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Wicklow County Council

N11/M11 Bus Priority Interim Scheme

Phase 2 - Long-list Option Sifting (Sub-Scheme B, Junction 6 to Junction 7)

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1. Introduction

This report details the Long-list Option Sifting Assessment for the N11/M11 Bus Priority Interim Scheme (hereafter the N11/M11 BPIS). As described in Section 8.3 of the Option Selection Report, the long-list assessment represents the first step in the revised Stage 2 Assessment process. It comprises the development of a long list of options aimed at resolving the previously identified deficiencies within Sub-Schemes B and C, and the undertaking of a sifting exercise to establish how these options respond to the agreed project objectives. The recommendations of the option sifting exercise inform the list of feasible options to be taken forward for more detailed assessment.

This report specifically focuses on the section of Sub-Scheme B between Junction 6 (Bray/Fassaroe) and Junction 7 (Bray South), with a view to:

- Identifying feasible options for closing intermediate junctions/accesses
- Identifying feasible options for providing active travel facilities.

The overall process for completing the Stage 2 Project Appraisal Matrix is illustrated in Figure 1-1.



Figure 1-1 Stage 2 Project Appraisal Process

2. Option Sifting Methodology

2.1 Overview

A sifting exercise has been undertaken on the long list of options to assess how each option responded to the project objectives and to refine, if possible, the overall number of options taken forward for more detailed appraisal. In accordance with the TII Project Appraisal Guidelines and the Department of Transport Common Appraisal Framework (CAF)[1], objectives have been established under the six headline CAF criteria of:

- Economy
- Safety
- Environment
- Accessibility and Social Inclusion
- Integration
- Physical Activity.

The objectives defined at the outset of the N11/M11 BPIS are presented in Table 2-1 and are intended to allow a focused definition of options which can be examined both quantitatively and qualitatively against a series of required outcomes.

Table 2-1 N11/M11 BPIS Project Objectives

Criteria	Project Specific Objective
Economy	**Economy Objective 1:** • Provide the infrastructure to increase the people carrying capacity of the N11/M11 between Loughlinstown Roundabout and Junction 9 (Glenview) **Economy Objective 2:** • Deliver a practicable interim transport solution capable of delivering benefits required in the short/medium term **Economy Objective 3:** • Generate positive economic benefits to public transport users by: • Reducing bus journey times • Improving bus journey time reliability
Safety	**Safety Objective 1:** • To deliver bus priority measures which are clearly delineated and understood by general road users and bus drivers in the environment of an inter-urban route. **Safety Objective 2:** • Ensure bus priority can be delivered without adversely impacting on the safety of all road users.
Environment	**Environment Objective 1:** • To provide for more sustainable transport solutions on the N11/M11 corridor, supporting a balance of alternative modes and enabling a reduction in private car dependency and reducing the carbon intensity of travel.
Accessibility and Social Inclusion	**Accessibility & Social Inclusion Objective 1:** • To increase bus patronage along the N11/M11 corridor and enable sustainable travel to provide a faster and more reliable choice. **Accessibility & Social Inclusion Objective 2:** • To support improved access to the GDA for all transport users along the N11/M11 corridor.

[1] Department of Transport Common Appraisal Framework (CAF) for Transport Projects and Programmes (October 2020). It is noted that the Transport Appraisal Framework (TAF) was published by the Department of Transport in June 2023 and replaces the CAF. The requirements of the revised TAF guidance will be applied as the N11/M11 BPIS Project moves to the next phases (i.e. Phase 3 and subsequent phases).

Criteria	Project Specific Objective
Integration	**Integration Objective 1:** • To deliver a practicable interim transport solution which does not introduce significant constraint on the subsequent development of the N11/M11 Junction 4 to Junction 14 Improvement scheme. **Integration Objective 2:** • To support integration of road-based transport with other transport modes. **Integration Objective 3:** • To complement wider government transport policy.
Physical Activity	**Physical Activity Objective:** • To provide a facility that allows for the delivery of an attractive alternative mode of transport for communities which supports the creation of a healthier urban environment for active travel, through congestion relief.

In addition to the six headline CAF criteria, *Indicative Cost* has been extracted from the Economy criterion and assessed as a separate standalone criterion, resulting in a total of seven assessment criteria. To assess the respective merits of each option, a series of Key Performance Indicators (KPIs) have been defined as a measure for judging the alignment of options with the project objectives. Each option has then been qualitatively assessed, with an impact score determined based on the likely impact against each KPI, using the seven-point scale presented below.

- 7 – Major or highly positive
- 6 – Moderately positive
- 5 – Minor or slightly positive
- 4 – Not significant or neutral
- 3 – Minor or slightly negative
- 2 – Moderately negative
- 1 – Major or highly negative.

2.2 Weighting of Assessment Criteria

In developing the long-list sifting matrix, consideration has been given as to how each of the seven criteria should be weighted, to ensure that the individual impacts of each option have been robustly and appropriately assessed relative to each other.

The seven criteria each have varying numbers of KPIs as listed in Table 2-2. Accordingly, a summation of the impact scores will assign a weighting proportionate to the number of KPIs under each heading.

This approach recognises that, as a largely on-line scheme assessment, direct environmental impacts are expected to be similar in nature across all options and relatively minor in scale when compared against an off-line (i.e. greenfield) options assessment. By comparison, the safety conditions and cost are expected to vary significantly, so it is considered that these elements should be afforded a higher weighting in the final matrix.

Therefore, the seven criteria have been weighted as follows:

- For each option, the scores against each KPI (ranging from 1 – 7) have been summed to produce a total impact score under each of the seven assessment criteria.
- The total impact score has then been converted to a weighted score under each of the seven assessment criteria.
- The weighted scores are derived as follows:

- Equal weighting has been applied to the Economy, Environment, Accessibility & Social Inclusion, Integration and Physical Activity criteria. In each case, the impact score is converted to a weighted score based on marks out of 100.
- An increased weighting has been applied to the Cost and Safety criteria, which are considered to be key differentiators and critical elements to the successful delivery of bus priority within Sub-Scheme B and Sub-Scheme C. In each case, the impact score is converted to a weighted score based on marks out of 200.

- The weighted scores under each of the seven criteria are summed to produce an overall total score for each option on the long list (expressed as marks out of 900 – i.e. 200 for Cost and Safety and 100 for each of the remaining five criteria).

Table 2-2 Project Objectives and Key Performance Indicators (KPIs)

Criteria	Project Objective	Key Performance Indicator (KPI)
Economy (Weighted Max. Score = 100)	• To increase the people carrying capacity of the N11/M11 between Loughlinstown Roundabout and Junction 9 (Glenview) • Deliver an interim transport solution capable of delivering value for money • Generate positive economic benefits to public transport users by: – Reducing bus journey times – Improving bus journey time reliability	**Constructability:** • Extent of enabling/corrective works to deliver effective bus priority • Extent of demolition/disruption during construction • Extent of potential realignment of existing N11/M11 mainline **Bus Priority:** • Effectiveness of bus priority measures at key delay points
Cost (Weighted Max. Score = 200)	N/A (Cost has been assessed as a separate criterion)	Indicative Cost Range
Safety (Weighted Max. Score = 200)	• To deliver bus priority measures which are clearly delineated and understood by general road users and bus drivers in the environment of an inter-urban route. • Ensure bus priority can be delivered without adversely impacting on the safety of all road users.	**Compliance with TII Standard DN-GEO-03087:** • Junction strategy (merge/diverge closed) • Number of minor junctions closed • Requirement for departures • Number of conflict points • Extent of continuous bus priority achieved
Environment (Weighted Max. Score = 100)	To provide for more sustainable transport solutions on the N11/M11 corridor, supporting a balance of alternative modes and enabling a reduction in private car dependency and reducing the carbon intensity of travel.	Circular Economy impact – degree of re-use of existing asset Impacts to community Impact on environmental constraints
Accessibility & Social Inclusion (Weighted Max. Score = 100)	• To increase bus patronage along the N11/M11 corridor and enable sustainable travel to provide a faster and more reliable choice. • To support improved access to the GDA for public transport users along the N11/M11 corridor.	**Bus Priority:** • Effectiveness of bus priority measures at key delay points
Integration (Weighted Max. Score = 100)	• To deliver a practicable interim transport solution which does not introduce significant constraint on the subsequent development of the N11/M11 Junction 4 to Junction 14 Improvement Scheme. • To support the integration of road-based transport with other transport modes. • To complement wider government transport policy.	**Compatibility with N11/M11 Scheme:** • Extent that the form of option aligns with the N11/M11 J4-J14 Scheme Phase 2 Preferred Option • Extent of abortive works **Compliance with Government Policy**

Criteria	Project Objective	Key Performance Indicator (KPI)
Physical Activity (Weighted Max. Score = 100)	• To provide a facility that allows for the delivery of an attractive alternative mode of transport for communities which supports the creation of a healthier urban environment for active travel, through congestion relief.	**Active Travel Facility** • Provision of a safe alternative facility • Conflicts between active travel users and buses.

3. Initial List of Options

Numerous options have been considered which seek to remove the conflict points at intermediate junctions and accesses and provide active travel facilities within Sub-Schemes B and C. The development of options has taken guidance from TII Publication DN-GEO-03087[2], which specifically notes the following in respect of minor junctions and accesses:

"In order to reduce conflict points and assist vehicles in navigating junctions, compact grade separated and left-in left-out junctions should be upgraded to have full merge and diverge layouts. Where space does not permit this, design organisations should carefully consider how the design will minimise the risk of vehicle conflict. Design organisations should review what measures can be implemented to improve the safety of the existing junction and its interaction with the scheme.".

"In line with the guidelines set out in DN-GEO-03060[3], the overriding principle is that direct vehicular access onto national roads should be avoided as far as practicable. Hard shoulder bus priority schemes should not contain direct accesses as per DN-GEO-03060. Where a hard shoulder bus priority measures scheme is being undertaken on a Type 1 Dual Carriageway all existing accesses should be closed. Where it is not possible to remove a direct access, a departure is required as set out in DN-GEO-03060."

While the primary basis behind options development is to identify ways of closing existing minor junctions and accesses northbound and southbound within Sub-Schemes B and C – as required by TII Standard DN-GEO-03087 – the challenges involved in doing so have meant that the following approach has been taken:

- The closure of many of the legacy accesses along the N11 dual carriageway poses very specific and difficult challenges in terms of engineering feasibility, environmental impact, and cost.
- Although the retention of any minor junction or direct access would require a departure, a pragmatic view has been taken in line with the objectives of the scheme, which does not seek to close each access at all costs or impact. It may, in certain cases, be preferable to retain an access and seek a departure from DN-GEO-03087.
- It is acknowledged that the presence of certain minor junctions/accesses poses a greater impediment to the safe operation of bus priority than others. For example, some accesses are more geometrically sub-standard than others, such that it would not be acceptable to retain the access along the hard shoulder bus priority measure under any circumstance. In other cases, it may be possible to retain an existing access and mitigate or manage any safety implications to an acceptable level.

[2] Hard Shoulder Bus Priority on Motorways and Type 1 Dual Carriageway, DN-GEO-03087, TII (May 2022). Available from: https://www.tiipublications.ie/library/DN-GEO-03087-01.pdf.

[3] Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated and compact grade separated junctions), DN-GEO-03060, TII (May 2023). Available from: https://www.tiipublications.ie/library/DN-GEO-03060-03.pdf.

- Furthermore, the degree to which each minor junction or accesses is likely to impede bus journey time is also variable. Highly trafficked accesses with greater turning movements will result in higher weaving volumes into the hard shoulder, frequently slowing the progress of the bus through the network. Conversely, lightly trafficked accesses may impede bus priority only very occasionally.
- Options have therefore been developed which close all accesses, or only close certain accesses within Sub-Schemes B and C. The aim of the analysis is to determine the optimal junction strategy in consideration of the specific objectives of the scheme.

3.1 Existing Junctions and Accesses

For the purposes of undertaking the assessment, all existing intermediate junctions and direct accesses between Junction 6 (Bray/Fassaroe) and Junction 7 (Bray South) have been considered. In addition, the assessment has also considered the possible interventions at the primary junction access points, as these also represent a point of potential conflict and delay for bus traffic. This ensures that the assessment considers the overall impacts on bus priority across the full extent of the N11 route segment in question (i.e. Junction 6 to Junction 7 in this case). Accordingly, the full list of junctions and access points considered within this assessment is presented in Table 3-1 for the southbound direction and Table 3-2 for the northbound direction.

Table 3-1 Existing Junctions / Accesses Southbound

Junction / Access Description	Existing Junction / Access Image
Name: Junction 6 Southbound Merge **Location:** Sub-Scheme B Southbound **Type:** Grade separated junction	
Name: Access to Silverbridge Halting Site **Location:** Sub-Scheme B Southbound **Type:** Left in – left out junction	

Junction / Access Description	Existing Junction / Access Image
Name: Dargle Lane L152 **Location:** Sub-Scheme B Southbound **Type:** Left in – left out junction	
Name: Herbert Road L1956 **Location:** Sub-Scheme B Southbound **Type:** Left in – left out junction	
Name: Private Access (Residential) **Location:** Sub-Scheme B Southbound **Type:** Direct access	
Name: Junction 7 Southbound Merge **Location:** Sub-Scheme B Southbound **Type:** Grade separated junction	

Table 3-2 Existing Junctions / Accesses Northbound

Junction / Access Description	Existing Junction / Access Image
Name: Junction 7 Northbound Merge **Location:** Sub-Scheme B Northbound **Type:** Grade separated junction	
Name: Private Access (Dublin Oak Academy) **Location:** Sub-Scheme B Northbound **Type:** Direct access	
Name: Junction 6a (R117 Enniskerry) **Location:** Sub-Scheme B Northbound **Type:** Left in – left out junction	
Name: Junction 6 Northbound Diverge **Location:** Sub-Scheme B Northbound **Type:** Grade separated junction	

3.2 Baseline Assumptions

It should be noted that the following baseline assumptions have been applied for the purposes of the long-list sifting exercise:

- The N11/M11 mainline cross-section is assumed to consist of 2 general traffic lanes and a hard shoulder bus priority measure as per the requirements outlined within DN-GEO-03087. For appropriate comparison of options, the sifting exercise has assessed the impacts and cost of the additional infrastructure associated with the option – i.e. the mainline cross-section has not been assessed or costed as part of the scoring and assessment of options.
- High level cost estimates developed for the purposes of the long-list sifting exercise are preliminary in nature and subject to change.
- At the time of undertaking the long list option assessment, microsimulation traffic modelling was not available. Considering this, only qualitative assessments of the options have been prepared for this stage.

For all southbound options:

- Where the Junction 6 southbound merge remains open, it is assumed that the Through Junction Running (TJR) with Parallel Merge treatment is provided.
- Where the Junction 7 southbound diverge remains open, it is assumed that the TJR Fork Diverge treatment is provided.
- A segregated Active Travel (AT) facility has been provided as part of all southbound options. It was determined that the AT facility was preferred on the eastern side of the N11 due to improved connectivity with adjacent planned Wicklow County Council (WCC) Active Travel schemes.

For all northbound options:

- Where the Junction 7 northbound merge remains open, it is assumed that the TJR with bus gate treatment is provided to ensure additional prioritisation of buses given the high merging volumes expected. The provision of a bus gate treatment will be subject to further modelling analysis in future stages.
- Where the Junction 6 northbound diverge remains open, it is assumed that the TJR Fork Diverge treatment is provided.

4. Long-list of Options

The Junction 6 to Junction 7 section of the corridor contains several inherent issues including a proliferation of minor intermediate junctions and accesses, poor geometry and visibility as well as high traffic demands which create operational issues. The long list of options considered within this section of the corridor are presented in Table 4-1 for the southbound direction and Table 4-2 for the northbound direction. Schematics of the options are presented in Appendix A. Each option covers the full extent of the N11 between Junction 6 and Junction 7 and is defined by the series interventions proposed at each junction/access point.

Table 4-1 Long-list of Options – Sub-Scheme B, Junction 6 to Junction 7 Southbound

Southbound Options	Intervention Proposed at Junction/Access:						Active Travel Provision
	Junction 6 (SB Merge)	Silverbridge Halting Site	L1522 Dargle Lane	L1956 Herbert Road	Residential Access	Junction 7 (SB Diverge)	
Option 1 (Minor Junction Closures)	Apply Through Junction Running (TJR)	Close Permanently (Relocate Residents)	Close Permanently (Acquire Properties)	Close Permanently (Cul de Sac Herbert Road at Kilbride Church)	Close N11 Access (New access via Ballywaltrim Lane)	Apply Through Junction Running (TJR)	On-line, off-road facility to east of N11
Option 1A (Minor Junction Closures – Variation A)	Apply Through Junction Running (TJR)	Retain left in – left out junction and apply TJR detail (Departure Required)	Close Permanently (Acquire Properties)	Close Permanently (Cul de Sac Herbert Road at Kilbride Church)	Close N11 Access (New access via Ballywaltrim Lane)	Apply Through Junction Running (TJR)	On-line, off-road facility to east of N11
Option 1B (Minor Junction Closures – Variation B)	Apply Through Junction Running (TJR)	Retain left in – left out junction and apply TJR detail (Departure Required)	Retain left in – left out junction and apply TJR detail (Departure Required)	Close Permanently (Cul de Sac Herbert Road at Kilbride Church)	Close N11 Access (New access via Ballywaltrim Lane)	Apply Through Junction Running (TJR)	On-line, off-road facility to east of N11
Option 2 (Junction 6 Link Road East)	Apply Through Junction Running (TJR)	Close Permanently (New Access via J6 Link Road East)	Close Permanently (New Access via J6 Link Road East)	Close Permanently (Cul de Sac Herbert Road at Kilbride Church)	Close N11 Access (New access via Ballywaltrim Lane)	Apply Through Junction Running (TJR)	On-line, off-road facility to east of N11
Option 2A (Junction 6 Link Road East – Variation A)	Apply Through Junction Running (TJR)	Close Permanently (New Access via J6 Link Road East)	Close Permanently (New Access via J6 Link Road East)	Close Permanently (New bridge connecting Herbert Road to R117)	Close N11 Access (New access via Ballywaltrim Lane)	Apply Through Junction Running (TJR)	On-line, off-road facility to east of N11
Option 3 (Segregated Parallel Service Road - PSR) *J6 SB Merge & J7 SB Diverge Remain Open*	Apply Through Junction Running (TJR)	Close Permanently (Redirect Access onto Parallel Road)	Close Permanently (Redirect Access onto Parallel Road)	Close Permanently (Redirect Access onto Parallel Road)	Close Permanently (Redirect Access onto Parallel Road)	Apply Through Junction Running (TJR)	On-line, off-road facility to east of N11

Southbound Options	Intervention Proposed at Junction/Access:						Active Travel Provision
	Junction 6 (SB Merge)	Silverbridge Halting Site	L1522 Dargle Lane	L1956 Herbert Road	Residential Access	Junction 7 (SB Diverge)	
Option 4 (Segregated Parallel Service Road PSR) *J6 SB Merge & J7 SB Diverge Closed*	Closed Permanently (SB traffic redirected to J7 via PSR)	Close Permanently (Redirect Access onto PSR)	Close Permanently (Redirect Access onto PSR)	Close Permanently (Redirect Access onto PSR)	Close Permanently (Redirect Access onto PSR)	Closed Permanently (SB J7 traffic would diverge at J6)	On-line, off-road facility to east of N11

Table 4-2 Long-list of Options – Sub-Scheme B, Junction 6 to Junction 7 Northbound

Northbound Options	Intervention Proposed at Junction/Access:				Active Travel Provision
	Junction 7 (NB Merge)	Dublin Oak Academy	R117 Enniskerry Road Junction	Junction 6 (NB Diverge)	
Option 1 (Minor Junction Closures)	Apply Through Junction Running (TJR) with bus gate treatment	Close Permanently (Alternative Access via Kilcroney Lane)	Close Permanently (Cul de Sac)	Apply Through Junction Running (TJR)	Not Provided (included in SB direction)
Option 1A (Minor Junction Closures – Variation A)	Apply Through Junction Running (TJR) with bus gate treatment	Close Permanently (Alternative Access via Kilcroney Lane)	Retain left in – left out junction and apply TJR detail (Departure Required)	Apply Through Junction Running (TJR)	Not Provided (included in SB direction)
Option 2 (Realigned R117 Link Road)	Apply Through Junction Running (TJR) with bus gate treatment	Close Permanently (Alternative Access via Kilcroney Lane)	Close Permanently (Re-directed to Junction 6 via Realigned R117)	Apply Through Junction Running (TJR)	Not Provided (included in SB direction)
Option 3 (Segregated Parallel Road) *J7 NB Merge & J6 NB Diverge Remain Open*	Apply Through Junction Running (TJR) with bus gate treatment	Close Permanently (Redirect Access onto Parallel Road)	Close Permanently (Redirect Access onto Parallel Road)	Apply Through Junction Running (TJR)	Not Provided (included in SB direction)
Option 4 (Segregated Parallel Service Road - PSR) *J7 NB Merge & J6 NB Diverge Closed*	Closed Permanently (NB merging traffic redirected to PSR)	Close Permanently (Redirect Access onto PSR)	Close Permanently (Redirect Access onto PSR)	Closed Permanently	Not Provided (included in SB direction)

5. Assessment of Options

5.1 Discounted Options

At the outset of the long-list sifting exercise, two options were initially discounted, as follows:

- **Southbound Option 1** – this option proposed closing all intermediate minor junctions and direct accesses southbound between Junction 6 and Junction 7, with no alternative access arrangements proposed. Hence, this would have necessitated relocation of the existing halting site at Silverbridge and the acquisition of properties along Dargle Lane. Given the availability of alternatives, and following consultation with key stakeholders, it was determined that this option would not represent a viable solution at this stage.
- **Southbound Option 2A** – this option proposed closing the existing N11 Herbert Road junction and instead providing an overbridge connecting Herbert Road with the R117 Enniskerry Road. However, this option was discounted as the provision of this crossing was not feasible from a road alignment and geometry perspective.

Following this, all remaining options were qualitatively assessed under the six headline CAF criteria, with cost also considered as a separate heading. Options were scored under a broad range of assessment sub-criteria and an overall matrix prepared to determine the likely performance of each.

5.2 Long List Sifting Matrix

The Long List Sifting Matrix is presented in Appendix B for the southbound options and Appendix C for the northbound options.

5.3 Economy

5.3.1 Constructability

The objective to deliver a practicable interim scheme has been assessed based on the expected constructability challenges associated with each option. As with the cost estimates, the constructability assessment considers works additional to the provision of the hard shoulder bus priority measures – which is consistent across all options. Options which involve significant enabling works/re-alignment of the mainline and/or demolition and reconstruction of existing infrastructure have been scored negatively, while options which optimise the use of existing infrastructure have been scored positively.

The following is noted in relation to the **Southbound** option assessments:

- Option 1A and Option 1B (Junction Closures and Variations) involve minimal additional construction works and were therefore considered to be moderately positive with a score of 6.
- The additional works required for Option 2 (i.e. construction of the Junction 6 Link Road East) involve works which are away from the existing N11 mainline corridor. While this is a positive in terms of operational impact on the N11, there may also be access and constructability challenges with the construction of the new bridge and works adjacent to the Dargle River and banks. Option 2 was therefore considered to be neutral with score of 4.
- Option 3 and Option 4 (Parallel Road Options) involve additional works adjacent to the existing N11 mainline corridor and would likely require significant realignment of the N11 mainline. In addition, Option 4 requires the demolition and reconstruction of the Junction 6 (Bray/Fassaroe) and Junction 7 (Bray South) overbridges and re-alignments of junction connector roads. Considering this, Option 3 is minor or slightly negative with a score of 3 and Option 4 is considered to be majorly negative with a score of 1.

The following is noted in relation to the **Northbound** option assessments:

- Option 1 and Option 1A (Junction Closures and Variation A) involve minimal additional construction works and were therefore considered to be moderately positive with a score of 6.
- The additional works required for Option 2 (i.e. construction of the R117 Realignment) involve works which are away from the existing N11 mainline corridor, which is positive in terms of impact to the operation to the N11. However, the construction of this link road would involve significant challenges in the vicinity of the Glencullen River crossing. Overall, this option is considered to be neutral with a score of 4.
- Option 3 and Option 4 (Parallel Road Options) involve additional works adjacent to the existing N11 mainline corridor and would likely require significant realignment of the N11 mainline. These options are therefore considered to be moderately negative with a score of 2.

5.3.2 Bus Priority

The objectives to increase people carrying capacity and generate positive economic benefits can be related to the respective bus journey time benefits achieved by options. At this stage, detailed microsimulation modelling is not available to quantify and evaluate journey time performance across the options. Considering this, a qualitative assessment of the options has been undertaken based on the expected effectiveness in addressing delay points for a bus moving along the corridor. Options which do not address delay points which could otherwise impede bus priority are assigned a lower score, with the assessment also factoring in a higher weighting to more significant delay points along the corridor, such as the Herbert Road Junction and the Junction 7 northbound merge and southbound diverge.

To explain this more clearly:

- For each junction or minor access, a ranking has been assigned to represent the likely degree to which that junction or minor access can be expected to delay or impede bus traffic operating in the hard shoulder. Using a ranking scale of 1-5, a rank of 1 indicates minor delay potential, with a rank of 5 indicating very significant delay potential. In general, higher rankings are assigned to accesses where turning volumes (and associated weaving movements and/or queuing) are highest, as these movements can be expected to impede bus priority.
- The expected effectiveness considers the relative ability of each junction treatment or intervention to mitigate that delay point. Using a scoring scale of 1-7, a score of 1 indicates that the intervention will have minimal impact in addressing the delay point, whereas a score of 7 indicates that the proposed intervention is fully effective in addressing the likely delay to bus traffic. Interventions which propose to close a minor junction or access are assigned the highest score as the delay point is removed altogether.
- The delay ranking (1-5) and expected effectiveness score (1-7) are multiplied to calculate an overall score for each option, which serves as a metric for quantifying the relative effectiveness of the proposed junction intervention in reducing bus journey time delay and hence maximising bus priority.
- Using the overall score for each option, an impact score is then assigned aligning with the TII PAG scaling system as presented in Section 2.1.

The assessments are presented in Table 5-1 for the southbound direction and Table 5-2 for the northbound direction.

The following is noted in relation to the **Southbound** option assessments:

- Option 2 and Option 3 close all intermediate minor junctions and accesses between Junction 6 and Junction 7 and are both considered minor or slightly positive in the qualitative assessment.
- Option 1A and Option 1B achieved slightly lower scores based on the qualitative assessment due to retaining mainline access to Silverbridge Halting Site and/or Dargle Lane, thereby creating additional points of delay.

- Option 4 provides the highest level of bus priority, due to the closure of all intermediate junctions, as well as the closure of the Junction 7 southbound diverge which is a potential key point of delay. It should be noted however, that this is likely to shift the existing demand for diverging traffic at Junction 7 to the Junction 6 southbound diverge, and the overall improvements for bus priority at Junction 7 (Bray South) could be negated by increased delays at Junction 6 (Bray/Fassaroe).

Table 5-1 Effectiveness of southbound options in reducing bus journey time delay

Junction / Access	Delay Potential (D) (1-5)	Option 1A		Option 1B		Option 2		Option 3		Option 4	
		Expected Effectiveness (E) (1-7)	Score (DxE)	Expected Effectiveness (E) (1-7)	Score (DxE)	Expected Effectiveness (E) (1-7)	Score (DxE)	Expected Effectiveness (E) (1-7)	Score (DxE)	Expected Effectiveness (E) (1-7)	Score (DxE)
J6 Southbound Merge	Moderate (3)	3	9	3	9	3	9	3	9	3	9
Silverbridge Halting Site	Very Minor (1)	3	3	3	3	7	7	7	7	7	7
Dargle Lane	Minor (2)	7	14	3	6	7	14	7	13	7	14
Herbert Road	Moderate (3)	7	21	7	21	7	21	7	21	7	21
Residential Access	Very Minor (1)	7	7	7	7	7	7	7	7	7	7
J7 Southbound Diverge	Significant (4)	3	12	3	12	3	12	3	12	7	28
Overall Score / Maximum Score		**66 / 98**		**58 / 98**		**70 / 98**		**69 / 98**		**86 / 98**	
Overall Effectiveness of Option (TII PAG Scale 1-7)		**Minor or Slightly Positive – 4.7**		**Not Significant or Neutral – 4.1**		**Minor or Slightly Positive – 5.0**		**Minor or Slightly Positive – 4.9**		**Moderately Positive – 6.1**	

The following is noted in relation to the **Northbound** option assessments:

- From a functionality perspective, Option 1, Option 2 and Option 3 close all intermediate junctions between Junction 6 (Bray / Fassaroe) and Junction 7 (Bray South), with bus gates provided to address the key delay point at the Junction 7 northbound merge. These options therefore achieved a score of 5 in the qualitative assessment.
- Option 1A achieved a lower score in the qualitative assessment due to retaining mainline access to the R117 Enniskerry Road Junction, thereby creating an additional point of delay.
- Option 4 provides the highest level of bus priority due to the closure of all intermediate junctions, as well as the closure of the Junction 7 northbound merge which is a potential key point of delay. This is reflected in the qualitative assessment which is moderately positive. It should be noted however, that this is likely to shift the existing demand for diverging traffic at Junction 6 to the Junction 7 northbound diverge, and the overall improvements for bus priority at the Junction 7 northbound merge would likely be negated by increased delays at the Junction 7 northbound diverge, which would need to be verified using microsimulation modelling.

Table 5-2 Effectiveness of northbound options in reducing bus journey time delay

Junction / Access	Delay Potential (D) (1-5)	Option 1		Option 1A		Option 2		Option 3		Option 4	
		Expected Effectiveness (E) (1-7)	Score (DxE)	Expected Effectiveness (E) (1-7)	Score (DxE)	Expected Effectiveness (E) (1-7)	Score (DxE)	Expected Effectiveness (E) (1-7)	Score (DxE)	Expected Effectiveness (E) (1-7)	Score (DxE)
J7 Northbound Merge	Significant (4)	5	20	5	20	5	20	5	20	5	20
Dublin Oak Academy	Very Minor (1)	7	7	7	7	7	7	7	7	7	7
R117 Junction	Minor (2)	7	14	3	6	7	14	7	14	7	14
J6 Northbound Diverge	Moderate (3)	3	9	3	9	3	9	3	9	7	28
Overall Score / Maximum Score		**50 / 70**		**42 / 70**		**50 / 70**		**50 / 70**		**62 / 70**	
Overall Effectiveness of Option (TII PAG Scale 1-7)		**Minor or slightly positive – 5.0**		**Not Significant or Neutral – 4.2**		**Minor or slightly positive – 5.0**		**Minor or slightly positive – 5.0**		**Moderately Positive – 6.2**	

5.4 Indicative Cost

Indicative Cost has been considered as a separate criterion due to the expected variability across the options. Order of magnitude cost estimates have been prepared based on the feasibility designs prepared for the options and are presented in Table 5-3. The following assumptions are noted:

- The cost estimates are high-level in nature and subject to change with further information available in future stages.
- Commensurate with the high-level nature of the long-list sifting exercise, the impact scores for indicative cost have been determined based on an expected cost range for an option, rather than the absolute cost. This is considered appropriate for the comparison of options at this stage, and the costs will be developed to further detail for options which are progressed to the Stage 2 Project Appraisal Matrix for wider and more detailed assessments.
- The impact score range for the cost assessment vary between southbound and northbound options as they have been determined based on the relative range of costs for the southbound and northbound options.
- Property acquisition costs have been based on preliminary valuation information provided by an external land valuer.

Table 5-3 Indicative cost assessment

Option	Indicative Cost	Score	Notes
Southbound Options			
Option 1A	Base cost for SS-B plus €10 – 15 million	4	High cost of option is partly attributable to land and property acquisition costs at Silverbridge and Dargle Lane.
Option 1B	Base cost for SS-B plus €1 – 5 million	6	Lowest relative cost due to minor nature of works proposed.
Option 2	Base cost for SS-B plus €5 – 10 million	5	Significant cost associated with construction of Junction 6 Link Road (East).
Option 3	Base cost for SS-B plus €10 – 15 million	4	Significant cost associated with construction of segregated parallel road and new bridge across River Dargle.
Option 4	Base cost for SS-B plus €25 – 30 million	2	Highest overall cost attributable to impact to existing structures (J6 & J7 Overbridge) and requirement for new bridge across River Dargle.
Northbound Options			
Option 1	Base cost for SS-B plus <€1.25 million	7	Lowest relative cost due to minor nature of works proposed.
Option 1A	Base cost for SS-B plus <€1.25 million	7	Lowest relative cost due to minor nature of works proposed.
Option 2	Base cost for SS-B plus €3.75 – 5 million	4	Significant cost associated with construction of Realigned R117 Link Road.
Option 3	Base cost for SS-B plus > €7.5 million	1	Highest overall cost attributable to extent of widening and requirement for new bridge across River Dargle.
Option 4	Base cost for SS-B plus > €7.5 million	1	Highest overall cost attributable to extent of widening and requirement for new bridge across River Dargle.

5.5 Safety

The N11/M11 BPIS project objectives include specific aims in respect of road safety, to deliver bus priority measures which are clearly delineated and understood by road users, and without adversely impacting on the safety of all road users.

The safety assessment has therefore considered the degree of compliance of the options with TII Standard DN-GEO-03087, including how the options have achieved a reduction in the number of conflict points, with the closure of intermediate junctions and/or major junction merges and diverges, contributing to improvements to safety. In addition, the assessment of options has considered the likely requirement for departures and the level of continuous bus priority achieved.

The following is noted in relation to the **Southbound** option assessments:

- Option 1A and Option 1B retain the left in – left out access to the Silverbridge Halting Site and Dargle Lane respectively, requiring a departure against DN-GEO-03087. It is noted that the existing junction visibility at Dargle Lane is poor, and this is likely to be worsened with the introduction of hard shoulder bus priority. Therefore, Option 1B contains a higher degree of safety issues relative to Option 1A. Considering this, Option 1A achieves a score of 2 and Option 1B achieves a score of 1 in the safety assessment.

- Options 2 closes all intermediate junctions, with potential conflict points retained at the Junction 6 southbound merge and Junction 7 southbound diverge only. No departures are required against DN-GEO-03087 in respect of junction type. The option is therefore considered to be moderately positive with a score of 6.

- Option 3 closes the direct access from intermediate junctions onto the N11 (redirecting these to the parallel road), with the Junction 6 southbound merge and Junction 7 southbound access to the mainline retained. No departures are required against DN-GEO-03087. Notwithstanding this, maintaining access to the junction ramps can be expected to generate weaving issues between traffic merging / diverging from the ramps and traffic trying to enter / exit the parallel road. Considering the above, Option 3 achieved a score of 4 in the safety assessment.

- Option 4 closes all intermediate junctions and direct accesses and also closes the Junction 6 southbound merge and Junction 7 southbound diverge. It should be noted however, that this is expected to shift the existing demand for diverging traffic at Junction 7 to the Junction 6 southbound diverge, with this demand catered for in a single lane parallel road between the junctions. The additional demand at the Junction 6 southbound diverge is expected to create significant additional queuing at Junction 6, generating safety issues on the mainline. The congestion on the parallel road and Junction 6 roundabout can also be expected to result in an overall decrease in safety. Considering the above, Option 4 achieved a score of 2 in the safety assessment.

The following is noted in relation to the **Northbound** option assessments:

- Options 1, 2 and 3 close all intermediate junctions, with potential conflict points retained at the Junction 7 northbound merge and Junction 6 northbound diverge only. No departures are required against DN-GEO-03087 in respect of junction type. These options are considered to be moderately positive with a score of 6.

- Option 4 closes all intermediate junctions and closes the Junction 7 northbound merge. This removes the potential conflict points at the Junction 7 northbound merge and Junction 6 northbound diverge. It should be noted however, that this is expected to shift the existing demand for diverging traffic at Junction 6 to the Junction 7 northbound diverge, with this demand catered for in a single lane parallel road. The additional demand at the Junction 7 northbound diverge is expected to create significant additional queuing at Junction 7, the busiest junction on the corridor. The additional queuing can be expected to generate safety issues on the mainline. The congestion on the parallel road and Junction 7 roundabout can also be expected to result in an overall decrease in safety. Considering this, Option 4 achieved a reduced overall score of 2 in the safety assessment.

- Option 1A retains a left in – left out access to the R117 and therefore requires a departure against DN-GEO-03087 and contains additional potential conflict points relative to the other options. Considering this, Option 1A achieves a score of 2 in the safety assessment.

5.6 Environment

5.6.1 Circular Economy Impact

Under the heading of Circular Economy, the degree of re-use of existing infrastructure has been considered in the options assessment.

The following is noted in relation to the **Southbound** option assessments:

- Option 1A and Option 1B involve minimal additional road construction works with only minor works to close existing junctions and acquire properties. These options are therefore considered to be moderately positive with a score of 6.
- Option 2 may have opportunities to reduce the extent of new pavement construction by overlaying the existing pavement at the Silverbridge Halting Site and Dargle Lane. However, new pavement construction would be required in widened/off-line areas and new materials required for the construction of the new bridge over the Dargle River. Option 2 is therefore considered to be neutral with a score of 4.
- Option 3 and Option 4 involve additional works adjacent to the existing mainline corridor and would likely require significant realignment of the N11 mainline. These options are expected to have the greatest requirements for new full depth pavement construction. In addition, Option 4 requires the demolition and reconstruction of the Junction 6 and Junction 7 overbridges and re-alignments of junction connector roads with associated pavement works. Considering the above, Option 3 is considered to be minor or slightly negative with a score of 3 and Option 4 is considered to be majorly negative with a score of 1.

The following is noted in relation to the **Northbound** option assessments:

- Option 1 and Option 1A involve minimal additional road construction works, with only minor works to close existing junctions. These options are therefore considered to be moderately positive with a score of 6.
- New pavement and earthworks construction would be required for the Realigned R117 Link Road as part of Option 2. This relatively short connection may also require some widening on Kilbride Lane. It is noted that there may be opportunities to reduce the extent of new pavement construction by overlaying the existing pavement on Kilbride Lane in non-widening areas. Option 2 is therefore considered to be minor or slightly negative with a score of 3.
- Option 3 and Option 4 (Parallel Road Options) involve additional works adjacent to the existing mainline corridor and would likely require significant realignment of the N11 mainline. These options are expected to have the highest requirements for new full depth pavement construction as well as a new bridge at St. Valerys. Option 3 requires additional widening relative to Option 4 in order maintain mainline access to and from the Junction 7 northbound merge and Junction 6 northbound diverge. Option 3 is therefore considered to be majorly negative with a score of 1 and Option 4 is moderately negative with a score of 2.

5.6.2 Impacts to Community

Impacts to community are assessed in consideration of the expected impacts of junction closures on existing businesses and nearby residents.

The following is noted in relation to the **Southbound** option assessments:

- Option 1A requires the closure of all businesses and requires acquisition of the residential properties on Dargle Lane, however retains access to Silverbridge Halting Site with no significant impacts. It is therefore considered to be moderately negative with a score of 2.

- Option 2 retains access to Silverbridge Halting Site, but may nonetheless generate impacts within the boundary of the site to construct the Junction 6 Link Road (East). Option 2 also retains access to Dargle Lane, although existing businesses would be deprived of direct access to the N11, which may negatively impact visibility and business. Option 2 is therefore considered to be minor or slightly negative with a score of 3.
- Option 1B, Option 3 and Option 4 would not impact on Silverbridge Halting Site, while maintaining access to the businesses and dwellings on Dargle Lane (via the parallel road for Options 3 and 4). Each of these options is considered to be neutral with a score of 4.

The following is noted in relation to the **Northbound** option assessments:

- The closure of the direct R117 Enniskerry Road access to the N11 can be expected to have negative accessibility impacts on adjacent residents and community facilities, including the Dargle Valley Nursing Home. Options 1 and 2 are considered to be moderately negative in this regard with a score of 2.
- Option 1A retains the existing direct R117 Enniskerry Road access to the N11, with no accessibility impacts for adjacent communities. This option does involve the closure of the N11 access to the Dublin Oak Academy, however, an alternative and safer access is available. Option 1A is therefore considered to be neutral with a score of 4.
- Options 3 and 4 essentially maintain present access arrangements, but redirect minor junctions/access to the segregated parallel road. Both options are considered to be neutral with a score of 4.

5.6.3 Impacts on Environmental Constraints

Impacts on environmental constraints are assessed in consideration of the extent of widening and/or off-line road construction works required, and the degree to which the options could impacts identified environmental constraints.

The following is noted in relation to the **Southbound** option assessments:

- Option 1A and Option 1B involve minimal additional road construction, with any potential impacts to environmental constraints limited to the construction of the active travel facility (which is common across all options and therefore not a differentiator). Accordingly, both options are considered to be neutral with a score of 4.
- Option 2 involves a degree of off-line construction along the proposed Junction 6 Link Road (East). While a section of this road utilises an existing residential road through La Vallee, the extension of the road south involves a crossing of the River Dargle at Silverbridge (utilising the existing structure, if feasible) and localised removal of vegetation. This option is therefore considered to be minor or slightly negative with a score of 3.
- Options 3 and 4 involve significant widening along the eastern side of the N11 corridor to construct the segregated parallel road. Both options require the construction of a new bridge spanning the River Dargle at St. Valerys. Given the potential for impact to the river site conditions (ecological and hydrological), both options are considered to be moderately negative with a score of 2.

The following is noted in relation to the **Northbound** option assessments:

- Option 1 and Option 1A involve minimal additional road construction, with any potential impacts to environmental constraints limited to the construction of the active travel facility (which is common across all options and therefore not a differentiator). Accordingly, both options are considered to be neutral with a score of 4.
- Option 2 involves a degree of off-line construction along the proposed Realigned R117 Link Road. Given the potential impacts to the Glencullen River and Dargle Woodland, this option is considered to be minor or slightly negative with a score of 3.
- Options 3 and 4 involve significant widening along the western side of the N11 corridor to construct the segregated parallel road. Both options require the construction of a new bridge spanning the River Dargle at St. Valerys, with potential for impact to the river site conditions (ecological and hydrological).

Additionally, both options have the potential to impact constraints of archaeological and architectural and cultural heritage significance adjacent to the existing western side of the N11. Given these potential impacts, both options are considered to be moderately negative with a score of 2.

5.7 Accessibility and Social Inclusion

For the accessibility and social inclusion assessment, it is noted that the options are not geographically distinct, hence the positive impacts of bus priority measures proposed as part of each option will all serve the same geographical area. Considering this, the accessibility and social inclusion assessment and scoring has been based on the qualitative assessment for bus priority as outlined in Section 5.3.2.

5.8 Integration

5.8.1 Integration with N11/M11 Main Scheme

It is a key objective of the N11/M11 BPIS to deliver a practicable interim transport solution which does not introduce significant constraint on the subsequent development of the N11/M11 Junction 4 to Junction 14 Improvement Scheme (N11/M11 J4-J14 Scheme). The integration assessment has therefore considered the degree to which each option could be readily integrated into the Phase 2 preferred option for the future N11/M11 J4-J14 Scheme.

The following is noted in relation to the **Southbound** option assessments:

- Option 1A involves minimal additional construction and is therefore less likely to place a significant constraint on the N11/M11 J4-J14 Scheme. This option is considered to be neutral with a score of 4.
- Option 1B also involves minimal additional construction, however, retains Dargle Lane with a left in – left out access. This is considered to be less aligned with the N11/M11 J4-J14 Scheme preferred option which proposes that this junction is closed, and this option is therefore considered to be moderately negative with a score of 2.
- Option 2 provides a link road between Junction 6 (Bray / Fassaroe) and Dargle Lane, with closure of the direct Dargle Lane access to the N11 mainline. The link road can be retained in future, and the closure of Dargle Lane is better aligned with the N11/M11 J4-J14 Scheme. Option 2 is therefore considered to be minor or slightly positive with a score of 5.
- Option 3 provides a parallel road with adjacent active travel facility between Silverbridge Halting Site and Dargle Lane. The provision of a segregated parallel road is consistent with the preferred option for the N11/M11 J4-J14 Scheme. It should be noted however, that the parallel road would require a future extension through to Junction 6 (Bray / Fassaroe) and Junction 7 (Bray South). Furthermore, the preferred option for the N11/M11 J4-J14 Scheme comprises a major improvement at Junction 7 (Bray South), thus it is likely that the tie-in of the parallel road to the existing junction in the interim scenario would generate a degree of abortive works. Option 3 is therefore considered to be minor or slightly negative with a score of 3.
- Option 4 provides the full parallel road between Junction 6 (Bray / Fassaroe) and Junction 7 (Bray South), consistent with the preferred option for the N11/M11 J4-J14 Scheme. It should be noted however that this option requires the demolition and reconstruction of bridges, without providing the major junction modifications proposed as part of the N11/M11 J4-J14 Scheme. The N11/M11 J4-J14 Scheme preferred option also does not propose the closure of the Junction 7 southbound diverge. As such, this option would involve significant investment in redundant infrastructure which would not be compatible with the N11/M11 J4-J14 Scheme and is therefore considered to be majorly negative with a score of 1.

The following is noted in relation to the **Northbound** option assessments:

- Option 1 and Option 1A involve minimal additional construction and are therefore less likely to place a significant constraint on the future development of the N11/M11 J4-J14 Scheme. These options are therefore considered to be neutral with a score of 4.

- Option 2 proposes a realignment of the R117 via a new link road to Junction 6. The realigned road can be retained in future, and the closure of the R117 Enniskerry Road junction onto the N11 is better aligned with the N11/M11 J4-J14 Scheme. Option 2 is therefore considered to be minor or slightly positive with a score of 5.
- Option 3 and Option 4 provide a segregated parallel road between Junction 6 (Bray/Fassaroe) and Junction 7 (Bray South). The provision of a parallel road is consistent with the preferred option for the N11/M11 J4-J14 Scheme. It should be noted however, that the parallel road would require a future extension through to Junction 6 and Junction 7 and requires a new bridge crossing at St Valerys. Furthermore, the preferred option for the N11/M11 J4-J14 Scheme comprises a major improvement at Junction 7 (Bray South) and thus it is likely that any tie-in of the parallel road to the existing junction in the interim scenario would generate a degree of abortive works. Considering this, Option 3 and Option 4 are considered to be minor or slightly negative with a score of 3.

5.8.2 Alignment with Wider Government Policy

All options aim to deliver an improved public transport corridor that will encourage and support investment, tourism and employment and support a balance of alternative modes within the study area. While the degree to which each option delivers the corridor may vary, the intention to align with government policy is not seen as a differentiating factor at this stage. Considering the above, all options are considered to be minor or slightly positive with a score of 5.

5.9 Physical Activity

One of the key aspects of the revised design basis for the Stage 2 assessments has been to provide bus priority measures only where there is no adverse impact on any road users. To achieve this, Active Travel facilities that are segregated from the mainline (on-line / off-line) have been proposed within the options development.

An initial assessment of options was undertaken, which determined that Active Travel provision was better suited on the eastern side of the N11 due to better connectivity with the following Wicklow County Council (WCC) planned facilities:

- Active Travel facility along Upper Dargle Road north of Junction 6 (Dargle River Greenway)
- Kilmacanogue to Southern Cross Greenway Scheme

Considering this, an Active Travel facility has been proposed as part of all southbound options. As this is not a differentiator between the options, all northbound and southbound options are considered to be moderately positive with a score of 6.

5.10 Summary

5.10.1 Southbound Options

A summary of the total weighted score for southbound options is provided in Table 5-4.

Table 5-4 Total weighted score and recommendations (southbound options)

Criterion	Option 1A	Option 1B	Option 2	Option 3	Option 4
Economy (/100)	77	72	64	57	51
Cost (/200)	114	171	143	114	57
Safety (/200)	52	36	171	106	43
Environment (/100)	57	67	48	43	33
Accessibility & Social Inclusion (/100)	67	59	71	71	88
Integration (/100)	64	50	71	57	43

Criterion	Option 1A	Option 1B	Option 2	Option 3	Option 4
Physical Activity (/100)	86	86	86	86	86
Total Weighted Score	517	479	599	485	357
Recommendation	Discounted	Discounted	Progressed	Progressed	Discounted

The following recommendations are noted in relation to the **Southbound** options:

- Option 1A, Option 1B and Option 4 are clear outliers from a safety perspective. The approach of retaining existing left in – left out junctions would require departures against DN-GEO-03087 and creates additional conflict points between buses and general traffic.
- In addition, the existing alignment contains inherent safety issues, particularly at Dargle Lane where poor horizontal geometry, junction sight distance and minimal junction spacing conditions are present. The provision of Hard Shoulder Bus Priority Measures at these locations, with the retention of the left in – left out access is expected to worsen these existing deficiencies, which is not considered to be aligned with the project objectives. Considering it is not feasible to safely retain these junctions open, it is recommended that Option 1A and 1B are therefore discounted.
- Option 2 achieved the highest overall score in the assessment. The Junction 6 Link Road (East) achieves the closure of all intermediate junctions and involves largely off-line construction. Partial impacts to Silverbridge Halting Site are expected, while there is no requirement to fully acquire the Dargle Lane properties.
- Additionally, there may be constructability challenges associated with the construction of the new bridge crossing the Dargle River and construction of the new link between Silverbridge Halting Site and Dargle Lane adjacent to the riverbank from a slope stability perspective. Notwithstanding this, it is recommended that Option 2 is progressed to Stage 2A to allow for further engineering assessments to be undertaken on the structural / geotechnical feasibility of the option as well to better understand the partial impacts on the Halting Site and how these can be mitigated.
- Option 3 achieved the third highest score in the assessment. The provision of the shorter parallel road will achieve a level of separation for buses on the mainline from local traffic demand to the intermediate junctions. However, this option can be expected to generate difficulties accommodating weaving movements on the N11 and it is expected that this would not achieve the same level of bus priority as Option 2. Additionally, there are substantial costs associated with the construction of a new bridge at St Valery's. Notwithstanding this, it is recommended that Option 3 is progressed to Stage 2A to allow further assessments to be undertaken.
- Option 4 clearly achieved the lowest score in the assessment. This can be attributed to a number of factors including the significant cost, disruption to the existing network caused by demolition and reconstruction of two bridges, and poor integration with the N11/M11 J4-J14 Scheme. While this option may in theory optimise the level of uninterrupted bus priority between Junction 6 (Bray/Fassaroe) and Junction 7 (Bray South), it is likely that this would create significant congestion issues at the Junction 6 diverge. Furthermore, with the demolition of bridges at Junction 6 and Junction 7, this would require a significant investment in redundant infrastructure. Considering this, it is recommended that Option 4 is discounted.

5.10.2 Northbound Options

A summary of the total weighted score for northbound options is provided in Table 5-5.

Table 5-5 Total weighted score and recommendations (northbound options)

Criterion	Option 1	Option 1A	Option 2	Option 3	Option 4
Economy (/100)	79	73	64	50	59
Cost (/200)	200	200	114	29	29

Criterion	Option 1	Option 1A	Option 2	Option 3	Option 4
Safety (/200)	171	57	171	171	43
Environment (/100)	57	67	38	33	38
Accessibility & Social Inclusion (/100)	71	60	71	71	89
Integration (/100)	64	64	71	57	57
Physical Activity (/100)	86	86	86	86	86
Total Weighted Score	729	544	561	455	349
Recommendation	Progressed	Discounted	Progressed	Discounted	Discounted

The following recommendations are noted in relation to the **Northbound** options:

Option 1

- Option 1 achieved the highest score in the assessment. The benefits of closing the R117 junction and providing a bus gate at the Junction 7 northbound merge are expected to result in significant safety improvements and some improvement in bus priority between Junction 6 (Bray / Fassaroe) and Junction 7 (Bray South) and this has been reflected in the assessments. It is noted that the microsimulation modelling is required to confirm the effectiveness of the bus gate in further detail. From a cost perspective, this option can be delivered for limited additional cost as there is minimal additional construction and no additional property acquisition required.
- It is expected however that there would be some negative community impacts in relation to the requirement for local trips accessing the R117 to utilise longer detours to Junction 6 (Bray / Fassaroe) or Junction 7 (Bray South) via Enniskerry.
- It is recommended that Option 1 is progressed to Stage 2A to better understand the level of bus priority achieved.

Option 1A

- Option 1A (and Option 4) are clear outliers from a safety perspective. The approach of retaining existing left in – left out junctions requires departures against DN-GEO-03087 and creates additional conflict points between buses and general traffic. Furthermore, the proximity of the R117 junction and Junction 7 northbound merge would retain existing unsafe weaving conditions. The provision of a bus lane through this area can be expected to worsen any existing safety issues and therefore it is not considered to be aligned with the project objectives. Considering it is not feasible to safely retain these junctions open, and there are options available which close the R117 junction, it is recommended that Option 1A is discounted.

Option 2

- Option 2 achieved the second highest score in the assessments. The proposed realignment of the R117 via a new link road connecting to Junction 6 alleviates some of the issues with long detours associated with Option 1. The additional works involve largely off-line construction and partial acquisition of properties between the R117 and Kilbride Lane. It is recommended that Option 1 is progressed to the Stage 2A to better understand the engineering feasibility and land acquisition impacts of the link road, together with any environmental impacts.

Option 3

- Option 3 achieved the second lowest score in the assessment. Due to the provision of the parallel road between Junction 7 (Bray South) and Junction 6 (Bray/Fassaroe), combined with leaving the merge and diverge open to the mainline, this option requires the largest degree of widening and new pavement construction. In addition, a new bridge crossing is required over the River Dargle at St Valerys.

- From a functionality perspective, Option 3 is expected to achieve the same level of bus priority as Option 1 and Option 2, for significant additional cost. Furthermore, the form and alignment of the parallel road may not be fully aligned with the scheme objective to provide a transport solution which does not impose significant constraint on the subsequent development of the N11/M11 J4-J14 Scheme. Option 3 would result in significant investment in infrastructure which could be made redundant and require further modification in future. Considering this, it is recommended that Option 3 is discounted.

Option 4

- Option 4 achieved the lowest score in the assessment. Due to the provision of a continuous parallel road between Junction 7 (Bray South) and Junction 6 (Bray/Fassaroe) and closure of the mainline merge and diverge, this option can be expected to provide the highest level of priority between Junction 7 and Junction 6. Notwithstanding this, all traffic demand previously diverging at Junction 6 (Bray/Fassaroe) would be required to diverge instead at Junction 7 (Bray South) and travel along a single lane parallel road. The significant demand for merging traffic at Junction 7 would also be required to use the parallel road and merge instead at Junction 6. This can be expected to create additional congestion at the Junction 7 roundabout, additional queuing at the diverge, potentially blocking a bus and negating any benefits accrued between Junction 7 (Bray South) and Junction 6 (Bray/Fassaroe).

- Option 4 is expected to be a relatively high-cost option to construct which may not resolve priority and safety issues. This is primarily due to the provision of the northbound parallel road and new overbridge at St. Valerys. Furthermore, the provision of two general traffic lanes, hard shoulder bus priority and a parallel road is not achievable without major impacts on both the main N11/M11 J4-J14 Scheme preferred option and on important environmental constraints to the west of the mainline.

- This additional queuing and congestion at the Junction 7 diverge and along the parallel road can also be expected contribute to an overall reduction in safety for motorised and non-motorised users. It is, however, a key safety objective of the scheme to deliver bus priority without adversely impacting the safety of all road users.

- Additionally, the form and alignment of the parallel road may not be fully aligned with the scheme objective to provide a transport solution which does not impose significant constraint on the subsequent development of the N11/M11 J4-J14 Scheme. Option 4 would result in significant investment in infrastructure which could be made redundant and require further modification in future. Considering the above, it is recommended that Option 4 is discounted.

5.11 Outcomes of Sifting

A summary of the initial option/alternative sifting is presented in Table 5-6.

Table 5-6 Summary of long-list sifting outcomes

Option / Alternative	Name	Outcome of Sifting Exercise	
Junction 6-7 Southbound			
Option 1	Minor Junction Closures	Option Discounted	✗
Option 1A	Minor Junction Closures – Variation A	Option Discounted	✗
Option 1B	Minor Junction Closures – Variation B	Option Discounted	✗
Option 2	Junction 6 Link Road East	Progress option and assess in further detail as part of Stage 2A	✓
Option 2A	Junction 6 Link Road East – Variation A	Option Discounted	✗
Option 3	Parallel Service Road, Junction 6 Merge and Junction 7 Diverge Open	Progress option and assess in further detail as part of Stage 2A	✓

Option / Alternative	Name	Outcome of Sifting Exercise	
Option 4	Parallel Service Road, Junction 6 Merge and Junction 7 Diverge Closed	Option Discounted	✗
Junction 6-7 Northbound			
Option 1	Minor Junction Closures	Progress option and assess in further detail as part of Stage 2A	✓
Option 1A	Minor Junction Closures – Variation A	Option Discounted	✗
Option 2	Realigned R117 Link Road	Progress option and assess in further detail as part of Stage 2A	✓
Option 3	Parallel Service Road, Junction 6 Diverge and Junction 7 Merge Open	Option Discounted	✗
Option 4	Parallel Service Road, Junction 6 Diverge and Junction 7 Merge Closed	Option Discounted	✗

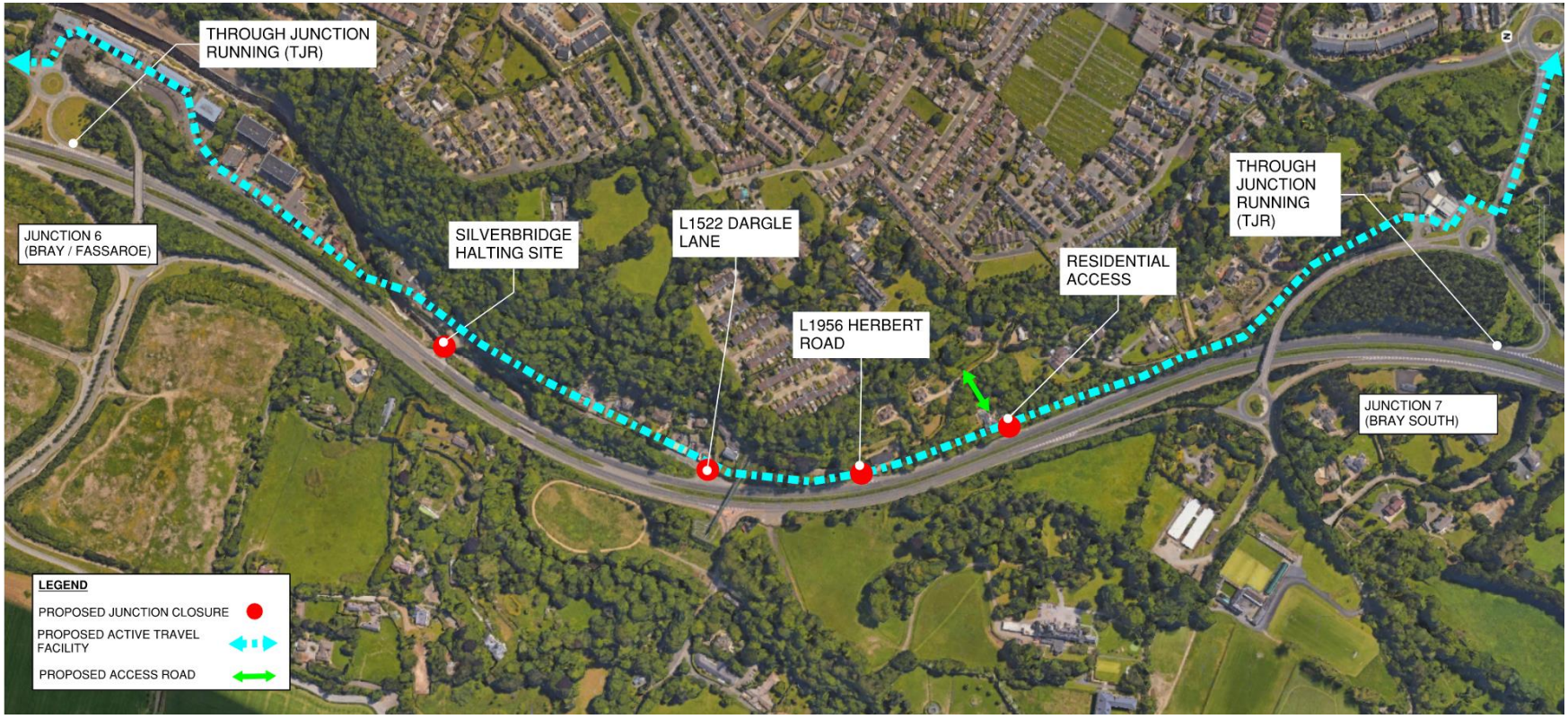
6. Conclusions and Recommendations

From the initial sifting exercise, it is evident that options that do not comply with the DN-GEO-03087 fail to respond positively to the project objectives. Additionally, options which close major junction merges / diverges and / or involve the demolition and reconstruction of existing overbridges also fail to respond positively to the project objectives. All other options have the potential to fulfil some or many objectives and / or require further investigations to be undertaken before this can be determined – these have been progressed to the Stage 2A assessments.

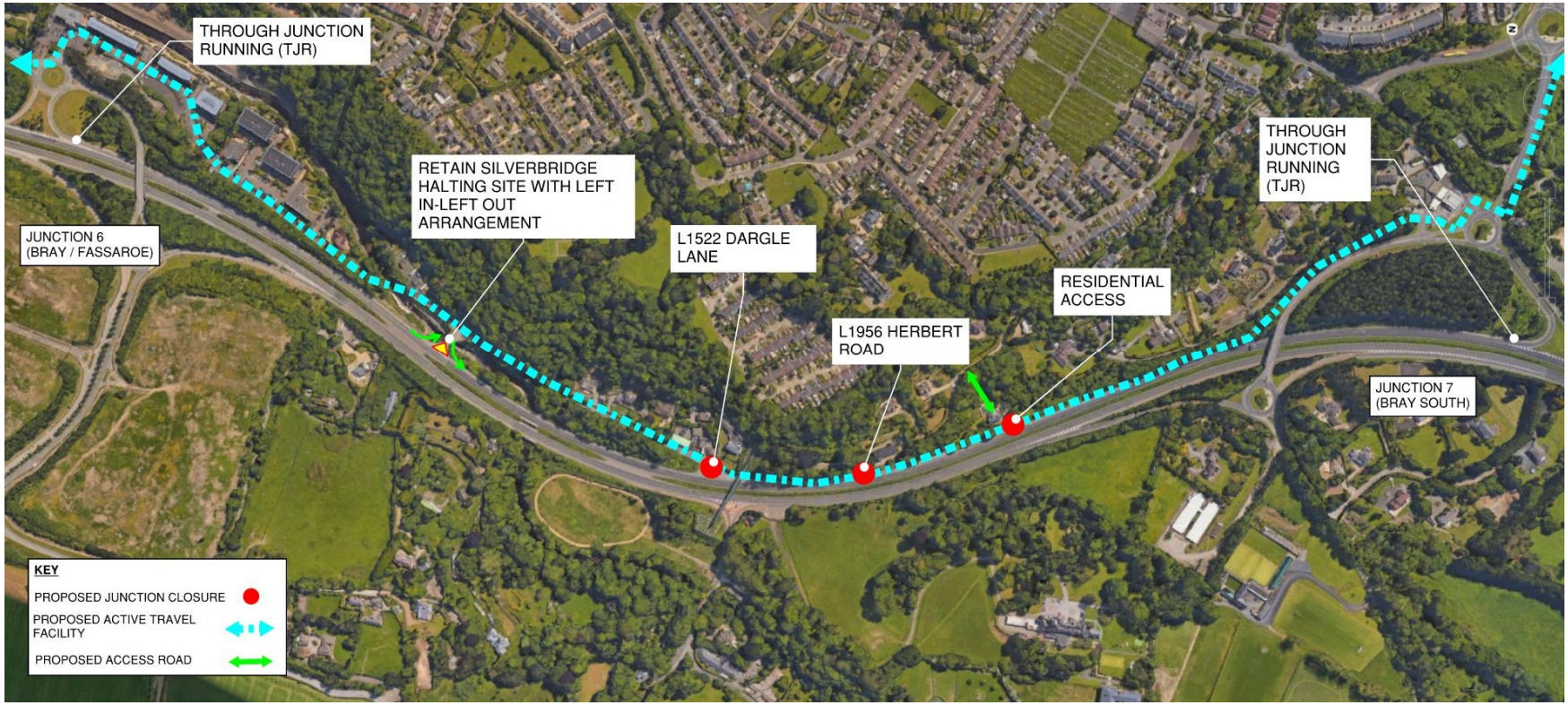
Appendix A

Option Schematics

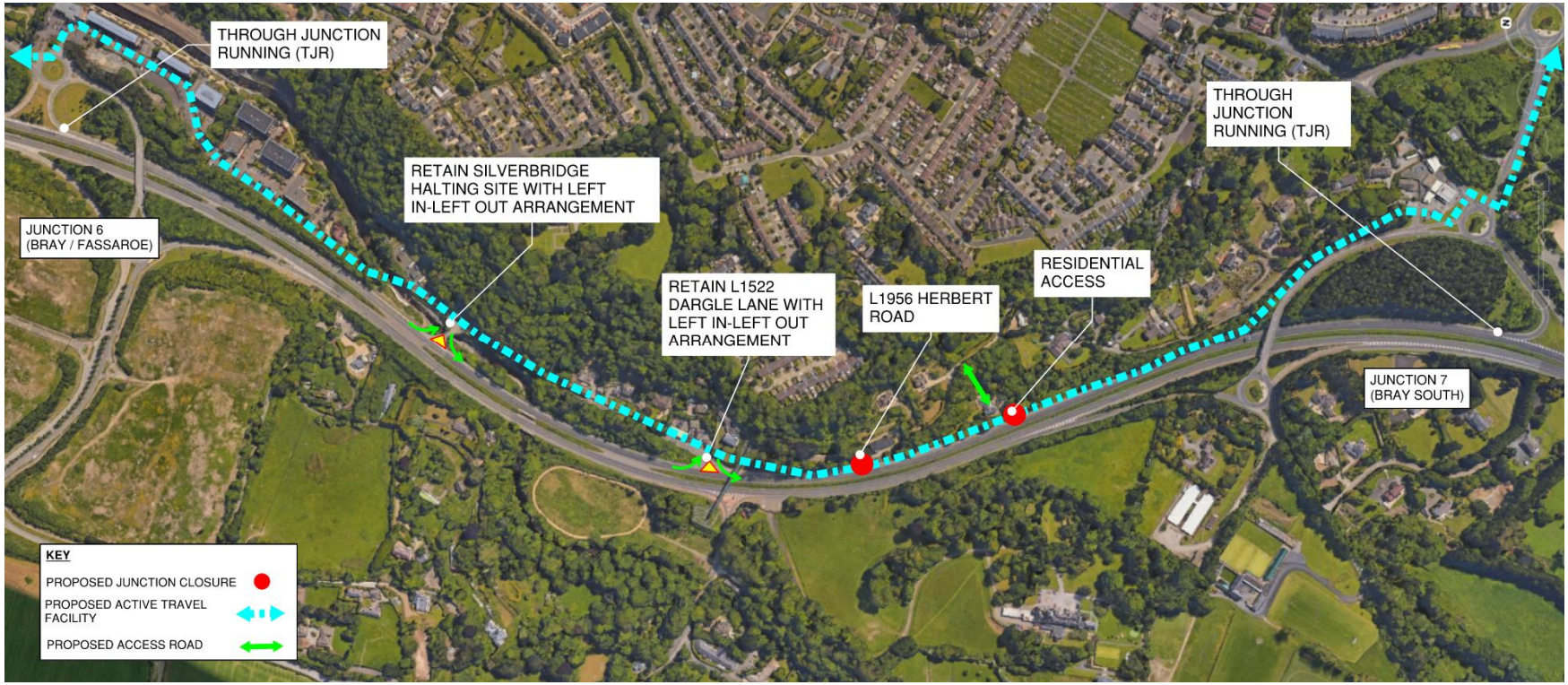
Southbound Option 1 (DISCOUNTED)	Intervention Proposed at Junction/Access:						Active Travel Provision
	Junction 6 (SB Merge)	Silverbridge Halting Site	L1522 Dargle Lane	L1956 Herbert Road	Residential Access	Junction 7 (SB Diverge)	
Option 1 (Minor Junction Closures)	Apply Through Junction Running (TJR)	Close Permanently (Relocate Residents)	Close Permanently (Acquire Properties)	Close Permanently (Cul de Sac Herbert Road at Kilbride Church)	Close N11 Access (New access via Ballywaltrim Lane)	Apply Through Junction Running (TJR)	On-line, off-road facility to east of N11
Access Open (✓) / Closed (✖)	✓	×	×	×	×	✓	N/A



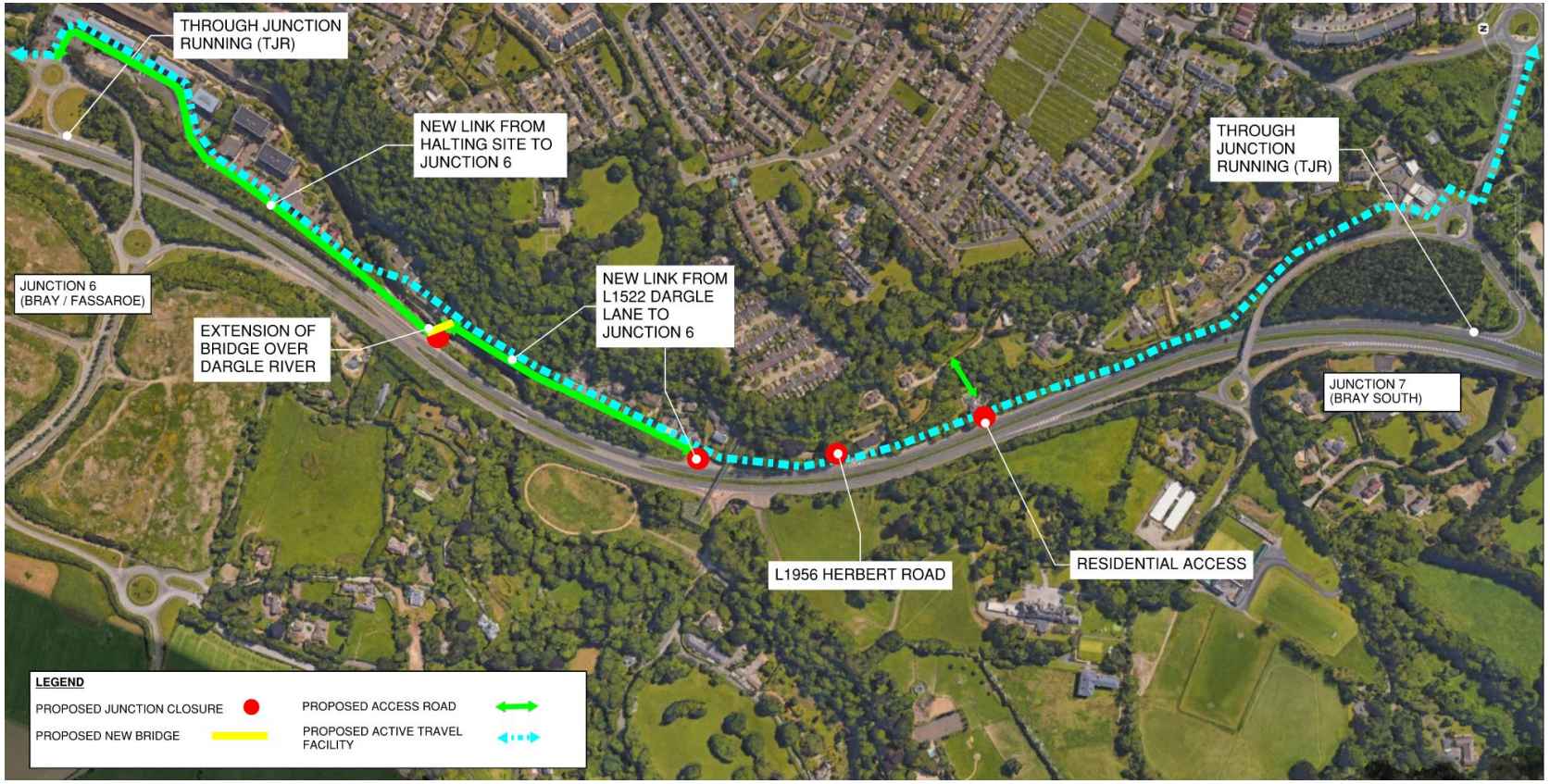
Southbound Option 1A	Intervention Proposed at Junction/Access:						Active Travel Provision
	Junction 6 (SB Merge)	Silverbridge Halting Site	L1522 Dargle Lane	L1956 Herbert Road	Residential Access	Junction 7 (SB Diverge)	
Option 1A (Minor Junction Closures – Variation A)	Apply Through Junction Running (TJR)	Retain left in – left out junction and apply TJR detail (Departure Required)	Close Permanently (Acquire Properties)	Close Permanently (Cul de Sac Herbert Road at Kilbride Church)	Close N11 Access (New access via Ballywaltrim Lane)	Apply Through Junction Running (TJR)	On-line, off-road facility to east of N11
Access Open (✓) / Closed (✖)	✓	✓	✖	✖	✖	✓	N/A



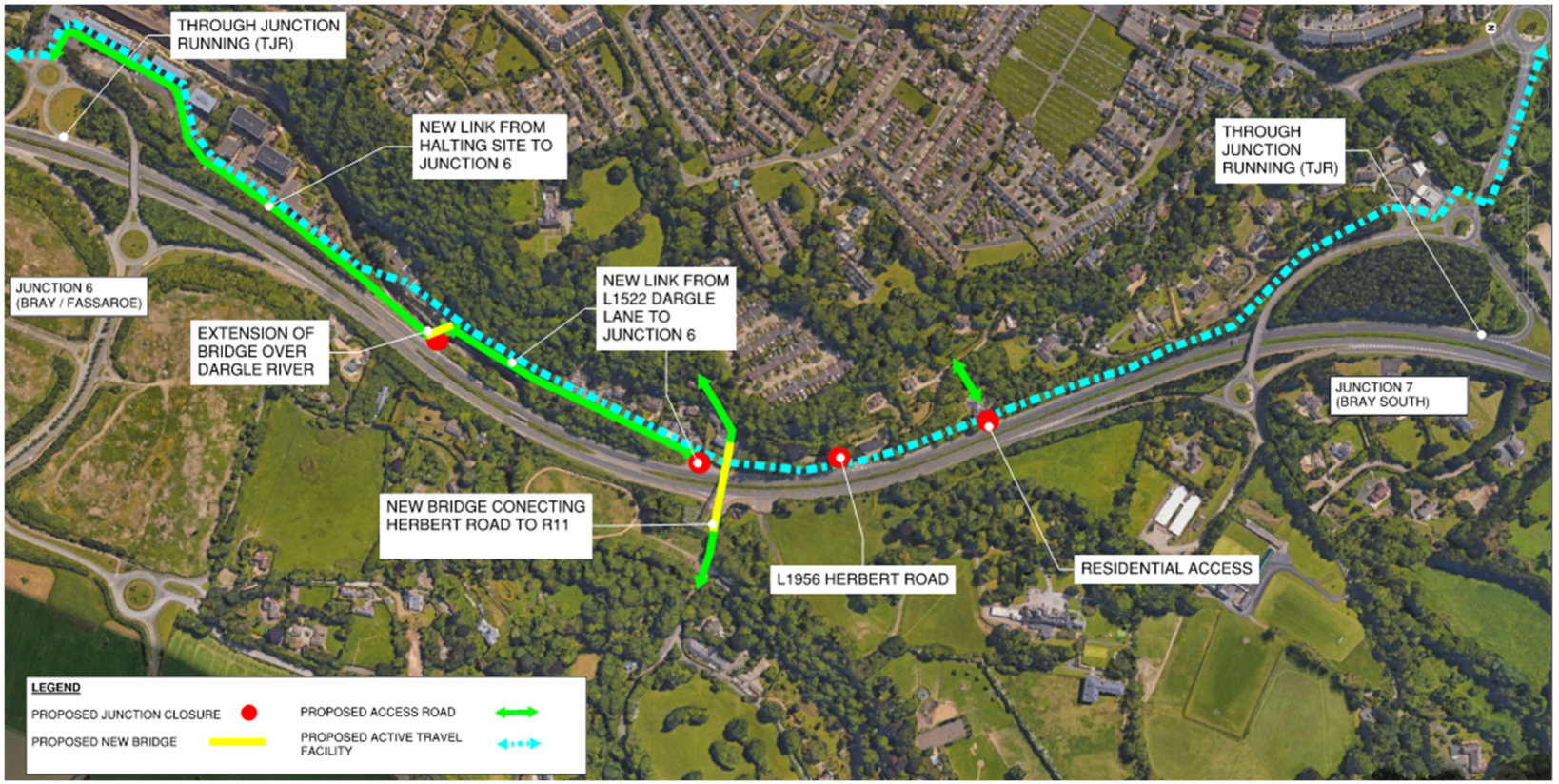
Southbound Option 1B	Intervention Proposed at Junction/Access:						Active Travel Provision
	Junction 6 (SB Merge)	Silverbridge Halting Site	L1522 Dargle Lane	L1956 Herbert Road	Residential Access	Junction 7 (SB Diverge)	
Option 1B (Minor Junction Closures – Variation B)	Apply Through Junction Running (TJR)	Retain left in – left out junction and apply TJR detail (Departure Required)	Retain left in – left out junction and apply TJR detail (Departure Required)	Close Permanently (Cul de Sac Herbert Road at Kilbride Church)	Close N11 Access (New access via Ballywaltrim Lane)	Apply Through Junction Running (TJR)	On-line, off-road facility to east of N11
Access Open (✓) / Closed (✖)	✓	✓	✓	✖	✖	✓	N/A



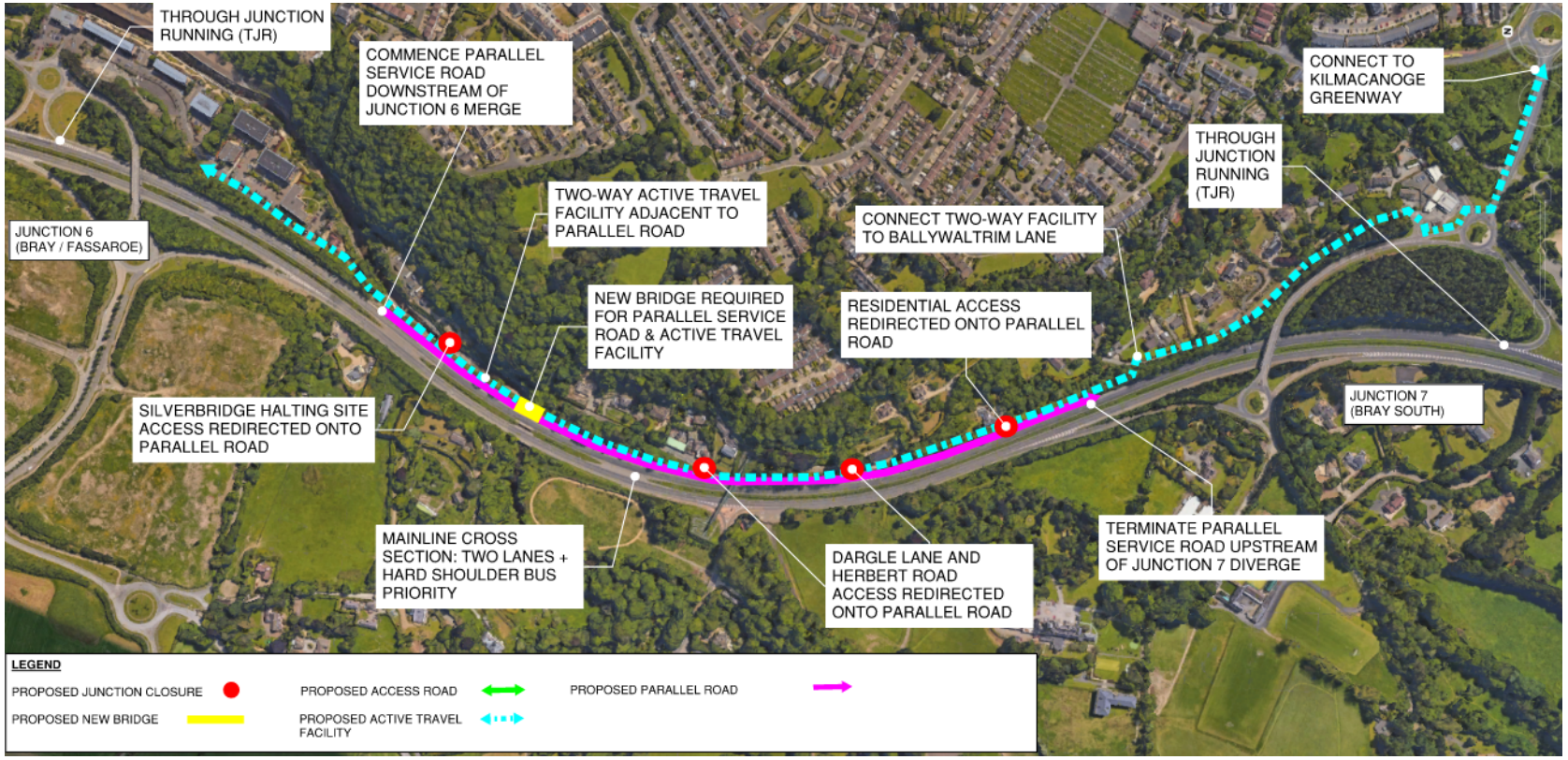
Southbound Option 2	Intervention Proposed at Junction/Access:						Active Travel Provision
	Junction 6 (SB Merge)	Silverbridge Halting Site	L1522 Dargle Lane	L1956 Herbert Road	Residential Access	Junction 7 (SB Diverge)	
Option 2 (Junction 6 Link Road East)	Apply Through Junction Running (TJR)	Close Permanently (New Access via J6 Link Road East)	Close Permanently (New Access via J6 Link Road East)	Close Permanently (Cul de Sac Herbert Road at Kilbride Church)	Close N11 Access (New access via Ballywaltrim Lane)	Apply Through Junction Running (TJR)	On-line, off-road facility to east of N11
Access Open (✓) / Closed (✖)	✓	✖	✖	✖	✖	✓	N/A



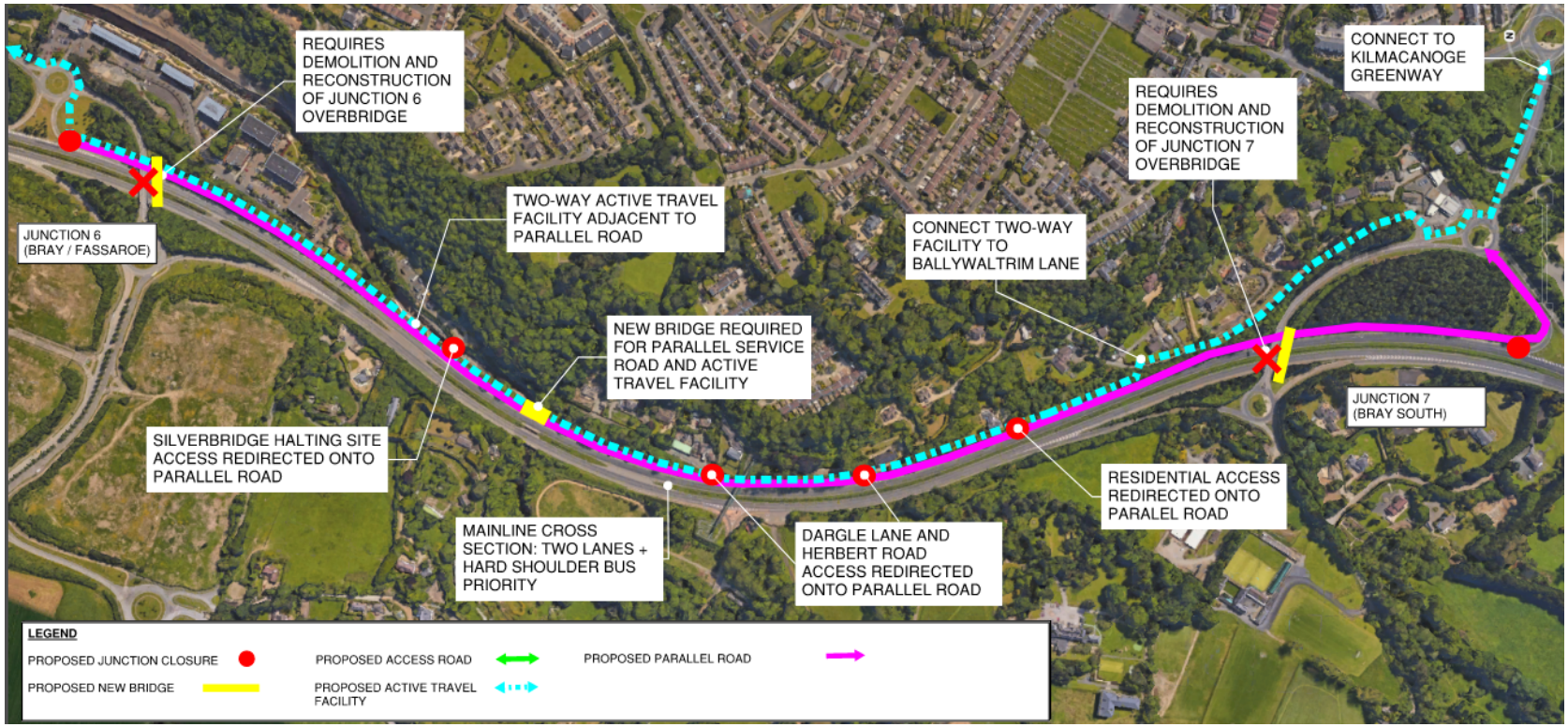
Southbound Option 2A (DISCOUNTED)	Intervention Proposed at Junction/Access:						Active Travel Provision
	Junction 6 (SB Merge)	Silverbridge Halting Site	L1522 Dargle Lane	L1956 Herbert Road	Residential Access	Junction 7 (SB Diverge)	
Option 2A (Junction 6 Link Road East – Variation A)	Apply Through Junction Running (TJR)	Close Permanently (New Access via J6 Link Road East)	Close Permanently (New Access via J6 Link Road East)	Close Permanently (New bridge connecting Herbert Road to R117)	Close N11 Access (New access via Ballywaltrim Lane)	Apply Through Junction Running (TJR)	On-line, off-road facility to east of N11
Access Open (✓) / Closed (✖)	✓	✖	✖	✖	✖	✓	N/A



Southbound Option 3	Intervention Proposed at Junction/Access:						Active Travel Provision
	Junction 6 (SB Merge)	Silverbridge Halting Site	L1522 Dargle Lane	L1956 Herbert Road	Residential Access	Junction 7 (SB Diverge)	
Option 3 (Segregated Parallel Service Road) J6 SB Merge & J7 SB Diverge Remain Open	Apply Through Junction Running (TJR)	Close Permanently (Redirect Access onto Parallel Road)	Close Permanently (Redirect Access onto Parallel Road)	Close Permanently (Redirect Access onto Parallel Road)	Close Permanently (Redirect Access onto Parallel Road)	Apply Through Junction Running (TJR)	On-line, off-road facility to east of N11
Access Open (✓) / Closed (✖)	✓	✖	✖	✖	✖	✓	N/A



Southbound Option 4	Intervention Proposed at Junction/Access:						Active Travel Provision
	Junction 6 (SB Merge)	Silverbridge Halting Site	L1522 Dargle Lane	L1956 Herbert Road	Residential Access	Junction 7 (SB Diverge)	
Option 4 (Segregated Parallel Service Road) J6 SB Merge & J7 SB Diverge Closed	Closed Permanently (SB traffic redirected to J7 via PSR)	Close Permanently (Redirect Access onto PSR)	Close Permanently (Redirect Access onto PSR)	Close Permanently (Redirect Access onto PSR)	Close Permanently (Redirect Access onto PSR)	Closed Permanently (SB J7 traffic would diverge at J6)	On-line, off-road facility to east of N11
Access Open (✓) / Closed (✖)	✖	✖	✖	✖	✖	✖	N/A



Northbound Option 1	Intervention Proposed at Junction/Access:				Active Travel Provision
	Junction 7 (Northbound Merge)	Dublin Oak Academy	R117 Enniskerry Road Junction	Junction 6 (Northbound Diverge)	
Option 1 (Minor Junction Closures)	Apply Through Junction Running (TJR)	Close Permanently (Alternative Access via Kilcroney Lane)	Close Permanently (Cul de Sac)	Apply Through Junction Running (TJR)	Not Provided (included in SB direction)
Access Open (✓) / Closed (✖)	✓	×	×	✓	N/A



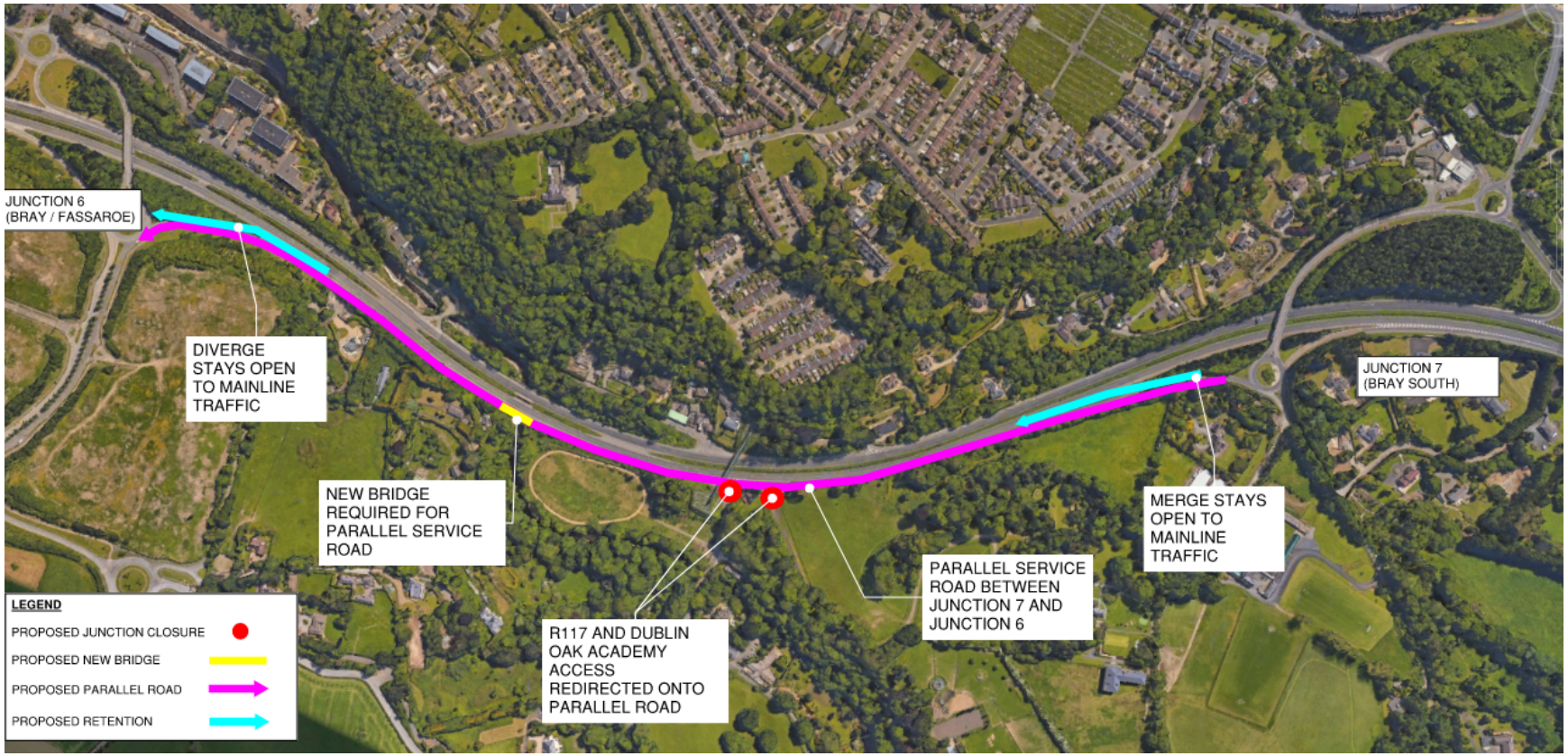
Northbound Option 1A	Intervention Proposed at Junction/Access:				Active Travel Provision
	Junction 7 (Northbound Merge)	Dublin Oak Academy	R117 Junction	Junction 6 (Northbound Diverge)	
Option 1A (Minor Junction Closures – Variation A)	Apply Through Junction Running (TJR)	Close Permanently (Alternative Access via Kilcroney Lane)	Retain left in – left out junction and apply TJR detail (Departure Required)	Apply Through Junction Running (TJR)	Not Provided (included in SB direction)
Access Open (✓) / Closed (✖)	✓	✖	✓	✓	N/A



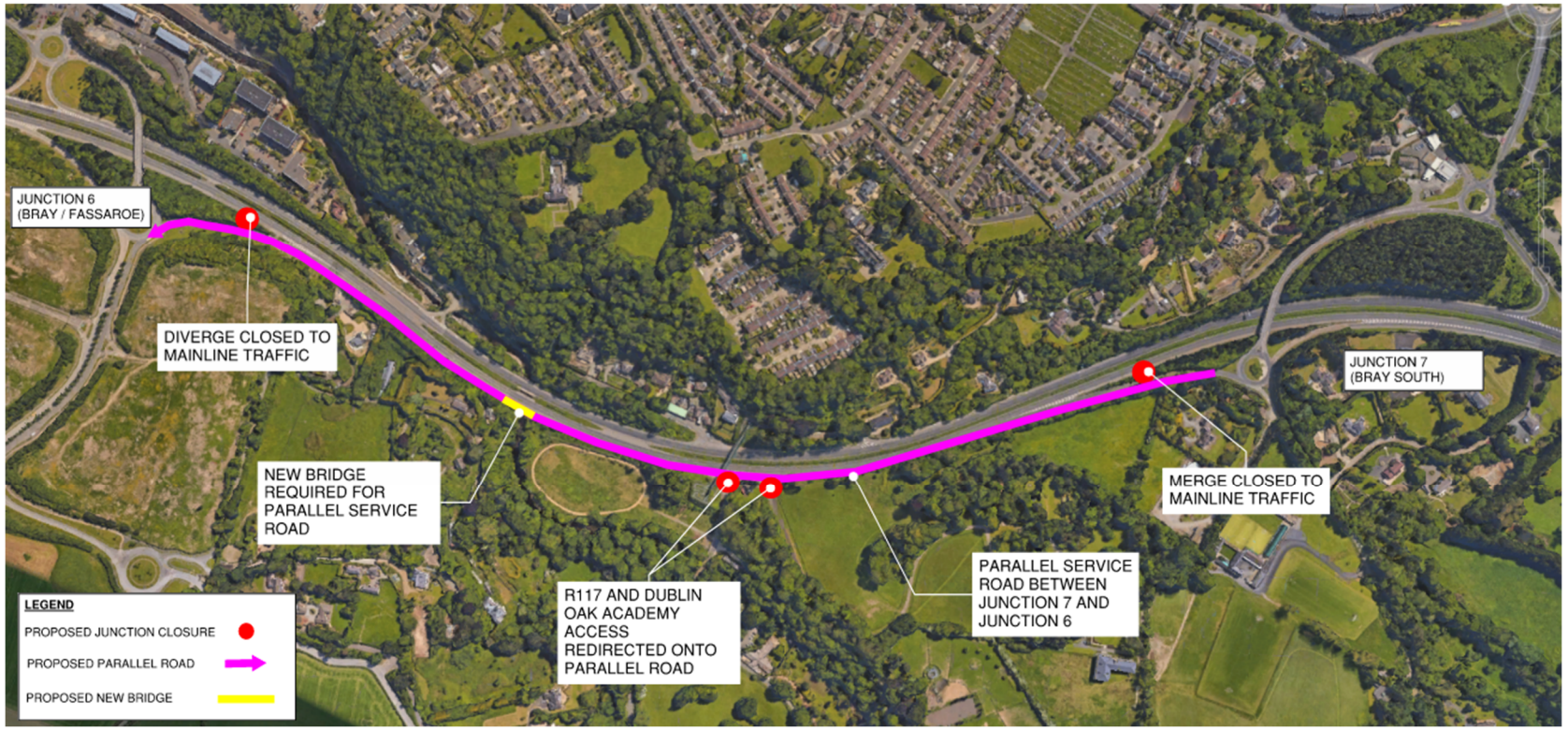
Northbound Option 2	Intervention Proposed at Junction/Access:				Active Travel Provision
	Junction 7 (Northbound Merge)	Dublin Oak Academy	R117 Junction	Junction 6 (Northbound Diverge)	
Option 2 (Realigned R117 Link Road)	Apply Through Junction Running (TJR)	Close Permanently (Alternative Access via Kilcroney Lane)	Close Permanently (Re-directed to Junction 6 via Realigned R117)	Apply Through Junction Running (TJR)	Not Provided (included in SB direction)
Access Open (✓) / Closed (✗)	✓	✗	✗	✓	N/A



Northbound Option 3	Intervention Proposed at Junction/Access:				Active Travel Provision
	Junction 7 (Northbound Merge)	Dublin Oak Academy	R117 Junction	Junction 6 (Northbound Diverge)	
Option 3 (Segregated Parallel Road) J7 NB Merge & J6 NB Diverge Remain Open	Apply Through Junction Running (TJR)	Close Permanently (Redirect Access onto Parallel Road)	Close Permanently (Redirect Access onto Parallel Road)	Apply Through Junction Running (TJR)	Not Provided (included in SB direction)
Access Open (✓) / Closed (✗)	✓	✗	✗	✓	N/A



Northbound Option 4	Intervention Proposed at Junction/Access:				Active Travel Provision
	Junction 7 (Northbound Merge)	Dublin Oak Academy	R117 Junction	Junction 6 (Northbound Diverge)	
Option 4 (Segregated Parallel Service Road) J7 NB Merge & J6 NB Diverge Closed	Closed Permanently (NB merging traffic redirected to PSR)	Close Permanently (Redirect Access onto PSR)	Close Permanently (Redirect Access onto PSR)	Closed Permanently	Not Provided (included in SB direction)
Access Open (✓) / Closed (✖)	✓	✖	✖	✓	N/A



Appendix B

Long List Sifting Matrix – Southbound

Assessment Criteria	Project Objectives	Key Performance Indicators (KPI)	Option 1A (Minor Junction Closures – Variation A) • TJR applied at Junction 6 SB Merge • TJR applied at Junction 7 SB Diverge • Silverbridge Halting Site N11 access retained • All other intermediate junctions/accesses closed		Option 1B (Minor Junction Closures – Variation B) • TJR applied at Junction 6 SB Merge • TJR applied at Junction 7 SB Diverge • Silverbridge Halting Site N11 access retained • All other intermediate junctions/accesses closed		Option 2 (Junction 6 Link Road East) • TJR applied at Junction 6 SB Merge • TJR applied at Junction 7 SB Diverge • All other intermediate junctions/accesses closed		Option 3 (Segregated Parallel Service Road) • TJR applied at Junction 6 SB Merge • TJR applied at Junction 7 SB Diverge • All other intermediate junctions/accesses closed		Option 4 (Segregated Parallel Service Road) • Junction 6 SB Merge Closed • Junction 7 SB Diverge Closed • All other intermediate junctions/accesses closed	
			Qualitative Assessment	Score (1-7)	Qualitative Assessment	Score (1-7)	Qualitative Assessment	Score (1-7)	Qualitative Assessment	Score (1-7)	Qualitative Assessment	Score (1-7)
Economy	• Deliver a practicable interim transport solution capable of delivering benefits required in the short/medium term.	**Constructability:** • Extent of enabling/corrective works to deliver effective bus priority • Extent of demolition/disruption during construction • Extent of potential realignment of existing N11/M11 mainline	• Minimal additional construction	6	• Minimal additional construction	6	• Additional works involve off-line construction • Access / constructibility challenges in the area between Dargle Lane and Halting Site, new bridge	4	• Additional works are adjacent to existing carriageway • Significant re-alignment of mainline may be required	3	• Additional works are adjacent to existing carriageway • Significant re-alignment of mainline may be required • Re-alignment of Junction 6 and 7 link roads required • Temporary Traffic Management expected to be significant	1
	• Provide the infrastructure to increase the people carrying capacity of the N11/M11 between Loughlinstown Roundabout and Junction 9 (Glenview). • Generate positive economic benefits to public transport users by: - Reducing bus journey times; and - Improving bus journey time reliability	**Bus Priority:** • Effectiveness of bus priority at key delay points	• Good priority achieved at intermediate junction closures (Dargle Lane, Herbert Road) • Reduced priority at Silverbridge Halting Site • Does not address key points of delay at J6 SB Merge, J7 SB Diverge	4.7	• Good priority achieved at intermediate junction closures (Herbert Road) • Reduced priority at Silverbridge Halting Site & Dargle Lane • Does not address key points of delay at J6 SB Merge, J7 SB Diverge	4.1	• Good priority achieved at intermediate junction closures (Silverbridge Halting Site, Dargle Lane, Herbert Road) • Does not address key points of delay at J6 SB Merge, J7 SB Diverge	5.0	• Good priority achieved at intermediate junction closures (Silverbridge Halting Site, Dargle Lane, Herbert Road) • Does not address key points of delay at J6 SB Merge, J7 SB Diverge	5.0	• Good priority achieved at intermediate junction closures (Silverbridge Halting Site, Dargle Lane, Herbert Road) • Good priority achieved at key points of delay at J6 SB Merge, J7 SB Diverge (note, that additional delay may be experienced at J6 SB Diverge)	6.1
	Sum of Impact Scores		**Total**	**10.7**	**Total**	**10.1**	**Total**	**9.0**	**Total**	**8.0**	**Total**	**7.1**
	Economy Weighted Score (out of 100)		**Total**	**77**	**Total**	**72**	**Total**	**64**	**Total**	**57**	**Total**	**51**
Cost	• Cost Range SB: < 5 million = 7 5 - 10 million = 6 10 - 15 million = 5 15 - 20 million = 4 20 - 25 million = 3 25 - 30 million = 2 > 30 million = 1	• Cost Range NB: < 1.25 million = 7 1.25 - 2.5 million = 6 2.5 - 3.75 million = 5 3.75 - 5 million = 4 5 - 6.25 million = 3 6.25 - 7.5 million = 2 > 7.5 million = 1	• Base Cost for SS-B plus €10 - 15 million	4	• Base Cost for SS-B plus €1 - 5 million	6	• Base Cost for SS-B plus €5 - 10 million	5	• Base Cost for SS-B plus €10 - 15 million	4	• Base Cost for SS-B plus €25 - 30 million	2
	Sum of Impact Scores		**Total**	**4**	**Total**	**6**	**Total**	**5**	**Total**	**4**	**Total**	**2**
	Cost Weighted Score (out of 200)		**Total**	**114**	**Total**	**171**	**Total**	**143**	**Total**	**114**	**Total**	**57**
Safety	• To deliver bus priority measures which are clearly delineated and understood by general road users and bus drivers in the environment of an inter-urban route • Ensure bus priority can be delivered without adversely impacting on safety of all road users	• Compliance with Draft TII IAN – - Junction strategy - Requirement for departures (if known), - No. of conflict points retained - Overall continuity of bus facility and junction • Compliance with Draft TII IAN. Provision of safe alternative facility for active travel.	• 3 minor junctions closed • Departures for junctions required = 1 • No. of conflict points = 3 • Continuous bus priority interrupted • Safe off-line AT facility provided	2	• 2 minor junctions closed • Departures for junctions required = 2 • No. of conflict points = 4 • Safe off-line AT facility provided	1	• All 4 minor junctions closed • Departures for junction closures required = 0 • No. of conflict points = 2 • Continuous bus priority achieved between J6 merge and J7 diverge • Safe off-line AT facility provided	6	• All 4 minor junctions closed and re-directed to parallel road • Departures for junction closures required = 0 • No. of conflict points = 2 (plus weaving conflicts) • Continuous bus priority achieved between J6 merge and J7 diverge • Safe off-line AT facility provided	4	• All 4 minor junctions closed and re-directed to parallel road • J7 SB Merge & J6 SB Diverge closed to mainline • Departures for junction closures required = 0 • No. of conflict points = 0 • Highest level of continuous bus priority achieved from J6 diverge to J7 merge • Would require J7 traffic to diverge at J6 creating additional safety issues • Safe off-line AT facility provided	2
	Sum of Impact Scores		**Total**	**2**	**Total**	**1**	**Total**	**6**	**Total**	**4**	**Total**	**2**
	Safety Weighted Score (out of 200)		**Total**	**52**	**Total**	**36**	**Total**	**171**	**Total**	**106**	**Total**	**43**
Environment	• To provide for more sustainable transport solution, supporting balance of alternative modes and enabling a reduction in private car dependency and reducing carbon intensity of travel	• Assess circular economy impact – degree of re-use of existing asset.	• Minimal additional construction	6	• Minimal additional construction	6	• Additional works involve offline construction	4	• Additional works are adjacent to existing carriageway • Significant re-alignment of mainline may be required	3	• Additional works are adjacent to existing carriageway • Significant re-alignment of mainline may be required • Demolition and reconstruction of J6 and J7 overbridges required • Re-alignment of Junction 6 and 7 link roads required • Temporary Traffic Management expected to be significant	1
		• Impacts to community	• Loss of business Dargle Lane • Loss of residential (1/2) - Dargle Lane	2	• No significant impacts	4	• Loss of business access from N11 Mainline at Dargle Lane	3	• No significant impacts	4	• No significant impacts	4
		• Impact on environmental constraints	• No environmental impact as no new construction is required	4	• No environmental impact as no new construction is required	4	• Potential environmental impact on Dargle River site conditions	3	• Potential environmental impact on Dargle River site conditions	2	• Potential environmental impact on Dargle River site conditions	2
	Sum of Impact Scores		**Total**	**12**	**Total**	**14**	**Total**	**10**	**Total**	**9**	**Total**	**7**
	Cost Weighted Score (out of 100)		**Total**	**57**	**Total**	**67**	**Total**	**48**	**Total**	**43**	**Total**	**33**
Accessibility and Social Inclusion	•To increase bus patronage along the N11/M11 corridor and enable sustainable travel to provide a faster and more reliable choice •To support improved access to the GDA for all transport users along the N11/M11 corridor	• Extent of bus priority achieved. Effective provision of bus priority at key delay points on the network	• Good priority achieved at intermediate junction closures (Dargle Lane, Herbert Road) • Reduced priority at Silverbridge Halting Site • Does not address key points of delay at J6 SB Merge, J7 SB Diverge	4.7	• Good priority achieved at intermediate junction closures (Herbert Road) • Reduced priority at Silverbridge Halting Site & Dargle Lane • Does not address key points of delay at J6 SB Merge, J7 SB Diverge	4.1	• Good priority achieved at intermediate junction closures (Silverbridge Halting Site, Dargle Lane, Herbert Road) • Does not address key points of delay at J6 SB Merge, J7 SB Diverge	5.0	• Good priority achieved at intermediate junction closures (Silverbridge Halting Site, Dargle Lane, Herbert Road) • Does not address key points of delay at J6 SB Merge, J7 SB Diverge	5.0	• Good priority achieved at intermediate junction closures (Silverbridge Halting Site, Dargle Lane, Herbert Road) • Good priority achieved at key points of delay at J6 SB Merge, J7 SB Diverge (note, that additional delay may be experienced at J6 SB Diverge)	6.1
	Sum of Impact Scores		**Total**	**4.7**	**Total**	**4.1**	**Total**	**5.0**	**Total**	**5.0**	**Total**	**6.1**
	Cost Weighted Score (out of 100)		**Total**	**67**	**Total**	**59**	**Total**	**71**	**Total**	**71**	**Total**	**88**
Integration	• To deliver a practicable interim transport solution which does not introduce significant constraint on the subsequent development of the N11/M11 Junction 4 to Junction 14 Improvement scheme	• Compatibility with Phase 2 Preferred Option for N11/M11 Scheme. Extent of abortive works.	• Minimal additional construction, therefore less likely to place a constraint for future N11/M11 J4-J14 Scheme • Closure of Dargle Lane better aligned with N11/M11 J4-J14 Scheme	4	• Limited additional construction, therefore less likely to place a constraint for future N11/M11 J4-J14 Scheme • Retention of Dargle Lane junction not aligned with N11/M11 J4-J14 Scheme	2	• Junction 6 Link Road (East) and AT facility can be retained in future scheme • Closure of Dargle Lane better aligned with N11/M11 J4-J14 Scheme	5	• Parallel Road and AT facility may be retained in future scheme, but require extension • Interim tie in with Junction 7 may be challenging and/or abortive	3	• Parallel Road and AT facility serve similar function to requirements for N11/M11 J4-J14 Scheme • demolition and reconstruction of bridges with no major junction improvements is a signifcant investment in redundant infrastructure, not compatible with future N11/M11 J4-J14 Scheme	1
	• To support integration of road-based transport with other transport modes • To complement wider government transport policy	• Level of compliance with plans and policies.	• Aligned with policy	5	• Aligned with policy	5	• Aligned with policy	5	• Aligned with policy	5	• Aligned with policy	5
	Sum of Impact Scores		**Total**	**9**	**Total**	**7**	**Total**	**10**	**Total**	**8**	**Total**	**6**
	Cost Weighted Score (out of 100)		**Total**	**64**	**Total**	**50**	**Total**	**71**	**Total**	**57**	**Total**	**43**
Physical Activity	• To provide a facility that allows for the delivery of an attractive alternative mode of transport for communities which supports the creation of a healthier urban environment for active travel, through congestion relief.	• Provision of safe alternative facility for active travel (buses not in conflict with active travel users).	• Safe alternative AT facility provided	6	• Safe alternative AT facility provided	6	• Safe alternative AT facility provided	6	• Safe alternative AT facility provided	6	• Safe alternative AT facility provided	6
	Sum of Impact Scores		**Total**	**6**	**Total**	**6**	**Total**	**6**	**Total**	**6**	**Total**	**6**
	Cost Weighted Score (out of 100)		**Total**	**86**	**Total**	**86**	**Total**	**86**	**Total**	**86**	**Total**	**86**
Total Weighted Score (out of 900)			**517**		**479**		**599**		**485**		**357**	

Appendix C

Long List Sifting Matrix – Northbound

Assessment Criteria	Project Objectives	Key Performance Indicators (KPI)	Option 1 (Minor Junction Closures) • TJR applied at Junction 7 NB Merge • TJR applied at Junction 6 NB Diverge •All other intermediate junctions/accesses closed		Option 1A (Minor Junction Closures – Variation A) • TJR applied at Junction 7 NB Merge • TJR applied at Junction 6 NB Diverge • R117 Enniskerry Road access retained •All other intermediate junctions/accesses closed		Option 2 (Realigned R117 Link Road) • TJR applied at Junction 6 SB Merge • TJR applied at Junction 7 SB Diverge • All other intermediate junctions/accesses closed		Option 3 (Segregated Parallel Service Road) • TJR applied at Junction 7 NB Merge • TJR applied at Junction 6 NB Diverge •All other intermediate junctions/accesses closed		Option 4 (Segregated Parallel Service Road) • TJR applied at Junction 7 NB Merge • TJR applied at Junction 6 NB Diverge •All other intermediate junctions/accesses closed	
			Qualitative Assessment	Score (1-7)	Qualitative Assessment	Score (1-7)	Qualitative Assessment	Score (1-7)	Qualitative Assessment	Score (1-7)	Qualitative Assessment	Score (1-7)
Economy	• Deliver a practicable interim transport solution capable of delivering benefits required in the short/medium term.	**Constructability:** • Extent of enabling/corrective works to deliver effective bus priority • Extent of demolition/disruption during construction • Extent of potential realignment of existing N11/M11 mainline	• Minimal additional construction	6	• Minimal additional construction	6	• Additional works involve off-line construction • Constructibility challenges in the area crossing the Glencullen River	4	• Additional works are adjacent to existing carriageway • Significant re-alignment of mainline may be required	2	• Additional works are adjacent to existing carriageway • Significant re-alignment of mainline may be required	2
	• Provide the infrastructure to increase the people carrying capacity of the N11/M11 between Loughlinstown Roundabout and Junction 9 (Glenview). • Generate positive economic benefits to public transport users by: - Reducing bus journey times; and - Improving bus journey time reliability	**Bus Priority:** • Effectiveness of bus priority at key delay points	• Good priority achieved at intermediate junction closures (R117, Dublin Oak Academy) • Bus gate provides priority at J7 northbound merge	5.0	• Good priority achieved at intermediate junction closures (Dublin Oak Academy) • Reduced priority at R117 Enniskerry Road junction	4.2	• Good priority achieved at intermediate junction closures (R117, Dublin Oak Academy) • Bus gate provides priority at J7 northbound merge	5.0	• Good priority achieved at intermediate junction closures (R117, Dublin Oak Academy) • Bus gate provides priority at J7 northbound merge	5.0	• Good priority achieved at intermediate junction closures (R117, Dublin Oak Academy) • Good priority achieved at key points of delay at J7 NB Merge, J6 NB Diverge (note, that additional delay may be experienced at J7 NB Diverge)	6.2
	Sum of Impact Scores		**Total**	**11.0**	**Total**	**10.2**	**Total**	**9.0**	**Total**	**7.0**	**Total**	**8.2**
	Economy Weighted Score (out of 100)		**Total**	**79**	**Total**	**73**	**Total**	**64**	**Total**	**50**	**Total**	**59**
Cost	• Cost Range SB: < 5 million = 7 5 - 10 million = 6 10 - 15 million = 5 15 - 20 million = 4 20 - 25 million = 3 25 - 30 million = 2 > 30 million = 1	• Cost Range NB: < 1.25 million = 7 1.25 - 2.5 million = 6 2.5 - 3.75 million = 5 3.75 - 5 million = 4 5 - 6.25 million = 3 6.25 - 7.5 million = 2 > 7.5 million = 1	• Base Cost for SS-B plus <€1.25 million	7	• Base Cost for SS-B plus <€1.25 million	7	• Base Cost for SS-B plus €3.75 - 5 million	4	• Base Cost for SS-B plus >€7.5 million	1	• Base Cost for SS-B plus >€7.5 million	1
	Sum of Impact Scores		**Total**	**7**	**Total**	**7**	**Total**	**4**	**Total**	**1**	**Total**	**1**
	Cost Weighted Score (out of 200)		**Total**	**200**	**Total**	**200**	**Total**	**114**	**Total**	**29**	**Total**	**29**
Safety	• To deliver bus priority measures which are clearly delineated and understood by general road users and bus drivers in the environment of an inter-urban route	• Compliance with Draft TII IAN – - Junction strategy - Requirement for departures (if known), - No. of conflict points retained - Overall continuity of bus facility and junction • Compliance with Draft TII IAN. Provision of safe alternative facility for active travel.	• 2 minor junctions closed • Departures for junctions required = 0 • No. of conflict points = 2 • Continuous bus priority achieved • Safe off-line AT facility provided	6	• 1 minor junction closed • Departures for junctions required = 1 • No. of conflict points = 3 • Continuous bus priority interrupted • Safe off-line AT facility provided	2	• 2 minor junctions closed • Departures for junctions required = 0 • No. of conflict points = 2 • Continuous bus priority achieved • Safe off-line AT facility provided	6	• 2 minor junctions closed • Departures for junctions required = 0 • No. of conflict points = 2 • Continuous bus priority achieved • Safe off-line AT facility provided	6	• 2 minor junctions closed • Departures for junctions required = 0 • No. of conflict points = 2 • Continuous bus priority achieved • Would require J6 traffic to diverge at J7 creating additional safety issues • Safe off-line AT facility provided	2
	• Ensure bus priority can be delivered without adversely impacting on safety of all road users											
	Sum of Impact Scores		**Total**	**6**	**Total**	**2**	**Total**	**6**	**Total**	**6**	**Total**	**2**
	Safety Weighted Score (out of 200)		**Total**	**171**	**Total**	**57**	**Total**	**171**	**Total**	**171**	**Total**	**43**
Environment	• To provide for more sustainable transport solution, supporting balance of alternative modes and enabling a reduction in private car dependency and reducing carbon intensity of travel	• Assess circular economy impact – degree of re-use of existing asset.	• Minimal additional construction	6	• Minimal additional construction	6	• Additional works involve off-line construction • Constructibility challenges in the area crossing the Glencullen River	3	• Additional works are adjacent to existing carriageway • Significant re-alignment of mainline may be required	1	• Additional works are adjacent to existing carriageway • Significant re-alignment of mainline may be required	2
		• Impacts to community	• Negative accessibility impacts on adjacent communities	2	• No significant impacts on adjacent communities	4	• Negative accessibility impacts on adjacent communities	2	• No significant impacts on adjacent communities	4	• No significant impacts on adjacent communities	4
		• Impact on environmental constraints	• Minimal extent of widening and/or off-line road construction works required	4	• Minimal extent of widening and/or off-line road construction works required	4	• Potential environmental impact on Glencullen River and Dargle Woodland	3	• Potential environmental impact on Dargle River and Archaeological/Architectural & Cultural Heritage constraints	2	• Potential environmental impact on Dargle River and Archaeological/Architectural & Cultural Heritage constraints	2
	Sum of Impact Scores		**Total**	**12**	**Total**	**14**	**Total**	**8**	**Total**	**7**	**Total**	**8**
	Cost Weighted Score (out of 100)		**Total**	**57**	**Total**	**67**	**Total**	**38**	**Total**	**33**	**Total**	**38**
Accessibility and Social Inclusion	•To increase bus patronage along the N11/M11 corridor and enable sustainable travel to provide a faster and more reliable choice •To support improved access to the GDA for all transport users along the N11/M11 corridor	• Extent of bus priority achieved. Effective provision of bus priority at key delay points on the network	• Good priority achieved at intermediate junction closures (R117, Dublin Oak Academy) • Bus gate provides priority at J7 northbound merge	5.0	• Good priority achieved at intermediate junction closures (Dublin Oak Academy) • Reduced priority at R117 Enniskerry Road junction	4.2	• Good priority achieved at intermediate junction closures (R117, Dublin Oak Academy) • Bus gate provides priority at J7 northbound merge	5.0	• Good priority achieved at intermediate junction closures (R117, Dublin Oak Academy) • Bus gate provides priority at J7 northbound merge	5.0	• Good priority achieved at intermediate junction closures (R117, Dublin Oak Academy) • Good priority achieved at key points of delay at J7 NB Merge, J6 NB Diverge (note, that additional delay may be experienced at J7 NB Diverge)	6.2
	Sum of Impact Scores		**Total**	**5.0**	**Total**	**4.2**	**Total**	**5.0**	**Total**	**5.0**	**Total**	**6.2**
	Cost Weighted Score (out of 100)		**Total**	**71**	**Total**	**60**	**Total**	**71**	**Total**	**71**	**Total**	**89**
Integration	• To deliver a practicable interim transport solution which does not introduce significant constraint on the subsequent development of the N11/M11 Junction 4 to Junction 14 Improvement scheme	• Compatibility with Phase 2 Preferred Option for N11/M11 Scheme. Extent of abortive works.	• Minimal additional construction, therefore less likely to place a constraint for future N11/M11 J4-J14 Scheme	4	• Minimal additional construction, therefore less likely to place a constraint for future N11/M11 J4-J14 Scheme	4	• Proposed closure of N11 Enniskerry Road junction via new connection to J6 could be incorporated into future N11/M11 J4-J14 Scheme.	5	• Parallel Road and AT facility may be retained in future scheme, but require extension • Interim tie in with Junction 7 may be challenging and/or abortive	3	• Parallel Road and AT facility may be retained in future scheme, but require extension • Interim tie in with Junction 7 may be challenging and/or abortive	3
	• To support integration of road-based transport with other transport modes • To complement wider government transport policy	• Level of compliance with plans and policies.	• Aligned with policy	5	• Aligned with policy	5	• Aligned with policy	5	• Aligned with policy	5	• Aligned with policy	5
	Sum of Impact Scores		**Total**	**9**	**Total**	**9**	**Total**	**10**	**Total**	**8**	**Total**	**8**
	Cost Weighted Score (out of 100)		**Total**	**64**	**Total**	**64**	**Total**	**71**	**Total**	**57**	**Total**	**57**
Physical Activity	• To provide a facility that allows for the delivery of an attractive alternative mode of transport for communities which supports the creation of a healthier urban environment for active travel, through congestion relief.	• Provision of safe alternative facility for active travel (buses not in conflict with active travel users).	• Safe alternative AT facility provided	6	• Safe alternative AT facility provided	6	• Safe alternative AT facility provided	6	• Safe alternative AT facility provided	6	• Safe alternative AT facility provided	6
	Sum of Impact Scores		**Total**	**6**	**Total**	**6**	**Total**	**6**	**Total**	**6**	**Total**	**6**
	Cost Weighted Score (out of 100)		**Total**	**86**	**Total**	**86**	**Total**	**86**	**Total**	**86**	**Total**	**86**
Total Weighted Score (out of 900)			**729**		**544**		**561**		**455**		**349**	