

Technical Note

Project:	Sutton to Malahide Pedestrian and Cycle Scheme		
Subject:	Station Road Pinch Point - Sutton		
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Client signoff

Client	FCC
Project	Sutton to Malahide Pedestrian and Cycle Scheme
Project No.	5158418
Client signature / date	

Scheme Outline

Fingal County Council (FCC) proposes to develop a comprehensive pedestrian and cycle route with a view to providing connecting facilities between the towns of Sutton and Malahide.

To achieve this objective, Atkins have been engaged by FCC to develop route options, to undertake preliminary design work on the preferred route option and to manage and coordinate all aspects of an application to An Bord Pleanála seeking approval for the implementation of the scheme. At present the scheme is at Stage 2 (Preliminary Design).

The purpose of the proposed scheme as set out by Fingal County Council and the National Transport Authority is to develop an urban greenway to facilitate leisure and recreational pedestrian and cycling trips between Sutton and Malahide. The proposed scheme will form a part of the long-standing objective of the Fingal Development Plan in providing a greenway from Sutton to Swords and the wider Fingal Coastal Way.

Purpose of Technical Note

This Technical Note presents a set of options developed for a section of the route just north of the level crossing at Sutton Station that is particularly constrained on both sides by private residential property. The options have then been assessed through a Multi Criteria Assessment (MCA) process to determine the preferred option along this short section.

Options Study Area Description

The location of the subject area is presented in the Figure 1.

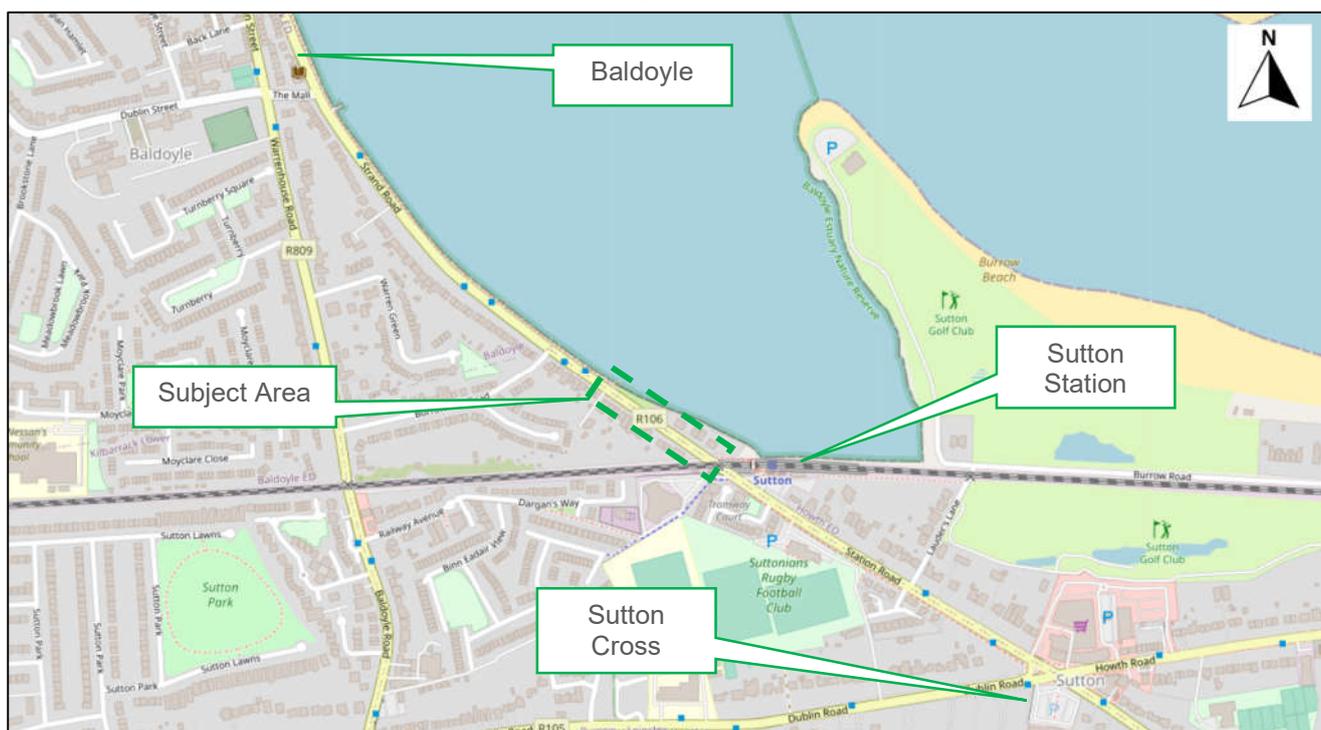


Figure 1 – Subject Study Area

The section in question is located along the R106 (Station Road) from Sutton Cross to Baldoye. Station Road consists of a circa 7.0m wide single carriageway with narrow footpaths provided on both sides. It extends for circa 100m and is directly located to the immediate north of the Sutton Station level crossing and immediately south of Baldoye Promenade.

High Level Optioneering

Prior to undertaking the MCA process, some high-level options were developed to identify which options had merit and reason for further examination. These high-level options are described below:

1. Utilisation of Station Road with landtake requirement;
2. Aligning the option along Station Road but implementing an overbridge to circumvent the pinch point;
3. Keeping the scheme aligned along Station Road but implementing an underpass to circumvent the pinch point; and
4. Bypassing the pinch point altogether by taking a route along Lauder's Lane and adjacent to the rail line to circumvent the pinch point.

The four high level options identified above are further discussed below with regards to the merits of each option and its suitability for progress to detailed MCA:

1. **Utilisation of Station Road with landtake requirement;**
2. This route option will keep the scheme at grade which would provide a comfortable experience for both pedestrians and cyclists. The option, however, would impact adjacent houses with the possibility of land take arising. This could be mitigated with careful optioneering design concepts. There are no overriding constraints that would remove this option from further detailed analysis. There is also potential for variants of this option to be explored, such as land take solely from one side or the other or from both sides etc. As such, this option and variant of this option merit further assessment;
3. **Aligning the option along Station Road but implementing an overbridge to circumvent the pinch point**
4. In order to implement this option, a bridge structure would potentially be required to be built close to or over the adjacent dwellings in order to circumvent the pinch point area. This structure would require significant vertical headroom clearance and thus extensive approach ramp lengths. This would impact the adjacent dwelling properties in terms of land take, privacy and views. The cost of this option would most likely be significant and outweigh its benefits. In addition to this there is not enough space to implement this option. For these reasons this option is not considered further;
5. **Keeping the scheme aligned along Station Road but implementing an underpass to circumvent the pinch point**
6. Implementing an underpass would require significant tunnelling either under the adjacent properties or adjacent to / in line with Station Road. Significant land take would be required to facilitate this underpass. Tunnelling would also be required under the railway line and there could be extensive opposition or conditions imposed by Irish Rail in undertaking this work as it could result in issues with the operations and maintenance of the railway line during construction and operation. The cost of this option would most likely be significant and outweigh its benefits and for that reason, and that there is not enough space to implement this option, it is not considered further;
7. **Bypassing the pinch point altogether by taking a route along Lauder's Lane and adjacent to the rail line to circumvent the pinch point**
This option would require traffic management along Lauder's lane. A boardwalk construction would be required within the SAC and SPA which may have an impact on the SAC and SPA sites and on the privacy of adjacent landowners. The impact of a boardwalk would be determined at a later stage through an appropriate assessment. Notwithstanding, this route removes land take impact and is an interesting and realistic alternative that is considered to merit a more detailed analysis.

For the reasons outlined in the text above, variants of the first high level option and the fourth high level option are taken to the MCA stage for detailed analysis.

Multi Criteria Analysis

The MCA process has been developed with reference to the National Cycle Manual (NCM), the Common Appraisal Framework for Transport Projects and Programmes (CAF) and Unit 7.0 'Multi Criteria Analysis' of TII's Project Appraisal Guidelines. The following steps have been developed to assist in the MCA process.

Development of Route / Link Options

Through reference to the National Cycle Manual and discussion with the Client the following design options have been identified.

- **Option 1: Utilise Station Road with land take on Northern Side.**

This option provides a two-way cycle track on the coastal side of the road, widened footpaths on both sides and a narrowed road carriageway. It consists of taking land from the coastal side of Station Road which will impact approximately 500m of road boundary affecting a total of four (4) residential units.



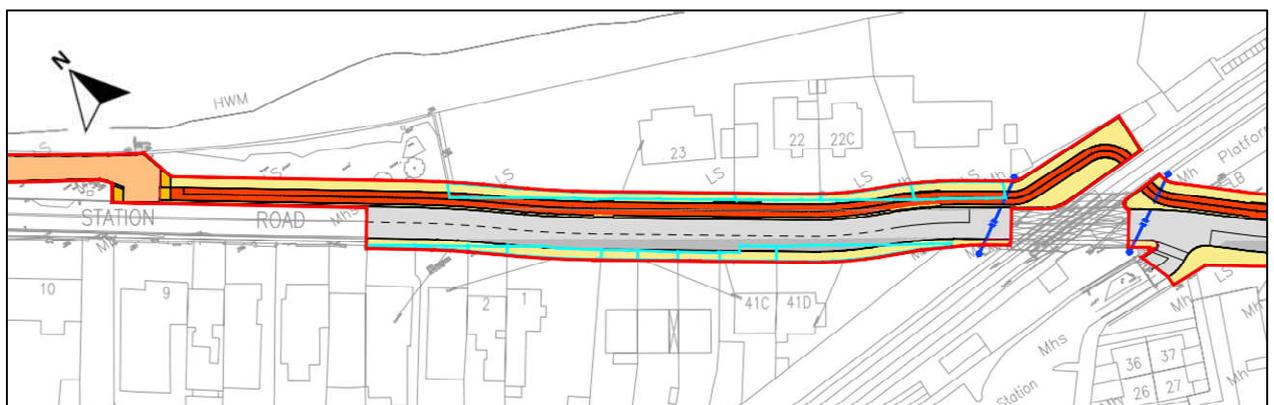
- **Option 2: Utilise Station Road with land take on Southern Side.**

This option provides a two-way cycle track on the coastal side of the road, widened footpaths on both sides and a narrowed road carriageway. This option involves land acquisition from the landward side. The length of the road boundary impacted is approximately 700m affecting a total of nine (9) properties. Two (2) properties on the coastal side are also slightly impacted due to the constraints in realigning the road carriageway to the landward side.



- **Option 3: Utilise Station Road with land take on both sides.**

This option provides a two-way cycle track on the coastal side of the road, widened footpaths on both sides and a narrowed road carriageway. However, it considers taking land on both the sides of Station Road to achieve the provision. This option impacts on 400m of the coastal side boundary and 700m of the landward side boundary. As such it affects a total of thirteen (13) properties.



- **Option 4: Alternative route along coast.**

This proposed alternative route bypasses the need to route along the subject section of Station Road. Instead it commences, in a south to north orientation, at the Lauder's Lane junction with the Station Road and progresses approximately 190m towards Burrow Road passing over the rail way crossing. Once on Burrow Court it progresses a short distance west until this road ends with its access to Sutton Golf Club. The route then continues northwards on an off road route adjacent to the eastern side of the rail way line for approximately 250m. This will be facilitated through the construction of a boardwalk. The route then diverts towards the rear of the existing four (4) residential units and continues for 200 meters before tying in with the existing Baldoyle Promenade.



Development of Assessment Criteria

With reference to design principles set out within the NCM and impacts that are relevant to the adjacent residents and the delivery of the proposed scheme the following criteria have been identified.

Table 1. Criteria Summary

Context	Design Context The assessment criteria relating to design refers to the five key design principles for cycle friendly infrastructure. These include the following:	Community Context The interests of the community are also considered within the assessment criteria. These include the following:	Delivery Context The consideration of risks in terms of construction costs and programme are also assessed. These include the following:
Criteria	<ul style="list-style-type: none"> • Pedestrian User Needs • Cyclist User Needs • Vulnerably Road Users 	<ul style="list-style-type: none"> • Impact on businesses • Impact on Residents • Operational road / traffic impacts 	<ul style="list-style-type: none"> • Budget risks • Programme risks • Environmental risk
Considerations	<ul style="list-style-type: none"> • Safety • Directness • Coherence • Attractiveness • Comfort 	<ul style="list-style-type: none"> • Impact on access • Impact on parking • Impact on property • Operational and maintenance impacts 	<ul style="list-style-type: none"> • Construction and maintenance costs • Acquisition costs • Delay to programme due to legal process • Ecological impacts on SAC / SPA.

Development of Scoring Process

Each of the four (4) options are assessed against the above identified criteria in a performance matrix which indicates how each option performs against the criteria and in comparison, to the other three options.

Each criterion is scored on a five-point ordinal colour coded scale as presented in Figure 1 2. This scale rates how well each alternative satisfies a particular criterion.

Table 2. Scoring Scale

Colour Coding	Rank Description
	Positive
	Slightly Positive
	Neutral
	Slightly Negative
	Negative

Development of Weighting Procedure

It is considered that Environment is important factor particularly so because of the schemes proximity to designated SAC and SPA sites. Thus, this criterion has been given a weighting of fifteen (15), whereas all other criteria are given a weighting of ten (10).

Performance Matrix

The full definition of the MCA criteria including sub criteria is provided in Table 3 following. The MCA assessment is provided in Table 4.

Table 3. MCA Assessment Criteria

Context	Main Criteria	Sub Criteria	Weighting
Environmental Context	Environmental Impact	<ul style="list-style-type: none"> Impacts on SPA / SAC sites. Impact on ecology. 	15
Design Context	Safety	<ul style="list-style-type: none"> Vehicle conflicts. Pedestrian conflicts. Perception of safety. 	10
	Directness	<ul style="list-style-type: none"> Transition between links types. Treatment of side roads and junctions. Ability to overtake. 	10
	Coherence	<ul style="list-style-type: none"> Route continuity and consistency. Route legibility. Obstructions such as illegal parking; 	10
	Attractiveness	<ul style="list-style-type: none"> Cycling experience. Contribution to urban design. Impact on local heritage and landscape values. 	10
	Comfort	<ul style="list-style-type: none"> Provision of adequate width. Maintain cyclist progression. Suitability for all users. 	10
Community Context	Local Business Impact	<ul style="list-style-type: none"> Property access. Parking. 	10
	Local Resident Impact	<ul style="list-style-type: none"> Property access. Impact of land / property acquisition. 	10
	Operational Impacts	<ul style="list-style-type: none"> Traffic management Impact on maintenance costs. 	10
Delivery Context	Budget Risks	<ul style="list-style-type: none"> Construction costs. Land / property acquisition costs; 	10
	Programme Risks	<ul style="list-style-type: none"> Land / property acquisition legal processes. 	10

Table 4. MCA Performance Matrix

Context	Criteria	Option 1	Option 2	Option 3	Option 4
Environmental Context	Environmental Impacts	Green	Green	Green	Red
Design Context	Safety	Light Green	Light Green	Light Green	Green
	Directness	Green	Green	Green	Yellow
	Coherence	Green	Green	Green	Yellow
	Attractiveness	Yellow	Yellow	Yellow	Yellow
	Comfort	Light Green	Light Green	Light Green	Green
Community Context	Property Impacts	Red	Red	Yellow	Yellow
	Operational Impacts	Red	Red	Yellow	Green
Delivery Context	Budget Risks	Light Green	Light Green	Green	Red
	Programme Risks	Light Green	Light Green	Light Green	Yellow
Rankings		2nd		1st	4th

Note:

A weighting of 15 has been applied to the environmental criterion.

A weighting of 10 has been applied to all remaining criteria.

Assessment Discussion

The ranking of the four (4) concept options as presented within Table 4 'Performance Matrix' gives an indication of how each option performs against each criterion and therefore illustrates the overall comparable strengths and weaknesses of each option.

It should be noted that this ranking only provides a guide to the impact of the each of the four (4) concept options and should be balanced through discussion and engineering judgement. The following such discussion weighs up the strength of key criteria and the impacts imposed by each option in order to determine the overall impacts and identify a preferred concept option.

Option 1: Utilise Station Road with land take on Coastal Side

This option does facilitate the delivery of a two-way pedestrian and cycle facility which meets the required standards in terms of safety and comfort and is suitable for all users.

This option requires all land take to be taken from the coastal side of the carriageway to facilitate the construction of the cycle facility. The main issues associated with this option is that it unduly impacts on the properties located on the coastal side of the road and how they negotiate vehicular access and egress to their properties. To take

land solely from these properties will leave the task of access and egress more difficult with limited space for manoeuvring a vehicle within their curtilage.

Option 2: Utilise Station Road with land take on Landward Side

This option also facilitates the delivery of a two-way pedestrian and cycle facility which meets the required standards in terms of safety and comfort and is suitable for all users.

This option requires all land take to be taken from the landward side of the carriageway to facilitate the construction of the cycle facility. The main issues associated with this option is that it unduly impacts on the properties located on the landward side of the road and how they negotiate vehicular access and egress to their properties. To take the majority of land from these properties will leave the task of access and egress more difficult with limited space for manoeuvring a vehicle within their curtilage. This option does not fully remove impact from the coastal side with two properties being affect due to the constraints adjacent the rail way line in realigning the road to the landward side.

In addition, the road carriageway would require to be realigned quite significantly leading to additional carriageway construction with resultant increase in capital construction.

Option 3: Utilise Station Road with land take on both sides

This option also facilitates the delivery of a two-way pedestrian and cycle facility which meets the required standards in terms of safety and comfort and is suitable for all users.

The characteristics of this option are similar to those detailed in Option 1 and 2, however this option proposes land acquisition from both sides of Station Road.

Whilst affecting more properties than either Option 1 or 2, this option imposes the least degree of impact on all properties. Thus, it does not compromise, to the same degree, the ability to access any of the properties or the ability to manoeuvre within the property if possible, per the existing situation.

This option also reduces the need to realign the existing road and thus this reduces capital expenditure impacts particularly when compared to Option 2.

Option 4: Alternative route along Coast

This option completely bypasses the need to route past Sutton Station, the level crossing and thus the need to route through the constrained area just north of there. From a pedestrian and cyclist perspective it does have some merits; in that it avoids the pinch point area along Station Road and can provide for its majority a high standard of comfort and safety. However, the section along Lauders Lane presents issues, given that it in itself is a narrow laneway with narrow footpaths and little scope to accommodate segregated facilities. In all likelihood this would require the lane to operate as either a shared street facility, which is a link type which has been avoided on this scheme so far, or would require the road to be reduced to a single lane in one direction only with the width gained allocated to the cycle facilities. Given that Burrow Lane is already a difficult area to access it is not considered that this would be acceptable from either a traffic management perspective or a local resident perspective. The route is also indirect and runs the risk of pedestrians and cyclists progressing along Station Road anyway. There are also privacy issues relating to the construction of a boardwalk to the rear of the four (4) properties just south of the Baldoyle Promenade.

Notwithstanding the above, the biggest issue with this option by far is its environmental impact. The circa 450m boardwalk section of this route within the intertidal areas of Baldoyle Bay would be entirely within the Baldoyle Bay Special Area of Conservation (SAC) and also within the Baldoyle Bay Special Protection Area for birds (SPA). These designated conservation areas are protected at EU / international level. The habitats within SAC and SPA are also protected at EU / international level.

The construction of the boardwalk would result in the direct loss of protected habitat. In order to propose a pathway through these protected habitats, there would need to be absolutely no other alternative, and even then, it would be unlikely to pass through the planning process because of the direct loss of protected habitats.

Furthermore, the construction activities within the intertidal areas / protected habitats can also cause impacts in and of itself would need to be considered appropriately. The position of the adjacent railway complicates access required for any construction process.

Baldoyle Bay as a SPA, supports large numbers of migratory waterbirds during the winter months – these waterbirds are protected species at an EU / International level.

These waterbirds feed within the mudflats and sandflats when the tide is low and rest along the shoreline when the tide is high. It should be noted that this area has not ever been subject to human disturbance / activities and waterbirds utilise this area of the bay for that reason.

During the usage of any greenway or boardwalk in this area the birds would be displaced and disturbed from regular feeding and roosting areas by the levels of human activity not seen before in this area. As with the direct loss of habitats mentioned above, it is highly unlikely that this would be acceptable at the planning process.

From a pure ecology point of view, any route within the intertidal areas will have both significant direct and significant indirect impacts on local biodiversity. The proposal for the cycleway from Sutton to Malahide has been designed to actively avoid these type of impacts.

Recommendation

It is recommended that [Option 3: Utilise Station Road with land take on both sides](#) is the preferred option to be progressed. It has none of the environmental impacts of Option 4 and is the most balanced option proposed along Station Road in terms of capital expenditure, land take and access impacts on the adjacent residential properties.