METROLINK

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A7.6 Depot Location Options Report

Contents

Executive Summary

A site for the MetroLink Depot was identified in 2020 on the Dardistown lands between Dublin Airport and the M50 Motorway on the above-ground section of the MetroLink route. Through a process of Multi-Criteria Analysis (MCA), nine depot location options were assessed, from which Option 8A was determined to be the Preferred Option. This Option is located in the northwest corner of the Dardistown lands and it has since been developed to Preliminary Design stage as shown in the image below.

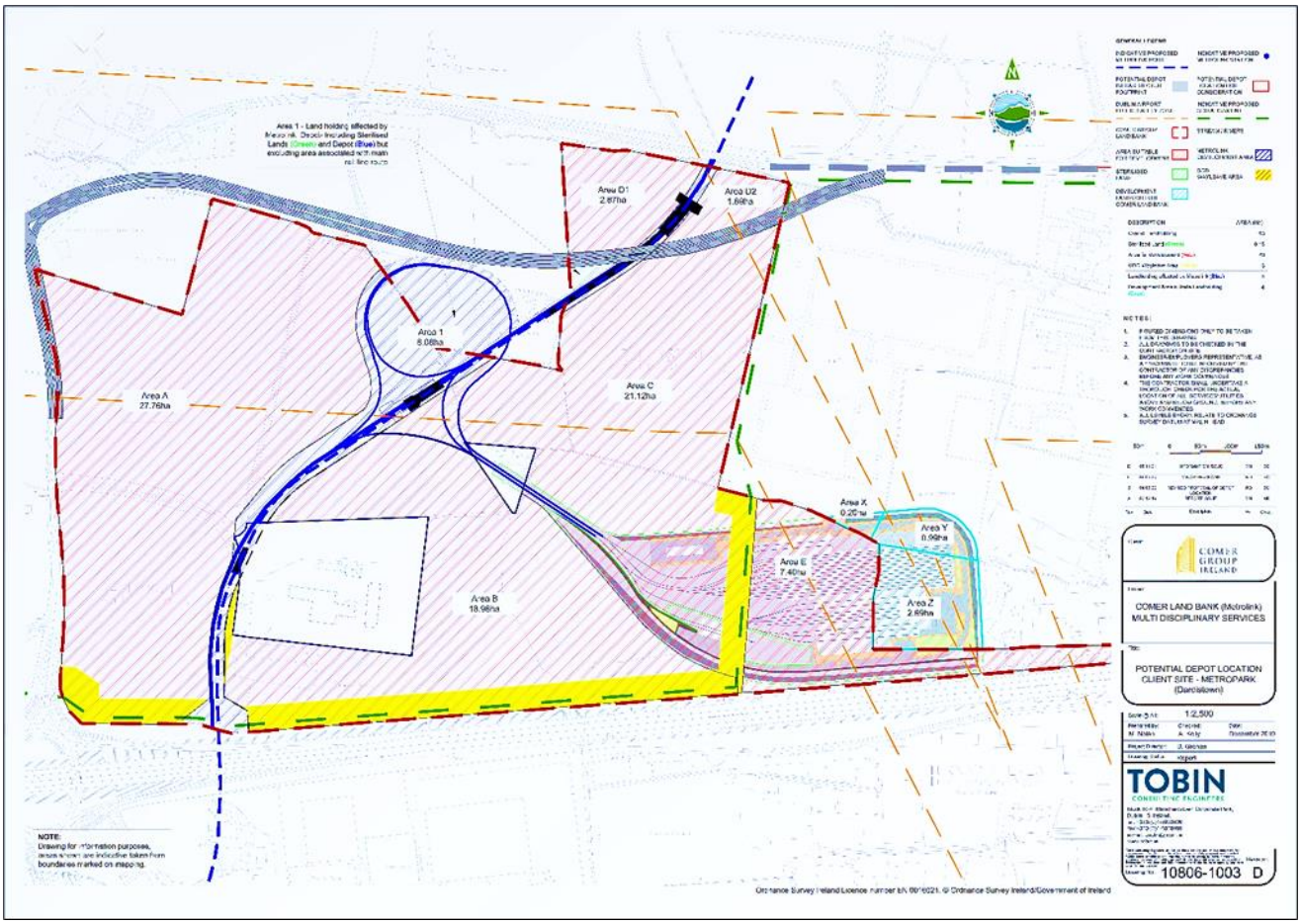
MetroLink Depot Current Preliminary Design (developed from MCA Depot Option 8A)

The Preliminary Design Report (PDR) for MetroLink was published by Jacobs/Idom (JI) in 2020, and it included a description of the depot proposals in Volume 4 - Chapter 12. The operation and functional requirements of the depot were considered, including covered stabling for the ultimate train fleet size, a maintenance shed, an administration building, a train wash plant, and a test track, as well as the connection to the MetroLink mainline. All facilities were set out in an efficient manner on a prepared level site with good access provided from the surrounding road network, including the M50. Trains entering and leaving service will do from the future Dardistown Station using the proposed crossovers and the conflict-free tracks at the southwest corner of the depot.

Land use, planning, and environmental impacts were considered and it is noted that the proposed depot aligns with the zoning objectives contained in the Fingal Development Plan 2017-2023 and the emerging Draft Fingal

Development Plan 2023-2029. Although the LAP lapses this year in 2022 it will be replaced by the Fingal Development (FCD) Plan 2017-2023, which has the same zoning proposals. It also takes account of the Public Safety Zones (PSZ) associated with Dublin Airport. Other constraints are addressed such as the FCC East-West Distributor Road to the north of the site and the Greater Dublin Drainage (GDD) Orbital Sewer Route, which runs to the south of the site and parallel to the M50 before it runs north through the Dardistown lands.

In January 2022, TII received a letter from Comer Group International (CGI) that questioned the Dardistown location for the depot, particularly in relation to the perceived commercial land value. The letter went on to propose an alternative location as shown in the drawing copied below (Drawing Reference 10806-1003 revision D. Dated: December 2019). The letter also expressed an opinion that the Lissenhall area would have been a better location for the depot. This is not supported by earlier JI studies because it does not deliver efficient train operations and for this reason it is not considered further in this review.



Comer Group International (CGI) Alternative Depot Location (Drawing Reference 10806-1003 revision D, December 2019)

The CGI alternative, with its grade separated looping entry/exit arrangement has similarities to the Option 1 solution shown overleaf, which was presented during the 2019 Public Consultation. It was discarded through the MCA process in favour of Option 8A mainly because it is part-located in the “High Technology” zone under the Fingal LAP, and for having an interface with the planned Greater Dublin Drainage (GDD) sewer route, shown by the green dashed line and wayleave zone (in yellow) in the CGI proposal.

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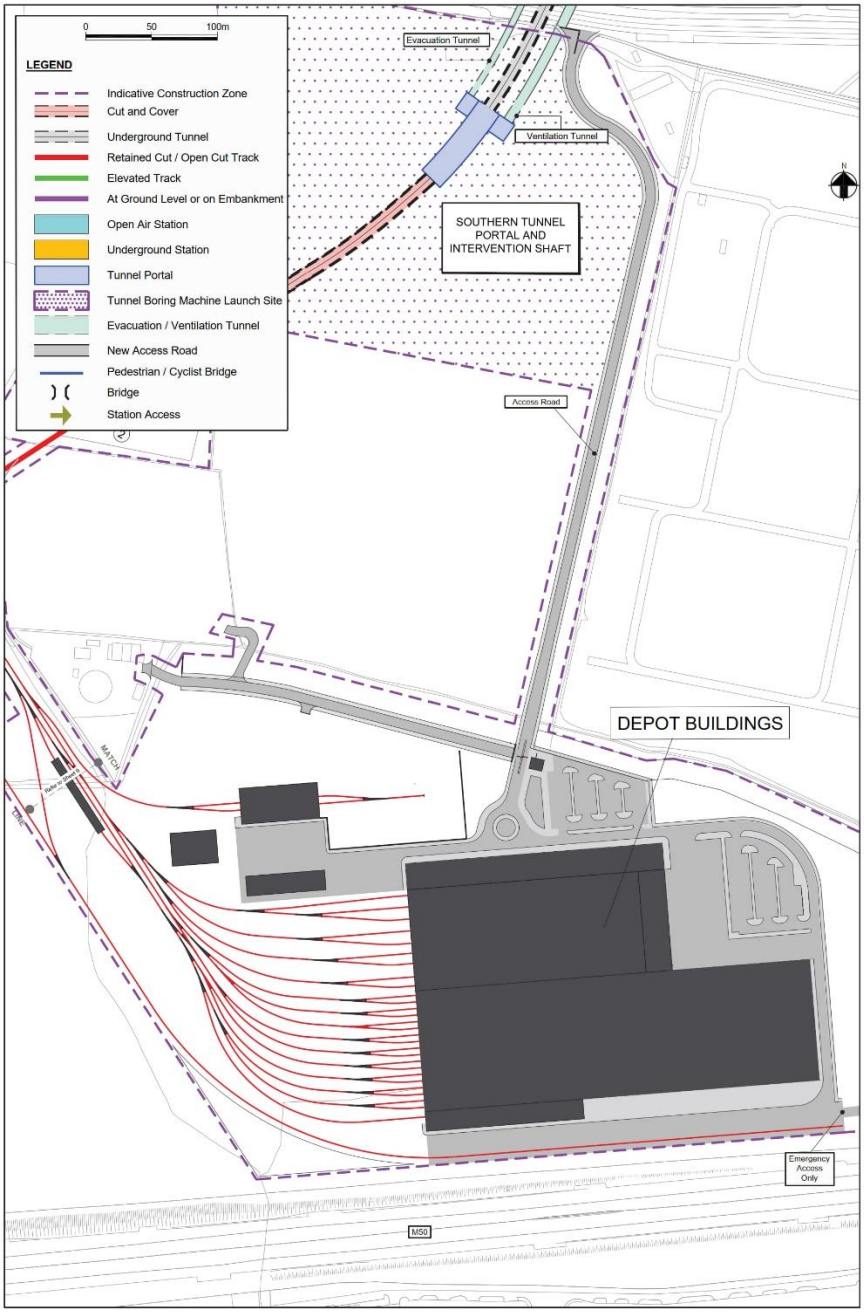
10. Dardistown Depot



Option 1 for Public Consultation 2019

The main difference between Option 1 and the CGI proposal is that the depot and its connecting line is shifted approximately 200m east into land under different ownership, as indicated by the light blue/turquoise shading on the image of the CGI proposal. This shift also moves the depot site into the North/South Runway Inner PSZ, shown by the dashed orange lines.

TII has instructed JI to consider the CGI option using the same MCA process used to assess the previous depot options. On the basis that Option 8A performed best out of nine options previously and so became the Preferred Option, the MCA process considers only preferred Option 8A and the CGI Proposal, known as Option 10 for the purposes of this review.

No design commentary has been provided for the CGI proposal in support of the single plan layout drawing provided. To perform the MCA as far as possible on a like-for-like basis a reasonable assumption is that the CGI proposal is in most respects the same as Option 1 but shifted to the east. It is also the case that after Option 8A was selected as the preferred option it was developed through the Preliminary Design stage, which resulted in an increase in land area requirements to accommodate the necessary equipment and functionality. Accordingly, we have adjusted the CGI Proposal so that it more closely matches the developed requirements following Preliminary Design. This “normalisation” has led to an increase in land take of 3.9ha compared to the CGI proposal submitted to TII.

The MCA for this review found that Option 8A has a number of advantages over Option 10 in terms of; ‘Planning, Land Use, and Property Impact’, ‘Dardistown Station Functionality’, ‘Utilities & Roads’, ‘Land Take’ and ‘Construction’ criteria. Option 8A has no significant disadvantages when compared to Option 10.

Key points to note are:

1) Option 10 provides insufficient area for the necessary depot facilities as developed for Option 8A through the Preliminary Design stage. Rather than the 14.22ha shown by CGI, the minimum land area needed for the depot is 18.1ha plus the mainline connection area of 8.08ha, giving a total of 26.2ha. **Option 10 therefore has a similar land requirement to Option 8A, which requires 26.3ha.**

2) Option 10 crosses into the Dublin Airport Inner PSZ where no new development is permitted, and this restriction is likely to make it unviable. **Option 8A does not have this restriction and so demonstrates there is a viable alternative to avoid encroachment.**

3) The Fingal Development Plan 2017-2023 indicates that the **Option 10 depot lies c.50% in the ‘High Technology’ zone**. **Option 8A has less impact with c.70% of the depot within the ‘General Employment Zoning’, preserving more of the “high technology” zoned lands for development.**

[N.B. To avoid the airport planning restriction, Option 10 would need to relocate to the west so it is outside of the Inner PSZ, placing it even further into the “high technology” zoned lands. With the required increase in depot area, it is also likely the MetroLink main line connection would cross the boundary of the existing factory in the middle of the Dardistown lands and risk disruption or relocation of the factory.]

4) **Option 10 is not compliant with the Dardistown LAP 2012 due to its encroachment onto the ‘Hub’ lands, whereas Option 8A is fully compliant in this regard. (**Note that the LAP 2012 is be replaced by the Fingal Development Plan 2017-2023, which has the same zoning proposals).

5) Option 10 is impacted by the proposed GDD sewer that will run west to east in the south part of the site parallel to the M50 motorway before it turns northwards under the depot site. The protected zone around this large diameter sewer is likely to make Option 10 unfeasible unless an engineered solution is developed, or a diversion of the GDD sewer can be agreed. This will risk delay and additional cost to both the GDD and MetroLink projects**. Option 8A does not have a GDD interface.**

6) Option 10's mainline rail connection passes through an existing wastewater treatment plant that supports a food processing business. This would need to be demolished and re-built elsewhere on the Dardistown lands and compensation agreed with the business for disruption or possible extinguishment. **Option 8A avoids this impact along with the associated additional cost and risk of project delay.**

7) The Option 10 footprint extends over more than one landowner onto existing businesses (the Go-karting facility and garage businesses will need to be closed) and higher value land. **Option 8A land acquisition will be less complex and cost less.**

8) For Option 10, a 4m retained cut to the west of the site c.400m long, a 2m fill area in the east of the site, and c.800m of retaining walls to support a 4-5m cut along the M50 will be required. Combined with the GDD realignment, wastewater plant replacement, and Mayne River treatment, the construction cost and complexity is greater for Option 10. **The Option 8A site will be mostly raised in level using fill material from MetroLink sources thereby positively impacting the construction material balance.**

9) The reduced design maturity of Option 10 presents a greater risk of schedule and cost increases as its design is developed. **Option 8A has been developed to Preliminary Design, it delivers the necessary operational requirements, and reduces the risk of future cost and schedule increases.**

10) Option 10 will be accessed from surrounding local roads, **Option 8A provides for good access from the M50 and also allows for the future airport road diversion along the north boundary of the site.**

11) Option 10 has significant disadvantages due to the future Dardistown Station being located between rail junction structures thereby providing a poor passenger/user experience, poor opportunity for future urban integration (requiring long underpasses or bridge structures), and a long walk between the station and depot. **Option 8A provides good Station access, depot access, and future urban integration.**

12) Option 10 will require the Mayne River to be diverted or culverted with its protective corridor likely to restrict the depot layout, along with limited opportunity to reinstate an adequate riparian zone in accordance with the FCD Plan 2017–2023. **While Option 8A has to deal with the Turnapin stream it is more like a field drain and the riparian zone can be provided easily**.

For these reasons, JI are satisfied that the Preferred Option should remain as the previously selected Option 8A and as developed in the Preliminary Design stage.

1. Introduction

1.1 Purpose and Objectives of Review

This report has been prepared to address the concerns raised by Comer Group International (CGI) that the proposed location for the MetroLink Depot in the northwest quadrant of the Dardistown lands (see Figure 1-1) might not be the best solution and would be better placed in the southeast quadrant instead (see Figure 1-2).

The structure of this report aligns with the previous Multi Criteria Analysis (MCA) work undertaken in 2020 to assess the nine depot options identified at that time, which resulted in the selection of Option 8A as the Preferred Option. This option 8A has now been developed to Preliminary Design stage and is currently the proposal for the MetroLink depot. To address the concerns raised by CGI and compare the proposed MetroLink depot location to the CGI proposal, this document has been structured as follows:

- the Receiving Environment (describes the site and its constraints);
- common design aspects that determine the functional depot layout requirements;
- the option selection process undertaken in 2020;
- key design features of Options 8A and the CGI Proposal (termed Option 10);
- criteria for assessment and MCA (Option 8A v CGI Proposal/Option 10); and
- conclusions and recommendation.

1.2 Depot Overview

A train stabling and maintenance depot is needed for the MetroLink system for efficient operations. The decision to place the depot and a future station on the surface at Dardistown meant that the route has to pass over the M50, with two separate tunnel sections on either side. The benefit of this situation rather than the previous option for the depot at the north end of the route at Lissenhall includes its central location, thereby enabling efficient train operations with only limited empty coaching stock running.

The land required for the depot is within the functional area of Fingal Council and is therefore subject to the Fingal Development Plan 2017-2023 and the Dardistown Local Area Plan 2012-2022 (LAP). These documents show that the Dardistown area has been zoned for a range of employment uses. At the time of the public consultation in Spring 2019, three options had been assessed and the option shown in Figure 4-1 was favoured at that time. However, subsequent design development indicated that other options could potentially address the depot requirements in a better way. Six additional options, including sub-options, were identified and assessed alongside the three previous earlier options identified. These nine options were compared against set criteria using a Multi-Criteria Analysis (MCA) methodology from which Option 8a was found to offer the greatest overall benefit. This Option 8A has now been developed to Preliminary Design Stage as shown in Figure 1-1.

MetroLink trains entering and leaving service will do so using the track crossovers at the future Dardistown Station and the grade-separated and conflict-free tracks at the southwest corner of the depot. All the functional requirements for a secure MetroLink depot are provided, including covered stabling for the ultimate fleet, a maintenance shed, an administration building, a train wash plant, and a test track. The facilities are set out in an efficient manner on a prepared level site with good access from the surrounding road network, including the M50.

Figure 1-1: Preferred Option 8A (as developed to Preliminary Design stage for the MetroLink Depot)

As part of the option assessment, land use planning, and environmental impacts were considered. The preferred site location is similar to the previous Metro North solution, which remains as part of the Fingal Council planning documents. The depot site boundaries take account of the constraints from planned infrastructure investments including the potential FCC East-West Distributer Road to the north. It also avoids any impact on the planned Greater Dublin Drainage (GDD) Project and its west to east route parallel to the M50 before its alignment turn northwards through the Dardistown lands.

The Preliminary Design Report (PDR) was submitted by Jacobs Idom (JI) to Transport Infrastructure Ireland (TII) in 2020 and it includes the depot proposals as contained in Volume 4 - Chapter 12.

In January 2022, TII received a letter from CGI that questioned the Dardistown location for the depot, particularly in relation to the perceived commercial land value, and went on to propose an alternative location as shown in the drawing extract in Figure 1-2 (*Drawing Reference 10806-1003 revision D. Dated: December 2019*). The expressed view in the letter that the Lissenhall area would have been a better location for the depot is not supported by Jacobs Idom studies since it does not enable efficient train operations, and for this reason it is not considered further in this report.

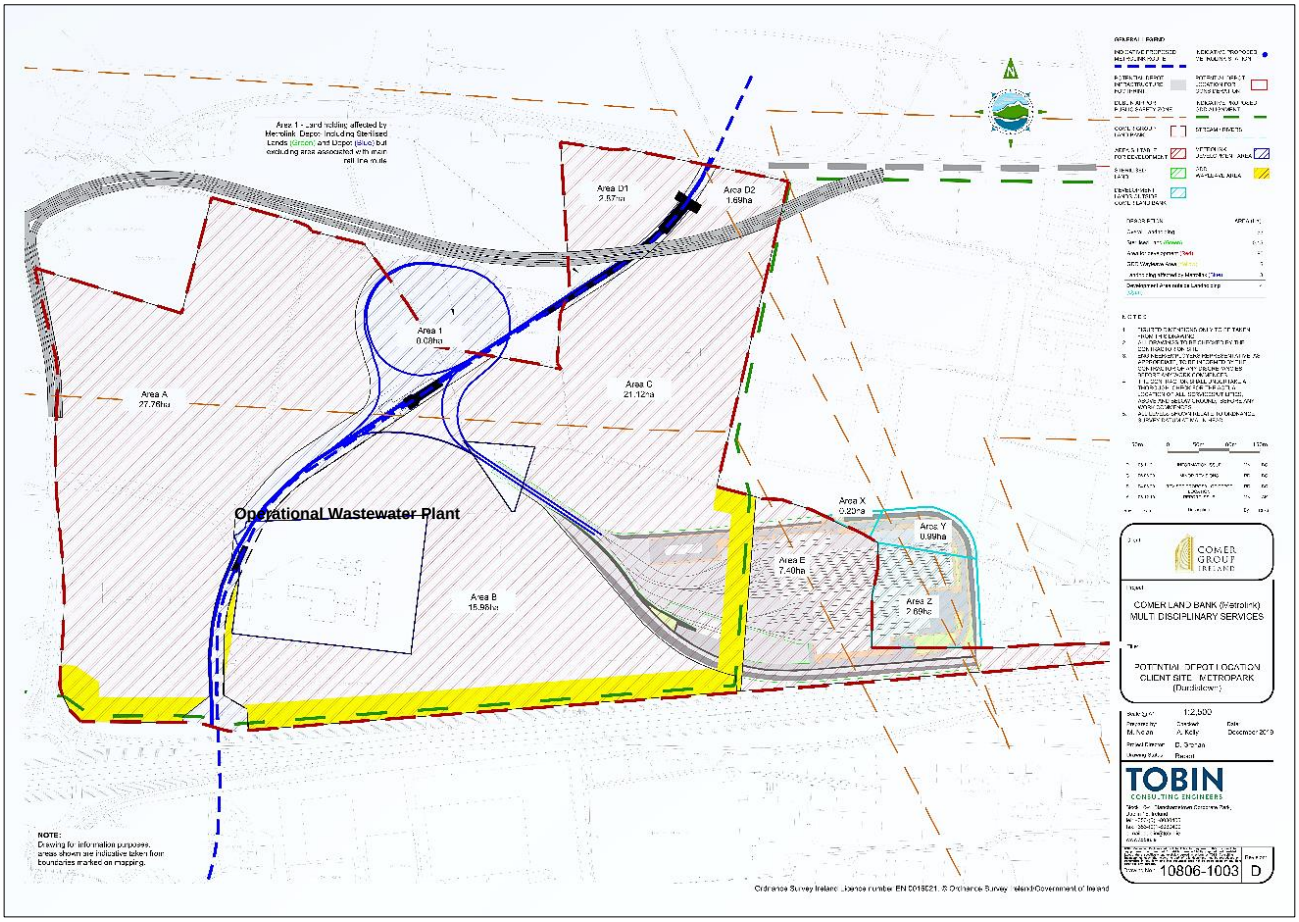


Figure 1-2: CGI Proposal for MetroLink Depot (Note dashed lines indicating Public Safety Zones and added text for wastewater plant)

The CGI suggestion for the depot has similarities with the location presented at the Public Consultation in 2019 as shown in Figure 4-1, and also with the Option 1 layout (see Figure 5-4 for overlay of Option 1 and CGI proposal) that was previously assessed though the 2020 MCA process (see Section 4). The main difference is that the depot has been shifted eastwards by approximately 200m, which takes it outside the area of single ownership as indicated by the light blue/turquoise shading in Figure 1-2. A grade separated junction has been added (in dark blue), which is very similar to the Option 1 proposal. The approach track to the depot is longer to suit the eastward shift, and it is shown passing through the existing operational wastewater plant (*see additional annotation added to Figure 1-2 by JI).*

TII has instructed JI to consider the CGI proposal and to evaluate it using the same MCA methodology that was applied to assess the performance of previous depot options considered. On the basis that Option 8A was the best performing option in the original assessment and ultimately became the Preferred Option, the MCA presented in this document considers only two options, namely, Option 8A and the CGI Proposal, presented as Option 10.

No design commentary has been provided for the CGI proposal in support of the single plan layout drawing provided. To perform the MCA as far as possible on a like-for-like basis a reasonable assumption is that the CGI proposal is in most respects the same as Option 1 but shifted to the east. It is also the case that after Option 8A was selected as the preferred option it was developed through the Preliminary Design stage, which resulted in an increase in land area requirements to accommodate the necessary equipment and functionality. Accordingly, we

have adjusted the CGI Proposal so that it more closely matches the developed requirements following Preliminary Design. This “normalisation” has led to an increase in land take of 3.9ha compared to the CGI proposal submitted to TII.

2. Receiving Environment

This section describes the site and its constraints, covering land use, planning policy and history, and environmental constraints and impacts.

2.1 Land Use

The Dardistown lands are an important strategic development landbank located between Dublin City Centre and Dublin Airport. The lands are bounded by Dublin Airport to the north, the M50 to the south, the Naul Road (R108) to the west, and the Swords Road (R132) to the east. Most of the lands are undeveloped, with the situation shown by Figure 2-1. The Dardistown Lands form part of the south fringe of Fingal, separating the built-up area of the city inside the M50 from Dublin Airport, Swords, and rural Fingal. Ballymun and Santry Demesne from the closest urban residential areas. Ikea, Northwood Business Park, and the new employment zone to the southwest of the Ballymun Interchange represent future employment and retail attractions. Logistics uses are provided for to the south of the M50 on the eastern side of the Ballymun Interchange.

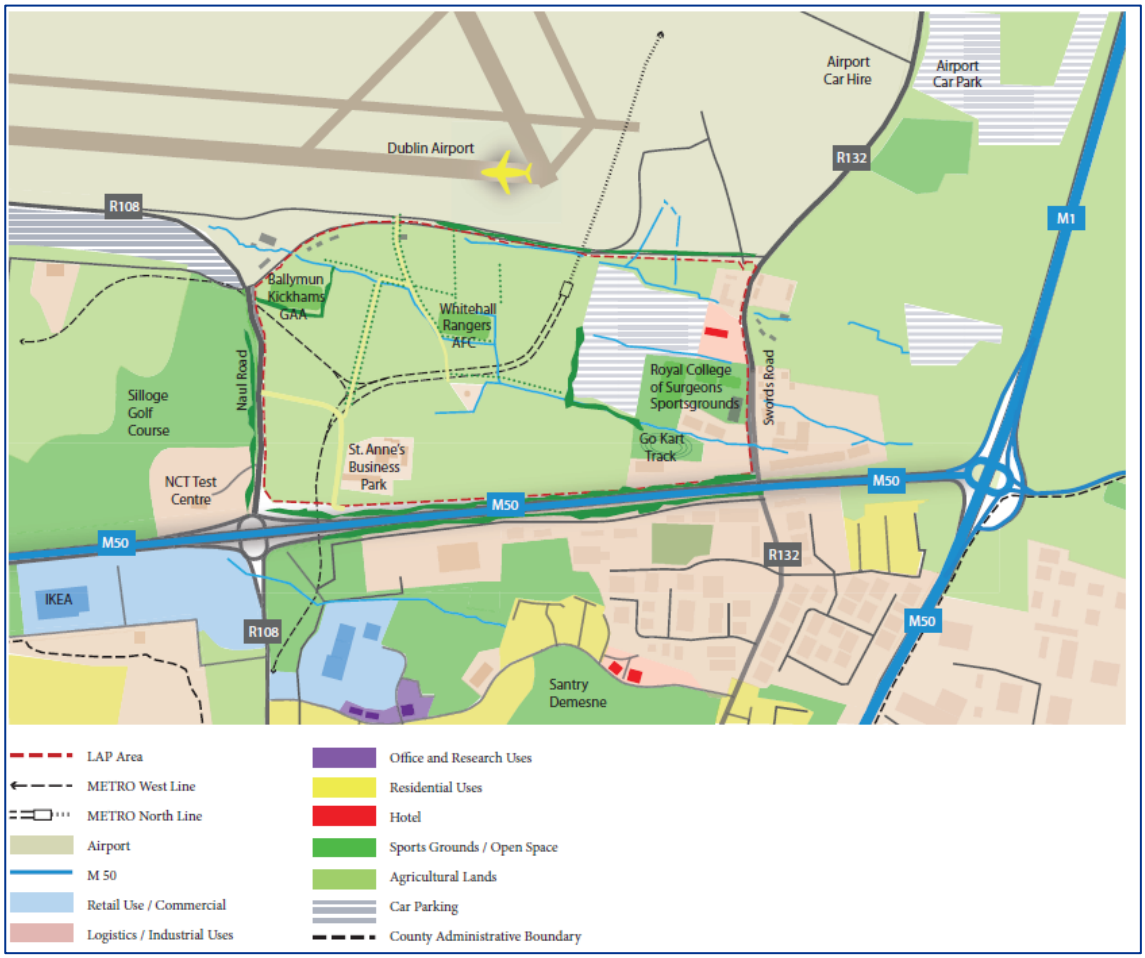


Figure 2-1: Land Use and Property Impact. ***Source Dardistown Local Area Plan 2012-2022 (Fingal Council)***

The area within which it is proposed to site the MetroLink depot comprises an approximately rectangular shaped parcel of land. The topography of the lands at Dardistown is generally flat but rises from the southeast to the northwest. There are a few existing paths and hedgerows crossing from north to south, and several watercourses

flow from west to east, including the Mayne River and its tributary, the Turnapin Stream. There is a verge of dense vegetation along the M50, and a significant proportion of the area is currently in agricultural use.

Development that has occurred within the area includes industrial, commercial, sports and recreational uses. Industrial and commercial uses include a food processing plant with its associated water treatment plant, the St. Anne's Business Park accessed off the Naul Road, and primarily frontage development along the Swords Road (R132) to the east. The lands accommodate sports and recreational facilities and several sporting clubs, with a number of sports pitches in the northern part of the area near to the airport, and a small number of commercial premises in the southern part immediately to the north of the M50 motorway. Further west of the R108 is a golf course. There are commercial premises off Swords Road to the east with some long stay carparking associated with the airport.

2.2 Planning Policy and Planning History

There are three Planning Plans listed below that are relevant to the Dardistown lands, and thus the depot. These are discussed individually in the proceeding section:

- Fingal Development Plan 2017-2023
- Draft Fingal Development Plan 2023-2029
- Dardistown Local Area Plan 2012-2022

It is noted that the location of the depot is not dependent on the LAP

2.2.1 Fingal Development Plan 2017-2023

The depot site location is within the functional area of Fingal Council (FCC) and is zoned within the current Fingal Development Plan 2017 – 2023 (FDP). The extract from the FDP zoning maps (see Figure 2-2) provides details of the plan's objectives that are relevant to the depot location. Note that the location of the depot not dependent on the Plan.

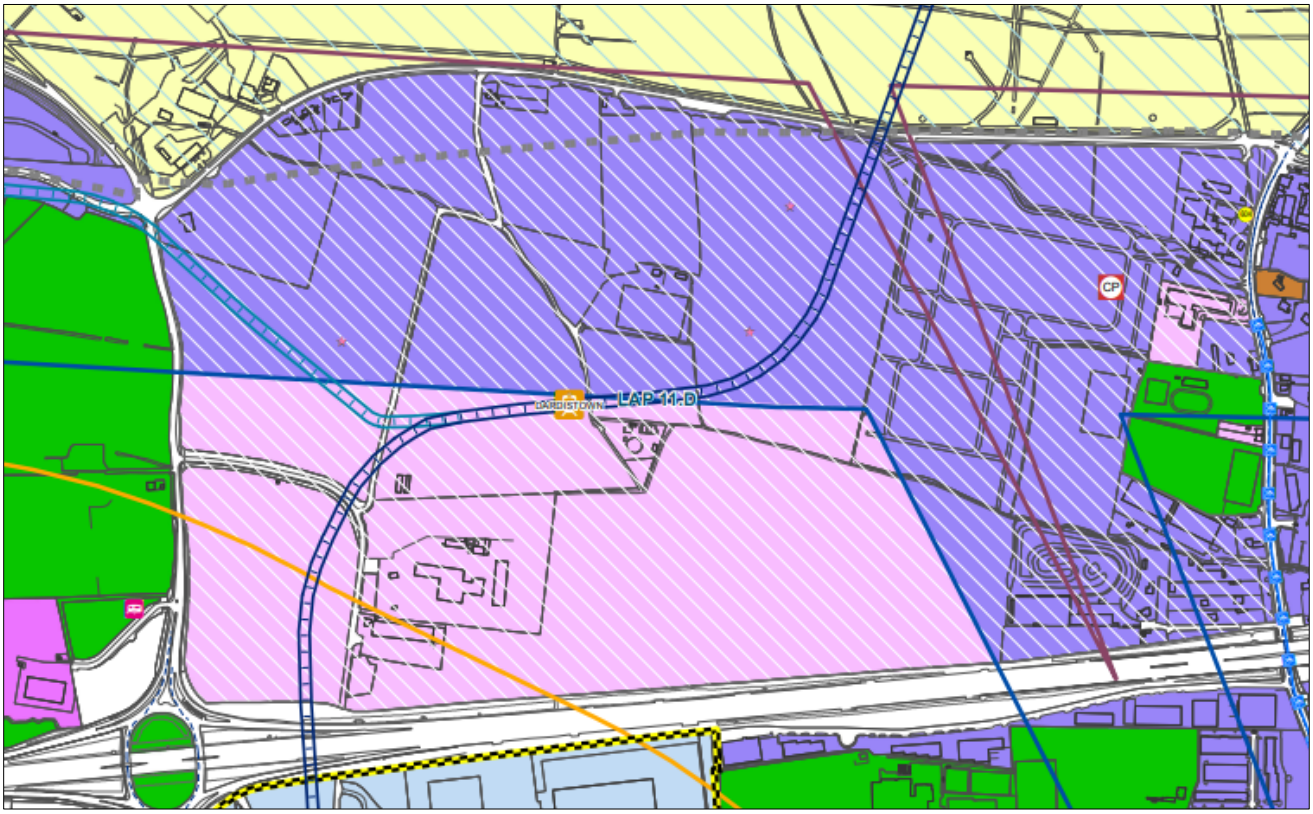


Figure 2-2: Fingal Development Plan 2017-2023 Zoning Map 11

As depicted in Figure 2-2, the lands are zoned as:

- Purple: General Employment (GE) '*the purpose of the general employment is to facilitate opportunities for general employment uses and compatible forms of industry, logistics and warehousing.'*

- Pink: High Technology (HT), *'the purpose of the high technology zoning is to facilitate opportunities for major office, science and technology, and research and development-based employment within high quality, high accessible, campus style settings.'*

In addition to providing for a wider range of employment opportunities, the High Technology zone can also support a higher intensity of development use.

The dark blue curved (laddered) corridor of the FDP zoning map also identifies the previously permitted Metro North alignment. In addition, the light blue curved (laddered) corridor traversing the land to the northwest indicates a section of the Light Rail corridor, with Objective MT27 stating it is an objective of the council to, '*Support TII in progressing the design of a Light Rail Corridor that addresses the needs of Fingal…*'. The areas of hatching indicate that the depot is located in an area subject to preparation and implementation of a Local Area Plan, for which Objective ED89 applies, '*Prepare and/or implement the following Local Area Plans during the lifetime of this plan…Dardistown*'.

Public Safety Zones

The FDP maps identify the lands that are within the Dublin Airport Public Safety Zones (PSZs) as shown in Figure 2-3 . These comprise an inner Safety Zone (yellow) and an outer Safety Zone (dark blue). The distinction between the two zoning areas corresponds to the location of the boundary of the Dublin Airport Outer Public Safety Zone and the lands outside the Public Safety Zone. The Dublin Airport Inner Safety Zone runs across the lands to the east of the Dardistown area and they correspond to the location of the boundary between the Outer PSZ and the lands outside the PSZs. The inner PSZ affects lands to the east of the Dardistown area.

Figure 2-3: Dublin Airport Public Safety Zones (PSZ)

The function of the PSZ's are set out in the Public Safety Zones Report (ERM, on behalf of the Department of Transport and the Department of Environment, Heritage and Local Government, 2003).

Within the inner PSZ, the objective is to prevent further development, while within the outer PSZ the objective is to prevent high density housing development, and the building of schools, hospitals and facilities attracting large numbers of people. In general terms, a development should be assessed where people can be expected to be present for all or part of the day. Table 2-1 sets out the density of employment considered appropriate.

Table 2-1 Employment Density for Inner and Outer Public Safety Zones

Permitted Developments	Outer Public Safety Zone	Inner Public Safety Zone
Housing	≤ 60 persons/half hectare	No further development
Holiday Accommodation	≤ 100 beds per development	No further development
Retail/Leisure Facilities	≤85 persons/half hectare	No further development
Working Premises	≤ 110 persons/half hectare	No further development
Institutional Accommodation	No further development	No further development
Sports Stadia	No further development	No further development
Limited Use	≤ 220 persons/half hectare	No further development

Exceptions for permitted developments in the inner PSZ are:

- developments where persons are not expected to be present;
- roads and railways where vehicles and passenger trains/trams are not expected to be stationary. For example, road vehicles can be expected to be stationary at major road intersections, junctions, and traffic lights. Therefore, major road intersections, junctions, traffic lights and similar should not be permitted in the inner PSZ.

There may be cases, in exceptional circumstances, where it is judged that a development's socio-economic benefits (etc.) outweigh the 'safety risk', and that it is impractical for such a development to be located elsewhere. The guidance states that roads and railways are permitted in the outer PSZs, including major road and rail intersections, junctions, and traffic lights. Therefore, the guidance does not support a depot use within the inner PSZ, where that use requires the stabling of vehicles or maintenance yards.

2.2.2 Draft Fingal Development Plan 2023-2029

The Draft Fingal Development Plan 2023-2029 is at an advanced stage, with public consultation having commenced on 24th February 2022, running to 12th May 2022. The extract from the Draft FDP zoning map in Figure 2-4 provides details of the draft plan objectives relevant to the lands in question.

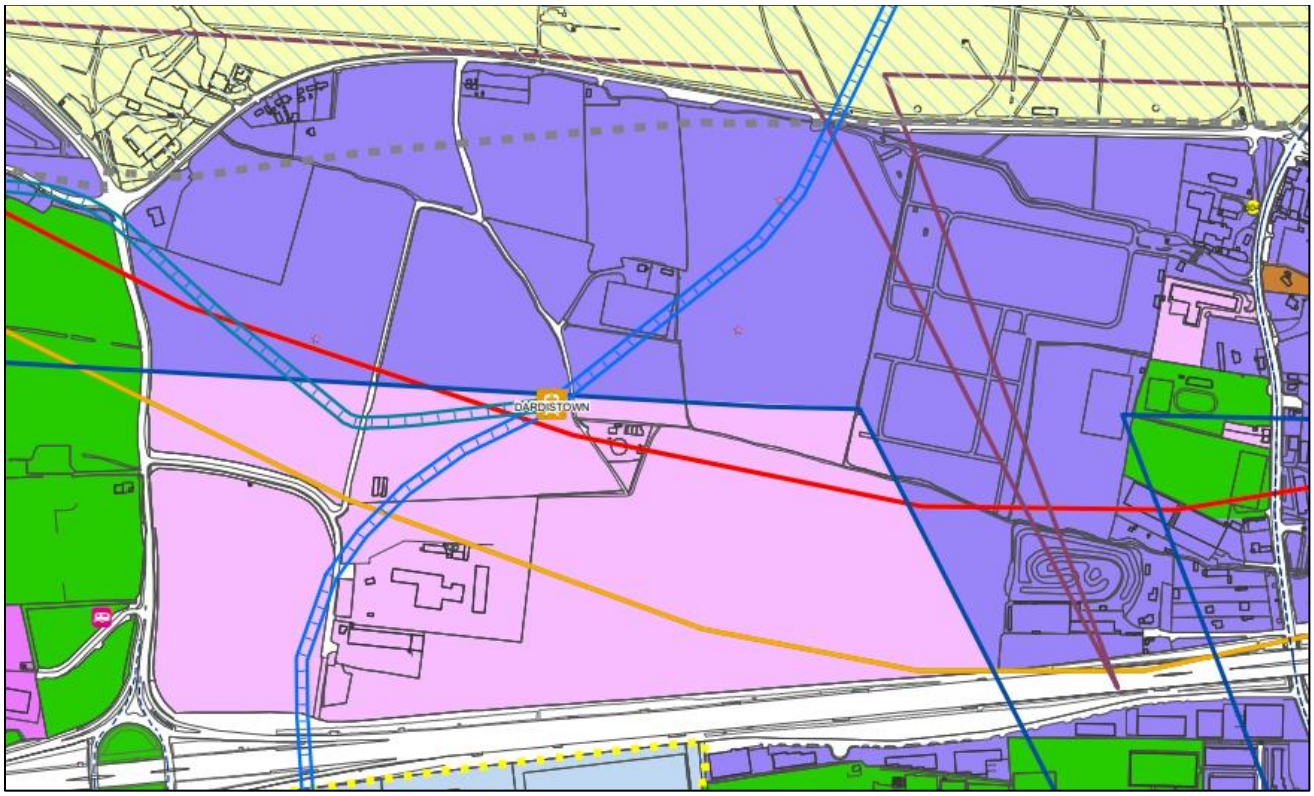


Figure 2-4: Draft Fingal Development Plan 2023-2029 Zoning Map 11

The Draft Plan continues with the zoning pattern for General Employment (purple) and High Technology (pink) uses. The zoning map also again shows the indicative alignment of the proposed Metrolink project ('laddered' blue track), as well as a Light Rail Corridor ('ladder' light blue track). Similarly, there are no changes to the location of the Public Safety Zone boundaries.

One key difference within the draft plan is that the requirement for a Local Area Plan on the Dardistown lands no longer applies.

2.2.3 Dardistown Local Area Plan 2012-2022

The MetroLink depot site is to be located on part of the lands included in the Dardistown Local Area Plan (LAP).

The Dardistown LAP was adopted in 2012 and has been extended to 12th November 2022 and takes into account the permitted Metro North project alignment and its depot. The map shown in Figure 2-5 summarises the LAP Strategy.

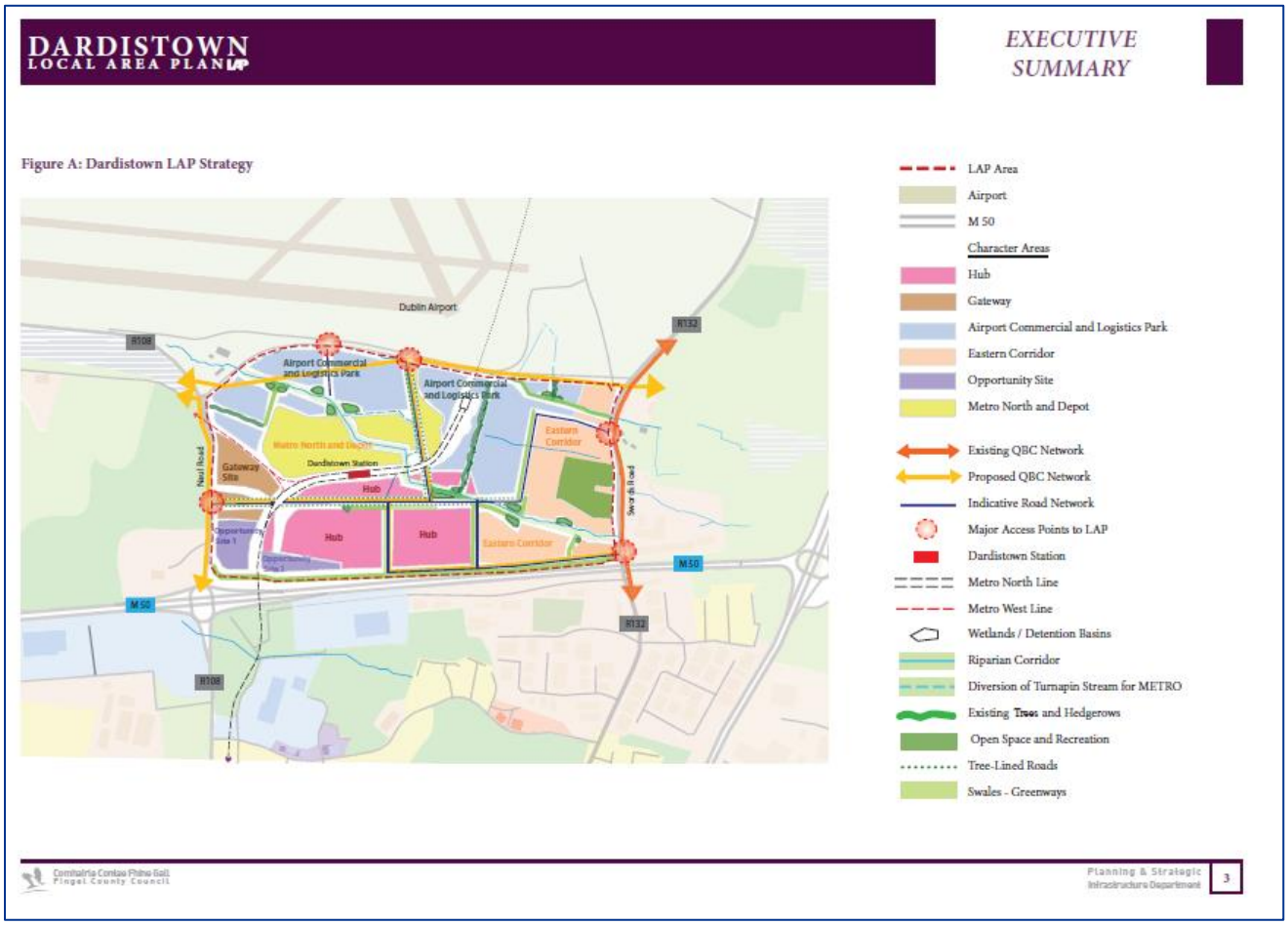


Figure 2-5: Dardistown LAP Strategy (Ref: Dardistown LAP)

The Local Area Plan will expire in 2022 and will not have a formal status on its expiry and hence there is no strict obligation to comply with the LAP content. However, there will be some residual influence on development in terms of the understanding of the site constraints and the underlying assessments carried out and thus these will need to be respected. The fundamental design principles of the LAP will also assist in understanding the type of issues that will be important to facilitate future development (e.g., access or drainage, landmark buildings) and managing ongoing stakeholder relationships.

2.2.4 Planning History

Historical Planning Permissions

The proposed depot lands are subject to two significant planning permissions as shown in Table 2-2. Both of these are in relation to the previous Metro North development.

Table 2-2 Planning Permissions affecting the Proposed Depot lands

Planning Ref.	Description	Registration Date	Decision Date	Decision
SID/02/08	Construction, operation, and maintenance of a light railway	29-Nov-2008	27-Oct-2010	Granted with conditions
SID/03/11	Dardistown Depot and Scheme Spoil Strategy for the Metro North Scheme.	29-Apr-2011	30-Sep-2011	Granted with conditions

Extant Planning Permissions

There has also been a number of extant planning permissions within the area of the proposed CGI depot location as shown in Table 2-3.

Table 2-3 Planning Applications affecting the proposed CGI Depot Location

Planning Ref.	Description	Registration Date	Decision Date	Decision
F21A/0227	Change of Use from karting to car rental storage car park and maintenance / cleaning facility.	04-Oct-2021	26-Nov-2021	Granted with conditions
F19A/0547	Change of use of an existing karting motor racing track to car rental storage car park and maintenance / cleaning facility.	18-Nov-2019	8-Apr-2020	Refused on Appeal, following refusal by FCC

In respect of the grant of planning permission for the car rental storage car park and maintenance / cleaning facility in 2021, it is noted that the maintenance and cleaning is located outside the inner PSZ designation. The observation from DAA on the planning application, noted that the planning authority should "*have regard to the Public Safety Zones associated with Dublin Airport, Objectives DA13 and DA14 of the Fingal Development Plan 2017-2023 and the recommendation of the ERM Report when assessing this application*".

The planning authority considered the employment levels within the outer PSZ as part of its consideration.

Greater Dublin Drainage (GDD) Project

This is a project to develop a new regional wastewater treatment facility and associated sewerage infrastructure to serve Dublin and parts of the surrounding counties of Kildare and Meath. It includes an underground orbital sewer from Blanchardstown to Clonshaugh as shown in Figure 2-6. The proposed sewer crosses through the Dardistown area as shown in Figure 2-7. The project was granted planning permission by An Bord Pleanála in November 2019 (Planning Ref. ABP301908-18). However, this has since been subject to a Judicial Review resulting in planning permission for the scheme still to be determined.

Any MetroLink depot options located in the southeast or eastern edge of the Dardistown lands would need to avoid impacting on this GDD alignment, provide suitable protection measures, or risk entering into protracted negotiations to agree a re-aligned route, risking delay to MetroLink and further delay to the GDD Project.

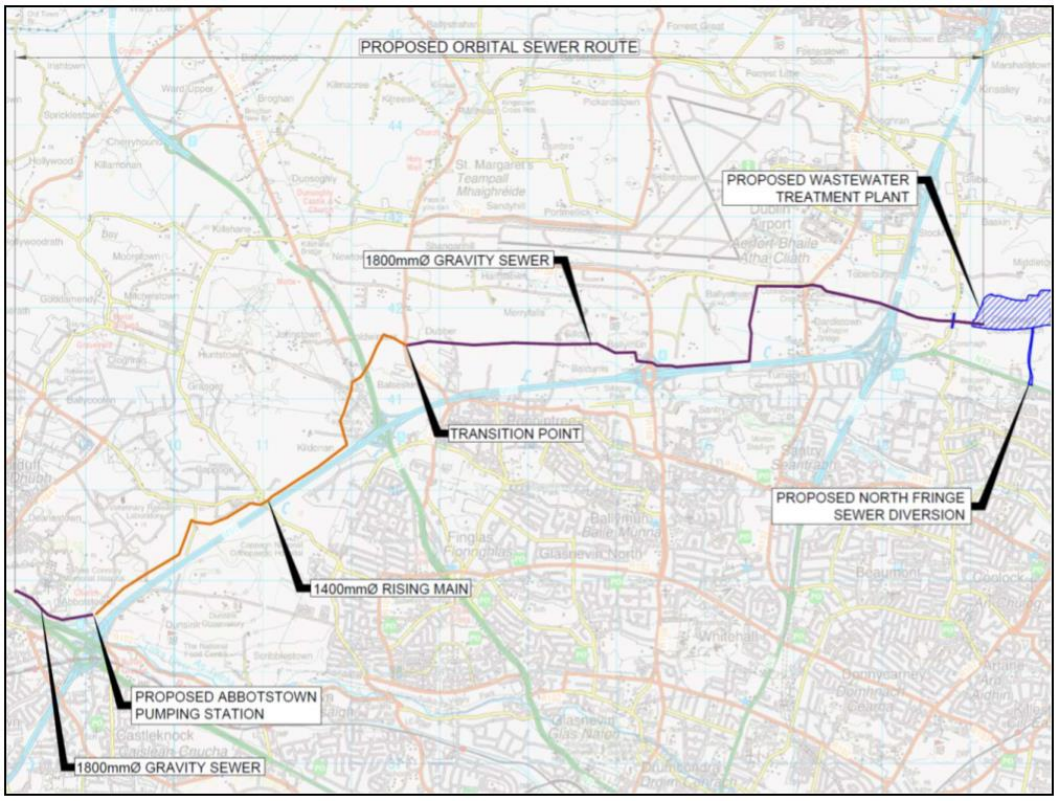


Figure 2-6: Proposed Greater Dublin Drainage (GDD) Orbital Sewer

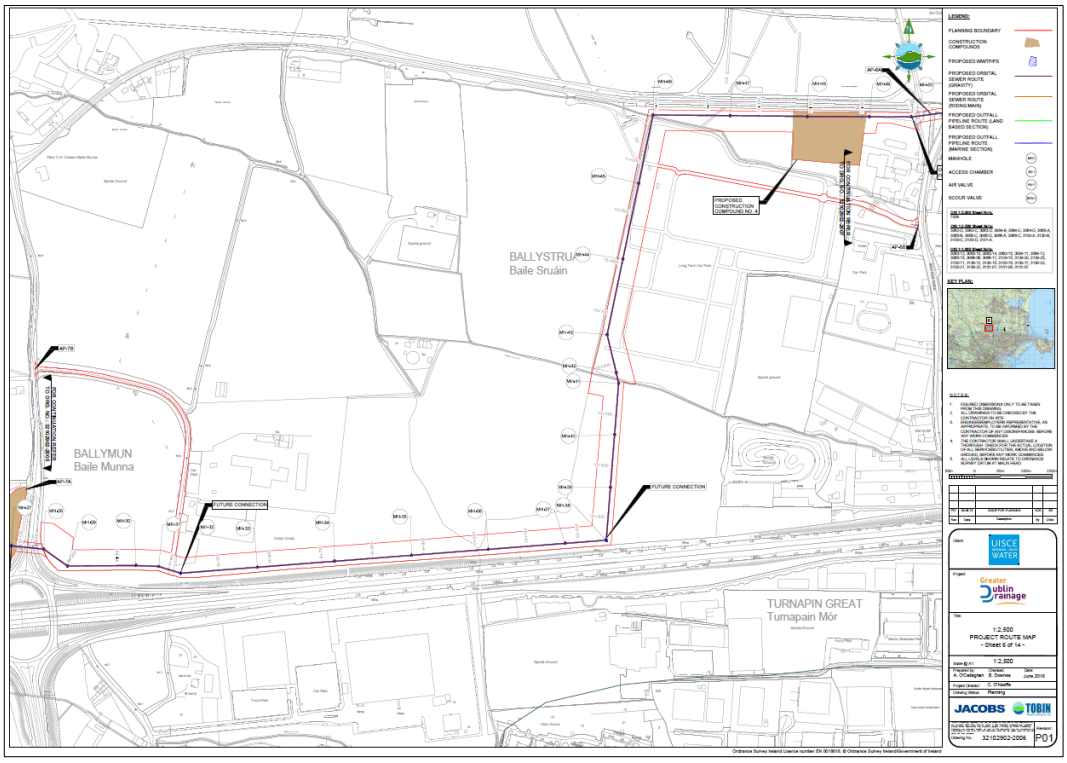


Figure 2-7: Greater Dublin Drainage (GDD) Route through Dardistown (shown in purple)

2.3 Environmental Constraints and Impacts

2.3.1 Environmental Overview

The MCA for the previous depot options considered a range of environmental factors, including human health, socioeconomics, air quality, noise, vibration, biodiversity, hydrology, hydrogeology, flood risk, archaeology, and architectural heritage.

A MetroLink depot has the potential to cause noise, vibration, and dust impacts during construction. However, the nearby receptors are limited to commercial premises and sports pitches, with no residential or other sensitive receptors, as well as there being existing ambient noise from Dublin Airport and the M50. Any required land-take from commercial premises and agricultural land could have economic impacts as well as impacting the sport pitches, limiting opportunities for physical activity.

Vegetation removal for construction could affect the habitat of breeding birds and bats. These species could also be affected by noise and lighting during depot operations.

Potential impacts on groundwater, the Mayne River and its tributaries, and drainage ditches in the area could affect water quality, geomorphology, flood risk and aquatic habitat, noting also there are groundwater abstractions in the area. An existing wastewater treatment works within the central area of the lands is also impacted by the CGI proposal (Option 10).

2.3.2 Environmental Context

The Dardistown lands are not identified in the County Development Plan (CDP) as an area with Historic Landscape Characterisations (HLC), and nor is any part designated as a Zone of Archaeological Potential. There are no ecologically designated sites within or adjoining the LAP lands and there are no records in the National Parks and Wildlife Service rare plant database of protected plant species within the LAP area.

The Proposed Natural Heritage Area (pNHA) at Santry Demesne is the site of a rare plant species of hairy St. John's Wort (Hypericum hirsutum) which is protected under the Flora Protection Order (1999). There is a record from 1991 of the rare plant species cornflower (Centaurea cyanus) at Newtown Caroline, and a scarce species of lesser chickweed (Stellaria pallida) at Dunsoghly Castle, both at least 5km to the west of the study area. Neither of these species has statutory protection under the Wildlife (Amendment) Act 2000.

The Santry River drains into the pNHA; however, the LAP lands lie within the catchment of the Mayne River, which is a separate catchment from the Santry River.

The Flora of County Dublin (Doogue et al.,1998) lists a number of uncommon plant species noted in the vicinity of Dunsoghly and St. Margaret's, but none in the vicinity of the LAP lands. The main habitats recorded within the LAP lands are amenity grassland, wet grassland, dry calcareous and neutral grassland, broadleaved woodland, hedgerows, low-land depositing river, re-colonising bare ground, active quarries and mines, buildings and artificial surfaces and arable land. Common mammal species are found within the LAP, but these are of no conservation significance or concern.

The LAP lands were inspected for potential bat roosts. While nothing of significance was discovered, a bat survey will need to be undertaken prior to the commencement of development to ensure any potential impacts are mitigated. No part of the LAP lands fall within any Architectural Conservation Area designations. The Record of Protected Structures (RPS) appended to the Development Plan identifies one Protected Structure located within the LAP lands. This is RPS No. 604, which is a thatched dwelling located along Swords Road within the town land of Collinstown.

Pedestrian and cycle routes exist along the Swords Road (R132) that forms the eastern boundary of the LAP lands, and along the southern section of the Naul Road (R108), which forms the western boundary of the LAP lands, where pedestrian and cycle facilities were incorporated as part of the M50 upgrade works to the Ballymun interchange.

2.3.3 Flood Assessment and Mitigation

The Dardistown LAP includes a number of objectives in relation to the diversion of the Turnapin Stream around the original Metro North Depot. These objectives are:

- CP031 - A 15m riparian corridor shall be maintained along both sides of the Turnapin Stream in order to protect and manage this existing watercourse.
- CP035 - The eastern regional fisheries board shall be consulted in relation to any working in relation to diverting or crossing of a river/stream.

The assessment of the depot options included consideration of flooding impacts and mitigations. The Dardistown lands are located at the head of the Mayne River system and the Turnapin Stream is a tributary to that system. The stream is shown in Figure 2-8 overlaid onto the Preferred Option 8A, demonstrating the need to divert the stream for this option.

Figure 2-8: Option 8A and the Turnapin Stream (tributary of the Mayne River)

A similar situation exists for the CGI proposal (Option 10) because of its move further east compared to Option 1 (see Figure 2-9), which also as previously noted, (see Figure 2-7) creates an interface with the GDD Project as a result of its alignment running along the south side of Option 10.

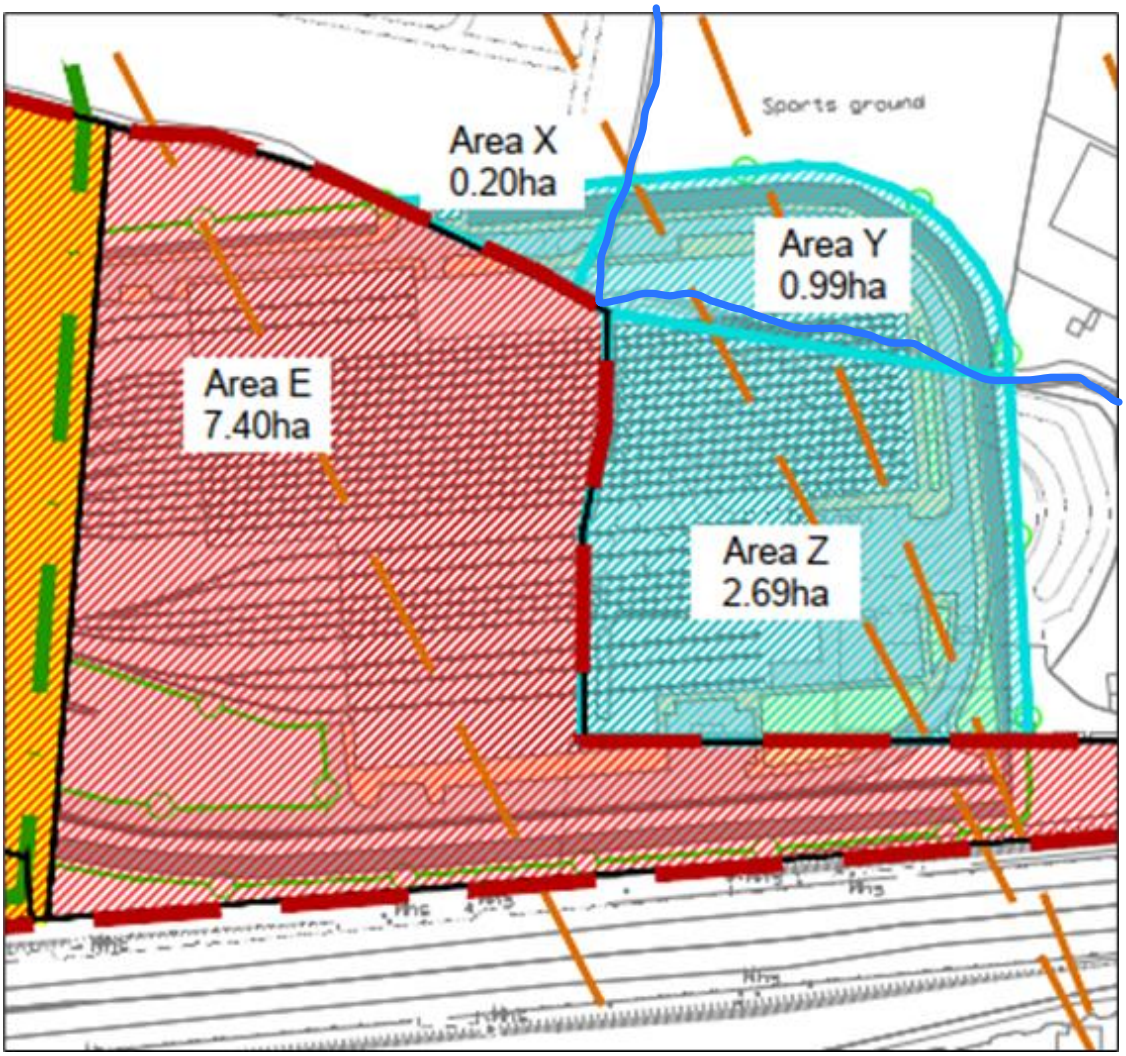


Figure 2-9: Option 10 and the Mayne River (dark blue line) – extract taken from Figure 1-2, south-east corner

3. Design Aspects in Common

3.1 Overall Operational Space Proofing Requirements

There are aspects of depot design that are common to both the proposed Option 8A and Option 10 (CGI proposal), in particular Train Operations and Depot Functional Requirements. These aspects determine the “space proofing” of the depot, and in the case of Option 10 they have resulted in the footprint of Option 10 proposal increasing in area. This is explained in further detail in Section 5.2, Land Take.

3.2 Train Operations

The passenger forecast for 2057 indicates that the highest demand will be on the section between the Airport and Charlemont Station. A schematic of the Metrolink Route is shown in Figure 3-1.

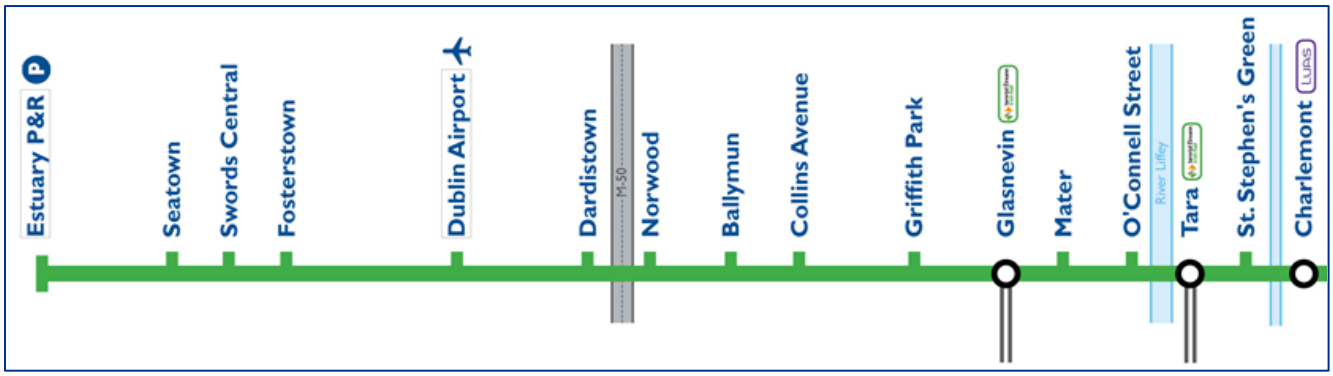


Figure 3-1: Route Schematic

Two operating circuits or cycles have been considered as shown in Figure 3-2. It is also feasible for trains to operate on a single loop and this would require more trains compared to the double loop because the latter involves a reduced train service north of Dublin Airport.

Figure 3-2: Two operating circuits

The ultimate fleet size is calculated on the basis of a design service interval of 90 seconds and the depot has been designed accordingly. It is recognised that at service commencement and possibly for several years thereafter a service interval greater than 90 seconds will satisfy the demand.

In the case of the two operating circuits, the longer circuit will run from Estuary Station to Charlemont Station and the shorter circuit will run from Dublin Airport Station to Charlemont Station. The demand study analysis indicated a minimum operational headway of 90 seconds in the inner circuit for a maximum of 40 trains per hour (40TPH), and 180 seconds headway in the outer circuit for 20TPH. Should MetroLink be extended southwards towards Sandyford in the future, the circuits will be increased either in number or in length and the train fleet increased accordingly. In the off-peak the demand is less and the operator might choose to reduce services north of the Airport by introducing the double loop operation.

There is no change to the depot design because it is sized for the ultimate fleet for single-loop operation for the forecast AM peak demand and also for a possible extension south towards Sandyford.

3.2.1 Normal Operations

At the start of service a train will depart from the turnbacks at Estuary and Charlemont, as well as from Dublin Airport. These trains will operate the service with the designed headways for the two circulations - the long circuit between the terminus stations and the short circuit from Dublin Airport south to the Charlemont terminus. The deployment to the main line will be managed in such a way that empty coaching stock movements are minimised. The Stabling Strategy is that trains park or stable overnight at the Charlemont Terminus for up to five units in the Station and Turnback; and the rest of the fleet at Dardistown Depot. The operating strategy would adjust headways to suit the demand profile so that when an increase in headway is desired to suit a lower demand the method of train removal from service is:

1) up to four units would be removed at the terminals of Charlemont and Estuary, and

2) any remaining units that need to be removed would go to the Dardistown Depot

When a decrease in headway is desired to suit a rising demand the method of train introduction is by:

3) releasing the stabled trains from the terminals at Charlemont and Estuary, then

4) any other trains needed would be deployed from Dardistown Depot.

At the end of service the last train will depart from each of the terminals (Estuary, Dublin Airport and Charlemont) and all units will be removed at the Dardistown Depot, except for the last five units, which will be stabled at Charlemont Station. The final Charlemont departure will have an Estuary destination, from where it will reverse and run empty (ECS) to the depot.

3.2.2 Degraded Operations

The design of the route has been developed so that during degraded operations service robustness is maintained and independent route sections can continue to operate. As shown in Figure 3-3, the switches and crossings (S&C) on the track are located near to the stations so that the time required for manoeuvring is kept to a minimum. Crossings are located at every third station so that operating headway is no more than 12-minutes in degraded situations. It is noted that the terminal stations offer the most flexibility in managing changing service situations, for example, at start and end of the service, headway changes, and removal of faulty trains.

Figure 3-3: MetroLink Route with Track Crossings

Regardless of any agreed out-of- service hours there will be a time period when the line is closed completely for commercial or maintenance reasons so that the entire fleet must be stabled at the depot or at the turnbacks located at Charlemont and the Airport. The Dardistown depot is sized to stable the entire MetroLink fleet at one time.

3.3 Depot Functional Requirements

The MetroLink depot design must consider each of the key listed items to provide the required functionality.

- **Total Fleet**: The MetroLink project requires 42 trains, but the depot design is future proofed in the event that the alignment is extended at some time so that the depot layout can accommodate 59 no trains on 15 no stabling tracks.
- **Rolling Stock**: Vehicles are to be designed for automated operation and are proposed as 64m long and 2.65m wide.
- **Area Available:** The proposed location for the depot is on the Dardistown Lands, which is constrained to the south by the M50, to the north by the Old Airport Road, and by the MetroLink main line as it crosses the Lands in a southwest to northeast alignment. The Dardistown Local Area Plan (LAP) also has some land use restrictions.
- **Main Line Connection**: The depot main line connection must enable conflict free train movements in both directions, towards Estuary and towards Charlemont.
- **Grade of Maintenance:** The Maintenance Strategy is divided into daily, preventive, and corrective maintenance carried out on the proposed nine no. maintenance tracks in the workshop.
- **Accessibility & Workflow:** Functional areas are arranged to suit the planned operations with consideration of normal and emergency train movements and associated staff requirements. The depot will be provided with one main and one emergency connection to the main road network. Pedestrian access to the future Dardistown station is to be provided.

3.4 Depot Facilities and Infrastructure Required

The typical depot facilities required are listed and described in Table 3-1.

Table 3-1: Facilities Description

Facility	Description
Main access & security building	Site security, pedestrian/vehicle control, etc
Automatic washing plant	Inspection bay, pits underside checks, train washing plant, etc
Main maintenance workshop building	Working stands, vehicle lifting track, lateral overhead platforms, electromechanical workshop, etc.
General storage building	Appropriate for fleet size required.
Main offices and administration building	Offices, operation staff facilities, training rooms, operation control centre
Electrical substation	Appropriate for fleet size required.
Inspection / Sanding Bay	Single Track
Stabling building	Appropriate for fleet size required.
Permanent way maintenance building	Workshops, storage with an overhead crane, diesel fuelling installation for Rail Maintenance Vehicles, etc

The depot will be divided into four operational areas with different methods of train control - automatic, manual, mixed or neutral. For train routing, the areas will be separated by dedicated platforms The automatic area will be monitored by OCC and/or SCADA. The different operational areas will be enclosed and protected by fencing and access to the automatic area will be monitored from the Operational Control Centre (OCC) using SCADA systems.

An unelectrified loading/unloading track is required for the delivery and assembly of the metro cars brought to site by road. An internal road network will enable normal and emergency site operations. Designated walkways to allow safe pedestrian movements are required, and internal roads, pedestrian walkways and platforms require adequate illumination for safe access during the hours of darkness. The lighting will be extended to the rail yard for safety during night operations, with lighting appropriate for use near to the airport operations.

The depot will provide office accommodation and amenities for the staff, with associated car parking available in proximity of accommodation buildings. The track layout will allow for;

Stabling -

- 4 trains per track giving 15 tracks for 59 trains.
- 64m for train length and 5m providing a minimum track length of 285m.

The Maintenance Workshop will require nine tracks in total with the following split:

- 4 tracks with pits
- 2 lifting tracks
- 1 track on slab for train unloading and car body interior maintenance activities
- 1 track for wheels re-profiling

- 1 track for car body and bogie frame preparation and painting

A test track for brake and driving tests of between 800m to 1,000m in length is required as straight as possible and without switches close to the workshops, with a continuous protective fence.

The option prepared for Public Consultation had an at-grade “delta” connection to the main line (Figure 4-1). Subsequent more detailed analysis of the operations plan showed that for the ultimate service of 90 second headways in each direction a conflict free junction was necessary.

All the depot tracks will be near horizontal. The approach tracks from the main line need to be grade separated for operational reasons and this does necessitate steeper gradients but still within the desirable maximum for the main line of 4%. The relevant criteria for the design of the depot and its mainline approaches are:

- Maximum operational speed in Depot - 15 km/h
- Maximum speed inside building - 5 km/h
- Minimum radius in Depot - 90 m
- Minimum radius for turnouts / crossings - 100 m

3.5 Depot Operations

Automated areas of the depot will be operated in automated GoA4 mode. Workshop areas are operated by manual interlocking and in these areas the driver moves the train manually in GoA0 mode. The automated area of the depot will be equipped with systems for interlocking, track vacancy detection, CBTC wayside, as well as points, and wayside signals. The automatic area of the depot can be controlled automatically by ATS and manually in the workshop area by the depot dispatcher.

3.5.1 Automatic Depot Operation

Train operations begins in GoA4 mode with the “waking-up” of the train through an ATS command according to the daily timetable. The ATS sets the route out of the stabling track onto the connected line onto the MetroLink mainline. The points are set by the interlocking and the CBTC wayside subsystem sends a movement authority to the on-board CBTC subsystem. The train will then be driven by the on-board system out of the depot according to the route and the movement authority. It is then driven by the on-board CBTC subsystem into the first platform of a passenger station where the passenger doors will open automatically.

3.5.2 Manual Operation

When a train has been powered off completely or is in cut-off mode, a manual set-in procedure will be applied. The CBTC on-board system will start-up along with the other Rolling Stock systems. It will be ready for operation after less than 60 seconds after the automatic start-up tests have been executed successfully. The driver unlocks the leading cab via a key switch. The CBTC on-board system will be in GoA0 mode. The line operator sets the route out of the stabling track through the ATS HMI and the driver can start driving the train out of the stabling track.

When the train has localised itself by, for example, reading a balise position, the CBTC on-board system establishes a connection to the wayside CBTC subsystem. As soon as a train has been successfully connected, the CBTC on-board subsystem receives a valid movement authority and changes to GoA3 mode. This transition is possible without stopping the train and the mode can now be changed to GoA4 by the driver.

3.5.3 Entering the Depot Area

When a train has completed its service, it shall be scheduled by the automatic route setting function and the ATS systems to return to the depot. The ATS automatically sets the route via the connection line into the depot stabling track and the train runs automatically to a pre-defined position. After coming to a stand, the cab is de-activated, and a sleep command is sent to train from the CBTC on-board unit. Trains in GoA4 mode will be stabled no less than 5m from either a buffer stop or another stabled train.

3.5.4 Entering the Workshop Area

Entry into a workshop is always undertaken manually. Maintenance personnel will drive the train that has been parked in the transfer zone. The maintenance area must be completely segregated from the automatic driving area for safety reasons. The operator follows a specific procedure and takes control of the train under GoA0 mode. From that point, the train is managed by the depot dispatcher.

3.5.5 Exiting the Workshop Area

The depot dispatcher sets a route from the area where the train is located to the transfer zone. The train will run in manual GoA0 mode to the transfer zone where the workshop operator will change the driving mode to GoA4. He leaves the cab after setting the required cabin control panel locks. The train is now under the management of the ATS system.

3.5.6 Exiting the Depot and System Start-up

The system will incorporate an automatic and safe start-up procedure. This procedure is applied only for trains which are powered-off during non-operation periods or maintenance overhaul activities in the depot. The start-up procedure will prevent non-reporting trains (so called “hidden trains”) exiting the depot and entering the mainline undetected. When a CBTC controlled train approaches a defined point on the track, the distance from the front of the train to the reference point is continuously measured. When the measured distance is smaller than the shortest train in the system and the track vacancy section behind the reference point is still vacant there is no hidden train in front, and the train is acknowledged as being cleared successfully. Otherwise, a track vacancy occupancy would occur and the procedure would fail.

3.5.7 Shunting Operations

Shunting operations are special operations in defined areas such as the workshop. The operation requires specific rules and regulations because it is not supervised by the CBTC system. Shunting routes shall be handled as normal routes and there will be no special shunting signals.

3.5.8 Automatic Wash Area

The system is to support a wash area in the depot and Automatic Washing is to be possible. The approaching train will be stopped in front of the washing area by the CBTC system. A washing mode command is then transmitted to the train so that it moves slowly (<5 km/h), using a special function to limit the speed, through the washing plant.

3.5.9 Operation on the Test Track

The test track needs to be straight and at least 800m long with suitable road access along its length. It will be operated from a depot dispatcher who will be able to set the entry and exit routes to the test track. The tests to be carried out in the test track will include ATC equipment testing, driving modes, door opening and closing, reversing operation, and ATO functionality and parameter adjustment.

4. Option Selection Process 2020

This document does not repeat the assessment of all nine options previously considered but it is noted that the MCA process that led to the selection of Option 8A as the preferred option was in accordance with the Common Appraisal Framework (CAF) for Transport Projects and Programmes, March 2016, published by the Department of Transport, Tourism and Sport (DTTS). It is also consistent with the PSC (Public Spending Code).

The starting point for the previous MCA process in 2020 was the layout used for the Public Consultation as shown in Figure 4-1, which placed the depot in the southeast corner of the Dardistown lands with access from a flat delta junction on the main MetroLink line. Subsequent option development determined the need for a grade separated mainline access for safety and operational reasons, with such an arrangement incorporated into the current Preliminary Design. The CGI proposed Option (Option 10) has strong similarities to the JI Option 1 depot layout but is shifted some 200m to the east, along with the incorporation of a grade separated main line access.

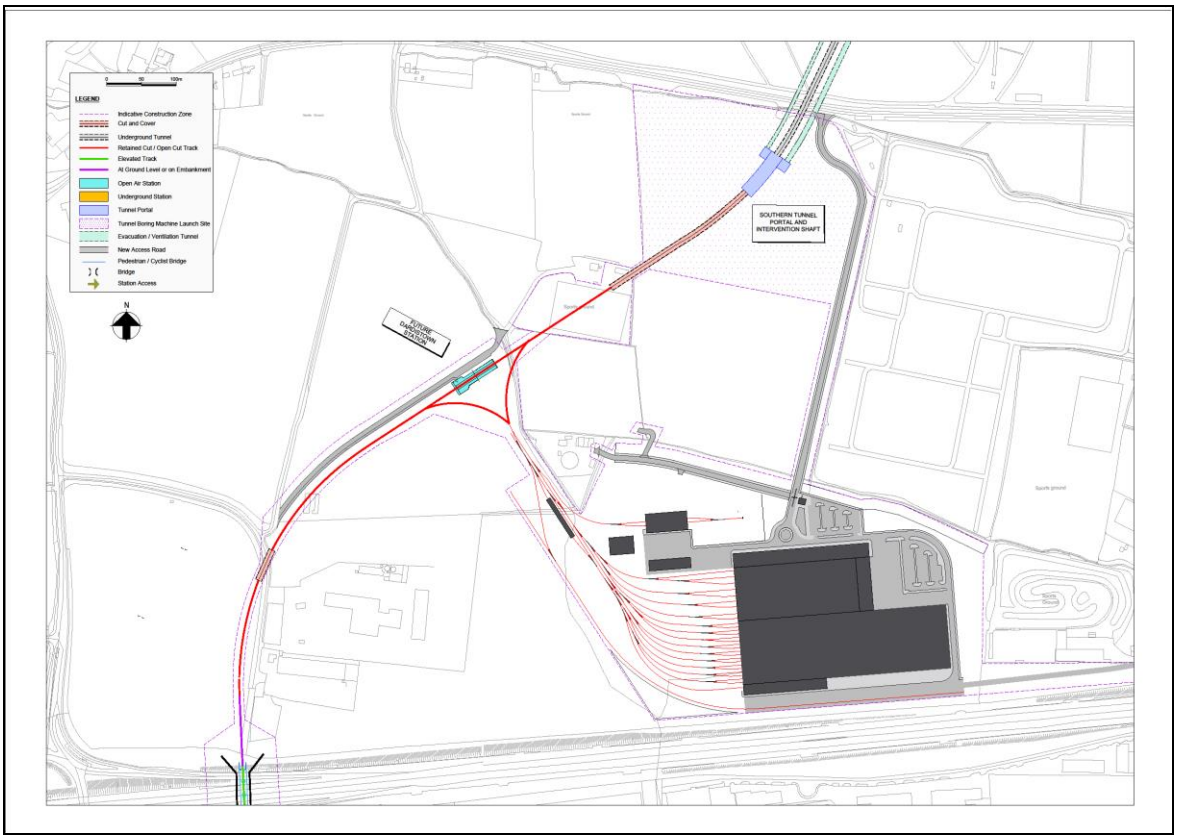


Figure 4-1: Depot Location at 2019 Public Consultation

Feedback from the consultation process regarding planning concerns, as well as the additional land take for an improved main line connection, resulted in further alternative options being investigated. These options focused on avoiding impact on the lands in the southern part of the site (including Option 1), which is identified in the Local Area Plan (LAP) as a 'Hub' area that is to form a new business district with higher density commercial and 'High Technology' use. All of the nine identified options were taken through a rigorous 4-stage MCA process as shown in Figure 4-2, using the depot locations presented in Figure 4-3.

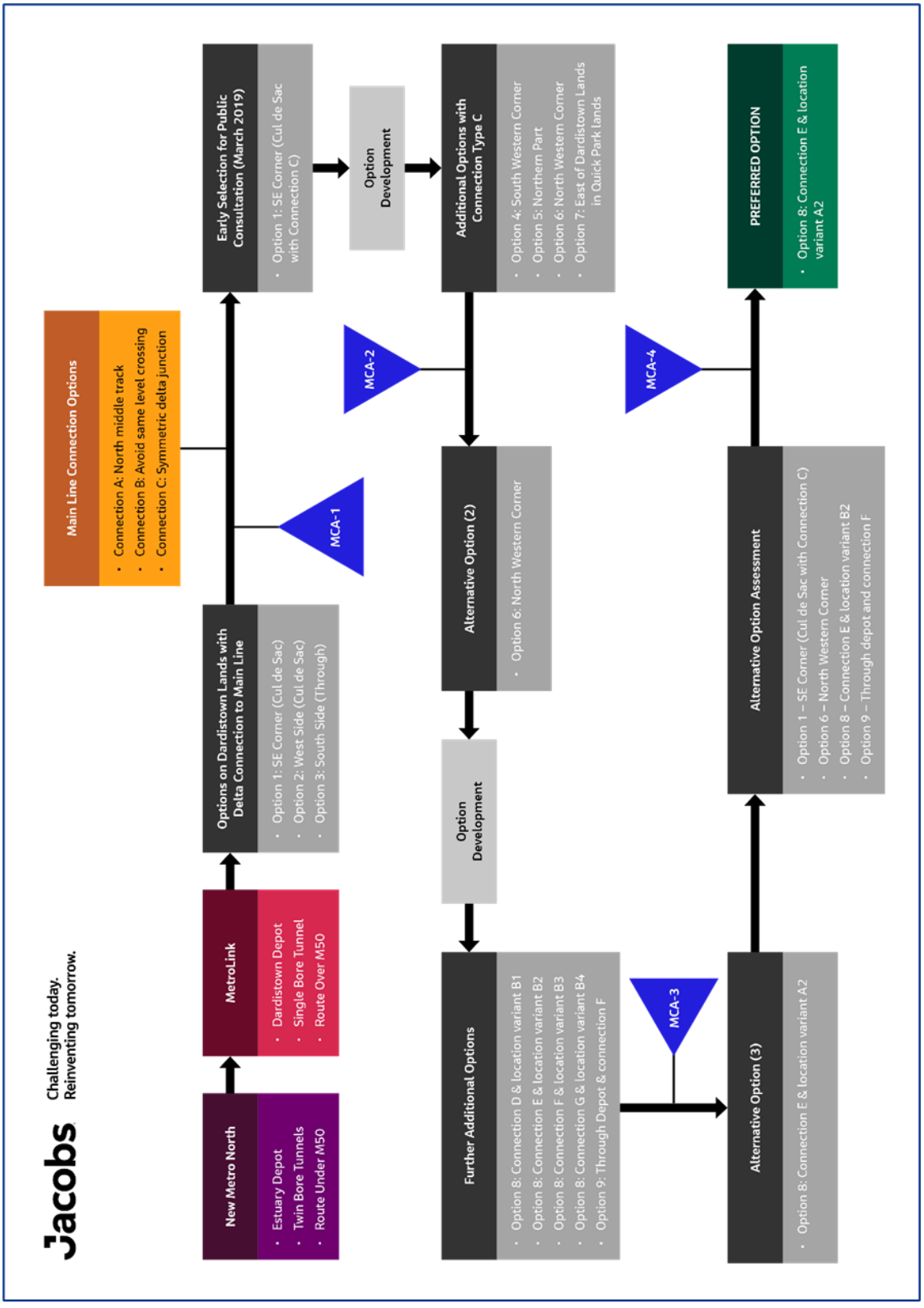


Figure 4-2: MCA Process Flowchart for Option Selection

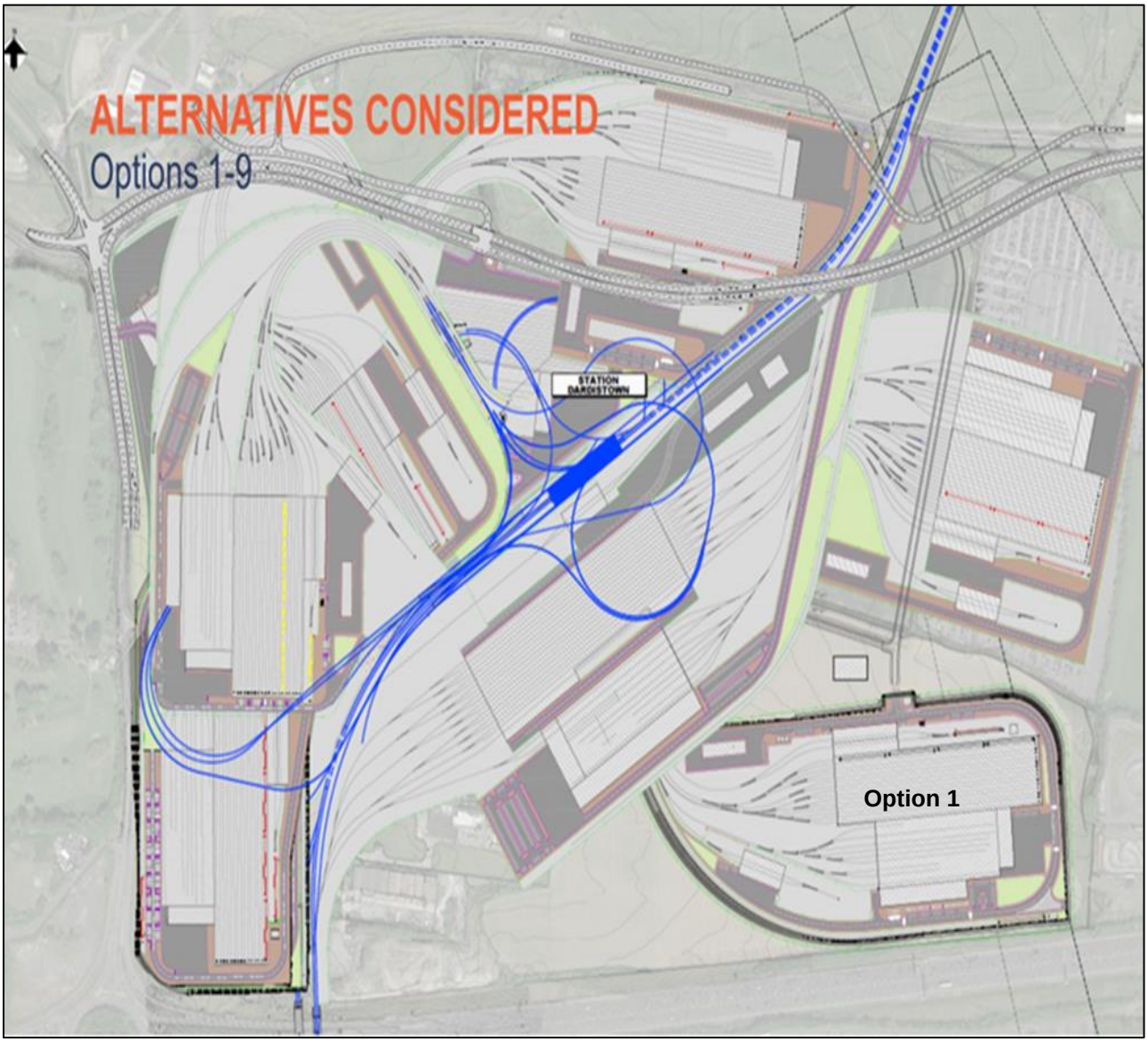


Figure 4-3: Depot Location Options Considered by MCA in 2020 (note highlighted Option 1)

The outcome of the MCA process was that Option 8A was determined to be the best performing option and it was recommended that it be taken forward to the Preliminary Design (PD) Stage. During the PD Stage, the depot requirements were further developed and this led to the layout as shown in Figure 4-4.

Figure 4-4: Option 8A Preferred Option taken to Preliminary Design Stage

The principal reasons for this outcome was that compared to other options, Option 8A was located mostly in the planning zone for 'General Employment' and it had no interface with the planned GDD Sewer project. This situation is more acceptable to FCC than the 'High Technology' areas in the southeast of the site taken up by Option 1. Note that the PDR station lies just outside the PSZ limit in the same way that the FCC-accepted Metro North was located.

5. Key Features of Option 8A (TII Preferred Option) and Option 10 (CGI Proposal)

In this section the key features of Option 8A (*the Preferred Option and now developed to Preliminary Design level*) and Option 10 (*CGI proposal*) are discussed. As previously noted, there is no available information on how the Option 10 layout has been designed but because it is similar to Option 1 and the earlier design used for the initial Public Consultation in 2019, it is appropriate to utilise the relevant features of these designs when reviewing and assessing Option 10.

5.1 Preferred Option 8A (now developed to Preliminary Design level)

The Preferred Option identified by the MCA process was Option 8A, placing the depot in the northwest corner of the LAP lands as shown in Figure 5-1. This option has a grade separated connection from the MetroLink main line giving access to the southwest corner of the depot.

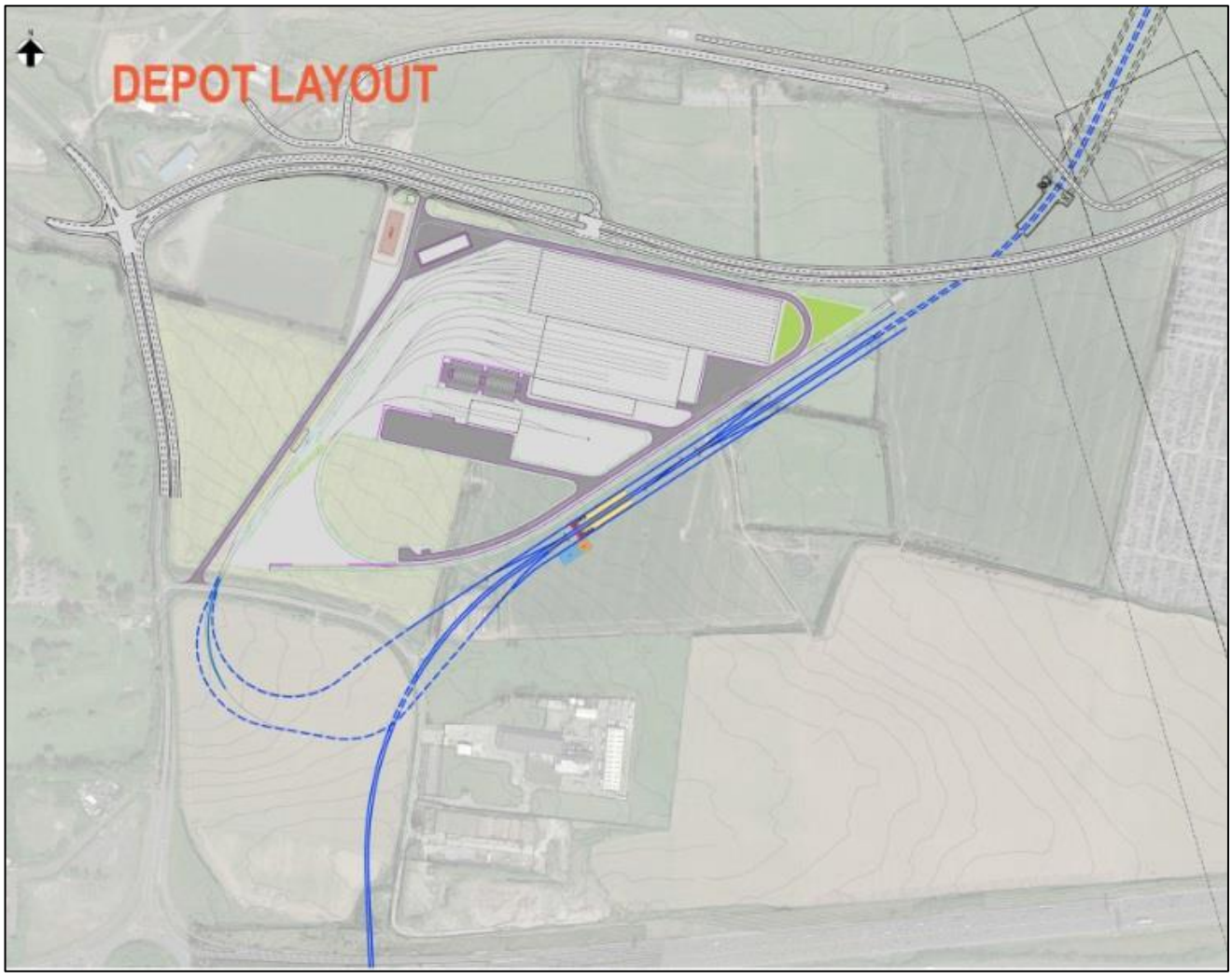


Figure 5-1: Option 8A (Preferred Option)

The grade separated connection has the outer/southernmost curved branch passing under the main lines. Both branch connections pass under the Silloge Green Road and continue northwards in cutting into the depot, which has a perimeter security fence. There is a “pocket” track or head shunt for reversing moves. The horizontal and vertical alignment is in accordance with the MetroLink track design criteria.

The functionality of the future Dardistown Station will be the same as the other surface stations on MetroLink. The difference here is that a pedestrian access will also be provided for staff moving into the depot from the Station. In the current design, access is from one side only but future Urban Integration from the Dardistown lands is possible on the other side. The location and features are shown in Figure 5-2, which shows that the station platforms are below existing ground level in an open-retained cut. The station is to be served by a 7.3m wide single carriageway road with a turning circle at its end.

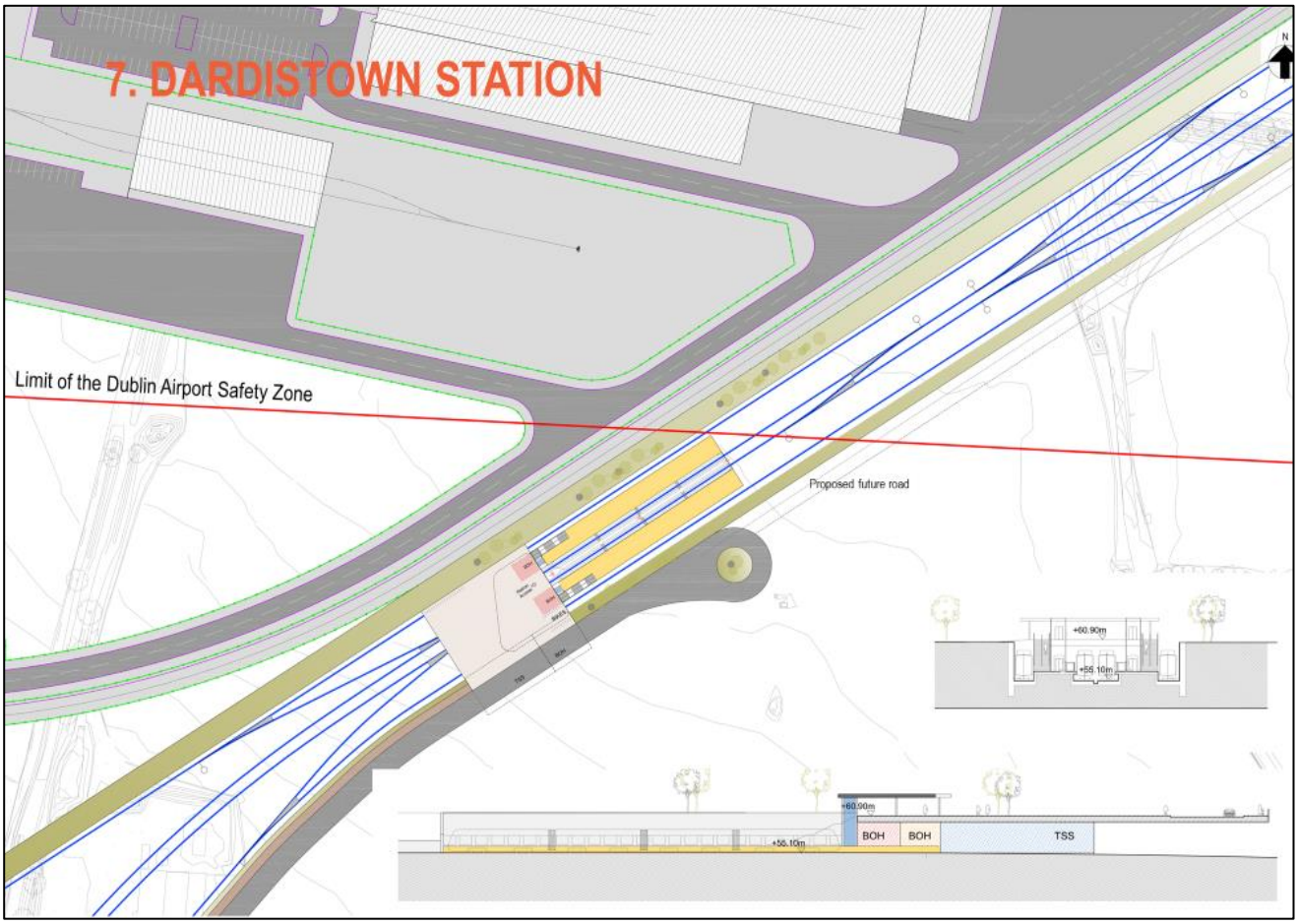


Figure 5-2: – Dardistown Station Layout and Sections

5.2 Option 10 – CGI Proposal

Option 10 is located in the southeast of the Dardistown lands as shown by the CGI drawing, Figure 5-3. (*Reference 10806-1003 revision D. Dated: December 2019*).

Since there is no available design statement in support of the CGI proposal and hence no information on how the depot layout has been designed or how depot operations are to be managed, as previously noted, the CGI proposal has similarities with Option 1 and therefore this has been used to evaluate the CGI proposal. It is relevant

to note that Option 1 was sifted out of the original MCA process in favour of Option 8A, mainly because of the planning zone constraints and the interface with the GDD Project.

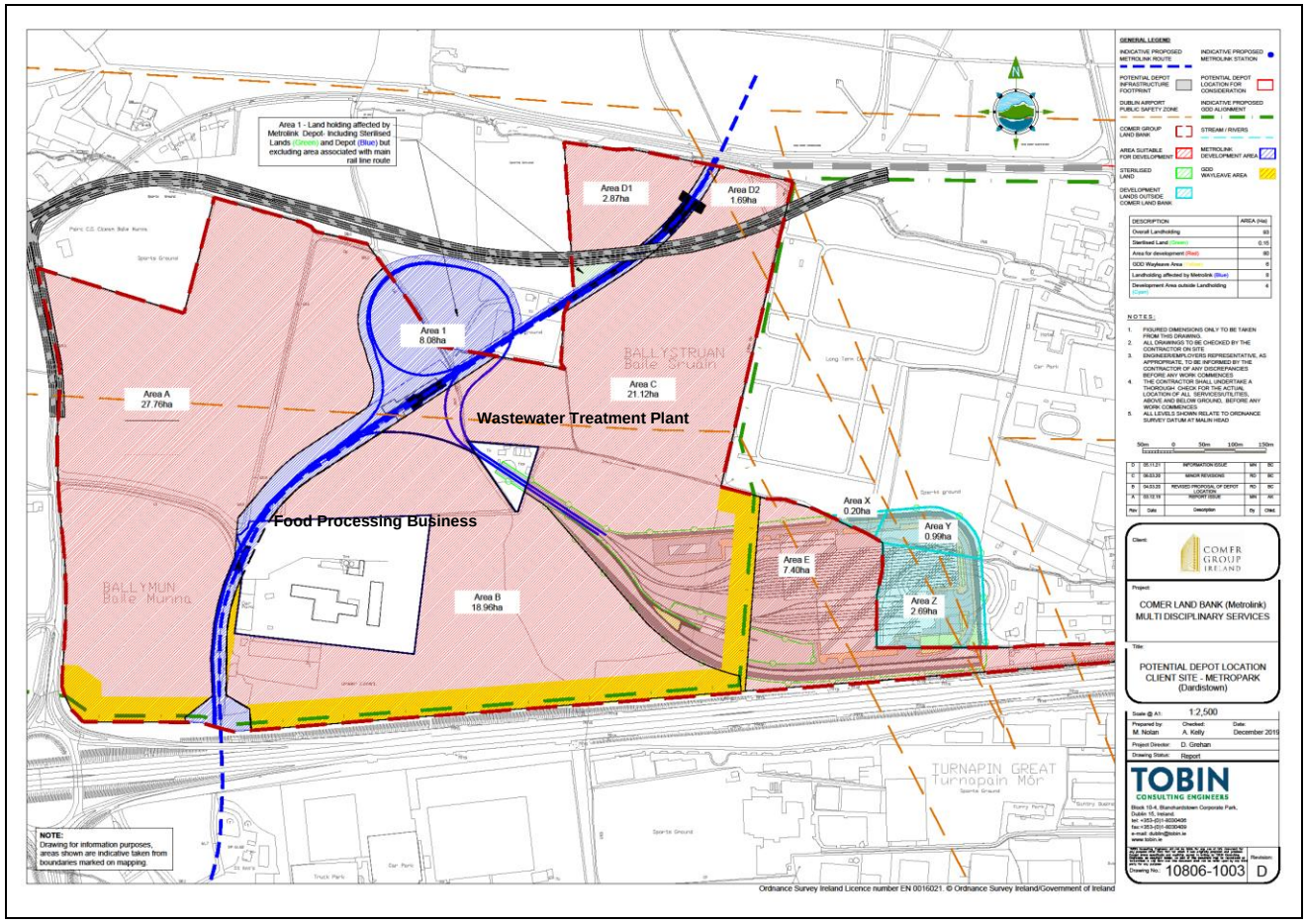


Figure 5-3: Comer Group Ireland (CGI) Proposal – Option 10 (Wastewater Treatment Plant and Food Processing Business annotations added)

5.2.1 Land Ownership and Interface with the Inner Public Safety Zone

Figure 5-4 shows Option 10 overlaid with the Option 1 layout. It can be seen that the main difference is the Option 10/CGI proposal moves the depot east by approximately 200m compared to Option 1, and partly outside the area of CGI single ownership, indicated by the light blue/turquoise shading. This is likely to mean an additional process for Compulsory Purchase will be necessary to secure this land for use by the depot.

Of high importance is the shift eastwards places the depot inside the Inner Public Safety Zone (PSZ) of Dublin Airport, which as previously noted in Section 2.2, allows no new development unless there are special circumstances to be considered. Exceptions for permitted developments in the Inner PSZ are:

- developments where persons are not expected to be present; and
- roads and railways where vehicles and passenger trains/trams are not expected to be stationary. For example, road vehicles can be expected to be stationary at major road intersections, junctions, and traffic lights.

Applying this guidance, it is considered that the CGI proposed depot would not meet the exceptional circumstances criteria, noting also that there are viable alternatives within the immediate vicinity where encroachment on the Inner PSZ can be avoided.

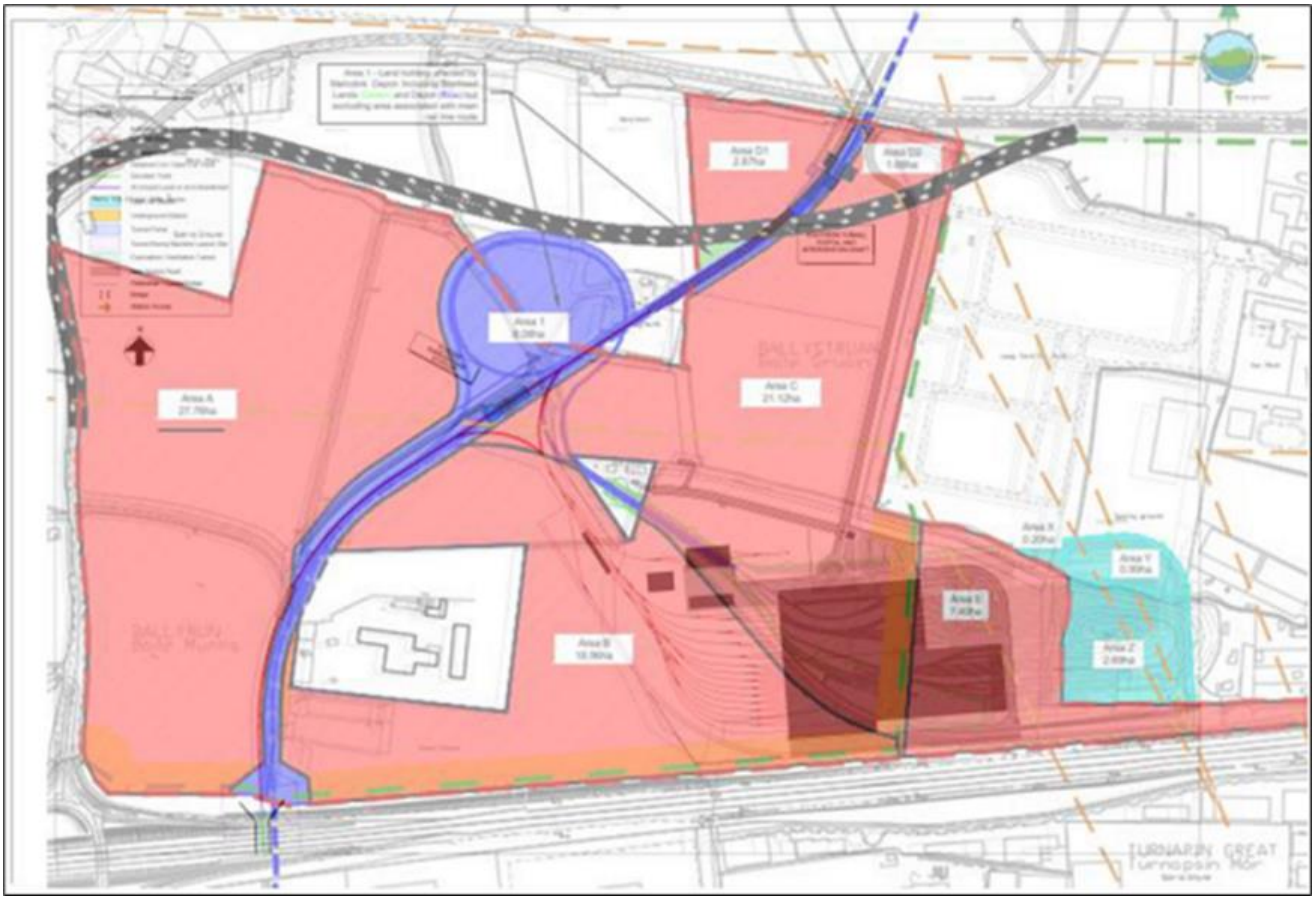


Figure 5-4: Option 10 overlaid with Option 1

5.2.2 Dardistown Station Access and Public Realm

The Option 10 arrangement will also negatively impact station access and the public realm around the station, with a poorer arrangement compared to the Option 8A/Preliminary Design option, which offers both good vehicular and pedestrian/cyclist access, as well as providing immediate access into the depot area via a secure subway arrangement. There is also the potential for passengers to exit the station directly into the future urban realm.

The railway access for a depot at the CGI Proposed Location requires the looping structures as shown on your drawing 10806-1003 D and the proposed Dardistown station is shown to be surrounded by these quite imposing structures. This will separate passengers from a future urban realm and passengers will have to traverse the structures and tracks by way of long bridge or underpass structures. Option 10 also has an increased walking distance from the depot and requires a number of tracks to be crossed.

5.2.3 Impact on the Wastewater Treatment Plant and GDD Project

As well as Option 10 moving the depot some 200m further east compared to Option 1, subject to the limited information made available by CGI, it has previously been noted that:

- the mainline grade separated delta junction stays approximately as before for Option 1 (see Figure 5-3) and the connecting tracks are indicated crossing through the existing operational wastewater treatment plant. If this remains the case and the food processing business it supports is to be maintained in operation the treatment plant would need to be demolished and relocated, including its associated pipework and infrastructure. This is considered to be an unnecessary impact.

- However, if such an impact was deemed acceptable, compensation will need to be provided for disruption, or if deemed not viable or economical to maintain the business, extinguishment of the food processing business. All of which will require significant stakeholder engagement and negotiation for what could be considered an avoidable impact, as well as generating significant and unnecessary additional cost and risk of delay for the MetroLink Project.

- Option 10 will impact the GDD Project, which is of strategic importance to the Dublin and national economy and an irreconcilable conflict between MetroLink and GDD must be avoided. Option 10 would require either the re-routing of the sewer or an engineering solution to protect and give access to the sewer for future maintenance. This would likely have a serious impact on both projects in terms of their planning application consenting period and it would also introduce additional risks during the decision process. Inevitably, there would be potential delays and additional cost for MetroLink to manage this interface.

The Option 10 depot location would also require the Mayne River to be diverted or culverted in a similar way to Option 8A. The area needed for road access is assumed to be similar for both options.

5.2.4 Topography and Earthworks

On the assumption that Option 10 does not change the internal layout of Option 1, we note that for Option 1, the proposed depot level is approximately +59.0m, and the 'delta' turnouts from the main line for the depot approach has a maximum longitudinal gradient of 4% rising/falling to the main line. This means that most of the depot area is below the existing ground level, with a 4m cut below ground level at the west boundary, and a maximum embankment of 2m height above ground level at the east boundary.

The operational area of the depot is required to be at a constant level and therefore major earthworks are anticipated, with retaining structures and embankments needing to be constructed.

5.2.5 Land Take

Referring to Figure 5-3, the land areas noted on the CGI drawing give the depot area as 14.22ha plus a further 8.08ha for Area 1, giving a total land requirement of 22.3ha. However, this land take does not provide for the necessary depot facilities as shown to be necessary for Option 8A through the Preliminary Design stage. There is also a requirement for an 800m long straight test track and service road which does not appear to be provided in the CGI proposal.

In order to assess the CGI proposal on the same basis as Option 8A developed through the Preliminary Design, it is considered necessary to modify the CGI proposal by increasing its site area to accommodate the necessary depot functional requirements. Effectively, the CGI proposal has been "normalised" as Optfor direct comparison with Option 8a.

As shown in Figure 5-5, the estimated land area needed for the normalised Option 10 depot is calculated to be 18.1ha and, with the mainline connection area of 8.08ha, this gives a total area required of approximately 26.2ha. This area is 3.9ha greater than the submitted CGI proposal but it is similar to the 26.3ha needed for the developed Option 8A.

Taking the low design maturity of the CGI proposal into account for the purposes of this review the land take for Option 8A and Option 10 can be considered to be the same.

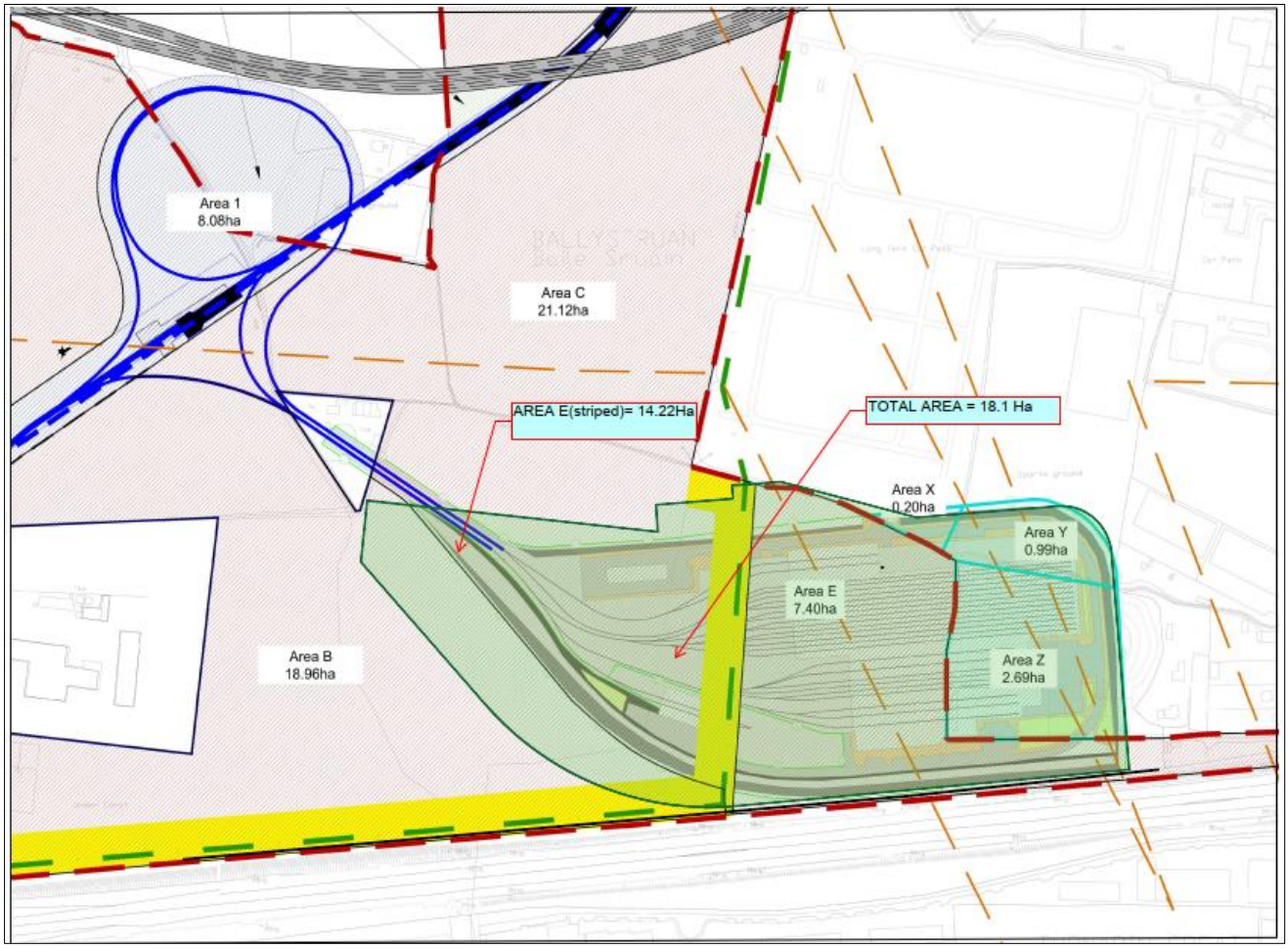


Figure 5-5: Option 10 adjusted for Increased Land Requirements (yellow highlighted green dashed line shows the GDD Sewer alignment)

6. Criteria for Assessment and MCA

6.1 Previous MCA

The previous MCA in 2020 selected Option 8A as the option to be taken forward to Preliminary Design using the following assessment criteria:

1) Environment
2) Planning
3) Land use and property impact
4) Internal functional layout
5) Main line connection functionality
6) Assessment of Dardistown Station functionality
7) Operational aspects, including signalling limitations, potential operational strategies including:
    a. degraded mode of operations
    b. alignment design criteria, including vertical limitations
8) Utilities and roads
9) High level costing and land take

The same criteria will be used to re-assess Option 8A against Option 10.

Recognising that the original MCA had nine options to consider and we are now looking at only two options, we have added a criterion number 10) Construction.

6.2 Environment

An extensive body of work exists on the environmental impact of options for a MetroLink depot in the Dardistown lands and this has been used to assess Option 8A and Option 10.

6.2.1 Option 8A – Environmental Considerations

1. This option has a number of sensitive receptors in close proximity that could be impacted during the construction phase due to noise, dust, and other nuisance. These sensitive receptors include residential properties and sports facilities.

   There will be direct impacts on a number of sports facilities during the construction phase of the project i.e., Ballymun Kickhams, Starlights, Na Fianna and Whitehall Rangers, the majority of which will be reinstated following completion of the works.

   During the operational phase these sensitive receptors would experience increased levels of noise and lighting arising from the proposed depot site, if not fully mitigated.

2. During both the operational phase and the construction phase, there is potential for impacts on breeding bird populations, bats, and other protected species in the area. These impacts would be due to the requirement to clear existing hedgerows, trees, and grassland in the area, combined with the effects of noise and lighting being introduced.

3. This option would require the realignment of the Turnapin stream. However, it should be noted that the stream at this location is more akin to a field drain. The realigned stream would be reinstated to include a riparian zone required under the Fingal Development Plan 2017 – 2023.

4. This option would require the import and deposition of a significant volume of material to raise the required level surface for the depot and approaching railway lines. The impact for the project is positive because there is a significant extra material balance available for re-use at this site.

5. Evidence of a burnt mound (DU014-119) has been found within the area proposed for this depot option. Also close by evidence has been found evidence of a cremation pit (DU014-120) and a medieval enclosure (DU014-121). There is the potential for other, previously unknown archaeological remains to be disturbed by the construction works.

6.2.2 Option 10 – Environmental Considerations

1. The location for Option 10 means that there is one sensitive receptor in close proximity that could be impacted during the construction phase due to noise, dust, and other nuisance. This sensitive receptor is an adjacent sports facility – the Whitehall Colmcille GAA grounds.

2. There will be potential for indirect impacts during the construction phase on the adjacent sports facilities due to dust and noise generation, if not properly mitigated.

3. During the operational phase this sensitive receptor would experience increased levels of noise and lighting arising from the proposed depot site, if not mitigated.

4. This option would have a detrimental impact on existing local businesses as it would require land take from a Go-Karting facility and a local garage (car repair shop).

5. The wastewater treatment plant that supports a business will require demolition and replacement.

6. During both the operational phase and the construction phase, there is potential for impacts on breeding bird populations, bats, and other protected species in the area. These impacts would be due to the requirement to clear existing hedgerows, trees, and grassland in the area, combined with the effects of noise and lighting being introduced.

7. This option would require the realignment of the Mayne River in this area, and due to space constraints there would be limited opportunity to reinstate an adequate riparian zone (as required in the Fingal Development Plan 2017 – 2023).

8. This option requires the excavation and removal off-site of a significant volume of material to achieve the level surface for the depot and approach railway lines. The impact for the project is negative because there is a significant extra material balance overall and the material generated for this depot option would only add to the balance.

9. There are no known archaeological remains within the site. However, within a few hundred metres to the north (and close to the proposed connecting rail tracks), surveys, including geophysical surveys and test excavations, have found evidence of a prehistoric cremation pit (DU014-120), a burnt mound (DU014-

121) and a medieval enclosure (DU014-121). There is the potential for previously unknown archaeological remains to be present at the site.

6.2.3 Environmental Impact, Option 8A versus Option 10

Overall, Option 10 would have a slight advantage over option 8A due to the fact that it is more removed from sensitive receptors, with less potential for impacts during both the construction and operational phases. Also, Option 10 does not have any direct impact on known archaeology, although it is acknowledged that this area in general does have a high potential for archaeology. It should be noted however that Option 10 would require the acquisition of two commercial properties, and demolition and replacement of the wastewater treatment plant, which would have a potentially negative impact on local business. Option 10 would also require the excavation of a significant volume of material to level the site, which would require disposal and significant transport impact.

While Option 10 is marginally better than Option 8A when considering it from an environmental perspective, the impacts identified for both options could be mitigated during both the construction and operational phases.

6.3 Planning

6.3.1 Options Comparison Overview

Table 6-1 compares the impact on Option 8A and Option 10 of the different planning policy considerations.

Table 6-1 Options comparison

	Option 8A	Option 10	Comparison of the Options
Fingal Development Plan Zoning	The depot is largely (c.70%) in the General Employment Zoning. Connecting lines are in the 'High Technology Zone' but should not restrict development because they are in retained cut and can be easily slabbed at ground level.	The depot is c.50% in the General Employment Zoning. Connecting lines are in the 'High Technology Zone' at ground level or ramp structures and create severance issues because of necessary bridges and/or underpasses	General Employment use is more appropriate for a depot use, given its lower intensity while keeping higher density opportunity for the High Technology lands. **Option 8A has less impact on the high technology lands with a lesser severance impact.**
Public Safety Zones (PSZ)	Largely in the Outer Public Safety Zone (PSZ), where limits are imposed on density of use. Depots are not affected by this restriction. Not affected by the Inner PSZ.	Eastern section of the depot falls into the Inner PSZ and Outer PSZ.	The Inner PSZ is not an appropriate location for development that is a working premises such as a depot. **Therefore, Option 8A location is preferred.**
Dardistown LAP 2012 (extended up to 2022)	Consistent with the previously designated 'Metro North and Depot'.	Proposed use is consistent with the 'Eastern Corridor' designation, which supports 'logistics, warehousing, commercial car park and transport depot'. Some encroachment onto the 'Hub' lands.	**Option 8A proposed location is fully compliant with the LAP. Option 10 is not fully compliant due to its encroachment onto the 'Hub' lands.**
Overall Dardistown Site Layout	The depot means there is some separation of development lands (e.g., Ballymun Kickhams GAA).	The depot creates less separation on the overall Dardistown lands but the	**Both options create separation issues to be considered and addressed.**

	Option 8A	Option 10	Comparison of the Options
	A depot location adjacent to the station limits the potential for the station to be centrally located in the development lands.	connecting tracks split the high technology zoned lands.	
Development Potential	Resulting from the zoning implications above. Lesser impact on overall potential due to a smaller proportion of the site being within the High Technology zoning.	Higher impact on overall potential due to a larger proportion of the site being within the High Technology zoning.	**Planning Zones indicate that the Option 8A location is preferred.**
Planning History	Not relevant	Greater Dublin Drainage (GDD) Project sewer crosses the site. This is currently with An Bord Pleanála for determination. Extant Planning Permission to development car rental storage on site would be affected.	**The Option 8A current design does not impact upon the GDD sewer.** The CGI location would require a reroute of the GDD development, or an engineering solution. This would impact on its planning application consenting period and introduce additional risks to its potential assessment and decision, and potential delay to MetroLink.
Existing Land Use Affected	Agricultural land and Whitehall Rangers Football Club.	Agricultural land, KartCity, used car retail, wastewater treatment plant, Royal College of Surgeons in Ireland (RCSI) sports grounds and Whitehall Rangers Football Club.	**The Option 8A impacts fewer amenities.**

The proposed Option 8A location is preferred on planning policy grounds, with the following being the key reasons,

- the Inner Public Safety Zone is not appropriate for Depot use;
- the Metrolink has a lower impact on high density High Technology lands; and
- the proposed Greater Dublin Drainage alignment is a significant constraint to the location proposed by CGI (Option 10).

6.4 Land Use and Property Impact

Option 8A is mostly in the area zoned for General Employment and as such is a suitable addition to the Dardistown lands. This option places the depot in lands which are predominately zoned for employment use and preserves most of the “high technology” zoned lands for future development

Option 10 extends further into the zone for “High Technology” and this is unlikely to be welcomed by FCC. In addition, this Option extends further to the east and requires acquisition of land currently being used by a leisure business. The rail access alignment as proposed by CGI requires the demolition and re-location of a water treatment works (and its associated infrastructure) used by the food processing factory on the site. A depot in this

location as well as being contrary to FCC land zoning also limits the potential of these lands to be developed for “high technology” use such as office, science, technology, and research uses.

6.5 Internal Functional Layout

The internal functional layout for Option 8A was developed through the course of the Preliminary Design stage and area requirements were increased (see Section 5.2, Land Take) to improve train access to the wash plant and the test track, as well as improved stabling provision. The outcome of the changes is shown in Figure 6-1.

Figure 6-1: Internal Functional Layout for Option 8A as developed for the Preliminary Design

As explained previously the increase in functional area requirements developed for Option 8A were applied in the same way to the CGI proposal.

6.6 Main Line Connection

The mainline connection for Option 10 is similar to the conflict free design produced for Option 1, requiring elevated structures (or perhaps below ground) over a large area to enable entry and exit from the depot. This option is multi-level with tight radii that has the potential to generate wheel-rail interface noise impacts and increased maintenance. The shift of the depot to the east also makes the approach tracks longer with the future station located inside the junction layout thereby providing limited possibilities for expansion.

The mainline connection for Option 8A does not have elevated structures but does require a covered cut and cover structure to enable one track to pass under the other. An area of land is contained inside the approach track layout that is available for future development, noting that particular access arrangements will need to be provided.

The arrangement needs a reverse movement for northbound trains made possible by crossover tracks at the future Dardistown Station.

The track arrangement for Option 8A is considered to be better because it is more straightforward to operate, has fewer crossing moves, makes use of Dardistown Station for reversing moves, and has greater curve radii and consequently less maintenance requirements.

6.7 Dardistown Station

Dardistown Station is planned for construction at some future date when it can be justified by the development growth in the area. The station will have similar facilities to other MetroLink stations and the preferred design is for an underpass to be provided to enable depot workers to access their place of work using MetroLink. The underpass can be extended south of the tracks to serve future developments.

No station details are provided for Option 10 apart from its location at the junction. Its layout will negatively impact station access and the public realm around the station, with a poorer arrangement compared to the Option 8A option, which offers both good vehicular and pedestrian/cyclist access, as well as providing immediate access into the depot area via a secure subway arrangement. There is also the potential for passengers to exit the station directly into the future urban realm.

The railway access for a depot at the CGI Proposed Location requires the looping structures as shown on your drawing 10806-1003 D and the proposed Dardistown station is shown to be surrounded by these quite imposing structures. This will separate passengers from a future urban realm and passengers will have to traverse the structures and tracks by way of long bridge or underpass structures. Option 10 also has an increased walking distance from the depot and requires a number of tracks to be crossed.

However, a similar arrangement to Option 8A is likely, although it appears that the walking route to the depot will be longer and crossing of several tracks at low or high level will be required.

6.8 Operational Aspects

Both options provide conflict free access to the depot and can be designed for acceptable alignment design standards, including vertical limitations. Both options are of the Cul-de-Sac type with only one connection route to the main line. However, Option 8A has the potential to add a second entry/exit route, giving increased operational robustness, whereas this is not possible for Option 10.

Option 8A is designed for robust operations during degraded mode periods and while Option 10 can be designed accordingly, s previously confirmed, the land area needs to be increased to suit the necessary internal functionality.

6.9 Roads and Utilities

For Option 8A, the main gated access is from Collinstown Lane on its north side with an emergency gate onto Silloge Green Road to the south. It is proposed to provide a new east-west access road from the R108 in line with Fingal planning policy. During construction and for later depot operations the M50 is more easily accessible than for Option 10

No details for road access are available for Option 10 but it is likely that the Option 1 road proposal giving access from the north can be provided. Emergency access off Swords Road and through the industrial estate and go-kart area should be achievable but this might require additional land area.

6.10 Cost and Land Take

The cost of the equipment and buildings to provide the depot functional layout will be similar for both options and is therefore not a differentiator. However, there are differences in cost when land take and construction is considered. Estimates for land requirements for each option are given in Table 6-2 and Figure 6-2 provides a land take plan comparison.

When Option 10 is adjusted to take account of the functional requirements that were developed during the Preliminary Design stage, the land take becomes almost the same as Option 8A. The key difference is that Option 10 requires 3.9 hectares of land that is outside of a single ownership.

Table 6-2: Land Areas for Options

Option	Depot		Connection	Total	Outside Single Ownership
8A	15.9		10.4	**26.3**	-
10	18.1		8.1	**26.2**	3.9

Figure 6-2: Land Take Plan Option Comparison (Note that Option 10 is similar to Option 1A in Figure)

Construction impacts are discussed in the following section. Option 10 will incur additional construction cost compared to Option 8A as a result of:

- the mitigation works required to manage the interface with the GDD sewer;
- c.800m of retaining structures required along the M50 to support a cut of c.4-5m;

- demolition and replacement of the wastewater treatment works; and
- major earthworks anticipated with a 4m cut below ground level at the west boundary requiring extensive retaining structures c.400m in length, and a maximum embankment of 2m height above ground level at the east boundary.

6.11 Construction Impacts

6.11.1 Option 10 Construction

GDD Construction and MetroLink Interface

If Option 10 is assumed to be similar to Option 1 then depot level would be approximately +59m and the mainline connection for the depot approach would have a maximum longitudinal gradient of 4%. This means that most of the depot area would be below the existing ground level with a maximum cutting of 4.00 m (western boundary) and a maximum embankment 2.00 m high (eastern boundary). This level is just above the planned Greater Dublin Drainage Project sewer pipeline as can be seen from Figure 6-3.

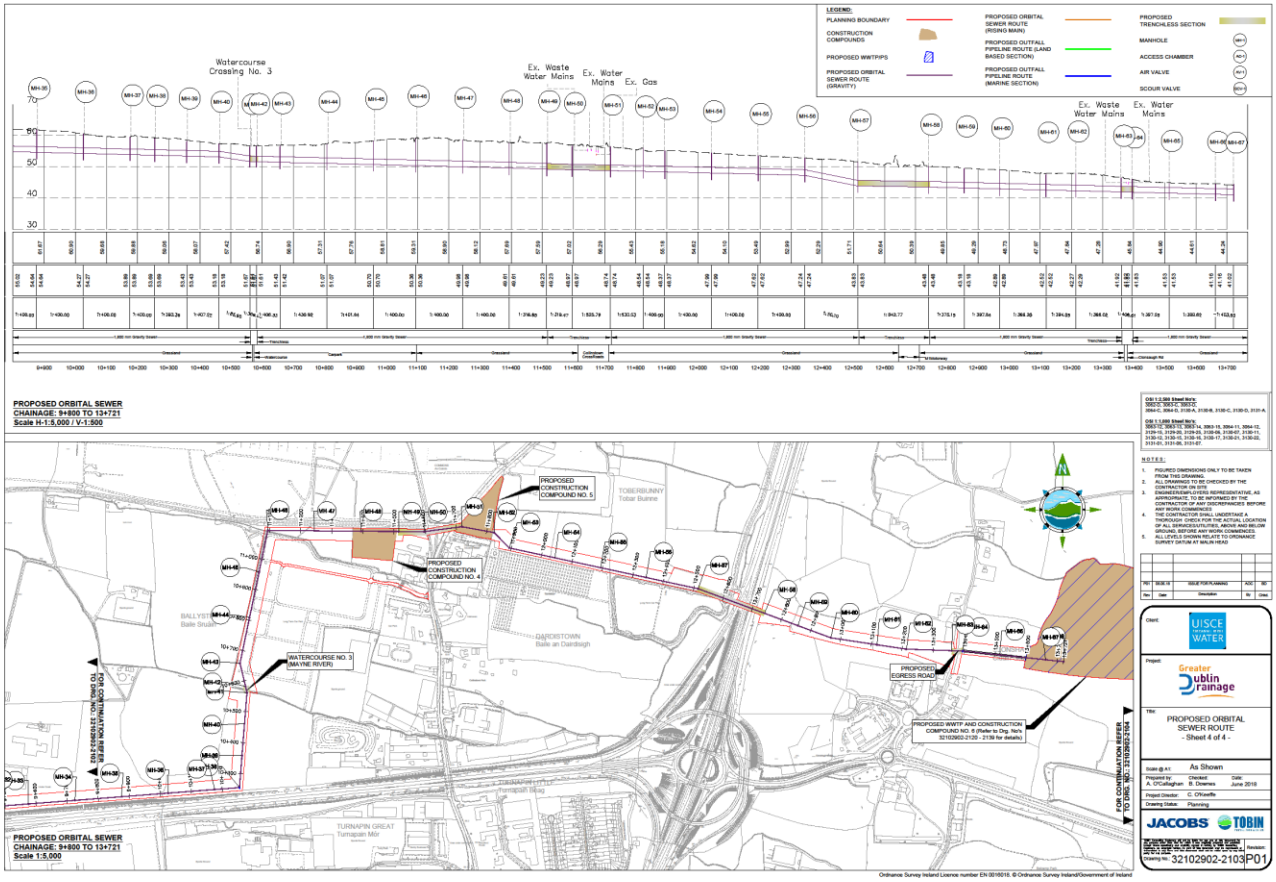


Figure 6-3: Greater Dublin Drainage (GDD) Project Plan at Dardistown

Emergency and maintenance access will need to be provided and this will need an open area protected from the development across the Option 10 depot. This approach is unlikely to be feasible, so an engineered solution is

likely to be needed to allow for the depot infrastructure. This could take the form of an underground pile supported slab together with a double pipe system.

The GDD and MetroLink programme would need very careful attention to ensure that neither project is delayed or affected through the planning and construction process. Even with high quality programme management, as previously noted, this interface will present significant risk of delay and additional cost to both the GDD and MetroLink projects.

Earthworks

The earthworks for Option 10 are substantial as can be seen from Figure 6-4 and, with a depth of cut of 4m it will involve extensive civil engineering structures, including enabling works for the main road access into the depot. The access for construction traffic from the Swords Road and the local industrial roads will also need careful planning. High quality stakeholder management will be key to managing the environmental impact during the construction phase.

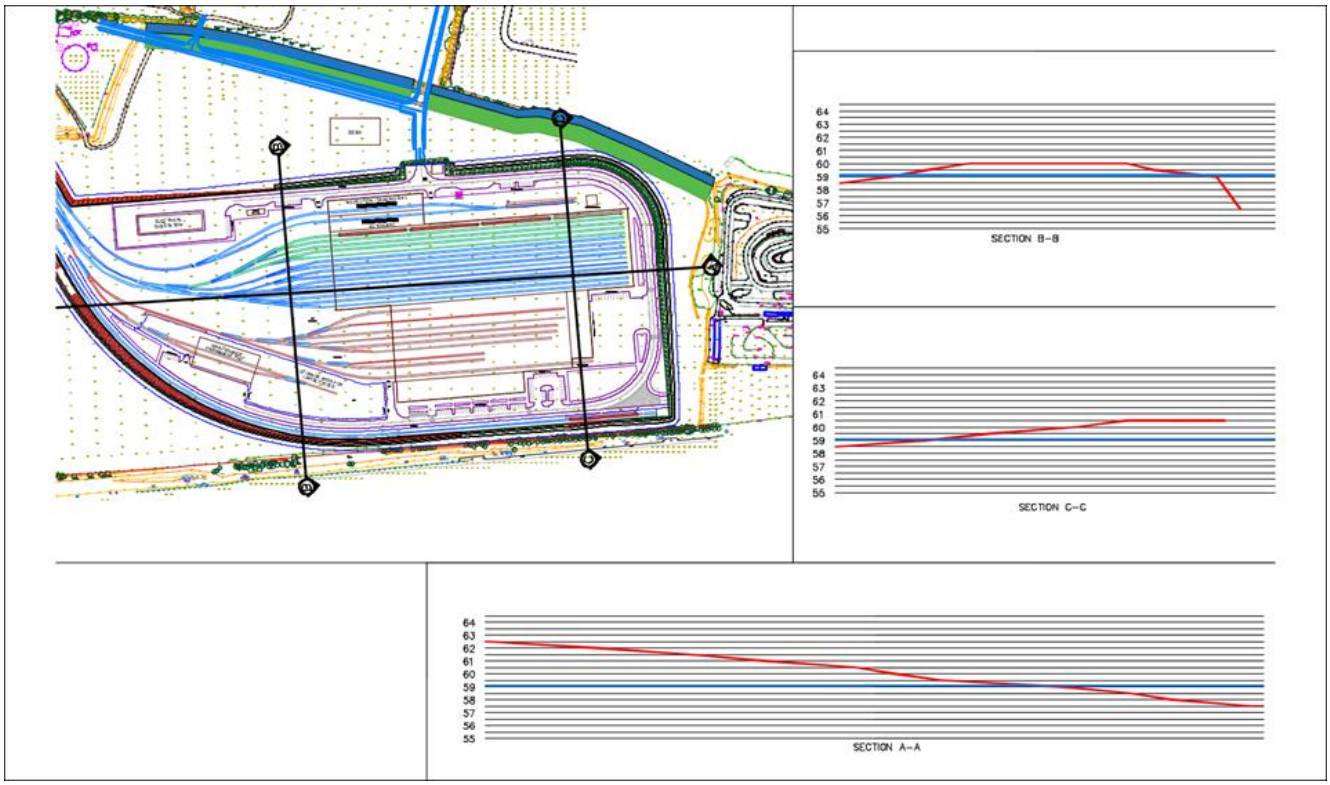


Figure 6-4: Option 1 with Cross Sections (similar to Option 10)

The culverting or diversion of the Mayne River over a distance of approximately 300m will be necessary for Option 10 and this will be an environmentally sensitive operation. Site drainage will be an issue during and after construction. Restrictions on development near or over the stream will be a design constraint.

6.11.2 Option 8A Construction

A similar scale of earthworks is needed for Option 8A, as can be seen from Figure 6-5, but importantly there is a greater fill requirement compared to Option 10 which can be supplied more easily using tunnel spoil material via the M50. This will also provide a more environmentally sustainable solution for MetroLink.

Other construction constraints will be similar for both options but Option 8A does not have the GDD Project interface to manage with its associated cost and schedule risks unlike Option 10.

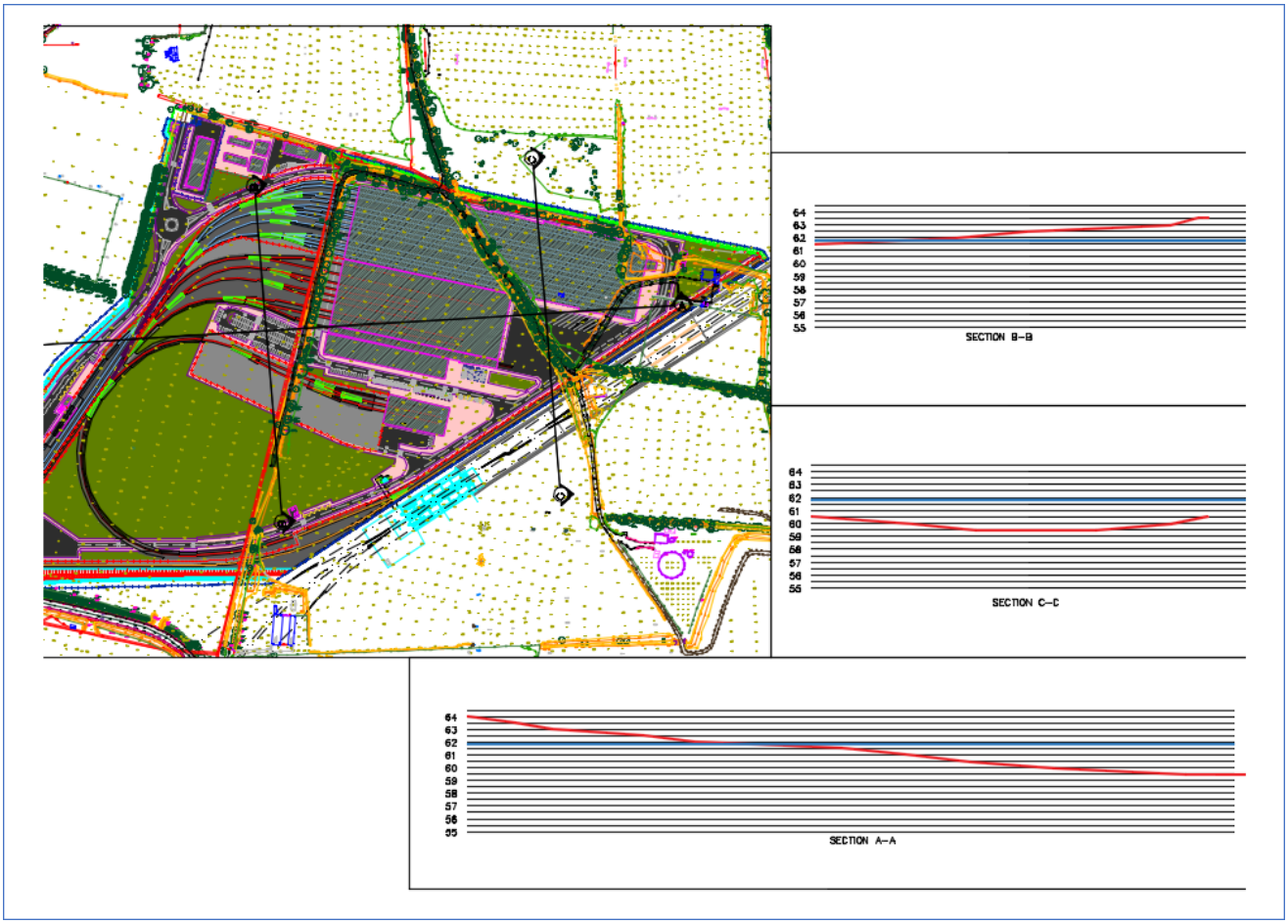


Figure 6-5: Option 8A with Cross Sections

6.12 MCA Assessment

Based on the considerations presented by this report an MCA has been undertaken. It is important to remember that the CGI proposed solution provided limited engineering detail (only plan drawings provided) so the key features of Option 10 are based on those developed for Option 1, suitably normalised in terms of land area requirements for a developed internal functional layout.

The MCA assessment uses a three-colour code (RAG) – green having advantages, amber being similar, and red having disadvantages compared to the options being considered. Table 6-3 summarises the conclusions drawn in comparing the advantages and disadvantages of both options:

- Option 10 has disadvantages compared to Option 8A in terms of; 'Planning, Land Use, and Property Impact', 'Dardistown Station Functionality', 'Utilities & Roads', 'Land Take' and 'Construction' criteria;
- there is no significant differentiator between the options with regards to 'Environment', 'Internal Functional Layout of Depot' (noting that JI have adjusted the footprint of the depot so that it works operationally), 'Main Line Connection Functionality' and 'Operational Aspects' criteria; and

- Option 10 is not considered to offer any significant advantages over Option 8A.

Overall Option 8A as developed through the Preliminary Design process is the better option compared to Option 10 as promoted by Comer Group International and therefore Option 8A, the current Metrolink Preliminary Design remains the preferred option.

Table 6-3: MCA Assessment of Options 8A and Option 10

Criterion	Option 8A	Option 10
Environment	• Has potential to impact a number of sensitive receptors during construction from noise, dust, and other nuisance. • Direct impacts on a number of sports facilities during construction, the majority of which will be reinstated. • During the operational phase sensitive receptors will experience increased levels of noise and lighting that will need to be mitigated. • Requires the realignment of the Turnapin Stream and provision of riparian zone in accordance with the Fingal Development Plan 2017-2023. • Earthworks involve mostly Fill rather than the Cut for Option 10, thus reducing the project wide excavated volume balance.	• Only one sensitive receptor in close proximity that could be impacted during the construction phase. • Potential for indirect impacts during construction on adjacent sports pitches from dust and noise if not mitigated. • During the operational phase sensitive receptors will experience increased levels of noise and lighting that will need to be mitigated. • Go-karting facility and garage businesses will be closed, the operational wastewater plant will require demolition and replacement. • Requires realignment of the Mayne River, however due to space constraints there will be limited opportunity to provide the riparian zone as required by the Fingal Development Plan 2017-2023. • Earthworks require significant excavation of material add to MetroLink's already positive excavated material balance.
Planning, Land Use, and Property Impact	• This option has advantages over Option 10 as it places the Depot in lands which are predominately zoned for employment use and preserves most of the "high technology" zoned lands for future development. • The land is outside of the airport Inner PSZ where a Depot is a permitted use. • This location has no interface with the Greater Dublin Drainage (GDD) Project. • The Design takes account of the potential future airport road diversion on the north boundary.	• The depot site is within the airport Inner PSZ where a depot development is not a permitted use. • Greater encroachment on the lands zoned for "high technology" use (office, science, technology, and research uses). • The site has a significant planning, design, and construction interface with the GDD Sewer Project. • Requires the demolition and re-location of the wastewater treatment works used by the existing food processing factory on the site. • The land requirements extend outside single ownership and therefore likely requiring an additional CPO.
Internal Functional Layout of Depot	• The concept has the advantage of having been developed through to Preliminary Design which delivers all the necessary facilities for efficient MetroLink operations and greater schedule and cost certainty compared to Option 10.	• No functional layout details are provided by CGI for this Option. GGI proposal submitted does not provide necessary functionality. • Based on Preliminary Design work previously undertaken by JI an assumption can be reasonably made that a 3.9ha increase in the area of Option 1 provides the necessary facilities and operational space for

Criterion	Option 8A	Option 10
		this option to function. • The requirement for a straight test track might extend the site alongside the M50. • The lack of design maturity compared to Option 8A presents an increased risk of subsequent schedule and cost increases as the design is further developed.
Main Line Connection Functionality	• Has the disadvantage of requiring a reverse movement for conflict free movement at the future Dardistown Station. • Has the advantage of a single connecting line and the possibility of adding a second entry in the future.	• Like Option 8A it has conflict free movement and direct access, but the movement is over a circuitous route with several tight radius bends on elevated structures leading to the potential for increase noise and maintenance from the rail-wheel interface. • No possibility for a second rail access in the future.
Dardistown Station Functionality	• Has a significant advantage as access is from one side thereby providing a satisfactory passenger/user experience. • Urban Integration is possible in the future via track underpass. .	• Significant disadvantages due to the Station being located between rail junction structures thereby providing a poor passenger/user experience. • Opportunity for future urban integration is poor, requiring long underpasses or bridge structures. • The access route to the depot is poor with a long walk needed between station and depot.
Operational Aspects	• This option has been developed to Preliminary Design level and thus is assured of being able to satisfy MetroLink and depot operational requirements.	• With a normalised design and increased area this option can be made to satisfy operational requirements for the depot.
Utilities & **Roads**	• Access to existing factories needs a cut and cover tunnel for future access road on compatible LAP lands. • Future airport road diversion allowed for. • Provides more direct access off M50. • Three overpass structures are required. • No interface with the planned GDD sewer.	• Significant disadvantages due to interface with GDD sewer which will need to be mitigated by diversion or engineered solution. • Road access is less direct from the M50, needing to use Swords and Airport road then a new and long access road • Mayne River needs to be diverted or culverted with surface development constraints.
Land Take (for acquisition costing)	• Land-take similar at approximately 26ha but occupies lower value land than Option 10.	• Land-take similar at approximately 26ha but in higher value land. • Spread over more than one landowner and partly in the Airport PSZ. • Need to demolish and relocate the wastewater plant.
Construction	• More fill for Option 8A compared to cut for Option 10. This is more environmentally sustainable than Option 10 as it will allow the use of MetroLink tunnel arisings. • More direct HGV access from M50.	• More excavations compared to Option 8A, adding to the project wide excavated volumes. • Will require more extensive retaining wall structures and embankments.

Criterion	Option 8A	Option 10
		• Major additional work to mitigate impact of GDD sewer. • More circuitous access from surrounding roads. • Culvert needed for Mayne River.

7. Conclusions and Recommendation

An alternative location for the MetroLink depot at Dardistown has been proposed by Comer Group International (CGI) in the southeast corner of the Dardistown lands. TII instructed Jacobs Idom to assess this alternative in the same manner as done previously in 2020 when nine depot options went through a rigorous Multi-Criteria Analysis (MCA) examination. This process resulted in Option 8A being considered the most advantageous and it was subsequently taken forward to the Preliminary Design stage. Given the extensive option assessment work previously undertaken it is deemed only necessary and of value to consider and compare the performance of:

- Option 8A, as the Preferred Option subsequently developed through to Preliminary Design, to
- Option 10, the CGI Proposal, suitably adjusted in area to suit the MetroLink developed Functional Requirements.

It is relevant that Option 1 (one of the nine previously assessed options) has similarities to the option proposed by CGI, except that the latter is shifted approximately 200m to the east and across the Inner PSZ of Dublin Airport. Option 1 was not previously selected as the preferred option for key reasons relating to planning and the interface with the proposed GDD sewer. These reasons remain for the CGI proposal, noting that it has also been necessary to draw on previous optioneering work and the current Preliminary Design to assess the CGI proposal because no design basis documentation has been provided by CGI, apart from a single depot plan drawing.

The latest MCA presented in this report was conducted in accordance with CAF guidelines and concluded that Option 8A has a number of advantages over Option 10 in terms of; 'Planning, Land Use, and Property Impact', 'Dardistown Station Functionality', 'Utilities & Roads', 'Land Take' and 'Construction' criteria, and no significant disadvantages when compared to Option 10. Therefore, the overall conclusion reached is that Option 8A, now the MetroLink developed Preliminary Design, should remain as the Preferred Option for the following reasons:

1. it lies outside of the Airport Inner PSZ where depot use is permitted. Option 10 lies within the Inner PSZ where depot development is not permitted;

2. it has less impact on the FCC planning zones for employment use (c.70% of the depot lies within the 'General Employment Zoning') and therefore preserves more of the "high technology" zoned lands for future development, compared to the Option 10 depot which is c.50% within the 'High Technology Zone';

3. it is fully compliant with the Dardistown LAP 2012 (extended up to 2022). Option 10 is not fully compliant because of its encroachment onto the 'Hub' lands;

4. it has no interface with the GDD Sewer Project, whereas Option 10 will require the GDD sewer to be realigned or an engineering solution developed to accommodate the GDD. This will impact the GDD planning application consenting period, introduce additional risks to its potential assessment and decision. This project interface presents a risk of delay and additional cost to the MetroLink Project

5. it does not impact the wastewater treatment plant that supports a food processing business. Option 10's connecting tracks run through the site of the wastewater treatment plant thereby requiring its demolition and replacement, as well compensation to support or extinguish the business served by the plant. Any negotiation is likely to present a risk of delay and will generate additional cost for Metrolink;

6. its land requirements do not extend outside of single ownership, and it is mostly located on lower value land. The footprint of Option 10 extends over more than one landowner onto existing businesses (Go-karting facility and garage businesses will need to be closed) and higher value land;

7. its construction cost will be less than for Option 10 mainly because of deeper excavations alongside the M50 (c.800m length of retaining structures required to support a cut 4-5m deep), major earthworks with a 4m cut below ground level at the west boundary requiring extensive retaining structures c.400m in length, and a maximum embankment of 2m height above ground level at the east boundary. This is in addition to the cost associated with the redesign and construction of the GDD Sewer to accommodate the depot and the demolition and replacement of the wastewater treatment plant;

8. while earthworks are likely to be similar for both options, more fill is required for Option 8A and this has a positive impact on the MetroLink Project environmentally in terms of overall material balance compared to Option 10, which requires more cut;

9. it has the advantage of having been developed through to Preliminary Design which delivers all the necessary facilities for efficient MetroLink operations. The relatively low design maturity of Option 10 presents an increased risk of subsequent schedule and cost increases as its design is developed;

10. it provides good access from the M50 compared to access from surrounding roads for Option 10, noting that Option 8A also allows for the future airport road diversion along the north boundary of the site;

11. it provides good Station access compared to Option 10 that has significant disadvantages due to the Station being located between rail junction structures thereby providing a poor passenger/user experience, poor opportunity for future urban integration (requiring long underpasses or bridge structures), and a long walk between the station and depot; and

12. while both options require the realignment of the Turnapin stream or Mayne River, at the location of Option 8A (Turnapin Stream) it is more of a field drain than a stream and therefore easier to manage. Option 10 however will require the Mayne River to be diverted or culverted with the protective corridor for the stream likely to restrict the depot layout. There will also be limited opportunity for Option 10 to reinstate an adequate riparian zone in accordance with the Fingal Development Plan 2017 – 2023.

For all these reasons we recommend that TII proceed as planned with Option 8A as the Preferred Option, with its development through the subsequent design stages.