

# A7.1

## Fosterstown Options Report

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## Executive Summary

TII held a non-statutory Public Consultation on the MetroLink Preferred Route in April 2019, during which the proposed location for the station at Fosterstown was presented to the general public and other stakeholders. At the time of the public consultation MetroLink had not been progressed to the preliminary design stage and therefore design information on the station was limited.

It was clear though that the Preferred Route proposal for a station at Fosterstown, given the local topography, would be in a deep retained cut on the east side of the R132 and this would require permanent land acquisition at the west side of the Airside Retail Park. Specifically, the end of terrace retail warehouse unit, forming part of Airside Retail Park, currently occupied by a combination of Smyths Toys Superstore and Starbucks Coffee would need to be demolished to accommodate the station stop and adjacent track alignment. This Preferred Route alignment has subsequently been incorporated into the Preliminary Design alignment.

As part of this design development, Jacobs/Idom has considered other station location and alignment options at this location to determine whether other feasible options (in terms of station location and alignment) could be adopted that would mitigate the impact on the Retail Park and in particular identify design solutions that would avoid demolition of the end of terrace retail warehouse unit. In each case, the station stop location is moved either north or south of the present location that coincides with the end of terrace retail unit, with the associated track alignment moved west.

The following options have been assessed:

- Preliminary Design (base case) Option - Alignment to east of R132 and station on the Retail Park site
- Alternative Option 1A - Station moved to the **north**. Minor displacement of the track alignment to west but avoiding permanent impact on the R132 alignment.
- Alternative Option 1B - Station moved to the **south**. Minor displacement of the track alignment to west but avoiding impact on the R132.
- Alternative Option 2A – The station is moved to the **north**. MetroLink alignment moved west to fully avoid the Airside building and runs partially under the R132 in cut and cover section.
- Alternative Option 2B – The station is moved to the **south**. MetroLink alignment moved west to fully avoid the Airside building and runs partially under the R132 in cut and cover section.

These options, together with the preferred Route alignment, have been assessed 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). The options are described and assessed through a consistent framework of multi-criteria analysis (MCA). The short-listing process takes account of factors including Project Objectives, Environment, Engineering and Economy and leads to a preferred option.

A two-stage multi-criteria analysis performed by Jacobs Idom showed that the alternative options that would avoid the need to demolish the end of terrace retail warehouse unit are less preferable than the Preliminary Design option.

For the Preliminary Design option, the Fosterstown station and the associated track alignment requires demolition of the end of terrace retail unit. However, the track alignment by the station is compliant with

required design standards and the station location offers good urban integration opportunity. This Preliminary Design option avoids impact on the adjacent R132 at this location.

Options 1A and 1B looked at the possibility of relocating the Fosterstown Station either north or south of the current location to avoid impact on the retail unit at Airside whilst retaining required alignment design standards. However:

- The revised station locations would lie directly adjacent to the R132, with no space available to accommodate a safe urban integration of the station with associated pedestrian and cycle access.
- Retaining required alignment standards would mean that the track alignment would still impact the Airside end of terrace unit requiring demolition
- The revised track alignment would lie directly adjacent to part of the R132 requiring some temporary traffic management restrictions during construction and would require additional localised diversions of utilities alongside the R132.

Given the above issues, these options were not taken forward for more detailed assessment under the MCA process.

Options 2A and 2B also looked at the possibility of relocating the Fosterstown Station either north or south of the current location to avoid impact on the retail unit at Airside but adopting an alignment that avoided demolition of the end of terrace retail unit. For these options:

- The revised station locations would also lie directly adjacent to the R132, with no space available to accommodate a safe urban integration at the revised station stop with associated pedestrian and cycle access.
- The revised track alignment would pass directly under the R132 requiring construction of a cut and cover tunnel over a length of approximately 140m to accommodate the railway under the R132.
- The revised alignment required the incorporation of smaller radius curves, north and south of the Fosterstown station, impacting locally on design and operational requirements.
- Both options would require an extended length of temporary traffic management requirements including temporary realignment of the R132 to maintain capacity through the roadworks
- The costs of the additional cut and cover tunnel and traffic management works associated with this alignment are assessed as similar to the property acquisition cost of the retail unit.

Of these two options, the station location under Option 2B would lie directly adjacent to the R132 and the Nevinstown Lane junction creating additional engineering challenges and disruption during construction than Option 2A. Option 2B was thus also discarded following the Stage 1 MCA assessment with Option 2A taken forward to the more detailed appraisal compared to the Preliminary Design option.

Under Option 2A, moving the MetroLink alignment westwards to avoid demolition of the Airside Building would require a track realignment passing partly under the adjacent R132 road corridor in an extended length of cut and cover construction, even adopting minimum alignment standards. This is due to the limited space available between the western edge of the Airside building and the R132 and the presence of residential properties in Boroimhe Willows immediately to the west of the road. As such, there is insufficient space to either permanently realign the R132 westwards to accommodate the railway corridor or temporarily

realign the road westwards to maintain the existing road capacity during construction of the railway corridor without impact on these properties.

The revised track alignment would require the introduction of an extended length of temporary traffic management and R132 realignment during construction, extending from north of the Fosterstown station location to the Nevinstown Lane junction, which would need to be in place for approximately 5 years. By comparison, for the Preliminary Design, traffic management measures are limited to works associated with just the Nevinstown Lane junction area. The construction activities associated with this option would thus significantly impact traffic and other road users on this length of the R132, with associated delay and disruption in the area and which is avoided by the Preferred Route alignment. Further, the resultant reduced minimum track curve radii on the metro alignment would require an operational speed reduction and restriction on this section of route from 80kmph to 65kmph.

Based on the assessment, these options do not support a change from the Preliminary Design alignment and the preferred option remains the same as presented at the Preferred Route Public Consultation and as subsequently developed for the Preliminary Design. This means that the alignment will require demolition of the end of terrace retail warehouse unit, forming part of Airside Retail Park, currently occupied by a combination of Smyths Toys Superstore and Starbucks Coffee to facilitate the MetroLink construction works.

## 1. Introduction

TII held a non-statutory Public Consultation on the MetroLink Preferred Route in April 2019, during which the location for the proposed Fosterstown Station was presented to the public and other stakeholders. At that time the concept design for MetroLink had not been progressed to preliminary design stage so information on the impact of the station on its local area and environment was limited.

MetroLink works along the R132 past Swords have been developed on the basis of the railway being provided in a mixture of retained cutting and cut and cover sections of route running along the eastern side of the R132 between Estuary roundabout and to the south of the Nevinstown junction and avoiding impact on the existing R132 road as much as possible. This allows MetroLink to be incorporated into the existing transport corridor, retains access to development lands and businesses to the east of the road, minimises traffic impacts during construction and supports the FCC future development plans for this section of the R132.

The basis of design for Fosterstown Station is the same as that employed on the other stations along the R132, i.e., Swords Central Station and Seatown Station. The key feature of these stations is that the MetroLink track is in a retained cut on the east side of the main road at a depth of approximately 7m below surrounding ground level. A covered slab section is provided at the station with an access plaza at street level. Vertical circulation to the platform level is by stairs, ramps, and lifts. The station platforms are set on a straight and level section of track and environmental impacts are limited by appropriate mitigation measures.

The station at Fosterstown for the Preferred Route is located close to the Airside Retail Park just off the R132 on its east side. The rail alignment going south follows the R132 in a cutting on its east side before going under the Nevinstown Lane junction, then, just south of the existing Texaco station, it crosses under the R132 to run on the west side of the road to continue on towards Dublin Airport. On the north side of the Naul Road, it will go into the tunnel that will take the route under the airport. Pedestrian and cycle access across the R132 at Fosterstown is to be provided by a suitably designed level road crossing rather than the bridge proposed at the time of the Public Consultation.

It was recognised at the time of the public consultation that the Preferred Route alignment passed across the northwest part of the Airside Retail Park and the end of terrace retail warehouse unit, forming part of Airside Retail Park, currently occupied by a combination of Smyths Toys Superstore and Starbucks Coffee, would have to be demolished.

Jacobs/Idom has examined different locations for the station and necessary track alignments that would avoid this demolition. This report sets out the option assessment process undertaken and confirms the recommendation on the preferred option.

## 2. Preferred Route and Fosterstown Station

Following completion of the Metrolink Route Selection Report the alignment of the Preferred Route and its station is shown in Figure 2.1 below. This was presented at the public consultation in April 2019. It can be seen that Fosterstown Station is located on the route section shown in cyan to the north of the Airport, which represents a line section that is in a retained cutting similar to the stations at Swords Central and Seatown.



Figure 2.1: Fosterstown Station Location

The plans and cross sections of the station proposals for Fosterstown were presented at the Public Consultation, as shown in Figure 2.2 below. The different types of retaining structures considered at that time for the railway cutting can be described as follows:

- **Section 1** – Vertical retaining wall support to R132, horizontal track support slab and landscaping slope to existing ground level to east.
- **Section 2** - Open concrete box structure containing station platforms with vertical retaining wall support to R132 and existing ground level to east.
- **Section 3** – Cut-and-Cover closed concrete box structure containing twin tracks below existing roads.
- **Sections 4 and 5** - Open concrete box structure containing twin tracks with vertical retaining wall support to R132 and existing ground level to east.

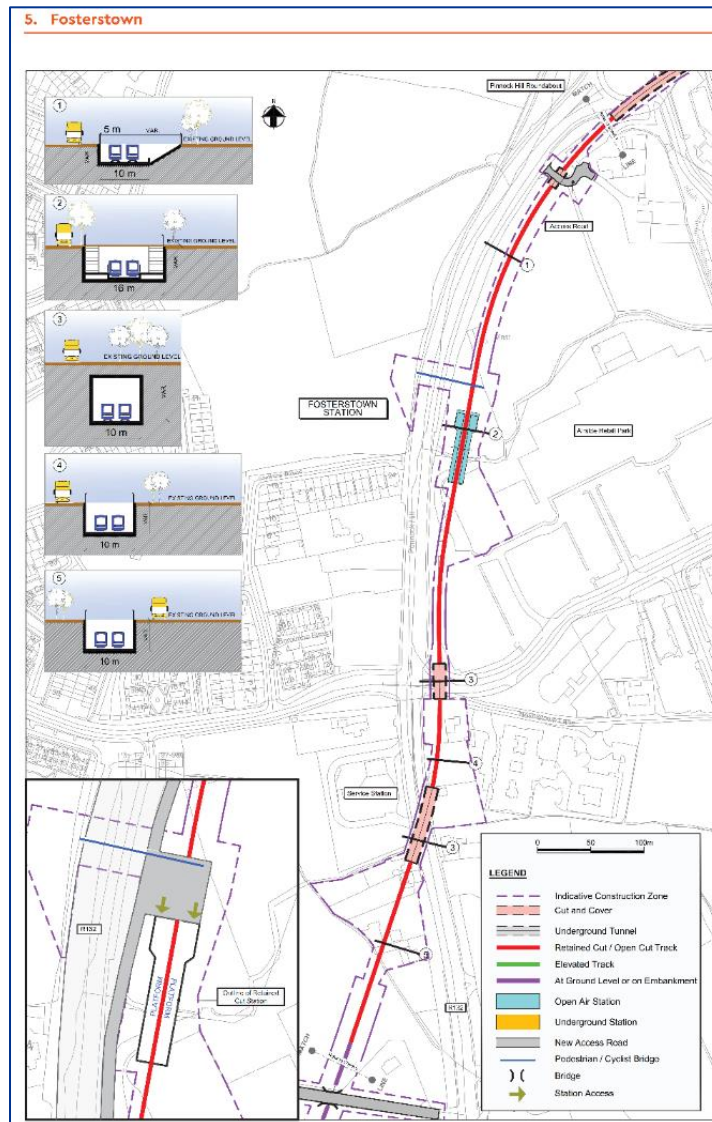


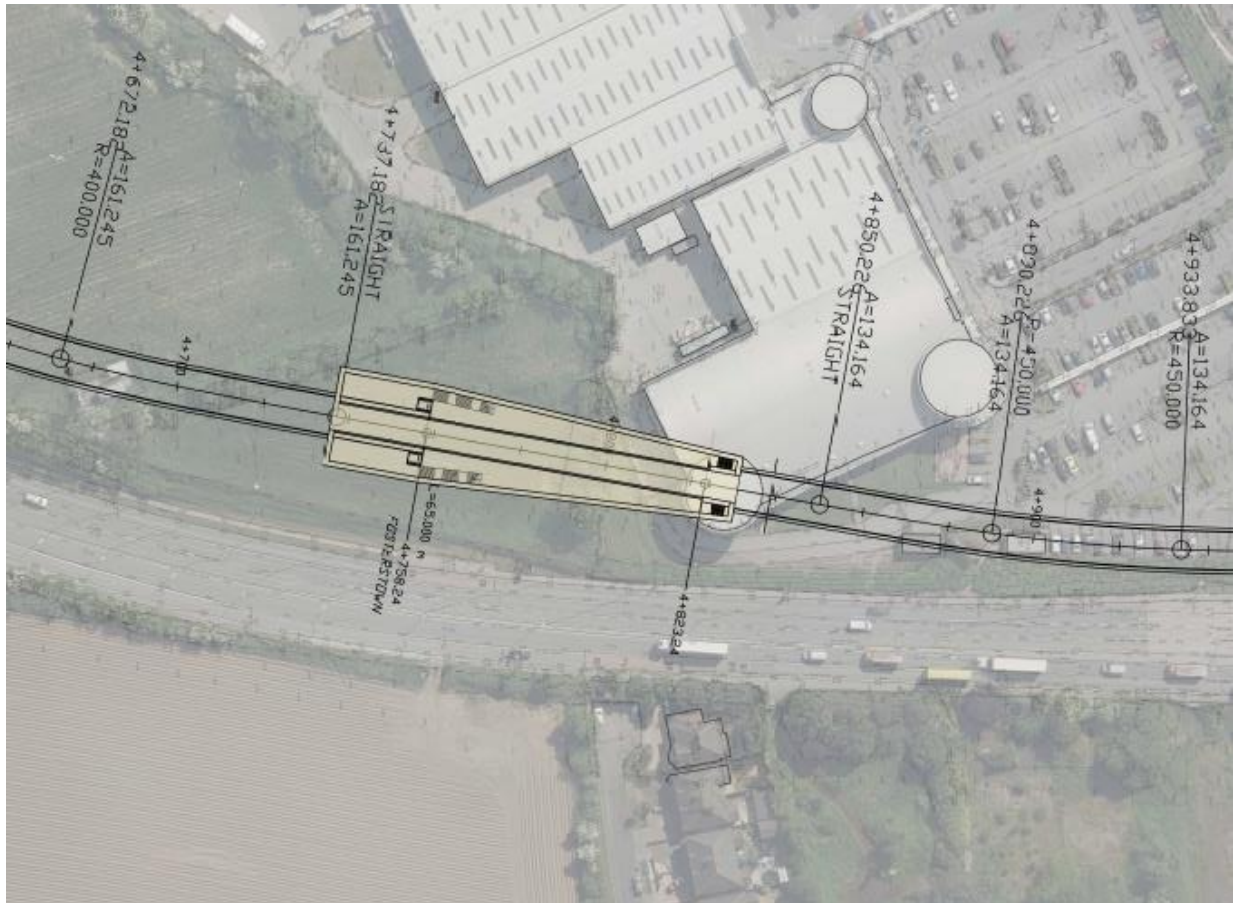
Figure 2.2: Fosterstown Station and MetroLink Alignment (ref: April 2019 Public Consultation Document)

Also shown in the figure is the zone for a pedestrian bridge across the R132, however, the provision of an alternative surface level toucan crossing of the road now forms part of the MetroLink proposals and is compatible with other crossings being provided as part of the R132 Connectivity Project. The inset diagram



highlights the potential land area currently occupied by the Airside Retail Park that was envisaged to be required for permanent use for the station and the land needed for temporary use during construction.

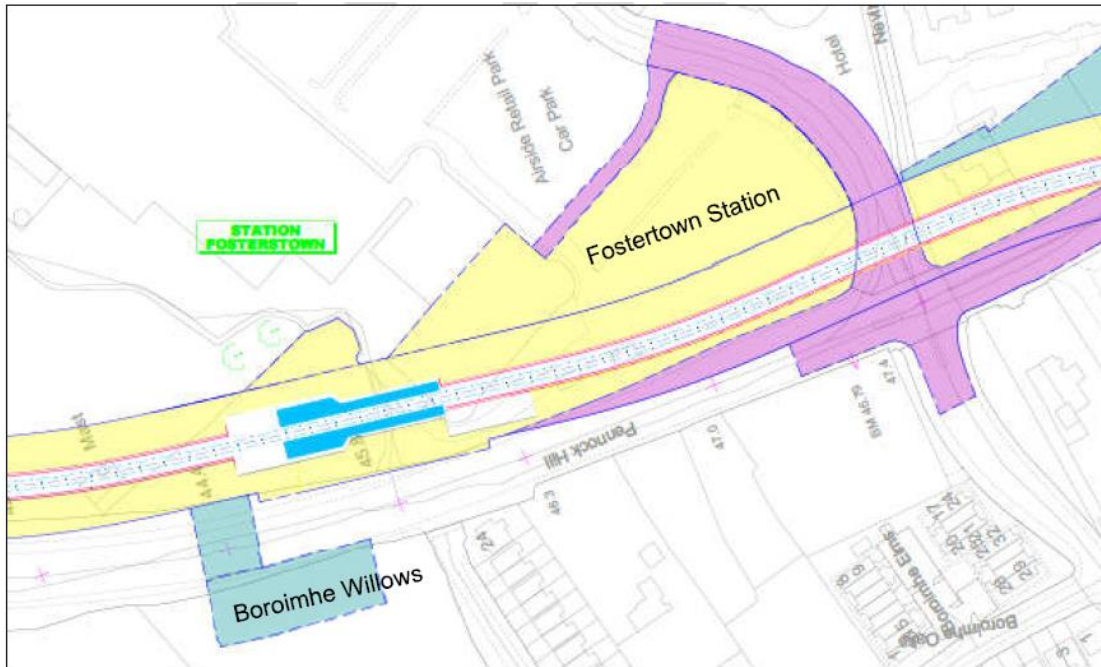
The MetroLink Preliminary Design alignment and Fosterstown station location are shown in in Figure 2.3 below, indicating the impact on the end of terrace retail unit.



**Figure 2.3 Airside Buildings and Preliminary Design Station Alignment**

The facilities to be located at Fosterstown Station include a large underground sub-station although this structure will be located to suit the final design of the station.

The construction methodology for the Preliminary Design proposal has been developed since the Public Consultation. As can be seen in Figure 2.4 below, as well as part of the Airside building an area of associated car park is also required because space is still necessary for the cut and cover tunnel section to and under Nevinstown Lane as well as for temporary traffic diversions. The Preliminary Design does ensure that the R132 is not directly impacted by the construction of the Station.



**Figure 2.4 Fostertown Station and Boraimhe Willows Construction Compounds**

Feedback from the consultation process raised concerns regarding the impact on the Airside retail park and whether it was feasible to avoid this impact. This options appraisal examines feasible alternatives for the station location, with the aim of identifying possible reduced land take requirements and impacts to existing buildings.

This document presents the assessment of identified alternatives and the option selection process using the Multi-Criteria Analysis (MCA) methodology as described in the following sections.

### 3. Option Development

#### 3.1 Base Case and Alternative Options

For the purposes of the MCA Analysis, the base case for assessing the location options for Fosterstown Station is the Preferred Route proposal presented in the April 2019 Public Consultation as described in Section 2 above and which now forms the Preliminary Design option. As previously stated, the initial Preferred Route option generated submissions, most of them relating to land take and the need to acquire land for permanent station use as well as temporary use for construction.

As a result, TII instructed Jacobs/Idom to examine feasible alternatives to reduce or avoid the impact on affected properties. The alternatives that were identified are summarised in Table 3.1 below along with the base case and they are described in more detail in the following sections.

**Table 3.1 Base Case and Alternative Option**

Location Option	Features	Option Changes
Preliminary Design (base case) Option	Alignment to east of R132 and station on Retail Park site.	Retail building demolished, R132 not affected with exception of junction to Airside car parking affected.
Alternative Option 1A	Station moved to the <b>north</b> . Minor displacement of the track alignment to west but avoiding permanent impact on the R132 alignment.	The station avoids the Retail Park, but the revised track alignment continues to impact the end of the building so it would still need to be demolished. Localised traffic management required and impact on the R132 during construction as part of the track alignment is directly adjacent to the road.
Alternative Option 1B	Station moved to the <b>south</b> . Minor displacement of the track alignment to west but avoiding impact on the R132.	The station avoids the Retail Park, but the alignment remains too close to the retail building, so it would still need to be demolished. Traffic management on the R132 during construction and permanent re-alignment to accommodate the revised station location.
Alternative Option 2A	The station is moved to the <b>north</b> .  MetroLink alignment moved west to fully avoid the Airside building and runs partially under the R132 in cut and cover section.	The station and the retained cutting for the rail alignment avoid the need for demolition of the building. However, the rail alignment remains close to the building, separated by approx. 6m, The R132 is severely affected during construction and will need temporary re-alignment to accommodate construction activities. The road is reinstated above

Location Option	Features	Option Changes
		the railway over a length of approx. 140m.  Reduced rail radii on curve past Airside building with associated localised speed restriction required for metro.
Alternative Option 2B	The station is moved to the <b>south</b> .  MetroLink alignment moved west to fully avoid the Airside building and runs partially under the R132 in cut and cover section.	The station and the retained cutting for the rail alignment avoid the need for demolition of the building. However, the alignment remains close to the building, separated by approx. 6m.  The R132 is very severely affected, with impacts as Option 2A but also additional realignment of the R132 adjacent to the revised station location and associated impacts on the Nevinstown Lane junction. The R132 is reinstated above the railway over a length of approx. 140m.  Reduced rail radii on curve past Airside building with associated localised speed restriction required for metro.

### 3.2 Preliminary Design (base case) Option

The Preliminary Design Option is taken as the base case for the MCA assessment. It is broadly the same as the Preferred Route scheme presented during public consultation in April 2019. It is sufficiently far from the R132 to avoid traffic disruption (with the exception of the junction to Airside Retail Park) and there is also adequate space between the road and rail alignments to construct a suitable Urban Realm area. However, as can be noted from Figure 3.1 the north west corner of the Airside retail park is required to be demolished for station and track construction.



**Figure 3.1 Preliminary Design (base case) Option – Station and Track Alignment**

The figure shows the station in the same location as was presented at the Public Consultation although the internal layout has been adjusted to suit architectural developments since then.

In terms of Planning, we note that:

- Placing the station at Fosterstown meets the policy and objectives of the Fingal Development Plan 2017-2023 and the Swords Masterplans 2019.

Any station option will require adequate access to serve Fosterstown Masterplan residential lands and also access to the Airside area, see Figure 3.2.



**Figure 3.2 Planning Elements**

In addition:

- The site is Zoned 'HT'- High Technology' and 'RW' - Retail Warehousing in the Fingal Development Plan (FDP);
- The station location is consistent with one of the main elements for Fosterstown Masterplan i.e. to provide priority pedestrian connections to the Fosterstown MetroLink station through the emerging new residential developments;
- The end of terrace retail warehouse unit, forming part of Airside Retail Park, currently occupied by a combination of Smyths Toys Superstore and Starbucks Coffee will require demolition, and
- The station building is adjacent to the R132 and needs to allow space for BusConnects, pedestrian and cycle lanes within its land take.

While the Smyth's building has to be removed there could be potential for reconstruction of a replacement store in a similar location if land was made available and planning permissions gained. This may also offer the potential for development to a higher intensity, consistent with location in close proximity to a metro station (subject to compliance with Fingal County Council planning policy).

### 3.3 Alternative Options Description

#### 3.3.1 Summary of Alternative Options

The alternative options considered are presented in Figure 3.3 below and they consist of two groups for comparison with the base case option.

Group 1 provides for alternative station relocation options to the north and south of the Airside end of terrace retail unit, to remove the impact on this building from the proposed station location. The associated track alignment is realigned slightly to the west, however, in order to maintain alignment design requirements and avoid impact on the R132 alignment the track alignment under these options would continue to impact the western end of the retail unit with associated demolition requirements.

Group 2 provides for similar alternative station relocation options to the north and south of the Airside retail unit, but with the track alignment moved further west and under the R132 to avoid the need for any demolition of the Airside end of terrace retail unit. This introduces some consequent adverse changes to the horizontal curvature. There is also some variation in vertical alignment, but this does not materially affect the assessment process. The alignment passing under the R132 introduces additional traffic management works on this road.



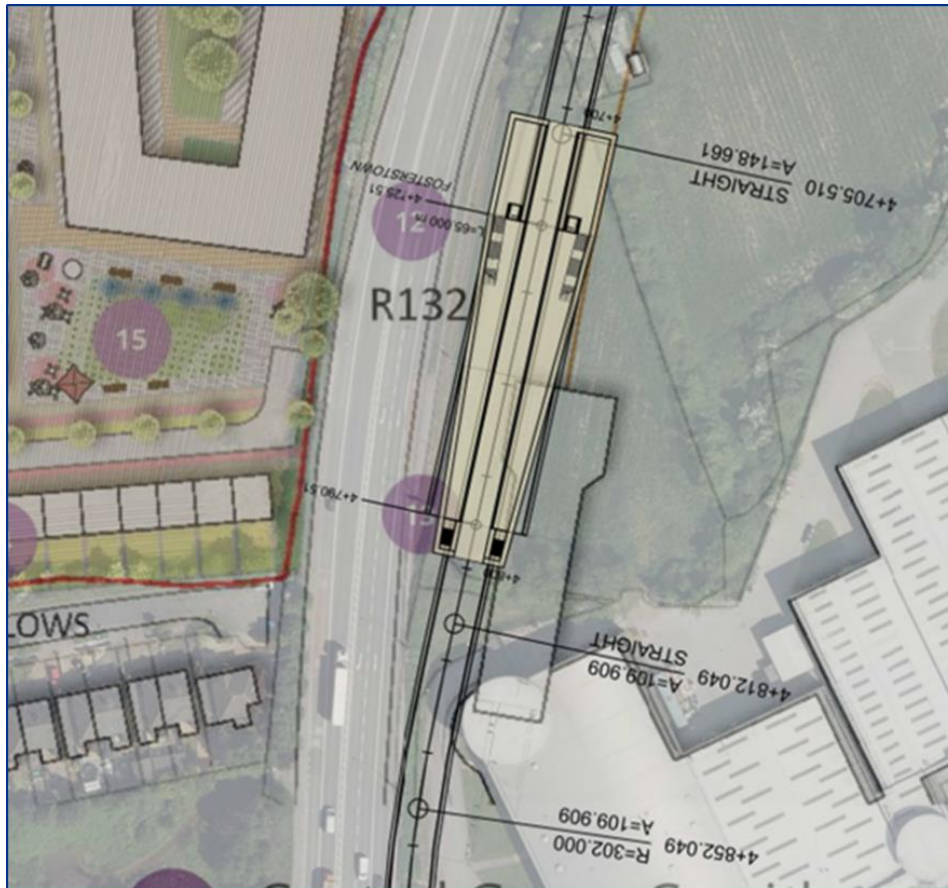
**Figure 3.3 Alternative Options Identified for Assessment**

The proposal for temporary land take is broadly the same for the base case and for each of the alternative options. As has already been highlighted with reference to Figure 3.3 above, part of the Airside building is needed for the base case and Group 1 options; along with part of the associated car park for all options.

The following sections discuss each alternative option in more detail. Constructability issues for the Emerging Preferred Options only are presented in Section 5.3.4 below.

#### 3.3.2 Alternative Option 1A

Option 1A involves relocation of the station to the north of the Airside complex. Due to the track alignment through the station needing to be straight, this requires a change to the horizontal alignment in this area, with a slight shift of the alignment provided to the west past the Airside buildings whilst avoiding encroachment onto the R132. The resulting layout is shown in Figure 3.4 and from inspection we can see that while the station works are clear of the retail park boundary, the works to construct the railway tracks and associated retained cutting cannot be completed without demolition of at least the north west corner of the retail park building and some land take in the car parking area. Due to the realignment of the railway track, this now passes directly adjacent to the R132 road corridor, which during construction works will necessitate temporary lane closures on the south bound carriageway, associated traffic management works and some permanent re-alignment of the carriageway to facilitate a safe distance between the road and railway corridors. The base case option for the station is shown by the black dotted outline.



**Figure 3.4 Alternative Option 1A: Minor displacement of the alignment and Station moved to the North**

In terms of Planning, we note that:

- The site is Zoned 'HT'- High Technology' in the Fingal Development Plan (FDP);
- The location can partially facilitate one of the main elements for the Fosterstown Masterplan, to provide priority pedestrian connections to the Fosterstown MetroLink station through the emerging new residential developments; but
- The location does not facilitate the optimal direct connection to Masterplan lands;
- The end of terrace retail warehouse unit, forming part of Airside Retail Park, currently occupied by a combination of Smyths Toys Superstore and Starbucks Coffee will require demolition due the revised track alignment (not directly due to station location) and
- The revised alignment will require encroachment onto the R132.

While the end-of-terrace retail warehouse has to be removed, there is potential for reconstruction of a replacement store in a similar location, subject to land being made available and planning permission provided. This may also offer the potential for development to a higher intensity, consistent with location in close proximity to a metro station (subject to compliance with Fingal County Council planning policy).



For environmental conditions we note that this option would be aligned to the east of the R132, just north of the Airside retail park, in land currently used for agriculture but zoned for high-technology campus -style development in the Fingal local plan. The station would be constructed within two fields, and across a currently well-vegetated field boundary. As previously stated, Option 1A would clash with a retail unit, which would require demolition.

Options with the station moved to the north of the base case location would involve the removal of trees and hedgerow plants, which currently provide habitat for breeding birds, but impacts would be similar to the base option. They would also require land-take from current agricultural land, but which is zoned for future development for high-technology uses. There is a well in the study area, hence excavation and dewatering could have an adverse effect on the abstraction. For the other environmental factors, the potential effects would be slight or not significant, even taking into account the potential loss of one retail unit.

### **3.3.3 Alternative Option 1B**

Option 1B involves the relocation of the station to the south with a similar slight shift of the alignment to the west as before. The resulting layout is shown in Figure 3.5 below and again from inspection we can see that while the station works are clear of the buildings in the retail park, the works to construct the railway tracks and associated retained cutting cannot be completed without demolition of at least the north west unit of the retail park building and some land take in the car parking area. There is also an impact on the R132 due to the closeness of the station to the road alignment, which will necessitate lane closures on the south bound carriageway during construction and resultant permanent re-alignment of the carriageway. The base case option for the station is shown by the black dotted outline.

In terms of Planning, we note that the:

- Zoned 'RW' - Retail Warehousing in the FDP;
- station location is not consistent with the Fosterstown Masterplan; there is no priority pedestrian connection to Fosterstown MetroLink station;
- connection is provided to Boroimhe and Airside lands;
- The end of terrace retail warehouse unit, forming part of Airside Retail Park, currently occupied by a combination of Smyths Toys Superstore and Starbucks Coffee TII, will require demolition due the revised track alignment (not directly due to station location); and
- The station building is adjacent to the R132 and needs to allow space for BusConnects, pedestrian and cycle lanes within its land take.

While the end of terrace retail unit has to be removed, this may also offer the potential for development to a higher intensity, consistent with location in close proximity to a metro station (subject to compliance with Fingal County Council planning policy) and other planning conditions. Any station option will require adequate access to serve Fosterstown Masterplan residential lands and also access to the Airside area.

For environmental conditions we note that this option would be aligned to the east of the R132, in the western-most part of the existing carpark/landscape planting area at the Airside retail park. The full demolition of the end of terrace retail unit will be necessary. The options for the station to the south of the base case would not take agricultural or future development land but would take up a small area of the carpark at the Airside retail park. It would be closer than the north options to residential receptors, plus a hotel and care home, hence it would have the potential for noise effects particularly during construction. There is a well immediately adjacent to the site, hence excavation and dewatering could have an adverse

effect on the abstraction. For the other environmental factors, the potential effects would be slight or not significant, even taking into account the potential loss of one retail unit.



Figure 3.5 Alternative Option 1B: Minor displacement of the alignment and Station moved to the South

### 3.3.4 Alternative Option 2A

This option would provide a solution that moves the station to the north, similar to Option 1A, but with a track alignment that avoids the need to demolish the end of terrace retail unit in the northwest corner of the Retail Park, although land presently used for car parking would be required on a temporary basis during construction as for other options.

As can be seen in Figure 3.6 below the station is outside the retail park northwest boundary and with the retained cutting some 6m from the closest building; so whilst it does not need to be demolished, it is likely that building services will need to be diverted. However, it is recognised that construction of the Metrolink corridor past the building will be difficult and constrained due to the closeness of the building, as well as severely impacting the use of the R132 during construction. The layout is achieved by relocating the station platforms and other facilities to the north on a straight section of track.

The necessary adjustments to the horizontal rail track alignment to avoid the end of terrace unit would mean that curves of radius 325m would be introduced north of Fosterstown station and a 302m radius curve included past the Airside buildings, both of which would be the tightest turning radii on the entire Metrolink scheme. The associated transition curves are restricted in length due to the station location, vertical curve approaching from the north and alignment requirements to the south, which restrict the cant that can be applied to the track on these curves and which in turn would locally constrain the operational speed of trains to 65kmph through this section compared to a general 80kmph design speed requirement for the MetroLink

alignment. However, given the closeness to the adjacent station, this restriction in design speed is unlikely to be significant given the short length of curve and that trains will be accelerating from, or decelerating to, the station stop. By comparison, the Preliminary Design alignment incorporates only a short section of reduced 70kmph design speed immediately north of Fosterstown station, again due to cant constraints associated with overlapping horizontal and vertical curves.

In avoiding the end of terrace retail unit, the rail alignment is pushed out westwards and would lie directly under the R132 road corridor over a length of approximately 140m.



**Figure 3.6 Alternative Option 2A: alignment moved west to avoid Airside Building and station moved north**

In terms of Planning, we note that the:

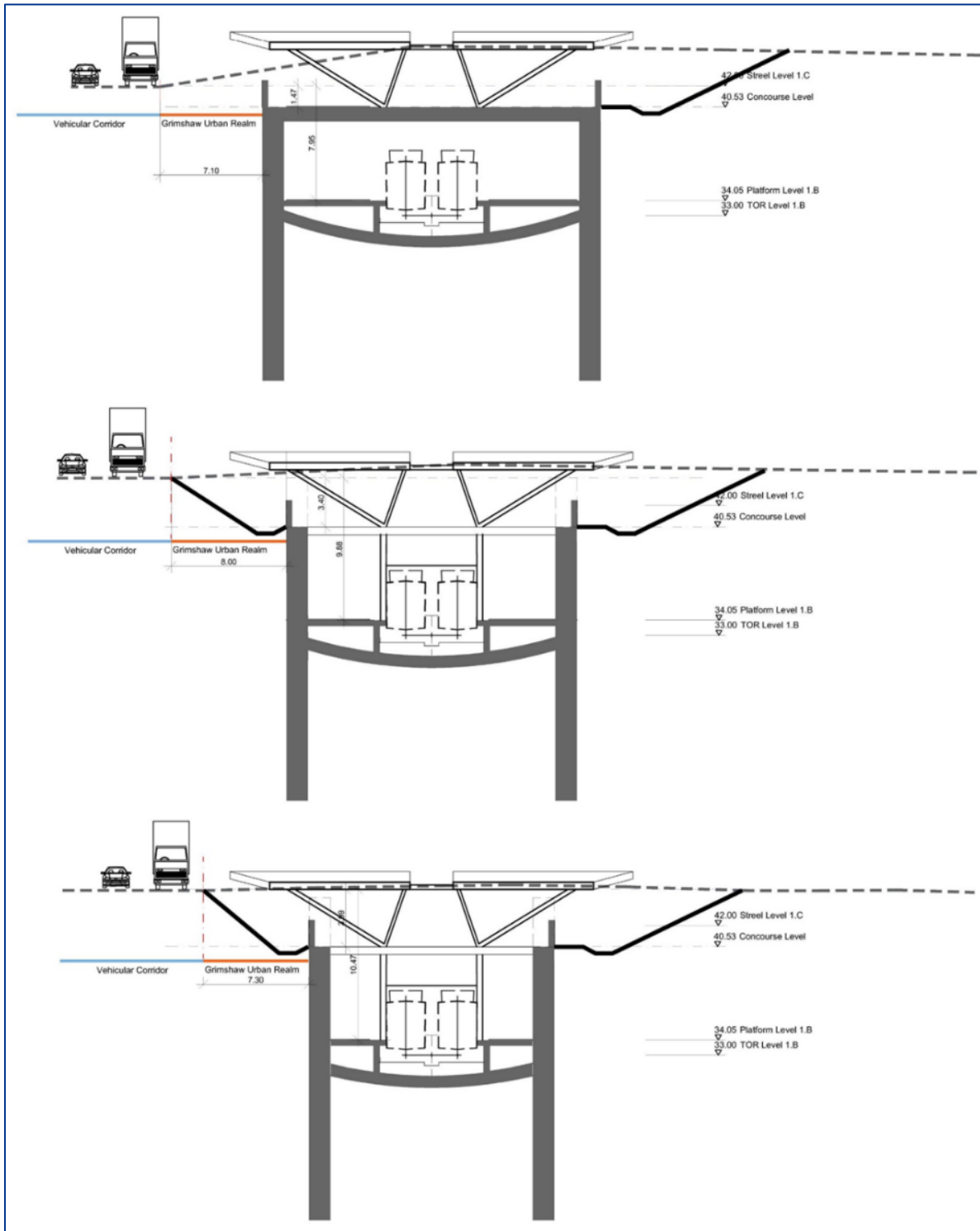
- Area is Zoned 'HT'- High Technology' in the FDP;
- Station location can partially facilitate one of the main elements for the Fosterstown Masterplan, to provide priority pedestrian connections to the Fosterstown MetroLink station through the emerging new residential developments; but
- The location does not facilitate the optimal direct connection to Masterplan lands;
- The end of terrace retail warehouse unit, forming part of Airside Retail Park, currently occupied by a combination of Smyths Toys Superstore and Starbucks Coffee, does not require demolition due to the revised track alignment;
- The revised alignment will encroach onto the R132 over a length of about 140m; and

- Any station option will require adequate access to serve Fosterstown Masterplan residential lands and also access to the Airside Retail park area.

For environmental conditions we note that this station option would be aligned to the east of the R132, just north of the Airside retail park, in land currently used for agriculture but zoned for high-technology development in the Fingal local plan. The station would be constructed within two fields, and across a well-vegetated field boundary. This option for the station would not clash directly with the retail unit, although the track is in deep cutting as it passes.

The removal of trees and hedgerow plants, which currently provide habitat for breeding birds would be necessary but similar to the base option. It would also require some additional permanent land-take from agricultural land zoned for future development for high-technology uses. There is a well in the study area, hence excavation and dewatering could have an adverse effect on the abstraction. For the other environmental factors, the potential effects would be slight or not significant, even taking into account the potential loss of one retail unit.

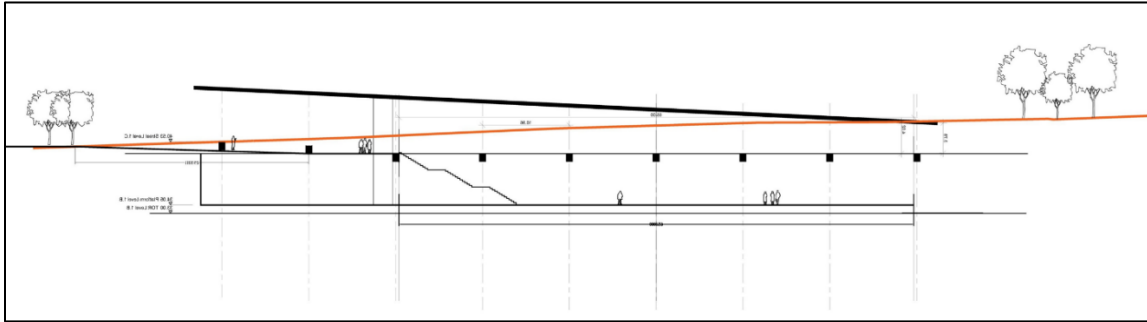
This option would require the station stop location to lie very close to the edge of the R132 in order to maintain track alignment standards. Similar to the base case option, the station would be formed within a retained cutting due to the existing topography at this location and restrictions on maximum track gradients to reduce the cutting depth. As such, there is very little room to adequately provide for appropriate landscaping and public realm between the road and the station box. This is illustrated in the three cross sections shown in Figure 3.7 below, which indicate typical details required depending on relative ground levels and the difficulty in achieving a satisfactory station arrangement at this location. It is very likely that the R132 would need permanent realignment locally past the station to provide an appropriate and safe environment for accessing the station.



**Figure 3.7 Option 2A – Cross Sections at Station**

A long section along the platforms is shown in Figure 3.8 below and from this we note that the level difference between the R132 and the proposed station entrance could be resolved over a plaza with a 3%

slope over a 30m length. The heavy black line is the proposed station canopy line and the orange line is the profile of the R132 as it rises from north to south.



**Figure 3.8 Architectural Longitudinal Section**

It is noted that at the station location the street level to the Top of Rail level gives a cutting depth of approx. 7.5m. The maximum slope of the track as it approaches from the north would rise at 4.0%, slightly more gradual than the 4.7% in the base case for Preliminary Design.

The construction impact of this option layout is severe on the south bound R132 as can be seen in Figure 3.9 because the track alignment has to pass onto and then under the road and remains close to the road approaching Nevinstown Lane junction. The rail alignment would require to be formed as a cut and cover section where it passes under the road, with the R132 diverted westwards and with traffic restrictions through temporary traffic management creating significant disruption to road traffic during construction. Following construction, the road would be reinstated in its original location following construction, on top of the railway alignment.

A sub-option considered if the station could be mirrored so that the station plaza is to the south of the station and not the north. However, this would mean that the entrance and plaza would lie directly adjacent to the R132 and with the level differences between road and station making it impossible to achieve a safe distance from passing traffic. There would also be no space for a footpath/cycleway on the west side of the station as can be achieved with our current layout to maintain continuity of access along the R132 for these non-motorised users.



Figure 3.9 Alternative Option 2A: R132 and Track Alignment Interface

### 3.3.5 Alternative Option 2B

This alternative is on a similar horizontal alignment to Option 2A above, but the station is relocated to the south of the retail park buildings as shown in Figure 3.10 below.



**Figure 3.10 Alternative Option 2B: alignment moved west to avoid Airside Building and station moved south**

Similar to Option 2A, this option would provide a solution that avoids the need to demolish the end of terrace retail unit in the north west corner of the Retail Park. However, it is recognised that construction of the Metrolink corridor past the building will be difficult and constrained due to the closeness of the building, as well as severely impacting use of the R132 during construction.

The impact on the R132 would be exacerbated compared to Option 2A due to the location of the station encroaching onto the east side of the R132. This would require alterations to the Nevinstown Lane junction to accommodate a realignment of the R132 away from the station with the realignment northwards requiring associated land acquisition to the west of the existing R132 including at the end of Boromimhe Willows road including one possible property acquisition. Alternatively, a permanent reduction of existing road width would be required. This option will also require a stretch of cut and cover structure north of the station to accommodate the railway alignment under the existing R132 carriageway as for Option 2A.



In terms of Planning, the:

- area is Zoned 'RW' - Retail Warehousing in the FDP;
- station location is not consistent with Fosterstown Masterplan; there is no priority pedestrian connection to Fosterstown MetroLink station (the station plaza lies approx. 250m further south from the Masterplan lands than the base case option which is better aligned);
- connection is provided to Boroimhe and Airside lands; and
- station building is adjacent to the R132 and needs to allow space for BusConnects, pedestrian and cycle lanes within its land take.

For environmental conditions we note that this option would be aligned to the east of the R132, in the western-most part of the existing carpark/landscape planting area at the Airside retail park. The options for the station to the south of the base case would not take agricultural or future development land but would permanently take up a small area of the carpark at the Airside retail park. They would be closer than the north options to residential receptors, plus a hotel and care home, hence they would have the potential for noise effects, particularly during construction. There is a well immediately adjacent to the site, hence excavation and dewatering could have an adverse effect on the abstraction. For the other environmental factors, the potential effects would be slight or not significant.

## 4. Station Options Assessment

### 4.1 Assessment Process

The additional 4 options identified for the Fosterstown Stop have been assessed in accordance with the Common Appraisal Framework (CAF) by the Department of Transport, Tourism and Sport. (March 2016) with a Multi-Criteria Analysis (MCA) as defined by the Public Spending Code undertaken. The MCA can be used as an alternative to monetary-based appraisal using social impacts or environmental impacts as a framework to evaluate different transport options with several criteria and more than one objective.

Given in this case that the base option has been identified through a previous MCA process and we are now assessing further refinements of this base option we take these additional options straight to Stage 3 short-listing of options taking account of factors such as project objectives, economy, safety, engineering and environment. The process then leads to a more detailed Stage 4 assessment of remaining options following which a preferred option is recommended.

Therefore, this process to assess additional station location options in an effort to reduce the impact of the Fosterstown Station on the end of terrace retail warehouse unit has adopted a 2 Stage process. Stage 1 is a high-level pass/fail assessment from which a Stage 2 more detailed assessment is undertaken of the remaining options. The options assessment methodology is set out in the following section.

### 4.2 Options Assessment Methodology

#### 4.2.1 Multi Criteria Assessment (MCA)

All the 5 Options are assessed equally including the Preliminary Design (Base Option). Stage 1 is a high-level assessment to eliminate any options that are deemed not feasible or scoring too low relative to other options.

#### 4.2.2 Stage 1 MCA:

Stage 1 of the MCA assessment considers relevant factors during both construction and operation, and scores them in turn, using a 4-point scale as shown in Table 4.1. The Stage 1 Assessment Table using four Criteria – Project Objectives, Environment/Planning, Engineering and Economy - is shown in

Table 4.2 below.

Completed Tables for each of the five Options are included in Section 5 of this report.

**Table 4.1 MCA Scoring Key - STAGE 1 Assessment**

Options Assessment	Significance
Green	Feasible with least impacts
Yellow	Feasible with moderate impacts
Orange	Feasible with negative impacts
Red	Not Feasible

Table 4.2 Stage 1 Assessment Criteria

Criteria	Sub-Criteria	Criteria Description	Note
Project Objectives	Demand/Property impact/Planning	Does the Option satisfy the stated project objectives set out below	Should the option not satisfy the objects it fails and is removed from further assessment
Environment/Planning	Potential for adverse impacts	Minimise the potential for adverse impact on the natural and built environment and the community.	Environmental criteria were assessed to ensure compatibility with the objectives of the FDP and Swords Masterplan
Engineering	Constructability / Safety	This criterion considers if the station option can be constructed having regard to the identified constraints and opportunities within the study area and relative differences in construction risk/safety	The constructability criterion was assessed given the potential differentiation between the construction of different station location options and associated track alignment changes.
Economy	Cost	This criterion considers the broad capital and operation costs of each of the proposed options.	This criterion was assessed given the capital and operational cost implications of differing options

Project Objectives were assessed to ensure the options developed were consistent with relevant project objectives as follows:

Overall:

- To provide a sustainable, safe, efficient, integrated and accessible public transport service between Swords, Dublin Airport and Dublin City Centre

Sub-objectives for Fosterstown Station:

- to provide a station to satisfy the passenger demand in the area
- to avoid or mitigate impacts on property and the R132 operations
- to fulfil in so far as possible the planning objectives set out in the area development/masterplans

The other Criteria used during Stage 1 are further described as follows:

- *Environment/Planning* – Placing the station at Fosterstown meets the policy and objectives of the Fingal Development Plan 2017-2023 and the Swords Masterplans 2019. Criterion also assesses the comparative impact of options on the environment such as land take.
- *Engineering:* - This criterion considers if the station option can be constructed and its ease of construction having regard to the identified constraints and opportunities within the study area. It considers construction risk/safety and general impact during construction.
- *Economy* – the proposed station will aid the development of the Fosterstown area. Under the Economy criteria it is accepted that the MetroLink project has a robust business case which depends on the provision of revenue generating access points at stations, including a station at Fosterstown. Therefore, Economy is concerned with comparative capital and operating costs of alternative station location options rather than overall economic benefits of the entire scheme. This criterion includes consideration of disruption and costs of constructing the rail alignment in a cutting and the station. The Stage 1 Assessment Tables are set out in section 5 of this report.

#### 4.2.3 Stage 2 MCA:

Stage 2 assesses the remaining options from Stage 1 in more detail according to the assessment criteria set out in Section 4.3 and scored as shown in the MCA Scoring Key – Stage 2 Assessment, Table 4.3 below. The assessment considers both construction and operational impacts.

Table 4.3 MCA Scoring Key – STAGE 2 Assessment

Assessment Score for Individual Assessment Criteria	Significance Advantages/Disadvantages
5	Significant advantages over other options
4	Some advantages over other options
3	Comparable to other options
2	Some disadvantages over other options
1	Significant disadvantages over other options

#### 4.3 Stage 2 Assessment Criteria

All Options carried forward from the Stage 1 Assessment above are now assessed in more detail. The criteria used to assess the options are set out below and each option is subject to further investigation under each of these criteria.

- **Alignment** – is the proposed option feasible based on metro alignment standards
- **Demolition of buildings** – an assessment of the number and type of buildings that would require demolition during construction of the Option at Fosterstown Station
- **Masterplan compliance** - placing the station at Fosterstown meets the policy and objectives of the Fingal Development Plan 2017-2023 and the Swords Masterplans 2019.
- **Road/Traffic Impacts** – an assessment of the main traffic impacts and disruption during construction for all road users and pedestrians
- **Environment & Planning** – a summary of the main potential impacts associated with option

development

- **Urban integration** – how well will the Metro station integrate into the urban environment
- **Economy / Costs** – a comparative assessment of the Metro station costs, including construction, risk, and property costs.

Stage 2 Assessment Tables are set out in Section 5 of this report.

## 5. Multi-Criteria Analysis (MCA) and Results

### 5.1 Options Assessed

The five options, including the base case and the four identified alternatives, were assessed through a rigorous process of Multi-Criteria Analysis (MCA) process described in Section 4 above.

This was done in two stages. The first stage was an initial high-level assessment using 4 criteria followed by the second stage MCA using 7 more detailed criteria. The results of this process outlined below enabled the selection of the preferred option to be included in the Preliminary Design.

### 5.2 Stage 1 MCA

An initial Multi-Criteria Analysis employed the selected criteria listed below and described in section 4 above:

- Project Objectives
- Environmental/Planning Impact
- Engineering
- Economy

The summary scoring result of the Stage 1 MCA is provided in the matrix in Table 5.1 below.

**Table 5.1 Summary Matrix of Initial MCA on All Options**

	Option PDR (Base)	Option 1A	Option 1B	Option 2A	Option 2B
Project Objectives	Yellow	Red	Red	Yellow	Yellow
Environmental/Planning	Yellow	Yellow	Yellow	Yellow	Yellow
Engineering	Yellow	Yellow	Yellow	Yellow	Red
Economy	Yellow	Yellow	Yellow	Yellow	Yellow
<b>Score</b>	Yellow	Red	Red	Yellow	Red

Note: Any option scoring a red under one of the criteria is deemed “not feasible” and is not taken forward to the Stage 2 assessment. Therefore, Options 1A, 1B and 2B are not considered in the Stage 2 assessment.

An explanation of the findings of the Stage 1 MCA is provided below:

- Options 1B and 2B performed less well in terms of planning requirements particularly in terms of the Fosterstown Masterplan. Both of these options also perform poorly under the criteria of environmental impact – 1B as it does not meet project objectives and requires demolition of the end of terrace retail unit and 2B station construction has greater environmental impacts and a more significant impact on the Nevinstown junction. Both options permanently impact the R132 due to

the station footprint and associated rail track alignment. **These two options were therefore discarded and not considered further.**

- Overall Option 1A does not meet project objectives as it requires demolition of property in the Airside park as well as potentially requiring private property to the west of the R132 to accommodate the R132 realignment. It will affect the operation of the R132 during construction. The horizontal and vertical geometry, although compliant, is not desirable when compared to the geometry for other options. This option is not as well aligned with the Fosterstown Masterplan as the Base case and has moderate environmental impacts. **This option was therefore discarded.**
- Option 2A avoids the demolition of the end of terrace retail warehouse unit which results in it performing well from an environmental viewpoint. From a planning perspective, it is not as well aligned with the Fosterstown Masterplan as the Preliminary design. The horizontal and vertical geometry are compliant, though the horizontal alignment is not desirable when compared to the Preliminary Design (base case) Option. The construction of this option is considered to have a moderate impact on the R132 during the construction phase. **This option is taken forward to the second stage.**
- The Preliminary Design (base case) option performs well under all criteria with the exception of environment as a result of the need to demolish the end of terrace retail warehouse unit. The vertical and horizontal geometry of this option is preferred over Option 2A.. **This option is taken forward to the second stage.**
- Based on the initial multi-criteria analysis, it was concluded that the **Preliminary Design (base case) Option** and **Option 2A** were the emerging preferred options.

### 5.3 Emerging Preferred Option Stage 2 MCA

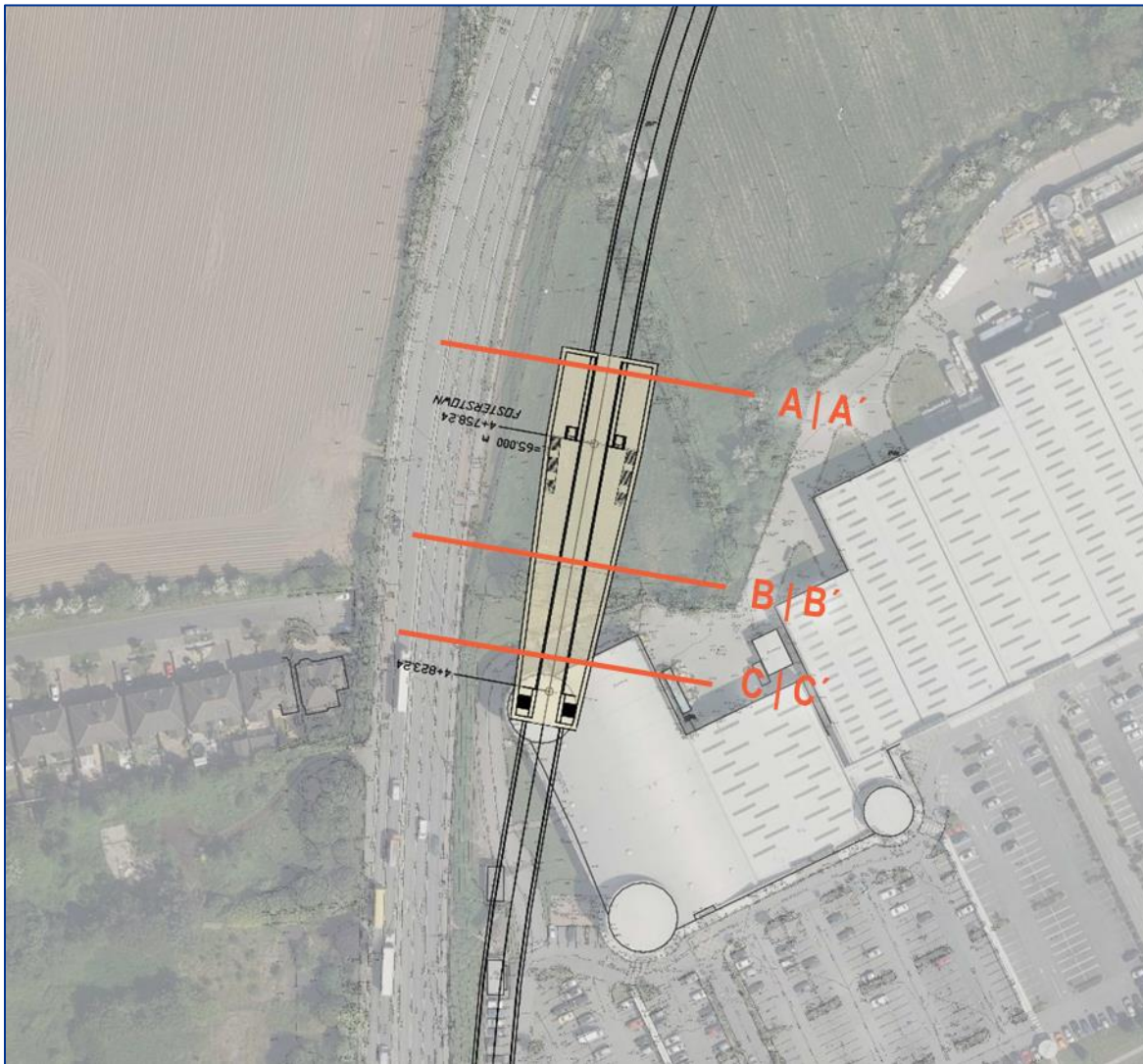
Following the findings of the initial multi-criteria assessment, Option 2A and the Preliminary Design (base case) solution have been developed further and evaluated in order to determine a final recommendation through a second MCA process. Both options have been developed to integrate the TII appointed architect's (Grimshaw Architects), concept for open-cut stations.

The two options selected for consideration as Emerging Preferred Options are presented below, this is followed by the second MCA assessment outputs leading to the final recommendation for Fosterstown Station.

#### 5.3.1 Preliminary Design (base case) Option

The Preliminary Design (base case) is basically unchanged from the proposal presented at public consultation in 2019. The station location, both horizontal and vertical is maintained but the ideas from the TII appointed concept architect have been incorporated such that no sharp turns and blind angles are included in the station design and the canopy has been extended to cover the full length of the platforms.

The plan layout is shown in Figure 5.1 below, which also includes the section marks for the cross sections shown in the following Figure 5.2.



**Figure 5.1 Preliminary Design (base case) Option**

The cross sections at cut lines A-A, B-B, and C-C are shown in Figure 5.2 below, which is followed by the longitudinal section along the track in Figure 5.3. It can be seen that the station offset from the R132 provides the opportunity to create good public realm integration between the station and road.



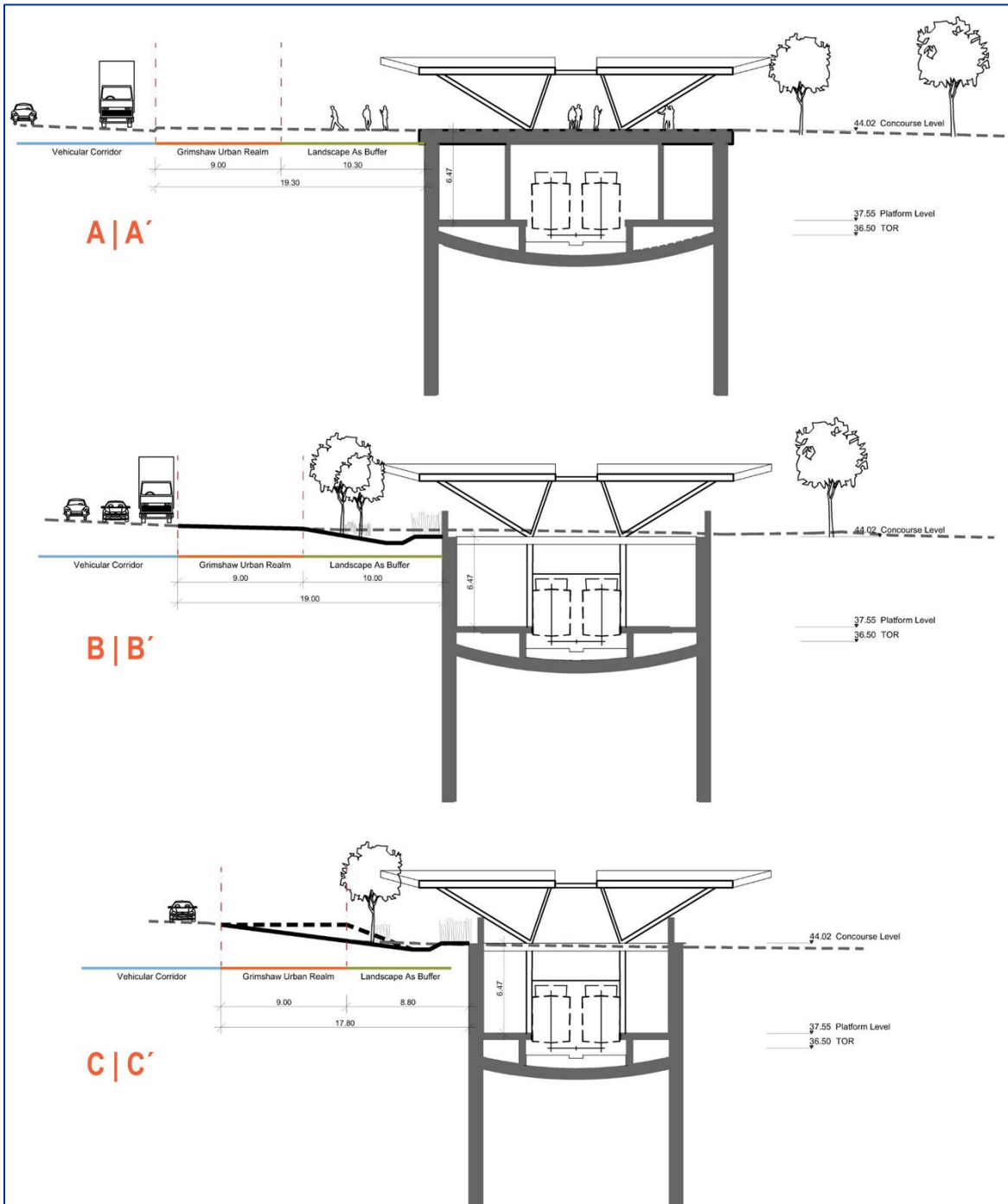


Figure 5.2 Cross Sections for Preliminary Design (base case) Option

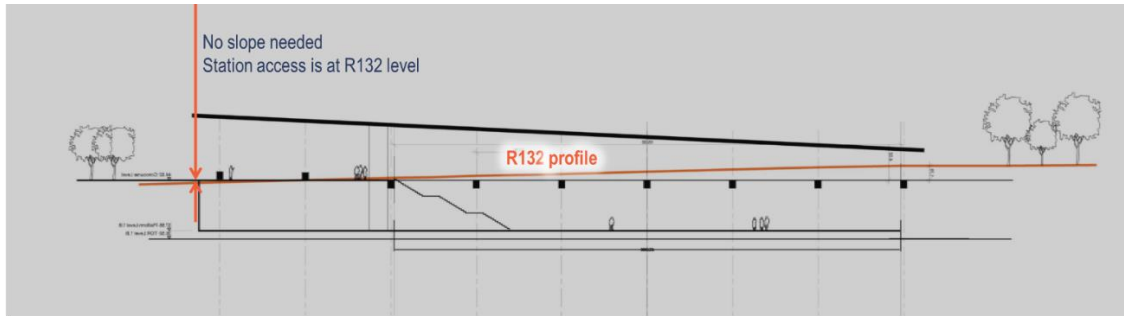


Figure 5.3 Longitudinal Section for Preliminary Design (base case) Option

### 5.3.2 Alternative Option 2A

Option 2A is the situation where the station is relocated to the north of the retail park and the track alignment is moved to the west, partially under the R132 and involving tight curvature for the track re-alignment. As before, the design ideas by TII's appointed concept architect have been integrated into the design, creating platforms with no sharp turns, and completely covered by the canopy. The plan layout is shown in Figure 5.4 below. It can be seen that the revised station location, being aligned much closer to the R132, does not provide the same opportunity to provide appropriate and safe public realm space between the road and station box without a realignment of the R132.



Figure 5.4 Option 2A Plan with Cross Sections

The cross sections at cut lines A-A, B-B, and C-C are shown in Figure 5.5 below, which is followed by the longitudinal section along the track in Figure 5.6.

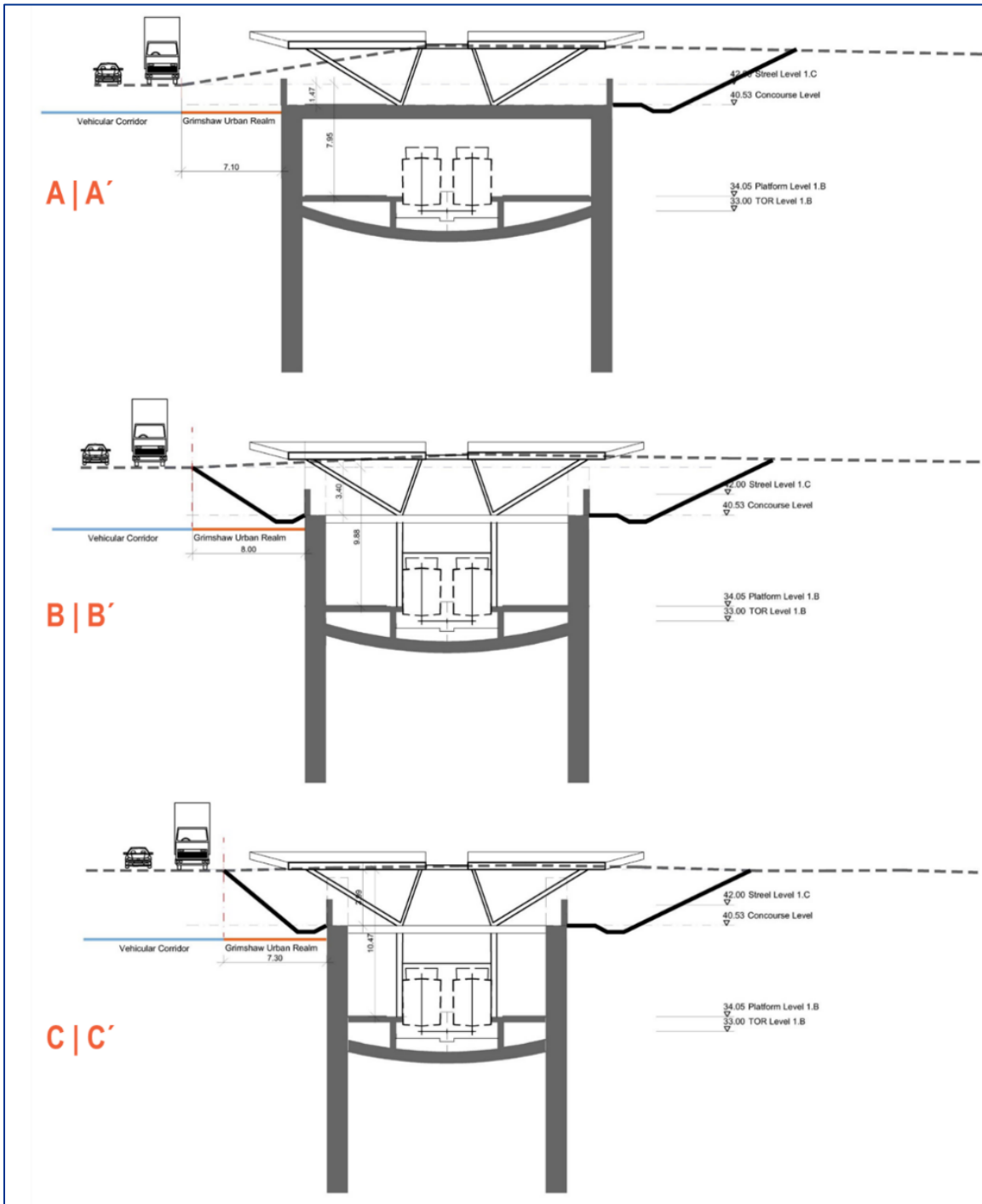


Figure 5.5 Cross Sections for Option 2A

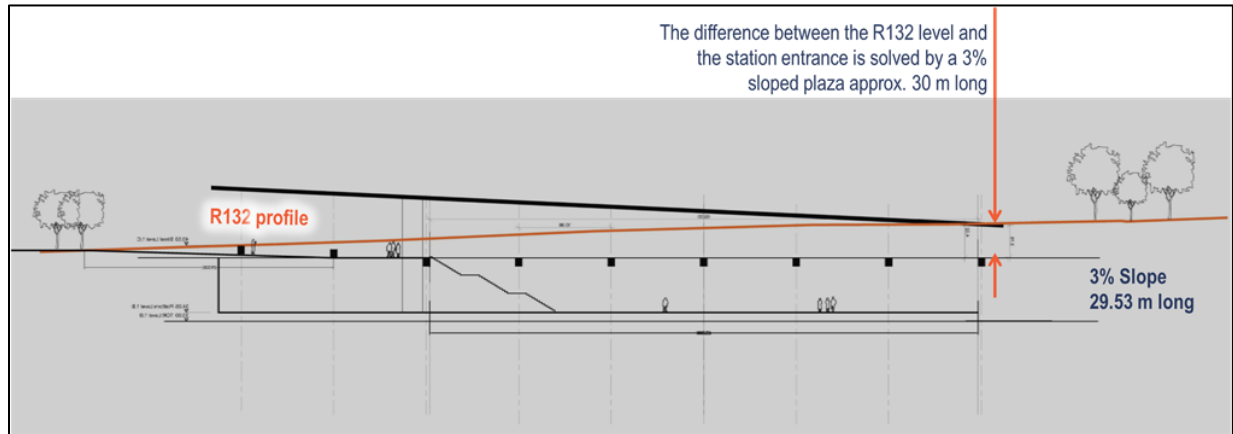


Figure 5.6 Longitudinal Section for Option 2A

### 5.3.3 Urban Realm Criteria Comparison

When evaluating the possibilities of each option for Urban Realm deployment around the station, we can observe that the greater distance between R132 and the station in the Preliminary Design option allows for a much better provision of urban realm and landscape elements that helps integrate the station in the surroundings, as well as providing a safer distance between the road and station.

For Option 2A, the much reduced distance between the R132 and the station, combined with the respective level difference between the station access, the R132 and existing ground level, reduces the possibilities for good urban realm and landscape integration of this option. Although this could be improved by raising the track level at this location, this would increase the approach gradient above desirable levels and the higher station arrangement would still lie close to the R132 with associated restrictions on achieving good urban realm integration.

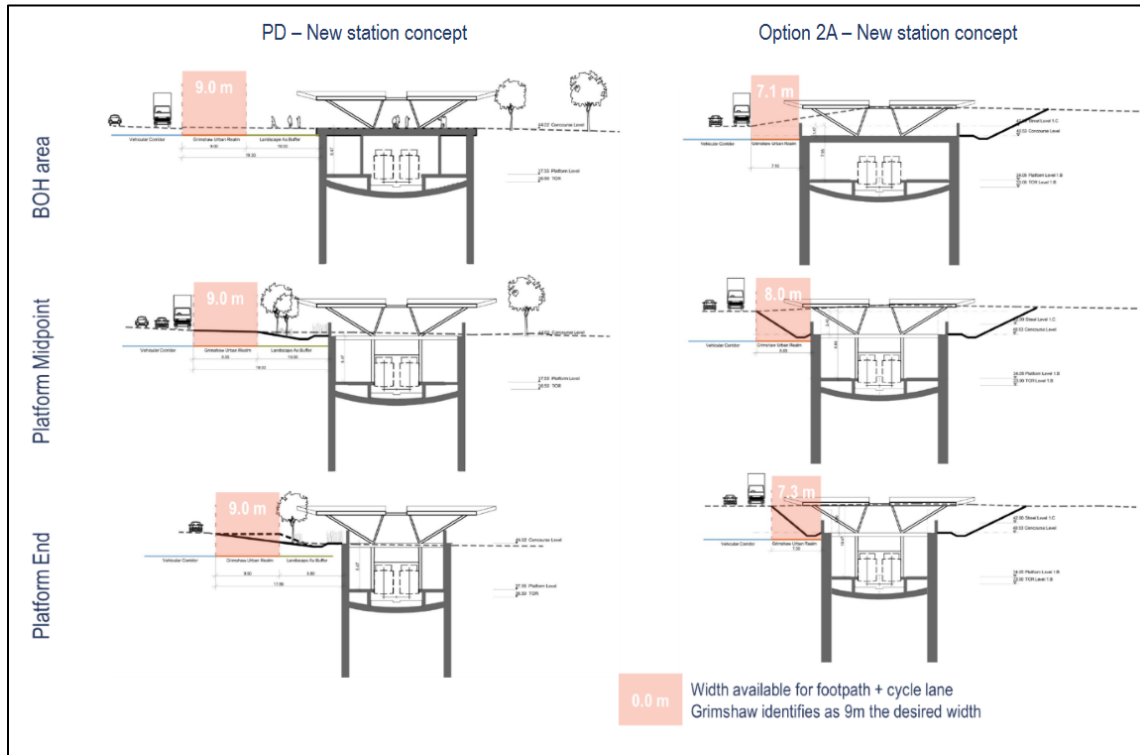


Figure 5.7 Urban Realm Design

### 5.3.4 Constructability Comparison between Base Case and Option 2A

The different construction forms and estimated periods of construction along the route local to Fosterstown Station are shown in Figure 5.8 below. While this is for the Preliminary Design (base case) station location, the form of construction for each side of the station for Option 2A would be similar but with an extended length of cut and cover south of the station where the route passes under the R132, with an associated increase in construction time and disturbance.



**Figure 5.8 Construction Forms**

The land available as a transport corridor for the construction of a new metro line and the retention of the R132 road is constrained by the Airside Retail Park end of terrace unit and the residential buildings on the west side of the R132 at Boraimhe Willows. There is approx. 40m from the Airside structure to the residential building at the narrowest point.

To avoid demolition of the Airside retail park unit and avoid building MetroLink under the R132 would require realignment of the existing road within this available width. Given that the existing road width is approximately 20m at this location, including footway, there would only be approx. 20m remaining to fit in the MetroLink corridor. In this case the R132 would need to be realigned westwards, however, the adjacent residential property would lose all its side and part of its back garden; the access route for servicing the Airside commercial units could not be maintained; and the R132 would require both significant temporary traffic management and permanent disruptive realignment. With this understanding, we do not consider this option to be feasible.

Due to the width restrictions at this point as described above, Option 2A would require the MetroLink corridor past the Airside unit to be constructed as a cut and cover section passing under the R132 road corridor. The R132 would be subject to temporary width restrictions/traffic management during these construction works, with the road subsequently reinstated on its current alignment above the cut and cover section.

Given the above constraints the following key impacts and implications of a design change from the Preliminary Design (base case) to alternative Option 2A can be summarised as follows;

- Horizontal alignment – route alignment moved slightly to the west, closer to the R132, from Seatown Station to Nevinstown Lane
- Vertical alignment – no major change except for variation on north approach to Fosterstown Station
- Existing utilities – greater impact where the R132 requires temporary realignment during construction

- Construction sequencing – significant impacts due to encroachment into R132 requiring temporary suspension of traffic/bus lanes, and diversion of R132. Due to the revised track alignment, there would need to be temporary traffic management and realignment works on the R132 from north of the revised station location to the Nevinstown Lane junction, for an estimated period of approximately 5 years, compared to limited traffic management required for just the Nevinstown Lane junction works for the Preliminary Design.
- Cost estimate – additional construction costs associated with additional cut and cover length and associated changed ventilation requirements, more extensive traffic management requirements; offset by a saving in property costs due to retention of the Airside end of terrace building,
- Programme – Option 2A is estimated to add around 5 months to the overall construction programme over this revised length (see Appendix B). However, the additional temporary traffic management works along the R132 will be in place for up to a further 5 years compared to the Preliminary Design to accommodate construction sequencing, utilities diversions and R132 realignment changes.
- Environmental – consequential impacts such as noise and additional temporary traffic impacts due to alternative construction sequencing
- Risk items – Construction of MetroLink substation utilities, temporary traffic management delays and risk (between Ch. 4+666 to Ch. 5+035) *[NB Substation location assumed to be relocated to the east of Fosterstown Station, cover to cut and cover roof (new design)]*
- Safety – More significant traffic management requirements with increased risk to road users due to constrained traffic lanes. Increased construction activities/temporary works associated with extended length of cut and cover under the R132 also add to construction risks.

Outlined below are the main areas where the alternative Option 2A has significant differences to the Preliminary Design (base case);

**a) Impacts on third parties**

The proposed realignment and associated works are still in close proximity to the existing Retail Park building so costs associated with structural survey, vibration and settlement monitoring would be required, including for the deep excavation of the MetroLink plant room assumed to be relocated to the east of the MetroLink route. The existing access road linking the car park with the delivery area to the west of retail park building would have to be temporary closed during construction. The temporary realignment of the R132 as part of the traffic management works would impact on the properties at the end of Boromhe Willows.

**b) Construction compounds**

There would be no significant change or impact on location of base case requirements, which means that the construction compound would still require the use of part of the existing Airside car park. The construction site for the station in Option 2A could be moved further north into the existing agricultural fields but space in the car park would still be required for the cut and cover tunnel works towards and beneath Nevinstown Lane. Space in the car park would be required on a more temporary basis for traffic diversions while the work to cross under Nevinstown Lane is being progressed.

### c) Building Impacts

Partial demolition of the existing Retail Park end of terrace retail unit is not required for Option 2A although careful planning and design would be required to enable the desirable width for the access and haul road to be provided between the retained cut and the corner of the building during construction.

The situation is illustrated in Figure 5.9 below, which indicates that while the track alignment avoids the need to demolish the building, the available space would not permit the desirable haul road width to be provided. This will be a localised restriction and pinch point on site movements, including the through movement of site vehicles during piling works which would require management on site to ensure the safety of workers and the building structure.

The location of the Fosterstown Traction Substation can be adjusted as necessary to suit the preferred option for the station.

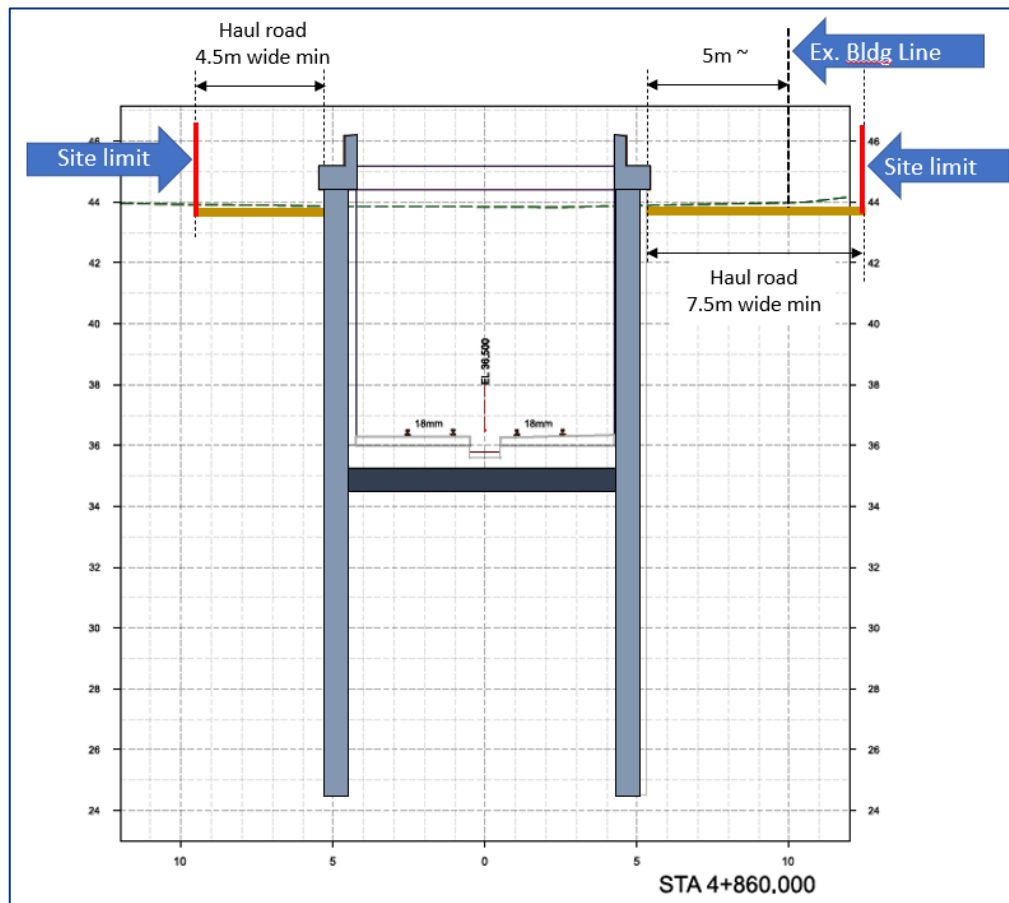


Figure 5.9 Fosterstown realignment / building interface

### d) Utilities

There are three major utilities along the R132 that would require to be diverted as a result of a realignment change from the base case to Option 2A. These are the diversion / protection of an existing



300mm surface water sewer, a 6” watermain, and a 250mm medium pressure gas main, that run between approximately Ch. 4+666 and Ch. 5+035.

In the base case the proposed service diversions associated with the relocation of the two existing MV substations serving the Airside complex and which are in the path of the cut and cover tunnel, are routed from the junction at Nevinstown Lane and along the R132. For Option 2A, the two MV substations still need to be relocated but the diversions would be more likely to be via the existing car park, so the costs associated with these works effectively remain unchanged.

The additional utility diversions for Option 2A compared to the base case would cause additional adverse impact to the R132 carriageway and require the introduction of an additional traffic management phase on the R132 with associated programme and cost implications.

**e) Temporary Traffic Management (TTM)**

Additional TTM would be required for Option 2A compared to the base case for two elements of works, namely, the additional utilities diversions as discussed above and the significant works associated with the temporary diversion and reinstatement of the R132 for the cut and cover tunnel construction under the R132 and for works to accommodate the station location north of Airside, as indicated in Figure 5.10 below. TTM on the R132 is estimated to be required for up to 5 years to accommodate the Option 2A construction activities.

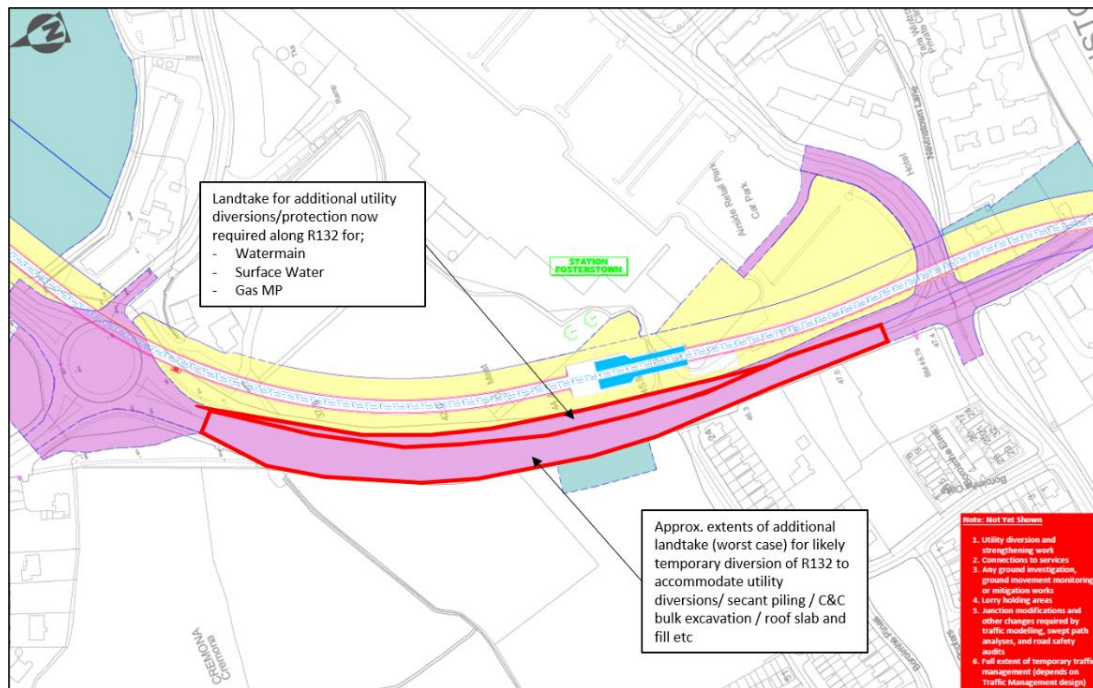


Figure 5.10 Additional Land take requirements

**f) Piling and Cut and Cover Tunnel Construction**

The MetroLink alignment for Option 2A would encroach into the R132 by an average of around 3.5m over a distance of approximately 140m, between Ch. 4+820 to Ch. 4+960, which allowing for construction working space would locally utilise all of the southbound carriageway during construction. We anticipate severe impacts on R132 road users would be caused during construction of this length

of MetroLink and the additional utility diversions is a further change of scope with associated additional cost.

In addition, the Option 2A realignment would significantly impact the design and associated costs as construction would be more complicated as it is being constructed partially in and under the R132. This would require the design to be modified to accommodate either a full or partially roofed cut and cover structure incorporating traffic collision barriers along the west side of the railway if full cut and cover was not provided directly adjacent to the R132.

A summary of the additional material changes and scope associated with these works for Option 2A are:

- Temporary traffic management (TTM) scheme over a distance of approx. 400m. Diversion of the R132 would as a minimum require 2 x 3.3m lanes contraflow (though additional lanes would reduce delays to road users), which may be feasible with speed restrictions and likely reconfiguration of the existing signalized junction at Nevinstown Lane. Some restricted access would be required as a result;
- The current width of the required construction site limits for the retained cut is approx. 22m wide. This would likely increase to 28m to accommodate the change in construction methodology from retained cut to cut and cover;
- Temporary works e.g., 4m long x sheet piles would be required to both sides of the tunnel works to retain the ground at ground level to allow the cutting down of piles, bulk excavation and construction of the roof slab, from Ch. 4+699 to Ch. 4+998;
- Additional earthworks required and additional construction works including roof slab for cut and cover lengths and additional ventilation fans incorporated for the extended tunnel length.

### 5.3.5 Economic Criteria

Under this criterion the comparative costs of the Preliminary Design (base case) Option and the alternative Option 2A were assessed for Construction and Property cost changes:

- **Construction Costs:** Option 2A requires a longer length of cut and cover when compared to the Preliminary Design Option, adding to the construction cost but avoiding the property acquisition cost.
- **Property Costs:** The Preliminary Design Option would involve compensation for at least part demolition of the end of terrace retail warehouse unit but most likely requiring the end of terrace retail unit to be removed in full, with associated demolition costs, land compensation and other compensatory claims from both the landlord and tenants. This cost would not be incurred with Option 2A

The comparison of these specific additional option costs for the Preliminary Design (base case) Option and Option 2A has indicated that they are broadly cost neutral. As these figures are commercially sensitive, they are not provided in this report.

We note that if the end of terrace retail warehouse unit were to be removed, there could be potential for reconstruction of a replacement unit in a similar location. This may also offer the potential for development of higher density, consistent with a location in close proximity to a metro station (subject to compliance with Fingal County Council planning policy), land availability and planning consents.

## 5.4 Stage 2 MCA Assessment

Examination of the two selected emerging preferred options under the discussed criteria leads to the MCA assessment outputs as presented in Table 5.2 with the scoring system shown in Table 5.3 below.

**NOTE:** A parallel MCA assessment was carried out on the environmental impact for all options including the Emerging Preferred Options. It was found that both options had similar scoring and it is considered that station option selection should be based on engineering, economic and station operational considerations.

Table 5.2 Overall Stage 2 MCA Summary Table

STAGE 2 MCA	Option PDR (Base)	Option 2A
Alignment		
Demolition of Buildings		
Masterplan compliance		
Road/Traffic Impacts		
Environment and planning		
Urban realm Integration		
Economy / Costs		
Result	Preferred Option	

Table 5.3 Stage 2 MCA Scoring Table

Assessment Score for Individual Assessment Criteria	Significance Advantages/Disadvantages
	Significant advantages over other options
	Some advantages over other options
	Comparable to other options
	Some disadvantages over other options
	Significant disadvantages over other options

## 6. Conclusions and Recommendations

The MetroLink alignment as it passes by the end of terrace retail unit at the Airside retail park and the location of the associated Fosterstown Station is constrained by the Airside buildings and the adjacent R132 road corridor. The Preferred Route published and consulted on in Spring 2019 proposed an alignment that minimised impact on the adjacent R132 but required demolition of the end of terrace retail warehouse unit, forming part of Airside Retail Park, currently occupied by a combination of Smyths Toys Superstore and Starbucks Coffee. Through ongoing design development, this Preferred Route has been developed further to form part of the proposed Preliminary Design.

As part of this design development, Jacobs/Idom has considered other station location and alignment options at this location to determine whether other feasible options (in terms of station location and alignment) could be adopted that would mitigate the impact on the Retail Park and in particular identify design solutions that would avoid demolition of the end of terrace retail warehouse unit. In each case, the station stop location is moved either north or south of the present location that coincides with the end of terrace retail unit, with the associated track alignment moved west. Options considered consisted of:

- Preliminary Design (base case) Option – Rail alignment to east of the R132 and Fosterstown station on Retail Park site
- Alternative Option 1A - Station moved to the **north**. Minor displacement of the track alignment to west but avoiding permanent impact on the R132 alignment
- Alternative Option 1B - Station moved to the **south**. Minor displacement of the track alignment to west but avoiding impact on the R132.
- Alternative Option 2A – The station is moved to the north. MetroLink alignment moved west to avoid Airside Buildings and runs under the R132 over a length of approx. 140m.
- Alternative Option 2B - The station is moved to the **south**. MetroLink alignment moved west to avoid Airside Buildings and runs under the R132 over a length of approx. 140m .

All options were subjected to an initial MCA to provide an Initial appraisal of these options. From this assessment the two best performing options – the Preliminary Design option and Option 2A were subject to more detailed comparison.

The more detailed MCA comparison indicated that Option 2A – avoiding the Airside building – although considered cost neutral compared to the Preliminary Design, had significant disadvantages compared to the proposed Preliminary Design option. It would have more extensive construction impacts, including additional utility diversion requirements; significant impact on the R132 traffic and other road users over an extended length of the R132 and with an approximate 5-year construction period; a poor urban integration of the station adjacent to the R132; and the introduction of a poor horizontal track alignment which would constrain the operational speed of trains in this area.

On this basis, we have concluded that the best available option for the MetroLink alignment and the Fosterstown station location past Airside is that now adopted for the Preliminary Design, and which will form part of the Railway Order documentation.

## Appendix A. Alignment Drawings and Parameters

The following information is provided.

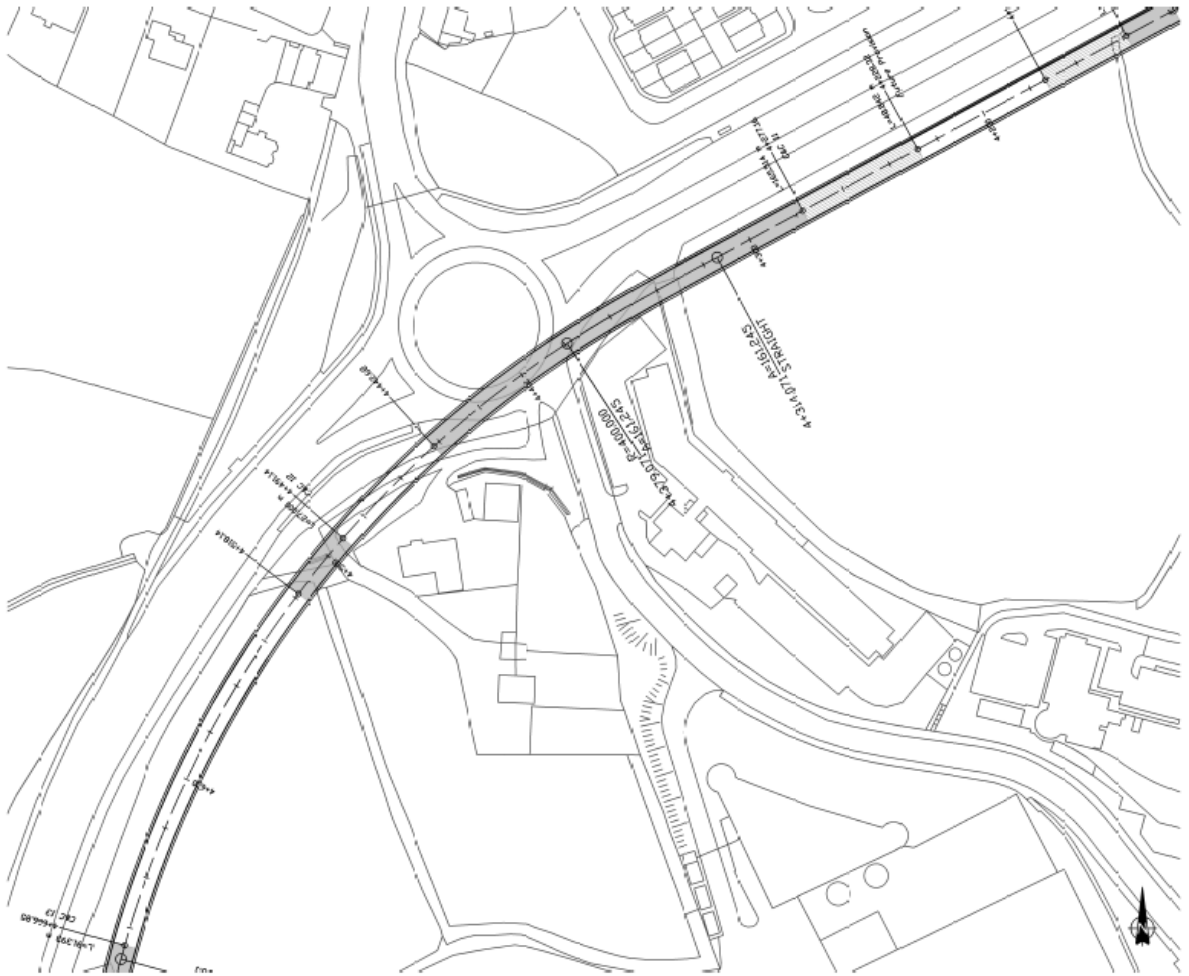
Preliminary Design Alignment: see following drawings (extract from [ML1-JAI-RTA-ROUT\\_XX-DR-Y-03031](#))

Fosterstown Option 2A Alignment: see following drawings

Alignment Parameter Verifications – Preliminary Design & Option 2A: see [ML1-JAI-RTA-ROUT\\_XX-SH-Y-00004](#)

**Fosterstown Preliminary Design Alignment**

Sheet 1 of 3



Sheet 2 of 3



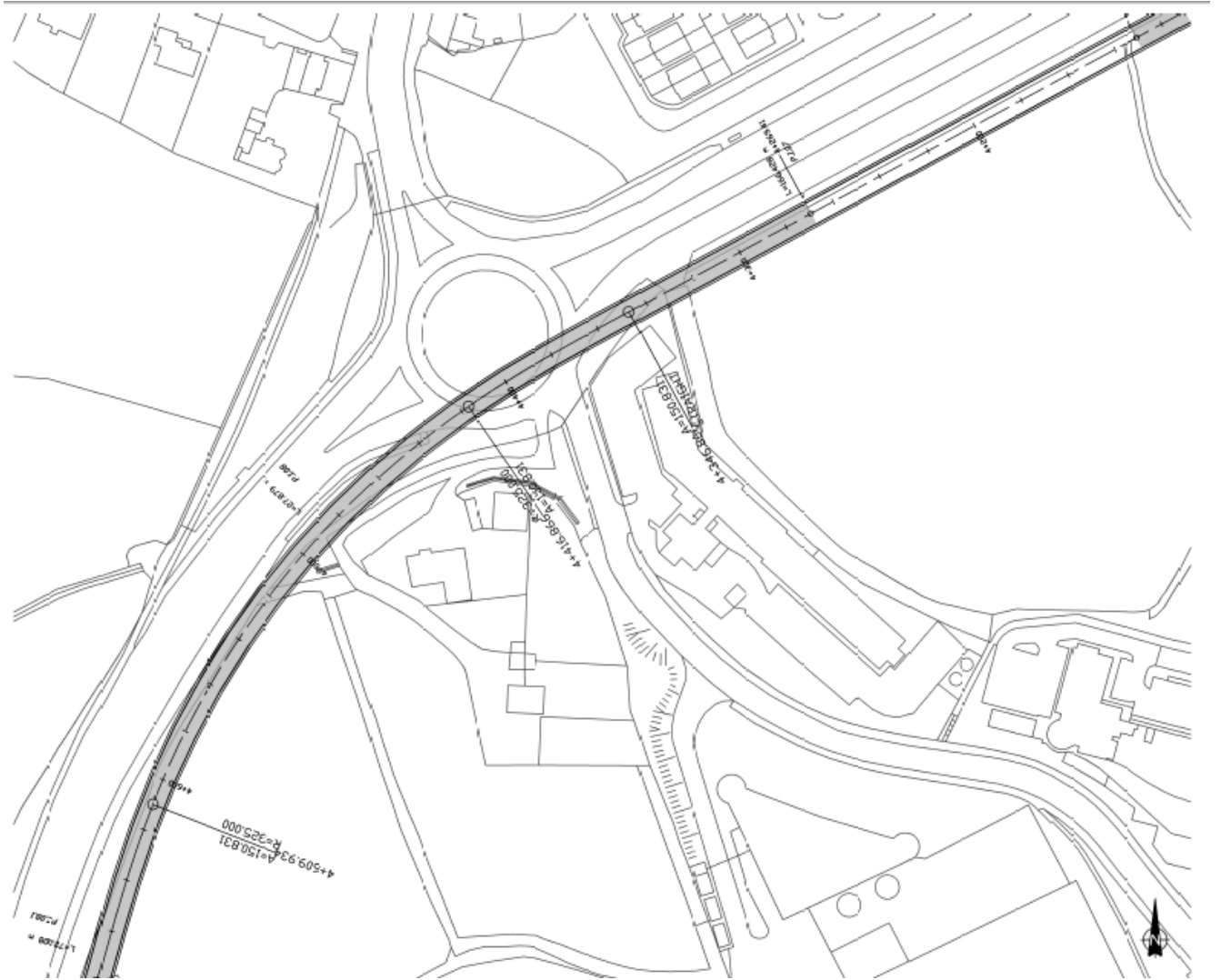
Sheet 3 of 3





**Fosterstown Option 2A Alignment**

Sheet 1 of 3



Sheet 2 of 3



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## Appendix B. Comparative construction programmes Preliminary Design vs Option 2A

Fosterstown Station to Nevinstown Lane Construction Activities	Year	Year 1												Year 2												Year 3												Year 4												Year 5											
		Months	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12						
<b>Preliminary Design (EIAR Construction Programme)</b>		Station South	Nevinstown Lane																																																										
	Months	CH4830	CH5030																																																										
"Notice to Treat"	0		█																																																										
Enabling Works	19		█																																																										
Utility Diversions	3		█																																																										
Utility Diversions Nevinstown Lane	3		█																																																										
Demolition of Smyths Toy Store	4		█																																																										
Site Clearance/Prep	9		█																																																										
Site Clearance/Prep: Nevinstown Lane	12		█																																																										
<b>Main Works</b>																																																													
Cut and cover before Station	26	CH4666	CH4736																																																										
Forstertown Station Construction to Platform Level	29	CH4737	CH4832																																																										
Cut and Cover	20	CH4832	CH4892																																																										
Retained Cut	30	CH4892	CH4993																																																										
Cut and Cover: Nevinstown Lane	22	CH4993	CH5030																																																										
<b>Option 2A (Assessment)</b>		CH4679	CH5030																																																										
"Notice to Treat"	0		█																																																										
Enabling Works	19		█																																																										
Utility Diversions: N & S C/Way	4	CH4600	CH5030																																																										
R132 Temp Realignment	4	CH4600	CH5030																																																										
Utility Diversions Nevinstown Lane	3		█																																																										
Site Clearance	4		█																																																										
Site Clearance/Prep: Nevinstown Lane	12		█																																																										
Cut and cover before Station (assumed*)	28	CH4600*	CH4679																																																										
Forstertown Station Construction to Platform Level	31	CH4679	CH4774																																																										
Cut and Cover To Nevinstown Lane: Stage 1	22	CH4774	CH4834																																																										
Cut and Cover To Nevinstown Lane: Stage 2	21	CH4834	CH4892																																																										
Cut and Cover To Nevinstown Lane: Stage 3	38	CH4892	CH4993																																																										
Cut and Cover To Nevinstown Lane: Stage 4	24	CH4993	CH5030																																																										
Utility Diversion Reinstated on R132	3	CH4600	CH5030																																																										
Realign R132 & Reinststate	4	CH4600	CH5030																																																										
<b>Disruption To R132</b>	53		█																																																										

**Notes:**

**A: Additional Cut & Cover plus one month additional time to install sheet piles to retain road and later to remove prior to backfill.**