

DART+ Depot Project Report

Appendix C– DART+ Depot Site Selection Report

25 February 2026



DART+ Depot

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Table of contents

Non Technical Summary

1.	Introduction.....	1
1.1	DART+ Programme	1
1.2	DART+ Programme Objectives	2
1.3	DART+ Depot Project Objectives	3
2.	Methodology	5
2.1	Site Selection Process.....	5
2.2	TAF Multi-Criteria Analysis	6
2.3	Study Area	7
2.4	Prospective Site Identification	8
3.	Identification of Site Longlist.....	9
3.1	Minimum Dimensions of the Site	9
3.2	Twin Track Feasibility	10
3.3	Operational Issues.....	10
3.4	Avoidance of Branch Lines.....	11
3.5	Finalisation of Site Longlist.....	12
4.	Multi-Criteria Analysis.....	13
4.1	Introduction	13
4.2	Transport and User Benefits and Other Economic Impacts.....	13
4.3	Accessibility Impacts.....	15
4.4	Social Impacts	16
4.5	Land Use Impacts.....	17
4.6	Safety Impacts	28
4.7	Climate Change Impacts	29
4.8	Local Environmental Impacts	35
5.	Stage 2 Multi-Criteria Analysis	65
6.	Conclusion.....	71
	ANNEX A: Depot Requirements Specification	73
	ANNEX B: Prospective Sites Summary Characterisation	82
	ANNEX C: Multi-Criteria Analysis Stage 1	96
	ANNEX D: Multi-Criteria Analysis Stage 2	97

Non Technical Summary

This report has been prepared to document the Site Selection process for the proposed DART+ Programme Depot. The Site Selection Process is illustrated on the graphic in **Figure E-01**. 50 No. prospective sites were initially identified across a study area which included the proposed DART+ Programme extent and 10km beyond the extent of the proposed service along each of the proposed DART+ routes.

The prospective site list was sifted to a longlist of 9 sites using alignment with the DART+ Depot Project Objectives, set out in Section 1, as the principal mechanism for sifting. The sites included in the longlist were all along the DART+ West and DART+ South West routes.

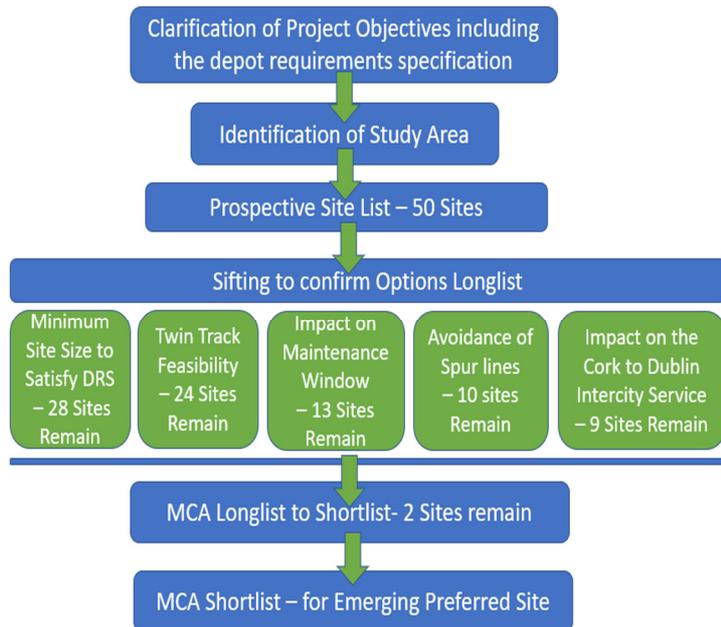


Figure E-01 Site Option Selection Methodology

A multi criteria analysis (mca) was carried out on the longlist of sites which resulted in the identification of a shortlist of 2No. sites for more detailed evaluation and a further stage of mca. The shortlist sites were Option 30 Maynooth West and Option 33 Kilcock West No.3. Following a second stage of multi-criteria analysis Option 33 was identified as the Preferred Option for the proposed DART+ Depot site location. Option 33 – Kilcock West Site No.3 is illustrated in **Figure E-02** below.

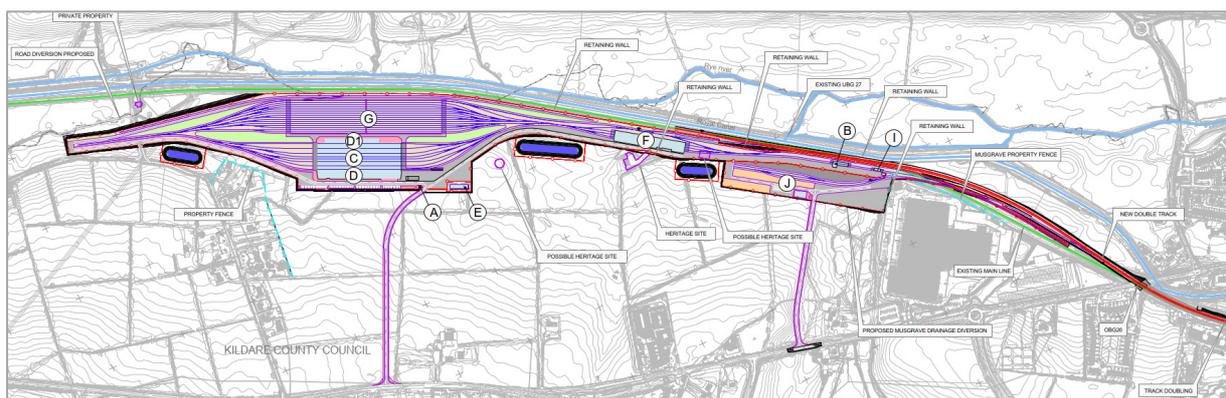


Figure E-02 Proposed Depot at Kilcock West Site No.3

The principal benefits of Option 33: Kilcock West Site No.3 over Option 30: Maynooth West are as follows:

- Kilcock West Site No.3 does not display the same vulnerability to flood risk that is evident for Maynooth West. This is because the hydrology of the Royal Canal, the Lyreen River the

Ballycaghan Stream create significant floodplains and the restriction of the Lyreen under the canal and railway at the Jacksons Bridge siphon result in increased flood risk vulnerability at the Maynooth site. The site west of Kilcock performs significantly better in respect of flood risk;

- In considering climate adaptation the superior flood risk performance of Kilcock West Site No.3 as set out above better assures the resilience of downstream arterial networks. Kilcock West Site No.3 is superior to Maynooth West in respect of Climate Action;
- Kilcock West Site No.3 has lower impact on properties than does Maynooth West. The impacts associated with Maynooth West, requiring approximately 30% less land;
- It is necessary to import earthworks materials to the depot sites. The quantum of import is higher for Maynooth West than is necessary for Kilcock West Site No.3, by approximately 223,000m³.
- The depot footprint for Kilcock West Site No.3 is significantly smaller than that for Maynooth West. This is due to the quantum of compensatory storage required for Maynooth West and the more challenging access configuration for the site.
- The achievement of road access to the Maynooth West Site is significantly more challenging than it is for access to the Kilcock West Site No.3 with the construction of a 100m long bridge and associated embankments necessary for Maynooth West;
- Option 30: Maynooth West has been the subject of a previous planning refusal for a DART+ programme depot by An Coimisiún Pleanála. The negative decision focused on flood risk and archaeological risk.
- The location of a proposed depot on a site west of Kilcock enhances the potential for implementation of DART+ services from Kilcock in line with policy. This is because it is necessary as part of the depot development to extend the electrification and the twin track configuration through Kilcock to the depot site.

Based on the outcome of multi-criteria analysis stage 2, it is evident that Option 33 Kilcock West Site No.3 has emerged ahead of other competing sites. There are clear advantages of Option 33 over Option 30 as set out above. It is considered appropriate that the proposed depot should be located west of the network extent to facilitate the easy rollout of train services to the network. It is also noted that the flood mitigation measures associated with this option are less onerous than those required at the Maynooth West site.

Option 33 Kilcock West Site No.3 meets the Project Objectives as set out in Section 1.0 of this report in full. It will facilitate the delivery of a depot to enable service delivery for the DART+ Programme train service specification.

Having completed an options selection process taking account of the Project Objectives and aligned with the Transport Appraisal Framework Guidelines, it is recommended that Kilcock West Site No.3 be progressed as the Emerging Preferred Option for the DART+ Depot.

1. Introduction

1.1 DART+ Programme

The DART+ Programme is a transformative programme of projects that aims to modernise and improve existing rail services in the Greater Dublin Area (GDA). It will see the DART network grow from its current 50 km in length to over 150 km and will support urban compact growth, contributing to reduced transport congestion and emissions in the Dublin region by electrified commuter rail between Dublin City Centre and the areas of Drogheda, Maynooth, Dunboyne, Celbridge and Greystones. It will provide a sustainable, electrified, reliable and more frequent rail service, improving capacity along these corridors. The extent of the proposed network is shown in Figure 1-1 below.

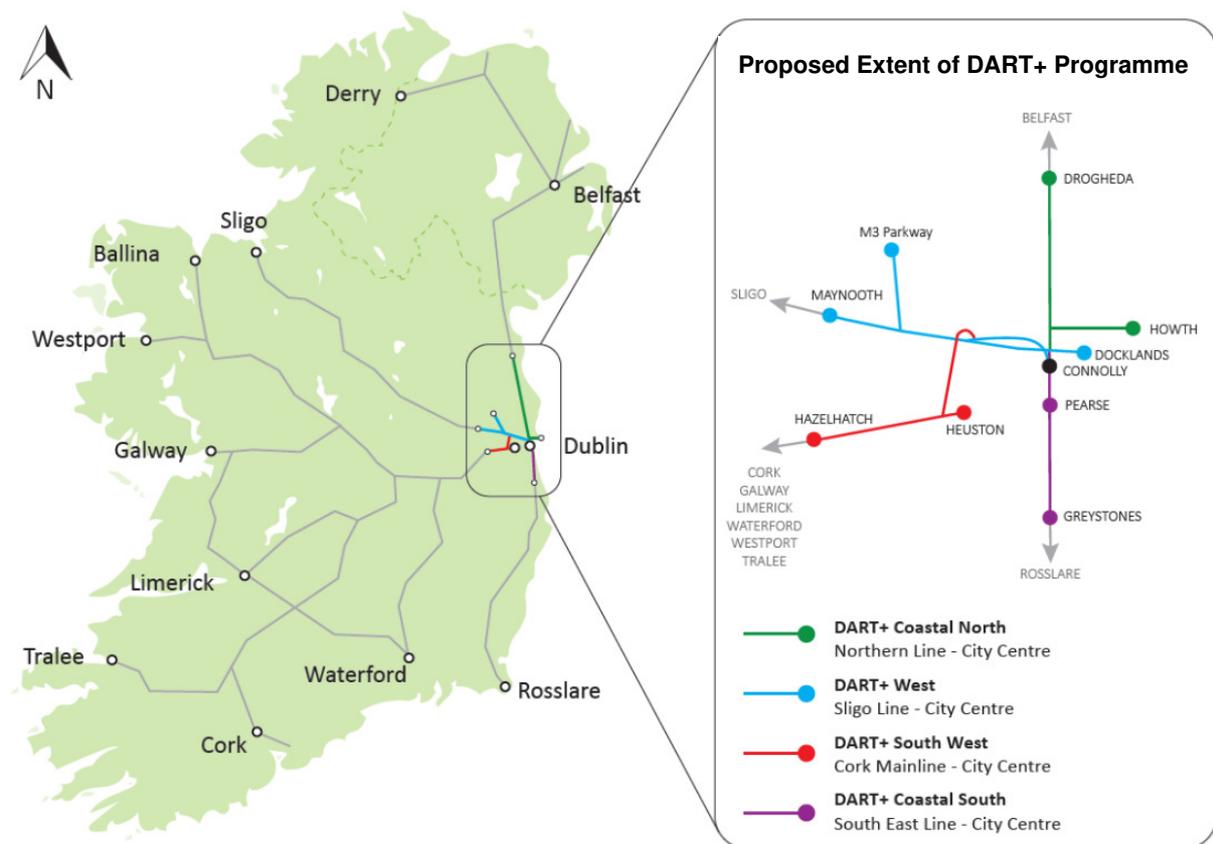


Figure 1-1 Schematic of Proposed Extent of DART+ Programme

The DART+ Programme comprises the following elements:

- DART+ West extends from the Docklands in Dublin City Centre along the Sligo Line to Maynooth and along the Dunboyne Line from Clonsilla to Dunboyne. It will add approximately 44km to the existing DART network;
- DART+ South West extends between Glasnevin and Hazelhatch along the Cork Line and will add approximately 19km to the Existing DART network;

- DART+ Coastal North extends from Connolly Station north along the existing Belfast line to Drogheda. It a branch line between Howth Junction and Howth and will add approximately 43km to the existing DART network;
- DART+ Coastal South extends from Connolly Station south along the Rosslare Line to Greystones. This section of the network is already electrified as part of the existing DART network.

At the time of writing this report railway orders have been approved for substantial portions of the proposed programme network including DART+ West to Maynooth, DART+ South West to Hazelhatch and DART+ Coastal North to Drogheda. In addition, delivery of the fleet for the upgraded network has commenced. A new depot is needed to facilitate maintenance and stabling for this new fleet.

The proposed depot will provide for maintenance of the whole of the new DART+ Programme fleet, up to 750 carriages. It will also provide for stabling of just under half of the fleet, 32 full length units. The remainder of the fleet will be stabled at locations across the network. The proposed depot is an essential component of the DART+ Programme, necessary to facilitate the delivery of the proposed service. Without a depot, the DART+ Programme service cannot be implemented.

The proposed depot will be a yard adjacent to the railway which will house facilities necessary to maintain and stable the trains. It will include the following principal elements

- Electrified trackwork to accommodate train movements and connection to the live railway. It also includes an electrified test track which facilitates the commissioning of new trains prior to accessing the railway network;
- Train wash and inspection units;
- A service slab for regular servicing and cleaning of trains;
- A maintenance building with offices and staff facilities and associated parking and ancillary buildings;
- A stabling area for trains;
- An electrical substation;
- A maintenance compound with associated buildings and service areas;
- Associated ancillary civil engineering infrastructure, such as boundary treatment, drainage, earthworks and landscaping.

A detailed depot requirements specification is included in **Appendix A** to this document.

1.2 DART+ Programme Objectives

The DART+ Programme's primary objective is to support urban compact growth and contribute to reducing transport congestion and emissions in the Dublin region by enhancing the heavy rail network between Dublin City Centre and the areas of Drogheda, Maynooth, Dunboyne, Celbridge and Greystones. It will provide a sustainable, electrified, reliable and more frequent rail service, improving capacity along these corridors.

Sub-objectives of the DART+ Programme include:

- Cater for existing heavy rail travel demand and support long-term patronage growth along established rail corridors in the Greater Dublin Area through the provision of a higher frequency, higher capacity, electrified heavy rail service which supports sustainable economic development and population growth.
- Improve accessibility to jobs, education and other social and economic opportunities through the provision of improved inter-rail and inter-modal connectivity and integration with other public transport services.
- Enable further urban compact growth along existing rail corridors, unlock regeneration opportunities and more effective use of land in the Greater Dublin Area, for present and future generations, through the provision of a higher capacity heavy rail network.
- Deliver an efficient, sustainable, low carbon and climate resilient heavy rail network, which contributes to a reduction in congestion on the road network in the Greater Dublin Area and which supports the advancement of Ireland's transition to a low emissions transport system and delivery of Ireland's emission reduction targets.
- Provide a higher standard of customer experience including provision of clean, safe, modern vehicles and a reliable and punctual service with regulated and integrated fares.

1.3 DART+ Depot Project Objectives

The DART+ Depot project has been established to facilitate the delivery of a depot for the proposed DART+ Network. A distinct set of objectives has been identified for the project to facilitate decision making and to allow the comparison of site options in respect of degree to which they are aligned with the needs of the project. The Objectives of the project sit within the objectives for the DART+ Programme and are as follows:

- To deliver maintenance and stabling facilities to accommodate the higher capacity, reliable, electrified rail service associated with the DART+ Programme;
- To deliver a depot which best meets the demands of the DART+ Programme Train Service Specification;
- To deliver a sustainable, low carbon and climate resilient design solution including making use of existing railway infrastructure together with targeted interventions to remove capacity constraints;
- To minimise adverse impacts on existing rail services, road users and landowners associated with the construction, operation and maintenance of the proposed development;
- To identify cost effective solutions from a capital, operations and maintenance perspective.

DART+ Depot Project Sub-Objectives

The following sub-objectives have been distilled from the above principal objectives:

- To deliver a depot which best meets the Depot Requirements Specification for the project;
- To deliver a state of the art facility for drivers and maintenance personnel training;

- To deliver a depot at least 30ha in area and meeting the following minimum dimensional criteria: 1.5km long x 350m wide or 2.2km long x 250m wide;
- To deliver a depot configuration which meets best practice in respect of depot layout and operation;
- To deliver a depot with maintenance facilities for 750 carriages and stabling for 32 full length units;
- To mitigate impact on the existing period for overnight maintenance activity on the railway network due to out of service DART train movements;
- To mitigate impact on the proposed Cork to Dublin electrified intercity service;
- To ensure depot facilities are located on a railway mainline rather than a branch line;
- To ensure twin track electrified access is provided to the depot to ensure effective service delivery;
- To minimise adverse impacts on the natural and built environment associated with the construction, operation and maintenance of the proposed development.

This report has been prepared to document the site selection process for the depot. It adopts a clean slate approach to examining the full extent of the proposed DART+ network to identify a preferred site which meets the needs of the DART+ Programme. In doing so, care was taken to include sites that were previously examined for prospective use and to consider existing facilities within Córas Iompair Éireann (CIÉ) lands which may be suitable for depot development. The team implemented an options selection process aligned with the Transport Appraisal Framework guidance documentation, dated July 2024. Details of the methodology used are set out in **Section 2** of this report.

2. Methodology

2.1 Site Selection Process

This section describes the methodology adopted for the options selection process for identification of a preferred site location for the proposed DART+ Programme Depot. The process involves sifting a list of prospective sites for alignment with the project objectives to identify a longlist of sites. The longlist is then subject to a two stage multi-criteria analysis to identify a preferred option. A two stage approach is used due to the high prevalence of flood risk in the vicinity of the railway and the need to carry out more detailed risk flood assessment for shortlisted sites where they are in a zone of flood risk.

The process can be broken down into a series of eight steps as follows:

- Clarification of Project Objectives including the Depot Requirements Specification. The specification was distilled from engagement with the IÉ stakeholders including the department of the Chief Mechanical Engineer, the department of the Chief Civil Engineer and the Operations Department. It is included in Appendix A to this document;
- Identification of the site selection study area. The full extent of the proposed DART+ Programme network. In addition, a 10km zone along the railway and beyond the proposed extents of the proposed network was included to ensure potential sites in the vicinity of the proposed network were included;
- Identification of a prospective site list; Once the study area was identified, sites considered in previous studies were noted for inclusion in the prospective site list. Then the full study area was examined for sites contiguous with the railway, of 30Ha or more, and of lands with limited residential development evident on them, which met the minimum dimensional requirements identified in the project objectives.
- Sifting of the prospective site list in respect of alignment with the Project Objectives to identify a site longlist;
- Characterisation of the longlisted sites to facilitate multi-criteria analysis aligned with the Transport Appraisal Framework Guidelines;
- Multi-criteria analysis of the longlisted sites to identify a shortlist of sites;
- Further characterisation of the shortlisted sites to facilitate stage 2 of the multi-criteria analysis;
- Multi-Criteria Analysis of the shortlisted sites to identify a preferred site option.

The flowchart in **Figure 2-1** provides an illustration of the mechanism whereby the preferred option was selected.

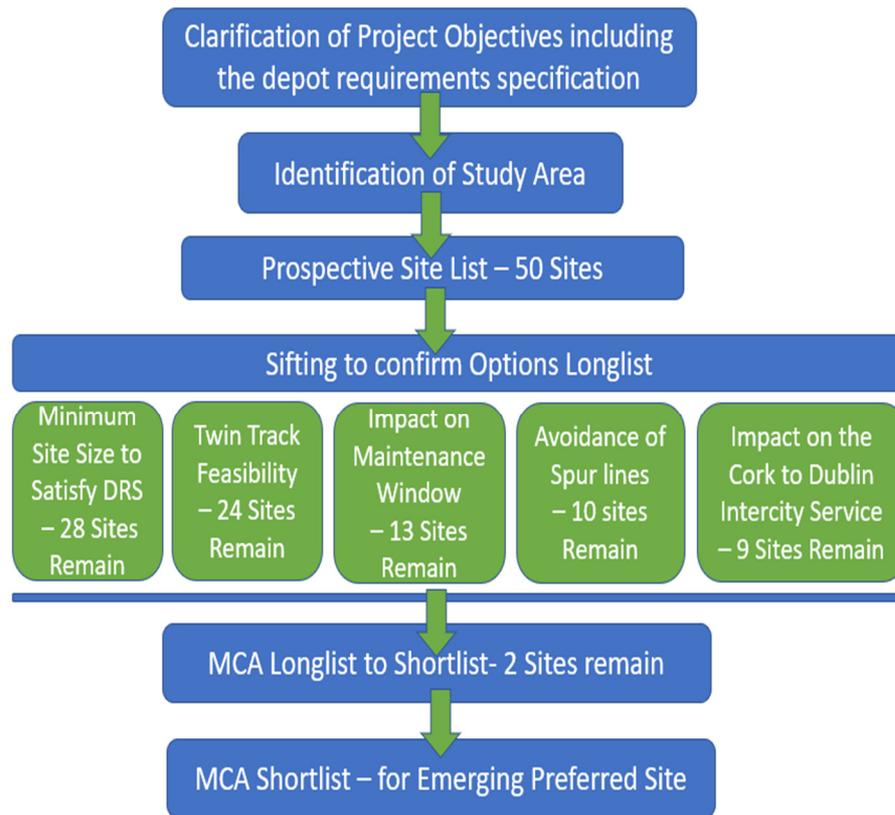


Figure 2-1 Illustration of Site Selection Methodology

2.2 TAF Multi-Criteria Analysis

The Transport Appraisal Framework (TAF), July 2024 purports to provide “appraisal and implementation guidance that aims to promote investment in the transport system which meets the needs of society, fulfils strategic policy objectives, and delivers value for money through a common framework for appraising transport investments in accordance with Infrastructure Guidelines” of the Department of Transport. Comprising 8 modules of guidance documentation, it provides the principal mechanism whereby public transport infrastructure is procured in Ireland.

Modules 7 (Detailed Guidance on Appraisal Techniques), and 8 (Detailed Guidance on Appraisal Parameters) of the guidelines are salient to option selection as they set out the basis whereby alternative options for development are appraised with a view to identifying a proposed outcome. A multi-criteria analysis methodology is set out in Module 7 and guidance on the basis of appraisal of the criteria and sub criteria is set out in Module 8. While the TAF focuses on the high level programme delivery the principals apply to appraisal of component options and the approach to options selection used in this study is aligned with the TAF guidelines.

The TAF approach to multi-criteria analysis examines the absolute impact of options under up to 26 criteria and sub-criteria. It also uses an averaging mechanism across sub-criteria and criteria to consolidate the impact ratings. The approach leads to an apparent levelling of outcomes which can make the relative merits of options challenging to differentiate.

In this study, the TAF multi-criteria analysis has been supplemented with comparative assessment tables where appropriate to assist with clarifying the distinctions between options assessed.

All stages of site selection process were kept live throughout the project stage so that salient information which became available later in the process could be fed back into considerations to ensure consistency throughout.

In determining an appropriate study area for the proposed depot site, consideration was given to ensuring that an even-handed assessment be carried out to identify a reasonable selection of prospective sites for options assessment. To this end, the full extent of the proposed DART+ Network was examined, contiguous with the railway with an additional 10km provision at the remote end of each line to permit the reasonable consideration of potential sites in the vicinity of the network.

2.3 Study Area

The study area was defined on the above basis incorporating the full 154km extent of network and 10km from the remote extremity of the network along each line. See the graphic in Figure 2-2. To ensure fair evaluation of all potential sites, any works necessary for electrification of the network have been considered in place prior to evaluation of depot site options.

The study area extends along each of the existing lines of the proposed DART+ Programme network as follows:

- DART+ West: the full extent of the Dublin-Sligo line from the Docklands in Dublin City Centre to Cloncurry, west of Kilcock and along the Dunboyne Line from Clonsilla to Derrockstown, north of Dunboyne;
- DART+ South West: the full extent of the Dublin-Cork Line from Glasnevin to Osberstown, southwest of Sallins;
- DART+ Coastal North: the full extent of the Dublin-Belfast line from the Dublin Docklands to Grangebellew, north of Drogheda and the branch line between Howth Junction and Howth;
- DART+ Coastal South: the full extends of the Dublin-Rosslare line from Connolly Station to Kiloughter, south of Newcastle.



Figure 2-2 Extent of Site Selection Study Area

2.4 Prospective Site Identification

Once the study area was identified, sites considered in previous studies were noted for inclusion in the prospective site list. Then the full study area was examined for sites contiguous with the railway, of 30Ha or more, and of lands with limited residential development evident on them, which met the minimum dimensional requirements identified in the project objectives.

From the initial site identification exercise, 50 prospective sites were chosen. Given that the sites are between 1.5km and 2.2km in length and that a portion of the 204km long study area has been subject to urban development, the site selection process can be considered extensive. The prospective site list includes 20 No. sites identified in earlier studies. The list with initial summary characterisation is presented in **Appendix B** to this report.

Table 2-3 below provides a full list of all sites.

Table 2-3 Prospective Site List

Coastal North Line	Sligo, Dunboyne Lines	Hazelhatch Suburban Line
Option 1. East Wall Yard	Option 20. North Wall Railway	Option 34. Heuston Station
Option 2. Conolly Depot	Option 21. Clonee West	Option 35. Inchicore
Option 3. Fairview	Option 22. M3 Parkway South	Option 36. Clondalkin Fonthill – Kishoge
Option 4. Clontarf Golf Club	Option 23. M3 Parkway	Option 37. Hazelhatch East
Option 5. Maynetown West	Option 24. M3 Parkway North	Option 38. Hazelhatch East 2
Option 6. Airport No.1	Option 25. Kellystown	Option 39. Hazelhatch West
Option 7. Airport No.2	Option 26. Allenswood	Option 40. Castledillon
Option 8. Malahide Depot	Option 27. Collinstown	Option 41. WhiteChurch
Option 9. Rush & Lusk South area	Option 28. Maynooth East	Option 42. Sallins
Option 10. Rush & Lusk North	Option 29. Maynooth West big area	Coastal South Line
Option 11. Skerries West	Option 30. Maynooth West	Option 43. Pearse Station
Option 12. Skerries North	Option 31. Kilcock West small area	Option 44. South Dublin Woodbrook
Option 13. Balbriggan North	Option 32. Kilcock West	Option 45. Bray Station
Option 14. Laytown South	Option 33. Kilcock West Site No.3	Option 46. North Greystones
Option 15. Drogheda South		Option 47. Greystones Station
Option 16. Drogheda Depot		Option 48. Kilcoole Site 1
Option 17. Drogheda North		Option 49. Kilcoole Site 2
Option 18. Drogheda North big area		Option 50. Newcastle
Option 19. Clogherhead West		

3. Identification of Site Longlist

After an initial characterisation exercise in respect of the prospective sites, a sifting process was implemented to remove unsuitable sites. The sifting process involved appraisal of each prospective site for alignment with the project objectives. The exercise was carried out in a sequential manner. While all options were aligned with the higher level objectives, the project sub-objectives offered the most effective mechanism for identification of sifting criteria for potential depot sites. The criteria are as follows:

- Minimum dimensions of the site – 30Ha and 1.5km long x 350m wide or 2.2km long x 250m wide;
- Twin Track Feasibility;
- Operational Issues;
- Avoidance of Branch Lines;

Each step of the process of sifting is set out below.

3.1 Minimum Dimensions of the Site

The Depot Requirements Specification was developed in conjunction with the departments of the Chief Mechanical Engineer, the Chief Civil Engineer and operations in Iarnród Éireann. It included consideration of the minimum dimensional requirements of a proposed DART+ Programme depot and is included in Appendix A to this report. The minimum site area and dimensions were confirmed following detailed examination of the space requirements of buildings and facilities needed at the Depot. 23No. sites were sifted out of the analysis for not complying with the minimum site requirements. The sifted sites are summarised in **Table 3-1** below.

Table 3-1 Sites Sifted due to insufficient size

Site Ref	Designation	Line
1	East Wall Yard	DART + COASTAL NORTH
2	Connolly Depot	DART + COASTAL NORTH
3	Fairview	DART + COASTAL NORTH
4	Clontarf Golf Club	DART + COASTAL NORTH
5	Maynetown West	DART + COASTAL NORTH
8	Malahide South	DART + COASTAL NORTH
9	Rush & Lusk South	DART + COASTAL NORTH
12	Skerries North	DART + COASTAL NORTH
16	Drogheda Depot	DART + COASTAL NORTH
20	North Wall	DART + WEST
22	M3 Parkway South	DART + WEST
25	Kellystown	DART + WEST
27	Collinstown	DART + WEST
31	Kilcock West small area	DART + WEST

Site Ref	Designation	Line
34	Heuston Station	DART + SOUTH WEST
35	Inchicore	DART + SOUTH WEST
36	Clondalkin Fonthill - Kishoge	DART + SOUTH WEST
37	Hazelhatch East	DART + SOUTH WEST
43	Pearse Station	CITY CENTRE
45	Bray Station	DART + COASTAL SOUTH
46	North Greystones	DART + COASTAL SOUTH
47	Greystones Station	DART + COASTAL SOUTH

Note: Option 29 Sifted out at this stage as it is effectively a duplicate of Option 30

Table 3-1 Sites Sifted due to insufficient size – Contd.

3.2 Twin Track Feasibility

A double track arrangement is required to facilitate pre-service deployment of trains and service implementation from the depot. It is not practicable to implement twin track through the Bray head tunnel sections. As a consequence, sites south of Bray Head were sifted out from the list of prospective sites. 3 No. of the remaining sites were affected south of Bray. The are listed in Table 3-2;

Table 3-2 Sites Sifted due to infeasibility of twin track

Site Ref	Designation	Line
48	Kilcoole Site 1	DART + COASTAL SOUTH
49	Kilcoole Site 2	DART + COASTAL SOUTH
50	Newcastle	DART + COASTAL SOUTH

3.3 Operational Issues

Protection of the overnight track maintenance window in the City Centre is an operational necessity and is essential to the safe and effective delivery of the DART+ service. The maintenance period, during which trains do not run, is between 01.00 and 05.00. The need for trains to shuttle across the network from the depot for start of service means that the choice of some sites would affect the maintenance window. 12 No. sites were identified as needing to be sifted out to protect the overnight maintenance period.

The DART+ South West line has been quadrupled between Parkwest and Cherry Orchard Station, and west of Hazelhatch and Celbridge Station. This provides for segregation of the proposed DART+ service which will use the northern/western tracks and the Dublin to Cork Intercity service which will use the southern / eastern tracks. The DART+ Programme train service specification makes provision for a 5 min level of service on the intercity line. It is also proposed to electrify the intercity line. Protection of the proposed Cork to Dublin electrified intercity corridor results in the removal of one option, Hazelhatch

East No 2 due to its location south of the railway, a location which requires crossing the intercity lines to access the DART+ lines.

Three site options sifted out due to Operational Issues are listed in **Table 3-3**.

Table 3-3 Sites Sifted due to Operational Issues

Site Ref	Designation	Line
6	Airport No.1	DART + COASTAL NORTH
7	Airport No. 2	DART + COASTAL NORTH
10	Rush & Lusk North	DART + COASTAL NORTH
11	Skerries West	DART + COASTAL NORTH
13	Balbriggan North	DART + COASTAL NORTH
14	Laytown South	DART + COASTAL NORTH
15	Drogheda South	DART + COASTAL NORTH
17	Drogheda North	DART + COASTAL NORTH
18	Drogheda North big area	DART + COASTAL NORTH
19	Clogherhead West	DART + COASTAL NORTH
38	Hazelhatch East 2	DART + SOUTH WEST
44	South Dublin - Woodbrook	DART + COASTAL SOUTH

3.4 Avoidance of Branch Lines.

This objective relates to the inherent vulnerability of service delivery from a branch line, the increased maintenance obligations consequent on such a condition and the increased operational load caused by cross track manoeuvre's necessary to implement such a service configuration. Three sites on the Dunboyne branch line were sifted out due to this requirement. They are listed in Table 3-4 below:

Table 3-4 Sites Sifted due to Avoidance of Branch Lines

Site Ref	Designation	Line
21	Clonee West	DART + WEST
23	M3 Parkway	DART + WEST
24	M3 Parkway North	DART + WEST

3.5 Finalisation of Site Longlist

Consideration was given to the use a number of further sifting criteria. They included the following:

- Flood risk: This was found to be too prevalent an issue across the sites to warrant inclusion as a sifting criterion. 28No. of the 50 candidate sites exhibited evidence of flood risk susceptibility by being partly of fully located in a Flood Zone;
- Impact on Recorded and Heritage Structures: It was considered inappropriate to use this criterion for sifting except in the most overt of conditions;
- In-direct impact on European Sites: A large proportion of the sites exhibit the potential for indirect impacts on European Sites and the possible scale if impact is highly variable for differing sites. It was decided that options would be considered individually in respect of the indirect impacts on European Sites;
- Site Gradient: Once it was decided that mainline access was not required at both ends of the depot, this criterion resolves primarily to the issue of feasible track alignment and the earthworks quantities. It was elected to consider each site on merit from this perspective.

It was elected to conclude the sifting process with nine (9No.) sites selected for further characterisation with a view to inclusion in a multi-criteria analysis for options selection. The list is provided in Table 3-5 below. Of the 50 No. candidates, 41No. sites were sifted out. The remaining sites are on the West, and South West lines.

Table 3-5 Final Site Longlist

Site Ref	Designation	Line	Area > 30 Ha	Length >1,500 m linear	Site Slope >2%	Flood Risk
26	Allenswood	DART + WEST	Yes	Yes	2%	Yes
28	Maynooth East	DART + WEST	Yes	Yes	3%	No
30	Maynooth West	DART + WEST	Yes	Yes	2%	Yes
32	Kilcock West	DART + WEST	Yes	Yes	2%	Yes
33	Kilcock West Ste No.3	DART + WEST	Yes	Yes	2%	Yes
39	Hazelhatch West	DART + SOUTH WEST	Yes	Yes	2%	Yes
40	Castledillon	DART + SOUTH WEST	Yes	Yes	2%	Yes
41	WhiteChurch	DART + SOUTH WEST	Yes	Yes	2%	Yes
42	Sallins	DART + SOUTH WEST	Yes	Yes	2%	No

At this stage of the process, the Site identification criteria have been established, the prospective site list identified and, a sifting exercise has been carried out to identify a longlist of sites.

Of the 9No. sites remaining all but two are subject to flood risk. It was clear that due to the high prevalence of flood risk across the options a more granular level of detail on flood risk is necessary to facilitate the MCA than would normally be used. All sites have an average gradient along them of between 2% and 3% based on available topographic information and it is noted that 5No. of the sites require extension of the mainline electrification to reach the site.

4. Multi-Criteria Analysis

4.1 Introduction

This section sets out the details of criteria, sub-criteria and comparators to be used in the multi-criteria analysis of depot site options. Each Criterion and sub-criterion is considered in turn in the following sections.

The characterisation of all sites is summarised in tabular form in Appendix B. The detail of the Stage 1 multi-criteria analysis of the site options longlist is included in Appendix C. A summary table of the assessment is presented in **Table 4-19** at the end of this section.

The assessment is broken into two stages mca1 and mca2. The assessment is typically similar for both but for the mca2 stage of the assessment, in some instances, a further level of detail is available and it is practicable to assess in greater detail. Where adjustments to the methodology are made between mca1 and mca2, this is set out below.

4.2 Transport and User Benefits and Other Economic Impacts

4.2.1 Alignment with Customer Requirements Specification

MCA1 assessment

Options were compared in respect of the following comparators:

- **Empty running**

Empty running from each Depot location has an impact on both operational cost and maintenance schedules. Considering the km of empty running as a product of the distance from the depot to Connolly station (the main hub in the network) gives a good estimation of the impact of each location to both aspects.

Output: the options located more than 28 km from Connolly were given a slightly negative rating, while those located closer than 28 km, a slightly positive rating.

- **Rail access, number of turnbacks, crossover requirement, access complexity**

DART trains start operations at different stations on the DART+ network. For some of them, access from the depot location requires a turn-back (for instance: getting from Drogheda to Kilcock requires turn-back at Connolly, getting from Drogheda to Heuston requires two turn-backs, while getting from Drogheda to Bray does not require a turn-back). The criterion was examined on the basis of the sum of products of numbers of turn-backs and number of trains terminating at a certain location per hour according to the proposed train service specification (tss).

In some cases, the candidate depot site may require trains to travel to/from depot across a highly occupied line section through a flat junction. This criterion was examined on the basis on the peak hour traffic (according to the tss, with long-distance and freight trains included) on the line section where the candidate depot was located. Also, traffic to/from the depot must have a certain capacity reserve on the adjacent line for effective performance. The lower the traffic on the adjacent sections, the better.

Although restricted due to the configuration of the DART+ network, from a strategic robustness perspective access to more than one line (via other lines in the network) may play an important role in case of any works / malfunction / disaster affecting the basic access line.

Output – slightly positive ratings were given to the options which a simple and straightforward connection to the network, while slightly negative ratings were associated to the options with more than one crossover required and/or the one that created a highly occupied line section through a flat junction.

- **Site Configuration**

This relates to the layout of the depot facilities and how effectively inspection, cleaning, maintenance activities can be carried out for the given configuration. It will consider comparative track layouts, and the prevalence of junctions and the gradient of the site.

Output – positive ratings were given to the options that allowed the desirable depot configuration, differentiating the ones with a steep slope from the ones with a moderate slope. Negative ratings were given to the options that, for differing reasons, could only fit the necessary facilities with a configuration where the service slab is placed in parallel to the stabling area, which creates difficulties for the Depot functionality.

MCA 2 Assessment

With detailed characterisation of the sites, the mca2 stage assessment of alignment with the customer requirement specification allowed for a more detailed analysis of the sites. A detail analysis of the time tables for the deployment of the fleet was undertaken, and the additional information allowed for a better informed rating.

4.2.2 Transport Costs and Operational Characteristics

MCA1 Assessment

As part of the assessment the comparative capital and operational costs of options needs to be considered. In addition, the release of diesel motorised units to other lines was examined, as was the potential for taking advantage of latent passenger demand associated with each location. The characteristics are as follows:

- Capital cost estimate

These include the cost of any additional; infrastructure which may be needed for a given site location including, road access infrastructure, electrification and signalling, additional permanent way and trackwork, drainage attenuation, compensatory storage, environmental bunding, associated land acquisition, supplementary stabling etc.

- Operational expenditure cost estimate

- Release of DMUs to other lines and Latent Passenger Demand

Output: The cost estimates were presented on the basis of percentage basis relative to the least expensive. The release of train units and the latent passenger demand was considered on a line basis. The outcomes were rated on a qualitative basis across the full spectrum of the available ratings.

MCA 2 Assessment

The MCA2 Stage assessment is done on the same basis as Stage 1 but based on more detailed information available for each site.

4.2.3 Change in Land Value

MCA 1 Assessment

This sub-criteria acknowledges the fact the proposed depot will enable the enhanced DART+ service with consequent increases in land value across the extent of the proposed network.

Output: A qualitative assessment of the options which turned out to be significantly positive rating for all options;

MCA 2 Assessment

The MCA2 Stage assessment is done on the same basis as Stage 1.

4.2.4 Transport User Benefits

MCA 1 Assessment

This sub-criteria acknowledges the fact the proposed depot will enable the enhanced DART+ service with consequent improvements for transport users across the extent of the proposed network.

Output: A qualitative assessment of the options which turned out to be significantly positive rating for all options;

MCA 2 Assessment

The MCA2 Stage assessment is done on the same basis as Stage 1.

4.2.5 Site Security

MCA 1 Assessment

This measures the comparative security of each candidate site – it considers the number of boundaries adjoining the site, the potential for oversight of the sites, the number of properties in proximity to the site and access points to the site.

Output: A qualitative assessment of the options which turned out to be neutral rating for all options;

MCA 2 Assessment

The MCA2 Stage assessment is done on the same basis as Stage 1 but based on more detailed information available for each site.

4.3 Accessibility Impacts

Under this assessment, the potential impacts on i) existing accessibility, namely to services, jobs, amenities and community facilities and ii) impacts on access for freight traffic and access to freight facilities at proposed depot sites are examined. This involved a desktop examination of the existing road network at the proposed depot sites and in the wider area using Google Earth, and Google Maps.

MCA1 Assessment

As part of the DART+ Programme, the proposed depot is required to facilitate the DART+ Programme service providing for maintenance and stabling of the train fleet. There is potential for the proposed depot site locations to impact on existing access to jobs, recreational facilities and key services such as education, medical, sports and community facilities during operation phase. Potential impacts during operation phase on existing accessibility to key services and recreational facilities within 1km of the proposed depot sites were considered. Potential impacts on existing road network during construction phase are assessed under 'Existing Transport Network and Service Impact' as described in Section 4.5.2 of this Report.

Output: a qualitative assessment of options with associated impact ratings.

MCA 2 Assessment

The MCA2 Stage assessment will be on the same basis as Stage 1.

4.3.1 Freight Access

MCA 1 Assessment

The potential impact on access for freight traffic associated with the proposed location for the depot was considered during operation and access for freight deliveries within 1km of the proposed sites was examined.

MCA 2 Assessment

The MCA2 Stage assessment will be on the same basis as Stage 1.

4.4 Social Impacts

MCA 1 Assessment

Under the social impacts criteria, TAF looks to assess the potential impacts of the projects on accessibility of deprived groups, transport users with different mobility needs and gender impacts. The proposed depot project in itself is not intended for public use, but rather to facilitate the electrification of the DART+ Programme network for operation and maintenance of the train fleet. As such, the potential social impacts are reviewed in relation to job opportunities, which would specifically be of benefit for population residing within socially disadvantaged geographical areas.

The Haase and Pratschke (HP) deprivation index measures the relative affluence or disadvantage of a particular geographical area. The index is based on census data, using 10 key indicators such as the proportion of skilled professionals, education levels, employment levels, age dependency, and lone parent rate found in an area. HP deprivation scores of 'Marginally Below Average', 'Disadvantaged', 'Very Disadvantaged', and 'Extremely Disadvantaged' represent socially disadvantaged geographical areas. The potential social impacts with regards to job opportunities on socially disadvantaged geographical areas (HP deprivation index) at Electoral Division (EDs) within 1km of the proposed depot site locations were considered.

Output: The output was a rating based on the above qualitative assessment.

MCA 2 Assessment

The MCA2 Stage assessment will be on the same basis as Stage 1.

4.5 Land Use Impacts

Land use impacts reflect the impacts the proposed development has on existing public realm, transport network and to existing businesses or premises. It also assesses the impact in respect of current planning policy.

4.5.1 Change in Quality of Public Realm

MCA 1 Assessment

Under TAF, public realm is identified as areas containing streets, footpaths, parks, squares, bridges and public buildings and facilities. Existing public realm areas within or in the vicinity of the proposed depot sites have been identified, as appropriate, and the potential change in quality of the public realm areas has been assessed.

MCA 2 Assessment

The MCA2 Stage assessment will be on the same basis as Stage 1 but will be based on more detailed information available for each site.

4.5.2 Existing Transport Network and Service Impact

MCA 1 Assessment

Under the TAF, this criterion assesses the potential for depot options to impact on the existing transport network and services during construction and operational phases. The following aspects were considered for each site:

- Number of bridges to be impacted by the proposed design.
- Road diversions required.

MCA 2 Assessment

The MCA2 Stage assessment will be on the same basis as Stage 1 but will be based on more detailed information available for each site.

4.5.3 Material Assets: Property

This assessment examines the potential impacts of options various property types. The methodology employed for MCA1 and MCA2 is outlined below.

4.5.3.1 Agricultural Property

MCA 1 Assessment

The options assessment comprises a qualitative and quantitative assessment of the depot site options and the impact of the proposed site on agriculture based on the criteria in **Table 4-1** below.

Table 4-1 Impact assessment criteria

Level	Score	Criteria to include the following:
Highly Negative Impact	1	<ul style="list-style-type: none"> - High level of agricultural lands. - Agricultural land use is primarily grass or arable based. - Land quality is primarily good being suited to intensive agricultural production and a wide range of agricultural uses. - Significant direct and indirect impacts on sensitive farming enterprises or agribusinesses. - Significant permanent impact on farm buildings / farm facilities involving property acquisition. - There is a high level of farm division / impact on access to land.
Negative Impact	2	<ul style="list-style-type: none"> - Predominantly agricultural lands. - Agricultural land use is mainly grass or arable based. May include a level of forestry, rough grassland / scrub, etc. - Land quality is average to good and with effective management is suited to intensive agricultural production and a range of agricultural uses. - Moderately significant direct and indirect impacts on sensitive farming enterprises or agribusinesses. - There may be a permanent or temporary impact on farm buildings / farm facilities involving property acquisition. - There may be a medium to high level of farm division / impact on access to land.
Slightly Negative Impact	3	<ul style="list-style-type: none"> - Agricultural land use is mainly grass based. May include levels of forestry, rough grassland / scrub, etc. - Land quality may be average, being less suited to intensive agricultural production. Lands may be limited in the range of agricultural use. - Indirect impact on sensitive farming enterprises or agribusinesses. - There may be a temporary impact on farm buildings / farm facilities. - There is no farm division, impact on access to land or it is at a low level.
Neutral Impact	4	<ul style="list-style-type: none"> - No effect on agricultural or non-agricultural property.
Positive Impact	5-7	<ul style="list-style-type: none"> - Not applicable to agriculture or non-agricultural property.

The assessment includes a quantitative and a qualitative assessment of the impact of options on agricultural property. The qualitative assessment for agriculture will consider landcover type and, specifically, farm enterprise type, indicative of farm sensitivity as listed in table below using the desktop review involved a survey of online aerial photography (Google Earth Pro).

All options are located on farm holdings, and as such the focus of the Stage 1 options assessment is to identify the type of farm enterprises within the footprint of each site location.

Direct impacts on agricultural property include land-take, farm division and impacts on access to remaining lands. Land-take impact involves a reduction in agricultural lands and may include direct impacts on farm buildings / or farmyard facilities used in the operation of the farm enterprise.

Indirect impacts on agricultural property can affect the operation of the agricultural enterprise. Such impacts include noise, air, visual and lighting impacts arising from the construction and operation of the proposed options. Indirect impacts on farm enterprises have also been considered as part of the assessment e.g., the proximity of equine farms to the proposed depot site locations.

The significance of impact increases with the degree of impact(s) associated with a proposed option. A higher significance is associated with farm enterprises considered of significance or sensitive to direct and indirect impacts. Such farm enterprises include agricultural property used for educational or

research purposes, horticultural enterprises involving intensive production under glass or equine farm enterprises where operational activities involve a high level of interaction with horses.

Output: Qualitative rating for each option.

MCA 2 Assessment

The options assessment comprises an assessment of depot option sites and the potential impact on agriculture and agricultural property. This will involve assigning a value rating and an impact rating to each option based on the criteria in Table below.

Table 4-1: Options assessment

Basis	Criteria	Rating
Value criteria	Description of option alignment, online / offline, land cover, existing land use, presence of farmyards / farmhouses, presence of key agricultural constraints.	- High, Medium, Low or Very Low
Impact criteria	Impacts on land, access to lands, farmhouses, farmyards and key agricultural constraints including highlighting significant impacts.	- High, Medium, Low or Very Low
Significance of impact	Significance category and MCA score based on the combination of both the value and impact ratings. based.	

The qualitative assessment consists of an evaluation of landcover on individual agricultural properties for depot option sites. This assessment will consider improved grassland as an indicator of productive agricultural lands other than other landcover categories of forestry / woodland and rough grassland / scrub / peat. Key agricultural constraints on a depot option site can be an indicator of high-quality agricultural lands, high intensity production and / or the sensitivity of agricultural activities depending on the type of constraint.

Equine constraints typically involve moderate to intensive activities considered sensitive to construction and operational activities associated with the development. Dairy constraints typically involve intensive agricultural production on high quality lands and are sensitive to the land-take and land severance impacts. Pig and Poultry farms are typically highly intensive farming enterprises within a farmyard setting and may be considered sensitive to direct impacts. Tillage constraints typically indicate high quality lands and may be considered sensitive to land-take. Agribusinesses typically are locations of local employment within the sector and may be considered sensitive to the direct impacts.

The quantitative assessment will consider total land-take required for each option and agricultural receptors within the corridor such as farmhouses, farmyards and other agricultural constraints.

The value rating in **Table 4-4** is based on the qualitative and quantitative assessment of individual agricultural properties under the following criteria:

- Landcover (improved grassland / arable lands, rough grassland, forestry / woodland, peat / scrub).
- Farmhouses / farmyards / farm facilities present.
- Key Agricultural constraints.

The value rating will consider the criteria as presented in **Table 4-2**.

Table 4-2: Value rating criteria

Rating	Criteria
High	Land use – Livestock and / or tillage enterprises on good quality improved grassland / arable land with little or no forestry / peat / scrub present. Farmhouses and farm buildings / facilities present. Key constraints – Sensitive farm enterprises present (i.e., dairy, equine, poultry, pigs, horticulture, agribusiness, education).
Medium	Land use – Livestock and / or tillage enterprises on medium to good quality lands or with low levels of forestry / peat / scrub present. Farmhouses and farm buildings / facilities present. Key agricultural constraints – Sensitive farm enterprises may be present.
Low	Land use – Livestock farm enterprises on medium quality lands or with levels of forestry / peat / scrub present. Agricultural lands may be zoned for, or planning permission exists, for non-agricultural purposes. Low level of farmhouses and farm buildings / facilities present. Key constraints – Sensitive farm enterprises may be present.
Very low	Land use – Extensively managed livestock farm enterprises on poor to medium quality lands or with significant levels of forestry / peat / scrub present. Agricultural lands may be zoned for, or planning permission exists, for non-agricultural purposes. Low level of farmhouses and farm buildings / facilities present. Key constraints – No sensitive farm enterprises present.

The impact rating assessment is based on the qualitative and quantitative assessment of the depot site options under the following:

- Land-take.
- Likely land severance on farm holdings.
- Impact on farmhouses.
- Impact on farm buildings and facilities.
- Impact on key agricultural constraints.

The impact rating will consider the criteria as presented in **Table 4-3**.

Table 4-3: Impact rating criteria

Rating	Criteria
High	Land-take – Predominantly offline (on private agricultural lands). Significant land-take and land severance impacts on agricultural properties. Significant direct impacts on farmhouses and farm buildings / facilities. Significant impacts on key constraints present.
Medium	Land-take – Predominantly offline (on private agricultural lands). Land-take and land severance impacts on agricultural properties. Direct impacts on farmhouses and farm buildings / facilities. Impacts on key constraints present.
Low	Land-take – Online (on public road / public lands) / offline (on private agricultural lands). Land-take and land severance impacts on agricultural properties. Impacts are not significant on farmhouses and farm buildings / facilities. Impacts are not significant on key constraints present.
Very low	Land-take – Online (on public road / public lands) / offline (on private agricultural lands). Land-take and land severance impacts on agricultural properties. No direct impacts on farmhouses and farm buildings / facilities present. No direct impacts on key constraints present.

All options are located on agricultural farm holdings and options effects will involve direct and indirect impacts.

Direct impacts on agricultural property include land-take, farm division and impacts on access to remaining lands. The impact of land-take involves a reduction in agricultural lands, fragmentation of retained lands and may include direct impacts on farm buildings / or farmyard facilities used in the operation of the farm enterprise.

Indirect impacts on agricultural property can affect the operation of the agricultural enterprise. Such impacts include noise, air, visual and lighting impacts arising from the construction and operation of the proposed options. Indirect impacts on farm enterprises have also been considered as part of the assessment e.g., the proximity of equine farms to the proposed depot site locations.

The significance of impact increases with the degree of impact(s) associated with a proposed option. A higher significance is associated with farm enterprises considered of significance or sensitive to direct and indirect impacts. Such farm enterprises include agricultural property used for educational or research purposes, dairy farm.

The Multi-Criteria Analysis (MCA) impact category for options is determined from the value rating combined with the impact rating from the matrix table in **Table 4-4**. There are four impact categories relevant to the assessment of the impact on agriculture that comprise of 'neutral', 'slight negative', 'negative' and 'highly negative'. These categories are taken from the seven-point scale in TAF guidance.

Table 4-4: MCA Impact category and score

Value Rating	Impact Rating			
	High	Medium	Low	Very low
High	Highly negative impact Score 1	Negative impact Score 2	Slight negative impact Score 3	Slight negative impact Score 3
Medium	Negative impact Score 2	Negative impact Score 2	Slight negative impact Score 3	Neutral impact Score 4
Low	Slight negative impact Score 3	Slight negative impact Score 3	Slight negative impact Score 3	Neutral impact Score 4
Very low	Slight negative impact Score 3	Slight negative impact Score 3	Neutral impact Score 4	Neutral impact Score 4

4.5.3.2 Non-Agricultural Property

MCA 1 Assessment

There are no guidelines that are specific to the assessment of the impact on non-agricultural property, which includes residential, commercial and community properties. In line with best practice, the assessment and appraisal of the impact on agriculture was prepared with regards to the following guidance documents:

- Directive 2011/92/EU, as amended on the assessment of the effects of certain public and private projects on the environment.
- Project Appraisal Guidelines for National Roads Unit 7.0 – Multi Criteria Analysis (2024)
- Transport Appraisal Framework (Dept. of Transport, 2024)

The desktop review involved a survey of available mapping for the study area and online aerial photography to identify residential, commercial and community facilities.

The Stage 1 options assessment for residential, non-agricultural commercial and community properties includes a quantitative assessment of the potential direct impacts of proposed site depot locations on property, other than agricultural property, namely on residential, commercial, and community property. Impacts on residential, non-agricultural commercial and community properties arising from the proposed development include:

- Properties that are to be entirely acquired.
- Properties where a portion of the site is likely to be acquired on a permanent basis.

Indirect impacts on residential, non-agricultural commercial and community properties are assessed across the spectrum of environmental, accessibility and social criteria associated with the multi-criteria analysis.

Direct impacts on residential, non-agricultural commercial and community properties comprises of land-take which can involve the acquisition of the property or part of the property (curtilage). Property types include residential, commercial and community property.

The significance of property impact is high for direct impacts on residential, non-agricultural commercial and community properties. See **Table 4-6**.

Table 4-6 Impact assessment criteria

Level	Score	Criteria to include the following:
Highly Negative Impact	1	- Permanent impact(s) on residential property, commercial property or community property involving property acquisition and demolition.
Negative Impact	2	- Permanent impact(s) on residential property, commercial property or community property involving property acquisition and demolition. - Permanent impact(s) on curtilage of residential property, commercial property or community property involving the acquisition of a portion of property.
Slightly Negative Impact	3	- Impact(s) on curtilage of residential property, commercial property or community property involving the permanent or temporary acquisition of a portion of property.
Neutral	4	- No effect on non-agricultural property.
Positive	5-7	- Not applicable to non-agricultural property.

MCA 2 Assessment

The options assessment comprises an assessment of depot option sites and the potential option impact on residential, non-agricultural commercial and community properties. This will involve assigning a value rating and an impact rating to each option based on the criteria in **Table 4-7**.

Table 4-7 Options assessment

Rating	Criteria	Rating
Value criteria	Type and quantity of non-agricultural property.	High, Medium, Low or Very Low
Impact criteria	Impacts on property, on residential, commercial, community and development property, on property curtilage, on property entrance / access. Identify significant impacts.	High, Medium, Low or Very Low

Rating	Criteria	Rating
Significance of impact	Significance category and MCA score based on the combination of both the value and impact ratings. based.	

The value rating in **Table 4-7** is based on the qualitative and quantitative assessment of the option corridor with regards to the following non-agricultural property:

- Residential property.
- Commercial property.
- Community property – Public park, open space or lands that are used for public amenities and services; and
- Development land – Lands zoned for development (with or without planning permission) and sites with planning permission.

The methodology for the options assessment comprises of a qualitative and quantitative appraisal of the depot option and the impact on non-agricultural property is set out in **Table 4-8**.

Table 4-8 Value rating criteria

Rating	Qualitative Criteria
High	Non-agricultural property – Residential, commercial, community and development property with zoning for development and planning permission is present.
Medium	Non-agricultural property – Residential, commercial, community and development property with zoning for development or planning permission is present.
Low	Non-agricultural property – Residential, commercial, community and development property with zoning for development or planning permission is present.
Very low	Non-agricultural property – Absent within the option site.

The qualitative assessment consists of an evaluation of residential, non-agricultural commercial and community property types along the route option corridor. The quantitative assessment considers the level of residential, non-agricultural commercial and community property types.

The impact rating in Table 7-3 is based on the qualitative and quantitative assessment of the potential option alignment under the following criteria:

- Land-take;
- Impact on dwelling houses / commercial / community buildings;
- Impact on entrance and access to property;
- Impact on property curtilage / property boundary.

The impact rating will consider the qualitative and quantitative criteria as presented in Table 4-9 for the option alignment.

Table 4-9 Impact rating criteria

Rating	Qualitative Criteria
High	Land-take and property impacts – on residential, commercial, community and development property with zoning for development and planning permission. Significant direct impacts involving property acquisition or a substantial area of curtilage / lands.
Medium	Impacts on residential, commercial, community and development property with zoning for development or planning permission. Direct impacts involving acquisition of areas of property curtilage / lands.
Low	Impacts on residential, commercial, community and development property with zoning for development or planning permission. Impacts on non-agricultural lands without planning permission. Direct impacts are not significant on property present.
Very low	There is no impact on non-agricultural property or direct impact involves acquisition of areas of public road only.

The impact assessment considers the combined effects of land take, direct impacts to properties and impacts on property access. The assessment of the option impact is based on the effect of the proposed option land take boundary on non-agricultural property present.

A direct impact on residential, non-agricultural commercial and community property may be a significant negative impact on the property. On residential property, land take may result in loss of property curtilage involving direct impacts to the dwelling / property entrance / access / property boundary and loss of garden area / mature planting. On commercial property, a loss of property curtilage may result in direct impacts to buildings / property entrance / property boundary and loss of staff parking / customer parking / commercial yard area. On community property, land take may result in a direct impact on community building / property entrance / property boundary and loss of amenity area, mature planting and public parking. The option assessment has allowed for mitigation of the loss of property access involving the replacement of property entrances and access on a like-for-like basis. These will be considered on an individual basis and final mitigation will inform the assessment of the non-agricultural impact on individual properties. The Multi-Criteria Analysis (MCA) impact category for depot options is determined from the value rating combined with the impact rating from the matrix table in Table 4-10. There are four impact categories relevant to the assessment of the impact on non-agricultural property that comprise of ‘neutral impact’, ‘slight negative impact’, ‘negative impact’ and ‘highly negative impact’. These categories are taken from the seven-point scale in TAF (2024).

Table 4-10 MCA Impact category and score

Value Rating	Impact Rating			
	High	Medium	Low	Very low
High	Highly negative impact Score 1	Negative impact Score 2	Slight negative impact Score 3	Slight negative impact Score 3
Medium	Highly negative impact Score 1	Negative impact Score 2	Slight negative impact Score 3	Slight negative impact Score 3
Low	Negative impact Score 2	Negative impact Score 2	Slight negative impact Score 3	Slight negative impact Score 3
Very low	Neutral impact Score 4	Neutral impact Score 4	Neutral impact Score 4	Neutral impact Score 4

Output: The impact of options on property is typically on a scale from Neutral Impact to Significant Negative Impact. Following the above assessment methodology, the options are rated 1 to 4 on this basis.

4.5.4 Built Services (Utilities)

MCA 1 Assessment

This criterion examined the potential impact, the proposed development at a given site may have on existing or permitted built services including statutory utilities and existing transport accesses such as roads, cycleways and the like.

The impact on built services was assessed for each site in turn. It was based on a desktop examination of each site using aerial photography (Google Earth Pro), examination of published utilities information and a site visit. The assessment was qualitative in nature, with the number, character and scale of impacts on affected services examined for each site.

MCA 2 Assessment

The stage 2 assessment was progressed in a similar manner to stage 1 with the benefit of enhanced detail available on the sites based on topographic surveys and enhanced design development at each site.

4.5.5 Soil and Geology Impacts

Under the TAF, this looks to undertake an option selection with respect to soil quality. The methodology employed for MCA1 and MCA2 is outlined below.

MCA 1 Assessment

Each option is assessed in accordance with the TII *'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes'* and assigned an impact score based on the basic Multi Criteria Analysis (MCA) seven-point scale outlined in the Transport Appraisal Framework (Department of Transport, 2024).

A desktop assessment of the study area is carried out to collect all relevant geotechnical data using available published information from the sources listed below:

- Geological maps, Geological Survey of Ireland (GSI) for mapping and preliminary classification of geomorphology, bedrock geology, soils and subsoils, superficial deposits, economic geology, karst features, geological heritage and landslide vulnerability (www.gsi.ie);
- Historic Maps (dating back to 1830) and Aerial Photography from Ordnance Survey of Ireland for mapping of the historical development at the proposed sites (www.geohive.ie);
- EPA maps for identifying and assessing any likely landfill sites or waste facilities within the study area (<https://gis.epa.ie/EPAMaps/>); and
- Other available mapping and imagery (e.g., Google Earth, Bing Maps and Ordnance Survey Ireland (OSI)) for aerial imagery and large-scale identification of surficial ground features and general topographical characteristics as well as features of the built environment or to assist in general geohazard identification and characterisations.

Based on the available information discussed above, the various factors related to Soils & Geology against which the site location options were assessed as follows:

- Presence of soft soil, including peat: Foundations on soft soils including alluvium, Lacustrine sediments, and peat may affect the underlying ground through the need for excavation &

replacement (and deposition), ground improvement and/or reinforcement, deep foundations or other effects such as compressing of soil and potential instability.

- Impact on land take/earthworks volume balance: Height of the earthworks to the width of the footprint taken up, as typical side slope of 1V:3H emphasises the land take. Fill areas/embankments have more impact than cuttings as they represent the majority of the earthworks while in areas of shallow competent ground or rock (expected in some areas here) the cutting slopes can typically be made steeper and in some cases up to 1V:2H and 1V:1H for glacial till and rock, respectively.
- Landslide susceptibility: Effects of landslides on environment include physical (habitat destruction, soil erosion and degradation, etc.) and ecological impacts which may lead to mitigation measures through disrupting environment further.
- Geological heritage and specific geomorphological features: Impact of options on geological heritage.
- Contaminated land: Sites located near or in close proximity to historical landfills, waste facilities, agricultural complexes, greenhouses, industrial plants (including workshops, depots, etc.) and urbanised/residential areas have higher risk of encountering contaminated land.
- Economic geology: Impact to quarries and other areas of significance for economic geology.
- Karst features: The density and nature of karst features (including wells, springs, sinkhole depressions and caves) under or in close proximity to the proposed sites.

Output: Qualitative analysis of the soils and geology impacts of each option on the associated site. The range of outcomes is from Neutral Impact to Highly Negative Impact.

MCA 2 Assessment

The methodology used to assess the Stage 2 site options is the same as that used for the Stage 1 MCA. In addition to all available published geotechnical data as listed in the Stage 1 MCA Assessment, the following resources were also considered:

- DART+ West Environmental Impact Assessment Report Volume 2: Main Text, Roughan & O'Donovan Consulting Engineers | IDOM | C3 (July 2022).
- Proposed Gateway Business Park, Piercetown, Co. Meath – Ground Investigation Report, IGSL Ltd. (August 2006) (GSI Report ID: 6426).
- Site Investigation Report, Kilcock, Maynooth, Leixlip By-Pass - 1982 N4, Irish Soil Laboratories Ltd (1982) (GSI Report ID: 2165).
- Preliminary Ground Investigation for the Dunboyne (M3) Navan Railway Line Sections 1 & 2 Feasibility Study Factual Report Volume 1, Site Investigations Ltd (May 2009).
- DART+: Maynooth to Kilcock ROD/IDOM/C3 Projects Ground Investigation Report (Rev B), Ground Investigations Ireland Ltd (July 2022).
- DART+ Maynooth Expansion: Dunboyne ROD/IDOM/C3 Projects and Irish Rail Waste Classification Report (Rev A), Ground Investigations Ireland Ltd (April 2022).
- Report on the Geophysical Investigation for the DART Expansion, Maynooth Line & City Centre Enhancements for Roughan O'Donovan, IDOM, C3 Projects & Iarnród Éireann (V.01), Apex Geophysics Ltd (October 2020).
- Report on the Geophysical Investigation for the DART Expansion, Maynooth Line & City Centre Enhancements for GII (V.02), Apex Geophysics Ltd (June 2022).

The factors related to Soils and Geology (including Waste) against which the site options were assessed is similar to ones described in Stage 1 MCA assessment above.

A preliminary site walkover was conducted on 14th February 2025 to observe in-situ site conditions.

4.5.6 Planning Applications

MCA 1 Assessment

This assessment looks to identify any active or granted planning applications within the boundary of the proposed depot sites within the last 10 years. The focus of the assessment is on large scaled residential and non-residential planning applications. The following sources of information were utilised in the planning search:

- EIA portal.
- An Bord Pleanála Case Search.
- Fingal County Council planning search.
- Meath County Council planning search.
- Dublin South County Council planning search.
- Louth County Council planning search.
- Kildare County Council planning search.

Output: Qualitative assessment of the options with associated rating from Neutral Impact to Significantly Negative Impact, 4 to 1.

MCA 2 Assessment

The following methodology was applied at MCA2:

- A defined research radius of 1 km has been applied around each identified site.
- All planning applications within this radius have been reviewed and assessed.
- The assessment is based on publicly available data sourced from:
 - The National Planning Application Database (NPAD).
 - Local Authority planning application records.
 - An Coimisiún Pleanála (ACP) GIS data, where available (manual search and mapping may be required where GIS data is unavailable).

Planning applications were filtered, with the following cases excluded from further analysis:

- Expired permissions, unless an appeal was lodged.
- Consented extension of duration (EOD) permissions, where applicable.
- Invalidated or withdrawn applications.
- One-off housing developments and dwelling extensions.

4.5.7 Zoned Land, Land Use Planning and Spatial Planning

MCA 1 Assessment

A review of the existing land use zoning, policies and objectives was undertaken for each of the depot site locations. The planning policy documents reviewed include:

- Meath County Development Plan 2021-2027
- Kildare County Development Plan 2023-2029
 - Leixlip Local Area Plan (LAP) 2020-2023, extended to 2026

- Kilcock Local Area Plan 2015-2021 (Expired)¹
- Maynooth Local Area Plan 2013-2019 (Expired)
- Draft Maynooth and Environs Joint Local Area Plan 2025-2031
- Fingal County Development Plan 2023-2029
 - Barnhill Local Area Plan (LAP), 2019, as extended
- Louth County Development Plan 2021-2027
- South Dublin County Development Plan 2022-2028.

Output: Qualitative assessment of the options with associated rating from Neutral Impact to Significantly Negative Impact, 4 to 1.

MCA 2 Assessment

The MCA2 Stage assessment will be on the same basis as Stage 1 but will be based on updated policy as appropriate. It is noted that since the preparation of the MCA 1 assessment, the Maynooth and Environs Joint Local Area Plan 2025-2031 was adopted. The Maynooth Local Area Plan 2013 – 2019 is therefore no longer relevant and is not addressed in this Appraisal.

4.6 Safety Impacts

4.6.1 Collisions & Related Impacts

MCA1 Assessment

This looks to compare estimated impacts on vulnerable users in this context – pedestrians, cyclists, motorcyclists, as a result of a scheme. It is intended to be a qualitative assessment.

The relevant comparators are as follows:

- Comparative Safety of Options

Output – Qualitative assessment of the safety of site layouts for different depot sites.

MCA 2 Assessment

The MCA2 Stage assessment will be on the same basis as Stage 1.

4.6.2 Other Safety Impacts

MCA1 Assessment

This looks to compare the impacts on anti-social behaviour, trips, falls, etc. It recommends a qualitative assessment of alignment integration with local urban infrastructure. This may feature in the impacts of the proposed depot site on local road infrastructure.

The relevant comparators are as follows:

¹ Kildare County Council have noted on their website that they will have regard to adopted Local Area Plans, including the Kilcock LAP and Maynooth LAP, until such time as it is reviewed or another plan made. We note that the land use zoning for Kilcock is included in the Kildare CDP, Volume 2.

- Alignment integration with local urban infrastructure.

Output – Qualitative assessment of the safety of site layouts for different depot sites.

MCA 2 Assessment

The MCA2 Stage assessment will be on the same basis as Stage 1.

4.7 Climate Change Impacts

The climate impact assessment has been conducted in accordance with the relevant guidance and requirements contained within the suite of TII documents and Department of Transport guidelines. These include:

- Transport Infrastructure Ireland (TII) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a);
- Transport Infrastructure Ireland (TII) PE-ENV-01105: Climate Assessment of Proposed National Roads – Standard (TII, 2022b);
- Transport Infrastructure Ireland (TII) PE-ENV-01107: Air Quality Assessment of Proposed National Roads – Standard (TII, 2022c);
- Department of Transport’s Transport Appraisal Framework guidelines (DoT 2024);
- TII Project Appraisal Guidelines for National Roads Unit 7.0 – Multi Criteria Analysis PE-PAG-02031 (PAG), 2024.

The climate assessment is split into two aspects, the greenhouse gas assessment (i.e. the impact of the project on climate change detailed in Section 4.7.1) and the climate change risk or climate adaption assessment (i.e. the impact of climate change on the project detailed in Section 4.7.2).

This section describes the climate assessment of the route options selection for the DART+ Depot. The specific objectives of the climate assessment at this stage are to:

- Determine the existing climate baseline with reference to Ireland’s current Greenhouse Gas (GHG) emissions;
- Predict GHG emissions as a result of the route options;
- Assess the vulnerability or adaptation potential of the proposed routes due to potential future climate change.

This assessment has been prepared based on the following TII Climate guidance:

- PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII 2022a);
- PE-ENV-01105: Climate Assessment of Proposed National Roads – Standard (TII 2022b); and
- GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII 2025).

The climate assessment is split into two aspects; the Climate Action Impact (i.e. the impact of the project on climate change) and the Climate Change Risk Assessment (i.e. the impact of climate change on the project).

4.7.1 Climate Action Impacts

Under the TAF, the primary aspects of the assessment relate to quantifying the greenhouse gas emissions by quantifying carbon sources. The methodology employed for MCA1 and MCA2 is outlined below.

MCA 1 Assessment

It is assumed at this stage of the assessment that as the depot has similar design requirements across all potential locations, it will produce similar carbon emissions during construction and operation. Unlike air quality emissions, which impact receptors within close proximity of the source, carbon emissions affects are in comparison with national budgets and not location specific. Therefore, provided the depot has similar emissions within the site boundary across all options, the location is not significant. However, options that require electrification of existing railway line, which would otherwise not be required, are likely to produce more carbon emissions at construction phase which has also been considered in this assessment. In certain options, this would result in the potential to extend the DART+ programme to include stations that are now within the electrified network leading to the provision of an extended public transport network. This would be subject to appropriate permissions from An Coimisiún Pleanála.

The distance of the site locations from the city centre was considered at operation i.e., more operational energy associated with empty running is required the further the depot site is located from the city centre. While the DART+ will run on renewable energy, reducing the demand on the electrical grid is beneficial.

The Transport Appraisal Framework (TAF) guidelines “Climate Mitigation Scorecard” consider the design year CO₂ emissions, potential changes in modal shift to public and active travel and car km travelled. While this is a Stage 1 assessment and full details on impacts are not available, a qualitative assessment has been made considering these criteria.

All options would facilitate the DART+ programme which is beneficial with respect to Ireland’s alignment with National climate target of Net Zero by 2050 and is specifically called for in the National Climate Action Plan. The baseline is a scenario without the DART+ Depot, and in the do-something scenario the DART+ Programme, which includes over 100km of newly electrified rail line and significant increases in frequency of service, cannot proceed.

Output: A qualitative assessment of options with ratings between neutral and significantly positive impact due to the positive climate benefits associated with all options due to their enabling the DART+ Programme service delivery.

MCA 2 Assessment

The primary aspects of the assessment relate to the greenhouse gas emissions by quantifying carbon sources. During this assessment, the Greenhouse Gas (GHG) emissions for each option are quantified and used to rank options from lowest to highest carbon impact in terms of tonnes of carbon dioxide equivalent (tCO₂e) and categorised by lifecycle stage as demonstrated.

GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII 2025) provides guidance on the use of the TII Carbon Tool for assessing lifecycle carbon emissions for national road and light rail infrastructure projects in Ireland. The Carbon Tool aligns with Section 7 of PAS 2080, which was published by the British Standards Institution (BSI), the Construction Leadership Council and the Green Construction Board in 2016.

The embodied construction emissions for the route options were calculated using the online TII Carbon Assessment Tool (TII 2025). The TII Online Carbon Tool (TII 2025) uses emission factors from recognized sources including the Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database, UK National Highways Carbon Tool v2.4 and UK Government 2021 Greenhouse Gas Reporting Conversion Factors. The carbon emissions are calculated by multiplying the emission factor by the quantity of the material that will be used over the entire construction / maintenance phase. The TII Online Carbon Tool (TII 2025) has been commissioned by TII to assess GHG emissions associated with infrastructure projects using Ireland-specific emission factors and data. The goal of the tool is to assist project development as a decision-making tool that drives lower carbon infrastructure and to facilitate the integration of environmental issues into transport infrastructure planning, construction and operation.

Information on all elements was not available at this stage in the project. Inputs were kept consistent across all options to allow for an equal comparison of impacts; where information on a certain element was not available for all options it was not included within the study. Information for end of life and operational use (non-road emissions) was not available for any of the options. Relevant differences in energy required for the operational phase, whether through rail movements or depot energy requirements, are not available at this stage and are included in the assessment.

The TII Online Carbon Tool (TII 2025) includes for on-going maintenance associated with the default 40-year lifetime of a project. This includes replacement of pavements etc. which is accounted for under the *Embodied Carbon* heading for the construction materials. The heading of *Maintenance* in the Carbon Tool below is for quantifying emissions associated with the fuel used for the maintenance of the infrastructure project during its use. This information is not known at this stage of the project and has not been quantified for any of the options. For transport infrastructure projects, it is generally assumed that end-of-life demolition is not relevant and thus there are no emissions associated with this stage. Preference of route options is based on the quantitatively assessed lowest lifecycle GHG emissions. Consideration is also given to options which have higher potential for mitigation during further design.

To enable alignment with Ireland's net zero trajectory, discussion on mitigation measures is included based on available data. Mitigation measures are based on the following mitigation hierarchy:

- Avoid;
- Reduce;
- Replace; and
- Offset.

This hierarchy is detailed in **Figure 6.3** of PE-ENV-01104 (TII 2022a), with reduction impacts quantified where possible. A scoring scale as detailed in PE-ENV-01105 (TII 2022b) is shown in **Table 4.11**.

The Transport Appraisal Framework (TAF) from the Department of Transport scoring differs from the TII scoring system and reviews three elements for significance:

- Percentage change in mode share from private vehicles to public transport and active travel modes.
- Percentage change in private car kilometres travelled; and
- Percentage change in CO₂ emissions.

The change criteria are shown in Table 4.12. For change in CO₂ the score should be based on the projected change in CO₂ as a result of the scheme based on design year traffic. Consideration is not made within the TAA of the construction, maintenance or deconstruction phase carbon emissions. The TAA assessment states that the total score for Climate Mitigation should be based on a combination of the scores recorded across each criterion and professional judgment.

Table 4.11 Greenhouse Gas Assessment Scoring Scale

Score		Description
Major or highly positive	7	Based on professional judgement the option would result in a potentially significantly positive improvement, providing a GHG reduction overall and positively contributing to Ireland's net zero trajectory. Mitigation measures are in place well beyond policy requirements.
Moderately positive	6	Based on professional judgement it is anticipated that the option would not result in a potentially significant positive improvement. However, the option has the potential to provide a moderate GHG reduction and will align with Ireland's net zero trajectory. Some mitigation measures are in place.
Minor or slightly positive	5	Based on professional judgement it is anticipated that the option would not result in a potentially significant positive improvement. However, the option has the potential to provide a small GHG reduction and will align with Ireland's net zero trajectory. Some mitigation measures are in place.
Not significant or neutral	4	Based on professional judgement it is anticipated that the option will align with Ireland's net zero trajectory. No mitigation measures are in place.
Minor or slightly negative	3	Based on professional judgement it is anticipated that the option has mitigation measures in place way beyond policy requirements, but it is likely that the project will produce some carbon emissions and fall short of Ireland's net zero trajectory.
Moderately negative	2	Based on professional judgement it is anticipated that the option has some mitigation measures in place, but it is likely that the project will produce carbon emissions and fall short of Ireland's net zero trajectory.
Major or highly negative	1	Based on professional judgement it is anticipated that the option has no mitigation measures in place, and it is likely that the project will produce carbon emissions and fall short of Ireland's net zero trajectory. Mitigation would be required for an option to progress.

Table 4.12 TAA Climate Mitigation Scoring

Score	% Change in CO ₂	Score	Mode share percentage point change	Score	% Car km Change
High Negative	> 3%	High Negative	< -3%	High Negative	> 3%
Negative	1% to 3%	Negative	-1% to -3%	Negative	1% to 3%
Slight Negative	0.25% to 1%	Slight Negative	- 0.25% to -1%	Slight Negative	0.25% to 1%
Neutral	-0.25% to 0.25%	Neutral	-0.25% to 0.25%	Neutral	-0.25% to 0.25%
Slight Positive	-0.25% to -1%	Slight Positive	0.25% to 1%	Slight Positive	-0.25% to -1%
Positive	-1% to -3%	Positive	1% to 3%	Positive	-1% to -3%
High Positive	< -3%	High Positive	>3%	High Positive	< -3%

Output: Options rated on a qualitative and quantitative basis following application of the above assessment mechanisms.

4.7.2 Climate Adaptation Impacts

This looks to evaluate the impact of the project on adaptation of transport infrastructure to climate change. A screening climate change risk assessment has been conducted to consider the risk of future climate change impacts on the depot infrastructure. The Transport Appraisal Framework (TAF) guidelines “Adaptation Scorecard” consider climate hazards with a focus on flood risk. The methodology employed for MCA1 and MCA2 is outlined below.

MCA 1 Assessment

Potential risks to sensitive infrastructure assets due to future climate change considered at this stage include:

- Flooding (coastal, pluvial, fluvial) – including sea level rise and storm surge;
- Extreme wind; and
- Soil stability e.g., history of landslides and reviewing GSI Landslide susceptibility mapping.

Other climate hazards, such as extreme heat, fog, extreme cold, lightning, drought, extreme precipitation and hail are considered to be regional hazards and not be significant differentiating factors across options. It is assumed that the depot will be designed to be resilient to projected climate hazards in 2100.

Output: A qualitative assessment of each site concludes on an absolute rating between Neutral and Highly Negative Impact.

MCA 2 Assessment

A screening climate change risk assessment has been conducted to consider the risk of future climate change impacts on the project receptors (i.e. drainage, road surfaces, utilities etc). Potential risks to these sensitive infrastructure receptors due to climate change include:

- Flooding (coastal, pluvial, fluvial) – including sea level rise and storm surge;
- Extreme heat (including wildfires and drought)– including extreme heat events and increasing temperatures overtime;
- Extreme cold – including frost and snow;
- Extreme wind;
- Lightning and hail;
- Landslides; and
- Fog.

The climate screening risk assessment comprises a sensitivity analysis which evaluates the project's vulnerability to climate change. This is completed by combining a sensitivity and exposure analysis. The sensitivity analysis first identifies the climate hazards relevant to the specific project type irrespective of its location (e.g., sea level rise will affect seaport projects regardless of specific location). TII (TII 2022a) describes the following as potential sensitive receptors; drainage, structures, earthworks, geotechnical, utilities, landscaping, signs, light posts and fences and buildings. These can be considered the on-site assets for road projects.

Sensitivity ratings are classed as:

- High Sensitivity: The climate hazard may have a significant impact on assets and processes, inputs, outputs and transport links. This is a sensitivity score of 3;
- Medium Sensitivity: The climate hazard may have a slight impact on assets and processes, inputs, outputs and transport links. This is a sensitivity score of 2; and
- Low Sensitivity: The climate hazard has no (or insignificant) impact. This is a sensitivity score of 1.

The exposure analysis identifies the climate hazards relevant to the planned project location irrespective of the project type, e.g., flooding could be a risk if the project location is next to a river in a floodplain. Exposure can be considered as high, medium or low:

- High exposure: It is almost certain or likely this climate hazard will occur at the project location i.e. might arise once to several times per year. This is an exposure score of 3;
- Medium exposure: It is possible this climate hazard will occur at the project location i.e. might arise a number of times in a decade. This is an exposure score of 2; and
- Low exposure: It is unlikely or rare this climate hazard will occur at the project location i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once sensitivity and exposure are categorised, the vulnerability is calculated by multiplying the sensitivity and exposure, as shown in Table . The Multi-Criteria Analysis (MCA) scoring scale is detailed in Table 4-14.

The Climate Change Risk Assessment results will inform the comparative ranking in combination with the GHGA, while considering possible mitigation measures. Since the options are geographically close, the climate vulnerability is primarily distinguished by differences in flood risk and soil stability issues.

The TAF scoring for climate adaptation focuses on flood risk in both the baseline and future climate events i.e. a 1 in 100-year flooding event. The risk assessment aims to determine if there is any change in the potential for adverse or beneficial coastal erosion, coastal flood risk or inland flood risk due to the proposed development over the current situation. When considering erosion or flood risk it is determined if there is a potential for no impact, limited impact or significant impact with and without the scheme. Limited and significant impacts can be described as:

- Limited Impact: A small area of the scheme area is impacted which could cause minor disruptions to services or
- Significant impact: large section of the scheme area is impacted by the hazard which could lead to significant service disruptions.

Given the location of all proposed options coastal erosion and coastal flood risk are not a potential hazard. Therefore, the risks only relate to inland flooding. The TAF assessment criteria does not specify which future climate scenarios need to be considered.

Table 4-13 Screening Assessment: Vulnerability Analysis

		Exposure		
		High (3)	Medium (2)	Low (1)
Sensitivity	High (3)	9 - High	6 - High	3 - Medium
	Medium (2)	6 - High	4 - Medium	2 - Low
	Low (1)	3 - Medium	2 - Low	2 - Low

Table 4-14 TII Climate Change Risk Assessment MCA Scoring Scale

Score	Description
Major or highly positive	7 Based on the vulnerability assessment undertaken for the project, the option has only low vulnerabilities to climate change risk across all climate hazards.
Moderately positive	6 Based on the vulnerability assessment undertaken for the project, the option has primarily low vulnerability to climate change risk, with medium vulnerability for one climate hazard.

Score		Description
Minor or slightly positive	5	Based on the vulnerability assessment undertaken for the project, the option has primarily low vulnerability to climate change risk, with medium vulnerability across up to three climate hazards.
Not significant or neutral	4	Based on the vulnerability assessment undertaken for the project, the option has only low and medium vulnerabilities to climate change risk across all hazards.
Minor or slightly negative	3	Based on the vulnerability assessment undertaken for the project, the option has high vulnerability to climate change risk for one climate hazard.
Moderately negative	2	Based on the vulnerability assessment undertaken for the project, the option has high vulnerability to climate change risk across more than one climate hazard.
Major or highly negative	1	Based on the vulnerability assessment undertaken for the project, the option has high vulnerability to climate change risk across three or more climate hazards.

Table 4-15 TAF Climate Change Risk Assessment MCA Scoring Scale

Impact		With Scheme		
		Not impacted	Limited Impact	Significant Impact
Observed/Projected	Not impacted	Neutral	Negative	High Negative
	Limited Impact	Positive	Negative	High Negative
	Significant impact	High Positive	Slight Positive	High Negative

4.8 Local Environmental Impacts

4.8.1 Biodiversity

This section presents an appraisal of the depot options in terms of the potential biodiversity impacts. The options selection process involves undertaking a comparative evaluation of the options, having regard to multiple factors in order to identify a preferred option. The objectives of the options selection exercise with regards to biodiversity are to:

- Complete a desk study to obtain relevant ecological data for each option.
- Identify and describe sites of ecological interest.
- Assess the significance of the likely impacts of each option on biodiversity.
- Evaluate and compare each option in accordance with the National Road Authority (NRA) Guidelines for Assessment of Ecological Impact of National Road Schemes (2009) considering interactions with other environmental disciplines.
- Assess each option in accordance with the Transport Appraisal Framework Appraisal Guidelines for Capital Investments in Transport Module 7 – Detailed Guidance on Appraisal Techniques (June 2023) and where applicable, the Project Appraisal Guidelines for National Roads Unit 7.0 – Multi-Criteria Analysis PE-PAG-02031 (TII, 2024) and Unit 13.0 – Appraisal of Active Modes [PAGs] (TII, 2024).
- To assess the impacts of each option against the existing baseline ecological environment and to compare and rank the options in order of preference.

In fulfilling these objectives, an assessment of the potential impacts of each option on biodiversity can be carried out. This enables a comparison between the options to be made and for the options to be ranked in relation to biodiversity.

The methodology employed for MCA1 and MCA2 is outlined below.

MCA 1 Assessment

The methodology for the options assessment comprised a desk study undertaken in October and November 2024, and wintering bird surveys on three options between November 2024 and February 2025. These studies were used to identify and describe areas of ecological value.

The resources consulted as part of the desk study include the following:

- The National Parks and Wildlife Service (NPWS) online database, consulted for designated sites of nature conservation interest in the study area, accessed November 2024 (www.npws.ie);
- The National Biodiversity Data Centre (NBDC) database, consulted for records of rare, protected and invasive species for Irish National Grid 10km squares W02 and W03, accessed online November 2024 (<http://maps.biodiversityireland.ie>);
- Perrin, P.M. & Daly, O.H., (2010) A provisional inventory of ancient and long - established woodland in Ireland. Irish Wildlife Manuals, No. 46. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland;
- O'Neill, F.H., Martin, J.R., Devaney, F.M. & Perrin, P.M. (2013) The Irish semi-natural grasslands survey 2007-2012. Irish Wildlife Manuals, No. 78. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland;
- GeoHive online mapping (<http://map.geohive.ie/mapviewer.html>);
- Environmental Protection Agency – water bodies and water quality (www.epa.ie);
- Geological Survey of Ireland – geology, soils and hydrogeology (www.gsi.ie);
- Ramsar Sites in Ireland (<https://www.irishwetlands.ie/irish-sites/>);
- Review of Ordnance Survey maps and orthophotography;
- Wintering bird surveys at options 30 and 32. These options were selected for wintering bird surveys based on the habitats present and the results of the hydrogeological and hydrological assessment which indicated the periodical presence of standing water. It was not possible to observe all areas within each of the options.

Study Area

The study area for the desk study to inform the option selection was defined as:

- The entire area within each option and a 1km buffer to identify designated sites and semi natural habitats.
- All watercourses within the options, downstream and including estuaries and coastal waterbodies to identify designated sites and ecologically valuable watercourse that were hydrologically connected to each option.

Criteria

The criteria related to Biodiversity against which the site location options were assessed as follows:

- The presence of European or other internationally designated sites within, hydrologically or functionally connected to each site.
- The presence of Nationally designated sites within, hydrologically or functionally connected to each site.
- The presence of habitats capable of supporting the Qualifying Interests of European sites within, hydrologically or functionally connected to each site.
- The presence of natural or semi-natural habitats within, hydrologically or functionally connected to each site.
- The presence of natural or semi-natural habitats capable of supporting rare and protected species within, hydrologically or functionally connected to each site.

Output: A qualitative assessment of each site concludes on an absolute rating between Neutral and Highly Negative Impact.

MCA 2 Assessment

This assessment follows the methodology outlined under MCA 1 Assessment. In addition to the desk study completed for Stage 1, the following sources of information and guidelines have been used:

- The National Parks and Wildlife Service (NPWS) database, consulted for data on rare/protected/ threatened species within the study area.
- The National Biodiversity Data Centre (NBDC) database, consulted for records of rare, protected and invasive species [Accessed: March 2025 <www.biodiversityireland.ie>];
- The Map of Irish Wetlands provided by Wetland Surveys Ireland was used to determine the wetlands located within the project site and their ecological importance.
- Gilbert, G., Gibbons, D.W., & Evans, J. (1998) Bird Monitoring Methods: A Manual of Techniques for UK Key Species. The Royal Society for the protection of Birds, Sandy, Bedfordshire, England.
- Fossitt, J. (2000) A Guide to Habitats in Ireland. The Heritage Council, Kilkenny.
- TII (2008b) Ecological Survey Techniques for Protected Flora and Fauna during the Planning of National Road Schemes.

Study Area

The study area for the desk study to inform the option selection was defined as:

- The entire area within each option and a 1km buffer to identify designated sites and semi natural habitats.
- All watercourses within the options, downstream and including estuaries and coastal waterbodies to identify designated sites and ecologically valuable watercourse that were hydrologically connected to each option.
- The National Biodiversity Data Centre species records from the 2km grid squared that overlap the footprint of the proposed development were reviewed. The results were filtered by date, only including records from the last decade. This included any invasive species recorded as well as rare and protected species.

Site Walkover Surveys

Field surveys were also undertaken which informed the MCA2 process, including:

- Wintering bird surveys, where land access was granted, were undertaken from December 2024 to March 2025.
- A mammal survey was undertaken on the 21st and 28th March 2025. The mammal survey involved systematically searching treelines, hedgerows, scrub and woodlands of each option for mammal signs, specifically Badger, Otter, Pine Marten and Red Squirrel. This also including a ground based assessment of the trees for potential for bat roosts. Following these surveys, trees with bat potential were examined up close on three occasions. Emergence surveys were also carried out at one identified bat roost.
- The habitat survey was undertaken in July, August, and September 2025 and involved a walkover of each option and the subsequent categorisation of each habitat type (according to Fossitt, 2000) identified.

4.8.2 Water Resources

4.8.2.1 Water Resources – Flood Risk and Hydrology

MCA 1 Assessment

A strategic flood risk assessment has been prepared for the longlisted sites in accordance with 2009 Planning Guidelines on Flood Risk Management. This has used readily available information to assess the scale of the potential impact of placing a depot within the floodplain and to consider the type and effectiveness of any mitigation measures. The strategic assessment applied the sequential approach as defined in the guidelines to steer depot locations away from floodplain and if this could not be avoided the location of the depot would be altered to limit crossing of the floodplain or changing conveyance routes wherever possible. If this avoidance approach could not be facilitated, then the site was given a higher flood risk impact characterisation.

All the shortlisted sites were identified to be subject to flood risk. An appropriately detailed Stage 1 Flood Risk Assessment was verified by site inspections, where necessary.

Output: Qualitative analysis of the flood risk at each site and potentially the impact of development on adjacent areas. The range of outcomes is from Neutral Impact to Highly Negative Impact.

MCA 2 Assessment

The assessment on hydrology in this section was carried out in accordance with:

- Department of Transport's Transport Appraisal Framework (TAF, 2023): Appraisal Guidelines for Capital Investments in Transport. Module 7- Detailed Guidance on Appraisal Techniques;
- Transport Infrastructure Ireland's (TII) Project Appraisal Guidelines for National Roads Unit 7.0 – Multi Criteria Analysis (PE-PAG-02031) (PAGs; TII, 2024); and
- National Roads Authority (NRA) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRATII, 2008).

This assessment is not significantly different from the methodology adopted in Stage 1 of the options selection.

The assessment has been informed by the guidance documents listed below:

- Environmental Protection Agency (EPA) (2022). 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports';

- Institute of Geologists Ireland (IGI) (2013). ‘Guidelines for Preparation of Soils, Geology, Hydrogeology Chapters of Environmental Impact Statements’; and
- Transport Infrastructure Ireland (TII) (2015) ‘Road Drainage and the Water Environment, DNDNG-03065’⁶.

The hydrology baseline for the project area has been compiled based on a review of published data summarised in **Table 4-5**.

Table 4-5 Hydrology Data Sources

Data	Score
Catchment Flood Risk Assessment and Management Study (CFRAM) Maps	OPW shapefiles for the 1% AEP Floods. Flood Maps - Floodinfo.ie
National Indicative Fluvial Mapping (NIFM)	
Pluvial Flood Maps	
Water Framework Directive (WFD)	WFD Risk and Status of Waterbodies, Significant Pressures, and Objectives of the Catchment. Data - Catchments.ie - Catchments.ie
EPA Shapefiles	River Water Bodies, Coastal Water bodies, Transitional Waterbodies, Lake Water bodies, SAC’s, pNHA’s, and NHA’s.

The procedures specified in the PAG, professional judgement and reference to the listed guidance documents, have been used to identify the potential effects of the options on the hydrogeological elements. The impact significance of the options has been assessed by considering two factors:

- The sensitivity / level of importance of the receiving groundwater environment; and
- the magnitude of impact.

The magnitude of impact is defined by:

- The amount or intensity by which the character of the water environment will change;
- The spatial extent of the impact; and
- The perceptibility, social implication or scientific significance of change.

The magnitude of impact is rated according to the criteria defined in **Table 4-6**.

Table 4-6 The Magnitude Should an Effect Occur (TII, 2008)

Magnitude of Impact	Criteria
Imperceptible	An effect capable of measurement but without noticeable consequence
Slight	An effect that alters the character of the environment without affecting its sensitivities
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing or emerging trends
Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Profound	An effect which obliterates all previous sensitive characteristics

The sensitivity of a surface water receptor is rated according to the criteria defined in **Table 4-7**.

Table 4-7 Criteria for rating option attributes -estimation of hydrology attributes (TII, 2008)

Attribute Importance	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale	River, wetland or surface water body ecosystem protected by EU legislation e.g. 'European sites' designated under the Habitats Regulations or 'Salmonid waters' designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988.
Very High	Attribute has a high quality or value on a regional or national scale	River, wetland or surface water body ecosystem protected by national legislation – NHA status Regionally important potable water source supplying >2500 homes Quality Class A (Biotic Index Q4, Q5) Flood plain protecting more than 50 residential or commercial properties from flooding Nationally important amenity site for wide
High	Attribute has a high quality or value on a local scale	Salmon fishery Locally important potable water source supplying >1000 homes Quality Class B (Biotic Index Q3-4) Flood plain protecting between 5 and 50 residential or commercial properties from flooding Locally important amenity site for wide range of leisure activities
Medium	Attribute has a medium quality or value on a local scale	Coarse fishery Local potable water source supplying >50 homes Quality Class C (Biotic Index Q3, Q2- 3) Flood plain protecting between 1 and 5 residential or commercial properties from flooding
Low	Attribute has a low quality or value on a local scale	Locally important amenity site for small range of leisure activities Local potable water source supplying Quality Class D (Biotic Index Q2, Q1) Flood plain protecting 1 residential or commercial property from flooding Amenity site used by small numbers of local people

The receptors selected for the hydrology assessment are listed and discussed below:

- Water Framework Directive (WFD) Status of the waterbodies crossed;
- Protected Areas registered under Article 6 of the WFD; and
- Flooding and flood risk.

The Water Framework Directive Status

The Water Framework Directive (WFD) status of individual receptors has been incorporated in the sensitivity rating for each waterbody. The likely effects of the proposed routes on WFD status considered include impacts on the Water Quality Element (QE) and the Hydromorphology QE. Intersections between the proposed routes and WFD designated Water Bodies was identified as a comparative proxy indicator of the magnitude effects on both QE's.

Protected Areas registered under Article 6 of the WFD

Interaction of the proposed routes with protected areas registered under Article 6 of the WFD has been incorporated into the sensitivity ratings of each water body.

Flooding and Flood risk

Topographic surveys were carried out on all shortlisted sites, including site wide lidar surveys supplemented with ground profiling and culvert, bridge surveys as appropriate. The topographic survey information procured as part of the above exercise was used to develop detailed flood models of the affected lands for each site. The models were used to confirm the extent and character of flood risk associated with each site. This informed the design and the progress of the options assessment. Where the extent of flood risk was confirmed for a site and it is feasible to reconfigure the site at that location to mitigate or avoid the flood risk, this was done for each site.

Once an optimal configuration was identified for each site, the design of the sites advanced in sufficient detail to facilitate the Detailed Flood Risk Assessment. This required the development of detailed drainage design characterisation of the depot options to permit identification of salient hydrological parameters, volumes and levels for detailed assessment of the impact of the proposed design and for any mitigation measures such as compensatory storage to be characterised.

These models are sufficiently detailed to assess the relative change in water levels and flows at the site and beyond. These models do not have to provide absolute flood levels for design, but represent the flood mechanisms at the site and how they could alter with the depot development. These models were ground verified by site visits, topographical surveys, and reference to existing CFRAM mapping. These models also allow climate change impacts to be understood and the identification of mitigation measures to be implemented in the design.

A detailed characterisation of the flood for all the shortlisted sites without the proposed development (first stage) was undertaken, the outcomes of which was used to rate each site as part of the Second Stage of the Multi-Criteria Analysis. This model allowed assessment of the impact of the development into the flood extent and the need and approximate quantity of any necessary mitigation measures.

The second stage of multi-criteria analysis was implemented on the basis of supplementary information acquired and hydraulic models developed for the sites. This strategic assessment used readily available information and the developed model together with expert judgement for the estimation of the necessary Compensatory Storage Areas, supported by comprehensive site visits and surveys. Criteria used utilised the framework of the Development Plan Justification Test :

- Location of floodplain within depot site and how the development may alter the functioning of the floodplain and its conveyance of flood waters.
- Impact of climate change on the scale of depot encroachment
- Identification of possible surface water flow routes and tributaries that may be impacted
- Scale and extent of mitigation measures needed to ensure no impact of the development based on volumetric compensation measures.

The detailed modelling allowed the criteria within the Development Management Justification Test to be applied, namely:

- Development will not increase flood risk elsewhere;
- Development will minimize risk to people and property;
- Development will manage residual risks and ensure emergency access and egress;
- Any mitigation measures are adaptable to future climate drivers.

The MCA scoring adopted for the analysis was as follows and then translated into TAF Impact Ratings.

- Low score: Avoidance of fluvial floodplains, both in present day and with climate change (using the 0.1% event extents as a surrogate indicator). Limited impact on surface water flow paths and ponding in low lying areas. (Slightly Negative Impact - 3)
- Medium score: Limited and peripheral encroachment into present day and climate change floodplain. More defined surface water flow paths impacted. Mitigation measures do not require detailed modelling. (Slightly Negative Impact - 3)
- High Score: Depot has a significant footprint within the floodplain but is not an active storage or has a conveyance function. Mitigation measures can be determined by level for level area compensation and modelling is not required to assess their performance. (Negative Impact - 2)
- Very High score: Significant crossing of the floodplain, large areas of displaced floodplain and compensatory floodplain needs to be provided. Burden of proof required to pass the Justification Test would require detailed hydraulic modelling and may not be conclusive. (Highly Negative Impact - 1)

4.8.2.2 Water Resources – Hydrogeology

The assessment in this section was carried out in accordance with:

- Department of Transport's Transport Appraisal Framework (TAF, 2023): Appraisal Guidelines for Capital Investments in Transport. Module 7- Detailed Guidance on Appraisal Techniques.
- Transport Infrastructure Ireland's (TII) Project Appraisal Guidelines for National Roads Unit 7.0 – Multi Criteria Analysis (PE-PAG-02031) (PAGs; TII, 2024); and
- National Roads Authority (NRA) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2008).

The assessment has been informed by the guidance documents listed below:

- Environmental Protection Agency (EPA) (2022). 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports',²
- Institute of Geologists Ireland (IGI) (2013). 'Guidelines for Preparation of Soils, Geology, Hydrogeology Chapters of Environmental Impact Statements',³
- Transport Infrastructure Ireland (TII) (2015). 'Road Drainage and the Water Environment, DNDNG-03065'.

The methodology employed for MCA1 and MCA2 is outlined below.

MCA 1 Assessment

The various factors relating to hydrogeology against which the site have been assessed are as follows:

- Aquifer classification and Groundwater Vulnerability assessment of the underlying bedrock;
- Type of Ground waterbody and the Water Framework Directives'(WFD) Quality assessment and risk projection, groundwater pressures at the site;
- Groundwater water resources ((i.e. group water schemes (GWS), public water supply (PWS), and, source protection areas and private abstractions and public water supply and abstractions, drinking water rivers, lakes)) intercepted, close to and down hydraulic gradient of the site;
- Geological Survey Ireland (GSI) surface water and groundwater flooding within the site;
- Water dependent ecosystems down hydraulic gradient of the site and connected through baseflow; and
- Groundwater karst features (caves, dry valley, enclosed depression, spring, estavelle and borehole) either intercepted, proximal and down hydraulic gradient of the site.

The risk to groundwater is defined through assessment of Groundwater Vulnerability, aquifer potential and source protection areas. Vulnerability represents the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities. It depends on the:

- time of travel of infiltrating water (and contaminants);
- relative quantity of contaminants that can reach the groundwater; and
- contaminant attenuation capacity of the geological materials through which the water and contaminants infiltrate (DELG/EPA/GSI, 1999).

The above are a function of the following natural attributes of any area:

- type and permeability of the subsoils that overlie the groundwater;
- thickness of the unsaturated zone through which the contaminant moves; and
- recharge type, whether point or diffuse.

Output: Qualitative analysis of the hydrogeological impacts of each option on the associated site. The range of outcomes is from Neutral Impact to Highly Negative Impact.

MCA 2 Assessment

The MCA2 Stage assessment will be on the same basis as Stage 1 but will be based on more detailed information available for each site.

The procedures specified in the TII Project Appraisal Guidelines (PAG), professional judgement and reference to the listed guidance documents, have been used to identify the potential effects of the options on the hydrogeological elements. The impact significance of the options has been assessed by considering two factors:

- The sensitivity / level of importance of the receiving groundwater environment; and
- The magnitude of impact.

The magnitude of impact is defined by:

- The amount or intensity by which the character of the water environment will change;
- The spatial extent of the impact; and
- The perceptibility, social implication or scientific significance of change.

The magnitude of impact is rated according to the criteria defined in Table 4-19.

Table 4-19 The Magnitude of Impact (source: Table 5.1, NRA 2008)

Magnitude of Impact	Criteria
Imperceptible	An impact capable of measurement but without noticeable consequence
Slight	An impact that alters the character of the environment without affecting its sensitivities
Moderate	An impact that alters the character of the environment in a manner that is consistent with existing or emerging trends
Significant	An impact, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Profound	An impact which obliterates all previous sensitive characteristics

The sensitivity of a receptor is rated according to the criteria defined in Table 4-20.

Table 4-20 Criteria for rating option attributes -estimation of hydrogeology attributes (NRA, 2008)

Attribute Importance	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale	Groundwater supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status.
Very High	Attribute has a high quality or value on a regional or national scale	Regionally Important Aquifer with multiple wellfields. Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – NHA status. Regionally important potable water source supplying >2500 homes Inner source protection area for regionally important water source.
High	Attribute has a high quality or value on a local scale	Regionally Important Aquifer. Groundwater provides large proportion of baseflow to local rivers. Locally important potable water source supplying >1000 homes. Outer source protection area for regionally important water source. Inner source protection area for locally important water source.
Medium	Attribute has a medium quality or value on a local scale	Locally Important Aquifer. Potable water source supplying >50 homes. Outer source protection area for locally important water source.
Low	Attribute has a low quality or value on a local scale	Poor Bedrock Aquifer Potable water source supplying.

Table 4-21 shows the criteria for rating the impact significance at the route selection stage which is derived from the value rating combined with the attribute importance for a hydrogeological receptor and the magnitude of impact. There are four impact categories relevant to the assessment of the impact on hydrogeology that comprise of 'neutral impact', slight negative impact', negative impact' and 'highly negative impact'. These categories are taken from the seven-point scale in TAF (2024).

Table 4-21 Criteria for rating Impact Significance

Magnitude of Impact	Importance of an Attribute				
	Extremely High	Very High	High	Medium	Low
Profound	Highly negative impact Score 1	Highly negative impact Score 1	Negative impact Score 2	Slightly negative impact Score 3	Neutral impact Score 4
Significant	Highly negative impact Score 1	Negative impact Score 2	Negative impact Score 2	Slightly negative impact Score 3	Neutral impact Score 4
Moderate	Negative impact Score 2	Negative impact Score 2	Slightly negative impact Score 3	Slightly negative impact Score 3	Neutral impact Score 4

Magnitude of Impact	Importance of an Attribute				
	Extremely High	Very High	High	Medium	Low
Slight	Slightly negative impact Score 3	Neutral impact Score 4			
Imperceptible	Neutral impact Score 4	Neutral impact Score 4	Neutral impact Score 4	Neutral impact Score 4	Neutral impact Score 4

Source (NRA, 2008 Guidelines)

The various factors relating to hydrogeology against which the options have been assessed are presented in Table 4-22 below.

Table 4-22 Hydrogeological features and impact assessment criteria

Hydrogeological features to be assessed	Means of assessment of potential impacts
The classification and extent of aquifers underlying each option and increased risk presented to them.	<p>Aquifer classification of and the extent of aquifer – provided as the length of the option or as a percentage which is underlain by a particular aquifer classification.</p> <p>Aquifer vulnerability – provided as the length of the option, or as a percentage which is underlain by groundwater classified as low, moderate, high, extreme or rock at or near surface vulnerability.</p> <p>The extent of removal of subsoil cover or part of aquifer (i.e. cuttings along the options) which may give rise to changes in groundwater level and change in aquifer vulnerability and aquifer classification.</p>
<p>High yielding water supply wells and springs</p> <p>Groundwater water resources ((i.e. group water schemes (GWS), public water supply (PWS)), and, source protection zones and private abstractions, and public water supply and abstractions, drinking water rivers, lakes))</p>	<p>The proximity to the feature (s). The length of the option within the protection zone or zones of contribution, and areas close to and down hydraulic gradient of the option.</p> <p>The extent of the potential influence of the cut, fill and earthworks areas along the options on the feature(s).</p>
Karst features along each option	<p>The proximity to the feature(s) and the length of the option within the feature.</p> <p>The extent of the potential influence of the cut, fill and earthworks areas along the options on the feature(s).</p>
Groundwater dependant habitats	<p>The proximity and the position of the route option (upgradient or downgradient) to the feature.</p> <p>Removal of subsoil cover or part of aquifer (cuttings along the option) which may give rise to changes in groundwater level that is likely to impact the integrity of the habitat. Removal of part of the habitat by the option.</p>
Ground Waterbody and Water Framework Directive (WFD) Quality	An assessment in terms of potential impacts to groundwater quality and subsequent change in the WFD status of the groundwater body as a result of the cut, fill and earthworks along the option.
Geological Survey Ireland (GSI) groundwater flooding	<p>Areas of groundwater flooding intercepted or down hydraulic gradient of the option connected through groundwater baseflow.</p> <p>The extent of the potential influence of the cut, fill and earthworks areas along the options on the groundwater flood areas.</p>

The risk to groundwater is defined through assessment of Groundwater vulnerability, aquifer potential and source protection zones. Vulnerability represents the intrinsic geological and hydrogeological

characteristics that determine the ease with which groundwater may be contaminated by human activities. It depends on the:

- Time of travel of infiltrating water (and contaminants);
- Relative quantity of contaminants that can reach the groundwater; and
- Contaminant attenuation capacity of the geological materials through which the water and contaminants infiltrate (DELG/EPA/GSI, 1995).

The above are a function of the following natural attributes of any area:

- Type and permeability of the subsoils that overlie the groundwater.
- Thickness of the unsaturated zone through which the contaminant moves; and
- Recharge type, whether point or diffuse.

Where the level of the proposed depot option is below the existing ground level, existing materials will require excavation and removal. These cut areas will require the removal of soils, made ground, subsoils and bedrock. Earthworks and fill works are typically undertaken in a 'dry' environment; however, cuts are more likely to intercept the groundwater table and may require temporary dewatering. The location of water supply wells, karst groundwater features, groundwater dependent habitats, the WFD status of the groundwater body and groundwater flood areas hydraulically connected to the option and areas where the works are planned.

Limitations

The assessment has been completed solely using publicly available hydrogeological data with associated limitations. The information available for the key hydrogeological receptors is seen as appropriate for the scale and nature of the assessment undertaken.

Assumptions

This assessment has been prepared based on available data and this is assumed to represent the baseline condition in line with the requirement of evidence-based analysis.

4.8.3 Landscape and Visual Quality

Under the TAF, this looks to examine the impacts on landscape and visual quality. It is intended to be a qualitative assessment. The TAF recommends to focus the assessment on landscape and significant landscape features. In addition to this, the potential impacts on protected views / routes and visual receptors have been considered. The methodology employed for MCA1 and MCA2 is outlined below.

MCA 1 Assessment

The landscape and visual impact assessment is being prepared having regard to the following legislation and guidelines:

- Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.
- Planning and Development Act 2000, as amended;
- Planning and Development Regulations 2001, as amended;

- Environmental Protection Agency (EPA) (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports (hereafter referred to as the EPA Guidelines).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, Department of Housing, Planning and Local Government, 2018; and
- Guidelines for Landscape and Visual Impact Assessment, 3rd Ed., Landscape Institute and Institute of Environmental Management & Assessment, 2013.

The following key local policy documents have been reviewed and have informed the assessment:

- Meath County Development Plan 2021-2027
 - Chapter 08 Cultural and Natural Heritage
 - Appendix A.05 Landscape Character Assessment
 - Appendix A.10 Protected Views and Prospects
 - Interactive Map Viewer²
- Kildare County Development Plan 2023-2029
 - Chapter 13 Landscape, Recreation and Amenity
 - Appendix 7 Scenic Routes
 - Interactive Map Viewer³
- Fingal County Development Plan 2023-2029
 - Chapter 9 Green Infrastructure and Natural Heritage
 - Interactive Map Viewer⁴
- South Dublin County Development Plan 2022-2028
 - Chapter 3 Natural, Cultural and Built Heritage
 - Appendix 9 Landscape Character Assessment
 - Interactive Map Viewer⁵
- GeoHive Map Viewer, Tailte Éireann⁶
- Historic Environment Viewer, National Monuments Service⁷
- Aerial photographs and satellite imagery available on Google Earth Pro (2006 – 2024)

General Approach

The assessment of landscape visual impacts at Stage 1 options assessment included a review of relevant local policies and objectives with regards to the following:

- Consideration of landscape character assessments,
- Location of protected views and prospects / scenic routes, together with a desktop review of:
- Likely visual impact on properties, and
- Likely impact on key landscape features.

Sensitivity of Landscape and Visual Environment

The sensitivity of the landscape and visual environment is a function of its existing land use, patterns and scale, enclosure, visual characteristics and value. The nature and scale of the proposed depot

² <https://www.arcgis.com/apps/instant/portfolio/index.html?appid=84a669c14a84416c92b3583ffd774e58>

³ <https://webgeo.kildarecoco.ie/planningenquiry>

⁴ <https://fingalcoco.maps.arcgis.com/apps/webappviewer/index.html?id=b97f2adda903489caddb77378565df29b>

⁵ <https://experience.arcgis.com/experience/f8990ef0badf42acaee196bd4b9a3725>

⁶ <https://www.arcgis.com/apps/webappviewer/index.html?id=3ae19cc156bf4706a929304bf8fcc4f6>

⁷ <https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=0c9eb9575b544081b0d296436d8f60f8>

locations is taken into account, as are trends of change and relevant policy framework. Five categories are used to classify landscape and visual sensitivity, as set out in **Table 4-16**.

Magnitude of Change in Landscape and Visual Environment

The magnitude of change is a factor of the scale, extent and degree of change imposed on the landscape and visual environment by the proposed depot development, with reference to its key characteristics and the sensitivity of the landscape and visual environment. Five categories are used to classify magnitude of change, as set out in **Table 4-16**.

Table 4-16 Rating of Landscape Sensitivity and Magnitude of Change

Description of Baseline Sensitivity	Rating	Description of the likely Magnitude of change arising from Proposed Project
Landscapes / views / viewpoints (towards or from a landscape feature or area) that are recognised in policy or otherwise designated as being of national value. The composition, character and quality of the landscape / view are such that its capacity for change is very low. The principle management objective for the landscape / view is its protection from change.	Very High	Change that is large in extent, resulting in the loss of or major alteration to key elements, features or characteristics of the landscape / view, and / or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the landscape / view.
Landscapes / views that are recognised in policy or otherwise designated as being of value, or highly valued by people that experience them regularly. The composition, character and quality of the landscape / view may be such that its capacity to accommodate change may or may not be low. The principle management objective for the landscape / view is its protection from change that reduces landscape value / visual amenity.	High	Change that is moderate to large in extent, resulting in major alteration to key elements, features or characteristics of the landscape / view, and/or the introduction of large elements considered uncharacteristic in the context. Such development results in substantial change to the landscape / view.
Landscapes / views that may not have features or characteristics that are of particular value, but have no major detracting elements, and which thus provide some landscape value / visual amenity. These landscapes / views may have capacity for appropriate change and the principle management objective is to facilitate change to the composition that does not detract from landscape value / visual amenity, or which enhances them.	Medium	Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape / view, and / or introduction of elements that may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in modest change to the landscape / view.
Landscapes / views that have no valued feature or characteristic, and where the composition and character are such that there is capacity for change. This category includes landscapes/views experienced by people involved in activities with no particular focus on the landscape. For such landscapes / views the principle management objective is to facilitate change that does not detract from landscape value / visual amenity or enhances them.	Low	Change that is moderate or limited in scale, resulting in minor alteration to key elements, features or characteristics of the landscape / view, and / or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the landscape / view.
Landscapes / views that have no valued feature or characteristic, or in which the composition may be unsightly (e.g. in derelict landscapes). For such landscapes / views the principle management objective is to facilitate change that repairs, restores or enhances landscape value / visual amenity.	Negligible	Change that is limited in scale, resulting in no alteration to key elements features or characteristics of the landscape / view, and / or introduction of elements that are characteristic of the context. Such development results in negligible change to the landscape / view.

Significance of Effects on Landscape and Visual Environment

To classify the significance of effects the magnitude of change is measured against the sensitivity of the landscape / view based on the guidance developed by the EPA in the Guidelines on the information to be contained in EIARs (2022 EPA Guidelines, Figure 3.4). Determining significance of effects that are rational and justifiable is also based on the professional judgement, expertise and experience of the author.

The assessment follows the methodology outlined above and is based on the information available at this stage, which does not include a design or layout for the depot. The assessment does not take account of any potential works, if required, outside of the lands identified for each option.

MCA Stage 2 Assessment

The methodology used in the MCA2 assessment follows the detailed methodology provided for in the MCA1 assessment, supported by visits to the environs of the sites and their surrounds. The assessment is based on detailed designs/layouts for each site and the impact rating / scoring is based in the Scoring Scale for Transport Appraisals (Box 7.4) of Module 7 - Detailed Guidance on Appraisal Techniques from the Transport Appraisal Framework.

4.8.4 Cultural and Heritage

This assessment looks to examine the potential direct and indirect impacts on features of architectural, archaeological and cultural heritage significance. The assessment methodology employed for MCA1 and MCA2 is outlined below.

MCA 1 Assessment

The following legislation was consulted for this assessment:

- The National Monuments Act, 2014, as amended;
- The Planning and Development Act, 2000, as amended;
- Heritage Act 1995, as amended.

The following guidance documents issued by the government, local authorities, and semi-state bodies to assist in the identification, protection and avoidance of heritage assets were considered when analysing the options:

- Environmental Protection Agency (EPA) (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports (hereafter referred to as the EPA Guidelines).
- EPA (2003). Advice Notes on Current Practice (in preparation of Environmental Impact Statements).
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht and Islands.
- Guidelines for Cultural Heritage Impact Assessment of TII National Road and Greenway Projects (TII, 2024)

A range of all available desktop sources of architectural and archaeological heritage information were consulted as part of the desk study to inform the assessment, including the following:

- The Historic Environment Viewer, National Inventory of Architectural Heritage (NIAH) and NIAH Garden Survey.

- Meath County Development Plan 2021-2027 (A06 Record of Protected Structures) (RPS and ACA).
- Kildare County Development Plan 2023-2029, The Record of Protected Structures (RPS and ACA).
- Fingal County Development Plan 2023-2029 (RPS and ACA).
- South Dublin County Development Plan 2022-2028, Appendix 3a Record of Protected Structures (RPS and ACA).
- Record of Monuments and Places for Counties Dublin, Kildare, Meath;
- Sites and Monuments Record for Counties Dublin, Kildare, Meath;
- National Monuments in State Care Database;
- Preservation Orders List;
- Cartographic and aerial photographic sources;
- Excavations Bulletin (1970-2024)

Study Area

The study area for this assessment consisted of the area within the proposed site depot locations, as well as the area extending 50m from the site locations. Structures of architectural, archaeological and cultural heritage significance close to that boundary but at a greater distance from the railway are included in the assessment. Measurements are taken from the proposed site location boundaries to the nearest point of a site or structure.

Assessment Methodology

The quality and type of potential impacts can vary to include the following, as per TII’s Guidelines for Cultural Heritage Impact Assessment of TII National Road and Greenway Projects (TII, 2024):

- Direct Effect - where a Cultural Heritage Receptor or its setting is physically located within the footprint of a project which would entail its removal in whole or in part. Direct effects can also be defined as those that are directly attributable to the proposed development.
- Indirect Effect - an effect that results indirectly from the proposed project, often occurring away from the development, or because of a sequence of interrelationships or a complex pathway.
- Positive Effect - a change which enhances or improves the quality of the Cultural Heritage Receptor.
- Negative Effect - a change which reduces the quality of the Cultural Heritage Receptor.

A five-level rating system was used to describe the importance of Cultural Heritage Receptors in accordance with the TII, 2024 Guidelines, as shown in **Table 4-17** below.

Table 4-17 Rating of Cultural Heritage Receptors

Importance	Cultural Heritage Receptors
Very high	<ul style="list-style-type: none"> • Designated Built Heritage Receptors rated as being of international importance, including associated historic gardens and designed landscapes. • Designated features of international intangible heritage value. • Designated historic landscapes of international value. • National Monuments. • Sites with Preservation Orders • Other designated Cultural Heritage Receptors of international importance. • World Heritage Properties (including the tentative list)

Importance	Cultural Heritage Receptors
High	<ul style="list-style-type: none"> • Architectural Conservation Areas. • Historic landscapes (designated or undesignated) of outstanding interest and of demonstrable national value. These will be well-preserved historic landscapes exhibiting considerable coherence, time depth, or other critical factors. • Other designated or undesignated Cultural Heritage Receptors of demonstrable national importance. • Places or features of national intangible heritage value. • Protected Structures. • Recorded Monuments (or sites and monuments scheduled for inclusion on the RMP). • Undesignated receptors of high quality and importance.
Medium	<ul style="list-style-type: none"> • NIAH structures • Historic landscapes of regional value (designated or undesignated). • Other designated or undesignated receptors of regional Cultural Heritage importance. • Places or features of regional intangible heritage value.
Low	<ul style="list-style-type: none"> • Historic landscapes whose value is limited by poor preservation and/or poor survival of contextual associations. • Other designated or undesignated Cultural Heritage Receptors of local importance. • Places or features of local intangible heritage value. • Receptors compromised by poor preservation of contextual associations with inherent, albeit limited, Cultural Heritage value. • Undesignated historic buildings of modest quality in their fabric or historical association.
Negligible	<ul style="list-style-type: none"> • Receptors/landscapes with very little surviving Cultural Heritage interest.

The importance of cultural heritage receptors in combination with the type of impact on each was used to inform the cultural impact assessment for each proposed depot site location.

MCA 2 assessment

The assessment methodology remains as presented in the Stage 1 assessment, although the study area for each of the depot sites has been increased to 250m in order to ascertain and refine any potential indirect impacts on cultural heritage sites within the receiving environment.

4.8.5 Noise & Vibration

This assessment looks to examine the potential change in noise pollution and level of exposure to noise. The methodology employed for MCA1 and MCA2 is outlined below.

MCA 1 Assessment

In the absence of specific guidance relating to option selection methodologies for this specific project type, the noise impact assessment has been conducted in accordance with guidance contained within the suite of TII documents. These include:

- Section 5.0 of the Transport Infrastructure Ireland (TII) 2004 Guidelines for the Treatment of Noise and Vibration in National Road Schemes (TII Noise Guidelines 2004).
- Section 2.0 of the 2014 Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes (TII Noise Guidelines 2014).
- TII Project Appraisal Guidelines for National Roads Unit 7.0 – Multi Criteria Analysis PE-PAG-02031 (PAG), 2024.

The following methodology has been adopted to assess the impact rating of each of the depot site locations under consideration for the Stage 1 options assessment.

The Depot options will all have potential noise and vibration impacts during both the construction and operational phases. The assessment of potential noise impacts is based primarily upon property counts (Quantitative) for Stage 1. Specific operational noise emissions for depot site locations have not been considered at this stage of the assessment.

Property counts of Noise Sensitive Locations (NSLs) have been conducted within 300m of each of the proposed site locations and have been quantified within the following bands from the site boundary:

- 0m to 50m.
- 50m to 100m.
- 100m to 200m.
- 200m to 300m.

NSLs may include residential units, schools, hospitals, nursing homes; although at this stage of the assessment no further distinction is made between these different types of properties. During the specific impact assessment for the emerging preferred depot location, any variation in NSL type will be identified and considered as appropriate. Any variation in type of NSL, however, would not be expected to materially affect the noise impact assessment.

An assessment of potential noise impact based upon the number of noise sensitive receptors within specified distance bands from each of the Depot options under consideration has been undertaken. From the property counts a Potential Impact Rating (PIR) is calculated by weighting the property counts and summing the weighted value. A weighting factor of 4 for the closest distance band (0 to 50m) down to 1 for the furthest distance band (200 to 300m). For the PIR assessment, the calculated weighted value within 300m from Depot boundary is then determined. The option with the lowest PIR has the lowest nominal potential impact.

Indicative layouts have been provided for each site and the location of the main Depot buildings and sidings are taken into account in reviewing each option. These areas are the most significant from a noise generation perspective and where appropriate commentary is provided on the proximity of sensitive receptors to the likely Depot building locations.

MCA 2 Assessment

Property counts of NSLs have been conducted within 300m of each of the proposed depot sites locations as described under the MCA 1 Assessment.

The operational noise impacts at the proposed depot sites have also been considered as part of this assessment. The depot will be in operation 24/7 and will be used to stable and maintain DART EMU's from across the network. The operation of the depot therefore has the potential to generate noise impacts during the day and night-time periods to its surrounding environment.

The methodology adopted for Stage 2 involved developing an acoustic model of the depot site options to determine the potential noise impact on the surrounding environment to each. This takes account of the site layout and the location of specific noise sources at the site.

The EIAR for the Dart+ West project included a detailed impact assessment of potential operational noise sources associated with the Depot operations. This information has been used to model operational noise emissions at the proposed depot sites. The model was updated to include NSLs within 300m and some additional noise sources added to the model, as discussed below.

To assess the noise impact of the operation the following noise sources have been considered:

- Maintenance building activity – note this building is fully enclosed and noise internal to the building will be largely contained within the building.

- Substation and mechanical plant serving the depot.
- Automatic Train Wash (ATW).
- Stabling Noise Levels.
- Chief Civil Engineering (CCE) areas.

AWN Consulting previously undertook noise level measurements at the Irish Rail depots at Fairview and Inchicore depots to inform the impact assessment of the Maynooth West Depot as part of the Dart+ West EIAR. This information has been modelled for the Depot options site at Kilcock. The following noise levels have been measured during these surveys,

- General maintenance activity – 74dB(A) internally within the building.
- Wheel Lathe – 80dB(A) internally within the building.
- Automatic Train Wash (ATW) – 61dB(A) at 12m for an open air ATW.
- Substation – 55 dB at 2m
- Roof mounted gas burners – 46dB(A)

The maintenance building is modelled as a lightweight insulated cladding panel with an assumed sound insulation performance of this construction is 26 dB Rw. For the ATW, the wash area is enclosed on two sides and above with openings either end for the trains to enter and exit.

In addition, the movement of DART EMUs within the depot has also been modelled along the siding areas. For the purposes of the assessment, peak hour movements discussed in Section 14.5.4.6.4 of Chapter 14 of the Dart+ West EIAR have been adopted as a worst-case.

Further noise sources associated with mobile plant movements within the CCE Compound have been added to the model to account for activity occurring within this area of the site. These compounds will be in use intermittently when loading of rail vehicles are required for maintenance works. The following sources have been modelled with the CCE east and west areas for each depot option site with an equivalent estimated on-time to represent potential activity when in use:

- 3 No. Tracked machines – 76 dB(A) at 10m (15% on time)
- Cutting equipment – 79 dB(A) at 10m (25% day/ 5% night on-time)
- Welding equipment – 76 dB(A) at 10m (25% day/ 5% night on-time)
- 1 No. Forklift 79 dB(A) at 10m (15% on time)

Noise Model

A computer-based prediction model has been prepared in order to quantify the operational noise levels associated with the operation of the depot sites. This section discusses the methodology behind the noise modelling process and presents the results of the modelling exercise.

SoftNoise Predictor: Proprietary noise calculation software was used for the purposes of this impact assessment. The selected software, SoftNoise Predictor Version 2024, calculates fixed plant noise sources in accordance with ISO 9613 Acoustics – Attenuation of Sound During Propagation Outdoors 2024 and rail noise levels in accordance with the RMR 2012 methodology.

Input to the Noise Model: The noise model was prepared using depot site layout drawings, 3D rail alignment drawings, topographical data, Ordnance Survey mapping, and source noise levels discussed above.

The model assumes all of the above listed activities are operating concurrently within each depot. This represents a highly conservative scenario as the activity at the depot will vary in intensity across a typical day and night and it is not expected that all activity would occur simultaneously as modelled.

Technical Movements to and From Depots Sites

Once operational, there will be technical movements to and from the selected depot. These movements are to allow DART EMU's to be stabled at the depot following the completion of service and also to deploy stabled DART EMU's to the network prior to the beginning of service. These movements have also been taken into consideration as part of the noise assessment.

4.8.6 Air Quality

MCA 1 Assessment

The air quality impact assessment has been conducted in accordance with the relevant guidance and requirements contained within the suite of TII documents and Department of Transport guidelines. These include:

- Transport Infrastructure Ireland Guidance Air Quality Assessment of Proposed National Roads – Standard – PE-ENV-01107 (TII 2022a)
- Transport Infrastructure Ireland PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects (TII 2022b)
- Transport Infrastructure Ireland (TII) PE-ENV-01107: Air Quality Assessment of Proposed National Roads – Standard (TII, 2022c);
- TII Project Appraisal Guidelines for National Roads Unit 7.0 – Multi Criteria Analysis PE-PAG-02031 (PAG), 2024.

The Transport Appraisal Framework (TAF) methodology has been adopted to assess the impact rating of each of the depot site locations under consideration for the Stage 1 options assessment. Consideration has also been given to the TII Guidance however, the TAF is the primary document considered.

The Transport Appraisal Framework (TAF) guidelines "*Air Quality Scorecard*" consider estimates for the impact "with the scheme" on air quality. A scheme where both the baseline and do-something air quality remains below the following criteria is assumed to be a neutral impact:

- NO₂ 1-hour mean of 200 µg/m³
- SO₂ 1-hour mean of 89 µg/m³
- PM_{2.5} 24-hour mean of 35 µg/m³
- PM₁₀ 24-hour mean of 50 µg/m³

In addition to the TAF, TII Guidance has also been considered as a secondary appraisal method. TII Guidance reviews different objectives, considering the number of receptors potentially impacted within 200m. Property counts of Sensitive Receptors have been conducted within 200m of each of the proposed site locations and have been quantified from the site boundary using satellite imagery. While all these receptors may not be impacted if roads are not considered "affected" by TII criteria it provides a basis for assessment. Based on previous assessments, it is predicted that only a small number of road links will only be "affected" during peak construction and the potential for impacts from road traffic emissions would be screened out (see Section 4.3.3 of PE-ENV-01106) during the operational phase.

The assessment of potential air quality impacts is based primarily upon property counts (Quantitative). AADT data for depot site locations has not been considered at this stage of the assessment.

Sensitive Receptors may include residential units, schools, hospitals, nursing homes; although at this stage of the assessment no further distinction is made between these different types of properties. During the specific impact assessment for the emerging preferred depot location, any variation in

Sensitive Receptor type will be identified and considered as appropriate. Any variation in type of Sensitive Receptor, however, would not be expected to materially affect the air quality impact assessment.

Emissions from additional trains are not considered significant as trains will be EMUs, the depot will facilitate the transition from diesel to electric, therefore improving the baseline. All options would facilitate the DART+ programme which will be beneficial with respect to Ireland's alignment with EU Directive (EU) 2024/2881 which significantly reduces the air quality limit values. The depot site does not have any other significant emission sources with respect to air quality. The baseline is a scenario without the DART+ Depot, and in the do-something scenario the DART+ programme, which includes over 100km of newly electrified rail line and significant increases in frequency of service, cannot proceed.

MCA 2 Assessment

This assessment has been prepared based on the following TII Air Quality Guidance:

- PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects; (TII 2022a); and
- PE-ENV-01107: Air Quality Assessment Standard for Proposed National Roads (TII 2022b).

The primary aspects of the assessment relate to the existing ambient air quality, proximity of sensitive locations and a review of the overall significance of potential changes in air quality.

The objective at this stage of the route selection process is to indicate whether there are likely to be significant air quality impacts associated with the proposed route corridor options. The evaluation methodology assesses the number of residential properties within 50m of site boundary. Traffic data obtained for the Opening Year and Design Year have been used in the model as per the TII guidelines (2022a, 2022b). A comparison of the proposed routes can be carried out based on a calculation of the Index of the Overall Change in Exposure by human receptors to nitrogen oxides (NO_x) and particulate matter (PM₁₀ and PM_{2.5}) resulting from each individual route. The calculation of the Index of Overall Change in Exposure allows a comparison of the overall air quality impact on people from each route option to be carried out. The Index is based on identifying the number of sensitive receptor locations (e.g. residential properties, schools) within 50m of the carriageway of all road links that would experience a significant change in traffic for each of the routes and be classified as "affected". The change in emissions is influenced by changes in traffic flow, composition and speed. The analysis is carried out using the methodology of TII (2022a, 2022b) and using TII Road Emissions Model (REM) (GE-ENV-01107) (TII 2024). The TII guidance (TII, 2022a) states that the following scoping criteria shall be used to determine whether a road link is classified as "affected":

The objective at this stage of the site selection process is to indicate whether there are likely to be significant air quality impacts associated with the proposed route corridor options. The evaluation methodology assesses the number of residential properties within 50m of effected carriageway edge of each route. Traffic data obtained for the Opening Year and Design Year have been used in the model as per the TII guidelines (2022a, 2022b). A comparison of the proposed depot sites is carried out based on a calculation of the Index of the Overall Change in Exposure by human receptors to nitrogen oxides (NO_x) and particulate matter (PM₁₀ and PM_{2.5}) resulting from each individual site. The calculation of the Index of Overall Change in Exposure allows a comparison of the overall air quality impact on people from each route option to be carried out. The Index is based on identifying the number of sensitive receptor locations (e.g. residential properties, schools) within 50m of the carriageway of all road links that would experience a significant change in traffic for each of the proposed depot sites and be classified as "affected". The change in emissions is influenced by changes in traffic flow, composition and speed. The analysis is carried out using the methodology of TII (2022a, 2022b) and using TII Road Emissions Model (REM) (GE-ENV-01107) (TII 2024).

The TII guidance (TII, 2022a) states that the following scoping criteria shall be used to determine whether a road link is classified as "affected":

- Road alignment will change by 5 m or more; or
- Annual average daily traffic (AADT) flows will change by 1,000 or more; or
- Heavy duty vehicle (HDV) (vehicles greater than 3.5 tonnes, including buses and coaches) flows will change by 200 AADT or more; or
- Daily average speed change by 10 kph or more; or
- Peak hour speed will change by 20 kph or more.

In addition to assessing the impact to people as a result of air quality, the impact to sensitive ecosystems must also be assessed as per the TII guidelines (TII 2022a, 2022b). The EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the “Habitats Directive”) requires an Appropriate Assessment to be carried out where there is likely to be a significant impact upon a European protected site. TII requires the Air Quality Specialist to liaise with an ecologist on schemes where there is a European protected site within 2km of the option. However, as the potential impact of a scheme is limited to local level, detailed consideration need only be given to roads where there is a significant change to traffic flows (>5%) and the designated site lies within 200m of the proposed site. Where these two requirements are fulfilled, the assessment at the site selection stage involves a calculation of nitrogen oxides (NO_x) and ammonia (NH₃) concentrations, and acid deposition and nitrogen deposition rates using the methodology set out in TII Guidance document PE-ENV-01106 (TII 2022a).

The nature of the Proposed Development is to support the DART network as it grows from its current 50km in length to over 150km. The Depot itself is not expected to result in any significant change in traffic volumes, during the operational phase, as traffic will be primarily associated with members of staff. Therefore, impacts due to road traffic in the operational phase are scoped out as there is no potential for significant impact on human or ecological receptors due to changes in pollutant concentrations as per the significance criteria in TII PE-ENV-01106.

The depot will have associated rail transport emissions. However, the rail stock serviced by the depot will be electric rather than fuelled by a combustion engine. Therefore, the rail stock will not have the potential for significant localised impacts. Impacts due to rail traffic in the operational phase are scoped out as there is no potential for significant impact on human or ecological receptors due to changes in pollutant concentrations as per the significance criteria in TII PE-ENV-01106. There will be some use of natural gas at all of the proposed depots, irrespective of location. These emissions were previously scoped out with respect to the Directive (EU) 2015/219 which is commonly known as Medium Combustion Directive (MCD) as they were rated thermal input less than 1 MW (1,000 KW) and should not be considered for the purpose of calculating the total rated thermal input of a combination of combustion plants. Therefore, the potential for impact due to combustion emissions from the depot can be considered not significant and scoped out.

The most significant potential construction phase impacts relate to construction dust. Transport Infrastructure Ireland (TII) recommends the use of the IAQM guidance (2024) in the TII guidance document Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a). The depot is considered to have the potential for magnitudes of potential dust emissions in accordance with IAQM (IAQM 2024) Guidance:

- Demolition: N/A
- Earthworks: Large
- Construction: Large
- Trackout: Large

The potential for impact prior to mitigation is assessed by combining the magnitude of potential emissions with the sensitivity of the area.

The Institute of Air Quality Management in the UK (IAQM) guidance document ‘Guidance on the Assessment of Dust from Demolition and Construction’ (2024) outlines mitigation measures and to determine the level of site-specific mitigation required. Construction dust related impacts can be mitigated with best practice mitigation measures and are temporary in nature.

The depot will require some activities which have the potential to generate dust during operation, including the hosting of a maintenance facility. However, similar to construction stage dust, mitigation will ensure operational phase impacts with respect to dust nuisance. Health impacts and sensitive ecology do not have the potential for significant impacts.

The comparative evaluation of options was assisted by scoring of impacts to sensitive receptors using the Stage 2 Project Appraisal Matrix as per the Project Appraisal Guidelines for National Roads Unit 7.0 - Multi Criteria Analysis (TII 2016) and (TII 2022b). A qualitative assessment was undertaken of each option, with the quantitative assessment being scoped out due to lack of significant changes in traffic. Each impact is scored based on the seven-point scale, as detailed in **Table 4-18**.

Table 4-18 Seven-Point Scale from AQ overarching guidance (TII 2022a)

Seven Point Scale	Stage 2: Local Air Quality (quantitative)	Stage 2: Index of Overall Change in Exposure (quantitative)
7 – Major or highly positive	Overall significant positive air quality effects are predicted at either human health receptors or sensitive designated habitats.	Negative index value
6 – Moderately positive	Overall significant positive air quality effects are not predicted at either human health receptors or sensitive designated habitats. However, the option has a higher potential for significant positive effects e.g. moderate impacts at individual receptors.	Negative index value
5 – Minor or slightly positive	Overall significant air quality effects are not predicted at either human health receptors or sensitive designated habitats. Only positive effects that are at worst slight at individual locations are predicted.	Negative index value
4 – Not significant or neutral	Overall significant air quality effects are not predicted at either human health receptors or sensitive designated habitats. Only effects that are Neutral at individual locations are predicted.	Low positive or negative index value (less than 100 for NO _x and PM ₁₀)
3 – Minor or slightly negative	Overall significant air quality effects are not predicted at either human health receptors or sensitive designated habitats. Only negative effects that are at worst slight at individual locations are predicted.	Positive index value
2 –Moderately negative	Overall significant air quality effects are not predicted at either human health receptors or sensitive designated habitats. However, the option has a higher risk of significant effects e.g. moderate impacts at individual receptors.	Positive index value
1 – Major or highly negative	Overall significant adverse air quality effects are predicted at either human health receptors or sensitive designated habitats. This would be a showstopper and mitigation would be required for a scheme/option to progress.	Positive index value

4.8.7 Electromagnetic Compatibility

This assessment looks to examine the electromagnetic compatibility Impact.

The proposed Project will be required to comply with the requirements of the European Directive on Electromagnetic Compatibility (2014/30/EU), and European Standards EN 50121 (Parts 1-5), which address railway Electromagnetic Compatibility (EMC). In addition, all electrical and electronic products placed on the market or taken into service in the European Union must comply with all applicable directives which include the above EMC Directive, the Low Voltage Directive (2014/35/EU) and the Radio Equipment Directive (2014/53/EU). These directives have been transposed into Irish law under the following statutory instruments).

- S.I. No. 145/2016 - European Communities (Electromagnetic Compatibility) Regulations 2016
- S.I. No. 248/2017 - European Union (Radio Equipment) Regulations 2017
- S.I. No. 345/2016 - European Union (Low Voltage Electrical Equipment) Regulations 2016

It is proposed to assess the proposed Project's required compliance in accordance with the above directives and standards in addition to guidelines on limiting exposures to electromagnetic fields as published by the International Commission on Non-Ionising Radiation Protection (ICNIRP) and the EU EMF Recommendation (1999/519/EC) when addressing human health effects.

The Electromagnetic Compatibility Directive (2014/30/EU) and the Radio Equipment Directive (2014/53/EU) do not cover emissions from DC and near DC fields which are also an interference risk to particularly sensitive equipment such as Scanning Electron Microscopes (SEMs) and Magnetic Resonance Imaging (MRI) equipment. Nonetheless an assessment of this type of Electromagnetic Interference (EMI) is included in the scope of the investigation.

Impacts from stray currents arising from the operation of the system will also be mitigated as per European Standard EN 50122-2.

The methodology employed for MCA1 and MCA2 is outlined below.

MCA 1 Assessment

The study area for the baseline environment with respect to Electromagnetic Radiation (EMR) is defined to be 100 m either side of the outermost depot rail line. The following potential receptors are considered:

- Local residents and the community
- Domestic and industrial electrical equipment
- Telecommunications infrastructure (including wireless radio services)
- Sensitive medical and research equipment
- Utilities (buried pipes, cables etc.)
- Mainline rail, suburban rail and light rail systems
- Members of the public

The main sources of EMI from the proposed development will be the traction supply system, High Voltage (HV) lines (ESB supply voltages), substations, IT equipment and signalling infrastructure.

Impacts from electromagnetic radiation (EMR) include the following:

- Impacts on nearby sensitive equipment effecting correct operation from (Direct Current (DC), Alternating Current(AC) or and Radiofrequency (RF) electromagnetic fields)
- Impacts on buried structures, such as cast iron pipework, causing corrosion (stray current)
- Impacts on human health (across all the frequency ranges – DC, AC and RF)

In relation to the above impacts the following aspects of EMR were considered for each option:

1. DC or Quasi DC Magnetic Fields - The baseline for these types of fields is considered up to 100 m either side of the line. In rare instances where equipment has been identified (through the questionnaires or representations from the public) that is known to be sensitive to these types of fields (e.g. Scanning Electron Microscopes (SEMs), Magnetic Resonance Imaging machines (MRIs), Transmission Electron Microscopes (TEMs) etc.) further consideration of the options is necessary. Options explored where the traction supply or the rails are brought closer to an identified receptor would be classed as at a comparative disadvantage, while an option with these items being located further away from the sensitive receptor would have a comparative advantage. Standard industrial, commercial and residential equipment (with the exception of Cathode Ray Tube (CRT) monitors within 10 metres) are not vulnerable to such differing options therefore in all other instances the options would be comparable.
2. AC fields and low frequency harmonics - The baseline for these fields is considered at 10 m either side of the line. In rare instances where equipment has been identified that is known to be sensitive to these types of fields (bespoke audiovisual equipment with magnetic pickups) further consideration of the options is necessary. Options explored where the traction supply or the rails are brought closer to an identified receptor would be classed as at a comparative disadvantage, while an option with these items being located further away from the sensitive receptor would have a comparative advantage.
3. RF fields – Due to the requirement for any electrical installations to meet the EMC directive all options should be comparable unless installations are made that come within 10 m of potentially sensitive receptors. 10 m has been selected in this case as the distance based on the CISPR standards for measuring radiated emissions.
4. Stray current - All options considered with respect to Stray currents would be expected to be comparable unless significant changes were being considered to the running rails, which are the primary source of stray currents. Options that would lead to a reduction of track conductivity or rail-to-earth resistance in any options would be considered as at a comparable disadvantage to other options.
5. Electromagnetic Fields and human exposure – The recommended limits for human exposure to electromagnetic radiation are higher than the permissible emissions limits specified in various EMC standards. From a human health and exposure point of view, all options explored would be comparable. However, it should be considered that there is an aesthetic nature to the location of EMR emitting sources in close proximity to properties and concerns about exposure while unfounded would still be higher to the layperson. Therefore, an option that place high voltage equipment closer to a domestic dwelling (to within 15 m) would be considered at a comparable disadvantage to other options that locate the equipment at a greater distance from said dwelling.

In reality none of the options presented are considered significantly preferable to the others, primarily because all of the options once selected will still be bound by the same limits of the governing European directives and recommendations.

Output: Qualitative Assessment of the sites on an absolute basis to evaluate impacts which are on a scale from neutral to highly negative impact.

MCA 2 Assessment

The MCA2 Stage assessment will be on the same basis as Stage 1 but will be based on more detailed information available for each site.

Table 4-19 below provides the consolidated outcome of the Stage 1 multi-criteria analysis aligned with the Transport Appraisal Framework guidelines.

Table 4-19 MCA Stage 1 Summary

Parameter	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins	
1	Transport User Benefits and Other Economic Impacts	1.1 Alignment with Customer Requirements Specification	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		1.2 Transport Costs & Operational Characteristics	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		1.3 Change in Land Value	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact
		1.4 Transport User Benefits	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact
		1.5 Site Security	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact
2	Accessibility Impacts	2.1 Impacts on existing accessibility	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		2.2 Freight Access	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact
3	Social Impacts	3.1 Social Impacts	Slightly Positive Impact	Slightly Positive Impact	Slightly Positive Impact	Slightly Positive Impact	Slightly Positive Impact	Slightly Positive Impact	Slightly Positive Impact	Slightly Positive Impact	
4	Land Use Impacts	4.1 Change in Quality of Public Realm	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	
		4.2 Existing Transport Network and Service Impact:	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		4.3 Material Assets: Property	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		4.4 Built Services (Utilities)	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		4.5 Soils & Geology (incl Waste)	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	
		4.6 Planning Applications	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		4.7 Zoned Land, Land Use Planning and Spatial Planning	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
5	Safety Impacts	5.1 Collisions & Related Impacts	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		5.2 Other Safety Impacts	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
6	Climate Change Impacts	6.1 Climate Action Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		6.2 Climate Adaption Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
7	Local Environment Impacts	7.1 Biodiversity Impacts	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		7.2 Water Resources Impacts	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		7.3 Landscape & Visual Quality	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		7.4 Cultural & Heritage Impacts	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		7.5 Noise & Vibration Impacts	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
		7.6 Air Quality Impacts	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact
		7.7 Electromagnetic Compatibility Impacts	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact	Neutral Impact
Criteria											
Sub-Criteria Consolidation		Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins	
1	Transport User Benefits and Other Economic Impacts	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
2	Accessibility Impacts	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
3	Social Impacts	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
4	Land Use Impacts	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
5	Safety Impacts	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
6	Climate Change Impacts	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
7	Local Environment Impacts	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	Highly Positive Impact	
Criteria Consolidation											
Overall Rating		27	29	30	28	30	28	28	26	28	
Progress To Stage 2		No	No	Yes	No	Yes	No	No	No	No	

Colour Coding

Highly Positive Impact

Positive Impact

Slightly Positive Impact

Neutral Impact

Slightly Negative Impact

Negative Impact

Highly Negative Impact

The TAF methodology provides for an absolute analysis of impacts of change under a given sub-criterion. This means that options are compared to a do-nothing scenario rather than to other options. The effect is to level the outcomes and to make the benefits of one option over another less obvious.

On examination of the sum of the consolidated ratings for all options presented in Table 4-1 we see that the range of ratings is between 26 and 30. Two options score 30 or more in the assessment. These were progressed to Stage 2 of the assessment. Option 28 Maynooth East scored 29 on the ratings but this was not progressed to Stage 2 of the assessment as the option exhibits the potential for significant archaeological impacts, it fronts the curtilage house Carton House over the full extent of the site and is hydrologically linked to the and associated Carton special area of conservation.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39 Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
1.1	Alignment with Customer Requirements Specification									

In respect of Alignment with Customer Requirements Specification variance arises between options principally in respect of the available space on the site and the shape of the site in respect of meeting the sequencing of facilities need on the site. Sites which are located less than 28km from the city centre are marked better than others. Sites which require fewer turnbacks or crossovers score better than others.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39 Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
1.2	Transport Costs & Operational Characteristics									

On Transport Costs and Operational Characteristics site options on the DART+ West line performed better than those on the DART+ South West line due to greater benefits associated with latent demand and release of train units to other lines. The capital and operational costs are also significant in distinguishing between options with the additional costs associated with the supplementary electrification and twin tracking necessary for some options influencing the outcome.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39 Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
1.3	Change in Land Value									
1.4	Transport User Benefits									
1.5	Site Security									

For Change in Land Value and Transport User Benefits, all options perform equivalently but we acknowledge the benefits of facilitating network wide service delivery with the implementation of the depot. For Site Security examination of the sites identified limited variation and as such all have been rated neutral in this regard.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39 Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
2.1	Impacts on existing accessibility									
2.2	Freight Access									

In respect of Impacts on Existing Accessibility there is significant variation between options on the degree to which they affect access during construction and in the permanent condition. In the case of Options 30, 33, 40 and 42, the access to existing residential areas, community facilities, places of employment and road network will be largely unaffected by the proposed works. In respect of Option 41 there is potential for the option to sever L2004 within Whitechurch Townland which brings traffic across the Grand Canal and provides a link to the N7 National Road. There is also potential to sever the L2007 Straffan Road which runs from north west to south east and provides access across the Grand Canal at Baronrath Bridge. It has the potential to have significant effects on existing access to residential areas, community facilities, places of employment and road network are likely due to longer detours. Freight Access is unaffected for all options.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39 Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
3.1	Social Impacts									

Benefits accrue at all sites in respect of Social Impacts due to the fact that the proposed depot will enable the service delivery of the DART+ Programme and the network wide benefits that are associated with it. Additional benefit is accrued for those sites which enhance the prospect for DART+ service deliver to Kilcock through the implementation of enabling infrastructure.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39 Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
4.1	Change in Quality of Public Realm									

The alternative sites are relatively curtailed in their interaction with local urban public realm. All options perform equivalently in this regard.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
4.2	Existing Transport Network and Service Impact:									

Options interaction with the existing local transport network and service is varied. Where extension of electrification or twin tracking is required, the existing railway service will be affected during construction and existing bridges over the railway may be affected. In some instances, the sites require the construction of new bridges to access the site.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
4.3	Material Assets: Property									

Each of the sites has been rated significantly negative impact in respect of Material Assets: Property except Option 42 where the impacts on agricultural, equine, residential, commercial and community properties were considered to be slightly less than for other options.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
4.4	Built Services (Utilities)									

Each of the sites was examined to determine the scale of impact on existing utilities associated with them. Options 33, 39 and 40 performed better than others in this regard.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
4.5	Soils & Geology (incl Waste)									

Options 28 and 40 performed better than other options in respect of Soils and Geology Impacts as the ground conditions and lie of the land appear to be superior to other options and they no geological heritage features were identified on the sites. Options 28 and 41 perform poorer than other options due to the recorded presence of geological heritage features present on the sites which may affect implementation.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
4.6	Planning Applications									

Each option has been examined in respect of Planning Applications which have been granted on the sites and for refused decisions which are aligned with the proposed depot works. In this instance options performed equivalently except for Option 30 where An Coimisiún Pleanála refused permission for a DART+ Programme railway depot. For Option 26, the depot site is within a large scale approved residential development at Barnhill (Fingal Reg. Ref. SHDW/005/21; ABP Ref. 314125 (Quashed Case), 320560 (Remitted Case)) which was granted planning permission in 2023, and also overlaps with a section of a development for a upgrade works to Maynooth wastewater pumping station which includes a new pipeline (c.9.8km) along the R149 (Kildare Reg. Ref. 22/784; ABP Ref. 315725).

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
4.7	Zoned Land, Land Use Planning and Spatial Planning									

Each of the options are rated in respect of Zoned Land, Land Use Planning and Spatial Planning, each of the sites was examined in respect of planning policy. Options 30, 32 and 33 perform better than others due to the presence in the Kildare County Development of objectives supporting the implementation of the DART+ extension to Kilcock.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins

5.1	Collisions & Related Impacts									
5.2	Other Safety Impacts									

Collisions & Related Impacts looks at safety related consequences associated with each site. Options which require extension of electrification and twin tracking are rated more negatively than other options. In respect of Other Safety Impacts, the assessment acknowledges the safety benefits incurred across the full extent of the proposed DART+ Programme service implementation and the associated modal shift which is anticipated consequent on this.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
6.1	Climate Action Impact									

In respect of Climate Action Impact, the implementation of the proposed depot facilitates the implementation of DART+ Programme services with consequent climate benefits. All options have been rated equivalently as the same benefits apply for all potential depot locations.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
6.2	Climate Adaption Impact									

Climate Adaption Impact relates to vulnerable climate related features in the vicinity of the site such as landscape with landslip sensitivity, downstream flood vulnerability and the like which affect transport infrastructure. A project may enhance robustness and resilience of the transport network through measures which address existing interfacing weaknesses. The outcomes are typically negative but some more negative than others.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
7.1	Biodiversity Impacts									

Variability in respect of Biodiversity Impact relates principally to the proximity and connection to nearby designated areas, including the Royal Canal pNHA and the European sites downstream.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
7.2	Water Resources Impacts									

Each of the sites was examined in respect of Water Resources Impacts as described in Section 4 above. All but one of the sites exhibits exposure to flood risk. Options 30 and 40 exhibit the greatest vulnerability to flood risk. Option 28 exhibits no evidence of exposure to flood risk. Flood risk was the dominant issue in the assessment and is evidenced under both the water resources sub-criteria and the climate adaption sub-criterion.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
7.3	Landscape & Visual Quality									

Options are typically envisaged to have a significantly negative impact on Landscape and Visual Quality. Option 30 is rates Negative Impact due to the low-lying setting of the site and the lack of protected scenic routes or hilltop views in the vicinity of the lands, however, this option adjoins three protected views of the canal from bridges.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
7.4	Cultural & Heritage Impacts									

In respect of Cultural & Heritage Impact, Options 28, 32 and 40 exhibit the most significant impacts while all sites manifest some degree of impact protected and listed heritage structures.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
7.5	Noise & Vibration Impacts									

Potential Impact Ratings (PIR) for Noise & Vibration Impacts range between 60 and 3250. Although some options have few sensitive receptors, the requirement to extend electrification to certain sites will result in increased noise levels associated with the approaches to the site.

	Criteria	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
7.6	Air Quality Impacts									
7.7	Electromagnetic Compatibility Impacts									

Air Quality and Electromagnetic Compatibility Impact assessments result in equivalence between the options. All have been rated Neutral Impact under these criteria. The consolidated criteria are presented in Table 4-20 below.

Table 4-20 MCA Consolidated Stage 1 Summary

	Sub-Criteria Consolidation	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
1	Transport User Benefits and Other Economic Impacts									
2	Accessibility Impacts									
3	Social Impacts									
4	Land Use Impacts									
5	Safety Impacts									
6	Climate Change Impacts									
7	Local Environment Impacts									
	Criteria Consolidation									
	Overall Rating	27	29	30	28	30	28	28	26	28
	Progress To Stage 2	No	No	Yes	No	Yes	No	No	No	No

On consolidation of the outcome of the sub-criteria analyses, we can see that Options 30 and 33 step ahead of others in the assessment. When we recast the consolidated table to examine performance relative to the average outcome across the options for each criterion, see **Table 4-21**, we see that Options 30 and 33 perform notably better than other options with total scores of 1.44 and 2.04 respectively. They perform better than or equivalent to other options under four of seven TAF criteria. Although Option 28 appears to perform well on face value, it performs poorer or equivalent to Options 30 and 33 on five of the seven criteria but the overall score of 0.57 is significantly lower than that of Options 30 and 33. While the TAF approach leads to the correct outcome, the comparative table better illustrates the appropriateness of the outcome.

Table 4-21 MCA Comparative Summary

	Option 26: Allenswood	Option 28: Maynooth East	Option 30: Maynooth West	Option 32: Kilcock West	Option 33: Kilcock West Site No.3	Option 39: Hazelhatch West	Option 40: Castledillon	Option 41: Whitechurch	Option 42: Sallins
1	Transport User Benefits and Other Economic Impacts	0.18	-0.02	0.58	-0.22	0.18	-0.02	-0.02	-0.62
2	Accessibility Impacts	-0.44	0.06	0.56	-0.44	0.56	-0.44	0.56	-0.94
3	Social Impacts	-0.22	-0.22	-0.22	0.78	0.78	-0.22	-0.22	-0.22
4	Land Use Impacts	-0.93	0.17	0.17	-0.03	0.67	-0.03	0.37	-0.53
5	Safety Impacts	0.06	0.06	1.06	0.06	0.06	0.06	-0.44	-0.44
6	Climate Change Impacts	-0.06	0.44	-0.56	-0.06	-0.06	0.44	-0.56	-0.06
7	Local Environment Impacts	-0.11	0.09	-0.11	-0.21	-0.11	0.39	-0.21	0.19
	Total Differential Score	-1.56	0.57	1.44	-0.16	2.04	0.14	-0.56	-2.06

LEGEND Better than Average of Other Options Equivalent to Average of Other Options Poorer than Average of other Options

5. Stage 2 Multi-Criteria Analysis

Muti-criteria analysis stage 2 was carried out on the shortlisted sites. They are Option 30 Maynooth West and Option 33 Kilcock West Site No.3. The process is largely aligned with that of mca1 but with a more detailed level design completed for the shortlisted options, some of the criteria assessments are adjusted at MCA2 stage. The detail of the assessments is described in Section 4.

The design of the shortlisted options was further advanced prior to implementation of the MCA2 assessment. The designs are described below with details of the key impacts associated with each, and an image of the developed design.

Option 30 Maynooth West



Figure 5-1 Option 30 Maynooth West Layout

This option is located between Maynooth and Kilcock on the Sligo Line. It is approximately 29km from the city centre and was the site proposed as part of the DART+ West Draft Railway Order for the location of a new depot in July 2022. The site was rejected by An Coimisiún Pleanála as part of the DART+ West Railway Order, principally due to flooding concerns but also due to concerns over cultural heritage sites affected by the proposed development. The site accommodates effective access to the Maynooth Line. Salient characteristics of this site include the following:

- Existing Transport Network: This option requires construction of a new 100m long bridge over the canal and railway to access the site from the R148;
- Biodiversity: The Royal Canal pNHA runs along the northern boundary of the site for a distance of 2.7km. There are 1.2km of mature treelines within the site footprint. Tributaries of the Lyreen cross the site that are connected to the Rye Water/ Carton SAC 3.5km downstream;
- Soils and geology: There is a net deficit of approximately 284,000m³ in earthworks materials associated with this option;
- Property: No direct impacts on commercial and residential properties, however residential estates are located immediately east and west of the option. Gheel autism unit is located approx. 80m south of the depot site. This option has Direct Impacts on 68.9 Ha of agricultural land;
- Flood risk: The proposed location is located in Flood Zones A and B. A significant bank of work has been done on modelling this site for flood risk. The site is significantly more complex than the site as Kilcock West. There are multiple sources of flood risk associated with this site including the Ballycaghan stream, the Royal Canal, the Lyreen River and an existing stream

located to the south west of the site. Modelling concludes that the flood metrics demonstrate a highly negative impact as a result of development in this location;

- Cultural Heritage: This option has potential for indirect impacts on Chambers Bridge and Lock (RPS no. B05-35 and NIAH no. 11900504) which is located approximately 10m northeast of site boundary. There is potential for direct impacts on two archaeological heritage sites (SMR KD005-033- and SMR KD005-003);
- Air and Noise: large number of residential receptors (existing and in construction) within 300m at the southern end of the depot site.

The principal issues associated with this site include flood risk, impacts on adjacent residential, commercial and care properties and operational issues associated with start and end of service.

Option 33 Kilcock West Site No.3

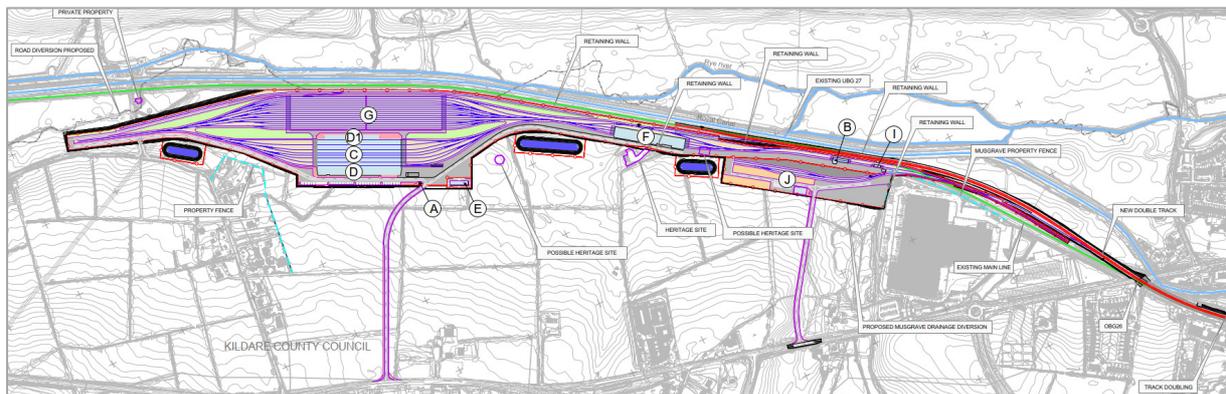


Figure 5-2 Option 33 Kilcock West Site No.3 Layout

This option is located on the DART+ West line immediately west of Kilcock. It is approximately 35km west of the city centre fronting the railway and is located at the western extremity of the proposed DART+ network. The site accommodates effective access to the Maynooth Line. It is also upstream of the Rye River and the Royal Canal. Salient characteristics of this site include the following:

- Biodiversity: The Royal Canal pNHA runs along the northern boundary of the site for a distance of 2km. There are two watercourses within the site that are connected to the Rye Water, which is connected to the Rye Water / Carton SAC 8.5km downstream. There is 900m of mature treelines and 1.9ha of wet grassland/ wet grassland mosaic habitat within the site footprint;
- Soils and geology: There is a net deficit of approximately 60,000m³ in earthworks materials associated with this option;
- Cultural Heritage: This option has potential for direct impacts on one archaeological heritage site, and one potential enclosure site, which are located within the site boundary. This option has potential for indirect impacts on Ferns Lock Station (RPS no. 91506 and NIAH no. 14404903) which is located approximately 39m northeast of site boundary;
- Material Assets - Property: It has potential for direct impact on one commercial property. Parke House Nursing Home is located approx. 190m south of the site. Tir na nOg Montessori Preschool is located approx. 270m south of the site. This option has direct impacts on 54.2 Ha of agricultural land, and indirect impacts on one equine property;

- Flood Risk: This site is within Flood Zones A and B. Examination of published flood mapping indicates the site is not subject to flood risk, however the depot area may be affected by flooding from an upstream tributary stream which discharges under the railway and canal into the Ryewater. Preliminary modelling identifies an area of Flood Zone that will be displaced by the depot construction. Flood modelling of the site has concluded that the flood impact rating for this site option is Negative Impact.

The principal issues associated with this site include flood risk and impacts on adjacent residential, commercial and care properties.

The detailed MCA is included in **Appendix F** to this report. The outcome of the analysis is summarised in **Table 5-1** below:

Table 5-1 MCA Stage 2 summary

	Parameter		Criteria	Option 30 Maynooth West	Option 33 Kilcock West	
1	Transport User Benefits and Other Economic Impacts	1.1	Alignment with Customer Requirements Specification			Highly Positive Impact
		1.2	Transport Costs & Operational Characteristics			
		1.3	Change In Land Value			
		1.4	Transport User Benefits			
		1.5	Site Security			
2	Accessibility Impacts	2.1	Impacts on existing accessibility			Positive Impact
		2.2	Freight Access			
3	Social Impacts	3.1	Social Impacts			Slightly Positive Impact
4	Land Use Impacts	4.1	Change in Quality of Public Realm			Neutral Impact
		4.2	Existing Transport Network and Service Impact:			
		4.3	Material Assets: Property			
		4.4	Built Environment (Utilities)			
		4.5	Soils & Geology (incl Waste)			
		4.6	Planning Applications			
		4.7	Zoned Land, Land Use Planning and Spatial Planning			
5	Safety Impacts	5.1	Collisions & Related Impacts			Negative Impact
		5.2	Other Safety Impacts			
6	Climate Change Impacts	6.1	Climate Action Impact			Highly Negative Impact
		6.2	Climate Adaptation Impact			
7	Local Environment Impacts	7.1	Biodiversity Impacts			Highly Negative Impact
		7.2	Water Resources Impacts			
		7.3	Landscape & Visual Quality			
		7.4	Cultural & Heritage Impacts			
		7.5	Noise & Vibration Impacts			
		7.6	Air Quality Impacts			
		7.7	Electromagnetic Compatibility Impacts			
			Criteria			
			Sub-Criteria Consolidation	Option 30 Maynooth West	Option 33 Kilcock West	
1			Transport User Benefits and Other Economic Impacts			
2			Accessibility Impacts			
3			Social Impacts			
4			Land Use Impacts			
5			Safety Impacts			
6			Climate Change Impacts			
7			Local Environment Impacts			
			Criteria Consolidation			
			Overall Rating	27.0	28.9	
			Emerging Preferred Option	No	Yes	

The outcome of the multi-criteria analysis indicated that Option 33 Kilcock West performs better than the Option 30 Maynooth West. From the Consolidated Summary it is evident that Option 33 performs better than Option 30 under Social Impacts, Land Use Impacts and Climate Change Impacts. This however is not the full picture. **Table 5-2** below provides a summary of all salient instances where we see differing performances between Options 30 and 33.

Table 5-2 Criteria Comparison

Sub Criteria	Option 30 Maynooth West	Option 33 Kilcock West Site No.3
Transport User Benefits and Other Economic Benefits	Operational Performance / Cost: Option 30 is closer to the city centre and consequently exhibits shorter empty running time associated with service initiation and termination. The Capital and Operational Costs for this option are lower than those of Option 33.	Operational Performance/Cost: Located further from the city centre this option exhibits greater empty running time as service initiation and termination. Capital and Operational Costs are also higher.
	Transport User Benefits: This option does not implement enabling works associated with the delivery of DART+ services from Kilcock station, included in planning policy.	Transport User Benefits: This option implements enabling works associated with the delivery of DART+ services from Kilcock station including twin tracking, electrification and bridge replacement.
Land Use Impacts	Existing Transport Network: This option requires construction of a new 100m long bridge over the canal and railway to access the site from the R148. This option requires the realignment of the L5041 over the canal and railway.	Existing Transport Network: This option requires no additional access bridges for the depot but requires online replacement of Allens Bridge, OBG26. This can be done while maintaining local road traffic. This option also requires the realignment of the L5041 over the railway and canal.
	Material Assets- Property: This option has Direct Impact on 68.9ha (permanent acquisition) on seven agricultural holdings. There will be significant or greater impacts on six of the seven agricultural properties. There is a moderate indirect impact on one equine property. There is no impact on non-agricultural property.	Material Assets- Property: This option has Direct Impact on 54.2ha (permanent acquisition) on six agricultural holdings. There will be significant or greater impacts on three of the six agricultural properties with land severance on one property. There is a minor to moderate indirect impact on one equine property. There is a minor direct boundary impact on a commercial premises
	Soils and Geology: The earthworks deficit associated with this site is estimated to be 285,000m ³	Soils and Geology: The earthworks deficit associated with this site is estimated to be 60,000m ³ .
	Planning Applications: It is noted that this site option was the subject of a previous refusal by An Coimisiún Pleanála in respect of a proposed depot as part of the DART+ West Railway Order Application	Planning Applications: There is no historical decision in respect to this property for a transport depot
Local Environment Impacts	Climate Adaptation: This site exhibits greater vulnerability to fluvial and pluvial flooding and requires the most mitigation.	Climate Adaptation: This site exhibits lower vulnerability to fluvial and pluvial flooding than Maynooth West. It would be easier to adapt Kilcock West to the impact of climate change.
	Flood Risk: This site is in Flood Zones A and B. This site is vulnerable to flood risk from the Ballycaghan stream, the Royal Canal and the Lyreen River. The flood risks issues associated with this site are considered sufficiently significant to warrant the overall Water Resources rating being set to Highly Negative Impact.	Flood Risk: This site is in Flood Zones A and B This site is vulnerable to flood risk from a tributary stream of the Rye River. The scale of mitigation measures is modest in comparison to Option 30, involving attenuation of the flow from drainage ditches passing under the depot from the south. Compensation will be required for loss of floodplain as result of diversion of the local road to Farren's Lock. This option is rated negative Impact in respect of Flood Risk.
	Landscape and Visual: The baseline landscape / visual environment is of local Medium Significance and Sensitivity. The impact on the local landscape is Significant, while the impact on the visual environment (including visual impact on properties) is Significant.	Landscape and Visual: The baseline landscape / visual environment is of local High Significance and Sensitivity. The impact on the local landscape is Very Significant, while the impact on the visual environment (including visual impact on properties) is Very Significant.

In summary Option 33 Kilcock West Site No.3 performs better than Option 30 Maynooth West under six of nine distinguishing comparators. Of a total of 25 comparators, Option 33 performs equivalent to or better than Option 30 on 23 comparators. This shows that Option 33 Kilcock West No.3 is clearly a better site for housing the proposed DART+ Programme depot than is Option 30 Maynooth West.

6. Conclusion

This report has been prepared to document the Site Selection process for the proposed DART+ Programme Depot. The Site Selection Process is illustrated on the graphic in **Figure 2-1**, reproduced opposite.

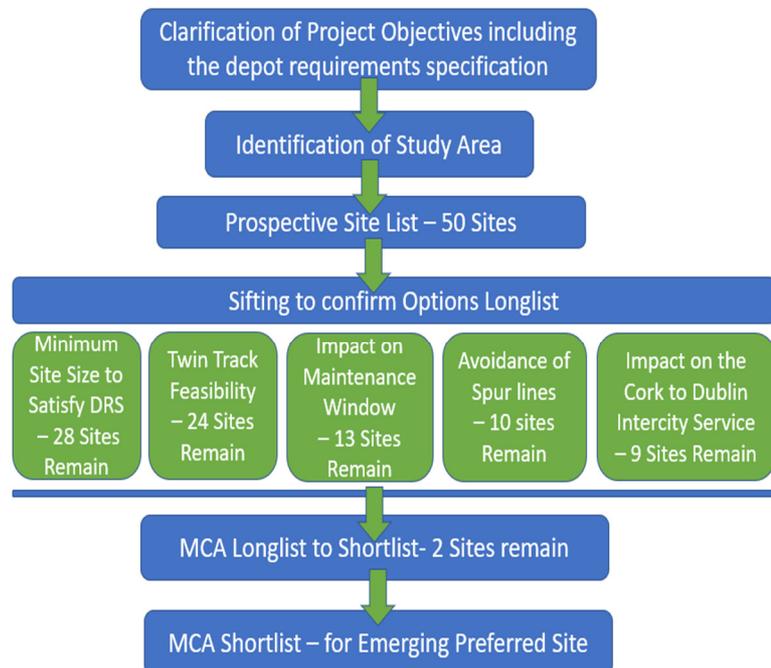
50 No. prospective sites were initially identified across a study area which included the proposed DART+ Programme extent and 10km beyond the extent of the proposed service along each of the relevant lines.

The prospective site list was sifted to a longlist of 9 sites using alignment with the DART+ Depot Project Objectives, set out in Section 1, as the principal mechanism for sifting. The sites included in the longlist were all along the DART+ West and DART+ South West routes.

A multi criteria analysis (mca) aligned with the Transport Appraisal Framework Guidelines was carried out on the longlist of sites which resulted in the identification of a shortlist of 2No. sites for more detailed evaluation and a further stage of mca. The shortlist sites were Option 30 Maynooth West and Option 33 Kilcock West No.3. Following an exercise of design development of the sites and further characterisation of the sites, a second stage of multi-criteria analysis was carried out which identified Option 33 as the Emerging Preferred Option for the proposed DART+ Depot site location.

From Section 6 above it is evident the Option 33 Kilcock West Site No.3 is a better site than Option 30, the Maynooth West Site. The principal benefits of Option 33 over Option 30 are as follows:

- Kilcock West Site No.3 does not display the same vulnerability to flood risk that is evident for Maynooth West. This is because the hydrology of the Royal Canal, the Lyreen River the Ballycaghan Stream create significant floodplains and the restriction of the Lyreen under the canal and railway at the Jacksons Bridge siphon result in increased flood risk vulnerability at the Maynooth site. The site west of Kilcock performs significantly better in respect of flood risk;
- In considering climate adaptation the superior flood risk performance of Kilcock West Site No.3 as set out above better assures the resilience of downstream arterial networks. Kilcock West Site No.3 is superior to Maynooth West in respect of Climate Action;
- Kilcock West Site No.3 has lower impact on properties than does Maynooth West. The impacts associated with Maynooth West, requiring approximately 30% less land;
- It is necessary to import earthworks materials to the depot sites. The quantum if import is higher for Maynooth West than is necessary for Kilcock West Site No.3, by approximately 223,000m³.



- The depot footprint for Kilcock West Site No.3 is significantly smaller than that for Maynooth West. This is due to the quantum of compensatory storage required for Maynooth West and the more challenging access configuration for the site.
- There is significant operational advantage of the Kilcock site over the Maynooth site. For start of operations, trains can depart the Kilcock West Site No.3 depot in a straightforward manner travelling east. For start of operations from the Maynooth West depot trains will need to depart travelling west on the southern track and drive through Kilcock station. After stopping west of the station on a dedicated siding the driver will need to walk to the remote end of the train without dismounting. They will then need to drive east, crossing to the northern track before stopping at the northern platform to pick up passengers. Every train departing the Maynooth West depot for Kilcock would need to implement this procedure;
- The achievement of road access to the Maynooth West Site is significantly more challenging than it is for access to the Kilcock West Site No.3 with the construction of a 100m long bridge and associated embankments necessary for Maynooth West;
- Option 30: Maynooth West has been the subject of a previous planning refusal for a DART+ programme depot by An Coimisiún Pleanála. The negative decision focused on flood risk and archaeological risk;
- The location of a proposed depot on a site west of Kilcock enhances the potential for implementation of DART+ services from Kilcock in line with policy. This is because it is necessary as part of the depot development to extend the electrification and the twin track configuration through Kilcock to the depot site.

Based on the outcome of multi-criteria analysis stage 2, it is evident that Option 33 Kilcock West Site No.3 has emerged ahead of other competing sites. There are clear advantages of Option 33 over Option 30 as set out in **Table 5-2**. It is noted that the flood mitigation measures associated with this option are less onerous than those required at the Maynooth West site. It is also noted that the location of a depot west of Kilcock requires the implementation of the Works which serve as enabling measures necessary for the extension of the DART+ services to Kilcock currently in planning policy.

Option 33 Kilcock West Site No.3 meets the Project Objectives as set out in Section 1.0 of this report in full. It will facilitate the delivery of a depot to enable service delivery for the DART+ Programme train service specification.

Having completed an options selection process taking account of the Project Objectives and aligned with the Transport Appraisal Framework Guidelines, it is recommended that Kilcock West Site No.3 be progressed as the Emerging Preferred Option for the DART+ Depot.

ANNEX A: Depot Requirements Specification

A1.1 Depot Requirements Specification

From the outset of the project, the design team engaged with the departments of the Chief Mechanical Engineer (CME) the Chief Civil Engineer (CCE) and the Operations Department of Iarnród Éireann with a view to distillation of a clear Depot Requirements Specification for the project which set out the needs of the DART+ Programme in respect of a proposed maintenance and stabling depot. The outcome of the engagement is summarised below:

Depot Requirements Specification

1. Fleet: Up to 750 EMU / BEMU carriages to be maintained at the state of the art Depot / up to 320 to be berthed (300 stabling and 20 in service slab). Both current and new fleet trains are to be stabled and maintained.
2. The depot track layout, the main building and service slab building shall be dual-ended to maximise operational flexibility.
3. As a minimum the site should have two distinct railway accesses to / from the mainline and should accommodate access from both directions.
4. Sequential Processes are required to the maximum degree with stabling offline. On highly constrained sites, positioning of the maintenance shed and stabling offline may be considered. This compromise arrangement would result in significant additional shunting with consequent reduction in efficiency and increased track and wheel degradation. It will also present a greater challenge for managing the safe operation of the facility and should only be considered for very restricted sites.
5. Maintenance tracks to be provided as follows:
 - 4 No. light maintenance tracks;
 - 2 No. heavy maintenance tracks;
 - 3 Service slab tracks;
6. 1 No. deep cleaning facility with painting cabin;
7. 1 No. wheel lathe;
8. 1 Automatic Wash Plant (AWP);
9. 1 Automatic Vehicle Inspection (AVI) unit.
10. Staff and carpark
 - 359 staff to be accommodated as per v12 of shift pattern;
 - Carpark: to accommodate parking for 178 cars, 16 motorbikes and 45 bicycles.
11. Nominal Minimum Site Dimensional Requirement
 - Area – 30 Ha;

- Dimensions – 1.5 km x 350m wide or 2.2km x 250m wide dependant on sequencing.

12. Depot Facilities: The following depot facilities are required to service the proposed fleet.

- Main building: 250 m x 115 m
- Stabling: 420 m x 90 m
- Service Slab: 200 m x 30 m
- AWP: 52 m x 12 m (plus one train after and before AWP, FLU total length is 168 m)
- AVIS: 30 m x 9 m
- Headshunt lengths: 200 m
- Waiting track length: 250 m

Engagement with the IÉ CCE department permitted distillation of the following track alignment design criteria for a proposed depot.

Table A-1 Depot Alignment Geometric Design Criteria

Alignment parameters for tracks within the Depot	
Maximum design speed in Depot	30 km/h (20 mph)
Maximum operational speed in Depot	8 km/h (5 mph) / 15 km/h (10 mph)
Horizontal alignment	
Minimum radius in Depot	200 m desirable
Minimum straight length between reverse curves	From 13.13 m to 6 m
Turnouts	
Radius	P8:8
Max. speed for branch line	30 km/h
Vertical alignment	
Maximum gradient of siding tracks	0.2% (1:500) (0% IÉ preference)
Maximum gradient of other tracks	1% (1:100)
Desired minimum vertical parabolic parameter (1%g and jointed track)	1000 m
Minimum vertical element length	20 m
Distance axis-to-axis (concrete +0.002 m)	
Third running track	5.18 m
Siding and running track	4.70 m
Siding track	4.07 m
Shunting tracks	5.00 m
Distance between berthed trains	6.00 m
Minimum straight approaching the buffer stop	16.00 m

The Depot building requirements are set out in **Table A-2** below:

Table A-2 CME Depot Space Requirements

Depot Component	Dimensions (m)	H (m)	L(m)	W (m)	No	Area (m2)
Head Shunt Road Up			250	5	2	2500
Reception Road to AVW			500	14	1	7000
Automatic Vehicle Inspection Unit + Future AVI x 5.4m high	20 x 6.0	5.4			2	
Train Wash + Future wash x 5.4m high	41.6 x 9.6	5.4			2	
Service Slab / Inspection & Sanding Bay x 5.4m high	186 x 25.5	5.4	450	35.5	1	15975
Stabling	354 x 81.5		900	94.5	1	85050
Turnouts / Switches - 64No						
Head Shunt Road Down			250	5	2	2500
Maintenance Building + General Storage x 11.4m high	216 x 95.6	11.5	800	110.6	1	88480
Main Office, Admin, Staff, training						
Wheel Lathe x 5.4 - In Main Bldg	(41.6 x 9.6)	5.4	41.6	9.6	1	399
Trackwork for Secondary AVI & ATW			900	18	1	16200
Reserve Area, Waste Yard, Secondary Storage	80 x 40		100	55	1	5500
Substation x 5.4m high	35.4 x 10.6	5.4	35.4	10.6	1	375
Security Building x 3.5m high	5.5 x 5.0	3.5	5.5	5	1	28
Test Track	8.0 x 1000		1000	8	1	8000
Car Parking 178			445	10	1	4450
Access Roads			6300	8	1	50400
Drainage Attenuation			300	50	1	15000
Environmental Bunding			4200	10	1	42000
Nominal Length			2.1km	Total Area	34 Ha	

Note: The above table excludes a length of 350m mainline interface

From the above the minimum dimensional requirements for identification of prospective depot sites were set as follows: Minimum Area - 30Ha, Minimum Dimensions 2.2km x 250m wide or 1.5km x 350m wide.

A CCE Compound is also needed at the Depot location to facilitate ongoing maintenance activity on the relevant line. The CCE Compound Provisions are as follows:

Table A-3 CCE Compound Requirements

Compound Component	Dimensions (m)	H (m)	L(m)	W (m)	No	Area (m2)
CCE Maintenance compound	67 x 14.6		67	14.6	1	978
CCE Maintenance Building x 5.4m high	35 x 20	5.4	35	20	1	700
Access Roads			306	8	1	2448
Drainage Attenuation			50	25	1	1250
Environmental Bunding			306	10	1	3060

In order to confirm that the number of car park spaces identified as required for the staff working on the Depot (as stated in point 10 above) is in line with the Local Authorities' provisions, the published requirements of Meath, South Dublin and Kildare County Councils were examined. The considerations are presented below.

A1.1 Local Authority Provisions for Parking facilities associated with Development

Meath County Council

Car parking requirements of Meath County Council are defined in the Meath County Development Plan 2021 to 2027, specifically in Document 11: Development Management Standards and Land Use Zoning Objectives, Chapter 9: Parking Standards. Table 11.4 – Car Parking Standards outlines the number of car parking spaces required based on land use, reproduced below in **Table 3-4**.

Table A-4 Proposed Parking Provisions MCC

Land Use – Residential	Car Spaces
Manufacturing Industry	1 per 50 sq.m. gross floor area
Offices	1 per 25 sq.m. gross floor area. Where the floor area exceeds 1,500 sq.m. gross floor area, 1 space per 50sq.m. gross floor area.

The following provisions and notes apply:

- Where parking is visible to the general public, appropriate soft landscaping must be provided to reduce the visual impact of hard-surfaced areas.
- Parking areas must be used exclusively for vehicle parking and not for the storage of materials, goods, or heavy vehicles associated with the development.
- The standards in Table 11.4 apply to all new developments, including new constructions, extensions, or material changes of use of existing buildings.
- Accessible car parking spaces must generally be provided at a rate of 5% of the total number of spaces for developments requiring more than 10 spaces, with a minimum of one space unless otherwise justified. These spaces must be located near building entrances and comply with Building Regulations.
- Age-friendly parking spaces should be provided where feasible in all developments.
- Non-residential parking standards are considered maximum thresholds.
- All parking areas must be clearly marked and numbered using indelible paint, which must be permanently maintained to the satisfaction of the Planning Authority.

Table A-5 – Car Parking Bay Dimensions provides the requirements for parking bay sizes.

Table A-5 Parking Bay Dimensions

Scenario	Dimensional Requirements
Parking dimensions (Perpendicular to Kerb)	5.0m x 2.5m
Parking dimensions (Parallel to Kerb)	6.0m x 2.5m
Accessible Parking Bay to comply with Building Regulations.	5.0m x 2.5m + 1.2m to the sides and rear of each space
Loading Bay	6.0m x 3.0m
Circulation Aisles	6.0m in width

Additional Meath County Council guidance is as follows:

- The visual impact of large parking areas should be mitigated through screen planting, low walls, and the use of varied paving textures or colours. Consideration must be given to visitor parking and parking for persons with disabilities.
- Provision of Electric Vehicle (EV) charging points is encouraged. Regarding EV infrastructure, the plan references the Climate Action Plan 2019. Furthermore, all car parks shall include the provision of necessary wiring and ducting to be capable of accommodating future Electric Vehicle charging points, at a rate of 10% of total space numbers. Additionally, in any car park with more than 20 spaces and public access, at least one fully functional EV charging point must be provided in accordance with IEC 61851 Standard for Electric Vehicle Conductive Charging Systems. Cycle Parking Standards Additionally, in any car park with more than 20 spaces and public access, at least one fully functional EV charging point must be provided in accordance with IEC 61851 Standard for Electric Vehicle Conductive Charging Systems.
- The Council also requires the provision of appropriate cycle parking facilities in new developments, in accordance with Table 11.6 – Cycle Parking Standards, reproduced in **Table A-6** below.

Table A-6 Cycle Parking Standards.

Type of Development	Cycle Parking Standard
Offices	10% of employee numbers subject to minimum of 10 bicycle places or one bike space for every car space, whichever is the greatest.
Other developments.	1 bike space per car space, or 10% of employee numbers in general

Table A-7 Summary of Meath Council Parking Provisions

Parking Provision	Requirement	Proposed No of Spaces	Dimensions
Main building: 250 m x 115 m			
Car parking spaces	1 per 50m ² = 575	178	2.5 m x 5.0 m
Disabled parking spaces	5% of the total number of spaces=29		2.5 m x 5.0 m +1.2m to the sides and rear
Electric car spaces	10% of total space numbers=58		
Motorbike spaces		16	
Cycle spaces		45	
CCE building: 35m x 20 m			
Car parking spaces	1 per 50m ² = 14	14	2.5 m x 5.0 m
Disabled parking spaces	1 in every 20 = 1		2.5 m x 5.0 m +1.2m to the sides and rear
Electric car spaces	1 in every 5 = 2		
Motorbike spaces		2	
Cycle spaces		5	

South Dublin County Council

The parking requirements for South Dublin County Council are set out in the South Dublin County Development Plan 2022–2028. These standards are detailed in Tables 12.25 and 12.26, which outline the maximum parking rates for both non-residential developments.

Parking rate that applies in this situation is Zone 1: General rate applicable throughout the County.

Provision of car sharing/pooling spaces is encouraged and does not count toward the maximum parking rates in Table 12.25, reproduced in **Table A-8** below.

Table A-8 Maximum Car Parking Standards.

Category	Land-Use	Zone 1
Enterprise and Employment	Offices11 Manufacturing	1 per 50 sq m GFA
	Warehousing	1 per 100 sqm GFA

Table 12.25 of the plan includes provisions for the loading and unloading of goods and disabled parking and parking for electric vehicles as required by Part M of the Building Regulations, 2010 (as amended), DMURS 2019 (or as amended) and Energy Performance of Buildings Regulations 2021 (or as amended) Technical Guidance (Energy Performance of Buildings Directive Articles 8(3), 14(4) and 15(4) – Electric Vehicle Recharging Points and Building Automation and Control).

For commercial uses not explicitly listed in Table 12.25, the default parking rate shall be based on a comparable use or determined through a Transport and Traffic Assessment.

Additional factors to be considered in determining parking provision include:

- Proximity to public transport and quality of service (to be detailed in a Design Statement).
- Access to services for daily and occasional needs.
- Existence of a Workforce or Mobility Management Plan.
- Potential for multi-purpose trips.
- Car dependency levels of proposed uses.
- Proximity of residents to workplaces.
- Peak demand hours and potential for shared parking.
- Accumulation of parking rates across uses.
- Capacity of the surrounding road network.

These criteria must be addressed in any Traffic and Transport Assessment and/or Workforce Plan to justify the proposed number of parking spaces. The Planning Authority may vary maximum parking standards in specific areas through mechanisms such as SDZ Planning Schemes, Local Area Plans, Movement Framework Plans, or Area Access Studies.

The design and layout of on-street parking spaces must comply with the Design Manual for Urban Roads and Streets (DMURS) and the National Cycle Manual, particularly where adjacent to cycle paths or lanes.

- Section 12.7.5 of the Plan outlines requirements for EV charging:

- EV charging shall be provided in all residential, mixed use and commercial development and shall comprise a minimum of 20% of the total parking spaces provided, with higher provision within this range required in urban areas.
- All remaining parking spaces must be constructed to accommodate future EV charging points.
- EV charging areas must be designed to allow passive surveillance and discourage anti-social behaviour.
- Applicants must specify the charging and payment mechanism (e.g., fob, credit card) and ensure availability for both residents and visitors.
- EV charging facilities must:
 - Not interfere with shared parking allocations.
 - Not obstruct pedestrian or cycling routes.
 - Avoid locations restricted by street furniture (e.g., bollards, benches, bike racks).
 - Not impede low-carbon transport modes.
 - Not be placed at the back of footpaths to avoid trip hazards from cables.

Section 12.7.1 and Table 12.23, reproduced in **Table A-9** define the minimum bicycle parking/storage rates for all new developments. The depot is categorized as Long-Term, for employees (must be located in secure, non-publicly accessible areas).

Table A-9 Maximum Car Parking Standards.

Category	Land-Use	Long Term
Enterprise and Employment	Offices, Manufacturing	1 per 200 sq m GFA

Additional requirements:

- Long-term facilities must be weather protected.
- Short-stay parking must be within:
 - 25 metres of entrances for public uses.
 - 50 metres for offices, and similar uses.
- The number of bicycle stands must be at least one-third of the required car parking spaces, with a minimum of one stand.
- In multi-storey car parks, bicycle facilities must be located at ground floor level, segregated from vehicle traffic, with dedicated cyclist entry and exit routes.

Table A-10 Summary of South Dublin County Council Parking Provisions

Parking Provision	Requirement	Proposed No of Spaces	Dimensions
Main building: 250 m x 115 m			
Car parking spaces	1 per 50m ² = 575	178	N/A
Motorbike spaces		16	N/A
Cycle spaces	1 per 200m ² =143	45	N/A
CCE building: 35m x 20 m			
Car parking spaces	1 per 50m ² = 14	14	N/A
Motorbike spaces		2	N/A
Cycle spaces	1 per 200m ² =3.5	4	N/A

Note: Disabled and Electric Car parking requirements included in Car Parking Spaces

Kildare County Council

Chapter 15 of the Kildare County Council Development Plan 2023-2029 sets out the Development Management Standards. It addresses maximum car parking for developments in Table 15.8. For Industrial / Manufacturing Developments it identifies a maximum car parking provision of 1 space per 33 sqm of gross floor area. It notes that “the maximum provision of parking should not be viewed as a target. Lower rates of parking and car-free developments should be considered in the first instance, particularly where such developments are close to and can avail of public transport. In addition, the Council will have regard to:

- The proximity of the site to the town centre and services that fulfil day-to-day needs;
- The potential for linked trips (where multiple needs are fulfilled in one journey);
- The nature of the uses of the site and likely durations of stays;
- Park and Stride initiatives;
- The nature of surrounding uses and potential for dual use of parking spaces depending on peak hours of demand;
- Proximity to public car-parking areas;
- The need to protect the vibrancy of town centres and regenerate vacant / underused buildings;
- Any modal shift demonstrated through a Traffic and Mobility Assessment; and
- The suitability of a contribution in lieu of parking in accordance with the Development Contribution Scheme, as part of a grant of planning permission.

Kildare County Council will normally require the provision of car parking spaces within the curtilage of the site or convenient to the development. The Council requires the submission of a Mobility Management Plan with planning applications where developments include substantial parking requirements. This should outline a series of measures to encourage sustainable travel modes and reduce car-borne traffic within a development.

The local authority requires that developments prioritise the safe movement of walkers and cyclists with a requirement to provide safe segregated cycling/walking routes where developments include substantial parking requirements.

In addition to car parking standards, sufficient space will be required within the curtilage of the site for all service vehicles involved in the operation of the business or building. Set down / drop-off areas and coach parking areas should be provided as appropriate.

The minimum size of car parking spaces for a development within the jurisdiction of Kildare County Council is:

- Car parking bay: 2.5 m x 5.0 m
- Car parking bay (disability / accessible space): 5 m x 3.75 m
- Loading bays: 3 m x 6 m.
- Circulation aisles: 6 m wide.
- 5% of parking spaces in non-residential developments should be set aside for disabled parking.

The electric vehicle charging infrastructure requirements are set out in Chapter 5 Objective TM O117 to guide the proposed development, reproduced below:

TM O117 Support the Government’s targets for electric vehicles on roads by prioritising parking for Electric Vehicles (EVs) in central locations, by supporting the provision of charging facilities on public and private land. Ensure a future proofed approach to the rollout of EV charging infrastructure by means of planning decisions by applying the following requirements of the EU (Energy Performance of Buildings) Regulations 2021 (S.I. 393 2021) for Electric Vehicle recharging infrastructure:

- New buildings or buildings undergoing major renovations (other than a dwelling) shall install at least one recharging point and ducting infrastructure **for at least one in every 5 car parking spaces** to enable the subsequent installation of recharging points for electric vehicles.

Table 15.4 of Chapter 15 sets out Kildare County Council Requirements in respect of the minimum level of cycle parking provision within developments. For Industry / Manufacturing development it requires 1 space per 100sqm of gross floor space. New cycle parking shall be designed in accordance with the National Cycle Manual (2011 and any subsequent updates). Where the provision of cycle parking facilities is intended for use by the staff of a particular development, stands should be covered, well lit and located within the curtilage of developments to ensure security and supervision.

The ground floor of the Depot Maintenance Building will provide for staff amenities, offices, locker rooms, canteen, workshops and storage areas.

The parking provisions set out in **Table A-11** below are aligned with Kildare County Council requirements for an Industrial / Manufacturing development and are significantly lower than the provisions of Meath County Council and South Dublin County Council. It is clear that the proposed provisions are not excessive.

Table A-11 Proposed Parking Provisions

Parking Provision	Meath Parking Provisions	South Dublin Parking Provisions	Kildare Parking Provisions	Proposed No of Spaces	Proposed Dimensions
Main building: 250mx115m					
Car parking spaces	1 per 50m ² = 575	1 per 50m ² = 575	1 per 100m ² = 287	178	2.5 m x 5.0 m
Disabled parking spaces	5% of the total =29	included above	1 in every 20 = 15		5 m x 3.75 m
Electric car spaces	10% of total =58	included above	1 in every 5 = 58		
Motorbike spaces				16	
Cycle spaces		1 per 200m ² =143		45	
CCE building: 35m x 20 m					
Car parking spaces	1 per 50m ² = 14	1 per 50m ² = 14	1 per 100m ² = 7	14	2.5 m x 5.0 m
Disabled parking spaces	1 in every 20 = 1	included above	1 in every 20 = 1		5 m x 3.75 m
Electric car spaces	1 in every 5 = 2	included above	1 in every 5 = 2		
Motorbike spaces				2	
Cycle spaces				5	

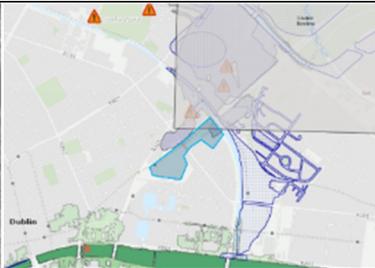
ANNEX B: Prospective Sites Summary Characterisation

Considering the criteria for identification of prospective depot locations, as set out in **Section 2.0**, a desktop study was undertaken to identify potential locations along the whole of the proposed DART+ Network + 10km beyond each extremity, contiguous with the railway. The complete Prospective Site List is as follow:

1. LINE DART + COASTAL NORTH

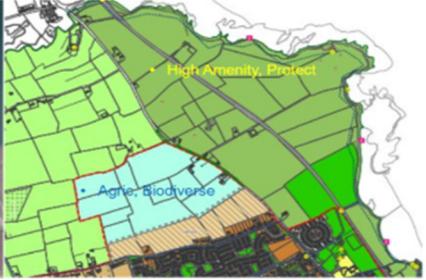
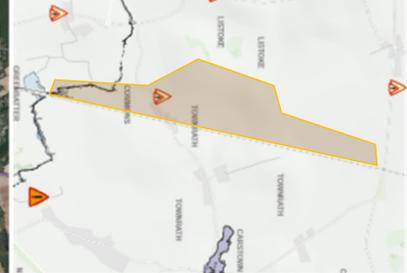
Nineteen (19) possible depot locations have been considered in the Coastal North line:

1. Option 1. East Wall Yard
2. Option 2. Conolly Depot
3. Option 3. Fairview
4. Option 4. Clontarf Golf Club
5. Option 5. Maynetown West
6. Option 6. Airport No.1
7. Option 7. Airport No.2
8. Option 8. Malahide Depot
9. Option 9. Rush & Lusk South
10. Option 10. Rush & Lusk North
11. Option 11. Skerries West
12. Option 12. Skerries North
13. Option 13. Balbriggan North
14. Option 14. Laytown South
15. Option 15. Drogheda South
16. Option 16. Drogheda Depot
17. Option 17. Drogheda North
18. Option 18. Drogheda North big area
19. Option 19. Clogherhead West

Option No	Site Name	Site Characteristics	Potential Site Layout	
1	East Wall Yard	<ul style="list-style-type: none"> • Area: 3.6 Ha • Length: 335 m • Flooding risk: yes • Distance to City Centre: 0 Km • Turnback Required Fairview 	 <p>Site Extent</p>	 <p>OPW Flood Mapping</p>
2	Connolly Depot	<ul style="list-style-type: none"> • Area: 3.6 Ha • Length: 467 m • Flooding risk: yes • Distance to City Centre: 0 Km 	 <p>Site Extent</p>	 <p>OPW Flood Mapping</p>

Option No	Site Name	Site Characteristics	Potential Site Layout	
3	Fairview	<ul style="list-style-type: none"> Area: 5.8 Ha Length: 574 m Flooding risk: yes Distance to City Centre: 1.5 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
4	Clontarf Golf Club	<ul style="list-style-type: none"> Area: 25 Ha Length: 900 m Flooding risk: Low Distance to City Centre: 3 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
5	Maynetown West	<ul style="list-style-type: none"> Area: 39.5 Ha Length: 750 m Flooding risk: yes Distance to City Centre: 9.8 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
6	Airport No.1	<ul style="list-style-type: none"> Area: 30 Ha Length: 2,900 km Flooding risk: no Distance to City Centre: 12.8 Km 	<p>Site Layout</p>	
7	Airport No. 2	<ul style="list-style-type: none"> Area: 25.3 Ha Length: 1,550 km Flooding risk: Yes Distance to City Centre: 10.8 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>

Option No	Site Name	Site Characteristics	Potential Site Layout	
8	Malahide South	<ul style="list-style-type: none"> Area: 30 Ha Length: 1,140 km Flooding risk: yes Distance to City Centre: 12.7 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
9	Rush & Lusk South	<ul style="list-style-type: none"> Area: 26.6 Ha Length: 1,160 km Flooding risk: no Distance to City Centre: 21.7 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
10	Rush & Lusk North	<ul style="list-style-type: none"> Area: 44 Ha Length: 1,950 km Flooding risk: no Distance to City Centre: 24,8 Km Turnbacks request Connolly, Add Stabling, Staff Facilities 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
11	Skerries West	<ul style="list-style-type: none"> Area: 31 Ha Length: 2,694 km Flooding risk: no Distance to City Centre: 29.6 Km 	<p>Site Extent</p>	
12	Skerries North	<ul style="list-style-type: none"> Area: 36 Ha Length: 1,810 km Flooding risk: no Distance to City Centre: 32.3 Km Castle Grounds 	<p>Site Extent</p>	<p>Zoning Map</p>

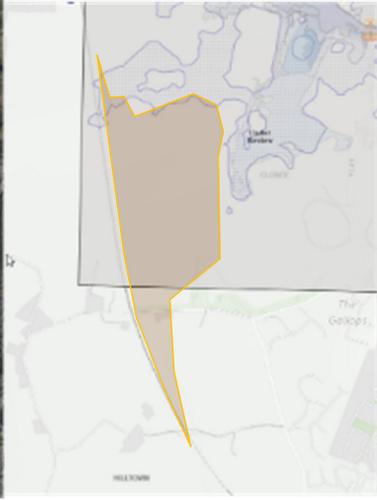
Option No	Site Name	Site Characteristics	Potential Site Layout
13	Balbriggan North	<ul style="list-style-type: none"> • Area: 41 Ha • Length: 1,930 km • Flooding risk: No • Distance to City Centre: 37 Km • Planned Port Development 	  <p data-bbox="628 678 719 701">Site Extent</p> <p data-bbox="1023 678 1126 701">Zoning Map</p>
14	Laytown South	<ul style="list-style-type: none"> • Area: 62.7 Ha • Length: 2,544 km • Flooding risk: No • Distance to City Centre: 40 Km 	 <p data-bbox="628 1050 719 1072">Site Extent</p>
15	Drogheda South	<ul style="list-style-type: none"> • Area: 30 Ha • Length: 2,750 km • Flooding risk: low risk • Distance to City Centre: 46.6 Km 	 <p data-bbox="628 1301 719 1323">Site Extent</p>
16	Drogheda Depot	<ul style="list-style-type: none"> • Area: 12,7 Ha • Length: 580 km • Flooding risk: No • Distance to City Centre: 50,5 Km 	  <p data-bbox="628 1588 719 1610">Site Extent</p> <p data-bbox="1023 1588 1198 1610">OPW Flood Mapping</p>
17	Drogheda North	<ul style="list-style-type: none"> • Area: 64 Ha • Length: 2,310 km • Flooding risk: no • Distance to City Centre: 54.7 Km 	  <p data-bbox="628 1895 719 1917">Site Extent</p> <p data-bbox="1023 1895 1198 1917">OPW Flood Mapping</p>

Option No	Site Name	Site Characteristics	Potential Site Layout	
18	Drogheda North big area	<ul style="list-style-type: none"> • Area: 198 Ha • Length: 2,813 km • Flooding risk: yes • Distance to City Centre: 54.7 Km 	<p data-bbox="624 604 719 627">Site Extent</p>	<p data-bbox="1018 604 1209 627">OPW Flood Mapping</p>
19	Clogherhead West	<ul style="list-style-type: none"> • Area: 30 Ha • Length: 2,693 km • Flooding risk: no • Distance to City Centre: 60 Km 	<p data-bbox="624 981 719 1003">Site Extent</p>	<p data-bbox="1018 981 1209 1003">OPW Flood Mapping</p>

2. DART+ WEST LINE

Fourteen (14) possible depot locations have been considered in the Coastal North line:

1. Option 20. North Wall Railway
2. Option 21. Clonee West
3. Option 22. M3 Parkway South
4. Option 23. M3 Parkway
5. Option 24. M3 Parkway North
6. Option 25. Kellystown
7. Option 26. Allenswood
8. Option 27. Collinstown
9. Option 28. Maynooth East
10. Option 29. Maynooth West big area
11. Option 30. Maynooth West
12. Option 31. Kilcock West small area
13. Option 32. Kilcock West
14. Option 33. Kilcock West Site No.3

Option No	Site Name	Site Characteristics	Potential Site Layout	
20	North Wall	<ul style="list-style-type: none"> • Area: 21 Ha • Length: 300 km • Flooding risk: yes • Distance to City Centre: 0 Km 	 <p>Site Extent</p>	 <p>OPW Flood Mapping</p>
21	Clonee West	<ul style="list-style-type: none"> • Area: 67.6 Ha • Length: 2,226 km • Flooding risk: yes • Distance to City Centre: 17 Km 	 <p>Site Extent</p>	 <p>OPW Flood Mapping</p>

Option No	Site Name	Site Characteristics	Potential Site Layout	
22	M3 Parkway South	<ul style="list-style-type: none"> • Area: 67.6 Ha • Length: 2,226 km • Flooding risk: yes • Distance to City Centre: 17 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
23	M3 Parkway	<ul style="list-style-type: none"> • Area: 30 Ha • Length: 2,692 km • Flooding risk: yes • Distance to City Centre: 20,5 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
24	M3 Parkway North	<ul style="list-style-type: none"> • Area: 50.2 Ha • Length: 2,300 km • Flooding risk: yes • Distance to City Centre: 23.6 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
25	Kellystown	<ul style="list-style-type: none"> • Area: 30 Ha • Length: 2,693 km • Flooding risk: yes • Distance to City Centre: 13.7 Km 	<p>Site Extent & OPW Flood Mapping</p>	

Option No	Site Name	Site Characteristics	Potential Site Layout
26	Allenswood	<ul style="list-style-type: none"> Area: 30 Ha Length: 2,693 km Flooding risk: yes Distance to City Centre: 16.2 Km 	<p>Site Extent</p>
27	Collinstown	<ul style="list-style-type: none"> Area: 41 Ha Length: 1,000 km Flooding risk: no Distance to City Centre: 16.2 Km 	<p>Site Extent</p> <p>OPW Flood Mapping</p>
28	Maynooth East	<ul style="list-style-type: none"> Area: 41.6 Ha Length: 1,795 km Flooding risk: no Distance to City Centre: 22.4 Km 	<p>Site Extent</p>
29	Maynooth West big area	<ul style="list-style-type: none"> Area: 112 Ha Length: 2,000 km Flooding risk: yes Distance to City Centre: 29 Km 	<p>Site Extent</p> <p>OPW Flood Mapping</p>
30	Maynooth West	<ul style="list-style-type: none"> Area: 72.7 Ha Length: 2,269 km Flooding risk: yes Distance to City Centre: 29 Km 	<p>Site Extent</p> <p>OPW Flood Mapping</p>

Option No	Site Name	Site Characteristics	Potential Site Layout	
31	Kilcock West Small Area	<ul style="list-style-type: none"> ● Area: 9.4 Ha ● Length: 910 m ● Flooding risk: yes ● Distance to City Centre: 35 Km 	 <p>Extent</p>	 <p>OPW Flood Mapping</p>
32	Kilcock West	<ul style="list-style-type: none"> ● Area: 30 Ha ● Length: 2,692 km ● Flooding risk: yes possibly from local stream ● Distance to City Centre: 35 Km 	 <p>Site Extent</p>	 <p>OPW Flood Mapping</p>
33	Kilcock West Site No.3	<ul style="list-style-type: none"> ● Area: 51.5 Ha ● Length: 2,290 km ● Flooding risk: possibly from local stream ● Distance to City Centre: 35 Km 	 <p>Site Extent</p>	 <p>OPW Flood Mapping</p>

3. DART+ South West

Nine (9) possible depot locations have been considered in the South West line:

1. Option 34. Heuston Station
2. Option 35. Inchicore
3. Option 36. Clondalkin Fonthill – Kishoge
4. Option 37. Hazelhatch East
5. Option 38. Hazelhatch East 2
6. Option 39. Hazelhatch West
7. Option 40. Castledillon
8. Option 41. WhiteChurch
9. Option 42. Sallins

Option No	Site Name	Site Characteristics	Potential Site Layout
34	Heuston Station	<ul style="list-style-type: none"> ● Area: 6 Ha ● Length: 0.57 km ● Flooding risk: no ● Distance to City Centre: 3 Km 	 <p>Site Extent</p>
35	Inchicore	<ul style="list-style-type: none"> ● Area: 28.3 Ha ● Length: 1.26 km ● Flooding risk: no ● Distance to City Centre: 5 Km 	 <p>Site Extent</p>
36	Clondalkin Fonthill - Kishoge	<ul style="list-style-type: none"> ● Area: 60 Ha ● Length: 1.58 km ● Flooding risk: no ● Distance to City Centre: 14 Km 	 <p>Site Extent</p>  <p>Existing SDZ Development across the site</p>
37	Hazelhatch East	<ul style="list-style-type: none"> ● Area: 33.3 Ha ● Length: 1.26 km ● Flooding risk: yes. Small flood zone to the east of the area. ● Distance to City Centre: 16 Km 	 <p>Site Extent</p>  <p>OPW Flood Mapping</p>

Option No	Site Name	Site Characteristics	Potential Site Layout	
38	Hazelhatch East 2	<ul style="list-style-type: none"> Area: 74.3 Ha Length: 2.48 km Flooding risk: yes Distance to City Centre: 16 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
39	Hazelhatch West	<ul style="list-style-type: none"> Area: 42.9 Ha Length: 2.23 km Flooding risk: yes Distance to City Centre: 16 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
41	Whitechurch	<ul style="list-style-type: none"> Area: 62.5 Ha Length: 2.30 km Flooding risk: yes Distance to City Centre: 25 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
42	Sallins	<ul style="list-style-type: none"> Area: 90 Ha Length: 2.0 km Flooding risk: Yes Distance to City Centre: 32 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>

4. DART+ Coastal South

Eight (8) possible depot locations have been considered in the Coastal South line:

1. Option 43. Pearse Station
2. Option 44. South Dublin - Woodbrook
3. Option 45. Bray Station
4. Option 46. North Greystones
5. Option 47. Greystones Station
6. Option 48. Kilcoole Site 1
7. Option 49. Kilcoole Site 2
8. Option 50. Newcastle

Option No	Site Name	Site Characteristics	Potential Site Layout
43	Pearse Station	<ul style="list-style-type: none"> ● Area: 1 Ha ● Length: 115 m ● Flooding risk: no ● Distance to City Centre: 0 Km 	<p>Site Extent</p>
44	South Dublin - Woodbrook	<ul style="list-style-type: none"> ● Area: 46.8 Ha ● Length: 1.80 km ● Flooding risk: no ● Distance to City Centre: 18 Km 	<p>Site Extent OPW Flood Mapping</p>

Option No	Site Name	Site Characteristics	Potential Site Layout	
45	Bray Station	<ul style="list-style-type: none"> • Area: 1.8 Ha • Length: 0.20 km • Flooding risk: no • Distance to City Centre: 20 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
46	North Greystones	<ul style="list-style-type: none"> • Area: 11.4 Ha • Length: 0.98 km • Flooding risk: coastal flood risk • Distance to City Centre: 24 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
47	Greystones Station	<ul style="list-style-type: none"> • Area: 1.1 Ha • Length: 0.34 km • Flooding risk: no • Distance to City Centre: 26 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>

Option No	Site Name	Site Characteristics	Potential Site Layout	
48	Kilcoole Site 1	<ul style="list-style-type: none"> • Area: 52 Ha • Length: 2.5 km • Flooding risk: coastal and river flood risk • Distance to City Centre: 30 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
49	Kilcoole Site 2	<ul style="list-style-type: none"> • Area: 57 Ha • Length: 2.5 km • Flooding risk: coastal and river flood risk • Distance to City Centre: 33 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>
50	Newcastle	<ul style="list-style-type: none"> • Area: 60 Ha • Length: 2.6 km • Flooding risk: low river flood risk • Distance to City Centre: 38 Km 	<p>Site Extent</p>	<p>OPW Flood Mapping</p>

ANNEX C: Multi-Criteria Analysis Stage 1

DART-DEP-000-SH-IDOM-PM-0001 – Depot MCA Matrix - Stage 1

ANNEX D: Multi-Criteria Analysis Stage 2

DART-DEP-000-SH-IDOM-PM-0002 – Depot MCA Matrix - Stage 2