Cork Area Commuter Rail Multi-Disciplinary Consultancy Services

Depot Site Selection Report

TRJV

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Quality Control Sheet

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Index

Abbreviations

Abbrev	Meaning	Abbrev	Meaning
AA	Appropriate Assessment	m	Metre
AACH	Architectural, Archaeological and Cultural Heritage	EIAR	Environmental Impact Assessment Report
AADT	Annual Average Daily Traffic	EMC	Electromagnetic compatibility
ABP	An Bord Pleanála	EMF	Electromagnetic field
AC	Alternating Current	EMI	Electromagnetic Interference
ACA	Architectural Conservation Area	EMR	Electromagnetic Radiation
ASP	Auxiliary Supply Point	EMRA	Eastern and Midland Regional Assembly
ATC	Automatic Traffic Count	EMU	Electric Multiple Unit
bgl	Below ground level	ERM	Eastern Regional Model
BRT	Bus Rapid Transit	ESB	Electricity Supply Board
BEMU	Battery Electric Multiple Unit	FDP	Fingal Development Plan
CA	Conservation Area	GDA	Greater Dublin Area
CAF	Common Appraisal Framework	GHG	Greenhouse gas
Cant	Superelevation / crossfall of the rails	GI	Geotechnical Investigations (Site Investigations)
CAPEX	Capital expenditure	GSM	Global System for Mobile communications
CCRP	City Centre Re-signalling Project	GSM-R	As above, GSM – Railway
CDP	City Development Plan	GUI	Graphical user interface
CCTV	Closed Circuit Television	ha	Hectare
CFRAMs	Catchment Flood Risk Assessment and Management	HGV	Heavy goods vehicle
CIÉ	Córas Iompair Éireann	hr	Hour
CMA	Cork Metropolitan Area	HV	High voltage
CRR	Commission for Railway Regulation	IAMS	Infrastructure Asset Management System
D&B	Design & Build	ICNIRP	International Commission on Non-Ionising Radiation Protection
DART	Dublin Area Rapid Transit	IÉ/IR	Iarnród Éireann / Irish Rail
DC	Direct Current	JTC	Junction Turning Count
DCDP	Dublin City Development Plan	CCDP	Cork County Development Plan
DCHG	Department of Culture, Heritage, and the Gaeltacht	LAP	Local Area Plan
DMRB	Design Manual for Roads and Bridges	LOC	Location cabinet
DMURS	Design Manual for Urban Roads & Streets	LV	Low voltage
DNO	Distribution Network Operator	RO	railway order
DTTAS	Department of Transport, Tourism & Sport	RPG	Regional Planning Guidelines

Abbrev	Meaning	Abbrev	Meaning
CMATS	Cork Metropolitan Area Transport Strategy	RPS	Record of Protected Structures
MCA	Multi-Criteria Analysis	RRV	Rail Road Vehicles
MDC	Multi-Disciplinary Consultant (TYPSA-ROD)	RSES	Regional Spatial and Economic Strategy
MEP	Multiple Equipment Provisioning	SAC	Special Area of Conservation
MGWR	Midlands Great Western Railway	SDRA	Strategic Development and Regeneration Area
min	Minute	SDZ	Strategic Development Zone
MRI	Magnetic Resonance Imaging	SEB	Signalling Equipment Building
MV	Medium Voltage	SEM	Scanning Electron Microscope
NAPSI	National Action Plan for Social Inclusion	SER	Signalling Equipment Room
NDP	National Development Plan 2018–2027	EIA	Environmental Impact Assessment
NIAH	National Inventory of Architectural Heritage	NHA	Natural Heritage Area
NMI	National Museum of Ireland	SET	Signalling, Electrical, Telecommunication
NPF	National Planning Framework	SIFLT	Strategic Investment Framework for Land Transport
NSO	National Strategic Outcomes	SMR	Sites and Monuments Record
NTA	National Transport Authority	SPA	Special Protection Area
OB	Overbridge	T	Tesla
ODMH	Ordnance Datum Malin Head	TAF	Transport Appraisal Framework
OHLE	Overhead Line Equipment	TBM	Tunnel Boring Machine
OPEX	Operating expenses	TER	Telecommunication Equipment Room
OSR	Option Selection Report	TII	Transport Infrastructure Ireland
PC1	Public Consultation No.1	TOD	Transit Oriented Development
PC2	Public Consultation No.2	TOR	Top of Rail
PLUTO	Planning Land Use and Transport Outlook 2040	TPHPD	Trains Per Hour Per Direction
pNHA	proposed Natural Heritage Area	TSS	Train Service Specification
SSR	Site Selection Report	TAA	Transport and Accessibility Appraisal
PPT	Phoenix Park Tunnel	UPS	Uninterrupted Power Supply
PSP	Principal Supply Point	V	Volt
QBC	Quality Bus Corridor	UIC	International Union of Railways
RAM	Reliability, availability and maintainability	WHO	World Health Organisation
REB	Relocatable Equipment Building	yd	Yard
RMP	Record of Monuments and Places	W	Watt

Depot Site Selection Report

Executive Summary

This report has been prepared to document the site selection process for the proposed depot for the CACR programme. It has been produced following a review of previous studies carried out for the programme and has adopted an even handed approach to the identification of potential sites for the depot and to confirmation of the emerging preferred option for the depot site. It has implemented an options selection process aligned with the current Transport Appraisal Framework guidance documentation.

Initially, a consultation exercise was carried out to clarify the operational requirements in respect of a proposed depot for the CACR Programme. This process was used to distil the minimum requirements of a potential site to facilitate site identification.

A study area was identified which included the full 63km extent of the CACR Programme network contiguous with the railway and a zone approximately 5km beyond the extents of the network. It was noted from the outset that the section of the network from Glounthaune to Cobh exhibits challenging topography along the railway, and that there is a strong coastal character of the line. Furthermore, it was perceived that the alignment between Kent and Mallow offered few locations which may suit the location of a depot. Given the substantial expanse of lands between Kent and Mallow, this section was examined in detail with a view to testing the perception.

In addition to the 6No. sites identified in earlier studies, five further sites were added to the longlist of sites to be considered as part of a sifting exercise to determine a proposed shortlist of options. The longlist with initial characterisation is presented in Table E-01 below.

Table E-01 Initial Characterisation of Site Longlist.

Site Ref	Designation	Line	Criteria A 25 Ha	Area Ha	Criteria B >1,500 m linear	Linear m	Site Slope >2%	Criteria C Flooding	Zoning	Direct Impact on European Sites	Heritage Structures	Distance to City Centre (km)	Operational, Supplementary Facilities	Criteria D Are there fundamental issues?	Prune Y/N
1	North Esk / Dunkettle	Kent to Cobh	No	11.3	No	1000	No 0.3%	Yes	Lands Zoned Brown Field, Transport	Indirect impact on Cork Harbour SPA, Direct Impact on Dunkettle Shore Proposed National Heritage Area	None Affected	6.0km	Not workable	Lands too small to fit depot based on CRS,	Y
2	Rathpeacon / Monard	Dublin to Cork	Yes	25	Yes	1500	Long 1% Trans 10%	No	Lands north of the currently included in SDZ, Site zoned for possible development	No	Indirect impact on standing stone, direct Impact on NIAH bridge (20906315)	6km	Reduce Site length requires Service bay in parallel with stabling and maintenance shed – undesirable wrt CRS	Ground Topography , road layouts and ribbon development challenging	N
3	Midleton	Glounthaune to Midleton	No	22	Yes	1800	No, 3%	Yes			Direct impacts on CO076-004 Cave, CO076-026 Fulacht Fia, CO076-081 Architectural Fragment, Indirect Imapct on CO076-027001 Castle-tower house	21km	Reduce Site length requires Service bay in parallel with stabling and maintenance shed – undesirable wrt CRS	Lands too small, subject to flood risk	+

Site Ref	Designation	Line	Criteria A 25 Ha	Area Ha	Criteria B >1,500 m linear	Linear m	Site Slope >2%	Criteria C Flooding	Zoning	Direct Impact on European Sites	Heritage Structures	Distance to City Centre (km)	Operational, Supplementary Facilities	Criteria D Are there fundamental issues?	Prune Y/N
4	Quarterstown	Dublin to Cork	No	20	No	700	No	Yes		No, Indirect impact on Blackwater SAC	CO033-143 Sheela-na-Gig, CO033-136 Railway Bridge, CO033-055 Milling Complex, CO033-054 Fulacht Fia	32km	Lands at remote end of EMU network, with increased empty running. Highly inefficient configuration required due to site layout	Lands too small to fit depot based on CRS,	Y
5	Ballyadam	Glounthaune to Midleton	No	14	No	910	Yes 2.6%	No	Lands already subject to development for Interconnector site	No	CO076-120 Fullacht Fia, CO076-123 Fulacht Fia, CO076-122 Burnt Mound	15.7km	Lands already subject to development for Interconnector site. Site unworkable	Lands too small to fit depot based on CRS,	Y
6	Ballyrichard More	Glounthaune to Midleton	Yes	25.3	Yes	1610	1.00%	No	Lands not zoned for development	No	None Affected	16.2km	Reduce Site length requires Service bay in parallel with stabling and maintenance shed – undesirable wrt CRS		N
7	Quarterstown Upper	Dublin to Cork	Yes	27.6	Yes	1550 Track Inteface 800m	10% Av%	Yes, Clyda River Floodplain		Indirect, 3km upstream of SPA	Indirect Impact CO042-005 Church, CO042-111 Designated Landscape	30km	Lands at remote end of EMU network, with increased empty running. Large gradients would require significant embankments	Gradients across and along the site are too steep to accommodate a depot	Y
8	Former Sugar Beet Factory Site	Mallow to Trallee	Yes	55	No	1190	1%	Yes, Blackwater River		Yes – Blackwater SAC	Direct Impact CO032-109 Quarry, CO032-237 Country House, Indirect Impact CO032-107003 Church	32.7km	Lands at remote end of EMU network, with increased empty running. Site cannot accommodate two track accesses required by CRS	Site cannot accommodate two track accesses.	Y
9	Dromsligo	Dublin to Cork	Yes	27.5	Yes	1500	Yes 2.6	No		No	None Affected	36.5km	Lands at remote end of EMU network, with increased empty running		N
10	Kilmona Lower	Dublin to Cork	Yes	25.5	Yes	1950, Track interface 1300m	3% Long, 15% Cross	No		No	Direct Impact CO062-049 Standing stone	14km	Gradients across the site are considered too severe to accommodate a depot		N
11	Stoneview	Dublin to Cork	Yes	32.6	Yes	2200	3.70%	No	This site has direct impact on the Stoneview SDZ	No	Direct impact on 7No Fullacht Fias , Railway Bridge Ref 20906230, indirect impact on railway station Ref 20906231	9.5km	No Issues	SDZ zoning	Y

After the characterisation was undertaken in the previous phase, a group of sites were sifted out of the analysis for not complying with the minimum requirements. A number of additional criteria were used in the sifting process. The full list of criteria is as follows:

- Size (the candidate site needs to be sufficiently large to house depot facilities, to facilitate safe movement of vehicles throughout the site and to facilitate the safe operation of the proposed facility). This applied to area, length and width. 5No. sites sifted out);
- Overt Heritage Impacts (The site which exhibits most overt impact on heritage sites is Stoneview, however this is not considered sufficient to warrant sifting out);
- Direct Impact on European Sites. 1No site, the Former Sugar Beet Factory, has direct impact on the Blackwater SAC;

- Lands Zoned for Strategic Development. The site at Stoneview includes a substantial strategic residential development zone;
- Protection of Network downtime for regular track maintenance. Deployment activity pre-service, cannot affect the network maintenance hours 01.00 to 05.00) None of the sites exhibit this issue.

Consideration was given to using a number of further sifting criteria. They include the following:

- Flood risk – Five of eleven sites exhibit flood risk. All of those exhibiting flood risk sift out for other reasons.;
- Impact on Recorded and Heritage Structures. Most sites have some impact on recorded monuments. This is therefore considered as part of the multi-criteria analysis;
- In-direct impact on European Sites. Only one site exhibits direct impact on a European Site, Three others exhibit indirect impacts, all of which are sifted out for other reasons;
- Site Gradient. This has been set aside as a sifting criterion as the impacts on sites vary distinctly. This is instead assessed as part of the multi-criteria analysis.

It was decided that the above four criteria should be considered as part of the multi-criteria analysis of the options shortlist.

The outcome of this sifting process is as follows:

- Size (the candidate site needs to be sufficiently large to house facilities. This applied to area, length and width): 5No. sifted out as listed in **Table E-2**.

Table E-2 Sites Sifted out due to insufficient size to accommodate facilities.

Site Ref	Designation	Line	Criteria A 25 Ha	Area Ha	Criteria B >1,500 m linear	Linear m	Site Slope >2%	Criteria C Flooding	Zoning	Direct Impact on European Sites	Heritage Structures	Distance to City Centre (km)	Operational, Supplementary Facilities	Criteria D Are there fundamental issues?	Prune Y/N
1	North Esk / Dunkettle	Kent to Cobh	No	11.3	No	1000	No 0.3%	Yes	Lands Zoned Brown Field, Transport	Indirect impact on Cork Harbour SPA, Direct Impact on Dunkettle Shore Proposed National Heritage Area	None Affected	6.0km	Not workable	Lands too small to fit depot based on CRS,	Y
3	Midleton	Glounthaune to Midleton	No	22	Yes	1800	No, 3%	Yes			Direct impacts on CO076-004 Cave, CO076-026 Fulacht Fia, CO076-081 Architectural Fragment, Indirect Imapct on CO076-027001 Castle-tower house	21km	Reduce Site length requires Service bay in parallel with stabling and maintenance shed – undesirable wrt CRS	Lands too small, subject to flood risk	Y
4	Quarterstown	Dublin to Cork	No	20	No	700	No	Yes		No, Indirect impact on Blackwater SAC	CO033-143 Sheela-na-Gig, CO033-136 Railway Bridge, CO033-055 Milling Complex, CO033-054 Fulacht Fia	32km	Lands at remote end of EMU network, with increased empty running. Highly inefficient configuration required due to site layout	Lands too small to fit depot based on CRS,	Y
5	Ballyadam	Glounthaune to Midleton	No	14	No	910	Yes 2.6%	No	Lands already subject to development for Interconnector site	No	CO076-120 Fullacht Fia, CO076-123 Fulacht Fia, CO076-122 Burnt Mound	15.7km	Lands already subject to development for Interconnector site. Site unworkable	Lands too small to fit depot based on CRS,	Y
8	Former Sugar Beet Factory Site	Mallow to Trallee	Yes	55	No	1190	1%	Yes, Blackwater River		Yes – Blackwater SAC	Direct Impact CO032-109 Quarry, CO032-237 Country House, Indirect Impact CO032-107003 Church	32.7km	Lands at remote end of EMU network, with increased empty running. Site cannot accommodate two track accesses required by CRS	Site cannot accommodate two track accesses.	Y

Option 7: Quarterstown Upper was sifted out due to a number of significant issues associated with the site as follows:

- The topography across the site would result in significant embankment works to accommodate the shallow gradients needed across the site.
- The short interface with the mainline (800m) is constrained for the accommodation of two accesses to the site and facilitating bi-directional access to the site.
- The site is located in the floodplain of the Clyda river.

Site Ref	Designation	Line	Criteria A 25 Ha	Area Ha	Criteria B >1,500 m linear	Linear m	Site Slope >2%	Criteria C Flooding	Zoning	Direct Impact on European Sites	Heritage Structures	Distance to City Centre (km)	Operational, Supplementary Facilities	Criteria D Are there fundamental issues?	Prune Y/N
7	Quarterstown Upper	Dublin to Cork	Yes	27.6	Yes	1550 Track Inteface 800m	10% Av%	Yes, Clyda River Floodplain		Indirect, 3km upstream of SPA	Indirect Impact CO042-005 Church, CO042-111 Designated Landscape	30km	Lands at remote end of EMU network, with increased empty running. Large gradients would require significant embankments	Gradients across and along the site are too steep to accommodate a depot	Y

Option 11, the Stoneview Site was sifted out due to the zoning of the lands within the Blarney Masterplan.

The sites shortlisted for progression to multi-criteria analysis are as shown in Table E-3

Site Ref	Designation	Line	Criteria A 25 Ha	Area Ha	Criteria B >1,500 m linear	Linear m	Site Slope >2%	Criteria C Flooding	Zoning	Direct Impact on European Sites	Heritage Structures	Distance to City Centre (km)	Operational, Supplementary Facilities	Criteria D Are there fundamental issues?	Prune Y/N
11	Stoneview	Dublin to Cork	Yes	32.6	Yes	2200	3.70%	No	This site has direct impact on the Stoneview SDZ	No	Direct impact on 7No Fullacht Fias , Railway Bridge Ref 20906230, indirect impact on railway station Ref 20906231	9.5km	No Issues	SDZ zoning	Y

Table E-3 Depot Sites Shortlisted for Multi-Criteria Analysis.

Site Ref	Designation	Line	Criteria A 25 Ha	Area Ha	Criteria B >1,500 m linear	Linear m	Site Slope >2%	Criteria C Flooding	Zoning	Direct Impact on European Sites	Heritage Structures	Distance to City Centre (km)	Operational, Supplementary Facilities	Criteria D Are there fundamental issues?	Prune Y/N
2	Rathpeacon / Monard	Dublin to Cork	Yes	25	Yes	1500	Long 1% Trans 10%	No	Lands north of the currently included in SDZ, Site zoned for possible development	No	Indirect impact on standing stone, direct Impact on NIAH bridge (20906315)	6km	Reduce Site length requires Service bay in parallel with stabling and maintenance shed – undesirable wrt CRS	Ground Topography , road layouts and ribbon development challenging	N
6	Ballyrichard More	Glounthaune to Midleton	Yes	25.3	Yes	1610	1.00%	No	Lands not zoned for development	No	None Affected	16.2km	Reduce Site length requires Service bay in parallel with stabling and maintenance shed – undesirable wrt CRS		N
9	Dromsligo	Dublin to Cork	Yes	27.5	Yes	1500	Yes 2.6	No		No	None Affected	36.5km	Lands at remote end of EMU network, with increased empty running		N
10	Kilmona Lower	Dublin to Cork	Yes	25.5	Yes	1950, Track interface 1300m	3% Long, 15% Cross	No		No	Direct Impact CO062-049 Standing stone	14km	Gradients across the site are considered too severe to accommodate a depot		N

The Longlist of sites has been sifted, with the result that four (4) sites are selected for further characterisation and assessment using multi-criteria analysis. The sites are listed in **Table E-3** above and are as follows: Site

Option 2 Rathpeacon / Monard, Site Option 6 Ballyrichard More, Site Option 9 Dromsligo and Site Option 10 Kilmona Lower.

The four site locations were progressed to multicriteria analysis (MCA) with a view to carrying out a detailed evaluation of the options across a spectrum of economic, environmental and social impact criteria. Characterisation of each of the candidate sites is described in Section 5.0 of this report. The detailed MCA matrix is included in Appendix B to this document.

Each of the principal criteria are considered in turn below with an explanation of how options perform against one another in each instance. We then provide a statement of the principal reasons the emerging preferred option performs as it does.

Transport User Benefits and Other Economic Impacts.

Table E-4 below provides a summary of how each option performs under this criterion.

Table E4 Transport User Benefits Summary

	Parameter		Criteria	Option 2 Rathpeacon / Monard	Rating	Option 6 Ballyrichard More	Rating	Option 9 Dromsligo	Rating	Option 10 Kilmona Lower	Rating
1	Transport User Benefits and Other Economic Impacts	1.1	Alignment with Customer Requirements Specification	3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3	2 – Negative Impact	2	3 – Slightly Negative Impact	3
		1.2	Transport Costs and Operational Characteristics	3 – Slightly Negative Impact	3	4 – Neutral Impact	4	3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3
		1.3	Site Security	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	3 – Slightly Negative Impact	3
1	Transport User Benefits and Other Economic Impacts			3 – Slightly Negative Impact	3.3	4 – Neutral Impact	3.7	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.0

Under Alignment with Customer Requirements Specification Option 6 Ballyrichard More performs best. As all depot options meet the minimum requirements of the Customer Requirements Specification, they bring largely equivalent benefits to the programme. They differ in performance relative to one another however and that arises principally in respect of how effectively or otherwise they can accommodate the fleet at differing expense. Cost is typically a negative impact. Remoteness is also typically rated negatively as it results in more cost and time in putting trains into service, referred to as empty running time.

In respect of Option 6 Ballyrichard More, the site is comparatively close to the city centre. It is low lying and relatively flat whereas the Option 9 Dromsligo site is located north of Mallow and all of the other sites are in challenging terrain requiring substantial earthworks to construct and restricting the scope for effectively configuring the depot site to safely deliver the service to CACR.

All sites are equivalent in respect of the interface length with the railway. None can accommodate the facilities in the sequential configuration best suited to the department of the Chief Mechanical Engineer. All will embrace compromises to layout which reflect the challenging terrain of much of the CACR network.

Accessibility and Social Impacts.

The options perform equivalently under accessibility and social impacts criteria. This is because all options are typically in rural settings and have comparable layouts. Social and accessibility impacts are common for all options.

Land Use Impacts.

Table E-5 below provides a summary of how each option performed under this criterion.

Table E-5 Land Use Impacts Summary

CACR Depot - MCA											
	Parameter		Criteria	Option 2 Rathpeacon / Monard	Rating	Option 6 Ballyrichard More	Rating	Option 9 Dromsligo	Rating	Option 10 Kilmona Lower	Rating
4	Land Use Impacts	4.1	Change in Quality of Public Realm	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
		4.2	Existing Transport Network and Service Impact:	2 – Negative Impact	2	2 – Negative Impact	2	3 – Slightly Negative Impact	3	1 – Highly Negative Impact	1
		4.3	Material Assets: Agricultural Properties	1 – Highly Negative Impact	1	2 – Negative Impact	2	2 – Negative Impact	2	1 – Highly Negative Impact	1
		4.4	Material Assets: Non-Agricultural Properties	1 – Highly Negative Impact	1	3 – Slightly Negative Impact	3	4 – Neutral Impact	4	1 – Highly Negative Impact	1
		4.5	Planning Applications	2 – Negative Impact	2	3 – Slightly Negative Impact	3	4 – Neutral Impact	4	4 – Neutral Impact	4
		4.6	Zoned Land, Land Use Planning and Spatial Planning	3 – Slightly Negative Impact	3	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
4	Land Use Impacts			2 – Negative Impact	2.2	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.5	3 – Slightly Negative Impact	2.5

Option 9 Dromsligo performs best in respect of Land Use Impacts. This is because of it's remote location to the north of Mallow. It does not impact on adjacent developments or planned development. The infrastructure alterations needed to access the site and to retain access for affected properties is less onerous for Option 9 than for other options.

Access infrastructure requirements for Options 2, Rathpeacon / Monard and for Ballyrichard More are most challenging for differing reasons. Option 2 is located remotely in difficult terrain and with poor access infrastructure. Ballyrichard More is located on the remote side of the railway from the N25 dual carriageway requiring more substantial access infrastructure.

In respect of impact on property owners Option 10 Kilmona Lower performs worst as it results in four properties being isolated between the new depot site and the railway. The other options perform equivalently negatively due to the significant negative impacts associated with the sites on property owners and businesses.

Safety Impacts and Climate Change Impacts.

Table E-6 below provides a summary of how each option performed under this criterion.

Table E-6 Safety and Climate Change Impacts Summary

	Parameter		Criteria	Option 2 Rathpeacon / Monard	Rating	Option 6 Ballyrichard More	Rating	Option 9 Dromsligo	Rating	Option 10 Kilmona Lower	Rating
5	Safety Impacts	5.1	Collisions & Related Impacts	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
		5.2	Other Safety Impacts	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
6	Climate Change Impacts	6.1	Climate Action Impact	4 – Neutral Impact	4	3 – Slightly Negative Impact	3	2 – Negative Impact	2	3 – Slightly Negative Impact	3
		6.2	Climate Adaption Impact	2 – Negative Impact	2	3 – Slightly Negative Impact	3	2 – Negative Impact	2	2 – Negative Impact	2
5	Safety Impacts			4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
6	Climate Change Impacts			3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.0	2 – Negative Impact	2.0	3 – Slightly Negative Impact	2.5

All options perform equivalently under the criteria associated with safety. There is variance however under the criterion of Climate Change Impacts. In this instance Option 2 Rathpeacon / Monard and Option 6 Ballyrichard More performed best. Ballyrichard More performed better than other options due to the relatively low scale of civil engineering intervention associated with this option in comparison to others. This is largely due to the flat character of the site. Option 2 performed better than Option 6 under Climate Action Impact due to the closer proximity to the city centre and consequent lower empty running time associated with the option in service delivery.

Local Environmental Impacts.

Table E-7 below provides a summary of how each option performed under this criterion.

Table E-7 Local Environmental Impacts Summary

CACR Depot - MCA											
	Parameter		Criteria	Option 2 Rathpeacon / Monard	Rating	Option 6 Ballyrichard More	Rating	Option 9 Dromsligo	Rating	Option 10 Kilmona Lower	Rating
7	Local Environment Impacts	7.1	Biodiversity	2 – Negative Impact	2	3 – Slightly Negative Impact	3	1 – Highly Negative Impact	1	2 – Negative Impact	2
		7.2	Water Resources & Soil Quality	3 – Slightly Negative Impact	3	2 – Negative Impact	2	3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3
		7.3	Landscape & Visual Quality	2 – Negative Impact	2	2 – Negative Impact	2	2 – Negative Impact	2	3 – Slightly Negative Impact	3
		7.4	Cultural & Heritage	2 – Negative Impact	2	3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3	2 – Negative Impact	2
		7.5	Noise & Vibration	2 – Negative Impact	2	3 – Slightly Negative Impact	3	2 – Negative Impact	2	1 – Highly Negative Impact	1
		7.6	Air Quality	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
		7.7	Electromagnetic Compatibility	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
7	Local Environment Impacts			3 – Slightly Negative Impact	2.7	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	2.7	3 – Slightly Negative Impact	2.7

The options can be seen to perform similarly from an environmental perspective. Option 6 performs poorer than other options under Water Resources and Soil Quality due to the presence of Karst features at the site and in the vicinity of the site. Such features can impact a number of environmental parameters negatively and can result in more intensive foundation works associated with construction works.

Option 10 Kilmona Lower performs poorly under noise and vibration due to the impact it has on four residential properties which are isolated by the proposed development.

In respect of biodiversity, Option 6 performs better than other options due to the character of the existing land and lack of connection to designated sites. Option 9 his option is considered to have a highly negative impact on biodiversity due to the existing environment, the hydrological connectivity to designated sites and protected habitats and the hydrolgoical connectivity to known Freshwater Pearl Mussel habitat.

The options perform equivalently in respect of air quality and electromagnetic compatibility.

Consolidation of Criteria Outcomes.

Table E-8 below provides consolidation of the assessment across the spectrum of criteria.

Table E-8 Assessment Summary

	Criteria	Option 2 Rathpeacon / Monard		Option 6 Ballyrichard More		Option 9 Dromsligo		Option 10 Kilmona Lower	
1	Transport User Benefits and Other Economic Impacts	3 – Slightly Negative Impact	3.3	4 – Neutral Impact	3.7	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.0
2	Accessibility Impacts	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
3	Social Impacts	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
4	Land Use Impacts	2 – Negative Impact	2.2	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.5	3 – Slightly Negative Impact	2.5
5	Safety Impacts	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
6	Climate Change Impacts	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.0	2 – Negative Impact	2.0	3 – Slightly Negative Impact	2.5
7	Local Environment Impacts	3 – Slightly Negative Impact	2.7	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	2.7	3 – Slightly Negative Impact	2.7
	Overall Ranking	3 – Slightly Negative Impact	3.3	4 – Neutral Impact	3.5	3 – Slightly Negative Impact	3.3	3 – Slightly Negative Impact	3.2
	Total Ranking / Preferred site	No	23.2	Yes	24.7	No	23.2	No	22.7

Consolidation of the outcome of the assessment was carried out on an averaging basis as contemplated with the Transport Appraisal Framework. Although the ranking range is narrow – 3.3 to 3.5 average, the sum of averaged ratings provides some greater distinction between options. In this regard Option 6 has a higher total than other options and appears to warrant consideration as the emerging preferred option.

Examination of the principal distinguishing characteristics associated with Option 6 appears to reinforce this suggestion. They are as follows:

- None of the shortlisted sites have been identified as being subject to flood risk. This site was rated more negatively than other sites as there is evidence of karst features to east and west of the site.

- The main habitats that have the potential to be lost as a result of this option include cultivated land and built land. Compared with other options, this option is considered to have the least negative impact on biodiversity due to the existing environment and the lack of connectivity to designated sites;
- In respect of noise and vibration, this site evidences the lowest Potential Impact Rating of all sites resulting in slightly better performance than other sites;
- The site is comparatively close to the city centre reducing empty running time;
- It is low lying and relatively flat reducing construction cost and simplifying the layout;
- All options perform equivalently in respect of the Customer Requirements Specification;
- The site is located within the extent of the electrified CACR network reinforcing the resilience of same;
- The site is closely located to the N25 dual carriageway which will facilitate access for delivery of train units to the site.

Challenges associated with the site include the presence of Karst in the area and the need to construct access infrastructure from the N25.

Conclusion

Following the application of a multi-criteria analysis to site options identified following a rigorous appraisal of the network wide study area, it is proposed that Option 6 Ballyrichard More be adopted as the proposed site for the development of a proposed depot for the CACR programme.

1. Introduction

1.1 Purpose of this Report

This report has been prepared to document the process of, and to set out the detail of options selection in respect of the preferred site or sites for the proposed CACR Programme Depot.

1.2 CACR Programme

The Cork Area Commuter Rail (CACR) Programme represents a transformational investment in the rail network in Cork. It will improve the attractiveness of rail, encourage modal shift from car-based travel and reduce congestion and emissions. Improvements to the commuter rail network in Cork were initially identified through the Cork Metropolitan Area Transport Strategy (CMATS) and the CACR Programme is a fundamental transport commitment in Project Ireland 2040.

CACR will play a key role in a future sustainable transport system in the Cork region and nationally. In the context of the State's climate action plans, investment in transport infrastructure is vital. CACR will be essential to the reduction in transport emissions: firstly, through the procurement of a low emissions fleet and, secondly, through reducing emissions from road congestion by encouraging and enabling people to choose public transport.

CACR will optimise the value of the existing heavy rail network, an important State asset, by creating a mass transit system capable of transporting large volumes of passengers, which is heavy rail's unique advantage.

1.3 CACR Programme Objectives

The CACR Programme Objectives are as follows:

Primary Objective

- Support compact urban growth and contribute to reducing transport congestion and emissions in the CMA by enhancing the existing heavy rail system, providing a sustainable, safe, efficient, and integrated public transport service that will improve the attractiveness of rail services.

Sub Objectives

- Cater for existing heavy rail travel demand and support long-term patronage growth along established rail corridors in the CMA through the provision of a higher frequency, higher capacity, electrified heavy rail service which supports sustainable economic development and population growth.';
- Develop an integrated suburban rail system improving accessibility to jobs, education and other social and economic opportunities, intermodal connectivity, and integration with other public transport services.;
- Enable consolidation of urban compact growth along existing rail corridors, unlock regeneration opportunities and more effective use of land in the CMA, 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 CMA and which supports the advancement of Ireland's transition to a low emissions transport system and delivery of Ireland's emission reduction targets.

1.4 CACR Programme Need and Strategic Fit

The concept of CACR has been in existence for nearly 20 years, this concept was further refined in 2003/04 as part of a Feasibility Study on a Cork Suburban Rail project and the 2003 Strategic Rail Review. The alignment of CACR with policy has been assessed through the SAR. There is a strong strategic policy fit between CACR and national, regional and local policy objectives, particularly in relation to sustainable mobility, emissions reductions, compact land use development, and consolidation of population and employment growth along high-frequency transport corridors.

At a national level, the key drivers for CACR include:

- Project Ireland 2040, where CACR is aligned with multiple National Strategic Objectives (NSOs) for compact growth, enhanced regional accessibility, a strong economy and a transition to a low carbon and climate resilient society.
- The National Investment Framework for Transport in Ireland (NIFTI) (2021) enables delivery of Project Ireland 2040 by guiding the appropriate investment in transport infrastructure. It addresses the importance of decarbonisation in the decades ahead to meet Ireland's climate change goals. It prioritises maintaining, optimising and improving existing assets over the building of new infrastructure in addition to prioritising active travel and public transport modes over private vehicles. CACR is aligned in seeking to optimise and improve the existing suburban rail system for Cork.
- The Climate Action and Low Carbon Development Act 2021 provides statutory recognition of the national climate objective and a requirement for sector-relevant carbon budgets. The subsequent Climate Action Plan 2021, places further emphasis on the need to decarbonise the transport sector. CACR is aligned in seeking to deliver a new fleet of non-carbon-based fuel trains for the network.

At a regional level, CACR aligns with:

- The Southern Regional Assembly's Regional Spatial and Economic Strategy (RSES) outlines 11 core 'Statements of the Strategy' to build a strong, resilient and sustainable region. CACR aligns with six of these; compact growth; enhanced regional accessibility; sustainable mobility; a strong economy; a low carbon, climate resilient and sustainable society; and sustainable, planned and infrastructure led development
- Locally, CACR is aligned with the Cork Metropolitan Area Transport Strategy (CMATS) as it will deliver the suburban rail elements of the Strategy. CMATS examined strategic transport options for the Cork Metropolitan Area (CMA), and extending to Mallow, an area hereafter referred to as the 'Cork Region,' on a corridor-by-corridor basis. It concluded that heavy rail is the optimum public transport mode to cater for demand in the catchment of the existing rail line between Mallow, Midleton and Cobh, serving Kent Station.
- Both the Cork City and Cork County Development Plans recognise and aim to enable the proposals in CMATS
- Finally, the Local Area Plans (LAPs) developed for several of the Cork Municipal Districts (MDs) outline proposals and zoning objectives for significant population and employment growth at existing and planned railway stations in the CMA

There is therefore a robust policy context at all levels which support the improvement of the rail system to enable the Cork Metropolitan Area to develop in a sustainable manner, while reducing emissions from transport.

Improved public transport requires integrated system-wide transportation across a rail, light rail, bus, cycling and walking network that allows each mode to play to its strengths. The benefit of rail is that it can carry higher volumes of people, more reliably, than any other mode. The existing network in Cork represents a very significant prior investment that can be fully leveraged and built upon. Rather than a network, it comprises three radial routes that all terminate in the city centre, there are significant gaps between some existing stations and a lack of off-peak services currently. The network needs to be upgraded to modern standards, the timetable and frequency of service needs to continue to improve, and the diesel-fuelled trains that currently operate are increasingly unacceptable from a societal and policy perspective. In addition, the existing diesel fleet is aged and needs replacement. In summary, there is an imperative to upgrade the public transport system in the Cork Region with an integrated approach across all modes. The railway must change to play its role. Specifically, it needs to be modernised to be able to address the drivers for change set out in **Table 2-1**.

1.5 CACR Network Upgrades, Fleet Depot and Electrification

The CACR Network Upgrades, Fleet Depot and Electrification Project comprises Work Packages 4, 5 and 6 of the CACR Programme and includes the following principal elements:

- New Stations (Blarney/Stoneview, Monard, Blackpool/Kilbarry, Tivoli, Dunkettle, Ballynoe, Carrigtwohill West & Water Rock);
- Closure of Myrtle Hill Level Crossing;
- Upgrading existing stations;
- Passing loops and crossovers on Mallow-Cork section.;
- Additional sidings/turn back facilities;
- Reconfiguration of the operational track layouts;
- Associated civil engineering and structural works (boundary treatments, retaining walls, etc.);
- Park and Ride facilities at Blarney/Stoneview & Dunkettle Stations;
- New Fleet Depot;
- Electrification of the CACR Network.

1.6 Draft Project Objectives

The Project Objectives embrace the CACR Programme objectives and sub-objectives in addition to the following project specific objectives:

- Deliver facilities to meet accommodate a 10 minute peak level of service across the network with 5 minute peak level of service between Kent Station and Glounthaune;
- Facilitate the migration of the existing CACR network Service to a low emissions modern fleet through electrification in a manner aligned with the Climate Action Plan;
- Deliver an electrified railway service configured compatible with the planned enhancement of the Cork to Dublin intercity service;
- Close Myrtle Hill level crossing.

1.7 Report Structure

This report has been prepared to document the decision-making process in the selection of a proposed site or sites for CACR Programme depot facilities.

Section 1 provides background and context to a proposed CACR Programme.

Section 2 describes the project configuration and sets out how it is embedded within policy. It draws from the CACR Project Report which sets out the detail of reference to the CACR within international, national, regional and local policy;

Section 3 describes the site selection methodology. It includes a description of how each step on the process is carried out.

Section 4 provides consideration of the proposed multi-criteria analysis criteria and comparators to inform the multi-criteria analysis for site selection.

Section 5 sets out the depot site longlist with basic characterisation of each.

Section 6 details the sifting exercise whereby clearly infeasible prospective sites are removed from the long list to allow finalisation of the shortlist of sites.

Section 7 summarises the multi criteria analysis outcome for the shortlisted sites.

2. CACR Policy Context

This section sets out the planning policy and policy context applicable to Cork Area Commuter Rail (CACR). This chapter is structured as a series of subsections which provide a summary of International, European, National, Regional, and Local policies, strategies, and plans that inform and interact with CACR as well as an indication of the development's compliance with these policies and plans. Table 2-1 provides a hierarchical overview of these documents.

Table 2-1 Overview of Relevant Policies, Strategies, and Plans

International Policy
• 2030 Agenda for Sustainable Development
European Policy
• EU Transport White Paper 6 (2011) • EU Green Deal • EU Sustainable and Smart Mobility Strategy • EU Recovery and Resilience Programme • EU Cities Mission
National Policy
• National Planning Framework 2040 • National Development Plan 2021-2030 • Climate Action Plan 2025 • Department of Transport: Statement of Strategy 2023-2025 • National Investment Framework for Transport in Ireland (2021) • National Sustainable Mobility Policy (2022) • Five Cities Demand Management Study (2021) • National Transport Authority Sustainability Transport Strategy 2024-2030 • All-Island Strategic Rail Review • IÉ Rail Freight 2040 Strategy • Iarnród Éireann Strategy 2027 • National Adaptation Framework: Planning for a Climate Resilient Ireland • Transport Climate Change Sectoral Adaptation Plan • Programme for Government 2025
Regional Policy
• Regional Spatial and Economic Strategy for the Southern Region (2020)   ○ Cork Metropolitan Area Strategic Plan • Cork Metropolitan Area Transport Strategy 2040 (2020)
Local Policy
• Cork County Development Plan 2022-2028   ○ Cork County Climate Action Plan 2024-2029

To curtail repetition in project documentation, the reader is referred here to Section 2 of the CACR Project Report which sets out in detail the alignment of CACR with international, national, regional and local policy.

3. Site Selection Methodology

3.1 The approach to Site Selection

The purpose of this section of the report is to identify a site selection process which leads to the choice of depot site which best meets the project objectives in a way which is aligned with the Department of Transport: Transport Appraisal Framework guidelines, July 2024.

A number of steps have been identified for selection of a preferred site in respect of a proposed depot or depots for the project. They are listed below, and each step is described in the subsequent paragraphs of this section of the report.

1.) Study Area Identification;
2.) Confirm Depot Customer Requirements Specification (CRS);
3.) Establishment of the MCA matrix criteria to address project objectives and customer requirements specification with alignment with TAF;
4.) Carry out Stakeholder Consultation in respect of the CRS and the proposed MCA Criteria;
5.) Consider existing depot facilities and stabling;
6.) Consider the scope for site splitting for the proposed depot;
7.) Establish the Minimum Site Identification criteria;
8.) Make provision for the inclusion of sites examined in previous studies;
9.) Identification of Site Long List;
10.) Initial Site Characterisation;
11.) Establishment of Sifting Criteria;
12.) Distil Site Shortlist from Site Longlist by sifting out infeasible sites;
13.) Confirmation of the Study Area to ensure sufficient sites for evaluation;
14.) Further Characterisation of Site Shortlist to facilitate multi-criteria analysis;
15.) Complete MCA Stage to identify an emerging preferred depot site option;
16.) Complete a sensitivity analysis of the multi-criteria analysis to confirm the appropriateness of the emerging site selection;
17.) Stakeholder Engagement on the Emerging Preferred Site.

3.2 Study Area Identification

Previous studies in respect of a depot location were focused on the extent of the proposed CACR Programme network along the Glouthaune to Midleton line and along the Kent to Mallow line.

As part of this exercise the study area has been widened to include the full extent of the CACR Programme network contiguous with the railway and stretches of past or present trackwork within 5km of the extremities of the network. The reasoning behind the approach is to ensure a thorough assessment of potential sites for a depot. The following observations are noted from previous studies in respect of the suitability of sections of the network for siting of a depot.

Section	Considerations	Conclusion
Kent Station and Environs	The existing Cork depot is located adjacent to Kent station and there are some IÉ owned lands between the depot site and Horgan's Quay that could potentially be considered for a new suburban depot. Issues: - Redevelopment and Master Planning Objectives - Site constrained by existing operations and insufficient available lands	It was concluded that locating a new suburban depot at Kent would not be appropriate and likely infeasible
Kent Station to Glounthaune	The majority of this area is either substantially developed or planned for significant future development. There are possible brownfield lands near Tivoli but lands towards Glounthaune form part of the estuary and are within the Cork Harbour Special Protection Area and Great Island Channel Special Area of Conservation. The IÉ owned lands at North Esk have been identified as a possible site in Phase 1 Issues: - Limited undeveloped lands - Redevelopment and Master Planning Objectives around Tivoli - SPA and SAC areas	It was concluded that there are no likely additional feasible sites in this section beyond the North Esk lands
Glounthaune to Cobh	Towards Cobh, the majority of the route is surrounded by adjacent development. North of Cobh the majority of undeveloped adjacent lands are sloping steeply towards the railway and the coast. There is a large brownfield site at Marino Point that is adjacent to the railway and could lend itself to a new depot site. The site is however owned by the Port of Cork and it is planned to be reopened as a port facility. IÉ are also considering the site for a railway freight terminal. Issues: - Use of Marino Point as new depot would likely use all available lands and make the location infeasible for Port related uses. This is at odds with the Port of Cork objectives for the site.	It was concluded that there is little scope for a new depot in this section
Glounthaune to Midleton	The area immediately east of Glounthaune and to the proposed Carrigtwohill West station is bounded to the south by the Cork Harbour Special Protection Area and Great Island Channel Special Area and the north by designated green belt. Through Carrigtwohill the lands are either already developed or planned for major urban development. There are vacant lands to the north east of Carrigtwohill in the townland of Poulaniska but these are zoned a mix of residential, community and greenbelt development and a considerable area of the lands (with the greenbelt designation) fall within Flood Zone A. The lands are generally flat and would otherwise provide suitable size but the designation and flooding issues would suggest they are unsuitable. East of Carrigtwohill, there is a section of brownfield land at Ballyadam (north of the Limestone Quarry), immediately west of Carrigtwohill United AFC grounds that could be a suitable depot site, it is within the designated urban development lands and outside the greenbelt designated lands at Ballyrichard More. It also appears to be of suitable size and within a single holding. It is understood that this is the site originally earmarked for an	It was concluded that a site to the east of Carrigtwohill in the area around Ballyadam or Ballyrichard More may be a suitable depot location and the Midleton site remains an option

Section	Considerations	Conclusion
	Amgen biotechnology plant but abandoned in 2010. The site is already serviced with road and utility infrastructure and the IDA continues to market the site for foreign investment. In 2020 the site was selected by EirGrid as the preferred site for a Converter Station (approx. footprint 300m by 150m) for the Celtic Interconnector and a planning application for this project was lodged with An Bord Pleanála in July 2021. Immediately east of Ballyadam the lands are designated as green belt. There is however the potential for a depot to be located in the lands around Ballyrichard More, subject to redesignation by the council. The lands are in agricultural use but they are generally flat and adjacent to the railway with few residential holdings in close proximity. From the greenbelt lands to Water Rock the lands are undeveloped but planned for industrial development. The land parcels are generally small and could not individually accommodate a new depot site. From Water Rock to Midleton the lands are developed. The IÉ owned lands at Midleton have been identified as a prospective site. Issues: - There is an SAC and SPA to the west of this section - There are 2 designated green belts, 1 west and 1 east of Carrigtwohill - Undeveloped land parcels are generally too small for depot development - Available lands are designated for urban development and the majority have master plans based on high value industrial and commercial development - The Brownfield site at Ballyadam (former Amgen site) appears to be suitable. The IDA may be aspiring to higher value commercial development as per the zoning designations and it is preferred site for EirGrid Converter Station and subject of a planning application with An Bord Pleanála since July 2021. - Greenbelt lands to the north and east of Ballyadam around Ballyrichard More may be suitable subject to redesignation of use.	
Kent to Blarney	The area immediately north of Kent and beyond the proposed Blackpool Station is developed and there are no apparent available sites. From Blackpool to Monard there are undeveloped lands but the railway is in either deep cutting or embankment and the lands to either side are hilly and undulating, making them unsuitable for a large depot site. The IÉ owned lands at Rathpeacon/Monard have already been identified for a prospective site. Between Monard and Blarney there is vacant agricultural type lands but the terrain is generally ascending from the railway to the north on a reasonably steep slope and falls away from the railway to the south. The land is undulating in level along the railway also. In this stretch the proposed site at Monard appears more preferable than any alternative.	It was concluded that there are no likely additional feasible sites in this section beyond the Rathpeacon/Monard lands
Blarney to Mallow	From Blarney to Mallow the adjacent lands are largely undeveloped and agricultural in nature. North of Blarney the topography of the land remains hilly and undulating with the railway line generally following the route of	It is concluded that there are likely to be few feasible depot sites

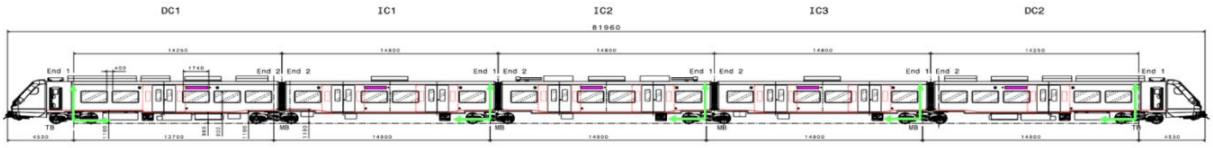
Section	Considerations	Conclusion
	the N20 road which in turn follows the valley of the River Martin. The land is generally falling towards the railway from the north and away from the railway to the south until the crossing of the N20 at Glencaum. North of the N20 crossing (OBC369A) the lands remain sloping either side of the railway however the railway runs in a valley with the land sloping upward away from the railway on both sides. Gradients of the land either side remain pronounced until approaching Mallow where the topography starts to flatten. There is a potential site adjacent to the Tralee branch from the main Cork Dublin line at Quartertown, Mallow that could be a possible depot site. This site appears to be generally flat, is zoned for Business and General employment and is accessible to the railway and road network.	in the section from Blarney to Mallow as a result of unfavourable land topography. There are possible depot sites on the approach to Mallow with a site at Quartertown potentially suitable

3.3 Depot Customer Requirements Specification

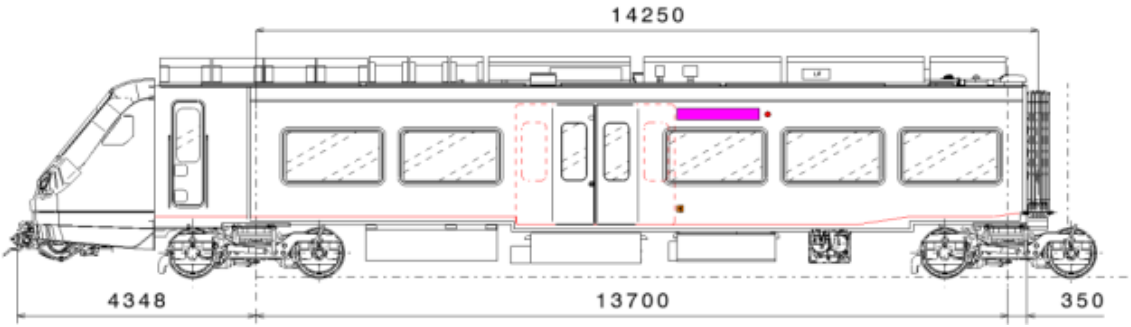
From the outset of the project, the design team engaged with the departments of the Chief Mechanical Engineer (CME), the Chief Civil Engineer (CCE), the Infrastructure Manager (IM) and the Operations department of IÉ with a view to distillation of a clear Customer Requirements Specification which set out the needs of the project in respect of a proposed CACR depot. The synopsis below summarises the principal Customer Requirements:

Depot Customer Requirements Specification

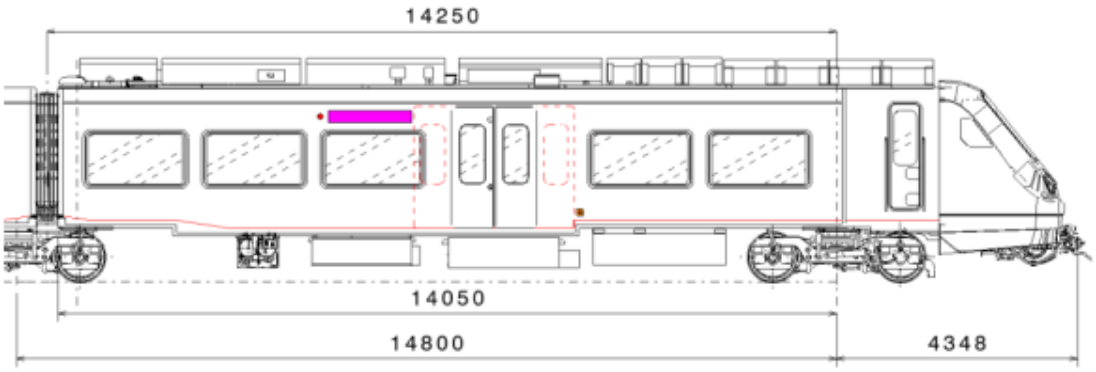
1. Fleet: Only EMU fleet as per the DART+ framework will be accommodated at the proposed depot. 28 Half Length Units (HLU), 82m long to be maintained at the Depot. HLUs will comprise 5-car articulated trainset with 1 key-car at one extremity and 4 half-suspended cars, based on 2 trailer bogies at the extremities and 4 motor bogies at the inter-cars. The trainset will have two pantographs, which will be in IC2 vehicle. / 16 to be berthed (all at stabling and 2 reserve spaces at service slab). The depot typically will be required to stable 16 HLUs overnight.



HLU layout



DC1 layout



DC2 layout

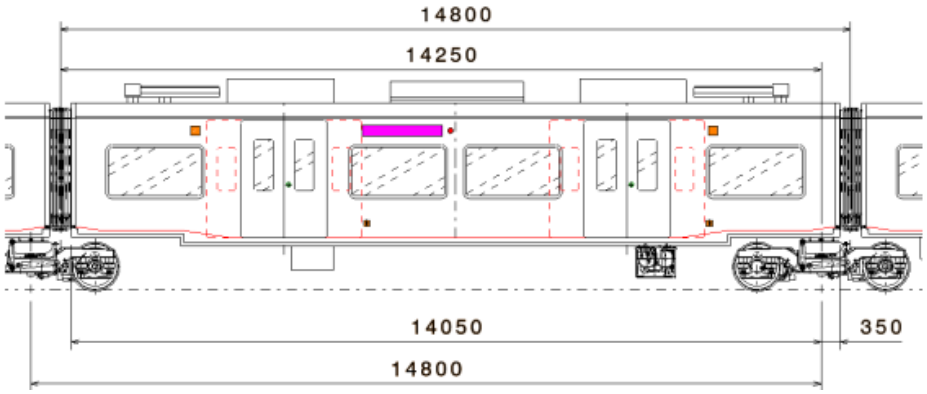


Figure 3-1 - IC layout.

2. The depot track layout shall be two ended i.e. there is a mainline connection at each end of the depot site. The stabling shall be double ended. The main depot building can be single ended. There shall be at least two accesses to the depot. Access to the depot shall be provided for from both directions.

3. The principal maintenance tasks which will be carried out at the site are daily maintenance, preventative maintenance, corrective maintenance and deep cleaning. There may also be some unscheduled maintenance related to design changes, improvements and upgrades to the fleet. Sequential processes are required to the maximum degree with stabling offline. On highly constrained sites, 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 effective operation of the facility and should only be considered for very restricted sites.

4. Maintenance tracks to be provided as follows:
    - 2 covered service slab tracks;

5. 1 No. deep cleaning facility with painting cabin;

6. 1 Automatic Wash Plant (AWP);

7. 1 Automatic Vehicle Inspection (AVI) unit.

8. Staff and carpark

    - Road vehicle access will be available throughout the site, linking the different buildings. Cycle track and pedestrian paths will link the depot staff/contractor entrances to the main depot building.
    - Carpark: to accommodate parking for 120 cars, 12 motorbikes and 45 bicycles.

Nominal Minimum Site dimensions

- Area – 25 Ha;
- Length – 1.5 km to 2.2km dependent on sequencing;
- Width – 250 to 350 m dependent on sequencing.

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

- Main building: 250 m x 115 m
    - 2 light maintenance roads;
    - 1 heavy maintenance road; and
    - 1 multi-purpose road for various maintenance activities, (deep cleaning, paint touch ups, exam overflow etc.).
- Lathe Building:
- Operations Staff Building
- Stabling: 510 m x 45 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 220 m)
- AVIS: 30 m x 9 m
- Headshunt lengths: 250 m
- Waiting track length: 250 m (multiple reception tracks to be accommodated)
- Bypass Track length: 1500m
- Substation, ESB rooms, stores and store yard

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

Table 3-1 Depot Alignment Geometric Design Criteria

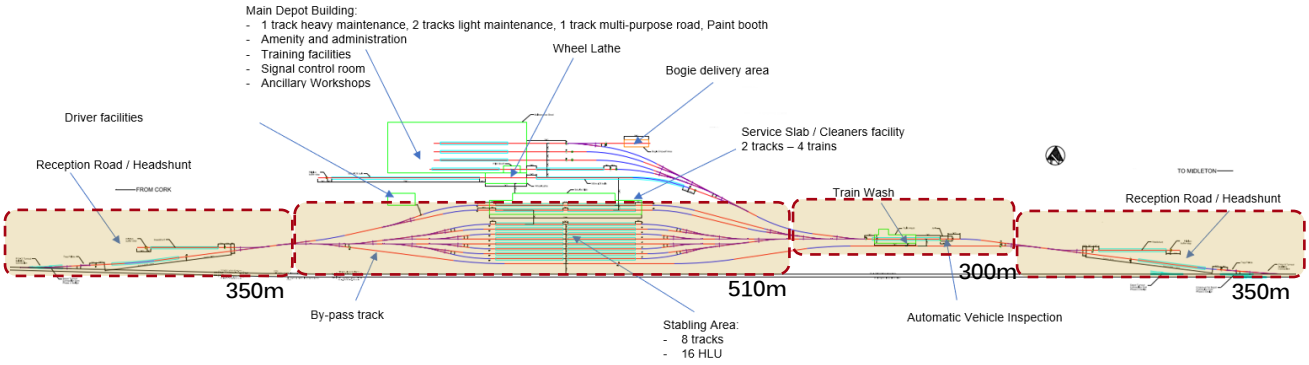
Alignment parameters for tracks within the Depot	
Maximum design speed in Depot	30 km/h (20 mph)
Maximum operational speed in Depot	8 km/h (5 mph) / 15 km/h (10 mph)
Horizontal alignment	
Minimum radius in Depot	200 m desirable
Minimum straight length between reverse curves	From 13.13 m to 6 m
Turnouts	P10-13
Radius	204.8 m
Max. speed for branch line	30 km/h
Vertical alignment	

Alignment parameters for tracks within the Depot	
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 3-2** below:

Table 3-2 CME Depot Requirements

Depot Component	Dimensions (m)	H (m)	L(m)	W (m)	No	Area (m2)
Head Shunt Road Up			250	5	2	2,500
Reception Road to AVW			350	14	1	4,900
Automatic Vehicle Inspection Unit + Future AVI x 5.4m high	30 x 9.0	5.4	80		2	
Train Wash + Future wash x 5.4m high	41.6 x 9.6	5.4	220		2	
Service Slab / Inspection & Sanding Bay x 5.4m high	200 x 30	5.4	450	35.5	1	15,975
Stabling	510 x 45		510	41.5	1	21,165
Turnouts / Switches - 24No						
Head Shunt Road Down			250	5	2	2,500
Up Reception Road			350			4,900
Maintenance Building + General Storage x 11.4m high	216 x 95.6	11.5	800	110.6	1	88,480
Main Office, Admin, Staff, training						
Wheel Lathe x 5.4 - In Main Bldg	41.6 x 9.6	5.4	450	9.6	1	4,320
Trackwork for Secondary AVI & ATW			900	18	1	5,500
Reserve Area, Waste Yard, Secondary Storage	80 x 40		100	55	1	375
Substation x 5.4m high	35.4 x 10.6	5.4	35.4	10.6	1	28
Security Building x 3.5m high	5.5 x 5.0	3.5	5.5	5	1	12,000
Bypass Track	8.0 x 1500		1500	8	1	3,000
Car Parking 120			300	10	1	37,440
Access Roads			6300	8	1	15,000
Drainage Attenuation			300	50	1	31,200
Environmental Bunding			3420	10	1	2,500
			1510 to 2260			25Ha



The graphic above provides illustration of the build up of component lengths to identify the minimum site length needed to meet the requirements of the CRS.

In order to confirm that the number of car park spaces required for the staff working on the Depot (as stated in point 10 above) is in line with the Local Authorities' provisions, an extract of their standards is presented:

Local Authority Provisions for Parking facilities associated with Development

Volume 1 of the Cork County Council Development Plan 2023-2028 sets out the Development Management Standards, It addresses maximum car parking for developments in Table 12.6. For Industrial (Light and General) Developments it identifies a maximum car parking provision of 1 space per 50 sqm of gross floor area. It notes that "Normally, developers will be expected to provide on-site car parking in line with this plan's standard". In addition, the Council will have regard to:

- For all types of location, where it is sought to eliminate or reduce car parking provision, it is necessary to ensure, where possible, the provision of an appropriate number of drop off, service, visitor parking spaces and parking for the mobility impaired;

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: 4.9 m x 2.4 m
- Car parking bay (disability / accessible space): 4.9 m x 3.0 m + 1.2m circulation area
- Loading bays: 6.1 m x 3.0 m.
- Parent and Child Bays: 4.9 m x 3.0 m.
- Circulation aisles: 6.1 m wide.
- 5% of parking spaces in non-residential developments should be set aside for disabled parking.
- 10% of parking spaces in non-residential developments should be set aside for parent and child parking. This requirement is noted but is not considered to be appropriate for the proposed depot.
- Motorcycle parking should be provided to meet the requirements of any development. Parking spaces should be provided on the basis of one motorcycle parking bay per 10 car parking spaces provided for non-residential developments and apartment developments. Spaces should be provided in locations convenient to building access points, similar to cycle parking requirements.

Where parking is provided within streets and spaces drop-kerbs should be provided to facilitate access to motorcycle parking bays.

- Non residential developments with more than 10 parking spaces, or applications for substantial renovation of a building with more than 10 associated parking spaces, will provide at least one electric vehicle recharge point. Should National Policy require a greater provision of charge points this greater provision will apply. All other parking spaces, including in residential developments, should be constructed to be capable of accommodating future charging points as required.

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

The parking provisions below are aligned with Cork County Council requirements for an Industrial development.

Table 3-4 Proposed Parking Provisions

Parking Provision	Requirement	Proposed No of Spaces	Dimensions
Main building: 250 m x 115 m			
Car parking spaces	1 per 50m2 = 575	120	2.5 m x 5.0 m
Disabled parking spaces	1 in every 20 = 29	6	5 m x 4.2 m
Electric car spaces	1 in every 10 = 58	12	
Motorbike spaces		12	
Cycle spaces		45	

The above provisions are significantly less than the maximum provisions identified in Cork County Council Planning Requirements but are considered appropriate for the CACR depot based on the shift working patterns which will be applied in service.

3.4 MCA matrix criteria

It is proposed to use a multi-criteria analysis (MCA) mechanism to identify the preferred option for a proposed site for the CACR Depot. The MCA will consider the following principal criteria aligned with the Transport Appraisal framework Guidelines:

- Transport User Benefits & Other Economic Impacts
- Accessibility Impacts
- Social Impacts
- Land Use Impacts
- Safety
- Climate Change Impacts
- Local Environmental Impacts

Table 3-5 below sets out the criteria, sub-criteria and proposed comparators for the assessment.

Table 3-5 Proposed MCA Criteria

TAF Criteria	Sub-Criterion	Opt 1	Opt 2	Opt n	Proposed Data Source for Appraisal
Transport User Benefits & Other Economic Impacts	Alignment with Customer Requirements Specification				Distance to Kent Station, No. of turnback's, No. of cross-overs, Site gradient, Connection to Mainline; Site Layout
	Transport Costs and Operational Characteristics				Capital Cost Estimates, Operational Cost Estimates, Release of DMUs to other lines; Passenger Demand
	Site Security				Site Security: Number of properties bounding the site.
Accessibility Impacts	Impact on passengers				Assessment of access impact to Services and jobs
Social Impacts	Social Impacts				Review of socially disadvantaged geographical areas (HP deprivation index) within 1km of site locations. Scores better if in deprived region.
Land Use Impacts	Change in Quality of Public Realm				Extent of alignment with the road network and the local area
	Existing Transport Network and Service Impact:				Impact on Local Road Network
	Material Assets: Agricultural Properties				Direct and indirect impacts on sensitive agricultural enterprise (e.g., beef or equine farms. Tillage is low sensitivity). Severance of landholding, direct acquisition of farmyards, sheds etc). Indirect impacts due to construction and operation near sensitive agri enterprises.
	Material Assets: Non-Agricultural Properties				No. of residential, community and businesses directly impacted by the option (acquisition). Indirect impacts (due to construction and operation activities) on non-agri properties. Indirect impacts on properties are assessed under noise and air quality assessments.
	Planning Applications				Large Scale residential and non-residential planning applications (granted and pending) potentially within the site boundaries.
	Zoned Land, Land Use Planning and Spatial Planning				Policy Review: Impact on land use strategies and regional and local plans. Assessment of support for land use factors local land use and planning.
Safety	Collisions & Related Impacts				Operational Configuration of the Site
	Other Safety Impacts				Assessment of Alignment Integration with local urban infrastructure
Climate Change Impacts	Climate Action Impact				Updating of train emissions profile in TUBA
	Climate Adaption Impact				Turnback's and Crossovers: Flood risk, sites with soil stability issues, wind exposure. Train journeys (additional train running)
Local Environmental Impacts	Biodiversity				Environmental constraints assessment of options
	Water Resources & Soil Quality				Flood Risk, Hydrogeology, Soils
	Landscape & Visual Quality				Environmental constraints assessment of options
	Cultural & Heritage				Environmental constraints assessment of options

TAF Criteria	Sub-Criterion	Opt 1	Opt 2	Opt n	Proposed Data Source for Appraisal
	Noise & Vibration				Estimated number of sensitive receptors (residential properties, community facilities etc) likely to be affected by transport related noise with the project within 50m, 100m, 200m and 300m bands.
	Air Quality				Estimated number of sensitive receptors (residential properties, community facilities etc) likely to be affected by transport related noise with the project within 50m, 100m, 200m and 300m bands.

The table above identifies the principal criteria and sub-criteria proposed for use in the assessment. In addition, the proposed source data for comparison of options is included in the right-hand column of the table. Each comparator is described in more detail in Section 4 of this report.

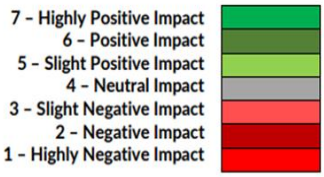
The following mechanism is proposed for assessing options under the above criteria:

- The impact, positive or negative, is assessed on a numeric scale;
- The consolidated impact of a given criterion will have a rating between 1 and 7;
- Where all impacts are to one end of the scale i.e. all positive or all negative, the available range of ratings extends between the median score and the extremes i.e. 1 to 4 or 4 to 7;
- The outcomes for each sub-criteria are consolidated into criteria;
- At each stage of consolidation an averaging mechanism is utilised;

The assessment is proposed to be on an unweighted basis to allow the influence and effectiveness of the comparators to be monitored. A ranked, coloured and numeric scale is envisaged as set out in the graphic below. The assessment will be made on a spreadsheet.

The graphic of **Figure 3-3** below illustrates the Impact rating, number scale and colour scale.

The following MCA scoring scale example can be used to sift a longlist of options, or to assess scheme impacts at detailed appraisal stage:



Scores should be assigned to options based on their respective impacts on addressing identified issues or opportunities, meeting SMART objectives and probability of impacts occurring. The table below sets out some guidance for assigning scores for impacts and options:

7 – Highly Positive Impact	The option is likely to significantly improve conditions in the relevant criteria.
6 – Positive Impact	The option is likely to improve conditions in the relevant criteria.
5 – Slight Positive Impact	The option is likely to somewhat improve conditions in the relevant criteria.
4 – Neutral Impact	The option will result in no changes to conditions in the relevant criteria.
3 – Slight Negative Impact	The option is likely to somewhat worsen conditions in the relevant criteria.
2 – Negative Impact	The option is likely to worsen conditions in the relevant criteria.
1 – Highly Negative Impact	The option is likely to significantly worsen conditions in the relevant criteria.

Figure 3-3 MCA Scoring and Colour Scale

3.5 Stakeholder Consultation

The option selection process has been advanced in consultation with interested stakeholder departments within Iarnród Éireann. They include CME, CCE, IM, Operations and Safety Assurance. The departments have been consulted on an ongoing basis from the outset of options identification activity.

Once an emerging preferred site option is identified a consultation exercise will be embarked on including the public, local representatives and other stakeholders.

3.6 Considerations of existing depot facilities and stabling

This section summarises considerations in respect of existing Stabling across the Cork Suburban Fleet Network in respect of the proposed CACR Programme.

3.6.1 Existing Fleet

Services across the Cork rail network are currently provided by a fleet of 16 No., Class 2600 Diesel Multiple Units (DMUs) (1 DMU = 1 car). The Class 2600 vehicles which were introduced in 1994 are arranged in two car units with 'one-third, two- third' door configuration and a medium density standing and seating configuration. The 2600 vehicles have tables and a toilet onboard. The two car units are nominally 40m in length.

All heavy maintenance activities are carried out in Limerick Depot for the 2600 DMUs however routine maintenance of the existing DMU fleet is carried out at Cork Depot (adjacent to Kent Station). The following routine maintenance activity is completed at Cork Depot:

- Diesel refuelling
- Toilet discharge to all rail vehicles
- Overnight cleaning (internal)
- Exterior washing
- Planned daily & weekly maintenance checks/exams
- Unplanned/running repairs for in service faults

Stabling for the existing fleet of 16 cars is provided at the following locations:

- Depot (either Cork or Limerick) – up to 6 cars
- Kent Station – up to 8 cars (overnight for morning services to Midleton/Cobh)
- Mallow – up to 2 cars (overnight for morning services)

In terms of existing stabling capacity it is understood that there is currently potential additional capacity to stable additional cars at these sites as follows:

- Depot (either Cork or Limerick) – up to 10 cars.
- Cobh – 2 cars (overnight for morning services)
- Midleton – 2 cars (overnight for morning services)

Stabling at Cobh and Midleton would be subject to suitable driver facilities and security for overnighting trains. This stabling occupies the platforms, so the units stabled would have to be the last to arrive at night and the first to depart in the morning. No detail on spare stabling capacity at Mallow has been provided so it is assumed that there is no spare capacity to stable more than 2 commuter trains at this site.

3.6.2 Interim use of Dublin Fleet

It is understood that, as the Dublin suburban fleet is transitioned from DMU to Electric Multiple Unit (EMU) or Battery Electric Multiple Unit (BEMU) vehicles under DART+, a proportion (x8 four car sets) of the 29000 DMU fleet could potentially be released for use on the Cork suburban network in a transitionary period prior to the new Cork fleet becoming available for service. This would allow an enhancement to existing levels of service in Cork above the existing timetable and prior to the final service specification being realised.

During this phasing and transition period it is assumed that the DMU fleet could continue to receive heavy maintenance from the existing depots in Limerick or elsewhere. Routine maintenance activity in Cork would have to be continued and that would have to be provided by the Cork Depot at Kent, prior to a new Cork suburban depot being delivered.

It is however noted that the cascaded trains from Dublin are 4 car trains and maintenance of the fleet in Cork or Limerick may not be possible without enhancements to those maintenance facilities. This would be subject to a separate study and may not prove to be feasible; as a result, requirements for a cascaded fleet were considered in the Depot and Stabling Strategy and the feasibility of cascading existing DMU fleet from Dublin to Cork will be subject to a separate appraisal.

3.6.3 New Fleet Strategy

As part of the Cork Area Commuter Rail Programme Phase 2 study a Power and Fleet strategy has been developed. Please refer to the Power and Fleet Assessment Report (C745-W00-P3-REP-EL-TRJV-00001 Rev P04), dated June 2025. That separate work has considered the appropriate type of rolling stock and power system to apply to the Cork suburban rail system in consideration of project specific requirements, IÉ fleet strategy and available rolling stock propulsion technologies. The outcome of that work is summarised as follows:

- That the existing 2600 DMU fleet operating on the network continues to provide service but is gradually replaced as a new electrically powered fleet is procured and bought into service ;
- That the new Cork suburban fleet is of EMU Type implemented on a fully electrified 25kV AC network.

The outcome of this strategy suggests the following in relation to the provision of depot and stabling facilities:

- The ultimate vehicle size will be nominal 82m long trains made up of 5 cars into single units;
- The depot facilities must accommodate Overhead Line Equipment (OHLE). In order to provide flexibility of operation across the entire depot including the maintenance shed;
- A common fleet will lead to the standardisation of maintenance procedures and sharing of knowhow between DART and CACR as it is anticipated the new CACR commuter units will be based on the DART+ Framework chassis;
- That a test track for the commissioning into service of new vehicles will be required to specifically accommodate the introduction into service of the CACR 25kv AC commuter fleet.

It is noted that at the time of writing that a testing and commissioning plan for the DART+ fleet is still being finalised but the emerging testing and commissioning plan is as follows:

Initial EMU order:

- EMU Cars come to Inchicore on low loaders and are assembled into units
- Testing & Commissioning for EMU will be managed from Inchicore
- Road testing will be undertaken on the 4 track section south of Inchicore
- There will also be some requirement to carry out testing on the existing DART network.

Subsequent 25kV AC EMU orders

Testing and commissioning of the orders will probably be based at the new CACR depot and orders will be placed to coincide with the availability of the proposed depot. It is assumed that the programme of testing and commissioning for the Cork fleet could be very similar to that planned for the DART+ fleet.

3.6.4 Timetable and Turnback

In order to deliver the TSS options, turnback facilities have been identified in each of the termini. These turnbacks are considered necessary for operations (train layover). Subject to the relevant security, cleaning and driver facilities being in place, these turnback facilities could also be used for overnight stabling of some of the fleet. The turnback facilities identified as required on the network are:

Table 3-6 – Turnback Facilities

Location	Sidings
Mallow	Turnback in 2 Platforms (New Island platforms) plus 2 Turnback Sidings
Blarney	Turnback in Platform plus 1 Turnback Siding
Kent	Turnback in Platforms
Cobh	Turnback in Platforms
Midleton	Turnback in Platforms plus 1 Turnback Siding

It is considered that at Mallow the turnback sidings will use existing siding capacity and will therefore not add any additional stabling capacity. The additional sidings at Blarney and Midleton could provide additional stabling.

3.7 Stabling Strategy

3.7.1 Stabling at Cork Kent Station and CME Depot

Section 3.6.1 sets out in summary the existing arrangements for stabling at Cork suburban fleet. As noted in Section 3.6.1 up to 8 cars (4 units) are stabled overnight in Kent Station with a further 8 cars (4 units) stabled between Mallow station and the CME Depot. In addition to the suburban fleet, a number of other vehicles are also stabled overnight in Kent. A summary of the various vehicles stabled in Kent Station and Depot are set out in **Table 3-7**.

Table 3-7 Kent Station Platforms – Existing Stabling

Platform	Trains Stables	No.	Service	Train Length	Depart
Platform 1	Suburban 2DMU	2	Cork-Midleton	Nom. 40m Nom. 40m	05.45 06.15
Platform 2	Suburban 2DMU	1	Cork-Cobh	Nom. 40m	05.30
Platform 3	Suburban 2DMU	1	Cork-Cobh	Nom. 40m	06.00
Platform 4	Intercity 4ICR	2	Cork-Heuston Cork-Tralee	Nom. 95m Nom. 95m	05.45 06.25
Platform 5	Intercity 4ICR	1	Cork-Heuston	Nom. 220m	07.00
Dep Road 1	Intercity 201 Loco	1	Standby	Nom. 25m	
Dep Road 2	Suburban 2DMU	1	Standby	Nom. 40m	
Dep Road 3	Suburban 2DMU	1	Heavy Maintenance	Nom. 40m	
Dep Road 4	Suburban 2DMU	1	Exam/Inspection	Nom. 40m	
Dep Road 5	Intercity 3ICR	1	Cork - Heuston	Nom. 70m	06:15
Dep Road 6	Intercity 8KMIV	1	Cork - Mallow	Nom. 220m	07:15

With the introduction of suburban services, an additional through platform, Platform 6, at Kent station has recently been completed. Increased service will be supported via the new platforms 5b and 6. The through suburban services are planned to use Platform 4 for down line services (from Mallow to Cobh/Midleton) and Platform 6 for up line services (from Cobh/Midleton to Mallow). It will be critical that at least two of the through running platforms (4,5 or 6) are available for the first arriving through running services from either Mallow or Cobh/Midleton and that they are clear for the last running services at night.

The first departures from Cobh, Midleton and Mallow in the existing timetables are as follows:

- Cobh to Kent – 06:00, arriving at Kent at 06:25
- Midleton to Kent – 06:15, arriving at Kent at 06:38
- Mallow to Kent – 06:55, arriving at Kent at 07:20

The last arrivals into Kent from Cobh, Midleton and Mallow are as follows:

- Last Arrival from Cobh – 23:25
- Last Arrival from Midleton – 23:08
- Last Arrival from Mallow – 22:55

If it is assumed that the first arrivals into Kent in the new TSS will be for through services and will be broadly as per the earliest existing arrival times, then Platforms 4, 5 and 6 should be free for through services from approximately 06:25. As can be seen in Table 3 this is not the case for Platform 5 which remains occupied until 07:00. This however can be mitigated by ensuring Platform 6 is available from 06:25.

A possible combined stabling strategy for Kent Station and Depot with the new through suburban services could therefore be as presented in **Table 3-8.**

Table 3-8 Kent Station, Depot Platforms –Potential Combined Stabling Configuration

	Existing			Proposed		
Platform	Trains Stables	No.	Train Length	Service	No.	Train Length
Platform 1	Suburban 5EMU	2	Nom. 40m Nom. 40m	Suburban 5EMU	1	Nom. 82m
Platform 2	Suburban 5EMU	1	Nom. 40m	Suburban 5EMU	1	Nom. 82m
Platform 3	Suburban 5EMU	1	Nom. 40m	Suburban 5EMU	1	Nom. 82m
Platform 4	Intercity 4ICR	2	Nom. 95m Nom. 95m			
Platform 5a	Intercity 8ICR	1	Nom. 220m	Intercity 8ICR	1	Nom. 220m
Platform 5b				Intercity 4ICR	1	Nom. 95m
Platform 6				Suburban 5EMU	1	Nom. 82m
Dep Road 1	Intercity 201 Loco	1	Nom. 25m	Intercity 201 Loco	1	Nom. 25m
Dep Road 2	Suburban 2DMU	1	Nom. 40m			
Dep Road 3	Suburban 2DMU	1	Nom. 40m			
Dep Road 4	Suburban 2DMU	1	Nom. 40m	Intercity 3ICR	1	Nom. 70m
Dep Road 5	Intercity 3ICR	1	Nom. 70m	Intercity 8KMIV	1	Nom. 220m
Dep Road 6	Intercity 8KMIV	1	Nom. 220m	Intercity 8KMIV	1	Nom. 220m
Dep Road 7	Intercity 8KMIV	1	Nom. 220m	Intercity 8KMIV	1	Nom. 220m

3.7.2 Stabling at Mallow

Section 3.6.1 sets out in summary the existing arrangements for stabling at Mallow Train Station. As noted in Section 3.6.1 up to 2 cars are stabled at Mallow (overnight for morning services). The station features three platforms: Platform 1 (P1), a side platform next to the station building, and an island platform comprising Platforms 2 and 3 (P2 and P3) on the west side. On the down side (east side, next to the car park), sidings are used to stable trains overnight—typically one 2600 set, and occasionally an On-Track Machine (OTM) or engineering train.

To facilitate the introduction of the CACR train service, two additional platforms are required to the west of the existing platforms to allow CACR trains to stop and turn back and passengers to alight and board offline from the main lines which service the intercity services. Platforms 4 and 5 (P4 and P5) will occupy an island platform configuration and will service the CACR programme only. It is envisaged that Suburban EMU trains will be stabled at the new platforms.

3.8 New Depot Stabling

The new Cork suburban railway depot will have to maintain the new electrically powered fleet. It is assumed that the existing DMU maintenance facilities at Limerick and Cork will no longer be used for Cork suburban fleet maintenance once the new depot is operational. On that basis the new depot will need to maintain the entire new fleet which as noted in **Section 3-3** is a maximum of 22 trains (5 car trains). The capacity released at Limerick and Cork depots can then be used for maintenance of DMUs for service on other parts of the IÉ network or for other purposes as considered suitable by IÉ.

From a stabling perspective it is assumed that overnight stabling of the new vehicles will continue at Mallow and Kent but that stabling of Cork suburban vehicles at Cork or Limerick Depots will cease with the introduction of the new Cork suburban depot. It is preferred that all trains requiring overnight maintenance are stabled in the new depot, to avoid transit moves between depot and out-stabling that may interfere with track maintenance access. The capacity released at Limerick and Cork can then be used for stabling of DMUs or other IÉ fleet.

Although the new Cork suburban fleet will comprise of longer trains it is considered that overnight out-stabling of up to 8 trains away from the main depot will remain possible in a configuration as follows:

- Kent – up to 4 trains;
- Mallow – up to 2 trains;
- Blarney – up to 1 train;
- Midleton – up to 2 trains;
- Cobh – up to 2 trains.

It is noted that the total stabling capacity at the termini could be 11 or more as per the above however it is considered that spreading the fleet over multiple locations introduces rostering complexities and requirements for welfare, parking and other facilities at each of the sites. In addition, consideration needs to be given to maintenance activities and instances where access to all the above possible stabling locations may not be possible. Whilst out-stabling 11 or more trains may be possible, it is therefore considered that assuming up to 8 allows for some rationalisation of the stabling sites to complement staff and rostering needs and provides some resilience in the strategy. It is considered that overnight stabling is best provided at Mallow, Kent and Midleton.

In addition, within the new depot itself it may be possible to use the Main Depot Building for overnight stabling of up to 2 trains, using 2 of the 4 maintenance roads. The precise location for stabling is currently being determined from detailed power, timetabling and scheduling studies but provision for overnight stabling at the above sites is essential to delivery of the train service specification. The options developed for additional platforms and stabling at Mallow will be used to ensure sufficient resilience in the power and fleet configuration but will not affect the stabling proposals for the new Cork suburban depot. It is noted that the new depot will need to stable between 12 and 16 trains (between 60 and 80 cars) depending on the final out-stabling strategy.

3.9 Considerations on site splitting for the proposed depot

In establishing the project, consideration was first given to the scale of depot facilities needed to accommodate the programme train service specification and the potential for distributing the maintenance and stabling facilities at multiple locations across the network. Section 3.7 sets out the planned distribution of stabling across the network. Approximately 65% of fleet trains will be stabled at the proposed depot overnight.

A number of factors have led to the decision to host all heavy maintenance facilities for the fleet at one location. They include the following:

- The existing DMU and Intercity fleets require bespoke parts, equipment and personnel which are particular to the proprietary systems in use and currently provided at other depot across the network.

- The detailed stabling assessment carried out to meet the needs of the programme train service specification has identified the requirement for approximately 65% of the fleet being stabled at the depot. With such a large proportion of the fleet stabled at the proposed depot, there is a strong case for centralising all heavy maintenance operations at this location;
- Where any significant bank of trains is stabled at a given location there is a need for appropriate facilities for accommodation of the associated staff, whether it be maintenance staff or drivers. With the centralisation of 25kV AC EMU maintenance operations at one location for CACR, there is a strong case for establishing best-in-practice facilities in close proximity to maintenance activities.

3.10 Minimum Site Identification Criteria

An exercise was carried out to establish the essential elements of the depot facility, their size and acceptable configurations to allow the identification of minimum site areas and dimensions for initial identification of sites for inclusion in an options selection process. The full set of site requirements is set out in the Section 3.3. The principal site identification criteria are set out below:

Nominal Minimum Site Identification Criteria

- Area: 25 Ha minimum;
- Length x Width – 1.5 km x 350 m or 2.2 km x 220 m minimum envelopes dependent on sequencing of facilities within the site.
- Gradients less than 3% longitudinally or 10% transversally across the site;

3.11 Considerations of sites examined in previous studies

As part of the analysis, sites examined in previous studies were checked against the minimum site requirements stated above.

Although not necessarily meeting the minimum requirements, the following previously considered sites form part of the long list (numbers refer to the numbers used for the long list, please refer to **Section 5**):

1 North Esk/Dunkettle
2 Rathpeacon/Monard
3 Midleton
4 Quarterstown
5 Ballyadam
6 Ballyrichard More

They have been given equivalent consideration to other sites as part of this study.

3.12 Identification of Site Longlist

The full extent of the study area was examined to identify a broad spectrum of prospective sites which meet the minimum site identification criteria identified in **Section 3.10**. They were identified with a view to avoiding impact on existing residential properties if practicable, avoiding steep sites, and avoiding overt heritage features. The intent was to identify an adequate number of sites distributed across the network to facilitate effective assessment of a preferred site location. In addition, all sites examined in earlier studies were included in the process (refer to section 3.9 above).

The longlist of Table 3-9 was prepared.

Table 3-9 Site Longlist

Site Ref	Designation	Line
1	North Esk / Dunkettle	Kent to Cobh
2	Rathpeacon / Monard	Dublin to Cork
3	Midleton	Glounthaune to Midleton
4	Quarterstown	Dublin to Cork
5	Ballyadam	Glounthaune to Midleton
6	Ballyrichard More	Glounthaune to Midleton
7	Quarterstown Upper	Dublin to Cork
8	Former Sugar Beef Factory Site	Mallow to Trallee
9	Dromsligo	Dublin to Cork
10	Kilmona Lower	Dublin to Cork
11	Stoneview	Dublin to Cork

3.13 Initial Site Characterisation

An initial desktop study was carried out of all the available locations to provide initial characterisation of them with a view to sifting out any options which were obviously unsuitable for use. It examined the following:

- Available space on the site;
- Available site length and length fronting the railway;
- Available width;
- Site Gradient, longitudinal and transverse;
- Adjacent track alignment;
- Susceptibility to flood risk using CFRAMs flood mapping, Historic OS Mapping, Aerial Photography, Local Authority Strategic Flood Mapping;
- Planning policy / zoning;
- Existing land use;
- Presence of National Monuments and Listed Structures.

The characterisation is presented in tabular form in Table 3-10 below.

Table 3-10 Initial Site Shortlist

Site Ref	Designation	Line	Criteria A 25 Ha	Area Ha	Criteria B >1,500 m linear	Linear m	Site Slope >2%	Criteria C Flooding	Zoning	Direct Impact on European Sites	Heritage Structures	Distance to City Centre (km)	Operational, Supplementary Facilities	Criteria D Are there fundamental issues?	Prune Y/N
1	North Esk / Dunkettle	Kent to Cobh	No	11.3	No	1000	No 0.3%	Yes	Lands Zoned Brown Field, Transport	Indirect impact on Cork Harbour SPA, Direct Impact on Dunkettle Shore Proposed National Heritage Area	None Affected	6.0km	Not workable	Lands too small to fit depot based on CRS,	Y
2	Rathpeacon / Monard	Dublin to Cork	Yes	25	Yes	1500	Long 1% Trans 10%	No	Lands north of the currently included in SDZ, Site zoned for possible development	No	Indirect impact on standing stone, direct Impact on NIAH bridge (20906315)	6km	Reduce Site length requires Service bay in parallel with stabling and maintenance shed – undesirable wrt CRS	Ground Topography , road layouts and ribbon development challenging	N
3	Midleton	Glounthaune to Midleton	No	22	Yes	1800	No, 3%	Yes			Direct impacts on CO076-004 Cave, CO076-026 Fulacht Fia, CO076-081 Architectural Fragment, Indirect Imapct on CO076-027001 Castle-tower house	21km	Reduce Site length requires Service bay in parallel with stabling and maintenance shed – undesirable wrt CRS	Lands too small, subject to flood risk	Y
4	Quarterstown	Dublin to Cork	No	20	No	700	No	Yes		No, Indirect impact on Blackwater SAC	CO033-143 Sheela-na-Gig, CO033-136 Railway Bridge, CO033-055 Milling Complex, CO033-054 Fulacht Fia	32km	Lands at remote end of EMU network, with increased empty running. Highly inefficient configuration required due to site layout	Lands too small to fit depot based on CRS,	Y
5	Ballyadam	Glounthaune to Midleton	No	14	No	910	Yes 2.6%	No	Lands already subject to development for Interconnector site	No	CO076-120 Fullacht Fia, CO076-123 Fulacht Fia, CO076-122 Burnt Mound	15.7km	Lands already subject to development for Interconnector site. Site unworkable	Lands too small to fit depot based on CRS,	Y
6	Ballyrichard More	Glounthaune to Midleton	Yes	25.3	Yes	1610	1.00%	No	Lands not zoned for development	No	None Affected	16.2km	Reduce Site length requires Service bay in parallel with stabling and maintenance shed – undesirable wrt CRS		N
7	Quarterstown Upper	Dublin to Cork	Yes	27.6	Yes	1550 Track Inteface 800m	10% Av%	Yes, Clyda River Floodplain		Indirect, 3km upstream of SPA	Indirect Impact CO042-005 Church, CO042-111 Designated Landscape	30km	Lands at remote end of EMU network, with increased empty running. Large gradients would require significant embankments	Gradients across and along the site are too steep to accommodat e a depot	Y
8	Former Sugar Beet Factory Site	Mallow to Trallee	Yes	55	No	1190	1%	Yes, Blackwater River		Yes – Blackwater SAC	Direct Impact CO032-109 Quarry, CO032-237 Country House, Indirect Impact CO032-107003 Church	32.7km	Lands at remote end of EMU network, with increased empty running. Site cannot accommodate two track accesses required by CRS	Site cannot accommodat e two track accesses.	Y
9	Dromsligo	Dublin to Cork	Yes	27.5	Yes	1500	Yes 2.6	No		No	None Affected	36.5km	Lands at remote end of EMU network, wth increased empty running		N
10	Kilmona Lower	Dublin to Cork	Yes	25.5	Yes	1950, Track interface 1300m	3% Long, 15% Cross	No		No	Direct Impact CO062-049 Standing stone	14km	Gradients across the site are considered too severe to accommodate a depot		N
11	Stoneview	Dublin to Cork	Yes	32.6	Yes	2200	3.70%	No	This site has direct impact on the Stoneview SDZ	No	Direct impact on 7No Fullacht Fias , Railway Bridge Ref 20906230. indirect impact on railway station Ref 20906231	9.5km	No Issues	SDZ zoning	Y

3.14 Establishment of Sifting Criteria and Refinement of Site Longlist to Shortlist

After the characterisation was undertaken in the previous phase, a group of sites were sifted out of the analysis for not complying with the minimum requirements. A number of additional criteria were used in the sifting process. The full list of criteria is as follows:

- Size (the candidate site needs to be sufficiently large to house facilities. This applied to area, length and width. 5No. sites sifted out);
- Overt Heritage Impacts (The site which exhibits most overt impact on heritage sites is Stoneview, however this is not considered sufficient to warrant sifting out);
- Direct Impact on European Sites. 1No site, the Former Sugar Beet Factory, has direct impact on the Blackwater SAC.;
- Lands Zoned for Strategic Development. The site at Stoneview includes a substantial strategic residential development zone;
- Protection of network downtime for regular track maintenance. Deployment activity pre-service cannot affect the network maintenance hours 01.00 to 05.00) None of the sites exhibit this issue.

Consideration was given to using a number of further sifting criteria. They include the following:

- Flood risk – Five of eleven sites exhibit flood risk. All of those exhibiting flood risk sift out for other reasons;
- Impact on Recorded and Heritage Structures. Most sites have some impact on recorded monuments. This is therefore considered as part of the multi-criteria analysis;
- In-direct impact on European Sites. Only one site exhibits direct impact on a European Site, Three others exhibit indirect impacts, all of which are sifted out for other reasons;
- Site Gradient. This has been set aside as a sifting criteria as the impacts on sites vary distinctly. This is instead assessed as part of the multi-criteria analysis.

It was decided however that these should be considered as part of the multi-criteria analysis of the options shortlist.

3.15 Confirmation of the Study Area to ensure sufficient sites for evaluation.

Should the sifting process result in too few sites for assessment then consideration would be given to expanding the study area. In carrying out the sifting assessment, the extent of sites subject to site risk were examined to confirm that repositioning / reconfiguration of the site cannot be made locally to avoid risk. 4No. sites spread across the network is considered sufficient to permit effective assessment of options.

An exercise was also carried out to examine the prospect of a wider study area generating potentially suitable sites. It became evident that several physical boundaries constrained all the remaining lines. This section presents a review of the Mallow line to provide enhanced consideration of this section of the network due to it's significant length and relative complex topography.

Figure 3-4 opposite shows aerial imagery of the extent of railway for 5km north of Mallow, extending to the village of New Twopothouse. The extent of the CACR Programme network terminates at Mallow.

It is evident here that the existing N20 Limerick to Cork road runs north-south immediately to the east of the railway. The lands east of the national route rise by approximately 10%. The road and topography are considered to represent sufficient impediment to the location of a depot east of the roadway.

Just northwest of Mallow Train Station the Mallow Hospital Grounds are raised and the existing road network curtails the scope for identification of a site at this location.

North of the hospital, the L1200 local road runs north west from the railway through Dromsligo. The lands between the railway and the roadway rise away from the railway by up to 5%. This area has been included for consideration of a depot on the lands with the L1200 representing a western boundary to such considerations.

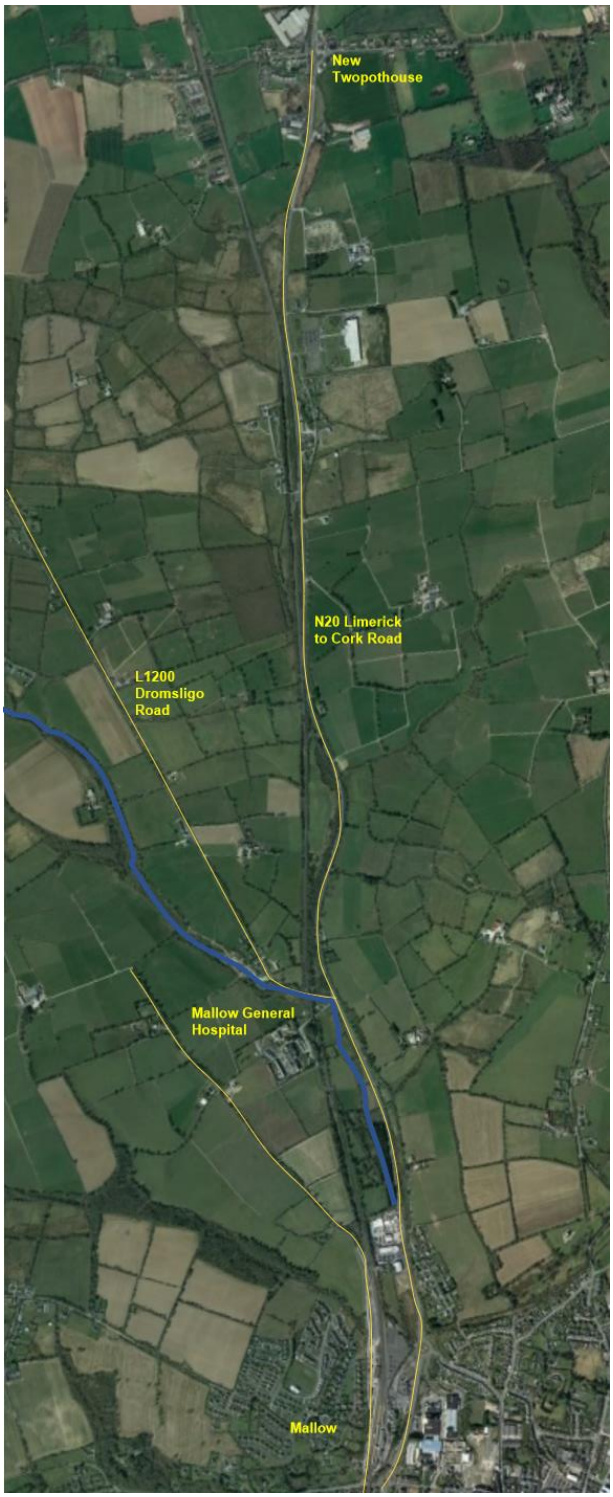


Figure 3-4 Site Selection Mallow North

Along the western approach to Mallow from Tralee, the railway is bounded to the north by the R169 Regional Road and the River Blackwater. The Clyda River extends southeast crossing the railway and the R621 Regional Road crosses the railway in a north south direction. The site of the former sugar beet factory is accessible by railway via a spur which passes under the R169 Regional Road. It is reasonable to consider the former sugar beet factory site in the initial site longlist.. The presence of two reqional roads and two river channels crossing the lands south of the railway in addition to recorded structures on the lands raise questions in respect of the appropriateness of these lands to accommodate a depot. Refer to **Figure 3-5** for an aerial view of this section of track.

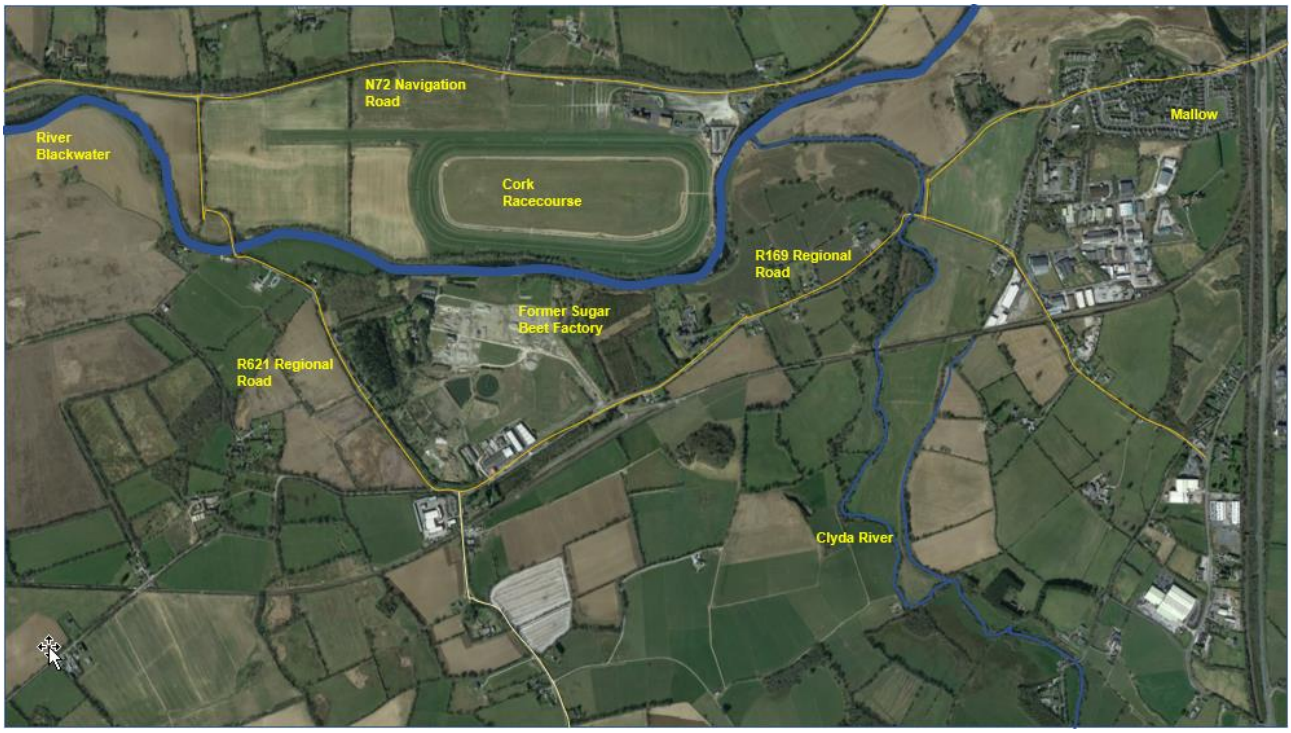


Figure 3-5 Site Selection Mallow West

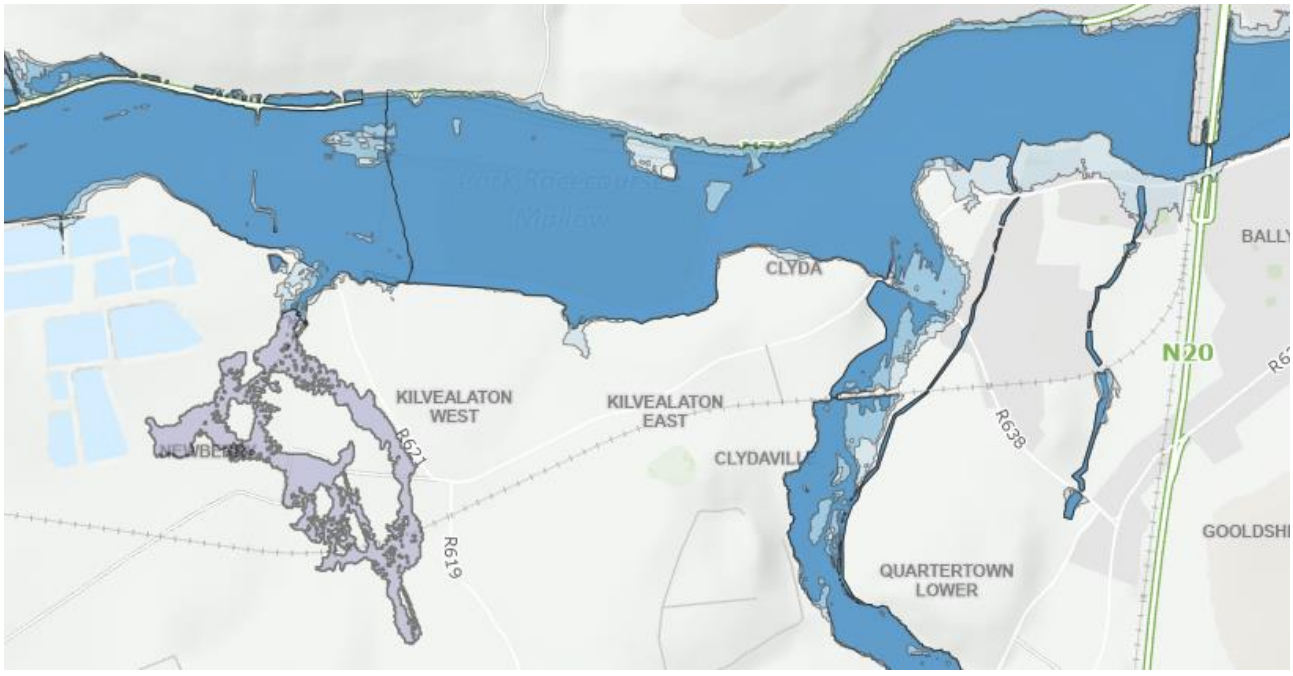


Figure 3-6 OPW Flood Mapping Mallow West

Figure 3-6 above illustrates the extent of 1 in 10, 1 in 100 and 1 in 1000 year fluvial flood risk in the Mallow West section of the study area.

Figure 3-7 below provides an illustration of constraints on the Dublin Cork Line between Mallow and Mourneabbey. It is evident here that the existing N20 Limerick to Cork road runs north-south immediately to the east of the railway. The lands east of the national route rise by approximately 6%. The River Clyda parallels the railway to the west as far north as Quarterstown Upper where it moves up to 600m west of the railway.

The ground falls away by between 20 and 30 metres over much of this section of the railway at gradients of 20% and greater. The infrastructure constraints, the presence of the Clyda river and the topographic constraints along this section of the railway make it unsuitable for the location of a depot.

The lands between the railway and the river at Quarterstown Upper are sufficiently large to accommodate a depot site. Although the land in this area drops away quickly from the railway this site option has been included in the initial longlist for consideration in the sifting exercise.

The combination of physical boundaries and the topography along this section of the railway evidence significant constraints in respect of the location of a proposed depot site here.

Figure 3-7 Site Selection Mallow South

Figure 3-9 opposite provides an illustration of Constraints on the Dublin Cork Line between Mourneabbey and Rathduff. It is evident here that the existing N20 Limerick to Cork road runs north-south immediately to the east of the railway. The Old Mallow Road and the L5382 run north-south to the west of the railway. The River Martin parallels the railway before picking up a tributary at a railway crossing and flowing on south to Blarney.

There is substantial ribbon development along the west of the railway through Rockhill.

It is noted that the proposed N20/M20 Limerick to Cork upgrade scheme is planned to be online over much of this section of the railway but moves offline, closer to the railway through Rathduff. See in Figure 3-9 below an extract from the planned scheme at this location.

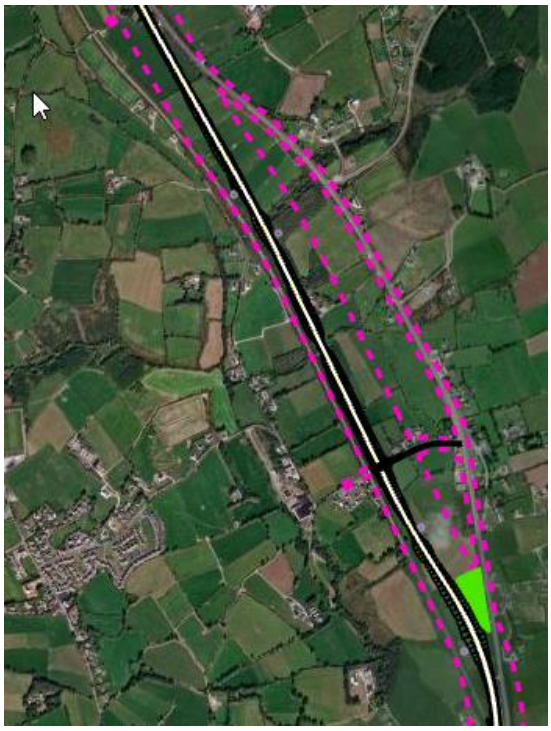


Figure 3-8 Proposed N20 Realignment at Rathduff

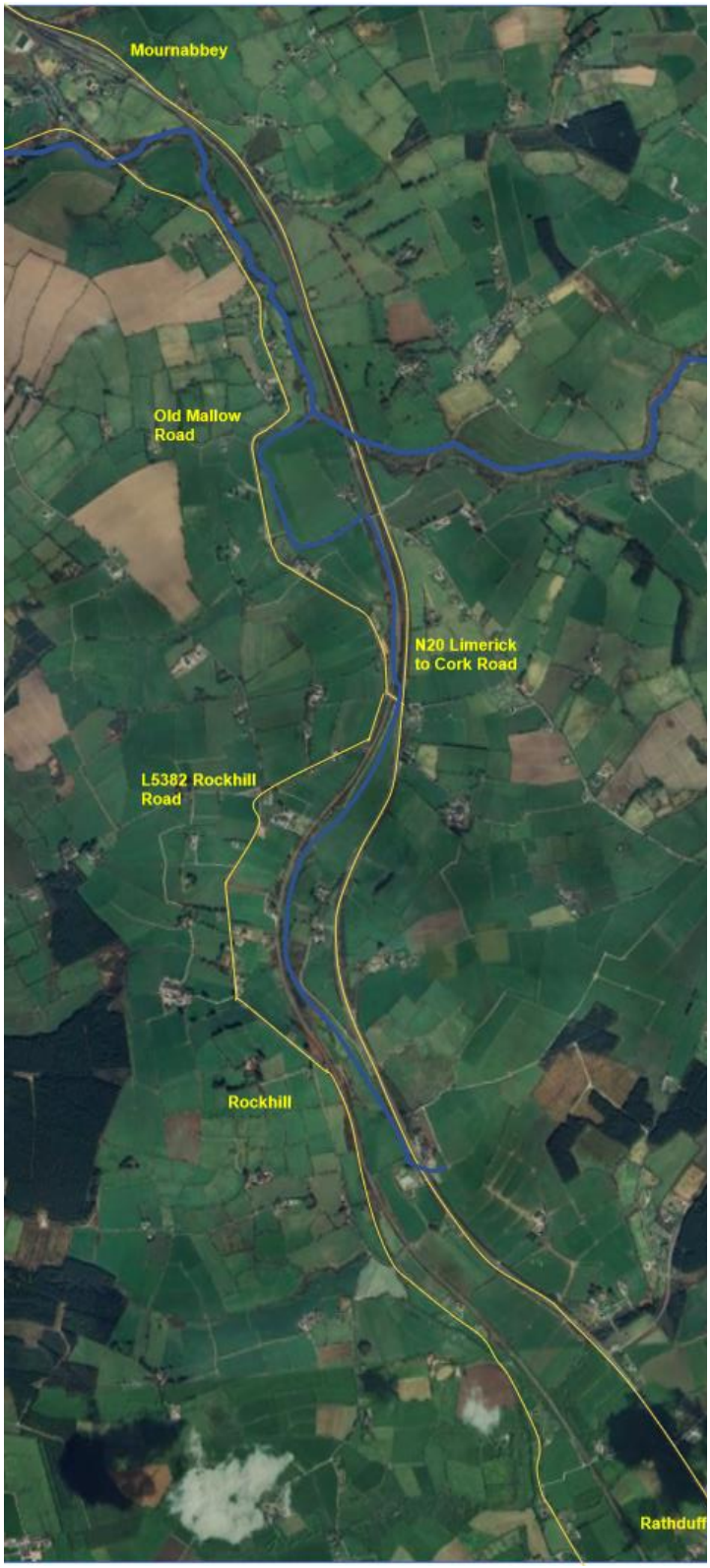


Figure 3-9 Site Selection Mournabbey to Rathduff

The cross gradients of the topography along this section of railway vary between 4% and 11% with the low point to the west of the railway.

At Rathduff the existing and proposed N20 / M20 corridor crosses the railway and runs north south between the railway and the River Martin. Together, these provide effective boundary to considerations of a depot location between Rathduff and Blarney, west of the railway.

The Old Mallow road crosses the railway at Rathduff and runs south largely parallel to the railway. The location exhibits significant ribbon development along the local road network.

There are two public road crossings of the railway between Ballynaraha and the Stoneview Road, east of the railway. There is a third crossing which appears to be a private access. The lands here rise above the railway although a sufficiently large parcel of land can be identified which may accommodate a depot. Examination of the ground profile identifies a rise of up to 28m above the railway level at the northern end of a prospective plot. It is considered that the degree of intervention necessary at this location to accommodate a depot would be inordinate and inappropriate.

Further to the south, the Stoneview lands, northeast of the railway are sufficiently large to accommodate a depot. Station Road bisects the prospective site. The lands do not appear to be subject to flood risk and gradients across the lands are shallow. The eastern portion of the lands have, however, been the subject to planning application for significant residential development and are included within a strategic planning zone. This site has been included in the initial long list of sites.

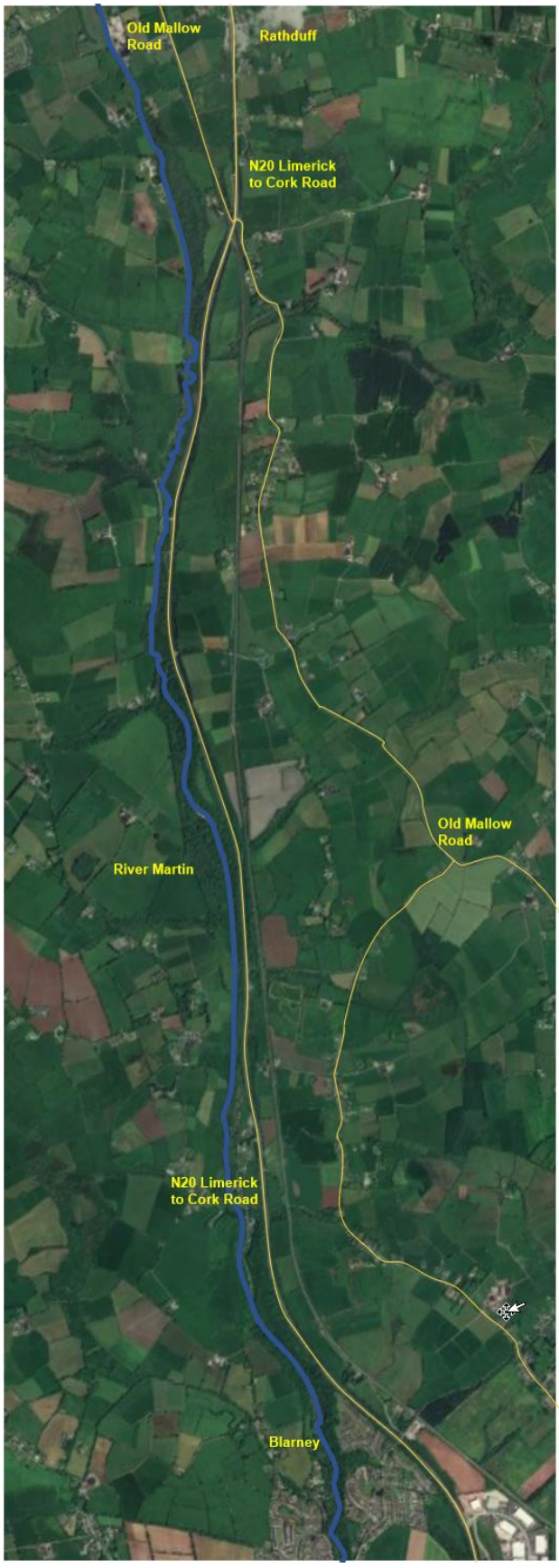


Figure 3-10 Site Selection Rathduff to Blarney

3.16 Further characterisation of sites to facilitate multi-criteria analysis

All sites included in the Shortlist were examined to confirm the most suitable depot layout configuration for each site and the site extent was adjusted to reflect the updated layout. Once confirmed each candidate site was subject to further characterisation across all disciplines identified in the multi-criteria analysis template. The MCA spreadsheet was used to facilitate characterisation of the options and rating of the impact of each site option under each discipline.

3.17 Multi-criteria analysis for selection of the preferred site

The multi-criteria analysis was implemented on the basis of supplementary information acquired and developed for the sites. This assessment provided an initial indication of the emerging preferred Option for the depot site.

Results will be included in Section 9.

3.18 Sensitivity analysis to confirm the appropriateness of the emerging site preferred option

Once the initial outcome of the MCA analysis was complete, an analysis was carried out of the principal criteria under which options are performing better than others. This process was used to confirm the appropriateness of the choice of emerging preferred option.

4. Multi-Criteria Analysis and Comparators

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.

4.2 Transport and User Benefits and Other Economic Impacts

4.2.1 Alignment with Customer Requirements Specification

It is proposed to compare options in respect of the following comparators:

- Distance to the city centre

With focus on the main transport hub, this criterion will allow comparing distance from alternative depot site locations to Kent Station.

Output: It is proposed that the average distance to Kent station is calculated and distances to different optional locations are compared with the average.

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

CACR Programme trains start operations at different stations on the CACR network. For some of them, access from the depot location would require a turn-back (for instance: getting from Midleton to Cobh requires turn-back at Glounthaune, getting from the Mallow line to Midleton a turnback at Mallow, while getting from Mallow north to Midleton does not require a turn-back). The criterion would be calculated as the sum of products of numbers of turn-backs and number of trains terminating at a certain location per hour according to TSS.

In some cases, the depot location may require trains going to/from the depot to cross the highly occupied line section through a flat junction. This criterion is based on the peak hourly traffic (according to the TSS, with long-distance and freight trains included) on the line section where depot is located. Also, traffic to/from the depot must have a certain capacity reserve on the adjacent line. The lower the traffic on the adjacent section is, the better.

Although hard to access in regard to the CACR network, from a strategic robustness perspective, access to more than one line (through other lines in the network) may play an important role in the case of any works/malfunction/disaster affecting basic access line.

Output – qualitative description of how options are better or worse than others.

- 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 – qualitative description of how options are better or worse than others.

4.2.2 Transport Costs and Operational Characteristics

As part of the assessment the comparative capital and operational costs of options needs to be considered. In addition, it is proposed to consider the release of diesel motorised units to other lines, and the potential for

taking advantage of latent passenger demand associated with each location. The characteristics are as follows:

- Capital and operational expenditure cost estimates – Output – value for each depot site.

  This will 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 etc.

- Release of DMUs to other lines – Output, number of units released for each site.
- Latent Passenger Demand – Output, comparative ranking of sites.

Output – qualitative description of how options are better or worse than others.

4.2.3 Site Security

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, comparative ranking of sites;

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.

Output – qualitative description of how options are better or worse than others.

4.3.1 Impacts on Existing Accessibility

The proposed depot is required to facilitate the electrification of the CACR Programme network for operation and maintenance 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 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 – qualitative description of how options are better or worse than others.

4.3.2 Freight Access

Potential impacts on access for freight traffic to the proposed depot sites during operation and access to freight within 1km of the proposed sites has been considered.

Output – qualitative description of how options are better or worse than others.

4.4 Social Impacts

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 in

itself is not intended for public use, but rather to facilitate the electrification of the CACR Programme network for operation and maintenance of the train fleet. As such, the social impacts considered under TAF are not applicable to this element of the project. Instead, 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 – qualitative description of how options are better or worse than others.

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.

Output – qualitative description of how options are better or worse than others.

4.5.1 Change in Quality of Public Realm

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.

Output – qualitative description of how options are better or worse than others.

4.5.2 Existing Transport Network and Service Impact

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.

Output – qualitative description of how options are better or worse than others.

4.5.3 Material Assets: Agricultural Properties

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 4-2** 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.

Rating	Criteria
	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:

- Landtake.
- 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	Landtake – Predominantly offline (on private agricultural lands). Significant landtake and land severance impacts on agricultural properties. Significant direct impacts on farmhouses and farm buildings / facilities. Significant impacts on key constraints present.
Medium	Landtake – Predominantly offline (on private agricultural lands). Landtake and land severance impacts on agricultural properties. Direct impacts on farmhouses and farm buildings / facilities. Impacts on key constraints present.
Low	Landtake – Online (on public road / public lands) / offline (on private agricultural lands. Landtake 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	Landtake – Online (on public road / public lands) / offline (on private agricultural lands. Landtake 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 landtake, farm division and impacts on access to remaining lands. The impact of landtake 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 farms 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

4.5.4 Material Assets: Non-Agricultural Properties

The options assessment comprises an assessment of depot option sites and the potential option impact on non-agricultural property. This will involve assigning a value rating and an impact rating to each option based on the criteria in **Table 4-5**.

Table 4-5 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
Significance of impact	Significance category and MCA score based on the combination of both the value and impact ratings.	

The value rating in **Table 4-5** 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 in **Table 4-6**.

Table 4-6 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 non-agricultural property types along the route option corridor. The quantitative assessment considers the level of non-agricultural 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:

- Landtake.
- 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 4-7 for the option alignment.

Table 4-7 Impact rating criteria

Rating	Qualitative Criteria
High	Landtake 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 landtake, direct impacts to properties and impacts on property access. The assessment of the option impact is based on the effect of the proposed option landtake boundary on non-agricultural property present.

A direct impact on residential, community or commercial property may be a significant negative impact on the property. On residential property, landtake 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, landtake 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 4-8. 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 2-8 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

4.5.5 Planning Applications

This assessment looks to identify any active or granted planning applications within 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;
- Cork County Council planning search;
- Cork City Council planning search.

Output – qualitative description of how options are better or worse than others.

4.5.6 Zoned Land, Land Use Planning and Spatial Planning

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:

- Cork County Development Plan 2022-2028
- Cork City Development Plan 2022-2028

Output – qualitative description of how options are better or worse than others.

4.6 Safety Impacts

4.6.1 Collisions & Related Impacts

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.

4.6.2 Other Safety Impacts

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:

- Alignment integration with local urban infrastructure;

Output – qualitative description of how options are better or worse than others.

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);
- 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).

4.8 Climate Action Impacts

Under the TII Guidance, , the primary aspects of the assessment relate to quantifying the greenhouse gas emissions by quantifying carbon sources. The methodology employed for multi-criteria analysis is outlined below.

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 ofof tCO_2e and categorised by lifecycle stage as demonstrated.

PE-ENV-01104: Climate Guidance for National Rods, Light Rail and Rural Cycleways (offline & Greenways) – Overarching Technical Document (TII 2022a) provides guidance for assessing lifecycle carbon emissions . At Phase 2 Stage 2 information is available to input into the online TII Carbon Assessment Tool (TII 2025a). The goal of the tool is to assist project development as a decision-making aid that promotes lower carbon infrastructure and integrates environmental considerations into transport infrastructure planning, construction and operation.

The change in operational phase road emissions was also considered using the TII (2022b) methodology and TII Road Emissions Model (REM) (GE-ENV-01107) (TII 2025b), however, the potential for significant adverse impacts due to traffic have been screened out for the operational phase.

Preference of route options is based on the qualitatively assessed lowest lifecycle GHG emissions and the potential to affect operational phase modal shift away from private vehicles public travel. Consideration is given to routes which have higher potential for mitigation during further design. When considering the proposed depot options, the number of additional kilometres travelled with empty trains which are required for depot access have been considered as part of the assessment. While the trains will run on electricity and therefore have lower carbon emissions than diesel trains, they will still have some carbon emissions, or if running on fully renewable power, add additional requirements on the electrical grid. 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** 4-9

The Transport Appraisal Framework (TAA) from the Department of Transport scoring differs from the TII scoring system and reviews three elements for significance with respect to climate action:

- 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 CO_2 emissions.

The change criteria are shown in **Table 4-10.** For change in CO2 the score should be based on the projected change in CO_2 as a result of the scheme based on design year. 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 4-9 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 4-10 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%

4.9 Climate Adaption Impacts

This looks to evaluate the impact of the project on adaption 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 methodology employed for multi-criteria analysis is outlined below

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 Transport Appraisal Framework (TAF) guidelines "Adaptation Scorecard" consider climate hazards with a focus on flood risk. The climate screening risk assessment comprises a sensitivity analysis which evaluates the project's vulnerability to climate change. The screening assessment 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. Sensitivity score 3;
- Medium Sensitivity: The climate hazard may have a slight impact on assets and processes, inputs, outputs and transport links. Sensitivity score 2; and
- Low Sensitivity: The climate hazard has no (or insignificant) impact. Sensitivity score 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 4-11.** The MCA scoring scale is detailed in **Table 4-12**.

The Climate Change Risk Assessment results will inform the comparative ranking in combination with the GHGA, while considering possible mitigation measures. Since to 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 4-11 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 4-12 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.
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.

Score		Description
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 4-13 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

4.10 Local Environmental Impacts

4.10.1 Biodiversity

This section presents an appraisal of the Project 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 for the options assessment comprised a desk study undertaken in October and November 2024. These studies were used to identify and describe areas of ecological value.

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

- Environmental Protection Agency – water bodies and water quality (www.epa.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.
- The National Parks and Wildlife Service (NPWS) online database, consulted for designated sites of nature conservation interest in the study area, accessed October 2024 (www.npws.ie).
- Review of Ordnance Survey maps and orthophotography.

In addition to the desk study 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.

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

- The entire area within each option and a 1 km buffer.
- All watercourses within the options, downstream and including estuaries and coastal waterbodies.

The NBDC desk study used 2 km grids that were in the proximity of the option footprint. Results were filtered by date, only including records from the last decade. This included any invasive species recorded as well as rare and protected flora and fauna species.

Wintering bird surveys were undertaken at each site, where land access was granted, from December 2024 to March 2025.

4.10.2 Water Resources and Soil Quality

4.10.2.1 Water Resources – Flood Risk

The assessment will be informed by a strategic flood risk assessment, as laid out in the Planning System and Flood Risk Management Guidelines (2009) for all shortlisted sites identified as being subject to flood risk. The strategic assessment will use readily available information and expert judgement. Criteria used will utilise 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.
- Percentage encroachment of the depot site on the floodplain

- 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 MCA assessment for the short-listed sites will be verified by detailed 2d modelling of fluvial and pluvial sources of flood risk in the present day and with climate change. The detailed modelling will allow thecriteria within the development management Justification Test to be applied, namely:

- Will not increase flood risk elsewhere
- Minimize risk to people and property
- Manage residual risks and ensure emergency access and egress
- Any mitigation measures are adaptable to future climate drivers

MCA Scoring (Notes at this stage)

- 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.
- 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.
- 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.
- 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.

4.10.2.2 Water Resources – Hydrogeology

The assessment in this section was carried out in accordance with the National Roads Authority (NRA) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2008). The methodology employed for multi-criteria analysis is outlined below.

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.

4.10.2.3 Soil Quality

Under the TAF, this looks to undertake an option selection with respect to soil quality. The methodology employed for multi-criteria analysis is outlined below.

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.

4.10.3 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 focussing 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 multi-criteria analysis is outlined below.

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:

- Cork County Development Plan 2022-2028
    - Volume 01 Main Policy Material
    - Volume 02 Heritage and Amenity
    - Interactive Map Viewer1
- Cork City Development Plan 2022-2028
    - Chapter 13 Landscape, Recreation and Amenity
    - Appendix 7 Scenic Routes
    - Interactive Map Viewer2
- GeoHive Map Viewer, Tailte Éireann3
- Historic Environment Viewer, National Monuments Service4
- 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 locations is

[1] https://corkcocoeur.maps.arcgis.com/apps/webappviewer/index.html?id=b19f8b17dca5474aa2ce1f961ae0fa8d

[3] https://www.arcgis.com/apps/webappviewer/index.html?id=3ae19cc156bf4706a929304bf8fcc4f6
[4] https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=0c9eb9575b544081b0d296436d8f60f8

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 4-13**.

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 4-13**.

Table 4-13 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	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

Description of Baseline Sensitivity	Rating	Description of the likely Magnitude of change arising from Proposed Project
landscapes / views the principle management objective is to facilitate change that does not detract from landscape value / visual amenity or enhances them.		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.

4.10.4 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 multi-criteria analysis is outlined below.

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.
- Cork County Development Plan 2022-2028 (A06 Record of Protected Structures) (RPS and ACA).
- Cork City Development Plan 2022-2028, The Record of Protected Structures (RPS and ACA).
- Record of Monuments and Places for Counties: Cork;
- Sites and Monuments Record for Counties Cork;
- National Monuments in State Care Database;
- Preservation Orders List;
- Cartographic and aerial photographic sources;
- Excavations Bulletin (1970-2024)

The study area for this assessment consisted of the area within the proposed site depot locations, as well as the area extending 250m 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.

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 **Table 4-14** below.

Table 4-14 Five level rating system for Cultural Heritage Assessment

Importance	Cultural Heritage Receptors
Very high	• 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

Importance	Cultural Heritage Receptors
	• Other designated Cultural Heritage Receptors of international importance. • World Heritage Properties (including the tentative list)
High	• 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	• 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	• 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	• 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.

4.10.5 Noise & Vibration

This assessment looks to examine the potential change in noise pollution and level of exposure to noise. The methodology employed for multi-criteria analysis is outlined below.

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 has 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.

4.10.6 Air Quality

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
- PM2.5 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 with 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 CACR 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 CACR Depot, and in the do-something scenario the CACR programme, which includes over 60km of newly electrified rail line and significant increases in frequency of service, cannot proceed.

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 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 (NOx) and particulate matter (PM10 and PM2.5) 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 route selection process is to indicate whether there are likely to be significant air quality impacts associated with the proposed 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 routes can be carried out based on a calculation of the Index of the Overall Change in Exposure by human receptors to nitrogen oxides (NOx) and particulate matter (PM10 and PM2.5) 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":

- 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 route. 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 road centre line. Where these two requirements are fulfilled, the assessment at the site selection stage involves a calculation of nitrogen oxides (NOx) 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 CACR network as it transitions from its current 63km in length of DMU railway to 63km of electrified railway. 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 4-15**.

Table 4-15 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

4.10.7 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 Multi-criteria analysis is outlined below.

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 withing 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 reductions 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 options 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.
6. In reality none of the options presented are considered significantly preferrable 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.

5. Depot Site Longlist

Considering the criteria for identification of possible depot locations, as listed in **section 3.10**, a desktop study was undertaken to localise all the potential locations along the whole CACR Network. The complete list of locations identified for the initial assessment is as follow:

Eleven (11) possible depot locations have been considered across the CACR Network:

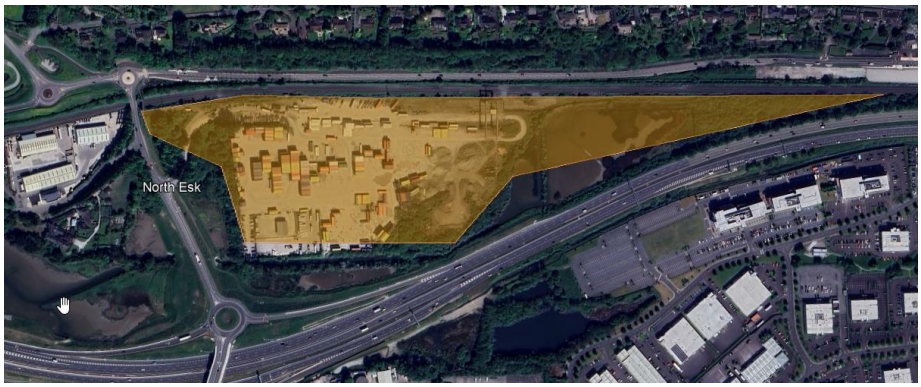
1.) Option 1: North Esk/Dunkettle
2.) Option 2: Rathpeacon / Monard
3.) Option 3: Midleton
4.) Option 4: Quarterstown
5.) Option 5: Ballyadam
6.) Option 6: Ballyrichard More
7.) Option 7: Quarterstown Upper
8.) Option 8: Former Sugar Beet Factory Site
9.) Option 9: Dromsligo
10.) Option 10: Kilmona Lower
11.) Option 11: Stoneview

5.1 Initial characterisation of sites.

The initial characterisation of each of the site options in presented below.

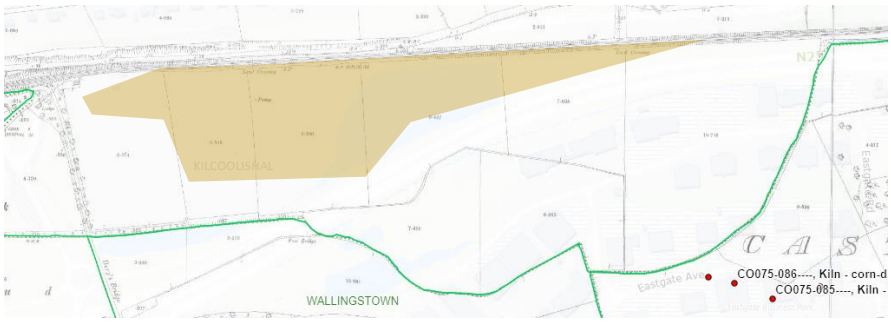
5.1.1 Option 1: North Esk/Dunkettle

Area	11.3 Ha
Length:	1,000 m
Width:	200m
Flooding risk:	Yes
Distance to City Centre:	6.0 Km
Site Gradient	0.3% Long 0% Trans

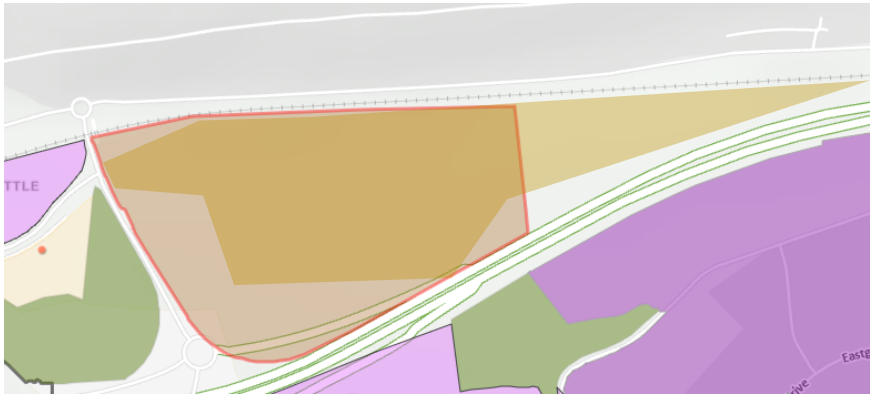


Site Layout on Aerial Photography

OPW Flood Mapping



Historic Environment Viewer

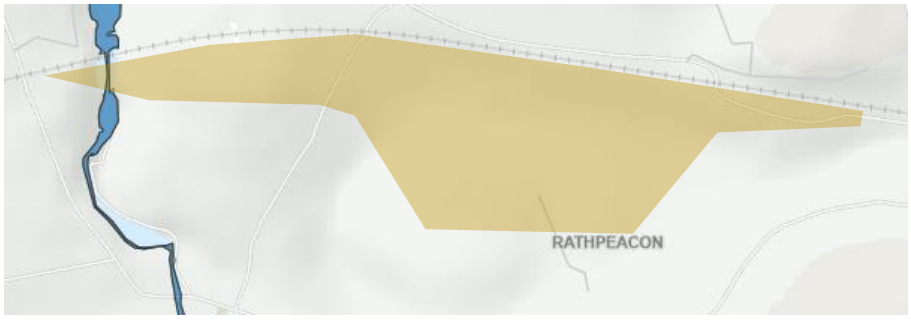


Land Use Zoning Extract

5.1.2 Option 2: Rathpeacon / Monard

Area	25.0 Ha
Length:	1,500 m
Width:	322m
Flooding risk:	Yes
Distance to City Centre:	6.0 Km
Site Gradient	1.0% Long 10% Trans

Site Layout on Aerial Photography



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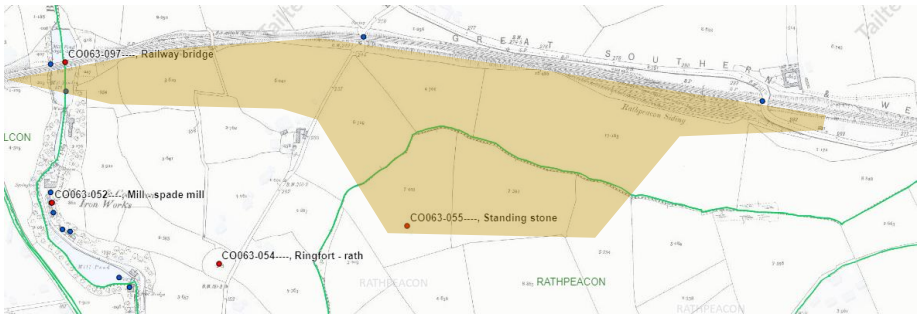
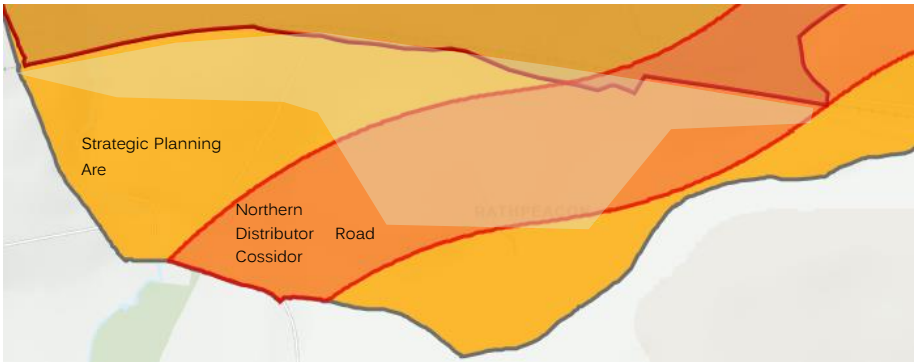


Historic Environment Viewer



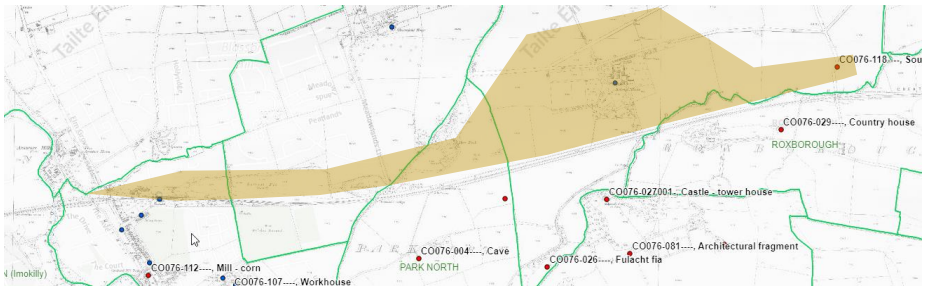
Land Use Zoning Extract

5.1.3 Option 3: Midleton

Area	22.0 Ha
Length:	1,800 m
Width:	260m
Flooding risk:	Yes
Distance to City Centre:	21.0 Km
Site Gradient	3.0% Long
	3.0% Trans

Site Layout on Aerial Photography

OPW Flood Mapping



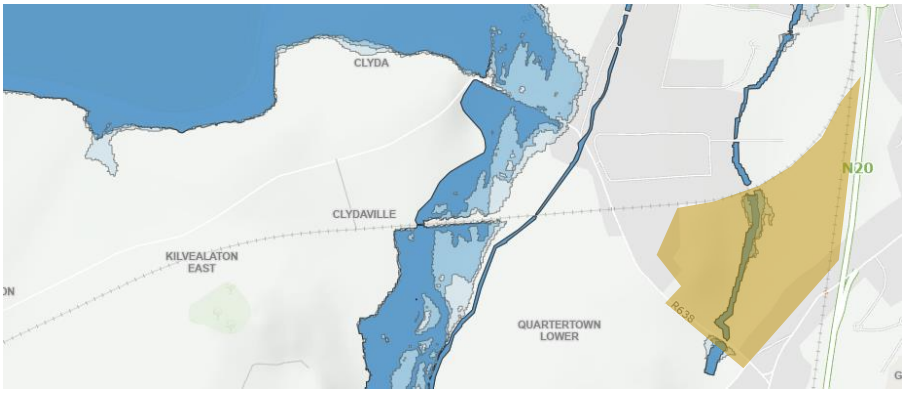
Historic Environment Viewer

Zoning Map Extract

5.1.4 Option 4: Quarterstown

Area	20.0 Ha
Length:	700 m
Width:	400m
Flooding risk:	Yes
Distance to City Centre:	32.0 Km
Site Gradient	1.0% Long
	1.0% Trans

Site Layout on Aerial Photography



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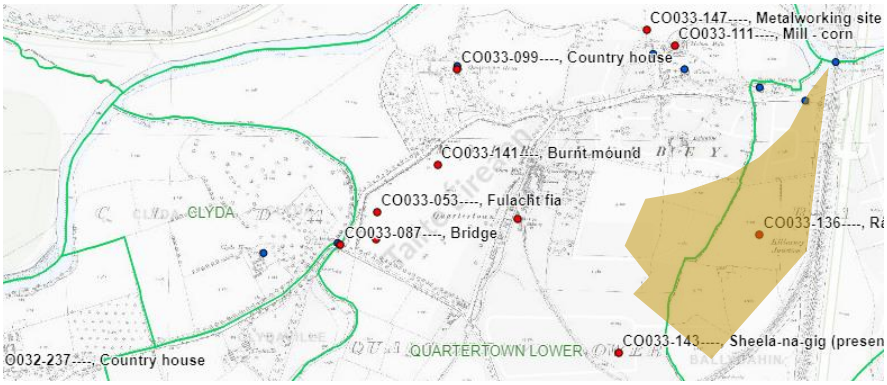
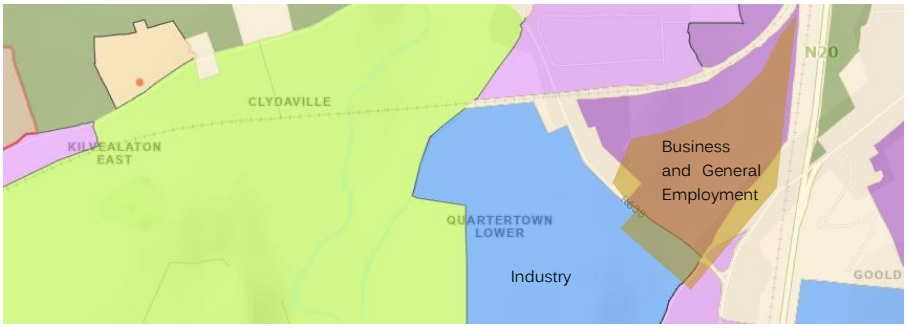


Historic Environment Viewer

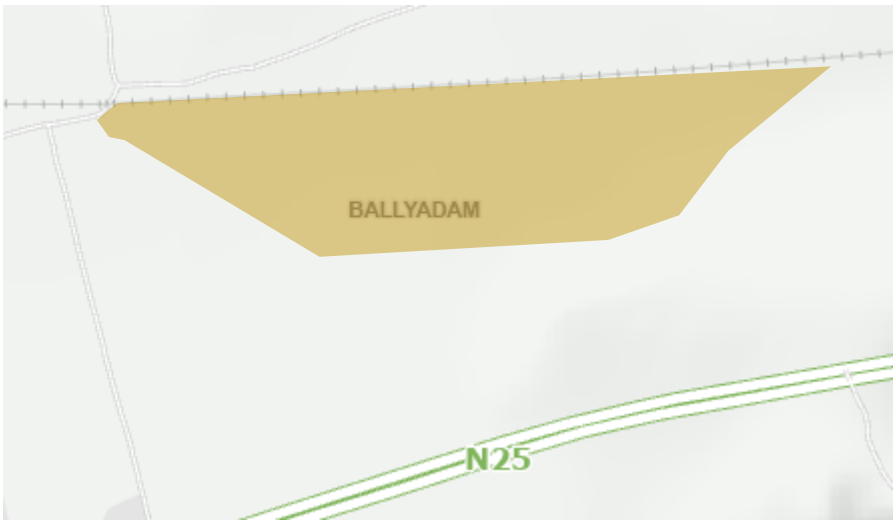


Land Use Zoning Extract

5.1.5 Option 5: Ballyadam

Area	14.0 Ha
Length:	910 m
Width:	200m
Flooding risk:	No
Distance to City Centre:	15.7 Km
Site Gradient	2.6% Long
	1.0% Trans

Site Layout on Aerial Photography



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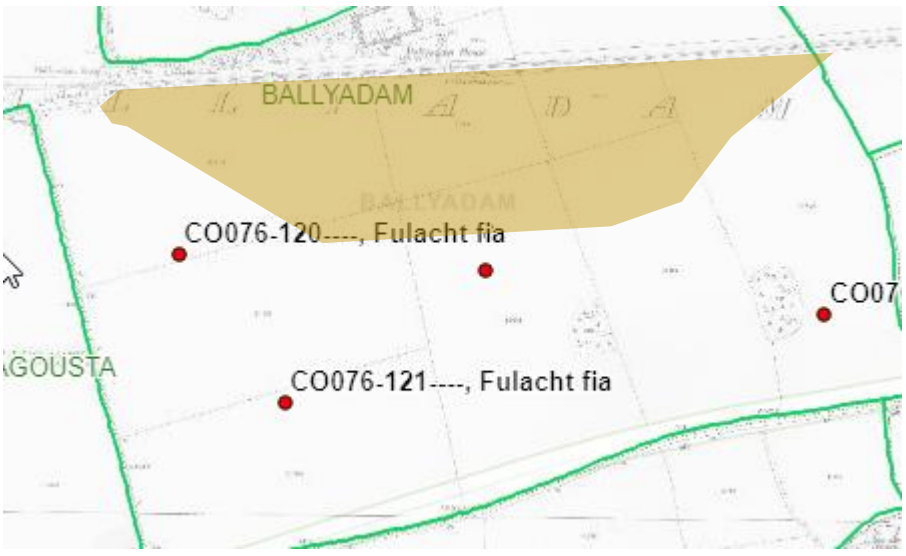
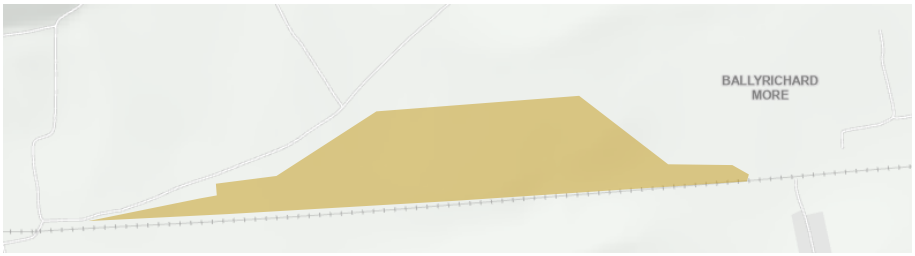


Historic Environment Viewer

5.1.6 Option 6: Ballyrichard More

Area	25.3 Ha
Length:	1610 m
Width:	200m
Flooding risk:	No
Distance to City Centre:	16.2 Km
Site Gradient	1.0% Long
	1.0% Trans

Site Layout on Aerial Photography



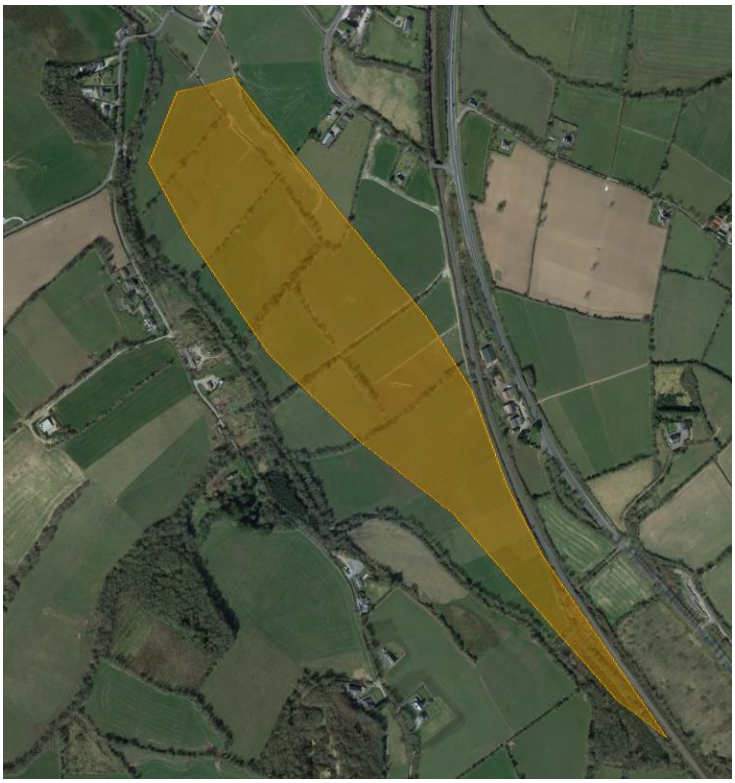
OP W Flood Mapping

Historic Environment Viewer

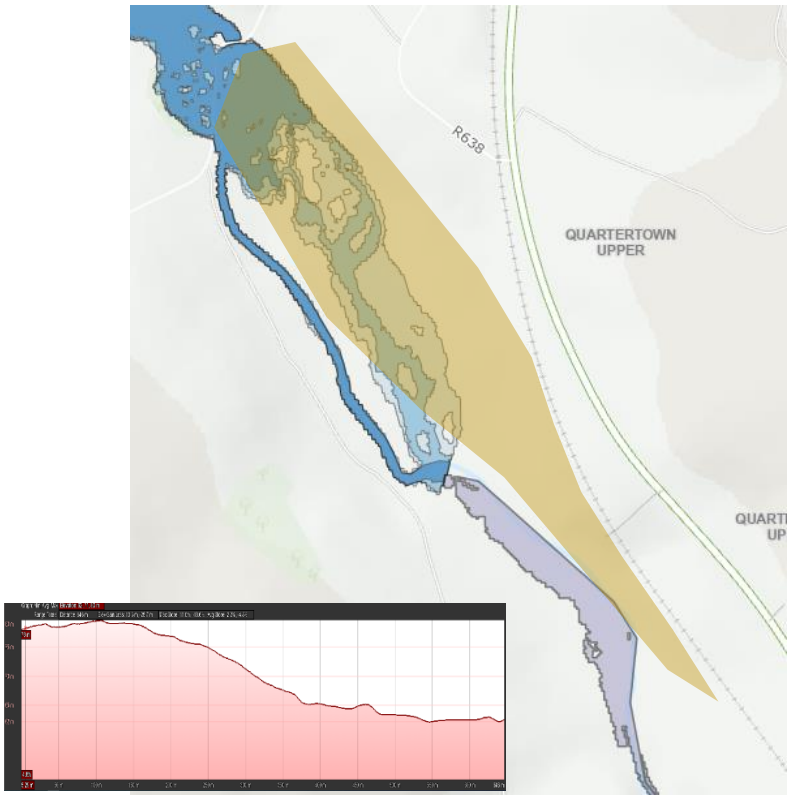
Land Use Zoning Extract

5.1.7 Option 7: Quarterstown Upper

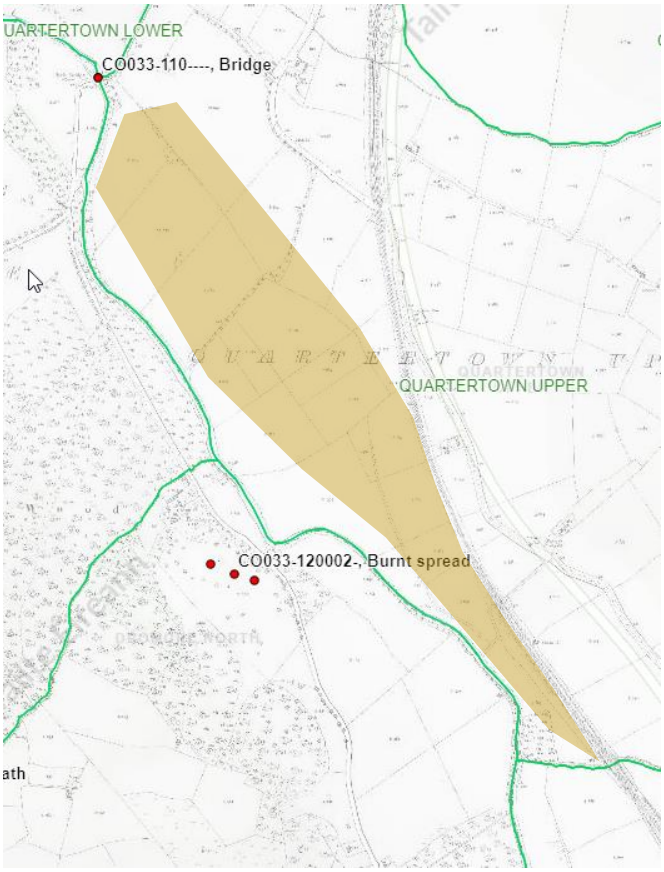
Area	55.0 Ha
Length:	1190 m
Width:	280m
Flooding risk:	Yes
Distance to City Centre:	12.7 Km
Site Gradient	10% Long
	10% Trans



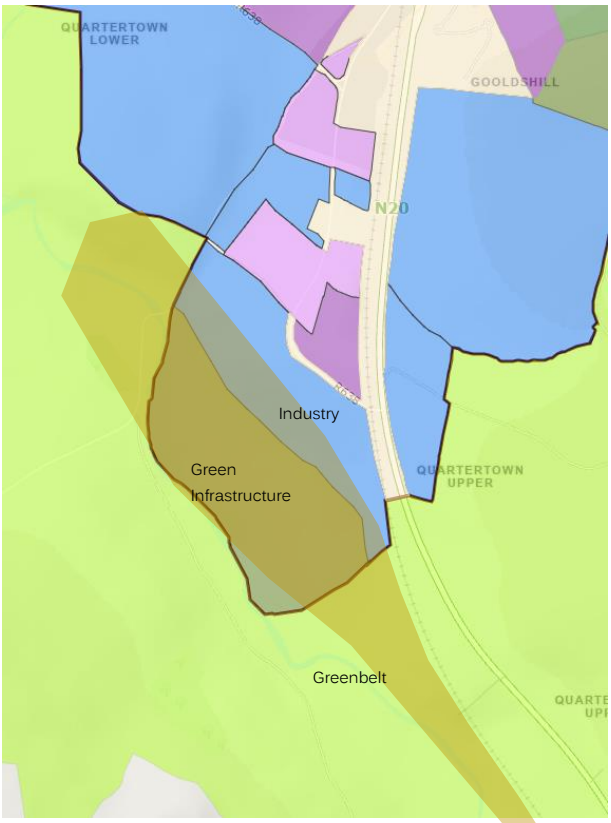
Site Layout on Aerial Photography



OPW Flood Mapping



Historic Environment Viewer

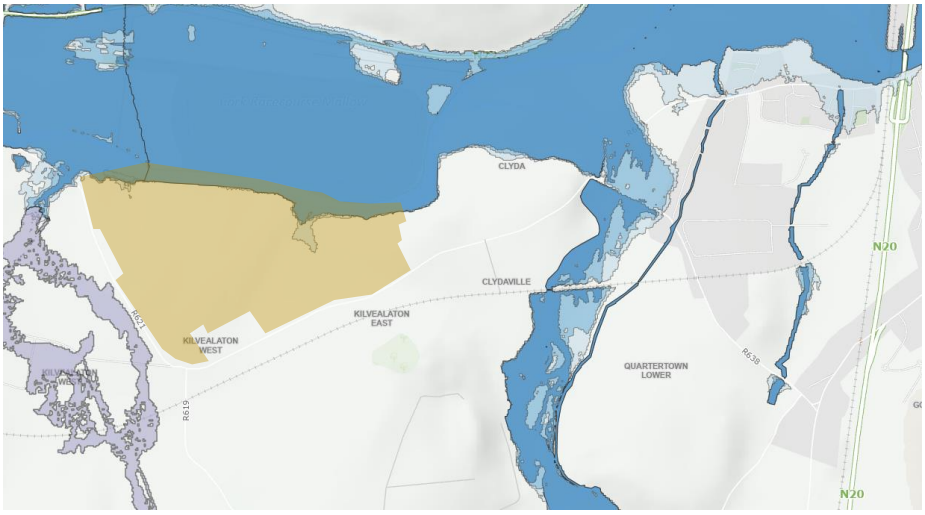


Land Use Zoning Extract

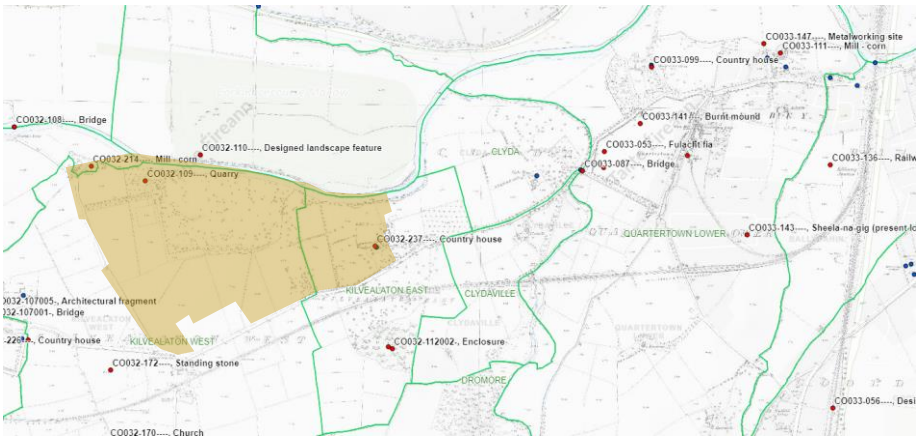
Option 8: Former Sugar Beet Factory Site

Area	55.0 Ha
Length:	1190 m
Width:	400m
Flooding risk:	Yes
Distance to City Centre:	12.7 Km
Site Gradient	1.0% Long
	1.0% Trans

Site Layout on Aerial Photography



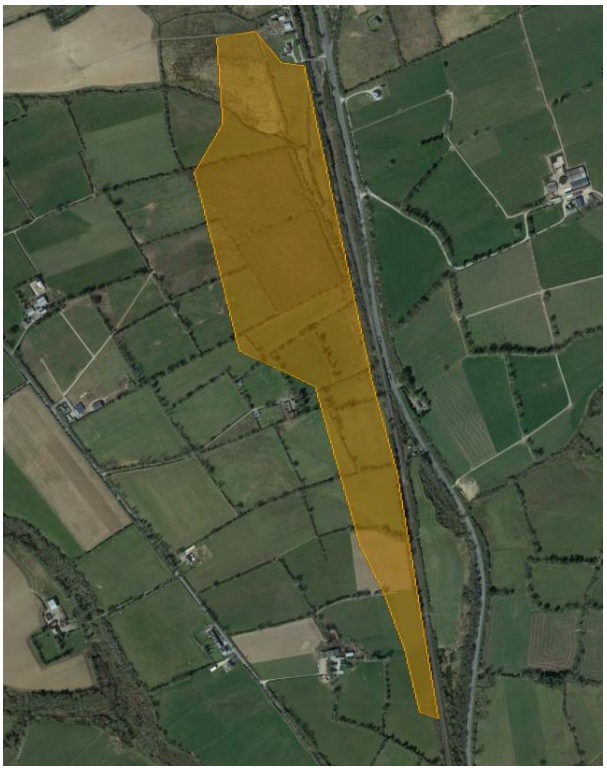
OPW Flood Mapping



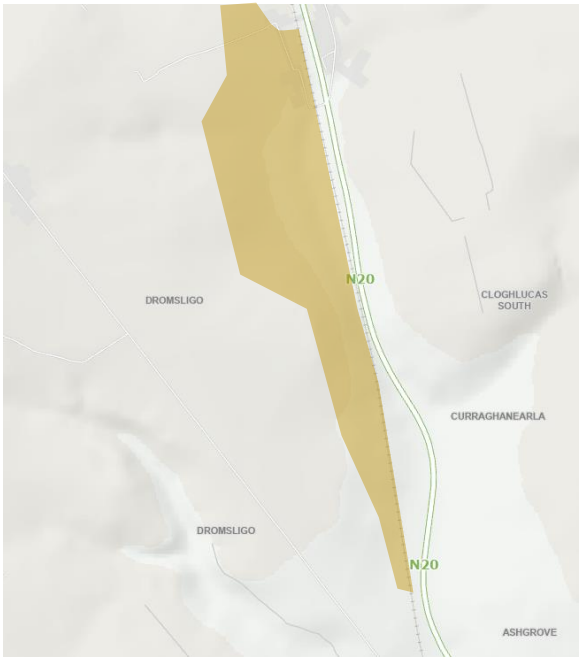
Historic Environment Viewer

5.1.8 Option 9: Dromsligo

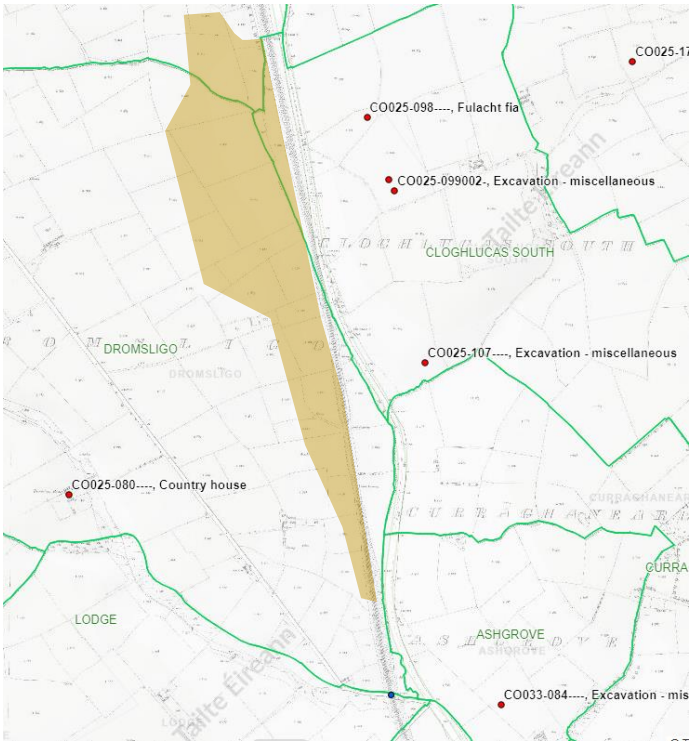
Area	27.5 Ha
Length:	1500 m
Width:	400m
Flooding risk:	No
Distance to City Centre:	36.5 Km
Site Gradient	2.6% Long
	6.0% Trans



Site Layout on Aerial Photography



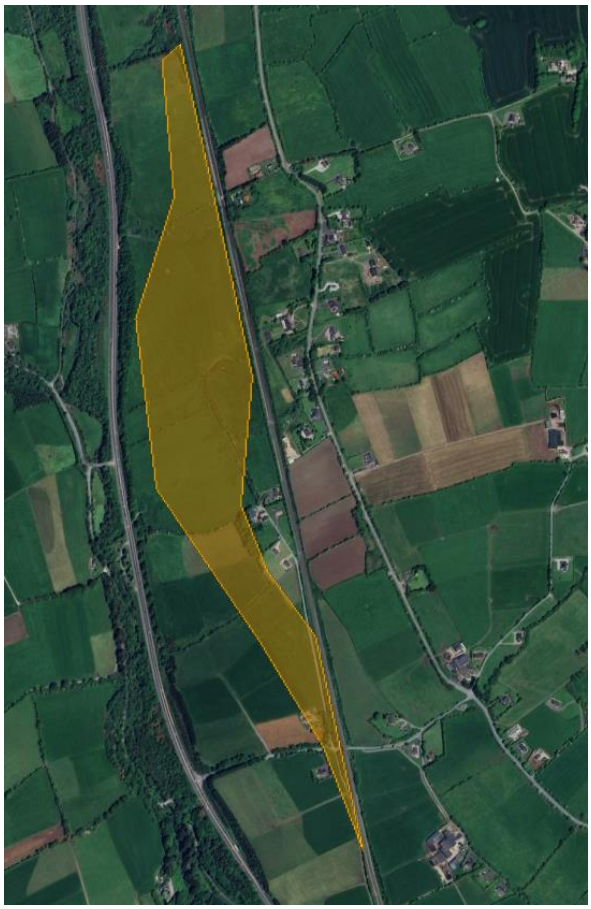
OPW Flood Mapping



Historic Environment Viewer

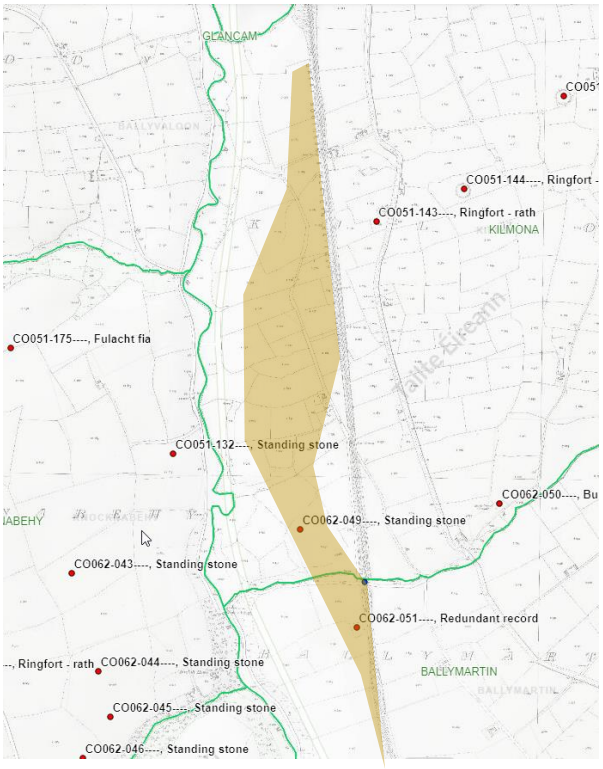
5.1.9 Option 10: Kilmona Lower

Area	25.5 Ha
Length:	2200 m
Width:	280m
Flooding risk:	Yes
Distance to City Centre:	14.0 Km
Site Gradient	3.7% Long
	1.0% Trans



Site Layout on Aerial Photography

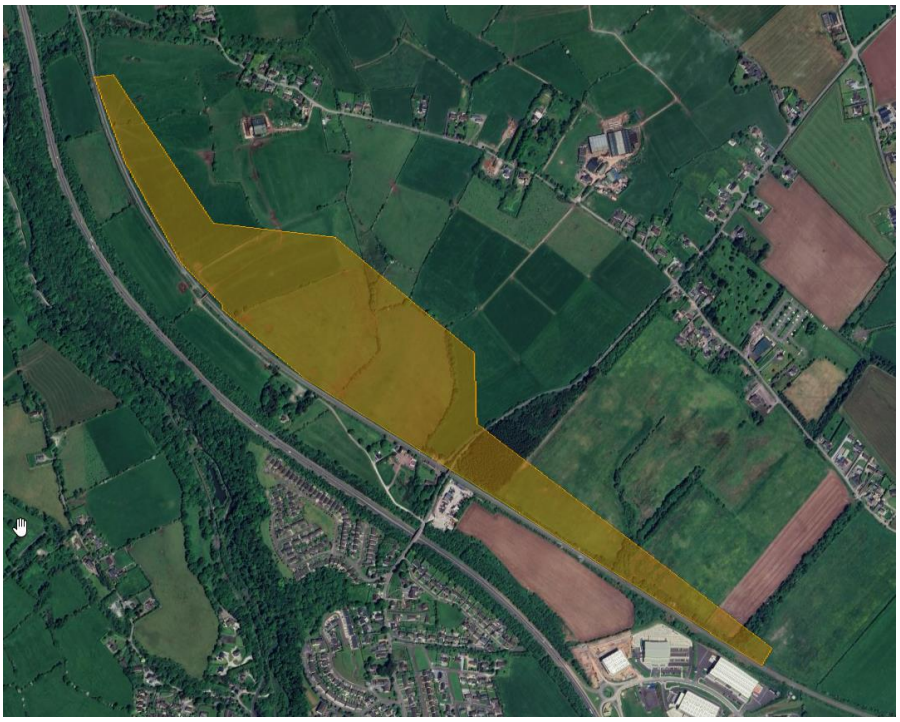
OPW Flood Mapping



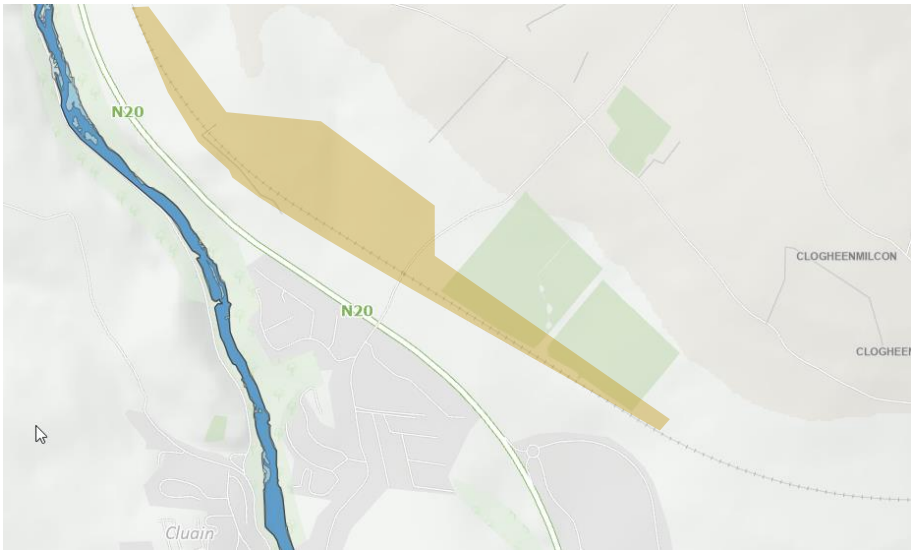
Historic Environment Viewer

5.1.10 Option 11: Stoneview

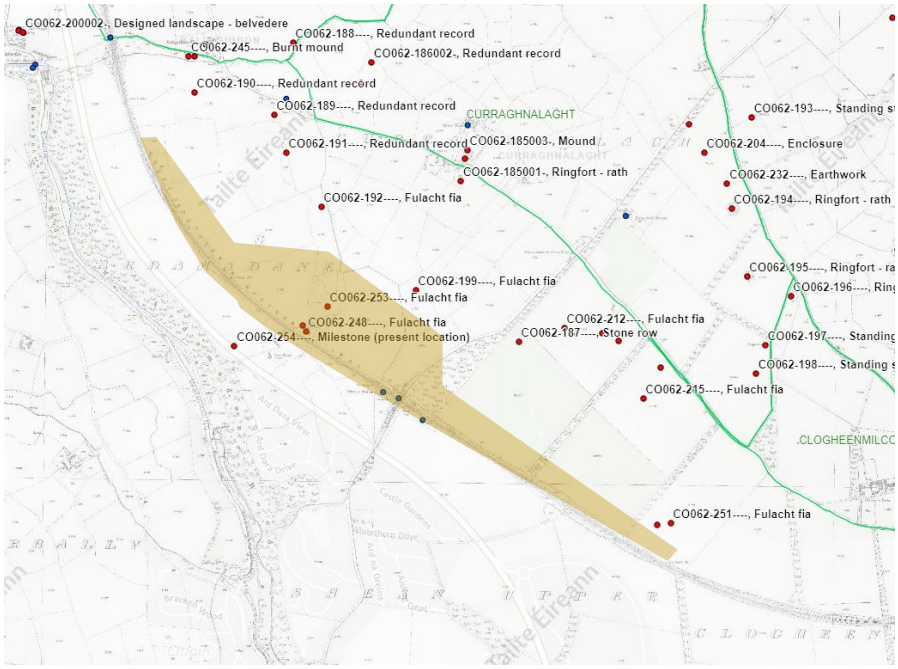
Area	32.6 Ha
Length:	2200 m
Width:	400m
Flooding risk:	No
Distance to City Centre:	9.5 Km
Site Gradient	3.7% Long
	1.0% Trans



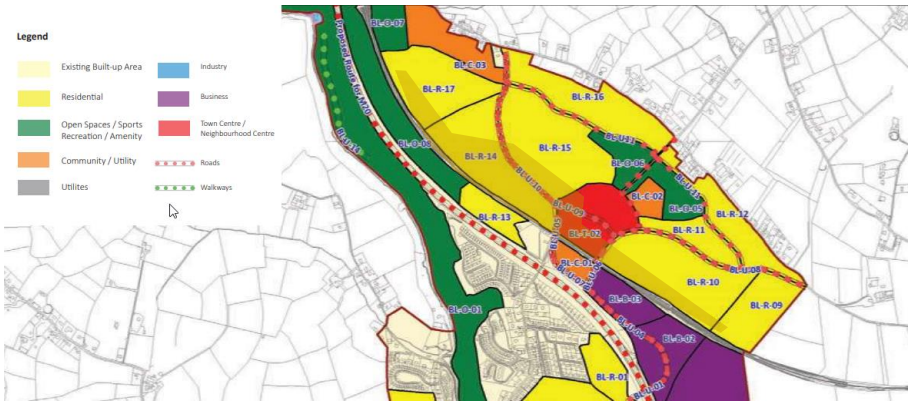
Site Layout on Aerial Photography



OPW Flood Mapping



Historic Environment Viewer



Blarney Masterplan Booklet Extract

6. Sifting of the Longlist to the Shortlist of Site Options

6.1 Introduction

As presented in **Section 3.11**, an initial site characterisation was carried out for the longlist in **Section 6** above.

After this desk study, a group of sites were sifted out of the analysis for not complying with the minimum requirements. A number of additional criteria were used in the sifting process, as presented in **Section 3.12**.

The outcome of this sifting process is as follows:

- Size (the candidate site needs to be sufficiently large to house facilities. This applied to area, length and width): 5No. sifted out as listed in **Table 7-1**.

Table 7-1 Sites Sifted out due to insufficient size to accommodate facilities.

Site Ref	Designation	Line	Criteria A 25 Ha	Area Ha	Criteria B >1,500 m linear	Linear m	Site Slope >2%	Criteria C Flooding	Zoning	Direct Impact on European Sites	Heritage Structures	Distance to City Centre (km)	Operational, Supplementary Facilities	Criteria D Are there fundamental issues?	Prune Y/N
1	North Esk / Dunkettle	Kent to Cobh	No	11.3	No	1000	No 0.3%	Yes	Lands Zoned Brown Field, Transport	Indirect impact on Cork Harbour SPA, Direct Impact on Dunkettle Shore Proposed National Heritage Area	None Affected	6.0km	Not workable	Lands too small to fit depot based on CRS,	Y
3	Midleton	Glounthaune to Midleton	No	22	Yes	1800	No, 3%	Yes			Direct impacts on CO076-004 Cave, CO076-026 Fulacht Fia, CO076-081 Architectural Fragment, Indirect Imapct on CO076-027001 Castle-tower house	21km	Reduce Site length requires Service bay in parallel with stabling and maintenance shed – undesirable wrt CRS	Lands too small, subject to flood risk	Y
4	Quarterstown	Dublin to Cork	No	20	No	700	No	Yes		No, Indirect impact on Blackwater SAC	CO033-143 Sheela-na-Gig, CO033-136 Railway Bridge, CO033-055 Milling Complex, CO033-054 Fulacht Fia	32km	Lands at remote end of EMU network, with increased empty running. Highly inefficient configuration required due to site layout	Lands too small to fit depot based on CRS,	Y
5	Ballyadam	Glounthaune to Midleton	No	14	No	910	Yes 2.6%	No	Lands already subject to development for Interconnector site	No	CO076-120 Fullacht Fia, CO076-123 Fulacht Fia, CO076-122 Burnt Mound	15.7km	Lands already subject to development for Interconnector site. Site unworkable	Lands too small to fit depot based on CRS,	Y
8	Former Sugar Beet Factory Site	Mallow to Trallee	Yes	55	No	1190	1%	Yes, Blackwater River		Yes – Blackwater SAC	Direct Impact CO032-109 Quarry, CO032-237 Country House, Indirect Impact CO032-107003 Church	32.7km	Lands at remote end of EMU network, with increased empty running. Site cannot accommodate two track accesses required by CRS	Site cannot accommodate two track accesses.	Y

Option 7: Quarterstown Upper was sifted out due to a number of significant issues associated with the site as follows:

- The topography across the site would result in significant embankment works to accommodate the shallow gradients needed across the site.
- The short interface with the mainline (800m) is constrained for the accommodation of two accesses to the site and facilitating by directional access to the site.
- The site is located in the floodplain of the Clyda river.

The summary characterization is shown in **Table 7-2** below:

Table 7-2 Quarterstown Upper initial characterisation.

Site Ref	Designation	Line	Criteria A 25 Ha	Area Ha	Criteria B >1,500 m linear	Linear m	Site Slope >2%	Criteria C Flooding	Zoning	Direct Impact on European Sites	Heritage Structures	Distance to City Centre (km)	Operational, Supplementary Facilities	Criteria D Are there fundamental issues?	Prune Y/N
7	Quarterstown Upper	Dublin to Cork	Yes	27.6	Yes	1550 Track Inteface 800m	10% Av%	Yes, Clyda River Floodplain		Indirect, 3km upstream of SPA	Indirect Impact CO042-005 Church, CO042-111 Designated Landscape	30km	Lands at remote end of EMU network, with increased empty running. Large gradients would require significant embankments	Gradients across and along the site are too steep to accommodate a depot	Y

Option 11, the Stoneview Site was sifted out due to the zoning of the lands within the Blarney Masterplan.

The initial characterization of Stoneview Site is summarized in **Table 7-3** below.

Table 7-3 Stoneview Initial Characterisation

Site Ref	Designation	Line	Criteria A 25 Ha	Area Ha	Criteria B >1,500 m linear	Linear m	Site Slope >2%	Criteria C Flooding	Zoning	Direct Impact on European Sites	Heritage Structures	Distance to City Centre (km)	Operational, Supplementary Facilities	Criteria D Are there fundamental issues?	Prune Y/N
11	Stoneview	Dublin to Cork	Yes	32.6	Yes	2200	3.70%	No	This site has direct impact on the Stoneview SDZ	No	Direct impact on 7No Fullacht Fias , Railway Bridge Ref 20906230, indirect impact on railway station Ref 20906231	9.5km	No Issues	SDZ zoning	Y

The sites shortlisted for progression to multi-criteria analysis are as shown in Table 7-4

Table 7-4 Depot Sites Shortlisted for Multi-Criteria Analysis.

Site Ref	Designation	Line	Criteria A 25 Ha	Area Ha	Criteria B >1,500 m linear	Linear m	Site Slope >2%	Criteria C Flooding	Zoning	Direct Impact on European Sites	Heritage Structures	Distance to City Centre (km)	Operational, Supplementary Facilities	Criteria D Are there fundamental issues?	Prune Y/N
2	Rathpeacon / Monard	Dublin to Cork	Yes	25	Yes	1500	Long 1% Trans 10%	No	Lands north of the currently included in SDZ, Site zoned for possible development	No	Indirect impact on standing stone, direct Impact on NIAH bridge (20906315)	6km	Reduce Site length requires Service bay in parallel with stabling and maintenance shed – undesirable wrt CRS	Ground Topography , road layouts and ribbon development challenging	N
6	Ballyrichard More	Glounthaune to Midleton	Yes	25.3	Yes	1610	1.00%	No	Lands not zoned for development	No	None Affected	16.2km	Reduce Site length requires Service bay in parallel with stabling and maintenance shed – undesirable wrt CRS		N
9	Dromsligo	Dublin to Cork	Yes	27.5	Yes	1500	Yes 2.6	No		No	None Affected	36.5km	Lands at remote end of EMU network, with increased empty running		N
10	Kilmona Lower	Dublin to Cork	Yes	25.5	Yes	1950, Track interface 1300m	3% Long, 15% Cross	No		No	Direct Impact CO062-049 Standing stone	14km	Gradients across the site are considered too severe to accommodate a depot		N

Consideration was given to using a number of further sifting criteria. They include the following:

- Flood risk: Although over 50% of the longlist sites exhibited flood risk, all sites subject to flood risk were sifted out due to a combination of other issues. None of the remaining sites are subject to flood risk;

- 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: These impacts were considered insufficiently significant to warrant use in sifting. It was decided that options would be considered individually in respect of the protected sites.

The Longlist of sites has been sifted, with the result of four (4) sites are selected to further characterisation and assessment using multi-criteria analysis. The list is provided in **Table 7-4** above and are as follows: Site Option 2 Rathpeacon / Monard, Site Option 6 Ballyrichard More, Site Option 9 Dromsligo and Site Option 10 Kilmona Lower.

7. Multi Criteria Assessment

7.1 General

Four site locations were progressed to multicriteria analysis with a view to carrying out a detailed evaluation of the options across a spectrum of economic, environmental and social impact criteria. The detailed MCA matrix is included in Appendix A to this document.

Each of the principal criteria are considered in turn below with an explanation of how options performed against one another in each instance. We then provide a statement of the principal reasons the emerging preferred option performed as it did.

7.2 Transport User Benefits and Other Economic Impacts.

Table 8-1 below provides a summary of how each option performed under this criterion.

Table 8-1 Transport User Benefits Summary

	Parameter		Criteria	Option 2 Rathpeacon / Monard	Rating	Option 6 Ballyrichard More	Rating	Option 9 Dromsligo	Rating	Option 10 Kilmona Lower	Rating
1	Transport User Benefits and Other Economic Impacts	1.1	Alignment with Customer Requirements Specification	3 - Slightly Negative Impact	3	3 - Slightly Negative Impact	3	2 - Negative Impact	2	3 - Slightly Negative Impact	3
		1.2	Transport Costs and Operational Characteristics	3 - Slightly Negative Impact	3	4 - Neutral Impact	4	3 - Slightly Negative Impact	3	3 - Slightly Negative Impact	3
		1.3	Site Security	4 - Neutral Impact	4	4 - Neutral Impact	4	4 - Neutral Impact	4	3 - Slightly Negative Impact	3
1	Transport User Benefits and Other Economic Impacts			3 - Slightly Negative Impact	3.3	4 - Neutral Impact	3.7	3 - Slightly Negative Impact	3.0	3 - Slightly Negative Impact	3.0

Under Alignment with Customer Requirements Specification Option 6 Ballyrichard More performs best. As all depot options meet the minimum requirements of the Customer Requirements Specification, they bring largely equivalent benefits to the programme. They differ in performance relative to one another however and that arises principally in respect of how effectively of otherwise they can accommodate the fleet at differing expense. Cost is typically a negative impact. Remoteness is also typically rated negatively as it results in more cost and time in putting trains into service.

In respect of Option 6, the site is comparatively close to the city centre. It is low lying and relatively flat whereas the Dromsligo is located north of Mallow and all of the other sites are in challenging terrain requiring substantial earthworks to construct and restricting the scope for effectively configuring the depot site to effectively deliver the service to CACR.

All sites are equivalent in respect of the interface length with the railway. None can accommodate the facilities in the sequential configuration best suited to the department of the Chief Mechanical Engineer. All will embrace compromises to layout which reflect the challenging terrain of much of the CACR network.

7.3 Accessibility and Social Impacts.

The options perform equivalently under accessibility and social impacts criteria. This is because all options are typically in rural settings and have comparable layouts. Social and accessibility impacts are common for all options.

7.4 Land Use Impacts.

Table 8-2 below provides a summary of how each option performed under this criterion.

Table 8-2 Land Use Impacts Summary

CACR Depot - MCA											
	Parameter		Criteria	Option 2 Rathpeacon / Monard	Rating	Option 6 Ballyrichard More	Rating	Option 9 Dromsligo	Rating	Option 10 Kilmona Lower	Rating
4	Land Use Impacts	4.1	Change in Quality of Public Realm	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
		4.2	Existing Transport Network and Service Impact:	2 – Negative Impact	2	2 – Negative Impact	2	3 – Slightly Negative Impact	3	1 – Highly Negative Impact	1
		4.3	Material Assets: Agricultural Properties	1 – Highly Negative Impact	1	2 – Negative Impact	2	2 – Negative Impact	2	1 – Highly Negative Impact	1
		4.4	Material Assets: Non-Agricultural Properties	1 – Highly Negative Impact	1	3 – Slightly Negative Impact	3	4 – Neutral Impact	4	1 – Highly Negative Impact	1
		4.5	Planning Applications	2 – Negative Impact	2	3 – Slightly Negative Impact	3	4 – Neutral Impact	4	4 – Neutral Impact	4
		4.6	Zoned Land, Land Use Planning and Spatial Planning	3 – Slightly Negative Impact	3	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
4	Land Use Impacts			2 – Negative Impact	2.2	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.5	3 – Slightly Negative Impact	2.5

Option 9 Dromsligo performs best in respect of Land Use Impacts. This is because of it's remote location to the north of Mallow. It does not impact on adjacent developments or planned development. The infrastructure alterations needed to access the site and to retain access for affected properties is less onerous for Option 9 than for other options.

Access infrastructure requirements for Options 2, Rathpeacon / Monard and for Ballyrichard More are most challenging for differing reasons. Option 2 is located remotely in difficult terrain and with poor access infrastructure. Ballyrichard More is located on the remote site of the railway from the N25 dual carriageway requiring more substantial access infrastructure.

In respect of impact on property owners Option 10 performs worst as it results in four properties being isolated between the new depot site and the railway. The other options perform equivalently negatively due to the significant negative impacts associated with the sites on property owners and businesses.

7.5 Safety Impacts and Climate Change Impacts.

Table 8-3 below provides a summary of how each option performed under this criterion.

Table 8-3 Safety and Climate Change Impacts Summary

	Parameter		Criteria	Option 2 Rathpeacon / Monard	Rating	Option 6 Ballyrichard More	Rating	Option 9 Dromsligo	Rating	Option 10 Kilmona Lower	Rating
5	Safety Impacts	5.1	Collisions & Related Impacts	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
		5.2	Other Safety Impacts	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
6	Climate Change Impacts	6.1	Climate Action Impact	4 – Neutral Impact	4	3 – Slightly Negative Impact	3	2 – Negative Impact	2	3 – Slightly Negative Impact	3
		6.2	Climate Adaption Impact	2 – Negative Impact	2	3 – Slightly Negative Impact	3	2 – Negative Impact	2	2 – Negative Impact	2
5	Safety Impacts			4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
6	Climate Change Impacts			3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.0	2 – Negative Impact	2.0	3 – Slightly Negative Impact	2.5

All options perform equivalently under the criteria associated with safety. There is variance however under the criterion of Climate Change Impacts. In this instance Option 2 Rathpeacon / Monard and Option 6 Ballyrichard More performed best. Ballyrichard More performed better than other options due to the relatively low scale of civil engineering intervention associated with this option in comparison to others. This largely due to the flat character of the site. Option 2 performed better than Option 6 under Climate Action Impact due to the closer proximity to the city centre and consequent lower empty running time associated with the option in service delivery.

7.6 Local Environmental Impacts.

Table 8-4 below provides a summary of how each option performed under this criterion.

Table 8-4 Local Environmental Impacts Summary

CACR Depot - MCA											
	Parameter		Criteria	Option 2 Rathpeacon / Monard	Rating	Option 6 Ballyrichard More	Rating	Option 9 Dromsligo	Rating	Option 10 Kilmona Lower	Rating
7	Local Environment Impacts	7.1	Biodiversity	2 – Negative Impact	2	3 – Slightly Negative Impact	3	1 – Highly Negative Impact	1	2 – Negative Impact	2
		7.2	Water Resources & Soil Quality	3 – Slightly Negative Impact	3	2 – Negative Impact	2	3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3
		7.3	Landscape & Visual Quality	2 – Negative Impact	2	2 – Negative Impact	2	2 – Negative Impact	2	3 – Slightly Negative Impact	3
		7.4	Cultural & Heritage	2 – Negative Impact	2	3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3	2 – Negative Impact	2
		7.5	Noise & Vibration	2 – Negative Impact	2	3 – Slightly Negative Impact	3	2 – Negative Impact	2	1 – Highly Negative Impact	1
		7.6	Air Quality	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
		7.7	Electromagnetic Compatibility	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
7	Local Environment Impacts			3 – Slightly Negative Impact	2.7	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	2.7	3 – Slightly Negative Impact	2.7

The options can be seen to perform similarly from an environmental perspective with all requiring significant earthworks. Option 6 performs poorer than other options under Water Resources and Soil Quality due to the presence of Karst features at the site and in the vicinity of the site. Such features can impact a number of environmental parameters negatively and can result in more intensive foundation works associated with construction works.

Minor streams are indicated within the footprint of Option 2 and Option 9, however, they have not significantly impacted the rating due to their limited extent and size.

Option 10 Kilmona lower performs best for Landscape and Visual Quality due to the lack of impact on High Value Landscape designations, with other options having a similar performance overall.

Option 10 Kilmona Lower performs poorly under noise and vibration due to the impact is has on four residential properties which are isolated by the proposed development.

The options perform equivalently in respect of biodiversity, air quality and electromagnetic compatibility.

7.7 Consolidation of Criteria Outcomes.

Table 8-5 below provides consolidation of the assessment across the spectrum of criteria.

Table 8-5 Assessment Summary

	Criteria	Option 2 Rathpeacon / Monard		Option 6 Ballyrichard More		Option 9 Dromsligo		Option 10 Kilmona Lower	
1	Transport User Benefits and Other Economic Impacts	3 – Slightly Negative Impact	3.3	4 – Neutral Impact	3.7	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.0
2	Accessibility Impacts	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
3	Social Impacts	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
4	Land Use Impacts	2 – Negative Impact	2.2	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.5	3 – Slightly Negative Impact	2.5
5	Safety Impacts	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
6	Climate Change Impacts	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.0	2 – Negative Impact	2.0	3 – Slightly Negative Impact	2.5
7	Local Environment Impacts	3 – Slightly Negative Impact	2.7	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	2.7	3 – Slightly Negative Impact	2.7
	Overall Ranking	3 – Slightly Negative Impact	3.3	4 – Neutral Impact	3.5	3 – Slightly Negative Impact	3.3	3 – Slightly Negative Impact	3.2
	Total Ranking / Preferred site	No	23.2	Yes	24.7	No	23.2	No	22.7

Consolidation of the outcome of the assessment was carried out on an averaging basis as contemplated with the Transport Appraisal Framework. Although the ranking range is narrow – 3.3 to 3.5 average. The sum of averaged ratings provides greater distinction between options. In this regard Option 6 has a higher total than other options and appear to warrant consideration as the emerging preferred option.

Examination of the principal distinguishing characteristics associated with Option 6 appears to reinforce this suggestion. They are as follows:

- None of the shortlisted sites have been identified as being subject to flood risk. This site was rated more negatively than other sites as there is evidence of karst features to east and west of the site.
- The main habitats that have the potential to be lost as a result of this option include cultivated land and built land. Compared with other options, this option is considered to have the least negative impact on biodiversity due to the existing environment and the lack of connectivity to designated sites;
- In respect of noise and vibration, this site evidences the lowest Potential Impact Rating of all sites resulting in slightly better performance than other sites;
- The site is comparatively close to the city centre reducing empty running time;
- It is low lying and relatively flat reducing construction cost and simplifying the layout;
- All options perform equivalently in respect of the Customer Requirements Specification;
- The site is located within the extent of the electrified CACR network reinforcing the resilience of same;
- The site is closely located to the N25 dual carriageway which will facilitate access for delivery of train units to the site.

Challenges associated with the site include the presence of Karst in the area and the need to construct access infrastructure from the N25.

Appendix A

MCA Summary Sheet

CACR Depot - MCA											
	Parameter		Criteria	Option 2 Rathpeacon / Monard	Rating	Option 6 Ballyrichard More	Rating	Option 9 Dromsligo	Rating	Option 10 Kilmona Lower	Rating
1	Transport User Benefits and Other Economic Impacts	1.1	Alignment with Customer Requirements Specification	3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3	2 – Negative Impact	2	3 – Slightly Negative Impact	3
		1.2	Transport Costs and Operational Characteristics	3 – Slightly Negative Impact	3	4 – Neutral Impact	4	3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3
		1.3	Site Security	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	3 – Slightly Negative Impact	3
2	Accessibility Impacts		Impacts on existing accessibility	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
			Freight Access	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
3	Social Impacts	3.1	Social Impacts	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
4	Land Use Impacts	4.1	Change in Quality of Public Realm	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
		4.2	Existing Transport Network and Service Impact:	2 – Negative Impact	2	2 – Negative Impact	2	3 – Slightly Negative Impact	3	1 – Highly Negative Impact	1
		4.3	Material Assets: Agricultural Properties	1 – Highly Negative Impact	1	2 – Negative Impact	2	2 – Negative Impact	2	1 – Highly Negative Impact	1
		4.4	Material Assets: Non-Agricultural Properties	1 – Highly Negative Impact	1	3 – Slightly Negative Impact	3	4 – Neutral Impact	4	1 – Highly Negative Impact	1
		4.5	Planning Applications	2 – Negative Impact	2	3 – Slightly Negative Impact	3	4 – Neutral Impact	4	4 – Neutral Impact	4
		4.6	Zoned Land, Land Use Planning and Spatial Planning	3 – Slightly Negative Impact	3	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
5	Safety Impacts	5.1	Collisions & Related Impacts	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
		5.2	Other Safety Impacts	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
6	Climate Change Impacts	6.1	Climate Action Impact	4 – Neutral Impact	4	3 – Slightly Negative Impact	3	2 – Negative Impact	2	3 – Slightly Negative Impact	3
		6.2	Climate Adaption Impact	2 – Negative Impact	2	3 – Slightly Negative Impact	3	2 – Negative Impact	2	2 – Negative Impact	2
7	Local Environment Impacts	7.1	Biodiversity	2 – Negative Impact	2	3 – Slightly Negative Impact	3	1 – Highly Negative Impact	1	2 – Negative Impact	2
		7.2	Water Resources & Soil Quality	3 – Slightly Negative Impact	3	2 – Negative Impact	2	3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3
		7.3	Landscape & Visual Quality	2 – Negative Impact	2	2 – Negative Impact	2	2 – Negative Impact	2	3 – Slightly Negative Impact	3
		7.4	Cultural & Heritage	2 – Negative Impact	2	3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3	2 – Negative Impact	2
		7.5	Noise & Vibration	2 – Negative Impact	2	3 – Slightly Negative Impact	3	2 – Negative Impact	2	1 – Highly Negative Impact	1
		7.6	Air Quality	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
		7.7	Electromagnetic Compatibility	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
	Criteria			Option 2 Rathpeacon / Monard		Option 6 Ballyrichard More		Option 9 Dromsligo		Option 10 Kilmona Lower	
1	Transport User Benefits and Other Economic Impacts			3 – Slightly Negative Impact	3.3	4 – Neutral Impact	3.7	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.0
2	Accessibility Impacts			4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
3	Social Impacts			4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
4	Land Use Impacts			2 – Negative Impact	2.2	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.5	3 – Slightly Negative Impact	2.5
5	Safety Impacts			4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
6	Climate Change Impacts			3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.0	2 – Negative Impact	2.0	3 – Slightly Negative Impact	2.5
7	Local Environment Impacts			3 – Slightly Negative Impact	2.7	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	2.7	3 – Slightly Negative Impact	2.7
	Criteria Consolidation										
	Overall Ranking			3 – Slightly Negative Impact	3.3	4 – Neutral Impact	3.5	3 – Slightly Negative Impact	3.3	3 – Slightly Negative Impact	3.2
	Total Ranking / Preferred site			No	23.2	Yes	24.7	No	23.2	No	22.7

Appendix B

Multi-Criteria Analysis

Iarnród Éireann Irish Rail

CACR Depot - MCA

	Parameter		Criteria	Sub-Criteria (Quantitative/ Qualitative)		Option 2 Rathpeacon / Monard	Rating	Option 6 Ballyrichard More	Rating	Option 9 Dromsligo	Rating	Option 10 Kilmona Lower	Rating
				Quantitative Comparison		Rathpeacon / Monard 25.0Ha (inside the red line boundary), 1.5km length, 6.0km from Kent Station, 1.0% average gradient along site, 10% across site. Located on a non electrified section of the network		Ballyrichard More 25.3Ha (inside the red line boundary), 1.61km length, 16.2km from Kent Station, 1.0% average gradient along site, 1.0% across site. Located on electrified section of the network		Dromsligo 27.5Ha (inside the red line boundary), 1.5km length, 36.5km from Kent Station, 2.6% average gradient along site, 6.0% across site. Located on a non electrified section of the network		Kilmona Lower 25.5Ha (inside the red line boundary), 2.2km length, 14km from Kent Station, 3.7% average gradient along site, 1.0% across site. Located on a non electrified section of the network	
				Qualitative Comparison									
1	Transport User Benefits and Other Economic Impacts	1.1	Alignment with Customer Requirements Specification	Empty Running, Connection to Mainline, Configuration		3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3	2 – Negative Impact	2	3 – Slightly Negative Impact	3
					Empty running (Distance and travel time to the city centre)	Distance to the city centre - 6.0 kms	4	Distance to the city centre - 16.2 kms	3	Distance to the city centre - 36.5 kms	2	Distance to the city centre - 14 kms	3
					Connection to mainline (Rail Access, Turnback, Crossover Requirement)	Site Located on Mallow Line - Will Require 2 directional access - preferrably double ended. Short length of site will require service slab to be in parallel with stabling and maintenance sheds Large crossfall on site will require benching. No turnbacks required to facilitate release of trains at start of service.	3	Site Located on Midleton Line - Will Require 2 directional access - preferrably double ended. Short length of site will require service slab to be in parallel with stabling and maintenance sheds Large crossfall on site will require benching. turnbacks required at Kent / Glounthaune to facilitate release of trains at start of service.	2	Site Located on Mallow Line - Will Require principal access from the south. Short length of site will require service slab to be in parallel with stabling and maintenance sheds Large crossfall on site will require benching. No turnbacks required to facilitate release of trains at start of service.	3	Site Located on Mallow Line - Will Require 2 directional access - preferrably double ended. Short length of site will require service slab to be in parallel with stabling and maintenance sheds Large crossfall on site will require benching. No turnbacks required to facilitate release of trains at start of service.	3
					Configuration (Site Size, Gradient Along Site)	**Configuration:** The dimensions of the plot do not allow for the track alignment and facilities configuration requested as per last IÉ CME CRS documented in Section 3 of the report. **Gradient:** Moderate slope longitudinally - significant cross slope 10%	2	**Configuration:** The dimensions of the plot do not allow for the track alignment and facilities configuration requested as per last IÉ CME CRS documented in Section 3 of the report. **Gradient:** Moderate slope	4	**Configuration:** The dimensions of the plot do not allow for the track alignment and facilities configuration requested as per last IÉ CME CRS documented in Section 3 of the report. **Gradient:** Moderate slope longitudinally - significant cross slope 6.0%	2	**Configuration:** The dimensions of the plot do not allow for the track alignment and facilities configuration requested as per last IÉ CME CRS documented in Section 3 of the report. **Gradient:** 3.7% slope longitudinally - moderate cross slope	2
		1.2	Transport Costs and Operational Characteristics	Capital Cost Estimates, OPEX Cost Estimates, Release of DMUs to other lines, Demand		3 – Slightly Negative Impact	3	4 – Neutral Impact	4	3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3
					Capital Cost Estimates	Estimated Capital Cost = 113 %	1	Estimated Capital Cost = 100 %	3	Estimated Capital Cost = 113 %	2	Estimated Capital Cost = 107 %	2
					OPEX Cost Estimates	Estimated Operational Cost = 100%	4	Estimated Operational Cost = 100%	4	Estimated Operational Cost = 100%	4	Estimated Operational Cost = 100%	4
					Release of DMUs to other lines, Demand	No diference between the sites in respect of release of DMUs to other lines	4	No diference between the sites in respect of release of DMUs to other lines	4	No diference between the sites in respect of release of DMUs to other lines	4	No diference between the sites in respect of release of DMUs to other lines	4
		1.3	Site Security	Site Security		4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	3 – Slightly Negative Impact	3
					Site Security	All options perform equivalently in respect of impact on Site Security		All options perform equivalently in respect of impact on Site Security		All options perform equivalently in respect of impact on Site Security		This site results in the enclosure of a number of residences between the depot and the railway with associated access infrastructure	
2	Accessibility Impacts	2.1	Impacts on existing accessibility	Impacts on access to jobs, key services and recreational facilities, and freight access.		4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
					Impacts on existing accessibility (access to services, jobs, amenities and community facilities)	Although road diversions and bridgeworks are required for all options it is considered that access to local facilities will be largely unaffected by the proposed works		Although road diversions and bridgeworks are required for all options it is considered that access to local facilities will be largely unaffected by the proposed works		Although road diversions and bridgeworks are required for all options it is considered that access to local facilities will be largely unaffected by the proposed works		Although road diversions and bridgeworks are required for all options it is considered that access to local facilities will be largely unaffected by the proposed works	
		2.2	Freight Access			4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
					Impact on access for freight traffic and access to freight facilities	All options are not likely to have an impact on freight access		All options are not likely to have an impact on freight access		All options are not likely to have an impact on freight access		All options are not likely to have an impact on freight access	
3	Social Impacts	3.1	Social Impacts	Impacts on socially disadvantaged geographical areas		4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
					Review of socially disadvantaged geographical areas (HP deprivation index) within 1km of site locations. Scores better if in deprived region.	This option is located within Electoral Division(s) (ED) of Marginally Above Average HP deprivation index. EDs within 1km of the proposed depot site have the same deprivation index. Due to the nature of the proposed depot development which requires speciality skills to work at the depot, all options are likely to have comparable social impacts.		This option is located within Electoral Division(s) (ED) of Marginally Above Average and Affluent HP deprivation index. EDs within 1km of the proposed depot site are also of this mix of affluence. Due to the nature of the proposed depot development which requires speciality skills to work at the depot, all options are likely to have comparable social impacts.		This option is located within Electoral Division(s) (ED) of Marginally Above Average HP deprivation index. Affluency of EDs within 1km of the proposed depot site are identified as Marginally Above Average and Affluent. Due to the nature of the proposed depot development which requires speciality skills to work at the depot, all options are likely to have comparable social impacts.		This option is located within Electoral Division(s) (ED) of Marginally Above Average HP deprivation index. Affluency of EDs within 1km of the proposed depot site are identified as Marginally Above Average and Affluent. Due to the nature of the proposed depot development which requires speciality skills to work at the depot, all options are likely to have comparable social impacts.	
4	Land Use Impacts	4.1	Change in Quality of Public Realm	Impacts related to changes in public realm, such as streets, footpaths, and public buildings, as a result of a scheme.		4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
					Direct impacts on Public realm areas	The proposed depot option will not enhance or have negative impacts on the existing public realm.		The proposed depot option will not enhance or have negative impacts on the existing public realm.		The proposed depot option will not enhance or have negative impacts on the existing public realm.		The proposed depot option will not enhance or have negative impacts on the existing public realm.	
		4.2	Existing Transport Network and Service Impact:	Impact of Local Road Network		2 – Negative Impact	2	2 – Negative Impact	2	3 – Slightly Negative Impact	3	1 – Highly Negative Impact	1
					Impact on Local Road Network	This option is co-located with a proposed train station and existing/proposed compound. Road access through the area is would require upgrade to accommodate a depot at the site. The topography across the site is also challenging. This will result in substantial earthworks, roadworks and bridgeworks at the site to acommodate the various elements proposed for the site.		Access to this site will be challenging, requiring a likely new interchange on the N25 dual carriageway and / or extensive upgrades to the local road network to facilitate access to the depot and maintenance of access for local residents.		Access to the site can be accommodated off the existing L1200 Dromsligo Road. Concurrent proposals to upgrade the adjacent N20 road will enhance access to the site. There is an existing grade separated crossing of the railway over the L1200 which is expected to accommodate depot traffic.		This site presents challenges for access. There are four houses which will become isolated by the implementation of a depot at this location. Grade separated access across the depot site would be necessary to accommodate these properties. Direct access to the proposed depot site can be accommodated off the existing N20.	
		4.3	Material Assets: Agricultural Properties	Impacts on agricultural properties		1 – Highly Negative Impact	1	2 – Negative Impact	2	2 – Negative Impact	2	1 – Highly Negative Impact	1
					Direct and indirect impacts on sensitive agricultural enterprise (e.g., beef or equine farms. Tillage is low sensitivity). Severance of landholding, direct acquisition of farm yards, sheds etc). Indirect impacts due to construction and operation near sensitive agri enterprises.	The depot site will involve landtake of approximately 24.7ha on three agricultural holdings. There will be significant or greater impacts on all three of the agricultural properties with land severance on one property.		The depot site will involve landtake of approximately 25.3ha on five agricultural holdings. There will be significant or greater impacts on three of the five agricultural properties with land severance on one property. One of the significant impacts is on an equine holding though it does not appear to be currently in equine use.		The depot site will involve landtake of approximately 27.5ha on five agricultural holdings. There will be significant or greater impacts on two of the five agricultural properties. There is no land severance on affected properties.		The depot site will involve landtake of approximately 25.5ha on five agricultural holdings. There will be significant or greater impacts on four of the five agricultural properties with land severance and access impacts on one property. There is a significant direct impact on one key dairy constraint.	
		4.4	Material Assets: Non-Agricultural Properties	Impacts on non-agricultural properties		1 – Highly Negative Impact	1	3 – Slightly Negative Impact	3	4 – Neutral Impact	4	1 – Highly Negative Impact	1
					No. of residential, community and businesses directly impacted by the option (acquisition). Indirect impacts (due to construction and operation activities) on non-agri properties. Indirect impacts on properties are assessed under noise and air quality assessments.	There is a profound impact on one residential property.		There is a moderate impact on curtilage of one residential property.		There is no impact on non-agricultural property.		There is a significant direct impact involving property acquisition on one residential property. There is a significant impact on access to four residential properties.	
		4.5	Planning Applications	Planning search: LAs, ABP, EIA Portal		2 – Negative Impact	2	3 – Slightly Negative Impact	3	4 – Neutral Impact	4	4 – Neutral Impact	4
					Large Scale residential and non-residential planning applications (granted and pending) potentially within the site boundaries.	This site interfaces with the proposed Cork Northern Relief Road. The northern boundary of the site fronts a large area of proposed residential development. This site is identified within the Monard Strategic Development Zone.		The southern boundary of the site fronts a large area of proposed residential development and the ESB interconnector. The site is identified within the Metropolitan Cork Strategic Planning Area.		The lands are zoned greenbelt. There are no large residential developments planned for this area		There are no large residential developents planned for the area. Located within the Greater Cork Ring Strategic Planning Area.	
		4.6	Zoned Land, Land Use Planning and Spatial Planning	Impacts on strategic land–use planning at a national, regional, or local level.		3 – Slightly Negative Impact	3	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
					Policy Review Impact on land use strategies and regional and local plans. Assessment of support for land use factors local land use and planning.	This site interfaces with the proposed Cork Northern Relief Road. The northern boundary of the site fronts a large area of proposed residential development. The site is zoned as MN X-01, "To facilitate the development of a new rail based settlement in Monard consistent with the Monard SDZ Planning Scheme 2015 and accompanying documents as approved by An Bord Pleanala in May 2016." This site is identified within the Monard Strategic Development Zone.		The southern boundary of the site fronts a large area of proposed residential development and the ESB interconnector. Land directly south of the existing rail corridor and just north of the N25 are zoned as "Industry", consistent with the proposed development. The site is identified within the Metropolitan Cork Strategic Planning Area.		The lands are zoned greenbelt. Located within the Greater Cork Ring Strategic Planning Area. There are no large residential developments planned for this area		There are no large residential developments planned for the area. Located within the Greater Cork Ring Strategic Planning Area. Lands area earmarked for the NM20 Cork to Limerick scheme for elements including a proposed Grenagh road junction and Material Recovery area.	
5	Safety Impacts	5.1	Collisions & Related Impacts	Safety Considerations associated with site layout Safety Considerations at Level Crossings. Collision Statistics. Fire Safety of Trains, Train Stability		4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
					Operational Safety of Site	The depot configuration is very similar in all of them. All alternatives function equally in terms of collision impacts.		The depot configuration is very similar in all of them. All alternatives function equally in terms of collision impacts.		The depot configuration is very similar in all of them. All alternatives function equally in terms of collision impacts.		The depot configuration is very similar in all of them. All alternatives function equally in terms of collision impacts.	
		5.2	Other Safety Impacts	Impacts on anti-social behaviour, trips, falls, etc		4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
					Review of Alignment with local infrastructure	All options perform equivalently in respect of Impacts on anti-social behaviour, trips, falls, etc. and Assessment of Alignment Integration with local urban infrastructure.		All options perform equivalently in respect of Impacts on anti-social behaviour, trips, falls, etc. and Assessment of Alignment Integration with local urban infrastructure.		All options perform equivalently in respect of Impacts on anti-social behaviour, trips, falls, etc. and Assessment of Alignment Integration with local urban infrastructure.		All options perform equivalently in respect of Impacts on anti-social behaviour, trips, falls, etc. and Assessment of Alignment Integration with local urban infrastructure.	
6	Climate Change Impacts	6.1	Climate Action Impact	Qualitative assessment of carbon emissions		4 – Neutral Impact	4	3 – Slightly Negative Impact	3	2 – Negative Impact	2	3 – Slightly Negative Impact	3
					Greenhouse gases - assumption will be that the depot building will be the same on all sites. Sites that will require longer journeys for rail i.e. more operational energy have also been considered.	This is the most preferred site with respect to capital carbon. However, when the depot is considered in isolation of the wider CACR Programme, there is no significant change with respect to operational phase CO2 emissions, modal shift or car km travelled.		This option performs slightly poorer than Option 2 when capital carbon is considered. However, when the depot is considered in isolation of the wider CACR Programme, there is no significant change with respect to operational phase CO2 emissions, modal shift or car km travelled.		This site has the lowest preference due to a higher capital carbon. However, when the depot is considered in isolation of the wider CACR Programme, there is no significant change with respect to operational phase CO2 emissions, modal shift or car km travelled.		This option performs slightly poorer than Option 2 when capital carbon is considered. However, when the depot is considered in isolation of the wider CACR Programme, there is no significant change with respect to operational phase CO2 emissions, modal shift or car km travelled.	
		6.2	Climate Adaption Impact	Impact on Resilience and Robustness of Transport Infrastructure		2 – Negative Impact	2	3 – Slightly Negative Impact	3	2 – Negative Impact	2	2 – Negative Impact	2
					Crossovers Flood risk, sites with soil stability issues, wind exposure. Train journeys (additional train running)	There are more earthworks associated with this site than other sites due to the topography of the site. This raises the potential for soil stability issues in the comppleted design. According to GSI soil susceptbility clasification mapping to landslides there is a moderatly high risk for a section the east of the site. There is some flood risk to the west of the site however it is not predicted to increase with future climage change.		There are less earthworks associated with this site than other sites due to the topography of the site. This raises the potential for soil stability issues in the completed design. Flood risk is not a concern at this site in the baseline or future scenarios.		There are more earthworks associated with this site than other sites due to the topography of the site. This raises the potential for soil stability issues in the completed design. According to GSI soil susceptbility clasification mapping to landslides there is a moderatly high risk for a minor section the north of the site however this may be designed around. Flood risk is not a concern at this site in the baseline or future scenarios.		There are more earthworks associated with this site than other sites due to the topography of the site. This raises the potential for soil stability issues in the comppleted design. According to GSI soil susceptbility clasification mapping to landslides there is a moderatly high risk for a a central section of the site. Flood risk is not a concern at this site in the baseline or future scenarios.	
7	Local Environment Impacts	7.1	Biodiversity	Assessment is based on potential impacts (in the absense of mitigation) to: European designated sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs), RAMSAR); Nationally designated sites (Natural Heritage Areas (NHAs), proposed Natural Heritage Areas (pNHAs), National Parks, Nature Reserves); Sites of County Importance; Ancient or Long-established Woodland & National Survey of Native Woodlands; Wetlands for wintering birds (I-WeBS sites; Wetlands of Ireland; Wildfowl Sanctuaries; eBird hotspots); Non-designated Annex I habitats (e.g. coastal habitats, semi-natural grasslands); Linear habitats (e.g. hedgerows & watercourses); Protected species. Impacts related to the potential spread of invasive species as a result of the project are also assessed. Environmental constraints assessment of options		2 – Negative Impact	2	3 – Slightly Negative Impact	3	1 – Highly Negative Impact	1	2 – Negative Impact	2
					Identification of European sites (SACs/ SPAs/RAMSAR), Nationally designated sites, protected habitats and species.	This option is at least 25km upstream of the Cork Harbour SPA and the Great Island Channel SAC. This option is also upstream of the Blarney Bog pNHA, the Blarney Castle Woods pNHA, the Shournagh Valley pNHA, the Lee Valley pNHA and multiple pNHAs in Cork Harbour. Blarney Fen - Clogheenmilcon [BWI: 0L320] occurs approx. 1.7km southwest of this option. The N20 National Road, multiple residential dwellings and agricultural fields separate this option from the Blarney Fen. Estuaries [1130], Salicornia and other annuals colonising mud and sand [1310], Atlantic salt meadows [1330], Mediterranean salt meadows [1410] have been recorded in Cork Harbour downstream of this option. There is a minimum of 7 no. linear hedgerow/treeline habitats that have that potential to be lost as result of this option. The main habitat that has the potential to be lost as a result of this option is agricultural grassland. Compared with other options, this option is considered to have a negative impact on biodiversity due to the existing environment and the hydrological connectivity to designated sites.		This option is not functionally or hydrologically connected to any European or Nationally designated site. Cork Harbour [Ramsar Site ID: 837] occurs approximately 5.35km southwest of Ballyrichard More as the crow flies. On the Map of Irish Wetlands, Ballyadam Farm Ponds [MIW_CO274] occurs within the boundary of this site on the southern side of the existing railway line. Cork Harbour [BWI: 0L403] occurs approx. 3km south of this option as the crow flies. The existing railway line, the N25, and many agricultural and commercial properties separate this option from Cork Harbour.The wetlands on are now confined to the west side of the site due to the site being used as a site compound for the Glounthaune-Midleton Twin Track project. The larger central wetland area, part of Ballyadam Farm Ponds is no longer visible. There is a minimum of 5 no. linear hedgerow/treeline habitats that have the potential to be lost as a result of this option. The main habitats that have the potential to be lost as a result of this option include cultivated land and built land. Compared with other options, this option is considered to have the least negative impact on biodiversity due to the existing environment and the lack of connectivity to designated sites.		This option is at approx 4km upstream of the Blackwater River (Cork/Waterford) SAC. This option is also upstream of multiple pNHAs in the River Blackwater network including the Blackwater Valley (Killavullen) pNHA, the Blackwater Valley (Ballincurrig Wood) pNHA, the Blackwater Valley (Kilcummer) pNHA, the Blackwater Valley (Killathy Wood) pNHA, the Blackwater Valley (Cregg) pNHA, Blackwater Valley (The Beech Wood) pNHA, the Blackwater River Callows pNHA and the Blackwater River and Estuary pNHA. This is the only option that occurs within Freshwater Pearl Mussel sensitive catchment and is upstream of the Blackwater River which is a known habitat for Freshwater Pearl Mussel in Mallow. There is a minimum of 19 no. linear hedgerow/treeline habitats that have the potential to be lost as a result of this option. The main habitat that has the potential to be lost as a result of this option is agricultural grassland. Compared with other options, this option is considered to have a highly negative impact on biodiversity due to the existing environment, the hydrological connectivity to designated sites and protected habitats and the hydrolgoical connectivity to known Freshwater Pearl Mussel habitat.		This option is at least 25km upstream of the Cork Harbour SPA and the Great Island Channel SAC. This option is also upstream of the Ardamadane Wood pNHA, the Blarney Castle Woods pNHA, the Shournagh Valley pNHA, the Lee Valley pNHA and multiple pNHAs in Cork Harbour. Annex I Alluvial Woodland [91E0] has been recorded downstream of this option adjacent to the Marin River. There is a minimum of 2 no. linear hedgerow/treeline habitats that have the potential to be lost as a result of this option. The main habitat that has the potential to be lost as a result of this option is agricultural grassland. Compared with other options, this option is considered to have a negative impact on biodiversity due to the existing environment and the hydrological connectivity to designated sites and protected habitats.	
		7.2	Water Resources & Soil Quality	Impact on surface water, ground waterbodies, flood risk, land, soils and geological heritage sites.		3 – Slightly Negative Impact	3	2 – Negative Impact	2	3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3
					Flood Risk: Using CFRAMS Hydrological Studies and Hydraulic Models, NIFM, Local Area Plans, County SFRAs, Ground Profile, Lidar and ground survey, Historic Mapping, Current Aerial Photography	In general there is no flood risk indicated, however, historical surface water flooding is indicated from winter 2015/2016 at the southern-most extent of the site. Additionally, a minor stream runs through the site.	3	No flood risk, however, past flooding events indicated to have occurred immediately east of the site. Turloughs (seasonal waterbody) are present to the west of the site.	4	No flood risk indicated, however, minor streams runs through the site.	4	No flood risk indicated. Northern extent of site bound by river, however the site is not situated on active flood plain.	4
					Vulnerable Aquifers; Desktop Study - GSI	Not underlain by limestone/carbonaceous rock, and in turn, no distinct karst features recorded at the site. Bedrock defined as being a "Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones". Groundwater high vulnerability is extreme. Multiple groundwater abstraction wells within, or in close proximity to the site.	3	Predominately underlain by Waulsortian Limestone (massive, high purity limestone) which is defined as being a "Regionally Important Aquifer - Karstified (diffuse)". The northeastern extent of the site may be underlain by Ballysteen Formation (muddy limestone and shale) and defined as a "Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones". Groundwater vulnerability is medium to high. No groundwater abstraction wells indicated in the vicinity of the site. The presence of Karst is a significant challenge at this site. Turlough, depressions, caves and swallow holes recorded in the surrounding area.	3	Not underlain by limestone/carbonaceous rock, and in turn, no distinct karst features recorded at the site. Bedrock defined as being a "Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones". Groundwater vulnerability is medium to extreme. Multiple groundwater abstraction wells situated east and south of the site with low position accuracy.	2	Not underlain by limestone/highly cabonaceous rock, and in turn, no distinct karst features recorded at the site. Bedrock defined as being a "Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones". Groundwater vulnerability is typically medium, with the western margin of the site indicated to have a high vulnerability. Multiple groundwater abstraction wells within, or in close proximity to the site.	3
					Soils: Desktop Study, GSI	Substantial earthworks required. Till and gravels overlying Ballytrasna Formation (mudstone and sandstone) and Gyleen Formation (sandstone with mudstone and siltstone). Typically characterised as having a low landslide susceptbility. No geological heritage sites impacted by proposed works.	3	Substantial earthworks required towards the northern extent of the site. Till and gravels overlying Waulsortian Limestone (massive, high purity limestone). The northeastern extent of the site may be underlain by Ballysteen Formation (muddy limestone and shale). Karst Features present. Typically characterised as having a low landslide susceptbility. No geological heritage sites impacted by proposed works.	3	Substantial earthworks associated with this site. Till overlying Namurian (undifferentiated) (shale and sandstone). Typically characterised as having a low landslide susceptbility. No geological heritage sites impacted by proposed works.	1	Substantial earthworks associated with this site. Till overlying Gortanimill Formation (sandstone and siltstone). Typically characterised as having a low landslide susceptbility. No geological heritage sites impacted by proposed works.	3
		7.3	Landscape & Visual Quality	Potential landscape and visual impacts from new depot.		2 – Negative Impact	2	2 – Negative Impact	2	2 – Negative Impact	2	3 – Slightly Negative Impact	3
					Key landscape characteristics affected; Effects on listed/ key views; Impact on landscape character.	Potential for indirect impacts on High Value Landscape designation which is nearby to the east. There will be direct impacts on trees and hedgerows. Within Elevated Rolling Farmland Mosaic (Type 6A) which is noted as a landscape character type of high value and county importance in the Cork County Draft Landscape Strategy. Nearest scenic route is S40, Waterloo Road in Blarney; Low potential for impacts on this scenic route due to distance and intervening landscape features / topography. More potential for visual impacts on residential receptors due to surrounding linear development.		Potential for direct impacts on High Value Landscape designation which covers site area. There will be direct impacts on trees and hedgerows. Within Settled Harbour and Estuary (Type 1) which is noted as a landscape character type of very high value and of national importance in the Cork County Draft Landscape Strategy. Nearest scenic routes are S42 & S43; Low potential for impacts on this scenic route due to distance and intervening landscape features / topography. More potential for visual impacts on residential receptors due to surrounding linear development. Moderate potential for visual impacts on residential receptors due to some surrounding residential development.		Potential for indirect impacts on High Value Landscape designation which is adjacent to east. There will be direct impacts on trees, hedgerows and young deciduous plantations. Within Farmed and Wooded Foothills (Type 5) which is noted as a landscape character type of very high value with county importance. Nearest scenic route is S14, Navigation Road, Mallow; Low potential for impacts on this scenic route due to distance and intervening landscape features. Less potential for visual impacts on residential receptors.		No impacts on High Value Landscape designations. There will be direct impacts on trees and hedgerows. Within Elevated Rolling Farmland Mosaic (Type 10b) which is noted as a landscape character type of high value and county importance. Nearest scenic route is S40, to the south along L2773; Low potential for impacts on this scenic route due to distance and intervening landscape features. Screening from planting along existing railway and L2771 New Mallow Road, with less potential for visual impacts on majority of local residential receptors, with exception of a small group to the west of the railway which would have potential for visual impacts.	
		7.4	Cultural & Heritage	Impact on protected structures, archaeological sites and cultural heritage sites / features.		2 – Negative Impact	2	3 – Slightly Negative Impact	3	3 – Slightly Negative Impact	3	2 – Negative Impact	2
					No. of RPS, National Monuments, SMRs, Conservation areas within 250m and / or directly effected by options etc. Number of designated sites/structures (by level of designation) directly impacted by scheme (landtake).	Indirect impact on standing stone, direct Impact on NIAH bridge (20906315)		There are no recorded or previously unrecorded architectural or archaeological heritage sites in or within the study area of the depot and as such, no direct or indirect impacts are anticipated. However, the site comprises a large parcel of greenfield, which has the potential to contain previously unrecorded archaeological remains that may survive with no surface expression. No Listed or NIAH structures affected by this site		There are no recorded or previously unrecorded architectural or archaeological heritage sites in or within the study area of the depot and as such, no direct or indirect impacts are anticipated. However, the site comprises a large parcel of greenfield, which has the potential to contain previously unrecorded archaeological remains that may survive with no surface expression. No Listed or NIAH structures affected by this site		Direct Impact CO062-049 Standing stone	
		7.5	Noise & Vibration	Impact on sensitive properties		2 – Negative Impact	2	3 – Slightly Negative Impact	3	2 – Negative Impact	2	1 – Highly Negative Impact	1
					Estimated number of sensitive receptors (residential properties, community facilities etc) likely to be affected by transport related noise with the project within 50m, 100m, 200m and 300m bands.	• Potential Impact Rating (PIR) = 154 • No. of properties potentially above daytime criteria: 4 • No. of properties potentially above nighttime criteria: 0 • Technical Movements Noise Impact: Moderate to Significant This site has the lowest PIR, and has the potential to result in noise impacts at a number of properties to the south of the site and not likely require noise mitigation. There will be temporary moderate to significant noise impacts during the construction phase of the new section of rail at nearby NSLs. There will be some temporary negative noise impacts due to construction of the Depot but the number of receptors impacted is expected to be low.		• Potential Impact Rating (PIR) = 125 • No. of properties potentially above daytime criteria: 4 • No. of properties potentially above nighttime criteria: 1 • Technical Movements Noise Impact: Moderate to Significant This site has the lowest PIR, and has the potential to result in noise impacts at a number of properties to the north west of the site and not likely require noise mitigation. There will be temporary moderate to significant noise impacts during the construction phase of the new section of rail at nearby NSLs. There will be some temporary negative noise impacts due to construction of the Depot but the number of receptors impacted is expected to be low.		• Potential Impact Rating (PIR) = 105 • No. of properties potentially above daytime criteria: 4 • No. of properties potentially above nighttime criteria: 1 • Technical Movements Noise Impact: Moderate to Significant This site has the lowest PIR, and has the potential to result in noise impacts at a number of properties to the west of the site and not likely require noise mitigation. There will be temporary moderate to significant noise impacts during the construction phase of the new section of rail at nearby NSLs. There will be some temporary negative noise impacts due to construction of the Depot but the number of receptors impacted is expected to be low.		• Potential Impact Rating (PIR) = 105 • No. of properties potentially above daytime criteria: 6 • No. of properties potentially above nighttime criteria: 6 • Technical Movements Noise Impact: Moderate to Significant This site has the lowest PIR, and has the potential to result in noise impacts at a number of properties to the south of the site and not likely require noise mitigation. There will be temporary moderate to significant noise impacts during the construction phase of the new section of rail at nearby NSLs. There will be some temporary negative noise impacts due to construction of the Depot but the number of receptors impacted is expected to be low.	
		7.6	Air Quality	Impact on sensitive properties		4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
					Estimated number of sensitive receptors (residential properties, community facilities etc) likely to be affected by transport related air quality impacts with the project within 50m of the site boundary.	Significant operational phase imapcts are scoped out. With dust mitigation for construction and operational phases, there is no potential for significant effect on air quality.		Significant operational phase imapcts are scoped out. With dust mitigation for construction and operational phases, there is no potential for significant effect on air quality.		Significant operational phase imapcts are scoped out. With dust mitigation for construction and operational phases, there is no potential for significant effect on air quality.		Significant operational phase imapcts are scoped out. With dust mitigation for construction and operational phases, there is no potential for significant effect on air quality.	
		7.7	Electromagnetic Compatibility	Electromagnetic Compatability Impact on sensitive local receptors		4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4	4 – Neutral Impact	4
					Estimated number of potential receptors (residential properties, sensitive commercial properties etc) 100m either side of the outermost depot rail line.	No likely significant impacts on equipment susceptible to electromagnetic interference. Guideline limits for exposure to electromagnetic fields will not be exceeded for at any of the receptors in the current baseline environment.		No likely significant impacts on equipment susceptible to electromagnetic interference. Guideline limits for exposure to electromagnetic fields will not be exceeded for at any of the receptors in the current baseline environment		No likely significant impacts on equipment susceptible to electromagnetic interference. Guideline limits for exposure to electromagnetic fields will not be exceeded for at any of the receptors in the current baseline environment		No likely significant impacts on equipment susceptible to electromagnetic interference. Guideline limits for exposure to electromagnetic fields will not be exceeded for at any of the receptors in the current baseline environment	
	Criteria					**Option 2 Rathpeacon / Monard**	**28**	**Option 6 Ballyrichard More**	**28**	**Option 9 Dromsligo**	**29**	**Option 10 Kilmona Lower**	**29**
	Sub-Criteria Consolidation												
1	Transport User Benefits and Other Economic Impacts					3 – Slightly Negative Impact	3.3	4 – Neutral Impact	3.7	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.0
2	Accessibility Impacts					4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
3	Social Impacts					4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
4	Land Use Impacts					2 – Negative Impact	2.2	3 – Slightly Negative Impact	3.0	4 – Neutral Impact	3.5	3 – Slightly Negative Impact	2.5
5	Safety Impacts					4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0	4 – Neutral Impact	4.0
6	Climate Change Impacts					3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	3.0	2 – Negative Impact	2.0	3 – Slightly Negative Impact	2.5
7	Local Environment Impacts					3 – Slightly Negative Impact	2.7	3 – Slightly Negative Impact	3.0	3 – Slightly Negative Impact	2.7	3 – Slightly Negative Impact	2.7
	Criteria Consolidation												
	Overall Ranking					3 – Slightly Negative Impact	3.3	4 – Neutral Impact	3.5	3 – Slightly Negative Impact	3.3	3 – Slightly Negative Impact	3.2
	Total Ranking / Preferred site						23.2	Yes	24.7		23.2		22.7
	Comment					**Rathpeacon / Monard** **25.0Ha (inside the red line boundary), 1.5km length, 6.0km from Kent Station, 1.0% average gradient along site, 10% across site.** **Located on a non electrified section of the network**		**Ballyrichard More** **25.3Ha (inside the red line boundary), 1.61km length, 16.2km from Kent Station, 1.0% average gradient along site, 1.0% across site.** **Located on electrified section of the network**		**Dromsligo** **27.5Ha (inside the red line boundary), 1.5km length, 36.5km from Kent Station, 2.6% average gradient along site, 6.0% across site.** **Located on a non electrified section of the network**		**Kilmona Lower** **25.5Ha (inside the red line boundary), 2.2km length, 14km from Kent Station, 3.7% average gradient along site, 1.0% across site.** **Located on a non electrified section of the network**	