Technical Note

Project:	Sutton to Malahide Pedestrian and Cycle Scheme		
Subject:	Portmarnock Village		
Author:	Atkins		
Date:	April 2022	Project No.:	5158418
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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.

A landscape plan has been developed for Portmarnock village to incorporate, where possible, green infrastructure such as trees and planters.

Feasibility Study Options Report

In November 2017, Atkins prepared and issued a Feasibility Study Options Report (FSOR) to FCC. The main aims and objectives of this Report were:

- To consider the context of the scheme in terms of Local, Regional and National Planning Policy;
- To identify significant engineering and environmental constraints;
- To set out the route options considered and to summarise their feasibility and relative ranking in terms of economy, integration, accessibility, safety and environment; and
- To appraise the findings of the route options study and make a recommendation in relation to a preferred route and link type.

The above objectives are still valid in 2022 and consistent with the overall aims and objectives and in line with relevant policy.

Through discussions held with FCC and the National Transport Authority (NTA), the majority of the emerging route and link options have been agreed with the exception of some specific sections. One of the areas which required further review was Portmarnock Village and specifically the type of cycling facility to be provided through the village.

Purpose of Technical Note

The FSOR proposed three separate route options for Portmarnock. These consisted of two routes around the town, one to the east through Portmarnock Hotel and Golf Links and one to the west bordering a number of housing estates, the Sluice River and Malahide Golf Course. The third route consisted of route through the village centre, assumed to be in the form of a shared street provision. A Multi Criteria Analysis (MCA) was undertaken to assess the routes. This analysis concluded that the route through the village was the emerging preferred route option.

Discussions with FCC and the NTA indicated an acceptance that this route option represented the preferred route alignment. Notwithstanding, Atkins have been requested to develop a number of design options and undertake a MCA to assist in identifying the emerging preferred design option through Portmarnock Village.

This Technical Note presents a set of design options developed for the route through Portmarnock Village and the assessment of those design options.

Options Study Area Description

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

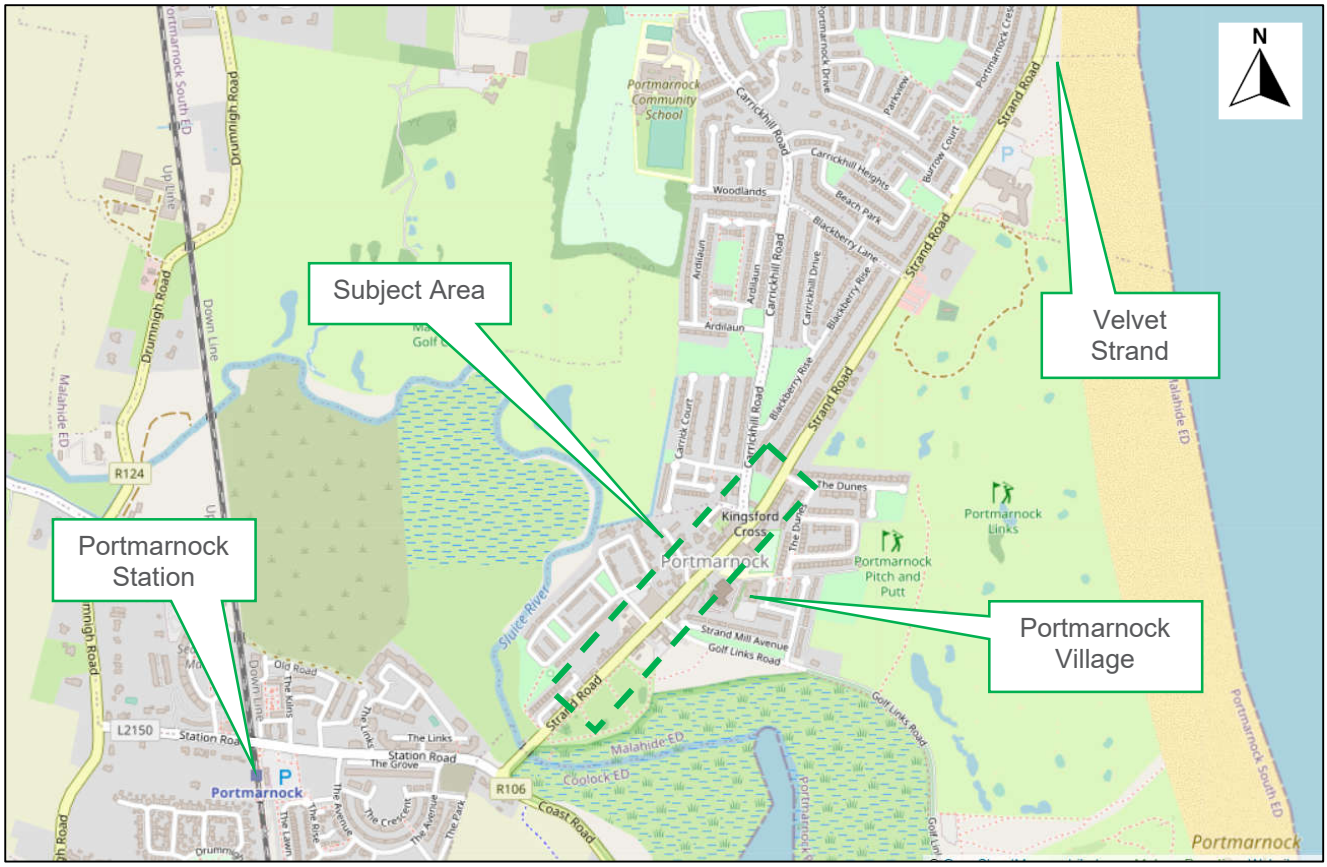


Figure 1 – Subject Study Area

The section in question is located along the R106 (Strand Road) from the Hazel Grove residential estate to the south of Portmarnock Village to The Dunes residential estate to the north of the village. The study area extends through Portmarnock Village over a length of approximately 700m.

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 Link Options

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

- Option 1: Shared Street – minimum land take;
- Option 2: Segregated two-way cycle track - parking removed / minor land take;
- Option 3: Segregated two-way cycle track – parking retained / significant land take;
- Option 4: One-way raised cycle lane – parking removed / minor land take; and
- Option 5: One-way raised cycle lane – parking retained / significant land take.

The design option drawings are contained within Appendix A, as appended to this Technical Note.

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	• Safety • Directness • Coherence. • Attractiveness. • Comfort.	• Impact on businesses • Impact on Residents • Operational impacts	• Budget risks • Programme risks
Considerations	• Traffic Volumes and Speeds • Vehicle conflicts. • Pedestrian conflicts. • Perception of safety. • Transition between links types. • Treatment of side roads and junctions. • Ability to overtake. • Route continuity and consistency. • Route legibility. • Obstructions such as illegal parking; • Integration with the village environs • Cycling experience. • Contribution to urban design.	• Property access. • Loading • Parking. • Property access. • Impact of land / property acquisition. • Traffic management impacts on Journey time • Impacts on junctions • Impact on maintenance costs.	• Construction costs • Land / property acquisition costs • Land / property acquisition legal processes

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:
	• Impact on local heritage and landscape values. • Provision of adequate width. • Maintain cyclist progression. • Suitability for all users.		

Development of Scoring Process

Each of the five (5) 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 Table 2 below. 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

In terms of the urban context of Portmarnock Village, Environment has not been considered a key differentiating criteria and thus is not considered here. However, given the urban context and the level of interaction between pedestrian's vehicles and cyclists, it is considered that safety is a particularly important criteria. Thus, safety 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. The MCA assessment is provided in Table 4.

Table 3. MCA Assessment Criteria

Context	Main Criteria	Sub Criteria	Weighting
Design Context	Safety	• Traffic Volumes and Speeds • Vehicle conflicts. • Pedestrian conflicts. • Perception of safety.	15
	Directness	• Transition between links types. • Treatment of side roads and junctions. • Ability to overtake.	10
	Coherence	• Route continuity and consistency. • Route legibility. • Obstructions such as illegal parking;	10
	Attractiveness	• Integration with the village environs • Cycling experience. • Contribution to urban design. • Impact on local heritage and landscape values.	10
	Comfort	• Provision of adequate width. • Maintain cyclist progression. • Suitability for all users.	10
Community Context	Local Business Impact	• Property access. • Loading • Parking.	10
	Local Resident Impact	• Property access. • Impact of land / property acquisition. • Traffic management impacts on Journey time	10
	Operational Impacts	• Impacts on junctions • Impact on maintenance costs.	10
Delivery Context	Budget Risks	• Construction costs. • Land / property acquisition costs;	10
	Programme Risks	• Land / property acquisition legal processes.	10

Table 4. MCA Performance Matrix

Context	Criteria	Option 1	Option 2	Option 3	Option 4	Option 5
Design Context	Safety*					
	Directness**					
	Coherence					
	Attractiveness					
	Comfort					
Community Context	Local Business Impact					
	Local Resident Impact					
	Operational Impacts					
Delivery Context	Budget Risks					
	Programme Risks					
Ranking		2nd	5th	3rd	4th	1st

*A weighting of 15 has been applied to the safety criterion.

**A weighting of 10 has been applied to the directness criterion and to all remaining criteria.

Assessment Discussion

The ranking of the five (5) design 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 discussion weighs up the strengths of key criteria and the impacts imposed by each option in order to determine the overall impacts and identify a preferred design option.

Option 1: Shared Street (Parking Retained / No Land-take)

A shared street provision is suitable in a low speed, low traffic, single lane environment where cyclists take precedence over vehicular traffic. They are typically provided in residential and quiet town centre routes with little or no through traffic. The key feature is that cyclists "take the lane" in line with vehicles. Streets should be provided with a centre line and cycle symbols to encourage appropriate positioning of the cyclist.

The weakness of this option lies in the traffic characteristics of the R106 in Portmarnock Village. The R106 is a regional road and key artery that runs from Sutton Cross to Swords connecting Baldoyle, Portmarnock and Malahide. It carries approximately 12,000 vehicles per day. The NCM outlines a threshold of 10,000 vehicles per day as the maximum volume of vehicles that can be appropriately catered for by a shared street facility in a self-regulating 30kph speed environment. Whilst it is considered achievable to engineer a 30kph speed environment within Portmarnock Village, opportunities to reduce daily traffic volumes are limited and therefore it is not expected that an appropriate Quality of Service (QoS) would be delivered for cyclists. This link type would also be inconsistent with the remainder of the scheme. This route consists predominantly of a two way and one-way

(on both sides of the carriageway) cycle tracks. As described above, this option falls short on fulfilling the schemes vision and objective.

The strength of this option is that it has the least impact on the local community and least impact on project delivery in terms of cost and programme. It does not require any loss of parking. It does not require any land take. It effectively allows Strand Road within Portmarnock to continue to operate similarly to the existing scenario. In this circumstance it would perform poorly in terms of pedestrian and cyclist safety in comparison to other options.

Option 2: Segregated Two-Way Cycle Track (Parking Removed / Minor Land-take)

Cycle tracks are physically segregated from motorised traffic. This is chieved by either a kerb, verge, bollards or other softer measures such as planters. In general, cycle tracks are introduced where the existing traffic regime is unsuitable for cycling and cannot be appropriately mitigated in terms of traffic volumes or traffic speeds or both. Two-way cycle tracks are most suitable along distributor roads.

The inherent weakness of two-way cycle facilities is that they do not integrate well in town and village environments particularly where urban development sits evenly on both sides of the street. Caution in design needs to be exercised in side road junctions as vehicles on the minor road will not be expecting cyclists to approach from the left. The primary weakness of this option is that it removes two thirds of on street parking from Strand Road within Portmarnock Village. This is likely to meet with opposition from traders and the local community who avail of their services. This option, whilst providing a good QoS, also has further weaknesses in that the widths provided at a small number of locations are the minimum permissible. The removal of parking and loading along Strand Road could lead to inappropriate parking and loading practises within the village centre. Measures would need to be considered to avoid these types of poor parking practises.

The strength of this options lies in its ability to provide a cycling facility which meets the required standards in terms of safety and comfort whilst negating the need for significant land take along the eastern side of the street within the village and thus the associated risks that come in terms of cost and programme delivery. This option also ensures consistency of link type with it being a two-way cycle track located on the seaward side of the road similar to the remainder of the scheme route and thus goes someway in delivering on the objective of providing an urban greenway.

Option 3: Segregated Two-Way Cycle Track (Parking Retained / Significant Land-take)

The characteristics of this option are similar to those detailed in Option 2, however greater widths and separation from vehicular traffic are provided. The primary weakness of this option is the significant land take that will be required within the village centre from four properties. This includes larger land take from an Adventure Club as well as landtake from a church, a school and also the acquisition of a house. The stakeholders involved coupled with the acquisition of an occupied dwelling is likely to be met with strong opposition. This may result in significant cost and programme risks.

As with Option 2, the inherent weakness of two-way cycle tracks is that they do not integrate well with urban environments such as town and village centres with development on both sides of the street. Caution in design needs to be exercised in side road junctions as vehicles on the minor road will not be expecting cyclists to approach from the left.

The strength of this option is that it provides a high QoS, is one of the most attractive, comfortable and safe cycling facilities, provides a consistent and continuous route provisions along the entirety of the project, caters for future growth in cycling and retains on street parking provision. As the cycle track will be totally separated from the street by means of a wide concrete kerb it is considered that concerns with regards to the track being used for parking can be designed out. This option also ensures consistency of link type with it being a two-way cycle track located on the seaward side of the road similar to the remainder of the scheme route and thus delivers most on the objective of providing an urban greenway.

Option 4: One-Way Raised Cycle Lanes (Parking Removed / Minor Land-take)

Cycle lanes are lanes on the carriageway that are reserved for the passage of cyclists. They include advisory cycle lanes, mandatory cycle lanes and raised cycle lanes. Raised cycles lanes are as suggested raised to include a kerb upstand of 50mm maximum.

The primary weakness of this option is that it removes two thirds of on street parking from Strand Road within Portmarnock Village. This is likely to meet with opposition from traders and the local community who avail of their services. This option, whilst providing a good QoS, also has further weaknesses in that the widths provided at a small number of locations are the minimum permissible. The removal of parking and loading along Strand Road could lead to inappropriate parking and loading practices within the village centre. Measures would need to be

considered to avoid these types of poor parking practices. There is potential to upgrade the car park at the Adventure Club to substitute the parking lost along the main street

This link type would also be inconsistent with the remainder of the scheme route which consists predominantly of a two-way cycle track.

The strength of this option lies in its ability to provide a cycling facility which meets the minimum standards in terms of safety and comfort whilst negating the need for significant land take along the eastern side of street within the village. The removal of parking and loading along Strand Road could lead to inappropriate parking and loading practices within the village centre. Measures would need to be considered to avoid these types of poor parking practices.

In addition, whilst a one-way cycle lane on both sides of the street may not deliver fully on the vision of providing an urban greenway, it is considered that the section of street through Portmarnock Village is multi-functional and thus the final cycle facility cannot solely cater for the movement function but must also work as a centre for the community that is a higher place function. In this context, an appropriately designed one-way cycle lane on both sides of the street will integrate better within a village environment.

Option 5: One-Way Raised Cycle Lanes (Parking Retained / Significant Land-take)

This raised cycle lane option will be similar to Option 4 and will provide added benefits due to being wider and raised by 50mm maximum.

The primary weakness of this option is as a result of the significant land take that will be required within the village centre from four properties. This includes larger land take from an Adventure Club as well as landtake from a church, a school and also the acquisition of a house. There is potential to upgrade the car park at the Adventure Club to substitute the parking lost along the main street. The stakeholders involved coupled with the acquisition of an occupied dwelling is likely to be met with strong opposition. This may result in significant costs and programme risks.

This link type would also be inconsistent with the remainder of the scheme route which consists predominantly of a two-way cycle track.

The strength of this option is that it provides a high QoS, is one of the most attractive, comfortable and safe cycling facilities, integrates well within a village environment, caters for future growth in cycling and retains on street parking provision. Due to the geometrical advantages of this cycle lane option being wider and raised, it is considered that design measures can be introduced (light segregation etc.) to alleviate concerns with regards to cycle lanes being used for parking.

In addition, whilst a one-way cycle lane on both sides of the street may not deliver on the vision of providing an urban greenway, it is considered that the section of street through Portmarnock Village is multi-functional and thus the final cycle facility cannot solely cater for the movement function but must also accommodate the place function. In this context, an appropriately designed one-way cycle lane on both sides of the street will integrate better within a village environment.

Recommendation

Whilst performing well in terms of community and delivery context, it is considered than Option 1 does not facilitate an attractive, comfortable and safe cycling facility for all cyclists and therefore will not likely yield a sufficiently appropriate QoS. On this basis it is not deemed appropriate to put forward this option.

While both Options 3 and 5 both provide high quality cycling facilities it is considered that they would have an unacceptable impact in terms of property acquisition. Particularly in the context that there are other alternatives that can be provided to a similar level of service with less requirement for property acquisition.

Option 2 and Option 4, whilst providing a lesser QoS than either Option 3 and 5, still provide a good QoS that can accommodate current and future level of use. Any requirement for removal of on-street car parking would be limited and could potentially be offset by existing underutilised off-street car parking in the vicinity. This would need to be further explored through a parking survey study and consultation with traders and locals.

Option 2 delivers on the vision of providing a high quality continuous and consistent urban greenway, however, disregards any additional functions other than movement that may need to be served within urban environments such as that of Portmarnock Village.

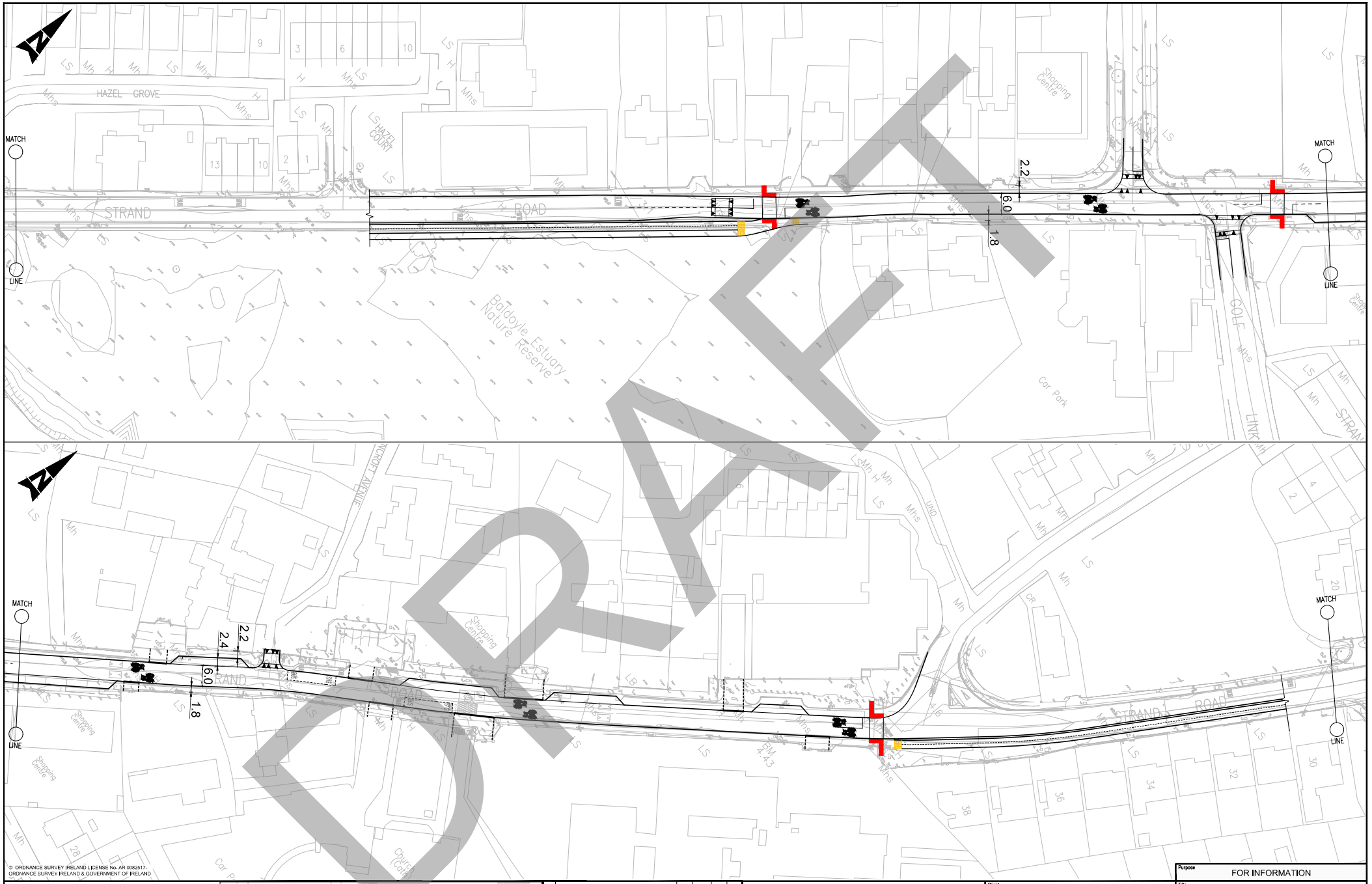
Option 4 also provides a high-quality cycling facility that more than adequately caters for the movement function of required of an urban cycling route. However it also has regard to the place context of a busy village centre and the need to accommodate its community and businesses.

Segregated two-way cycle track on one side of the road, as per Option 2, are more appropriate along higher speed, high volume distributor roads and that within urban environments they tend to create a barrier to place

functions and create unacceptable levels of conflicts where side road junctions are frequent. It is therefore considered that one-way cycle lanes on both sides of the street, as per Option 4, are less intrusive, more inclusive of place functions and therefore more appropriate for village centre locations.

It is recommended that Option 4: One-way raised cycle lane – parking removed / minor land take is to proceed as the preferred option.

Appendix A. Design Option Drawings



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-	FOR INFORMATION	BH	21.03.18	CF	MD

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Client: FINGAL COUNTY COUNCIL

Project: SUTTON TO MALAHIDE PEDESTRIAN AND CYCLE SCHEME

Purpose: FOR INFORMATION

Title: PORTMARNOCK VILLAGE DESIGN OPTION 1 SHARED STREET PARKING RETAINED / NO LAND TAKE

Original Scale	Design/Drawn	Checked	Authorised
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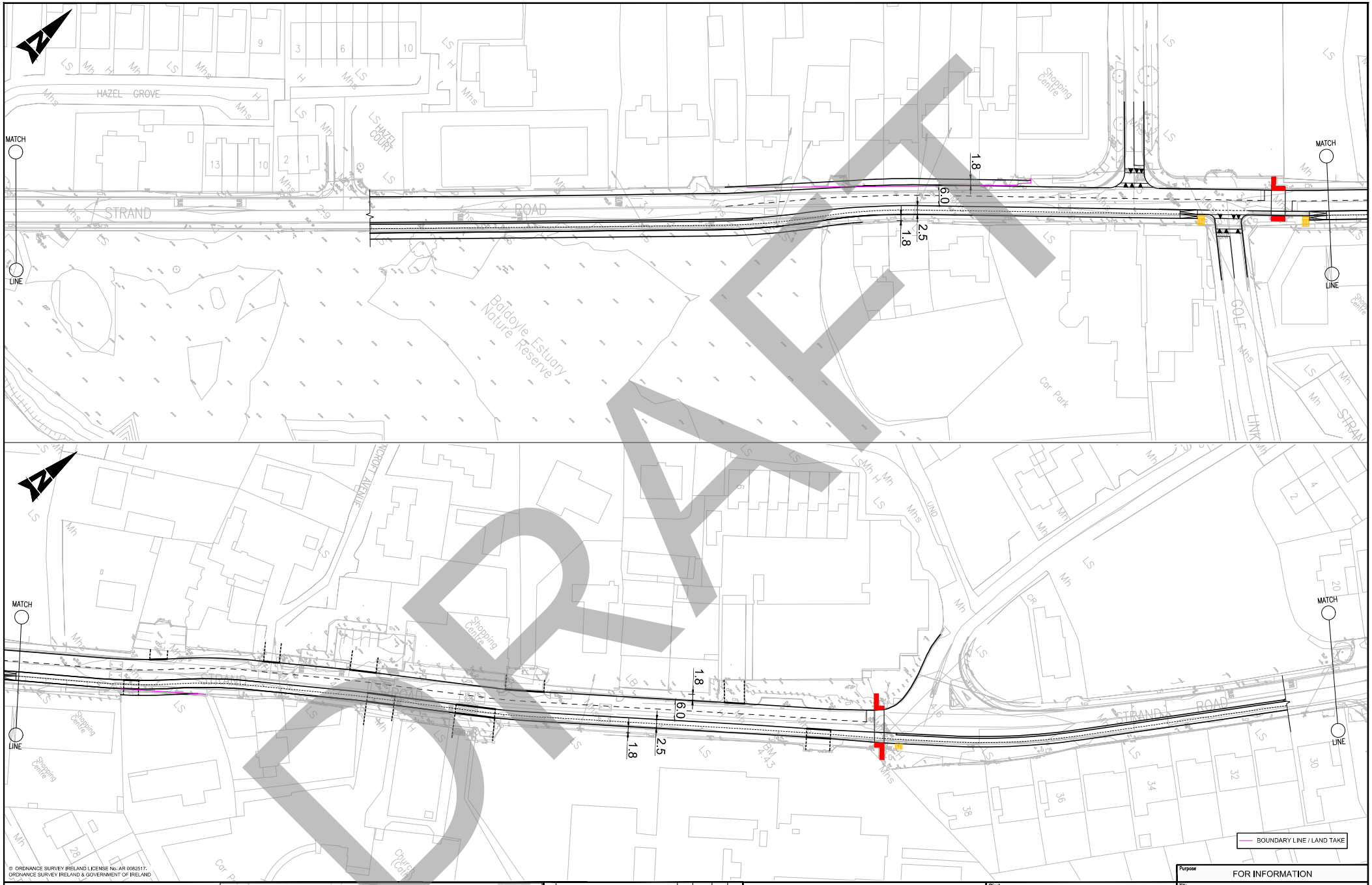

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Comhairle Contae Fhine Gall
Fingal County Council

Údarás Náisiúnta Iompair
National Transport Authority

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Client: FINGAL COUNTY COUNCIL

Project: SUTTON TO MALAHIDE PEDESTRIAN AND CYCLE SCHEME

Purpose: FOR INFORMATION

Title: PORTMARNOCK VILLAGE
DESIGN OPTION 2
TWO WAY CYCLE TRACK
PARKING REMOVED / MINOR LAND TAKE

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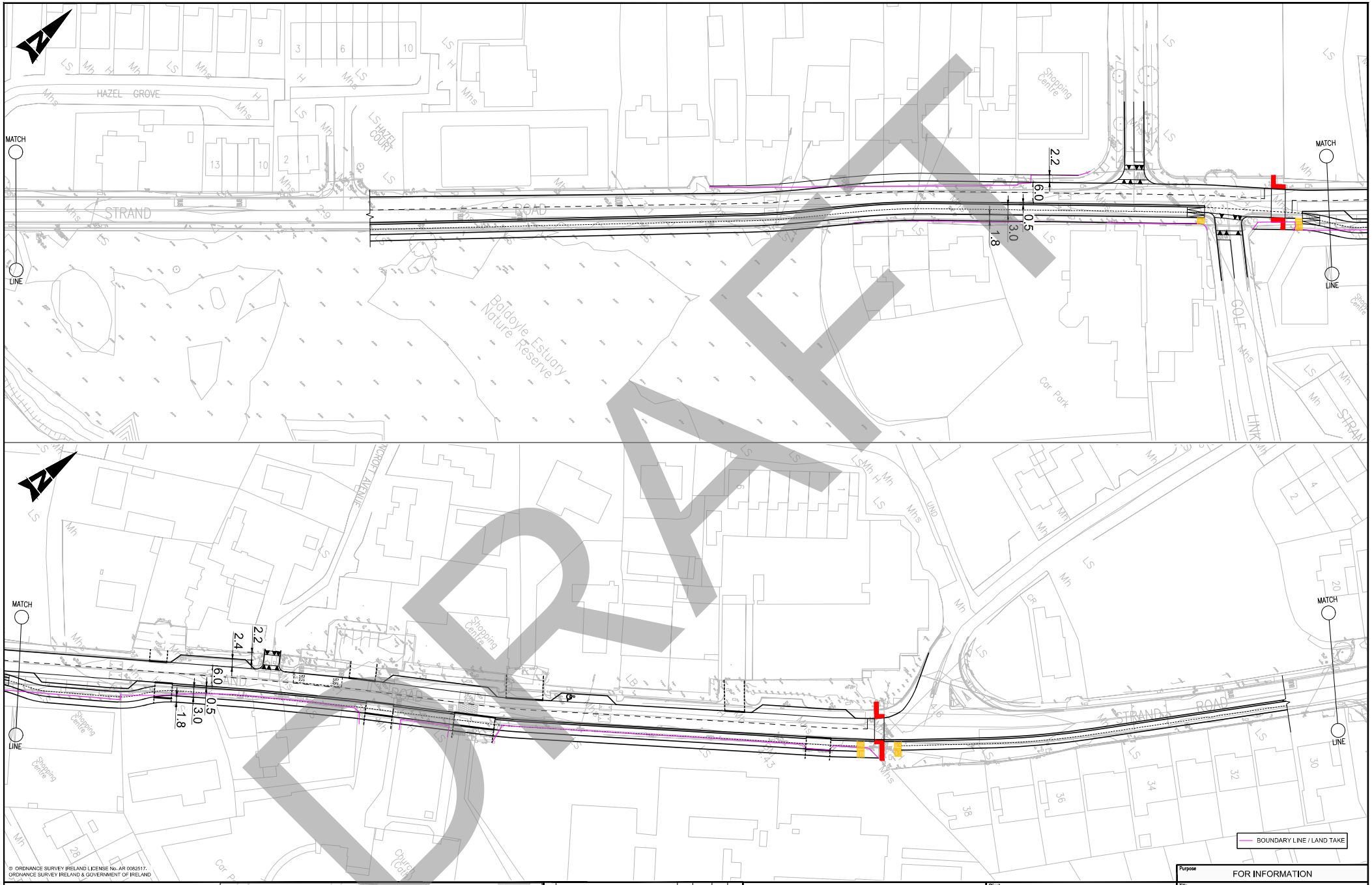

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Client: FINGAL COUNTY COUNCIL

Project: SUTTON TO MALAHIDE PEDESTRIAN AND CYCLE SCHEME

Purpose: FOR INFORMATION

Title: PORTMARNOCK VILLAGE
DESIGN OPTION 3
TWO WAY CYCLE TRACK
PARKING RETAINED/SIGNIFICANT LANDTAKE

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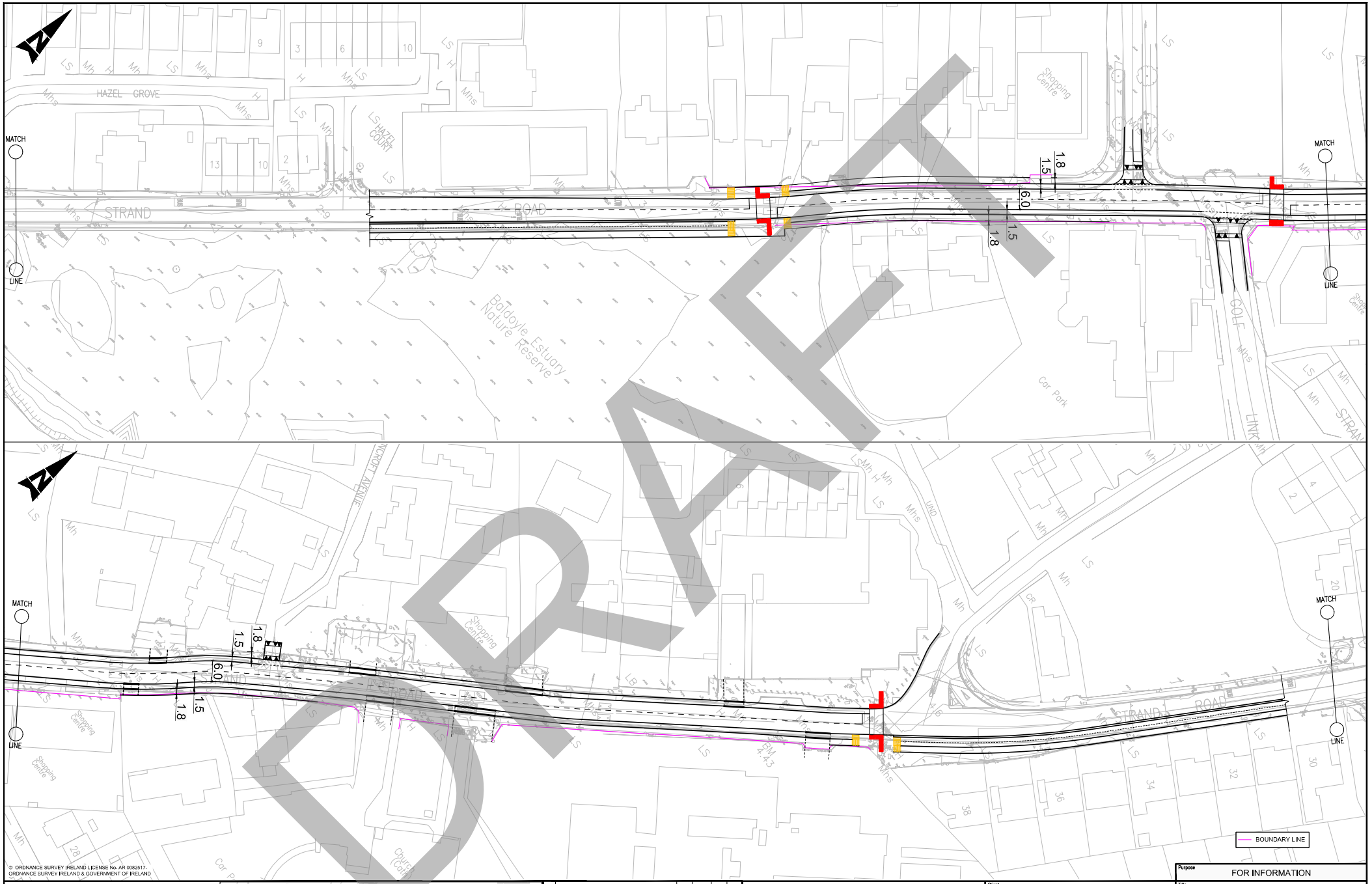

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Client: FINGAL COUNTY COUNCIL

Project: SUTTON TO MALAHIDE PEDESTRIAN AND CYCLE SCHEME

Purpose: FOR INFORMATION

Title: PORTMARNOCK VILLAGE
DESIGN OPTION 4
ONE WAY MANDATORY CYCLE LANE
PARKING REMOVED / MINOR LAND TAKE

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Rev: A

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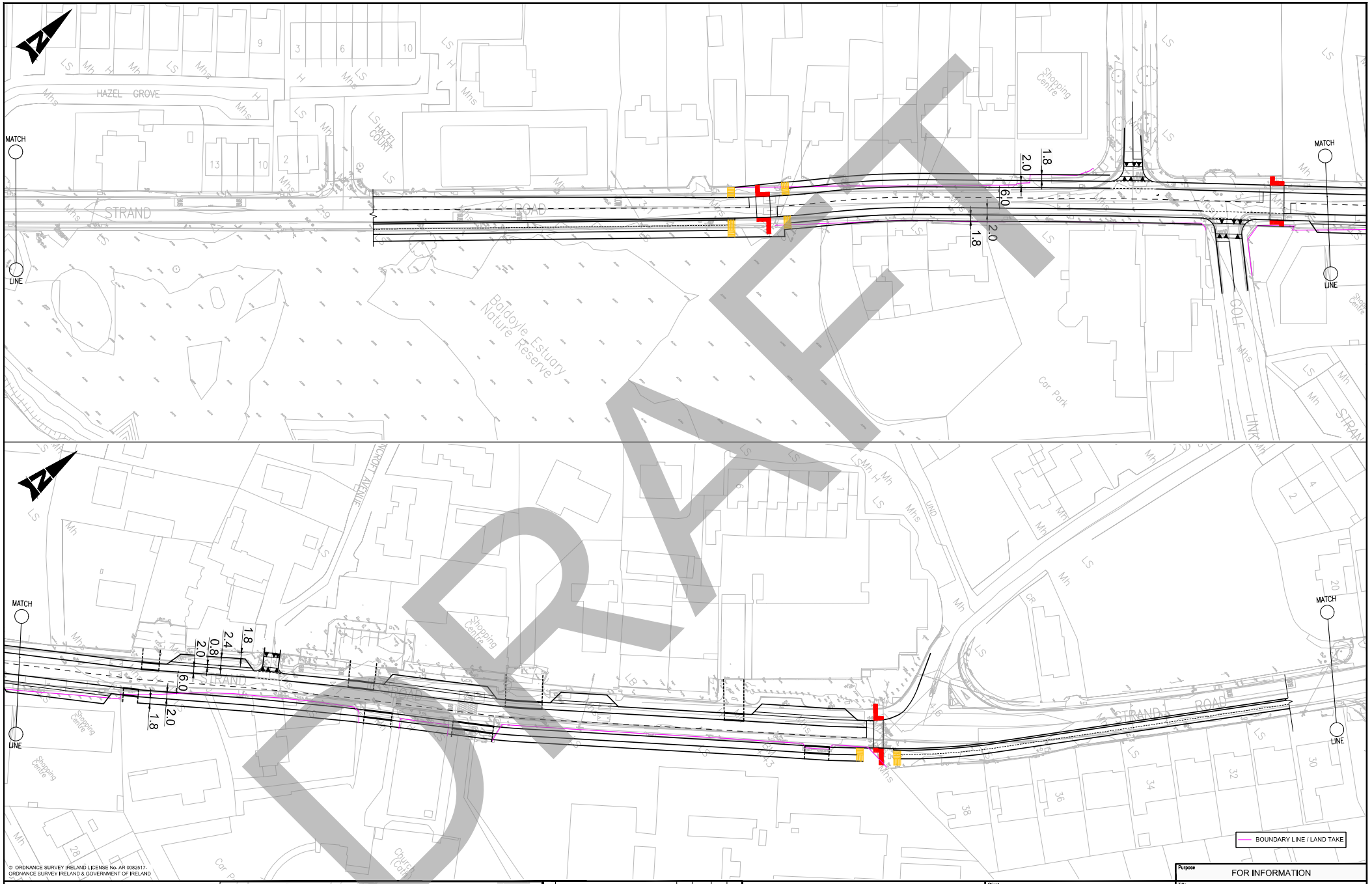

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Client: FINGAL COUNTY COUNCIL

Project: SUTTON TO MALAHIDE PEDESTRIAN AND CYCLE SCHEME

Purpose: FOR INFORMATION

Title: PORTMARNOCK VILLAGE
DESIGN OPTION 5
ONE WAY RAISED CYCLE TRACK
PARKING RETAINED /SIGNIFICANT LANDTAKE

Original Scale	Design/Drawn	Checked	Authorised
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