the site fronts is on shallow embankment which ranges from approximately 1m above the surrounding ground level to approximately 2m above ground level at the northern end of the site frontage.

The available site area is adequate for a single sided service area facility, however, there are several hedgerows along stream/ditches/field boundaries through the site.

The design of the grade separated junction would have a potential impact on the 1050mm diameter culvert and mammal crossing at approximately Ch: 24.1 along the

M3 motorway and will need to be incorporated/extended in the design. There is potential impact on the existing access track along the western side of the M3 motorway and would require rerouting. An existing attenuation ditch and attenuation pond may also be impacted upon by a new grade separated junction.

There are no designated flood zone around the proposed site.

There are adequate electrical and telecom services available in the vicinity of the site location. An ESB connection can be provided from the existing lines along R147 600m to the west of the proposed site boundary. Detailed information regarding the potential telecom facilities are not available, however it is anticipated that these can be provided from the R147 road.

The nearest foul water services with sufficient capacity are located to the north of Dunshaughlin which will required 3.85km connection via crossing the proposed junction. Similarly, the closest suitable potable water services are also located north of Dunshaughlin via local roads. A 1.2km connection to an existing 100mm watermain in the townland of Trevet is required and includes a crossing of the motorway. A drain or small stream flows in a south-westerly direction towards the River Skane approximately 100m south of the site which the existing motorway drainage outfalls to. This stream could be used as an outfall subject to the requisite Environmental Assessment and implementation of environmental controls.

There is no ESB line throughout the proposed site.

There is an attenuation pond which is potentially impacted by the grade separated junction and would need to be moved. Also, there are drainage ditches along the edge of motorway that may need to be rerouted.

Local access could be potentially provided from the existing access road along the south side boundary which could be re-routed for approximately 300m length around the slip road into the site boundary.

The site comprises improved agricultural lands used for tillage. Lands are of good agricultural quality and farming enterprises are tillage based involving cereal and vegetable production. Access to lands on Site 4A is via farm access on the R147 and leading to the M3 overbridge at Berrilstown. There are no dwelling houses or farmyards present within the site option.

It is noted that there are significant equestrian holdings on the western side of the R147 and a separate holding 600m to the north.. It is believed that the farm boundary of an

equine enterprise is within the immediate area of the study area though the more intensive equine activities will take place nearer to stable yard, 575m from the site boundary. The closest residential properties are 200m to the north of the site. There is a Garda observation platform that would be impacted at the proposed grade separated junction.

The site encompasses mature hedgerows with occasional mature trees dividing them. These features may support roosting bats and badger setts.

There are no planning application or permissions within the proposed site.

The proposed site falls under low aquifer vulnerability. Locally important aquifer comprising bedrock which is generally moderately productive in local zones.

The draft Tara Skryne Valley Landscape Conservation Area is located in close proximity to the proposed Site 4A. Meath County Council note that that the conservation area shows a number of sites of archaeological interests, which are not recorded on the DoE Database of Archaeological Monuments.

The site is located in Berrillstown and Garretstown, north of Dunshaughlin within landscape character area 12: Tara Skryne Hills (MCC Development Plan – Appendix 7: Landscape Character Assessment). This landscape is identified as being of 'exceptional value'; and of 'high sensitivity'. It is unlikely that the site would be visible from the Hill of Tara, however Skyrne Church would be visible the site. Site 4A residential properties are generally well setback. Sites 4A is also located close to Gerrardstown House and Garretstown Studs where additional illumination may be a consideration.

The site has a moderate negative potential impact on Archaeological potential due to the greenfield environment and proximity to draft Tara-Skryne conservation area. In addition it is noted that during the construction of the M3, there was a significant increase in concentration of archaeological remains to the north of Dunshaughlin.

5.1.6 *Site 4B*

Site 4B is situated on the eastern side of the existing M3 Clonee to Blundelstown Scheme, approximately 3.5km northwest of Dunshaughlin town. The land topography is favourable, being largely flat throughout and slight gradient towards the watercourses. The section of road onto which the site fronts is on shallow embankment which ranges from approximately 1m above the surrounding ground level to approximately 2m above ground level at the northern end of the site frontage.

The available site area is adequate for a single sided service area facility, however, there are several hedgerows along stream/ditches/field boundaries through the site.

The design of the grade separated junction would have a potential impact on the 1050mm dia culvert at approximately Ch: 24.2 along the M3 motorway and will need to be incorporated/extended in the design. There is potential impact on the existing access track along the western side of the M3 motorway and would require rerouting.

There are adequate electrical and telecom services available in the vicinity of the site location. An ESB connection can be provided from the existing lines along local road 500m to the east of the proposed site boundary. Detail information regarding the potential telecom facilities are not available, however it is anticipated that these can be provided from the R147 road.

The nearest foul water services with sufficient capacity are located to the north of Dunshaughlin which will required 3.35km connection via crossing the proposed junction. Similarly, the closest suitable potable water services are also located in both Dunshaughlin via local roads. The 100mm Water main will require a 0.7km connection including a crossing of the motorway at Trevet. A drain or small stream flows in a south-westerly direction towards the River Skane approximately 100m south of the site which the existing motorway drainage outfalls to. This stream could be used as an outfall subject to the requisite Environmental Assessment and implementation of environmental controls.

There is no ESB line throughout the proposed site.

There is an attenuation pond which is potentially impacted by the grade separated junction and would need to be moved. Also, there are drainage ditches along the edge of motorway that may need to be rerouted.

Local access could be potentially provided from the existing access road along the south side boundary which could be re-routed for approximately 500m length around the slip road into the site boundary.

The site comprises improved agricultural lands used for grazing livestock, fodder and tillage production. The lands are of good agricultural quality and the farming enterprises are cereal crops and mixed livestock (beef and sheep) farming. Access to lands is direct farm access onto the local (Garrettstown and Berrilstown) roads. There are no dwelling houses or farmyards present within the site option.

The site encompasses large fields with dividing hedgerows with occasional mature trees which may support roosting bats and badger setts. A drain or small stream flows in a south-westerly direction from the site towards the River Skane. Development on this site could also result in a loss of aquatic habitat and associated biota

The site area generally consists of good quality agricultural grassland / arable land and will likely involve 3 landowners. The land comprise of large fields of tillage with dividing hedgerows with occasional mature trees which may support roosting bats and badger sets. Farming enterprises are tillage (cereal crops) and grassland (beef livestock) based production. Access to all lands is via access gates onto the Berrilstown local road. South of the site there is a significant equestrian holding (Garrettstown House Stud) with extensive facilities including stabling, sand area and horse walker for exercising horses. The holding extends to approximately 300m of Site 4B. There are no residential properties in the immediately area of the site boundary although there are 6 residential properties on the Berrilstown local road. The closest buildings are 200m to the north of the site. There is a Garda platform that would be impacted where the grade separated junction is proposed.

There are no planning application or permissions within the proposed site.

The proposed site falls under low aquifer vulnerability. Locally important aquifer comprising bedrock which is generally moderately productive in local zones.

The draft Tara Skryne Valley Landscape Conservation Area is located in close proximity to the proposed Site 4B. Meath County Council note that that the conservation area shows a number of sites of archaeological interests, which are not recorded on the DoE Database of Archaeological Monuments.

The site is located in Berrillstown and Garretstown, north of Dunshaughlin within landscape character area 12: Tara Skryne Hills (MCC Development Plan – Appendix 7: Landscape Character Assessment). This landscape is identified as being of 'exceptional value'; and of 'high sensitivity'. It is unlikely that the site would be visible from the Hill of Tara, however Skyrne Church would be visible the site. Site 4A residential properties are generally well setback. Sites 4A is also located close to Gerrardstown House and Garretstown Studs where additional illumination may be a consideration.

The site has a moderate negative potential impact on Archaeological potential due to the greenfield environment and proximity to draft Tara-Skryne conservation area. In addition it is noted that during the construction of the M3, there was a significant increase in concentration of archaeological remains to the north of Dunshaughlin.

5.2 Summary of Assessment

5.2.1 Site 1A

The assessment of Site 1A is summarised in the following table:

Criteria		Sub-Criteria	Ranking	Comment
Engineering	Traffic Volumes		**Neutral**	16,289 AADT Opening Year
	Road Safety		**Neutral**	No departures or relaxation required for weaving length to adjacent grade separated junctions.
	Physical Characteristics of the Site	Land Availability & Setting	**Neutral**	There are no buildings within the proposed site. There is a house just on the northern boundary to the north east corner of the proposed site, which may be directly impacted by the development.
		Terrain	**Neutral**	Site is relatively flat
		Conflicts with existing services	**Neutral**	No significant conflicts
		Surface Water features	**Neutral**	There is a ditch/ land drain that runs through the western portion of the site.
		Motorway Structures - Culverts/Other	**Neutral**	A 1050mm dia culvert and a mammal crossing at Ch 15.35 approx. is impacted and will need to be incorporated/extended in the design. Approx. 400m of existing access track along the motorway boundary (north side) will need to be rerouted There is a small trapezoidal ditch which would be impacted by the proposed slip roads and would need to be moved
		Flooding	**Neutral**	The proposed site is close to flooding zone, however a significant level difference exists between the site and the flood zone.
	Service/Utility Connections	Potable Water Supply	**Moderate Negative**	Water supply available from connection to main adjacent to Dunshaughlin Business Park via a 4.3km Watermain
		Wastewater Disposal	**Minor Negative**	Connection via rising main to pumping station on outskirts of Dunshaughlin via a 3.95km Rising Main
		Broadband/ Telecommunications	**Neutral**	Broadband available
		Electrical Supply	**Neutral**	Electrical Supply available
		Surface Water Outfall	**Neutral**	Outfall available
		Local Road Access	**Neutral**	Local Access available
	Geotechnical		**Neutral**	Boreholes from the M3 Ground investigation indicate firm to very stiff glacial till in excess of 8m at each of the potential MSA Sites.
Environmental	Air Quality		**Neutral**	The site was rated as 'Most preferred' in the Air Quality Assessment and ranked for the purposes of Site Selection Report as Neutral
	Noise		**Minor Negative**	Site 1A was assessed in terms of its potential impact rating (PIR) and potential noise impacts. Site 1A is deemed an intermediate site from a noise perspective and therefore ranks as minor negative.

Criteria	Sub-Criteria	Ranking	Comment
	Landscape & Visual	**Minor Negative**	Site 1A would be openly visible in views south from a number of properties and would also come within 150m of Rathbeggan Lakes (Fishing and Amenity site) – with significant impact on character of the facility. - One two storey residential property, located immediately west of the M3 would be within c.50m of the site and would likely experience significant/profound visual Impact.
	Agriculture	**Minor Negative**	The site comprises of improved agricultural grassland used for grazing livestock and fodder production. Lands on Site 1A are of good agricultural quality and the farming enterprises are generally beef and sheep farming. Access to lands within Site 1A is via the M3 overbridge and access accommodation tracks. There are no dwelling houses present within the site option. Lands on Site 1A were formerly part of the farm holdings on Site 1B before being severed by the M3 motorway scheme.
	Non Agricultural Properties/ Material Assets	**Neutral**	Non Agricultural Properties: There are no residential properties identified within the extents of the study area.
	Ecology	**Minor Negative**	The site consists primarily of improved agricultural grassland and a very mature treeline which runs through the centre of the site. There are two further hedgerows in the eastern part of the site. These features may support roosting bats and badger setts. The River Tolka flows less than 500mwest of the site and drainage from the site is likely to lead towards the river. Development on this site could also result in a loss of aquatic habitat and associated biota
	Archaeology	**Neutral**	There is no direct impact on any recorded archaeological monuments. Archaeological potential due to greenfield environment.
	Cultural and Architectural Heritage	**Neutral**	Impact on Raynestown/ Rathbeggan townland boundary which traverses the area.
	Human Beings/ Socio Economic	**Moderate Negative**	No Impact on Strategic Rail Corridor from Pace to Navan - west of subject site. Rathbeggan lakes (amenity business to the south). Heatherfield Nursing Home to the North. Rathregan National School on the R154 in Batterstown is approximately 1,200m west of the site boundary. Raynestown Road Community to the North (no severance of this community by site). Cumulative Impacts due to recent large scale infrastructure projects. Site 1A given it's proximity to Rathbeggan Lakes (Fishing and Amenity site) has the potential to significantly impact on the character of the facility.
	Planning	**Neutral**	No recent planning applications recorded at the location
	Geology & Hydrogeology	**Neutral**	Dinantian upper impure limestones. No karst recorded within the study area. Groundwater in SAC Habitat. Locally important aquifer comprising bedrock which is generally moderately productive in local zones. Low Aquifer vulnerability.
	Hydrology	**Neutral**	Outfall to tributary upstream of EA_Tolka167_Tolka3_Upper - At risk of not achieving good status (EPA Site). Not salmonoid water body
	Waste	**Neutral**	From Ground Investigation from M3 mainline - assume excavated material will be reused on site for grade separated junction construction / landscaping.

Criteria		Sub-Criteria	Ranking	Comment
Economy	Benefit Cost Ratio		**Neutral**	Marginal differences in BCR across all sites results in a Neutral ranking for this category.

Table 5.1: Summary of Site 1A assessment

5.2.2 *Site 1B*

The assessment of Site 1B is summarised in the following table:

Criteria		Sub-Criteria	Ranking	Comment
Engineering	Traffic Volumes		**Neutral**	16,289 AADT Opening Year
	Road Safety		**Neutral**	No departures or relaxation required for weaving length to adjacent grade separated junctions.
	Physical Characteristics of the Site	Land Availability & Setting	**Neutral**	There are no buildings within the proposed site.
		Terrain	**Neutral**	Site is relatively flat
		Conflicts with existing services	**Neutral**	No significant conflicts
		Surface Water features	**Minor Negative**	There is a stream that runs through the site going from the centre of the site heading south. This takes a motorway culvert crossing (1050) and also a motorway outfall.
		Motorway Structures - Culverts/Other	**Neutral**	There is a culvert (1050mm) and a mammal crossing at ch15.4 approx. that will need to be incorporated/extended in the design. Approx. 400m of existing access track along the motorway boundary (north side) will need to be rerouted. There is a small trapezoidal ditch which is currently impacted by the proposed slip roads that would need to be moved
		Flooding	**Neutral**	No incidents recorded on the eastern side of the motorway.
	Service/Utility Connections	Potable Water Supply	**Moderate Negative**	Water supply available from connection to main adjacent to Dunshaughlin Business Park via a 3.8km Watermain
		Wastewater Disposal	**Minor Negative**	Connection via rising main to pumping station on outskirts of Dunshaughlin via a 3.5km Rising Main
		Broadband/ Telecommunications	**Neutral**	Broadband available
		Electrical Supply	**Neutral**	Electrical Supply available
		Surface Water Outfall	**Neutral**	Outfall available
		Local Road Access	**Neutral**	Local Access available
	Geotechnical		**Neutral**	Boreholes from the M3 Ground investigation indicate firm to very stiff glacial till in excess of 8m at each of the potential MSA Sites.
Environmental	Air Quality		**Neutral**	The site was ranked as 'Most preferred' in the Air Quality Assessment and ranked for the purposes of Site Selection Report as Neutral.
	Noise		**Moderate Negative**	Site 1B was assessed in terms of its potential impact rating (PIR) and potential noise impacts. Site 1B is deemed the least preferred site from a noise perspective and therefore ranks as moderate negative.
	Landscape & Visual		**Minor Negative**	Site 1B would be openly visible in views south from a number of properties - One two storey residential property, located immediately west of the M3 would be within c.50m of the site and would likely experience significant/profound visual Impact. The tie-in of the grade separated junction for either site would be adjacent to Rathbeggan Lakes (Fishing and Amenity site).

Criteria	Sub-Criteria	Ranking	Comment
	Agriculture	**Minor Negative**	The lands on this site are comprised of improved agricultural lands that are used for grazing livestock, cereal crops and fodder production. The lands are of good agricultural quality and the farming enterprises are tillage and livestock (sheep and beef) farming. Access to lands within Site 1B is via direct farm access onto R147 and an access accommodation track on the local road (L22091). There are no dwelling houses present within the site option.
	Non Agricultural Properties/ Material Assets	**Neutral**	Non Agricultural Properties: There are no residential properties identified within the extents of the study area.
	Ecology	**Minor Negative**	The site consists primarily of improved agricultural grassland divided by two mature treelines in the southern half. These structures may support roosting bats and badger setts. A drain or stream rises within the site and runs in a south-easterly direction through the site to join with the River Tolka c1.5km downstream.
	Archaeology	**Minor Negative**	No direct impact on any recorded archaeological monuments. Ranked Minor Negative due to general potential of surrounding area which includes a Bronze Age Ring-Ditch excavated along the M3 and watercourse to the south of the site.
	Cultural and Architectural Heritage	**Neutral**	Impact on Raynestown/ Rathbeggan and Growtown townland boundaries which traverses the area.
	Human Beings/ Socio Economic	**Minor Negative**	Community Severance: School at Growtown/The Bush (Rathbeggan N.S.) to NE. approx. 400m east of site boundary. Raynestown Road dwellings concentrated to the North but not severed). Cumulative Impacts due to recent large scale infrastructure projects. Economic Severance: None
	Planning	**Neutral**	Historic planning permission for Borrow Pit - Risk to be covered in waste assessment.
	Geology & Hydrogeology	**Neutral**	Dinantian upper impure limestones. No karst recorded within the study area. Groundwater in SAC Habitat. Locally important aquifer comprising bedrock which is generally moderately productive in local zones. Low Aquifer vulnerability.
	Hydrology	**Neutral**	Outfall to tributary - additional buffer from WFD Risk Score rated River / Stream. Not salmonoid water body
	Waste	**Minor Negative**	Potential for excavation of contaminated material from borrow pit deemed waste
Economy	Benefit Cost Ratio	**Neutral**	Marginal differences in BCR across all sites results in a Neutral ranking for this category.

Table 5.2: Summary of Site 1B assessment

5.2.3 *Site 2A*

The assessment of Site 2A is summarised in the following table:

Criteria		Sub-Criteria	Ranking	Comment
Engineering	Traffic Volumes		**Neutral**	16,289 AADT Opening Year
	Road Safety		**Neutral**	No departures or relaxation required for weaving length to adjacent grade separated junctions.
	Physical Characteristics of the Site	Land Availability & Setting	**Neutral**	There are no buildings within the proposed site.
		Terrain	**Neutral**	Site is relatively flat
		Conflicts with existing services	**Neutral**	A 220kV high voltage overhead ESB line runs perpendicular to the motorway through the site. A Grade Separated Junction and MSA Site could be designed to avoid an adjacent pylon in agreement with ESB.
		Surface Water features	**Neutral**	A stream crosses at the southern edge of the site which services field drains on the site.
		Motorway Structures - Culverts/Other	**Minor Negative**	There is a large attenuation pond which would be impacted by the proposed slip roads and would need to be moved. 2.4m*1.8m box culvert and mammal underpass at ch16.5 which crosses the motorway would need to be extended on both sides.
		Flooding	**Neutral**	No incidents recorded on site. Consultation with Landowners indicated that adjacent lands to the south has localised ponding adjacent to a double ditch.
	Service/Utility Connections	Potable Water Supply	**Minor Negative**	Water supply available from connection to main adjacent to Dunshaughlin Business Park via a 2.9km Watermain
		Wastewater Disposal	**Neutral**	Connection via rising main to pumping station on outskirts of Dunshaughlin via a 2.6km Rising Main.
		Broadband/ Telecommunications	**Neutral**	Broadband available
		Electrical Supply	**Neutral**	Electrical Supply available
		Surface Water Outfall	**Neutral**	Outfall available
		Local Road Access	**Neutral**	Local Access available
	Geotechnical		**Neutral**	Boreholes from the M3 Ground investigation indicate firm to very stiff glacial till in excess of 8m at each of the potential MSA Sites.
Environmental	Air Quality		**Neutral**	Site 2A has no sensitive receptors within 50 m of road links affected by the scheme. The site was ranked as 'Most preferred' in Air Quality Assessment and ranked for the purposes Site Selection Report as 'Neutral'.
	Noise		**Neutral**	Site 2A was assessed in terms of its potential impact rating (PIR) and potential noise impacts. Site 2A is deemed the preferred site from a noise perspective and therefore ranks as neutral.

Criteria	Sub-Criteria	Ranking	Comment
	Landscape & Visual	**Neutral**	Site 2A is located between Derrockstown and Rathbeggan, south of Dunshaughlin. There are no protected views pertaining to the sites (refer to Appendix 12 and Map 9.5.1 of County Development Plan). Development at Site 2A including the required grade separated junction and associated illumination would be well setback from residential properties either along the R147 (c.250m+) to east or Derrockstown Road (c.350m+) to the north or Raynestown Road (c.500m+) to south.
	Agriculture	**Minor Negative**	The site comprises of improved agricultural grassland used for grazing livestock and fodder production. Lands are of good agricultural quality farming enterprises are mostly sheep farming and land use is mainly livestock grazing. Access to lands is via farm holdings on local roads (L2209 & L22091). There are no dwelling houses or farmyards present within the site option.
	Non Agricultural Properties/ Material Assets	**Neutral**	Non Agricultural Properties: There are no residential properties identified within the extents of the study area.
	Ecology	**Minor Negative**	The site consists of improved agricultural grassland divided by a number of hedgerows and treelines of mature trees which may support roosting bats and badger setts. A drain runs in a south-westerly direction from the site which joins to the River Tolka approximately 700m downstream. Development on this site could also result in a loss of aquatic habitat and associated biota
	Archaeology	**Minor Negative**	No direct impact on any recorded archaeological monuments or architectural heritage features or buildings. Ranked Minor Negative due to general potential of surrounding area which includes a burnt mound excavated on the M3.
	Cultural & Architectural Heritage	**Neutral**	Impact on Raynestown, Derrockstown, Mill Land and Rathregan townlands which converge in the south west of the area.
	Human Beings/ Socio Economic	**Minor Negative**	No Impact on Strategic Rail Corridor from Pace to Navan - west of subject site. Community Severance: Potential Site between Raynestown Road / Derrockstown Road rural housing clusters. Cumulative Impacts due to recent large scale infrastructure projects. Economic Severance: None
	Planning	**Neutral**	No recent planning applications recorded on location.
	Geology & Hydrogeology	**Neutral**	Dinintian upper impure limestones. No karst recorded within the study area. Groundwater in SAC Habitat. Locally important aquifer comprising bedrock which is generally moderately productive. Low Aquifer vulnerability.
	Hydrology	**Neutral**	Outfall to tributary upstream of EA_Tolka167_Tolka3_Upper - At risk of not achieving good status (EPA Site). Not salmonoid water body
	Waste	**Neutral**	From Ground Investigation from M3 mainline - assume excavated material will be reused on site for grade separated junction construction / landscaping. Operational Waste equal across each site.

Criteria		Sub-Criteria	Ranking	Comment
Economy	Benefit Cost Ratio		**Neutral**	Marginal differences in BCR across all sites results in a Neutral ranking for this category.

Table 5.3: Summary of Site 2A assessment

5.2.4 *Site 2B*

The assessment of Site 2B is summarised in the following table:

Criteria		Sub-Criteria	Ranking	Comment
Engineering	Traffic Volumes		**Neutral**	16,289 AADT Opening Year
	Road Safety		**Neutral**	No departures or relaxation required for weaving length to adjacent grade separated junctions.
	Physical Characteristics of the Site	Land Availability & Setting	**Neutral**	There are no buildings within the proposed site.
		Terrain	**Neutral**	Site is relatively flat
		Conflicts with existing services	**Neutral**	A 220kV high voltage overhead ESB line runs perpendicular to the motorway south of the site. A Grade Separated Junction could be designed to avoid an adjacent pylon in agreement with ESB.
		Surface Water features	**Neutral**	No Surface Water features
		Motorway Structures - Culverts/Other	**Minor Negative**	There is a large attenuation pond which would be impacted by the proposed slip roads and would need to be moved. 2.4m*1.8m box culvert and mammal underpass at ch16.5 which crosses the motorway would need to be extended on both sides.
		Flooding	**Neutral**	No incidents recorded
	Service/Utility Connections	Potable Water Supply	**Minor Negative**	Water supply available from connection to main adjacent to Dunshaughlin Business Park via a 2.4km Watermain
		Wastewater Disposal	**Neutral**	Connection via rising main to pumping station on outskirts of Dunshaughlin via a 2.1km Rising Main
		Broadband/ Telecommunications	**Neutral**	Broadband available
		Electrical Supply	**Neutral**	Electrical Supply available
		Surface Water Outfall	**Neutral**	Outfall available
		Local Road Access	**Neutral**	Local Access available
	Geotechnical		**Neutral**	Boreholes from the M3 Ground investigation indicate firm to very stiff glacial till in excess of 8m at each of the potential MSA Sites.
Environmental	Air Quality		**Minor Negative**	The population exposure to NOx and PM10 would be increased if the scheme was developed at this location. Site is least preferred and ranked as a minor negative (in comparison with other sites).
	Noise		**Moderate Negative**	Site 2B was assessed in terms of its potential impact rating (PIR) and potential noise impacts. Site 2B is deemed the least preferred site from a noise perspective and therefore ranks as moderate negative.

Criteria	Sub-Criteria	Ranking	Comment
	Landscape & Visual	**Minor Negative**	Sites 2B is located between Derrockstown and Rathbeggan, south of Dunshaughlin. Development at Site 2B including the required grade separated junction and associated illumination would be well setback from residential properties either along Derrockstown Road (c.250m+) to the north or Raynestown Road (c.400m+) to south. However the proposed station and associated illumination would be between 50 and 150m of a number of residential properties located west of the R147. These properties would likely experience significant visual impact.
	Agriculture	**Minor Negative**	The site also comprises of improved agricultural grassland and tillage lands used for fodder production and cereals respectively. Lands are of good agricultural quality and farming enterprises are tillage and livestock based. Access to lands is via either an access accommodation track from the local road (L2209) or access onto the R147. Some of the lands on Site 2B were formerly part of farm holdings east of the M3 before being severed by the M3 motorway scheme. There are no dwelling houses or farmyards present within the site option.
	Non Agricultural Properties/ Material Assets	**Neutral**	Non Agricultural Properties: There are no residential properties identified within the extents of the study area.
	Ecology	**Neutral**	The site encompasses a number of fields which are used for tillage with dividing mature treelines which may support roosting bats and badger setts. There is no apparent surface water on the site
	Archaeology	**Neutral**	There is no direct impact on any recorded archaeological monuments or architectural heritage features or buildings.
	Cultural & Architectural Heritage	**Neutral**	There are no National Inventory of Architectural Heritage sites within the subject site. No direct impact on Townland boundaries.
	Human Beings/ Socio Economic	**Minor Negative**	Community Severance: Potential Site between Raynestown Road / Derrockstown Road rural housing clusters. Cumulative Impacts due to recent large scale infrastructure projects. Economic Severance: None.
	Planning	**Neutral**	Historic planning permission for Borrow Pit - Risk to be covered in waste assessment.
	Geology & Hydrogeology	**Neutral**	Dinantian upper impure limestones. No karst recorded within the study area. Groundwater in SAC Habitat. Locally important aquifer comprising bedrock which is generally moderately productive. Low Aquifer vulnerability.
	Hydrology	**Neutral**	Outfall to tributary upstream of EA_Tolka167_Tolka3_Upper - At risk of not achieving good status (EPA Site). Not salmonoid water body
	Waste	**Minor Negative**	Potential for excavation of contaminated material from borrow pit deemed waste

Criteria	Sub-Criteria	Ranking	Comment
Economy	Benefit Cost Ratio	**Neutral**	Marginal differences in BCR across all sites results in a Neutral ranking for this category.

Table 5.4: Summary of Site 2B assessment

5.2.5 *Site 4A*

The assessment of Site 4A is summarised in the following table:

Criteria		Sub-Criteria	Ranking	Comment
Engineering	Traffic Volumes		**Neutral**	15,891 AADT Opening Year
	Road Safety		**Neutral**	No departures or relaxation required for weaving length to adjacent grade separated junctions.
	Physical Characteristics of the Site	Land Availability & Setting	**Neutral**	There are no buildings within the proposed site.
		Terrain	**Neutral**	Site is relatively flat
		Conflicts with existing services	**Neutral**	No significant conflicts
		Surface Water features	**Neutral**	No Surface Water Features
		Motorway Structures - Culverts/Other	**Minor Negative**	There is an attenuation pond and drainage ditches along the edge of the motorway which would be impacted by the proposed grade separated junction and would have to be moved. 1050mm dia at ch24.1 which crosses the motorway would need to be extended on both sides. Approx. 300m of existing access track along the motorway boundary (north side) will need to be rerouted
		Flooding	**Neutral**	No incidents records.
	Service/Utility Connections	Potable Water Supply	**Neutral**	Water supply available from connection on local access road in Townland of Trevet via 1.2km Watermain
		Wastewater Disposal	**Minor Negative**	Connection via rising main to existing sewer on outskirts of Dunshaughlin via 3.85km Rising Main
		Broadband/ Telecommunications	**Neutral**	Broadband available
		Electrical Supply	**Neutral**	Electrical Supply available
		Surface Water Outfall	**Neutral**	Outfall available
		Local Road Access	**Neutral**	Local Access available
	Geotechnical		**Neutral**	Boreholes from the M3 Ground investigation indicate firm to very stiff glacial till in excess of 8m at each of the potential MSA Sites.
Environmental	Air Quality		**Neutral**	Site 4A has no sensitive receptors within 50 m of road links affected by the scheme. The site was ranked as 'Most preferred' in Air Quality Assessment and ranked for the purposes Site Selection Report as 'Neutral'
	Noise		**Neutral**	Site 4A was assessed in terms of its potential impact rating (PIR) and potential noise impacts. Site 4A is deemed the preferred site from a noise perspective and therefore ranks as neutral.

Criteria	Sub-Criteria	Ranking	Comment
	Landscape & Visual	**Moderate Negative**	The site is located north of Dunshaughlin within landscape character area 12: Tara Skryne Hills, which is identified as 'exceptional value'; and of 'high sensitivity'. It is unlikely that the site would be visible from the Hill of Tara, however Skyrne Church would be visible from the site. Site 4A residential properties are generally well setback. Site 4A is also located close to Gerrardstown House and Garretstown Stud, where additional illumination may be a consideration.
	Agriculture	**Neutral**	The site comprises of improved agricultural lands used for tillage. Lands are of good agricultural quality and farming enterprises are tillage based involving cereal and vegetable production. Access to lands on Site 4A is via farm access on the R147 and leading to the M3 overbridge at Berrilstown. There are no dwelling houses or farmyards present within the site option. Site 4A ranked as neutral in comparison to other sites based on lower impacts on agriculture due to landtake and landuse. On each site, landtake will involve a number of farm holdings and generally on external farm boundaries. Land severance will not occur and there is no access required to other lands. The lands are used for both livestock grazing and tillage production
	Non Agricultural Properties/ Material Assets	**Neutral**	Non Agricultural Properties: There are no residential properties identified within the extents of the study area.
	Ecology	**Neutral**	The site consists of a series of large agricultural fields of under tillage on the western side of the M3 north of Dunshaughlin. The fields have mature hedgerows with occasional mature trees dividing them. These features may support roosting bats and badger setts. There is no apparent watercourses on site though drainage appears to be to the south towards the Skane River
	Archaeology	**Moderate Negative**	Archaeological potential due to greenfield environment and proximity to draft Tara-Skryne conservation area. Works on M3 showed a significant increase in the concentration of archaeological remains north of Dunshaughlin.
	Cultural & Architectural Heritage	**Minor Negative**	Impact on the setting of the cultural heritage of the Tara-Skryne landscape and the setting of the Hill of Tara, although location 4A is outside the Draft Tara Skryne Landscape Conservation Area. Impact on the townland boundary between Garretstown and Berrillstown in the SW of the area.
	Human Beings/ Socio Economic	**Neutral**	Socio economic impact is neutral when compared against other sites. Potential sites have been located to reduce the impact on public amenities / communities
	Planning	**Neutral**	No recent planning applications recorded on location.

Criteria	Sub-Criteria	Ranking	Comment
	Geology & Hydrogeology	**Neutral**	Dinantian upper impure limestones. No karst recorded within the study area. Locally important aquifer comprising bedrock which is generally moderately productive. Low Aquifer Vulnerability. Groundwater in salmonoid Regs (all)
	Hydrology	**Minor Negative**	Outfall to tributary upstream of EA_Boyne159 Skane_Skane2_Upper- (Within catchment of River Boyne/ Blackwater (SAC)). At risk of not achieving good status (EPA Site). Not salmonoid water body.
	Waste	**Neutral**	From Ground Investigation from M3 mainline - assume excavated material will be reused on site for grade separated junction construction / landscaping. Operational Waste equal across each site
Economy	Benefit Cost Ratio	**Neutral**	Marginal differences in BCR across all sites results in a Neutral ranking for this category.

Table 5.5: Summary of Site 4A assessment

5.2.6 *Site 4B*

The assessment of Site 4B is summarised in the following table:

Criteria		Sub-Criteria	Ranking	Comment
Engineering	Traffic Volumes		**Neutral**	15,891 AADT Opening Year
	Road Safety		**Neutral**	No departures or relaxation required for weaving length to adjacent grade separated junctions.
	Physical Characteristics of the Site	Land Availability & Setting	**Neutral**	There are no buildings within the proposed site
		Terrain	**Neutral**	Site is relatively flat
		Conflicts with existing services	**Neutral**	No Significant Conflicts
		Surface Water features	**Minor Negative**	There are two number streams in the site. The southern stream commences in the centre of the site and is generated by a spring. The second stream dissects the north west corner of the site which flows across the M3.
		Motorway Structures - Culverts/Other	**Minor Negative**	There is an attenuation pond and drainage ditches along the edge of the motorway which would be impacted by the proposed grade separated junction and would have to be moved. 1050mm dia at Ch 24.1 which crosses the motorway would need to be extended on both sides. Approx. 300m of existing access track along the motorway boundary (north side) will need to be rerouted.
		Flooding	**Neutral**	No incidents recorded.
	Service/Utility Connections	Potable Water Supply	**Neutral**	Water supply available from connection on local access road in Townland of Trevet via 0.7km Watermain
		Wastewater Disposal	**Minor Negative**	Connection via rising main to existing sewer on outskirts of Dunshaughlin via 3.35km Rising Main
		Broadband/ Telecommunications	**Neutral**	Broadband available
		Electrical Supply	**Neutral**	Electrical Supply available
		Surface Water Outfall	**Neutral**	Outfall available
		Local Road Access	**Neutral**	Local Access available
	Geotechnical		**Neutral**	Boreholes from the M3 Ground investigation indicate firm to very stiff glacial till in excess of 8m at each of the potential MSA Sites.
Environmental	Air Quality		**Neutral**	Site 4B has no sensitive receptors within 50 m of road links affected by the scheme. The site was ranked as 'Most preferred' in Air Quality Assessment and ranked for the purposes Site Selection Report as 'Neutral'
	Noise		**Neutral**	Site 4B was assessed in terms of its potential impact rating (PIR) and potential noise impacts. Site 4B is deemed the preferred site from a noise perspective and therefore ranks as neutral

Criteria	Sub-Criteria	Ranking	Comment
	Landscape & Visual	**Moderate Negative**	The site is located north of Dunshaughlin within landscape character area 12: Tara Skryne Hills, which is identified as 'exceptional value'; and of 'high sensitivity'. It is unlikely that the site would be visible from the Hill of Tara, however Skyrne Church would be visible from the site. Site 4A residential properties are generally well setback. Site 4A is also located close to Gerrardstown House and Garretstown Studs where additional illumination may be a consideration.
	Agriculture	**Neutral**	The site comprises of improved agricultural lands used for grazing livestock, fodder and tillage production. The lands are of good agricultural quality and the farming enterprises are cereal crops and mixed livestock (beef and sheep) farming. Access to lands is direct farm access onto the local (Garrettstown and Berrilstown) roads. There are no dwelling houses or farmyards present within the site option. Site 4B ranked as neutral in comparison to other sites based on lower impacts on agriculture due to landtake and landuse. On each site, landtake will involve a number of farm holdings and generally on external farm boundaries. Land severance will not occur and there is no access required to other lands. The lands are used for both livestock grazing and tillage production.
	Non Agricultural Properties/ Material Assets	**Neutral**	Non Agricultural Properties: There are no residential properties identified within the extents of the study area.
	Ecology	**Minor Negative**	The site comprises large fields of tillage with dividing hedgerows with occasional mature trees which may support roosting bats and badger setts. A drain or small stream flows in a south-westerly direction from the site towards the River Skane. Development on this site could also result in a loss of aquatic habitat and associated biota
	Archaeology	**Moderate Negative**	Archaeological potential due to greenfield environment and proximity to draft Tara-Skryne conservation area. Works on M3 showed a significant increase in the concentration of archaeological remains north of Dunshaughlin.
	Cultural & Architectural Heritage	**Minor Negative**	Impact on the setting of the cultural heritage of the Tara-Skryne landscape and the setting of the Hill of Tara, although Location 4B is outside the Draft Tara Skryne Landscape Conservation Area. Impact on the townland boundary between Garretstown and Trevet in the NW of the area, and the townland boundary between Garretstown and Trevet in the SW of the area.
	Human Beings/ Socio Economic	**Neutral**	Socio economic impact is neutral when compared against other sites. Potential sites have been located to reduce the impact on public amenities / communities
	Planning	**Neutral**	No recent planning applications recorded on location.
	Geology & Hydrogeology	**Neutral**	Locally important aquifer comprising bedrock which is generally moderately productive. Low Aquifer Vulnerability. Groundwater in salmonoid Regs (all)

Criteria	Sub-Criteria	Ranking	Comment
	Hydrology	**Minor Negative**	Outfall to tributary upstream of EA_Boyne159 Skane_Skane2_Upper- (Within catchment of River Boyne/ Blackwater (SAC)). At risk of not achieving good status (EPA Site). Not salmonoid water body.
	Waste	**Neutral**	From Ground Investigation from M3 mainline - assume excavated material will be reused on site for grade separated junction construction / landscaping. Operational Waste equal across each site
Economy	Benefit Cost Ratio	**Neutral**	Marginal differences in BCR across all sites results in a Neutral ranking for this category.

Table 5.6: Summary of Site 4B assessment

5.3 Options Comparison

Table 5.7 compares the potential sites across all the criteria.

Criteria		Sub-Criteria	Site 1A	Site 1B	Site 2A	Site 2B	Site 4A	Site 4B
Engineering	Traffic Volumes		Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
	Road Safety		Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
	Physical Characteristics of the Site	Land Availability & Setting	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
		Terrain	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
		Conflicts with existing services	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
		Surface Water features	Neutral	Minor Negative	Neutral	Neutral	Neutral	Minor Negative
		Motorway Structures - Culverts/Other	Neutral	Neutral	Minor Negative	Minor Negative	Minor Negative	Minor Negative
		Flooding	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
	Service/Utility Connections	Potable Water Supply	Moderate Negative	Moderate Negative	Minor Negative	Minor Negative	Neutral	Neutral
		Wastewater Disposal	Minor Negative	Minor Negative	Neutral	Neutral	Minor Negative	Minor Negative
		Broadband/ Telecommunications	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
		Electrical Supply	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
		Surface Water Outfall	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
		Local Road Access	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
	Geotechnical		Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Environmental	Air Quality		Neutral	Neutral	Neutral	Minor Negative	Neutral	Neutral
	Noise		Minor Negative	Moderate Negative	Neutral	Moderate Negative	Neutral	Neutral
	Landscape & Visual		Minor Negative	Minor Negative	Neutral	Minor Negative	Moderate Negative	Moderate Negative
	Agriculture		Minor Negative	Minor Negative	Minor Negative	Minor Negative	Neutral	Neutral
	Non Agricultural Properties/ Material Assets		Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
	Ecology		Minor Negative	Minor Negative	Minor Negative	Neutral	Neutral	Minor Negative

Criteria	Sub-Criteria	Site 1A	Site 1B	Site 2A	Site 2B	Site 4A	Site 4B
	Archaeology	**Neutral**	**Minor Negative**	**Minor Negative**	**Neutral**	**Moderate Negative**	**Moderate Negative**
	Cultural & Architectural Heritage	**Neutral**	**Neutral**	**Neutral**	**Neutral**	**Minor Negative**	**Minor Negative**
	Human Beings/ Socio Economic	**Moderate Negative**	**Minor Negative**	**Minor Negative**	**Minor Negative**	**Neutral**	**Neutral**
	Planning	**Neutral**	**Neutral**	**Neutral**	**Neutral**	**Neutral**	**Neutral**
	Geology & Hydrogeology	**Neutral**	**Neutral**	**Neutral**	**Neutral**	**Neutral**	**Neutral**
	Hydrology	**Neutral**	**Neutral**	**Neutral**	**Neutral**	**Minor Negative**	**Minor Negative**
	Waste	**Neutral**	**Minor Negative**	**Neutral**	**Minor Negative**	**Neutral**	**Neutral**
Economy	Benefit Cost Ration	**Neutral**	**Neutral**	**Neutral**	**Neutral**	**Neutral**	**Neutral**

Table 5.7: Comparison of assessment across all sites

Key differentiating issues are the Noise, Archaeology, Landscape & Visual and Socio Economic Impacts criteria when comparing the different sites. There are no particular road safety issues on any of the sites and they have been ranked equally.

Site 1A and Site 1B are located in close proximity to the Rathbeggan Lakes development. A house is directly impacted by the development of Site 1A, and to a lesser extent Site 1B and there are other houses at approximately 250m to the proposed boundary.

Sites 1B and Site 2B are impacted upon by the presence of a Borrow Pits used during the construction of the M3 which may require the excavation of contaminated material. The proximity of Site 2B to ribbon development on the R147 and to a lesser extent on Raynestown Lane and Derrockstown Road, leads to a negative ranking with regards to Noise, Air and Visual Impact.

Sites 4A and 4B are situated in a particularly sensitive location with respect to Archaeology, Cultural Heritage and Landscape and Visual Impacts.

6 Recommendation

6.1 Identification of preferred site

On the basis of the assessment undertaken to date, Site 2A is identified as the preferred site for the proposed M3 MSA.

Site 2A has a clear benefit over the other sites in the environmental assessment. It is the best performing site with regards to Air Quality, Noise, Landscape and Visual. It is also the equally preferred site in the engineering assessment. It is ranked as neutral in the economic assessment.

It is recognised that Site 2A has a number of constraints including the existing 220kV overhead power line, the impact on adjacent landowners and residents and an existing motorway attenuation pond. During the Preliminary Design Stage, mitigation measures can be developed/applied to address these issues using best practice and experience of previous TII MSA's.

It is therefore recommended that the preferred site, Site 2A is progressed to the next stage, Preliminary Design.

Appendix A

Drawings

Y15112-M3-SSR-001	Study Area showing Key Constraints for M3 Service Area
Y15112-M3-SSR-002	Alignment Appraisal – M3 Service Area
Y15112-M3-SSR-003	Site Locations – M3 Service Area – Sheet 1 of 2
Y15112-M3-SSR-004	Site Locations – M3 Service Area – Sheet 2 of 2

EXTENT OF STUDY

BLUNDELSTOWN

HILL OF TARA

DUNSHAUGHLIN

TOLL

DUNBOYNE

CLONEE

J 7

J 6

J 5

J 4

J 4

LEGEND:

(pNHA) PROPOSED NATURAL HERITAGE AREA

(NHA) NATURAL HERITAGE AREA

(SPA) SPECIAL PROTECTION AREA

(SAC) SPECIAL AREA OF CONSERVATION

ARCHAEOLOGICAL MONUMENT

STREAM

EXISTING ESB HV OVERHEAD

EXISTING ESB HV UNDERGROUND

EXISTING RAILWAY LINE

EXISTING MOTORWAY JUNCTION

EXISTING MOTORWAY OVERBRIDGE

EXISTING MOTORWAY ACCOMMODATION UNDERPASS

DRAFT TARA SKRYNE LANDSCAPE CONSERVATION AREA - MAY 2010

0 1000 2000 Meters

N

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

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Rev.	Date	By	Amendments
A	11.09.15	RO'B/PM	INFORMATION

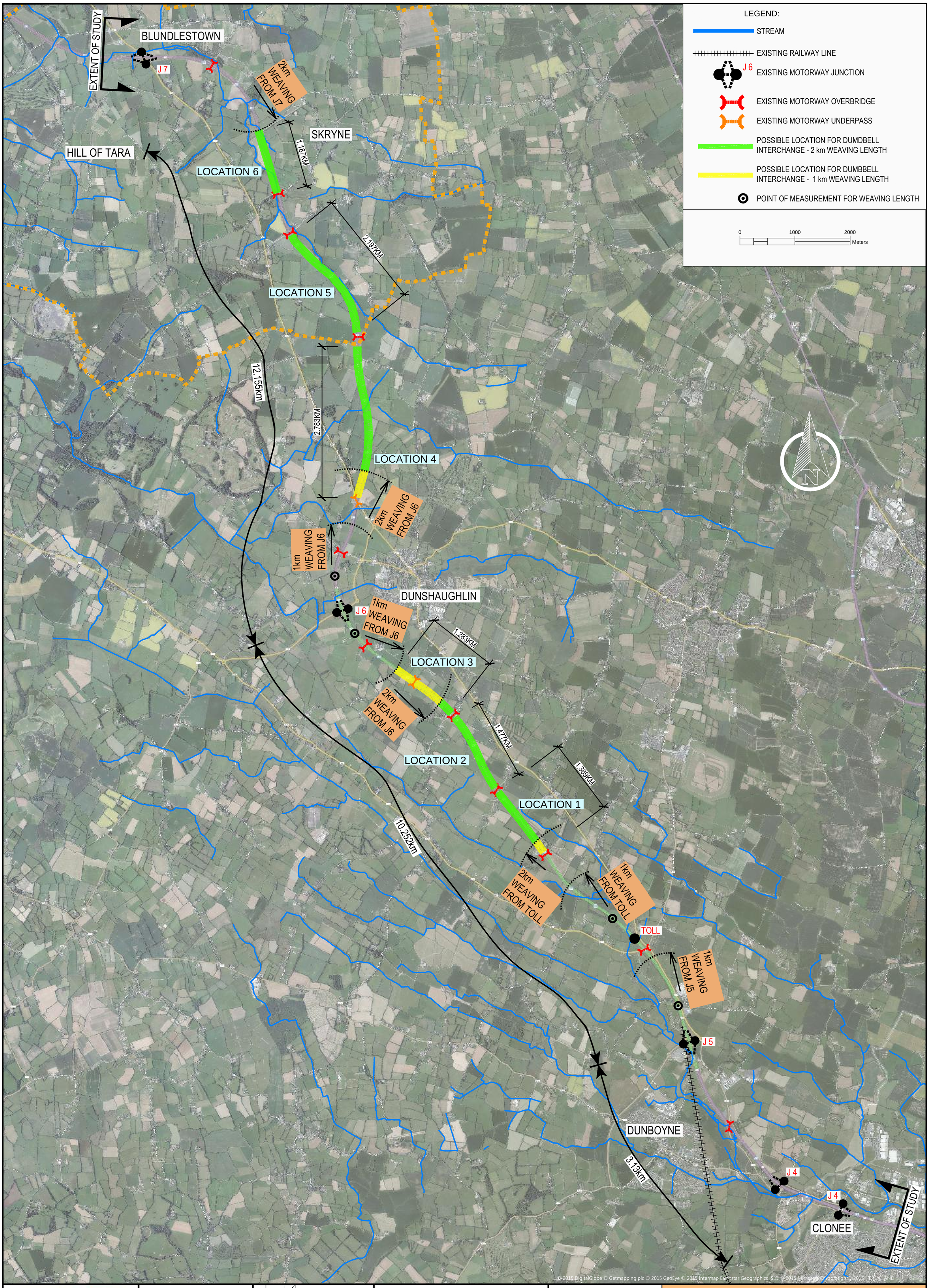
Job

TRANCHE 4 MOTORWAY SERVICE AREAS

Title

STUDY AREA SHOWING KEY CONSTRAINTS FOR M3 SERVICE AREA

Issue Details			Office Use Only	
Designed: RS	Draft	X	Job No. Y15112	
Drawn: RO'B	Approval		Date: SEPTEMBER 2015	
Checked: GT	Tender		Drawing No. Y15112-M3-SSR-001	Rev. A
Approved: PM	Construction			
Scale: 1:30,000 @ A1 1:60,000 @ A3	Record		File Ref. Y15112	



Bonneagar Iompair Éireann
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Rev.	Date	By	Amendments
C	22.12.15	JM / GT	DRAWING AMENDED
B	09.10.15	JM / GT	INFORMATION
A	11.09.15	RO'B / PM	INFORMATION

Job

TRANCHE 4 MOTORWAY SERVICE AREAS

Title

ALIGNMENT APPRAISAL
M3 SERVICE AREA

Issue Details			Office Use Only	
Designed: RS	Draft	X	Job No. Y15112	
Drawn: RO'B	Approval		Date: SEPTEMBER 2015	
Checked: GT	Tender		Drawing No. Y15112-M3-SSR-002	Rev. C
Approved: LP	Construction			
Scale: 1:30,000 @ A1 1:60,000 @ A3	Record		File Ref. Y15112	

LEGEND:

POTENTIAL SITE

1.0 CHAINAGE MARKER

SITE 2B

SITE 2A

SITE 1B

SITE 1A

18.0

17.5

17.0

16.5

16.0

15.5

15.0

14.5

14.0

HILL

BALLINLOUGH

DERROCHSTOWN

MILL LAND

RAYNESTOWN

POWDERMOUGH

RATHREGAN

GLEBE

RAYNESTOWN ROAD

TOLKA RIVER

RATHBEGGAN LAKES

L22092

R147

Underpass

Pond

Well

Church

Grave Yard

Tolka River

The Black Bush

Sports Field

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Rev.	Date	By	Amendments
C	18.11.15	JM / GT	CHAINAGES AMENDED
B	20.10.15	RO'B / PM	INFORMATION
A	11.09.15	RO'B / PM	INFORMATION

Job

TRANCHE 4 MOTORWAY SERVICE AREAS

Title

SITE LOCATIONS
M3 SERVICE AREA

Issue Details		Office Use Only	
Designed: RS	Draft	X	Job No. Y15112
Drawn: RO'B	Approval		Date: SEPTEMBER 2015
Checked: GT	Tender		Drawing No. Y15112-M3-SSR-003
Approved: PM	Construction		Rev. C
Scale: 1:5,000 @ A1, 1:10,000 @ A3	Record		File Ref. Y15112

LEGEND:

POTENTIAL SITE

1.0 CHAINAGE MARKER

N

26.0

25.5

25.0

SITE 4A

24.5

SITE 4B

24.0

23.5

23.0

22.5

BERRILLSTOWN

BRANSTOWN

GARRETSTOWN

TREVET

ROESTOWN

REDBOG

R147

Clowanstown

Tara Stud

Spring

Well

Pond

Church (in Ruins)

Graveyard

Coolmore

Smithstown House

Garretstown House

Roestown House

1.83m FF

FF

CR

UND

CS

WB

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

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Dundrum Road,
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Ireland

Phone: +353-1-485 1400
Email: info@jbbarry.ie

Rev.	Date	By	Amendments
C	18.11.15	JM / GT	CHAINAGES AMENDED
B	20.10.15	RO'B / PM	INFORMATION
A	11.09.15	RO'B / PM	INFORMATION

Job

TRANCHE 4 MOTORWAY SERVICE AREAS

Title

SITE LOCATIONS
M3 SERVICE AREA

Issue Details			Office Use Only
Designed: RS	Draft	X	Job No. Y15112
Drawn: RO'B	Approval		Date: SEPTEMBER 2015
Checked: GT	Tender		Drawing No. Y15112-M3-SSR-004
Approved: PM	Construction		Rev. C
Scale: 1:5,000 @ A1, 1:10,000 @ A3	Record		File Ref. Y15112