Bonneagar Iompair Éireann
Transport Infrastructure Ireland

NTA
Údarás Náisiúnta Iompair
National Transport Authority

Luas Finglas

Environmental Impact Assessment Report 2024

Appendix A1.3: EIA Scoping Report and Summary of Submissions Received & Responses

BARRY TRANSPORTATION
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Project Ireland 2040
Building Ireland's Future

Transport Infrastructure Ireland

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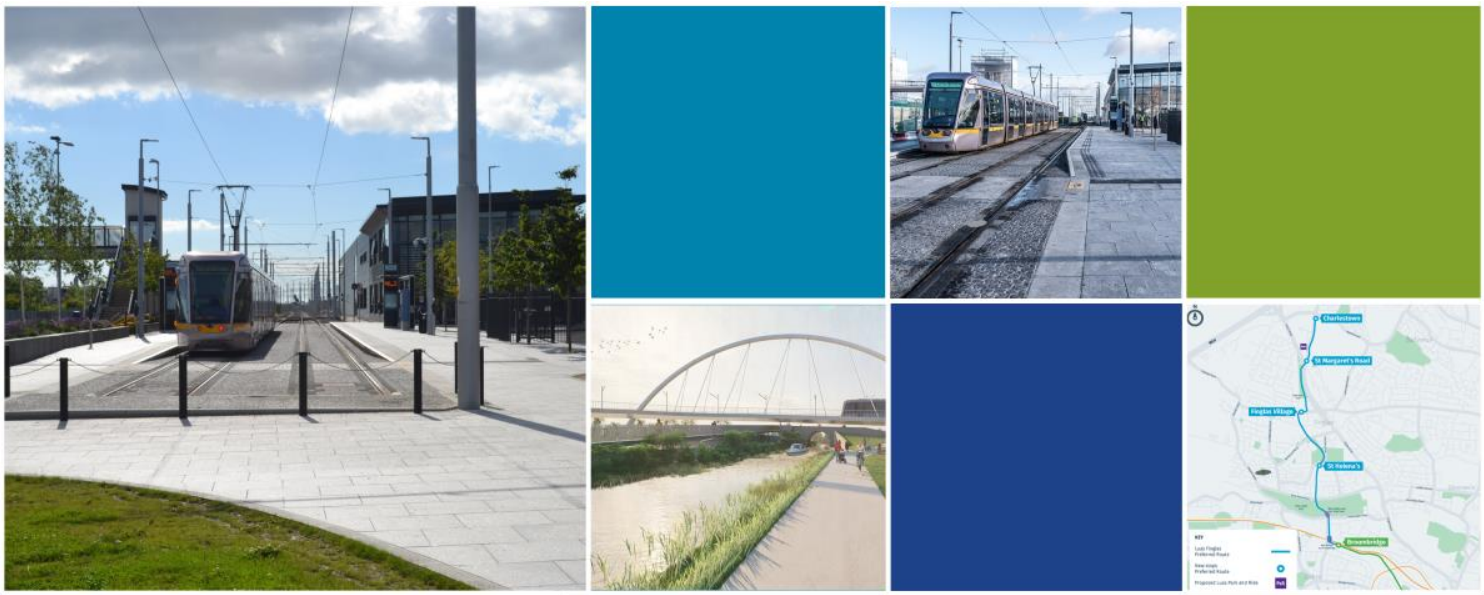
Luas Finglas



Environmental Impact Assessment Scoping Report

April 2022

BARRY TRANSPORTATION

egis

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EXECUTIVE SUMMARY

The route option assessment process for Luas Finglas, an extension to the Luas Green Line from Broombridge, has been actively explored by the National Transport Authority (NTA) and Transport Infrastructure Ireland (TII) since 2018, and follows from the successful completion of Luas extension to Broombridge which opened in December 2017. On the 28th July 2020, NTA and TII launched the proposed Luas Finglas scheme, which included the release of an Emerging Preferred Route (EPR). On 7th December 2021, the Preferred Route (PR) for the scheme was launched, public consultation for which continued until 31st January 2022.

The main objective of the proposed scheme is:

To provide a high-capacity, high-frequency Luas line running from Broombridge to Charlestown, connecting Finglas and the surrounding areas with Dublin's wider public transport network by providing a reliable, and efficient public transport service to the city centre via Broombridge.

The proposed scheme is approximately 4km in length and is the northern extension of the Luas Green Line from its current terminus in Broombridge to a new terminus in Charlestown. The proposed scheme starts from Luas Broombridge Stop and will overpass the Royal Canal and the Maynooth railway line adjacent to the Broome Bridge (Royal Canal) (included in the Record of Protected Structures - RPS 909).

It will then run adjacent to the east of Broombridge Road and the Dublin Industrial Estate. The proposed line will cross the Tolka Valley Park before reaching St Helena's Stop and then proceed northward towards Luas Finglas Village Stop. The route will pass through a new corridor created within the Garda Station car park, making its eastern turn onto Mellowes Road. The route will then proceed through Mellowes Park, crossing Finglas Road, towards proposed St Margaret's Road Stop. Thereafter the proposed line will continue along St Margaret's Road before reaching the terminus stop proposed at Charlestown.

The proposed scheme will include 4 proposed stops, extension to Luas Broombridge Depot, a Park and Ride facility near St Margaret's Road, two bridges (Tolka River and Broombridge), and ancillary infrastructure. It is envisaged that the proposed extension to Luas Green Line will be capable of operating a tram every 7.5 minutes with an approximate journey time of 30 minutes from Charlestown to Trinity College providing an approximate reduction in travel time by 14 minutes (in the peak period compared to car).

Under section 37 of the Transport (Railway Infrastructure) Act 2001 (No. 55 of 2001) (as amended by section 46(2) of the Dublin Transport Authority Act 2008 (No. 15 of 2008) and the European Union (Railway Orders) (Environmental Impact Assessment) (Amendment) Regulations 2021 (S.I. No. 743 of 2021)) there is a requirement for a report on the likely effects on the environment (referred to as an "environmental impact assessment report") of the proposed railway works; when submitting a Railway Order application. It is therefore a mandatory requirement to submit an Environmental Impact Assessment Report with the Railway Order application for this scheme.

Environmental Impact Assessment (EIA) Scoping is a key stage of the EIA process, and the main objectives of this EIA Scoping Report are to provide a description of the proposed scheme, identify the potential significant impacts which may arise during construction and operation of the proposed scheme and outline the relevant assessment methodologies to be incorporated within the Environmental Impact Assessment Report (EIAR). This EIA Scoping Report will form a basis of common reference for consultation about the scope and methodology to be utilised when undertaking the EIA process and preparing the EIAR. This is not a scoping report for the purposes of seeking an opinion on the scope of the EIAR from An Bord Pleanála pursuant to section 39(3)(a) of the Transport (Railway Infrastructure) Act 2001 (as amended). This EIA Scoping Report facilitates early engagement with prescribed bodies, consultees and others in relation to the proposed approach to the assessment of environmental impacts for the proposed scheme.

EIA Scoping ensures that potential environmental impacts are identified during the initial stages of the EIA process and environmental protection is taken into consideration in the development of the scheme design. Scoping is an ongoing process which continues throughout the EIA process and is informed by feedback received during consultation as well as the detailed assessment of baseline studies.

This EIA Scoping Report outlines the scope of the environmental assessments to be carried out in preparation of an EIAR which will accompany the Railway Order Application to An Bord Pleanála. The Railway Order will be subject to a period of statutory consultation which will provide the public with an opportunity to have their say, following which the Board will determine whether consent should be granted. The EIAR will comprise the following:

- A background to the proposed scheme and the EIA process;
- A description of the proposed scheme;
- The planning context for the proposed scheme, including national, regional and local policy;
- A description of the baseline conditions for each environmental topic;
- A description of the potential environmental impacts during construction and operation, including any demolition and/or land-use requirements, of the proposed scheme. The likelihood, extent, magnitude, duration and significance of the potential effects will be described;
- A description of features of the scheme and/or measures to mitigate and compensate the likely significant adverse effects and the residual effects that will persist after mitigation. Monitoring measures, where appropriate will also be described;
- A description of reasonable alternatives which were studied and an indication of the main reasons for the chosen option, taking into account the effects of the proposed scheme on the environment;
- An assessment of potential cumulative impacts;
- A description of the interactions between the various environmental topics; and
- A non-technical summary condensing the EIAR into an easily comprehensible version.

It is envisaged that the EIAR will be presented in five volumes anticipated to be as outlined below:

- **Volume 1: Non-Technical Summary**
  Summary of the EIAR in non-technical language;
- **Volume 2: Introduction and Scheme Description**
  Introduction to the proposed scheme and EIA process, including a scheme background, need for the scheme, legislative and planning context, description of alternatives, and a description of consultation;
- **Volume 3: Environmental Baseline and Assessment**
  A separate chapter for each environmental topic, describing the baseline, potential effects, mitigation and monitoring requirements for each environmental topic;
- **Volume 4: Figures**
  Graphics and plans supporting the EIAR chapters, illustrating the proposed scheme and environmental information; and
- **Volume 5: Appendices**
  Technical reference information supporting the EIAR chapters, such as calculations and detailed background data.

The environmental topics identified in the EIA Directive (Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 on the assessment of the effects of certain public and private projects on the environment) will be addressed within Volume 3 of the EIAR under the following headings:

- Human Health;
- Population;
- Biodiversity;
- Water;
- Land and Soils: Soils, Geology, and Hydrogeology;
- Land Take;

- Air Quality;
- Climate;
- Noise and Vibration;
- Electro Magnetic Compatibility and Interference;
- Material Assets: Infrastructure and Utilities;
- Material Assets: Traffic and Transport;
- Material Assets: Waste Management;
- Cultural Heritage;
- Landscape and Visual Amenity;
- Risk of Major Accidents and Disasters;
- Interactions; and
- Cumulative Impacts.

This EIA Scoping Report describes the approach to be taken in assessing each of the listed environmental topics, including a description of the study area for each topic; a description of the methodology to be used in assessing each topic including the desk-based, survey work and consultation to be undertaken to inform the assessment; as well as outlining the current baseline conditions and the likely impacts which will occur as a result of construction and operation of the proposed scheme. Potential mitigation measures are also referenced but these will be required to be fully developed as part of the EIA process.

Transport Infrastructure Ireland (in conjunction with the National Transport Authority) are now inviting submissions on the EIA Scoping Report and would like your views having regard to the following:

- Is the scope of the proposed assessment for the EIAR adequate?
- Is there any additional information that should be considered in the development of the proposed scheme?
- Are there any additional environmental issues that should be taken into consideration in preparing the EIAR?

All relevant submissions on the proposed scheme are welcome. Relevant submissions will be taken into consideration in the preparation of the EIAR. The EIA Scoping Report consultation period will run for 6 weeks from 12th April 2022 to 24th May 2022.

To make a submission please use the following contact details:

Email: info@luasfinglas.ie

Postal Address: Luas Finglas, Transport Infrastructure Ireland
Parkgate Business Centre
Parkgate Street
D08DK10
Freepost: FDN7406

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Further project information at https://www.luasfinglas.ie/

1 INTRODUCTION

1.1 Introduction

This report is the Environmental Impact Assessment (EIA) Scoping Report for Luas Finglas.

Scoping is a key stage of the EIA process and will describe what information should be contained in the Environmental Impact Assessment Report (EIAR) and what methodology is proposed to gather and assess that information. The potential for likely significant effects throughout construction and operational phase of the proposed scheme are considered as far as possible at this scoping stage.

The EIA Scoping Report facilitates early engagement with prescribed bodies, consultees and others in relation to the proposed approach to the assessment of environmental impacts for the proposed scheme. The scoping is an early stage in the process and is also designed to ensure that the environmental studies provide all the relevant information on the scheme.

The principal objectives of this report are to:

- Provide a description of the proposed scheme;
- Identify likely significant impacts which may arise during the construction and operation of the proposed scheme;
- Outline proposed assessment methodologies for completing the EIAR;
- Outline the likely content of the EIAR; and
- Form a basis of common reference for consultation about the scope and methodology of the EIAR.

On the basis of the information provided in this EIA Scoping Report views are being sought on additional information that should be considered in the development of the proposed scheme, and additional environmental issues or alternative methodologies that should be taken into consideration when preparing the EIAR.

Scoping will continue throughout the preparation of the Luas Finglas EIAR. If information or analysis emerges after the initial scoping stages indicating that additional issues should be considered, then these will also be included.

1.2 Scheme Overview

Barry Transportation Egis JV (BTEG) have been appointed by Transport Infrastructure Ireland (TII) to undertake the Luas Finglas Preliminary Design and Statutory Process.

Luas Finglas involves the proposed extension of the Luas Green Line from its current terminus in Broombridge to Finglas. The Preferred Route (PR) for the proposed extension is approximately 4km long, includes four new stops, a cycle and pedestrian path along part of the route, a Park and Ride facility near St Margaret's Road, two bridges (Tolka River and Broombridge) and an extension to the tram storage area at the Hamilton Depot at Broombridge. The route will provide interchange opportunities with bus networks at 3 of the 4 proposed stops and to the rail network via the existing Luas Broombridge Stop.

This next stage of the proposed Luas Finglas scheme requires Barry Transportation EGIS to develop a reference design to a level suitable for the purposes of supporting a Railway Order Application to An Board Pleanála.

The Transport (Railway Infrastructure) Act 2001 (No. 55 of 2001) (as amended), sets out the process required for making an application for a Railway Order. Section 37 of the Act of 2001 (as amended by section 46(2) of the Dublin Transport Authority Act 2008 (No. 15 of 2008) and the European Union (Railway Orders) (Environmental Impact Assessment) (Amendment) Regulations 2021 (S.I. No. 743 of 2021)) outlines the

required documentation when making an application. This includes a requirement for a report on the likely effects on the environment (referred to as an "environmental impact assessment report") of the proposed railway works.

It is therefore a mandatory requirement to submit an Environmental Impact Assessment Report with the Railway Order application for this scheme.

This EIA Scoping report has been prepared by Barry Transportation EGIS with the assistance of specialist environmental sub-consultants in accordance with the following guidelines:

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, Department of Housing, Planning and Local Government (DHPLG) now Department of Housing, Local Government and Heritage (DHLGH), 2018;
- Guidelines on Information to be Contained in Environmental Impact Statements, Environmental Protection Agency (EPA) 2002;
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements, EPA 2003;
- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, EPA 2017;
- Draft Advice Notes for Preparing Environmental Impact Statements, EPA 2015;
- Environmental Impact Assessment of Projects Guidance on Scoping, European Commission (EC) 2017; and
- Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report, EC 2017.

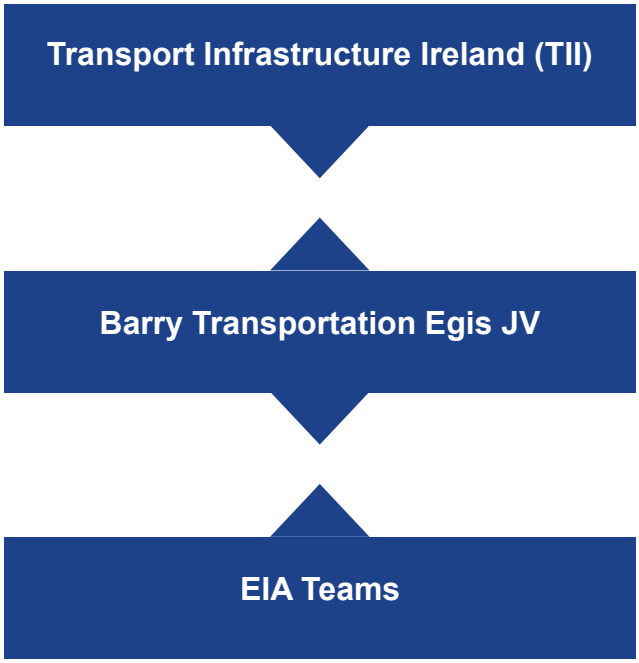
1.3 Current Status

The PR for the proposed scheme was published on 7th December 2021, launching a period of public consultation which continued until 31st January 2022. A preliminary design is currently being completed based on the outcomes of the public consultation and findings of studies completed during the route selection. At the next stage of the design development process, a summary of the feedback received during PR public consultation will be published.

1.4 Project Team

In January 2021 Barry Transportation Egis JV (BTEG) were appointed by TII to develop a preliminary design for the proposed scheme, to prepare an EIAR, an Appropriate Assessment (AA) Screening, a Natura Impact Statement (NIS) (if required) and prepare all required materials for the submission of a Railway Order Application under Section 37 of the Transport (Railway Infrastructure) Act 2001 (as amended).

The EIAR will be prepared by Barry Transportation Egis JV with the assistance of competent specialist environmental sub consultants, under a number of environmental disciplines, as outlined in Figure 1.1.



Discipline	Company
Population and Human Health	Optimise
Biodiversity	JBA Consulting
Water: Hydrology	BTEG
Water: Hydrogeology	BTEG
Land, Soils and Geology	BTEG
Air Quality and Climate	AONA Environmental Consulting
Noise and Vibration	AWN Consulting Ltd.
Material Assets: Traffic and Transport	Systra
Archaeology and Cultural Heritage	John Cronin and Associates
Waste Management	BTEG
Material Assets	BTEG
Landscape and Visual Amenity	JBA Consulting

Figure 1.1 EIA Study Team

1.5 EIA Scoping Report Structure

The structure of this EIA Scoping Report at hand is as follows:

Section 1: Introduces the EIA Scoping Report and the proposed scheme, as well as giving an overview of the roles and responsibilities for the EIA process.

Section 2: Provides a description of the proposed scheme.

Section 3: Provides an outline of the EIA process and the proposed methodology to be used.

Section 4: Provides an overview of the consultation process.

Section 5 - 20: Provides a description of the possible effects of the proposed scheme on the environment in order to inform the scoping for each of the relevant disciplines. These chapters identify the potential effects in the context of the environmental baseline. The chapters also outline the proposed assessment methodology that is expected to ensure a robust assessment of these effects.

Section 21: Outlines the interactions between the potential effects identified.

Section 22: Outlines the methodology to be used in assessing possible cumulative impacts between the proposed scheme and other projects which may be taking place concurrently or consecutively.

Section 23: Provides a concluding statement for the EIA Scoping Report.

2 DESCRIPTION OF PROPOSED SCHEME

2.1 Introduction

Luas Finglas is the proposed new northern extension of the Luas Green Line from its current terminus in Broombridge to a new terminus in Charlestown, see indicative Preferred Route (PR) in Figure 2.1. Also refer to the preferred route public consultation drawings included in Appendix A for further detail. There may be some changes to these drawings following completion of the preliminary design based on the outcomes of the public consultation and findings of studies completed during the option selection. However, these drawings are sufficiently detailed to use for the purposes of this informal EIA scoping exercise.

The identification of a Preferred Route is the result of Option Selection Process including Stage 1 and Stage 2 assessments. 'Luas Finglas Option Selection Report – Stage 1' published in August 2019 identified and brought forward a number of light rail options which could extend from the existing Luas network to the Finglas area. 'Luas Finglas Option Selection Report – Stage 2' published in January 2020 built on the outcomes of Stage 1 and identified the Emerging Preferred Route for a light rail line extending from the existing Luas network at Broombridge to the Finglas area. The Emerging Preferred Route (EPR) was published in July 2020 and following the EPR public consultation feedback and further assessment by the design team the Preferred Route for the scheme was launched in December 2021.

The PR for Luas Finglas is approximately 4km long and has four proposed stops. After leaving Broombridge Stop the Luas alignment turns north where it will overpass both the Royal Canal and the Maynooth railway line adjacent to the existing Broome Bridge (Royal Canal) (RPS 909). The existing pedestrian access ramp onto the Irish Rail platform is proposed to be removed. Alternative access arrangements are being assessed. The alignment then runs adjacent to the east of Broombridge Road and the Dublin Industrial Estate to the Ballyboggan Road. Thereafter a new signal controlled junction will be put in place and Luas Finglas will enter the Tolka Valley Park adjacent to the protected structure, the Finglas Wood Bridge (RPS 906), which will be protected *in situ*.

From here it will cross the park on a new bridge approaching Tolka Valley Road in proximity of the Carrigallen Estate. The new bridge of the Tolka River will carry two tram tracks and cycle tracks. The bridge is anticipated to have a span of 70m.

After crossing St Helena's Road, the line will proceed northward east of the GAA pitch, along the Farnham Drive and through green space opposite Casement Road. Farnham Drive roadway will be reduced in width and traffic-calmed. At Wellmount Road, a new signal controlled junction will be located at the existing roundabout with Patrickswell Place. Patrickswell Place will be realigned west to facilitate the Luas line, include cycle tracks and this road will intersect with Wellmount Road at a new priority junction. This road will also include provision of cycle tracks.

Thereafter the line will progress towards Cappagh Road at a new signal controlled junction. Between Cappagh Road and Mellowes Park the tram track will proceed along Cardiff Castle Road. The line will pass west of Raven's Court and travel through the current Finglas Garda Station Car parking area as a shared street with cyclists and pedestrians, and then cross the Mellowes Road to then pass through Mellowes Park. The proposed Luas Finglas Village Stop will be located in front of the Finglas Youth Resource and Sport Centre and adjacent to the Fire Station. Other works to take place in this location include reconfiguration of the street to include cycle tracks, reconfiguration of the Garda Station parking areas, reconfiguration of the car park for the childcare/resources/sports centre and provision of a bus stop at the Luas station platform.

The alignment will then pass through the east side of the Mellowes Park and will reach the proposed St Margaret's Road Stop to the other side of Finglas Road, opposite the Lidl supermarket. A park and ride facility is also proposed near St Margaret's Road Stop.

The N2 Finglas Road junction will be converted from an existing four-arm roundabout to a signalised junction and the existing footbridge south of that junction will be removed. The existing pedestrian overbridge over the Finglas Road is proposed to be demolished. This will facilitate the Luas crossing of the junction and will provide pedestrian facilities across the Finglas Road to and from the proposed Luas Stop.

The line will then continue from the Finglas Road junction along St Margaret's Road before reaching the proposed terminus stop at Charlestown.

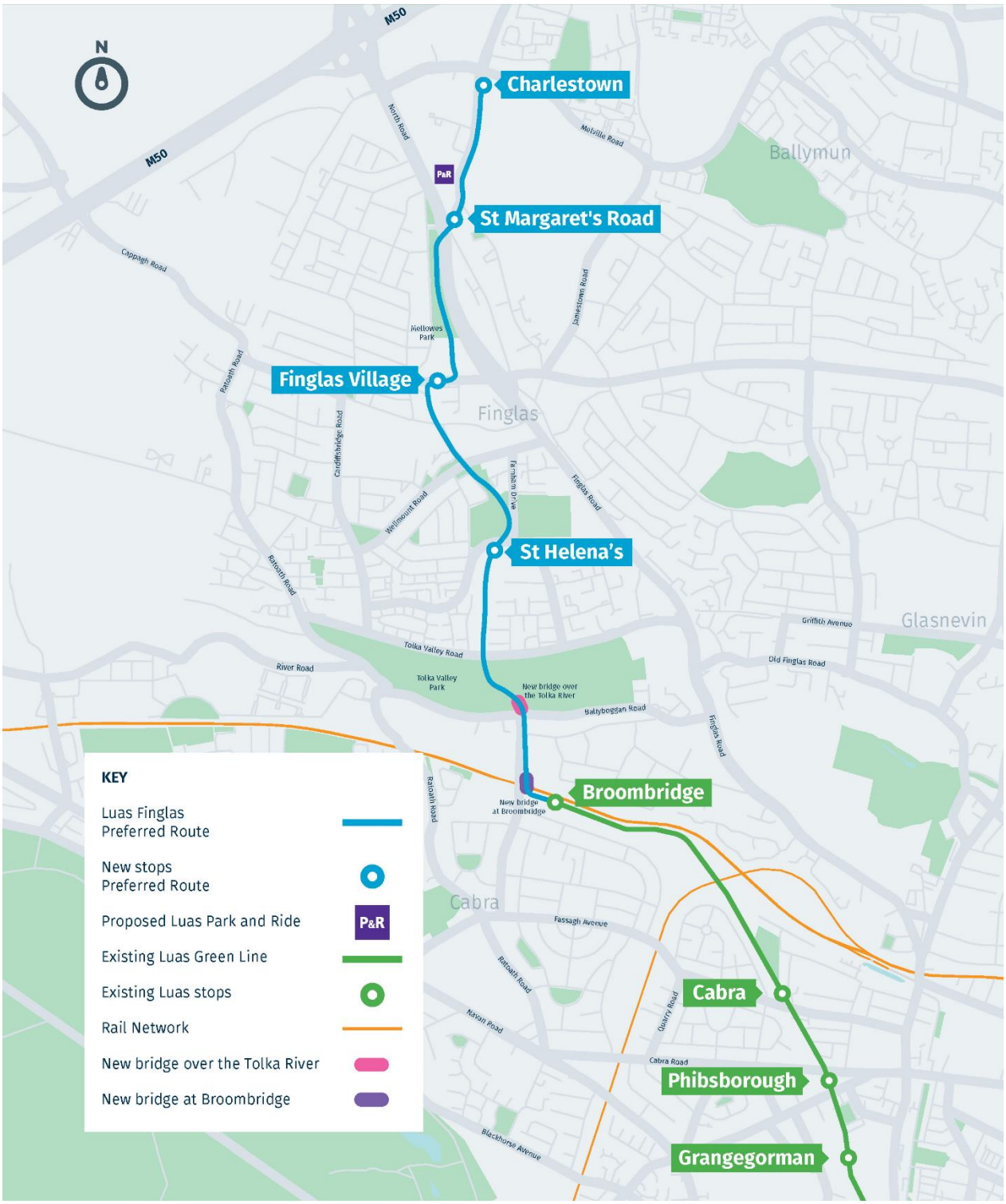


Figure 2.1 Overview of Luas Finglas PR

2.2 Description of the Proposed Works

The proposed works for Luas Finglas involve the following:

- Approximately 4km extension to the Luas Green Line track from Broombridge to Finglas, see Figure 2.1;
- An extension to the Luas Broombridge Depot for extra tram storage. Stabling for 10 additional trams will be provided.
- Provision of approximately 350 park and ride spaces at the proposed Luas St Margaret's Road Stop;
- Demolition of the existing overbridge at Mellowes Park;
- Construction of a new bridge over the River Tolka within the Tolka Valley Park;
- Construction of a new bridge over the Royal Canal and the Maynooth railway line at Broombridge;
- Site preparation including levelling and excavation works for track infrastructure;
- All associated utility diversions;
- New road lay-outs, new or modified junction layouts, footpaths and road layouts including junction signalling where impacted by the proposed scheme;
- Cycle facilities necessary as part of the scheme;
- Substation provision (2 No. substations located at approximately the mid-point and terminus of the line);
- Provision of additional traffic signalling infrastructure; and
- Provision of additional lighting and street furniture.

It is anticipated that a railway order application will be submitted to An Bord Pleanála in 2023.

Subject to approval of the Railway Order and receipt of government funding, it is anticipated that the construction of Luas Finglas will take 3-4 years to complete.

2.3 Construction Arrangements

As detailed above, construction of the proposed scheme is proposed to take place over 3-4 years. A detailed construction plan and schedule will be developed for the proposed scheme to ensure that the construction phasing allows for maximum efficiency while minimising potential for environmental impact.

The general sequence of activities to be followed when constructing the proposed scheme will be broadly as follows:

- Establishing the works area/site and the establishment of site offices, compounds and security;
- Site preparation including demolitions where required;
- Utilities diversion;
- Construction of bridges;
- Installation of light rail tracks;
- Construction of Luas stops;
- Installation of operating equipment;
- Fitting out of stops; and
- Finishing and landscaping.

Following construction, a period of testing and commissioning of the system will be required. The principal construction elements will include:

2.3.1 Construction Compounds and Working Areas

There will be a number of construction compounds and working areas of various scales along the whole proposed scheme. These will include working areas along track areas, construction areas at bridge locations and for other surface features.

2.3.2 Land Acquisition

Construction of the proposed scheme will require the acquisition of lands both on a temporary basis to facilitate certain construction activities, and on a permanent basis where proposed scheme infrastructure is to be located and where permanent access is required.

The types of properties that will be impacted by the proposed scheme generally include public roads, footpaths, parklands and will also include some private land holdings and access routes such as roadways, laneways and car parking areas.

The full extent of the land acquisitions and any demolitions required will be known once the final alignment has been defined. Consultation will be carried out with all affected landowners. The EIAR will include detail of lands and properties to be impacted.

2.3.3 Materials Management

Material generated during the construction of the proposed scheme will be managed to maximise the opportunities for reuse and recycling where practicable and will also aid to minimise the potential effects of material management on the receiving environment. Circular Economy principles are to be adopted through all stages of the project to optimise the use of natural resources and recycled materials and minimising waste.

2.4 Operation of the Proposed Scheme

Once operational it is expected that the proposed scheme will be capable of operating a tram every 7.5 minutes with an approximate journey time of 30 minutes from Charlestown to Trinity College providing an approximate reduction in travel time by 14 minutes (in the peak period compared to car).

To ensure the proposed scheme will continue to run effectively, there will be a requirement for regular routine maintenance on the line.

2.5 Need for the Scheme

Luas Finglas aligns with several objectives of Project Ireland 2040, the government's overarching plan for the state. It enables compact growth, sustainable mobility, access to services like education and healthcare, and crucially, a transition to a low carbon society.

Since the completion of the Luas Green Line to Broombridge in 2017, the potential to extend the line to Finglas has been explored by TII and the National Transport Authority (NTA). Finglas and the surrounding areas need improved public transport services to connect with Dublin's wider public transport network. The arrival of Luas Finglas will bring significant benefits to the area by providing a reliable, efficient and high-capacity public transport service to the city centre via Broombridge.

The Transport Strategy for the Greater Dublin Area 2016-2035 as established by the NTA and TII states:

'*Extension of Luas Cross City to Finglas, utilising the Luas Cross City line to provide a light rail link from its terminus at Broombridge to the north of Finglas area. This will provide a high capacity radial service from this large suburb into the city centre. It is also intended to provide a strategic park and ride at the terminus of this line on the N2 national road close to the M50.'*

The Draft Transport Strategy for the Greater Dublin Area 2022-2042, published in November 2021 for consultation, as established by the NTA and TII states:

'The Green Line extension to Broombridge (Luas Cross City) was opened to passenger service in 2017. It has long been planned that this line would eventually be extended to serve travel demand from Finglas, inclusive of a potential park and ride facility at or close to its terminal stop. In recent years, the NTA with TII have sought to identify an Emerging Preferred Route for this project and details of this were published in

2020. It is the intention to complete detailed design and planning over the coming years and to progress the scheme to construction.'

The Fingal Development Plan 2017 – 2023 published by Fingal County Council (FCC) also recognises the need for the integration of land-use and transport by providing high quality public transport and to promote sustainable travel. The Plan also highlights the development strategy for Charlestown and Meakstown and aims to improve integration and linkages with Finglas and neighbouring industrial areas. Currently, the Draft Fingal Development Plan 2023 – 2029 is under review and lays down the need for Luas expansion to Finglas as this will deliver the economic and environmental benefits without traffic congestion and pollution. The plan aims to provide well serviced, well-connected towns, villages and communities for the region.

In line with sustainable movement and transport, the draft Dublin City Development Plan 2022-2028 published by Dublin City Council highlights the importance of focusing development on transport infrastructure modes such as the Luas. This will support the connections, capacity and efficiency of transport services in line with national and regional policy.

The proposed scheme in line with the above will:

- Support development of Finglas as a key centre within the Greater Dublin Area;
- Help Ireland reduce emissions from transport by providing an attractive alternative to car use;
- Create safe, segregated, family-friendly cycle and walking paths along the route, improving the quality of life for all;
- Support ambitions for further development of Dublin as an attractive, vibrant location and focus for economic growth;
- Support public transport network integration by providing high quality passenger interchange points, which facilitate convenient transfer between public transport modes at key locations in the study area; and
- Contribute to a reduction in urban congestion and the enhancement of sustainable transport provision in the Region.

2.6 Alternatives

A description of the reasonable alternatives considered is required in accordance with Directive 2011/92/EU as amended by Directive 2014/52/EU, Article 5(1)(d), Annex IV(2) and Annex IV(3). The EIA Directive states that the EIAR should include:

'A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects'.

The Alternatives Assessment in the EIAR will consider the reasonable alternatives for the proposed scheme. This can include alternatives such as: "the do nothing" scenario, alternative locations, alternative alignments, alternative processes or equipment, alternative site layouts, alternative operating conditions, construction methodologies, and alternative ways of addressing potential environmental impacts.

2.7 National, Regional and Local Planning Policies and Transport Programmes

2.7.1 National Policy Context

The following are national level planning policy documents which are of relevance to the proposed scheme:

2.7.1.1 Project Ireland 2040

Project Ireland 2040 is the government's long-term overarching strategy to make Ireland a better country for all of its people. The plan changes how investment is made in public infrastructure in Ireland. Alongside the development of physical infrastructure, Project Ireland 2040 supports business and communities across all of Ireland in realising their potential. In 2018 the Department of Housing, Planning and Local Government, on behalf of the Government, published the National Development Plan and the National Planning Framework which combine to form Project Ireland 2040. The National Planning Framework (NPF) sets the vision and strategy for the development of our country to 2040 and the National Development Plan (NDP) provides enabling investment to implement the strategy. The renewed NDP was published in October 2021 and sets out a capital framework until 2030.

Project Ireland 2040: National Planning Framework (NPF)

The NPF is an overarching policy and planning framework for national development up to 2040. It consists of a set of national objectives and key principles resulting in a shared set of goals for every community across the country. These goals are expressed in this framework as National Strategic Outcomes (NSOs). The NPF lists the proposed scheme as one of the key future growth enablers for Dublin. NSO 4 Sustainable Mobility identifies the need to *"Deliver the key public transport objectives of the Transport Strategy for the Greater Dublin Area 2016-2035...";* which by extension refers to the proposed scheme.

Project Ireland 2040: National Development Plan (NDP) 2021 – 2030

The NDP demonstrates the Government's commitment to meeting Ireland's infrastructure and investment needs through a total public investment estimated at €165 billion over the ten-year period. The 'Strategic Investment Priorities' under NSO 4 refer to Luas Finglas scheme as: *"In terms of other light rail projects, the Luas Finglas is the most advanced with approval recently received under Decision Gate 0 (Strategic Assessment) of the Public Spending Code and the NDP will permit the project continue to progress in the coming years, with work already underway in relation to developing its Preliminary Business Case"*.

2.7.1.2 Zero Pollution Action Plan, Climate Action Plan 2021 and Climate Action and Low Carbon Development Acts 2015 to 2021

The European Commission adopted the EU Action Plan: 'Towards a Zero Pollution for Air, Water and Soil' on 12th May 2021 which is a key deliverable of the European Green Deal. The main objective for the zero-pollution vision for 2050 is to reduce air, water and soil pollution to levels that are not considered harmful to health and natural ecosystems. This is also translated into key 2030 targets to speed up reducing pollution at source. The action plan provides a compass to mainstream pollution prevention in all relevant EU policies, to step up implementation of the relevant EU legislation and to identify possible gaps.

Following the Climate Action and Low Carbon Development Act 2015 coming into legislation, the Government published the first Climate Action Plan in June 2019. The second Climate Action Plan was published in November 2021 and builds on measures and technologies set out in the 2019 plan to deliver the greater ambition. The objective of the Plan is to enable Ireland to meet its EU targets to reduce its carbon emissions by 30% between 2021 and 2030 with the ultimate objective of achieving a transition to a climate resilient, biodiversity rich and carbon neutral economy no later than 2050.

The Plan sets out measures to deliver targets for all sectors of the economy including Transport. One of these measures for Transport sector is 'Sustainable Mobility' to provide good public transport, cycling and walking infrastructure; and focusing on implementing major sustainable mobility projects in main cities of Ireland. The Plan also sets out actions to achieve targets in each sector. Action 291 in 'Transport' sector states:

"Improve climate resilience and adapt to climate change on the Light rail and National Road Network".

The Climate Action and Low Carbon Development (Amendment) Bill 2021 was signed into Law by the President on 23 July 2021. The Act 2021 establishes a 2050 net-zero emissions target for Ireland, with the

introduction of 5-year, economy-wide carbon budgets starting in 2021. In addition, it introduces a requirement to annually revise the Climate Action Plan.

2.7.1.3 National Investment Framework for Transport in Ireland (NIFTI) 2021

The Department of Transport (DoT) published National Investment Framework for Transport in Ireland (NIFTI) in December 2021. NIFTI is DoT's high-level strategic framework to support the consideration and prioritisation of future investment in land transport.

The proposed scheme aligns with types of outcomes that transport investment as a result of NIFTI can deliver or enable in support of Project Ireland 2040 including; *'Delivering clean, low-carbon and environmentally sustainable mobility'* and *'Facilitating safe, accessible, reliable and efficient travel on the network.'* The proposed scheme will directly contribute to two out of the four investment priorities contained within this Framework; as below.

- **Priority: Decarbonisation** which states that *"Decarbonisation and protection of our natural environment will mean investing in sustainable modes so that transport users have safe, accessible, reliable and efficient alternatives to the private car."*
- **Priority: Mobility of People and Goods** in Urban Areas which states that *"Given spatial constraints within our cities, it is essential that urban congestion is tackled through measures such as improved and expanded walking and cycling infrastructure and the provision of better and more comprehensive public transport services."*

2.7.1.4 Smarter Travel: A Sustainable Transport Future: A New Transport Strategy for Ireland 2009 – 2020

This policy document sets out an objective-led framework to achieve a sustainable travel and transport system for Ireland through 49 listed actions. These 49 actions are split into four overarching actions, one being *'…ensuring that alternatives to the car are more widely available, mainly through a radically improved public transport service…'*. The proposed scheme would contribute towards achieving an improved public transport service in the Greater Dublin Area.

2.7.2 Regional Policy Context

The following are regional level planning policy documents which are of relevance to the proposed scheme:

2.7.2.1 Regional Spatial and Economic Strategy (RSES) for the Eastern and Midland Region 2019 – 2031

A RSES is a strategic plan which identifies regional assets, opportunities and pressures and provides appropriate policy responses in the form of Regional Policy Objectives (RPO). At this strategic level it provides a framework for investment to better manage spatial planning and economic development throughout the Region. The principal statutory purpose of the RSES is to support the implementation of Project Ireland 2040. The RSES for Eastern and Midland Region was published by the Eastern and Midland Regional Assembly (EMRA) in 2019.

One of the key elements of the growth strategy identified at the regional level includes the development of a Metropolitan Area Strategic Plan (MASP) which is an integrated land use and transportation strategy for the Dublin Metropolitan Area (DMA). A number of Guiding Principles for the sustainable development of the DMA have been identified to achieve the vision of the MASP including; *'Integrated Transport and Land use – To focus growth along existing and proposed high quality public transport corridors and nodes on the expanding public transport network and to support the delivery and integration of… LUAS extension programmes… while maintaining the capacity and safety of strategic transport networks.'*

Specifically, the strategic development corridor 'City Centre within the M50 (Multi-modal)' refers to the proposed scheme as *'The proposed DART Underground and LUAS extensions to Finglas and Lucan subject to appraisal and delivery post 2027, will unlock long-term capacity including strategic landbanks such as Dunsink'.*

Furthermore, 'LUAS network expansion to Finglas' is identified in RPO 5.2 Sustainable Transport and RPO 8.8 Rail Infrastructure.

2.7.2.2 Transport Strategy for the Greater Dublin Area 2016-2035 and Draft Transport Strategy for the Greater Dublin Area 2022-2042

The Transport Strategy for the Greater Dublin Area 2016-2035 was published by the NTA in 2016 and provides a framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area (GDA). The strategy is an essential component, along with investment programmes in other sectors, for the orderly development of the GDA over the next 20 years. This strategy splits the GDA into a number of corridors, six radial and two central. The proposed scheme lies mainly within Corridor B – Navan – Dunboyne – Blanchardstown – to Dublin City Centre.

The Strategy recommends the *'extension of Luas Cross City to Finglas, utilising the new Luas Cross City line to provide a light rail link to the Finglas area'* and states that *'This (Finglas Luas) will provide a high capacity radial service from this large suburb (Finglas) into the city centre. It is also intended to provide a strategic park and ride at the terminus of this line on the N2 national road close to the M50. These proposals will serve the significant levels of forecast travel demand from this corridor to the city centre and Grangegorman*.'

The Draft Transport Strategy for the Greater Dublin Area 2022-2042 was published for consultation in November 2021 and replaces the previous Transport Strategy. It identifies Luas Finglas as one of the forthcoming schemes and states that a Railway Order application for Luas Finglas is expected to be submitted in 2023/2024. It states:

'The Green Line extension to Broombridge (Luas Cross City) was opened to passenger service in 2017. It has long been planned that this line would eventually be extended to serve travel demand from Finglas, inclusive of a potential park and ride facility at or close to its terminal stop. In recent years, the NTA with TII have sought to identify an Emerging Preferred Route for this project and details of this were published in 2020. It is the intention to complete detailed design and planning over the coming years and to progress the scheme to construction.'

A number of measures have been considered in this strategy which will enable the statutory targets to be met. A measure under 'Public Transport – Light Rail' focuses on Luas Finglas as stated below.

'Measure LRT2 – Luas Finglas: It is intended to extend the Luas Green Line northwards to Finglas, inclusive of a potential park and ride facility at or close to its terminal stop.'

2.7.3 Local Policy Context

The following are local level planning policy documents which are of relevance to the proposed scheme:

2.7.3.1 Fingal Development Plan 2017 – 2023

The Fingal Development Plan 2017 – 2023 published by Fingal County Council (FCC) recognises that the communities of Charlestown and Meakstown form an important residential settlement to the south of the M50. The development strategy for these settlements is to consolidate the development of both in a coordinated manner, promoting and enhancing the role of the Charlestown Centre as a focal point of the community, while improving integration and linkages with Finglas and neighbouring industrial areas. The Development Plan also recognises the potential of lands being in close proximity to the proposed extension of the Luas to Finglas.

The Draft Fingal Development Plan 2023 – 2029 is available to view on public display until May 12th 2022. The Strategic Issues Paper was placed on public display during March – May 2021. In this paper, Theme 3 Connectivity and Movement identified public transport and the offering of alternatives to the private car as being crucial in supporting Fingal's ambitious sustainable transport and active travel objectives. This is also reflected in the Draft Plan.

The Draft Plan states significant investment is planned for Fingal as it relates to the corridor connecting Fingal and Dublin City Centre, including *"extension of LUAS to Finglas".*

2.7.3.2 Dublin City Development Plan 2016 – 2022

The City Development Plan identifies Key District Centres (KDC) which represent the top-tier of urban centres outside the city centre. Amongst the 8 KDCs, Finglas and Northside are the only ones that do not closely align to public transport rail corridors, which perform an important regeneration role for local communities.

The wider encompassing policies in the Plan, such as economic policies, support the continued development of a quality, affordable and accessible movement system within the city that prioritises walking, cycling and public transport making the city more compact and sustainable. Additionally, the Dublin City Council's (DCC) public transport policy to be implemented in collaboration with the Transport Strategy for GDA identifies Luas to Finglas as a key public transport element. Movement and transport policy objective MT1 encourages intensification and mixed-use development along planned public transport corridors and at transport nodes, whilst objective MT4 aims to *'promote and facilitate the provision of… the expansion of Luas… in order to achieve strategic transport objectives.'*

The Draft Dublin City Development Plan 2022 – 2028 is under review. The Draft Plan was on public display from November 2021 – February 2022. The Pre-Draft Plan public consultation on Strategic Issues Paper was held during December 2020 – February 2021. In this paper, Theme 6 Sustainable Movement and Transport refers to the *"LUAS to Finglas".*

3 EIA PROCESS

This section describes the EIA process of identifying, predicting, evaluating and mitigating the effects (positive and negative) on the receiving environment caused by a proposed development or project. Where negative effects are considered unacceptable, design changes and/or other mitigation measures will be proposed to minimise these effects to acceptable levels.

3.1 EIA Directive

The EIA Directive (Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 on the assessment of the effects of certain public and private projects on the environment) (herein referred to as "The EIA Directive") sets out the EIA requirements for projects.

The various amendments introduced in the EIA Directive aim to strengthen the quality of the EIA procedure. It is in line with the drive for smarter regulation and reducing the administrative burden. It also improves the level of environmental protection, with a view to making business decisions on public and private investments more sound, more predictable and sustainable in the longer term.

The EIA Directive on the assessment of the effects of certain public and private projects on the environment became applicable in Ireland from May 16th, 2017. Directive 2014/52/EU is given effect in Irish Law in the context of applications for railway orders by the European Union (Railway Orders) (Environmental Impact Assessment) (Amended) Regulations 2021 (S.I. No. 743 of 2021) which came into effect on 31 December 2021 and the EIAR will be prepared in accordance with these Regulations.

3.2 The EIA Process

An overview of the stages of the EIA process for the proposed scheme is presented in Figure 3.1. The assessment of environmental impacts will be conducted for this scheme in accordance with best practice as detailed in the following Sections for each environmental subject. The EIA process can generally be summarised as follows:

- Screening – Is an EIAR required?;
- Scoping – What issues should be considered within the EIAR?;
- Baseline Data Collection – Establishing a robust baseline of the existing environment on and around the site. This stage includes a review of existing available information and undertaking any surveys identified during the scoping phase;
- Impact Assessment – Assessment of the environmental impacts and establishing their significance;
- Mitigation – Formulation of mitigation measures to ameliorate the potential impacts of the proposed scheme which cannot be avoided practically through site design;
- Consultation – With Statutory Authorities, Stakeholders, the public and other bodies;
- Decision – The competent authority, in this case An Bord Pleanála, will decide if the proposed scheme can be authorised and if so will specify conditions that must be adhered to;
- Announcement – The public is informed of the decision; and
- Monitoring – Monitoring of the effectiveness of implemented mitigation measures.

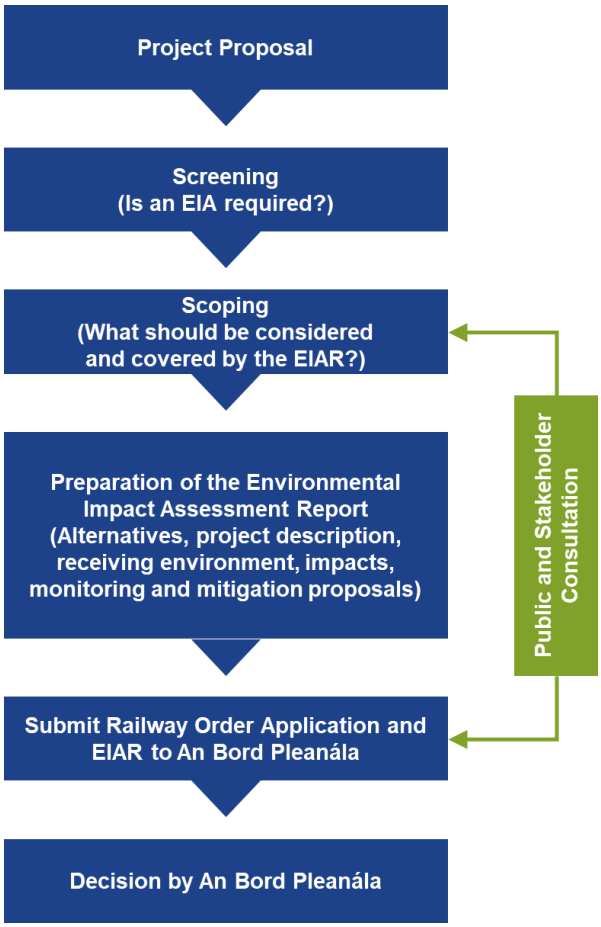


Figure 3.1 EIA Process

3.3 EIA Screening

Screening is the first stage of the EIA process, whereby a decision is made as to whether an EIA is required for a particular project.

The proposed Luas Finglas scheme is being progressed through an application for a Railway Order, under the Transport (Railway Infrastructure) Act 2001 (No. 55 of 2001) (as amended) with requirements as detailed in Section 3.3.1.

Schedule 5 of the Planning and Development Regulations 2001 to 2018 also outlines the relevant classes of development that require EIA. Part 2, Paragraph 10(h) sets out that an EIA is required for the following:

'All tramways, elevated and underground railways, suspended lines or similar lines of a particular type, used exclusively or mainly for passenger transport.'

3.3.1 Transport (Railway Infrastructure) Act 2001 (as amended)

The Transport (Railway Infrastructure) Act 2001 (No. 55 of 2001) (as amended), sets out the process required for making an application for a Railway Order.

It is a mandatory requirement to submit an EIAR with the Railway Order application for this scheme (as discussed in Section 1.2 of this report). Hence, EIA screening is not required for Luas Finglas scheme.

3.4 EIA Scoping

Once a project is subject to an EIAR, the scoping stage must be undertaken. The scoping of an EIAR is concerned with identifying aspects of the environment where there is an interaction, either direct or indirect, positive or negative, with the project. The potential effects thereafter will need to be assessed. Scoping is the process of considering what information should be contained within an EIAR and what methods should be used to gather and assess that information.

The purpose of scoping is to identify the information to be contained in an EIAR and the methodology to be used in gathering and assessing that information. It should provide focus for the EIAR and thus enable the environmental impact assessment to be appropriately tailored to the proposed development's likely significant impacts on the environmental factors are required under Article 3(1) of the EIA Directive –

1. The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

a) population and human health;

b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;

c) land, soil, water, air and climate;

d) material assets, cultural heritage and the landscape;

e) the interaction between the factors referred to in points (a) to (d).

This EIA Scoping Report sets out the proposed scope of work and methodologies to be applied in the development of the EIAR for the proposed scheme and outlines the proposed structure of the EIAR document. The key objectives of this EIA Scoping Report are:

- Provide a description of the proposed scheme;
- Identify likely significant effects which may arise during construction and operation of the proposed scheme, and which will be addressed in detail in the EIAR;
- Identify potential environmental effects which may be partially or wholly omitted from the EIAR (scoped out);
- Outline proposed assessment methodologies for completing the EIAR;
- Outline the likely contents of the EIAR; and
- Form a basis of common reference for consultation about the scope and methodology for the EIAR.

The environmental factors to be addressed in this Luas Finglas EIA Scoping Report are detailed below and comply with the prescribed environmental factors required under Article 3(1) of the EIA Directive and also include appropriate subdivisions (e.g. Material Assets) and additional scheme specific factors (e.g. Electro Magnetic Compatibility and Interference).

- Human Health;
- Population;
- Biodiversity;
- Water;
- Land and Soils: Soils, Geology, and Hydrogeology;
- Land Take;
- Air Quality;
- Climate;
- Noise and Vibration;
- Electro Magnetic Compatibility and Interference;

- Material Assets: Infrastructure and Utilities;
- Material Assets: Traffic and Transport;
- Material Assets: Waste Management;
- Cultural Heritage: Archaeology and Architectural Heritage;
- Landscape and Visual Amenity;
- Risk of Major Accidents and Disasters;
- Interactions; and
- Cumulative Impacts.

The following sections in this report will outline the receiving environment and sensitive environmental receptors for the study area for each of the aforementioned disciplines. Specifically, each discipline will identify the following:

- Policy, plan and guideline context;
- Receiving environment;
- Desktop study;
- Consultation;
- Potential impacts (Construction and Operational);
- Proposed assessment methodology;
- Data and Surveys; and
- Likely Mitigation Measures.

3.5 EIA Methodology

The assessment of environmental impacts will be conducted in accordance with the following EPA Guidance:

- Guidelines on Information to be Contained in Environmental Impact Statements, EPA 2002;
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements, EPA 2003;
- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, EPA 2017; and
- Draft Advice Notes for Preparing Environmental Impact Statements, EPA 2015.

In addition to the applicable EIA legislation and guidance, all EU Directives and national legislation relating to the specialist areas will also be considered as part of the process.

The EIAR will provide the following:

- A description of the proposed scheme comprising information on the location, design, size and other relevant features including the physical characteristics of the whole scheme, required demolitions and the land-use requirements during both the construction and operational phases;
- A description of the main characteristics of the operational phase of the scheme having particular regard to energy demand and energy used and the nature and quantity of materials and natural resources used;
- A description of the relevant aspects of the current environmental baseline and an outline of the likely evolution of the environment without the implementation of the scheme;
- A description of the likely significant effects of the scheme on the receiving environment;
- An estimate by type and quantity of expected residues and emissions and quantities and type of wastes generated during both the construction and operational phases;
- A description of the features of the scheme and/ or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;
- A description of the reasonable alternatives studied, which are relevant to the scheme and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the scheme on the environment;

- A description of the expected significant adverse effects of the proposed scheme on the receiving environment deriving from the vulnerability of the scheme to risks of major risks and disasters and a description of mitigation measures proposed to mitigate these;
- A description of monitoring measures, where appropriate;
- A non-technical summary of the information referred to in points above; and
- Any additional information specified in Annex IV of the EIA Directive 2014/52/EU (as transposed into Irish law) relevant to the specified characteristics of the project and to the environmental features likely to be affected.

It is envisaged that the EIAR will be presented in five volumes anticipated to be as outlined below:

- **Volume 1: Non-Technical Summary**
  Summary of the EIAR in non-technical language;
- **Volume 2: Introduction and Scheme Description**
  Introduction to the proposed scheme and EIA process, including a scheme background, legislative and planning context, description of alternatives, and a description of consultation;
- **Volume 3: Environmental Baseline and Assessment**
  A separate chapter for each environmental topic, describing the baseline, potential effects, mitigation and monitoring requirements for each environmental topic;
- **Volume 4: Figures**
  Graphics and plans supporting the EIAR chapters, illustrating the proposed scheme and environmental information; and
- **Volume 5: Appendices**
  Technical reference information supporting the EIAR chapters, such as calculations and detailed background data.

3.6 Potential Impacts

The assessment will be structured to ensure that assessment criteria (i.e. which receptors are considered sensitive) and standards of significance, sensitivity and magnitude used as part of the assessment are identified and documented and that the level of certainty of data is recorded. An explanation will be provided for each environmental aspect on the criteria that have been applied, including reference to the appropriate published guidance for each of the environmental aspects.

The assessment criteria used will be as per the EPA Guidelines (EPA 2017), as reproduced in Table 3.1 unless otherwise stated and described within the relevant EIAR chapter.

Table 3.1 Reproduction of Table 3.3 Description of Effects from the Draft EPA Guidelines (EPA 2017)

Assessment Criteria	Description of Effects
Quality of Effects It is important to inform the non-specialist reader whether an effect is positive, negative or neutral	**Positive Effects** A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
	Neutral Effects No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative/ Adverse Effects A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
	Imperceptible

Assessment Criteria	Description of Effects
Describing the Significance of Effects ''Significance' is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful (also see Determining Significance below.).	An effect capable of measurement but without significant consequences.
	Not significant An effect which causes noticeable[2] changes in the character of the environment but without significant consequences.
	Slight Effects An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate Effects An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant Effects An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
	Very Significant An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound Effects An effect which obliterates sensitive characteristics
Describing the Extent and Context of Effects Context can affect the perception of significance. It is important to establish if the effect is unique or, perhaps, commonly or increasingly experienced.	**Extent** Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
	Context Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Describing the Probability of Effects Descriptions of effects should establish how likely it is that the predicted effects will occur – so that the competent authority can take a view of the balance of risk over advantage when making a decision.	**Likely Effects** The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
	Unlikely Effects The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Describing the Duration and Frequency of Effects 'Duration' is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful.	**Momentary Effects** Effects lasting from seconds to minutes
	Brief Effects Effects lasting less than a day
	Temporary Effects Effects lasting less than a year
	Short-term Effects Effects lasting one to seven years.
	Medium-term Effects Effects lasting seven to fifteen years.
	Long-term Effects Effects lasting fifteen to sixty years.

Assessment Criteria	Description of Effects
	Permanent Effects Effects lasting over sixty years
	Reversible Effects Effects that can be undone, for example through remediation or restoration
	Frequency of Effects Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)

3.7 Mitigation Measures

The EIAR will address potential environmental effects associated with the proposed scheme and propose mitigation where significant effects are identified. All measures proposed as mitigation for the proposed scheme will be reported within the relevant chapter of the EIAR and also compiled within a standalone Summary of Mitigation Measures and Residual Impacts Chapter.

The EIAR will also include a final chapter that contains a Schedule of Environmental Commitments which will bring together all of the mitigation measures recommended in the various EIAR chapters for ease of reference.

The assessment will evaluate the construction and operational phases of the proposed scheme and the likelihood, extent, magnitude, duration and significance of potential impacts will be described. The potential for cumulative impacts to arise will also be considered.

For all environmental aspects, the significance of residual impacts, i.e. those impacts predicted once mitigation is taken into consideration, will be assessed and presented.

A Construction Environmental Management Plan (CEMP) will be prepared and included in an appendix to the EIAR which will be updated and finalised by the Contractor prior to construction commencing. The CEMP will comprise all of the construction mitigation measures, which are set out in the EIAR, and will be updated with any additional measures which may be required by the conditions attached to An Bord Pleanála's decision. Implementation of the CEMP will ensure disruption and nuisance are kept to a minimum. The plan will have regard to the guidance contained in the handbook published by Construction Industry Research and Information Association (CIRIA) in the UK, 'Environmental Good Practice on Site Guide, 4th Edition' (CIRIA 2015). The plan will also have regard to the TII Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan.

The CEMP will be a working document and will be finalised by the Contractor following appointment and prior to commencing works on site. However, all of the content provided in the CEMP will be implemented in full by the Contractor and its finalisation by the Contractor will not affect the robustness and adequacy of the information presented and relied upon in the EIAR.

The CEMP is a dynamic document, and the Contractor will ensure that it remains up to date for the duration of the construction period. The CEMP may need to be altered during the lifecycle of the construction period to take account of monitoring results, legislative changes, outcomes of third-party consultations etc. Additional appendices may be added to the CEMP to accommodate monitoring results, permits etc.

3.8 Monitoring

In addition to the proposed mitigation measures, monitoring programmes will be developed to assess the actual impacts on the receiving environment and the effectiveness of the proposed mitigation measures. Monitoring also allows for the comparison of pre and post scheme conditions and will enable any unforeseen impacts to be identified and mitigated where required.

3.9 Appropriate Assessment Process

European Sites (collectively known as the Natura 2000 network), i.e. Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) are classified under the Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (Birds Directive) and Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive). The procedures that must be followed when considering developments affecting a Natura 2000 site are specified in Articles 6(3) and 6(4) of Habitats Directive.

The Appropriate Assessment process will be undertaken concurrently with the EIAR, but both processes will be clearly distinguished. The AA will be documented in a Screening Statement and Natura Impact Statement (if required) for the proposed scheme and these documents will be submitted as part of the Railway Order Application with the EIAR.

3.10 Relevant Policy, Plan and Guidelines

The assessment of environmental impacts has been completed in accordance with, but not limited to, the following legislation and guidance:

- Planning and Development Act 2000 (as amended);
- Planning and Development Regulations 2001 (as amended);
- Transport (Railway Infrastructure) Act 2001 (as amended);
- Dublin Transport Authority Act 2008 (as amended);
- Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 on the assessment of the effects of certain public and private projects on the environment;
- Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions, EC 1999;
- Environmental Impact Assessment of Projects Guidance on Scoping, EC 2017;
- Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report, EC 2017;
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment, EC 2013;
- Advice Note Seventeen: Cumulative Effects Assessment Relevant to Nationally Significant Infrastructure Projects, The Planning Inspectorate UK 2015;
- Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), EPA 2003;
- Guidelines on the Information to be contained in Environmental Impact Statements, EPA 2002;
- Draft Advice Notes for Preparing Environmental Impact Statements, EPA 2015; and
- Draft Guidelines on Information to be contained in Environmental Impact Assessment Reports, EPA 2017.

Key policy documents that inform the examination of all environmental areas include:

- National Planning Framework: Project Ireland 2040;
- National Development Plan 2018 – 2027;
- Regional Spatial and Economic Strategy for the Eastern and Midland Region 2019 – 2031;
- Fingal Development Plan 2017 – 2023;

- Draft Fingal Development Plan 2023 – 2029;
- Dublin City Development Plan 2016 – 2022;
- Draft Dublin City Development Plan 2022 – 2028;
- Relevant Local Area Plans;
- Smarter Travel: A Sustainable Transport Future: A New Transport Strategy for Ireland 2009 – 2020;
- Transport Strategy for the Greater Dublin Area 2016 – 2035;
- Draft Transport Strategy for the Greater Dublin Area 2022 – 2042; and
- Climate Action Plan 2021.

4 CONSULTATION

4.1 Introduction

A non-statutory consultation and engagement process is being undertaken for the proposed scheme as described below. Further, the statutory consultation period will commence in accordance with section 40(1) of the Transport (Railway Infrastructure) Act 2001 (as amended) when the newspaper notices are published, and the notices are served on landowners just before the application is made to An Bord Pleanála for the railway order. The consultation assists in developing the EIAR and will serve the following objectives:

- The process will establish a robust environmental baseline for the proposed scheme and its surroundings;
- The public consultation and engagement process will comply with the Aarhus Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters; and
- It provides potential for specific concerns and issues relating to the scheme to be discussed and accounted for in design and assessment from very early in the process and ensures involvement of the public and stakeholders in the process.

4.2 Public Consultation Undertaken on the Emerging Preferred Route (EPR)

A non-statutory public consultation on the EPR for Luas Finglas took place from the 28/07/2020 to 17/09/2020. AECOM prepared a detailed Public Consultation Report on behalf of TII in November 2020.

Engagement involved online and face-to-face meetings. Due to the social distancing restrictions put in place as a result of Covid-19, many in-person activities could no longer be delivered. TII assessed the situation and decided to pursue the consultation to ensure the scheme continued to run to schedule and people were given an early opportunity to review and provide feedback on the proposals. The approach included focusing on digital engagement, including delivering consultation materials online, providing an email address and promoting the consultation via social media. Participants were encouraged to review materials and feedback online in order to remove any risk of infection due to leaving their homes. To ensure all members of society, including those who don't have access to or chose not to use the internet, were able to participate, postal submission and telephone enquiry services were also included and promoted via a leaflet delivered to 10,000 residential and commercial properties within 1km walking distance from the EPR. A small number of socially distanced face-to-face meetings took place when requested by local residents.

Entities directly consulted include local representatives, accessibility groups, landowners, businesses, and residents. Consultation materials included:

- Website – the primary source of information about the EPR;
- Virtual Consultation Room – an online space development to mirror the set-up of a traditional public drop-in event;
- EPR Booklet – a source of information for the EPR proposal with detailed information. The booklet also signposted readers to the website and provided contact details for further information. Hard copies of the booklet were available for all interested parties and could be requested via email or phone call; and
- Response Form – to collate responses during the public consultation process.

During the public consultation period the website had over 6,300 individual users and over 20,000 webpage views. 636 responses were received during public consultation, out of which 567 responses were received from online consultation response form, 48 from email and 21 were written responses. Submissions were also received from 33 stakeholders. These stakeholders included groups, organisations and individuals identified as having a specific interest in the proposals. There was a significant amount of positive feedback

from stakeholders, which focused on the benefits of Luas Finglas. These include connectivity, environmental impact, local regeneration, and the extended public transport reach. Stakeholder concerns included:

- The impact on residents, particularly at Mellowes Crescent, St. Margaret's Court, Lakeglen Estate, and Barnamore Grove, and Casement Road and Dunsink Road. Concerns focused on visual impact, safety risks, parking loss, and anticipated anti-social behaviour;
- The location of a surface car park at the location of the Park and Ride facility as this would impact future development of the land. Relocation suggestions included outside the M50;
- The lack of pedestrian provision at Charlestown; and
- The impact on the environment, the loss of public space, and safety risks.

Nine submissions were received from local landowners whose properties were likely to be impacted by Luas Finglas. Although most submissions supported the principle of the extension of the Luas to Finglas, the following concerns were raised:

- The impact on vehicular and pedestrian access to businesses;
- Suggested alternative routes and stop locations;
- The impact of Luas Finglas on potential development (new or extended);
- The proposed EPR causing existing businesses to become unviable;
- Safety and security concerns regarding proposed access arrangements; and
- Requests for alternative access to existing businesses.

Five hundred and seventy-six people filled out the online public consultation response form, with 90% supporting the principle of extending the Luas Green Line to Finglas. 59% of people rated the EPR as good or very good, and 25% of people rated it as poor or very poor. Popular themes from feedback received is summarised below:

- **Alternative routes**: A number of alternative routes were suggested including extending the Green Line to north to IKEA, Ballymun, Northwood, and Dublin Airport, and also south to Ratoath Road and Ballyboggan Road;
- **Public transport**: Luas Finglas would bring a number of benefits to public transport;
- **Benefits to the community:** Luas Finglas would have a positive impact on the community;
- **Impact on green space**: The EPR should not run through three parks as this would negatively impact on available public green space;
- **Impact on residents**: The EPR would have a negative impact on residents by cutting through cul-de-sacs, specifically at Mellowes Crescent, Casement Road, and Barnamore Grove; and
- **Impact on commuters**: Luas Finglas would provide quicker journey times to many people and would provide an alternative to driving.

The overall key issues identified arising from the public consultation process include the following:

- **Mellowes Crescent:** Residents were concerned about the impact on traffic and parking, destruction of the local community, risk to resident safety, and the visual impact on homes;
- **Casement Road and Dunsink Road**: Residents would like to see the route changed to Finglas Road. If the route is kept along Casement Road, they argue it should be moved away from houses and towards Farnham Crescent;
- **Lakeglen Estate:** Residents from Carrigallen Drive, Carrigallen Park, Carrigallen Road, Gortberg Avenue, Gortmore Road, and Gortmore Drive raised objections to opening up the cul-de-sacs in their areas; and
- **St. Margaret's Court:** Residents were concerned about the impact of changes to the state layout, including vehicular access issues and loss of green space, in addition to the impact of Luas Finglas and loss of parking from homes fronting St Margaret's Road.

4.3 Public Consultation Undertaken on the Preferred Route

Following the EPR public consultation feedback and further assessment by the design team the following changes and improvements (summarised below) were undertaken and are now included in the Preferred Route for Luas Finglas.

These include:

- **Broombridge** – A number of stakeholders expressed a strong demand for improved walking and cycling facilities along Broombridge Road with good linkages to the Royal Canal Greenway and Tolka Valley Park. In response it is proposed to shift the alignment slightly west and widen Broombridge Road;
- **St Helena's** – In response to feedback, this stop has been moved from the original site proposed in the EPR. It has been relocated slightly north closer to St Helena's Road to improve accessibility and interchange with bus routes. The alignment has also been slightly shifted to preserve trees and improve the pedestrian facilities. As the stop has been moved north and is directly accessible from St Helena's Road, it is no longer necessary to provide direct access from the Carrigallen and Gortmore Estates.
- **Farnham** – As the line continues north after St. Helena's, the alignment has been shifted to the east of the original EPR proposal to avoid bisecting the Farnham Park playing pitches. This will reduce environmental and visual impacts while enhancing Luas operational safety. This also allows more space for the Rivermount and Erin's Isle pitches. The alignment has also been adjusted so that when it crosses Wellmount Road, it preserves trees that had been impacted by the EPR. Moving further north, the proposed track has been shifted slightly and the road alignment altered along Patrickswell Place, so that both Patrickswell Court and Wellmount Parade can retain their road access from Patrickswell Place (as is today) without having to cross the Luas tracks.
- **Finglas Village** – The Preferred Route continues straight along Cardiff Castle Road, rather than turning east and then north towards Finglas Village through Mellowes Crescent as in the EPR. The route passes through a new corridor created within the Garda Station car park, making its eastern turn onto Mellowes Road. The stop will be located here, aligned east/west rather than the previous north/south proposal. The newly positioned stop will be more open and accessible than the EPR, with visual links - as well as walking and cycling links - back towards Finglas village east. It will also enable more direct interchange with bus services along Mellowes Road.
- **St Margaret's Road** – It is proposed to move the stop from its original location in Mellowes Park (as in EPR) onto St Margaret's Road, to the other side of Finglas Road, opposite the Lidl supermarket. For this reason, the name of this stop has changed from Mellowes Park to St Margaret's Road. This moves it closer to the newly rezoned Jamestown Industrial Estate, providing improved accessibility to existing and future residential and commercial development. This also addresses concerns raised by residents facing Mellowes Park and significantly reducing the impact on the park itself.

A public consultation on PR commenced from 7th December 2021 to the 31st January 2022. Consultation materials included:

- Website – the primary source of information about the PR;
- Virtual Consultation Room – an online space development to mirror the set-up of a traditional public drop-in event;
- EPR Consultation Report 2020 – an overview of stakeholder and community engagement and consultation activities from EPR consultation period 2020;
- PR Brochure – a source of information for the PR proposal with detailed information. The brochure provides contact details for further information; and
- Public Consultation Questionnaire – to collate responses and feedback during the public consultation process.

All drawings displayed as part of the public consultation are included in Appendix A of this EIA Scoping Report.

4.4 Key Stakeholder Consultation

The consultation is ongoing with a number of key stakeholders which includes, but is not limited to the following:

- Dublin City Council;
- Fingal County Council;
- Irish Rail; and
- Waterways Ireland.

4.5 Consultation with Prescribed Bodies and Other Consultees

As per the statutory requirements a number of statutory consultees, prescribed bodies and other consultees will be provided with the EIA Scoping Report for consultation and are listed in Table 4.1, below.

Table 4.1 Statutory Consultation

Consultees	
Age Action	Dublin Chamber
An Bord Pleanála	Dublin City Council
An Chomhairle Ealaíon (The Arts Council)	Dun Laoghaire - Rathdown County Council
An Taisce	Eastern and Midlands Regional Assembly
Bus Éireann	Environmental Protection Agency
CIÉ Group (Irish Rail, Dublin Bus, Bus Éireann)	Fingal County Council
Climate Change Advisory Council	Health and Safety Authority
Commission for Railway Regulation	Health Service Executive
Commission for Regulation of Utilities	Heritage Council
daa	Inland Fisheries Ireland
Department of Housing, Local Government and Heritage	Irish Aviation Authority
Department of Agriculture, Food and the Marine	Irish Rail
Department of Enterprise, Trade and Employment	Irish Water
Department of Environment, Climate and Communications	Local Authority Waters and Communities Office
Department of Justice	Luas
Department of Public Expenditure and Reform	National Museum of Ireland
Department of Rural and Community Development	National River Basin District
Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media	Office of Public Works
Department of Transport	TransDev
Development Applications Unit (DAU)	Waterways Ireland
Dublin Bus	

Table 4.2 Non-Statutory Consultation

Consultees	
An Garda Síochána	Friends of the Earth
An Post	Friends of the Irish Environment
Association of Consulting Engineers	Geological Survey of Ireland
Badgerwatch Ireland	Housing Agency IBEC
Bat Conservation Ireland	Irish Deaf Society
BirdWatch Ireland	Irish Farmers Association
Coach and Tourism Council	Irish Georgian Society
Coillte	Irish Planning Institute
Construction Industry Federation	Irish Raptor Study Group
Cycling Ireland	Irish Road Haulage Association
Department of Education	Irish Tourist Industry Confederation
Department of the Taoiseach	Irish Wheelchair Association
Dublin City Fire Brigade	Irish Wildlife Trust
Dublin City University	Irish Brent Goose Research Group
Dublin Civic Trust	Local Government Management Agency
Dublin Commuter Coalition	National Council for the Blind Ireland
Dublin Cycling Campaign	National Disability Authority
Dublin City Local Enterprise Office	National Famine Way
Dublin Port Company	National Youth Council of Ireland
Dublin Town	Rail Users Ireland
Enterprise Ireland	Retail Excellence Ireland
Eirgrid	The Irish Small and Medium Enterprise Association
Ervia - Gas Networks Ireland	Sustainable Energy Authority of Ireland
ESB	Tree Council of Ireland
Fingal Chamber	Young Planners Network
Fingal Local Enterprise Office	

5 HUMAN HEALTH

5.1 Introduction

This section describes the scope of works and methods to be applied for the identification and assessment of the potential impacts on human health, as a result of the proposed scheme. This section provides an overview of receiving environment, the types of impacts that can be expected, a proposed methodology and the scope of work likely to be required as part of the proposed scheme on human health as part of the EIA.

5.1.1 Policy, Plan and Guideline Context

The assessment for human health and population will require a comprehensive review of plan, policy and strategies, including (but not limited) to the documents listed in Section 3.10 and below:

- Night Noise Guidelines for Europe, World Health Organisation (WHO) 2009;
- Health Impact Assessment Resource and Tool Compilation, US EPA 2016;
- Guidelines for Community Noise, WHO 1999;
- Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011);
- WHO global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide, WHO 2021;
- British Standard (BS) 5228-1:2009+A1:2014– Code of Practice for Noise and Vibration Control on Construction and Open Sites Part 1: Noise, BSI 2014;
- Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4), EPA 2016;
- Environmental Noise Guidelines for the European Region, WHO 2018;
- Health Impact Assessment Guidance: A Manual, Institute of Public Health 2021; and
- Health in Environmental Impact Assessment- A Primer for a Proportionate Approach (Cave et al. 2017).

5.1.2 Receiving Environment

This scoping report includes a preliminary assessment of various baseline factors to describe the receiving environment and the study area. From a human health perspective, the assessment will focus primarily on those that are considered the most likely to be affected and includes people who live or work within 500m of the proposed scheme. However, impacts beyond this area will also be reviewed to ensure more distant effects are also taken in account.

Health in Ireland Key Trends 2019 is the most recent health statistics report published by the Department of Health. It provides a summary of health and healthcare statistics for the country over the past ten years. In 2015 County Health Profiles were published on the HSE website under the Healthy Ireland Strategy which is a national framework to improve the health and wellbeing of the people of Ireland. A group made up of the Health Services Executive, and Lenus the Irish Health Research Repository have published these health profiles for all local authorities in Ireland. These reports have been used to establish a community health profile for the proposed scheme.

In Ireland, there has been an increase in life expectancy and a decrease in mortality rates. Mortality rates in Ireland have declined 10.5% since 2009. Ireland has the highest self-perceived health status in the EU, with 82.9% people rating their health as good or very good (Department of Health 2019). The population of County Dublin is approximately 1.35 million (CSO Census 2016). The proposed scheme will physically traverse both Dublin City Council and Fingal County Council administrative areas. The majority of the proposed scheme is located within the Dublin City County Council administrative area.

The Dublin City Council area has a population of approximately 553,000 according to the 2016 census. According to the 2015 Health Profile Dublin City has a higher than average percentage of persons who report their health as being bad or very bad 2% (national 1.5%) or who have a disability 14.9% (national 13.0%). Cancer incidence rates are higher than average for female malignant melanoma, male colorectal

cancer and male and female lung cancers. Mortality rates are above national average for heart disease and stroke in those aged under 65 years (HSE 2015).

Fingal County Council has a population of approximately 296,020 according to the 2016 census. According to the 2015 Health Profile it is the second most affluent Local Authority in Ireland, with 85% of the population either above average or affluent. It has the lowest percentage nationally of those who report their health being bad or very bad at 1.1.% or persons with disability at 10.2%. As of 2015, Finglas has the highest birth rate, and second highest breast- feeding rate in the country. Cancer incidence rates are higher than average for female malignant melanoma, male colorectal cancer and male and female lung cancers (HSE 2015).

5.2 Baseline Information

5.2.1 Desktop Study

A review of available literature and publications for human health and well-being will be undertaken to develop an in depth understanding of the baseline conditions within the study area. A further literature review of potential health impacts arising from similar projects will be undertaken to identify potential health impacts arising from the proposed scheme.

5.2.2 Consultation

Consultations will be undertaken with prescribed bodies, local authorities, other consultees and the public. Further details of consultation can be found in Section 4 of this report.

5.3 Potential Impacts

5.3.1 Construction Phase

The potential impacts to human health and the population arising from the proposed scheme during construction phase will include, but are not limited to:

- Noise: During the construction phase a noise impact assessment will be undertaken to determine the impacts of construction phase noise on sensitive receptors. These sensitive receptors will include any schools, hospitals, nursing homes and other facilities where sensitive individuals may be present. Consideration will also be given to residential locations having regard to potential impacts of noise with particular attention paid to potential night-time noise effects on sleep;
- Vibration: During the construction phase the impacts of ground transmitted vibration on sensitive receptors will be assessed. Consideration will be given to potential impacts on sleep and other health effects;
- Water: Potential effects on water, both surface water and groundwater, will be considered in both the construction and operational phases. Potential effects on drinking water will be assessed as well as potential effects on public health arising from changes in surface water quality;
- Air quality: Potential effects on air quality, both positive and negative will be determined. Positive effects will arise from reduced car journeys;
- Potential effects on health arising from nuisance i.e. vermin; and
- Potential effects on health due to impaired or improved access to public facilities and services.

5.3.2 Operational Phase

The potential impacts to human health and the population arising from the proposed scheme during the operational phase will include, but are not limited to:

- Noise impact assessment will be undertaken to determine the impacts of operational phase noise on sensitive receptors;
- The potential effects of Electromagnetic force (EMF) on human health will be assessed having particular regard to the operational phase. Potential effects on human beings will be assessed as well as other

effects which would have potential effects on human health such as interference with equipment and machines in sensitive locations;
- Air quality: Potential effects on air quality, both positive and negative will be determined. Positive effects will arise from reduced car journeys;
- Potential effects on health arising from economic development; and
- Potential effects on health arising due to severance.

5.4 Assessment Methodology

The references to the 1985 and 2011 EIA Directives refer to "human health" and include "Human Beings" as the corresponding environmental factor. The 2014 EIA Directive (2014/52/EU) changes this factor to "Population and Human Health". However, no specific guidance on the meaning of the term Human Health has been issued in the context of Directive 2014/52/EU.

The 2017 Draft EPA Guidelines on the information to be contained in EIARs notes that '*while no specific guidance on the meaning of the term Human Health has been issued in the context of Directive 2014/52/EU, the same term was used in the SEA Directive (2001/42/ EC)'. The Commission's SEA Implementation Guidance (section 5.26) states 'The notion of human health should be considered in the context of the other issues mentioned in paragraph (f) and thus environmentally related health issues such as exposure to traffic noise or air pollutants are obvious aspects to study". (Paragraph (f) (of Annex I of the SEA Directive) lists the environmental factors including soils, water, landscape, air etc*.)' (EPA 2017).

The 2017 Draft EPA Guidelines note that the above health assessment approach is consistent with the approach set out in the 2002 EPA Guidelines where health was considered through assessment of the environmental pathways through which it could be affected, such as air, water or soil: *'The evaluation of effects on these pathways is carried out by reference to accepted standards (usually international) of safety in dose, exposure or risk. These standards are in turn based upon medical and scientific investigation of the direct effects on health of the individual substance, effect or risk. This practice of reliance upon limits, doses and thresholds for environmental pathways, such as air, water or soil, provides robust and reliable health protectors [protection criteria] for analysis relating to the environment'* (EPA 2017).

These guidelines therefore are supportive of the use of accepted standards such as those issued by authoritative bodies such as the World Health Organisation, European Commission, TII and other bodies. As a result, relevant standards will be used to classify the potential impacts on human health. The standards used will have regard to the assessment criteria used in other chapters in the EIAR and included in Section 5.1.1.

The 2017 Draft EPA Guidelines also note that in an EIA Report, '*the assessment of impacts on population & human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil, etc*.' and that "*assessment of other health & safety issues are carried out under other EU Directives, as relevant. These may include reports prepared under the Integrated Pollution Prevention and Control, Industrial Emissions, Waste Framework, Landfill, Strategic Environmental Assessment, Seveso III, Floods or Nuclear Safety Directives. In keeping with the requirement of the amended Directive, an EIAR should take account of the results of such assessments without duplicating them'* (EPA 2017).

The Institute for Environmental Management and Assessment (IEMA) in the UK issued a discussion document in 2017 *Health in Environmental Impact Assessment - A Primer for a Proportionate Approach*. This document provides a discussion on what a proportionate assessment of the impacts on health should be in EIA.

The WHO defined health in its broader sense in its 1948 constitution as '*a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity*'. Therefore, whilst the EPA guidance mentioned above is useful in terms of identifying an approach to health protection, for a more holistic assessment as per the IEMA document, it is also worthwhile to look at broader health effects in terms of

opportunities for improvement of health and for improvement of access to services. Therefore, health protection, health improvement and improving services will all be considered in the EIAR. In relation to health protection the health-based standards referred to above will be the primary assessment tool.

The human health assessments will draw on the residual impacts identified in other assessments, specifically, visual, traffic and transport, water, material assets, air quality and noise. The broader health effects in terms of opportunities for improvement of health and for improvement of access to services will be assessed.

5.4.1 Data and Surveys

For human health, no field surveys are required for any of the assessments in this EIAR chapter. In addition to the desktop study the impact assessment will be informed using comprehensive surveys undertaken in the preparation of other EIAR chapters including those for Electro Magnetic Compatibility and Interference, Noise and Vibration, Air Quality, Traffic and Water.

5.5 Mitigation Measures

Potential mitigation measures will be proposed to remove or reduce possible negative impacts arising from, for example, new severance, impacts on the journey amenity of pedestrians and cyclists, and accessibility or use of community facilities. Opportunities to enhance predicted positive impacts will also be explored. Mitigation will be proposed for both the construction and operational phases.

6 POPULATION

6.1 Introduction

This section describes the scope of works and methods to be applied for the identification and assessment of the potential impacts on population as a result of the proposed scheme. This section also provides an overview of the receiving environment, the types of impacts that can be expected, a proposed methodology and the scope of work likely to be required as part of the EIA. It considers the socio-economic impacts of the proposed scheme during both construction and operation. The aspects to be assessed include employment effects during the construction phase, access to employment, impacts on and access to community facilities, economic investment in the local area and the impacts on recreation and amenity.

The section will also assess the interaction between the various land uses including commercial, residential, community and future development lands. The scheme will play a key role in the movement of people throughout the area, during both the construction and operational phases.

6.1.1 Policy, Plan and Guideline Context

The assessment for population will require a comprehensive review of plan, policy and strategies, including (but not limited) to the documents listed in Section 3.10 and below:

- Regional Spatial and Economic Strategy for the Eastern & Midland Region 2019 – 2031, EMRA 2019;
- Applying a Gender Lens to TII Public Transport Projects, TII 2021;
- Greater Dublin Area Cycle Network Plan, NTA 2013;
- Permeability. Best Practice Guide, NTA 2013; and
- Local Economic Community Plans.

6.1.2 Receiving Environment

The study area extends for a radius of 500m from the proposed scheme, and up to 1km around Luas stops, for the assessment of the local effects of the proposed scheme particularly with regard to land use. A low-level site catchment with a radius of 500m will be used to replicate the average resident's walking speed, time and distance threshold to access services in their locality.

The extension from 500m to 1km around the stop locations reflects people's higher propensity to travel further to a transport hub than to a local shop. With approximate walking speeds of 3km/h to 5 km/h, the catchment will cover residents living between 12 and 20 minutes walking time from each stop location and 6 and 10 minutes walking time elsewhere.

A wider study area will also be considered as part of the population assessment and will include the regional context of Dublin and specific commuter towns, as well as the communities in the proximity of the development itself.

The scoping report includes a preliminary assessment of various baseline factors to describe the study area. The information will be used to guide a more comprehensive and low-level assessment in later stages, particularly as the assessment areas are definitively set out.

6.1.2.1 Population

Census 2016 results show that Ireland's population increased by 173,613 persons over the five years since April 2011, to reach 4,761,865 persons in April 2016. The population of all provinces grew, but Leinster grew faster than the State overall, increasing by 5.2 per cent in the five years ending April 2016. Leinster accounted for 55.3 per cent of the population in 2016 compared with 54.6 per cent in 2011. It should be noted that the population figures are based on the 2016 census, the next census was planned to take place on 18 April 2021 but this has been moved to 3 April 2022 due to the COVID-19 pandemic.

The population change by county varied widely with Fingal growing by 8 per cent over the five years (+22,223 people), or more than twice that of the state overall. The population for Dublin City increased by 4.8% over the same time period. The high birth rates arising from the relatively young population of Fingal and South Dublin has contributed to population increases in the area. Inter-regional and international net inward migration also played a significant role in population movement over the period and future trends noted in the National Planning Framework (Department of Public Expenditure and Reform 2018) indicate that this will continue in the near to mid-term to 2040.

In relation to the local effects, the proposed scheme lies within the highly populated Dublin City Council and Fingal County Council areas (populations of approximately 553,000 and 296,020 respectively according to the 2016 census). The desktop study will create a profile of population at small area level which will define population densities per square meter and also feed into other demographic related indicators for assessment.

6.1.2.2 Land Use and Amenity

There is a broad range of different land uses in the proximity of the proposed scheme. The Broombridge and Dublin Industrial Estates are located in the southern extent of the study area bordering the Royal Canal. This area is separated from residential areas to the north by the Tolka Valley Park. The residential areas themselves are bordered to the west by Cardiffstown Road (R103) and, further out by Ratoath Road, and to the east by Finglas Road (R135) which is the major artery for the area extending north to the N2 and possessing dedicated bus lanes. East-west connections are provided by Ballyboggan Road, Tolka Valley Road (R102), Wellmount Road, Cappagh Road (R103) and Mellowes Road. Finglas Village is on the eastern side of this Finglas Road, to the north of which is Jamestown Business Park which extends north as far as the Charlestown Shopping Centre and the M50. Residential areas continue to the north on the west side of Finglas Road. Throughout the study area there are community facilities, including playing fields and areas of green space. Other local attractors and community facilities, most of which are accessed by mainly local vehicle, pedestrian and cycle traffic, include St. Oliver Plunkett's Church, St. Canice's Roman Catholic Church and the Kingdom Hall of Jehovah's Witnesses. The Church of the Annunciation is due to be demolished and replaced with a smaller church, housing for senior citizens and a possible primary care centre.

6.1.2.3 Education

There are a large number of schools and colleges near the proposed scheme including St. Oliver Plunkett's National School, St. Malachy's MNS, St. Michael's Holy Faith Secondary School, St. Brigid's National School, St Brigid's Senior School, St. Fergal's Boys National School, Finglas Parochial National School, Coláiste Eoin, St. Fergal's Boys National School, St. Joseph's Girls National School, St. Kevin's Boys National School, Coláiste íde College of Further Education and CDETN Adult Education. A detailed assessment will also be undertaken during the desktop study.

6.1.2.4 Health Services

There are social and family support services that include St Helena's Family Resource and Childcare Centre, Finglas Childcare, Finglas Youth Services, St Michael's House Technical Services for people with disabilities, Finglas Intreo Centre (Department of Social Protection) and Finglas Medical Centre. A detailed facility assessment will be carried out during the desktop study.

6.1.2.5 Sports and Leisure

Sports and leisure facilities in the study area include Erin's Isle GAA, Rivermount Boys FC, Valley Park United FC, Finglas United Youth FC, Leisure Point Sport and Fitness Centre, and Finglas Area Office and Sports Centre. Parks and green space include Tolka Valley Park (including golf course), Barnamore Grove Linear Park, Kildonan Park and Mellowes Park.

6.1.2.6 Security

Finglas Garda Station is located in the study area along with Finglas Fire Station. A detailed facility assessment will be carried out during the desktop study.

6.1.2.7 Economic Activity

There are also numerous local neighbourhood shopping centres scattered throughout the area. The principal destinations or attractors are the Key District Centre of Finglas Village and Charlestown Shopping Centre, including also supermarkets and adjacent retail at Tesco (Clearwater), Aldi (St. Margaret's Road), Lidl (St. Margaret's Road), Dunnes Stores (Charlestown and Cardiffsbridge Road), as well as the Broombridge and Dublin Industrial Estates, Finglas Business Centre, and the North Road Commercial Area.

6.1.2.8 Unemployment

There were approximately 90,200 people unemployed in the Dublin Region of Quarter 1, 2021 or 7.8% of the workforce compared with a national figure of 7.1% (CSO 2021). A complete assessment covering principal economic status, unemployment, the labour force and participation rates will be undertaken as part of the desktop study. The development of transport infrastructure such as Luas Finglas, will have a marked impact on the opportunity potential for employment within Finglas, North County Dublin and beyond.

6.1.2.9 Public and Active Transport

The study area is served by various Dublin Bus routes, including Service 40 which connects with City Centre with the Liffey Valley and Charlestown Shopping Centres and uses Finglas Road and Cardiffstown Road, as well as the 40B, 40D, 40E which branch from Finglas Road to local destinations, the 220 which follows Lower Finglas Road, Tolka Valley Road and St Helena's Road and connects with Dublin City University, the 140 which follows Finglas Road and connects Rathgar with Ballymun, the 17A which follows Mellowes Road and connects with Blanchardstown and Howth, and the 103 which connects Charlestown Shopping Centre with the city centre. Under BusConnects, the 'F corridor' from Charlestown to the city centre is proposed as one of 16 core bus corridors which will consist of three spines, one of which would travel along Finglas Road.

Cycle infrastructure includes the Tolka Valley Greenway, Royal Canal Greenway and the Finglas Road cycle path which is segregated from the road and connects the city centre with Finglas Village. Secondary routes proposed in the Greater Dublin Area Cycle Network Plan (2013) follow Mellowes Road, North Road and Charlestown Place.

6.2 Baseline Information

6.2.1 Desktop Study

A review of available literature and publications for population will be undertaken to develop an in depth understanding of the baseline conditions within the study area. This will include, but not limited to:

- Census - Demographics (including population, age cohorts, gender);
- Census - Residential statistics (including, tenure, owner-occupied/rental, household composition);
- Census - Employment statistics; (including industry of employment, principal economic group);
- Census - Educational statistics (qualifications held);
- POWSCAR 2016 - place of work/school travel data;
- Dublin Economic Monitor (Dublineconomy.ie) and other Dublin region economic indicators;
- International research and data on the socio-economic impact of comparable projects;
- Projection of population within the area of assessment and at a regional level; and
- Review of local educational facilities, health facilities and local amenities.

6.2.2 Consultation

Consultations will be undertaken with prescribed bodies, local authorities, other consultees and the public. The submissions of business and trade groups, retailers, sectional stakeholders (i.e. community organisations and transport operators), and socio-economic groups located along the alignment will be fully reviewed during the preparation of the EIAR. Further details of consultation can be found in Section 4 of this report.

6.3 Potential Impacts

6.3.1 Construction Phase

The potential impacts to population and socio-economic effects arising from the proposed scheme during construction phase will include, but are not limited to:

- Potential impacts due to temporary and permanent loss of residential, commercial and amenity lands;
- Potential positive impacts due to creation of temporary direct and indirect employment opportunities in local areas;
- Potential temporary disturbance to businesses and non-commercial institutions;
- Potential population impacts arise in relation to accessibility to community facilities inside the study area, including key attractor destinations, schools, religious facilities, retail facilities, sports and amenity, and places of employment;
- Particular attention will be given in the assessment to sensitive receptors, namely pedestrians, cyclists, younger and older population groups, parents with young children, and people with disabilities; and
- There will be temporary adverse impacts on transport connectivity and local residential amenity.

6.3.2 Operational Phase

The potential impacts to population and socio-economic effects arising from the proposed scheme during operational phase will include, but are not limited to:

- The proposed Luas scheme will have a positive impact in facilitating access to community facilities in the study area, primarily by people living within and outside of the area who are not within convenient walking distance. It will also have a positive impact in providing people living in the study area with quicker and more convenient access to facilities outside of the study area, including the city centre and places of employment, especially for those people living further away from existing principal bus routes;
- This accessibility will provide local people with more opportunities in terms of access to employment, retail, and social facilities, and also provide benefits in terms of social and economic inclusion. The accessibility benefits will be realised particularly by people falling within lower CSO socio-economic categories, people with disabilities and those without access to a private car;
- In addition, the proposed cycle paths alongside the line will enhance this accessibility providing further benefits in terms of safer and more convenient journeys and health benefits. There will be further effects in terms of stimulating economic growth through enhanced access to employment opportunities to the benefit of both workers and employers, and by releasing the potential of unused lands for infill residential or business development;
- Impacts arising from potential new development (or redevelopment), net retail provision, new community facilities or new employment opportunities;
- Possible negative impacts could arise from any physical severance that could be introduced by the proposed Luas scheme. This could occur during either construction or operation. Direct severance will be slight at most locations, although the line would cross local roads and footpaths used for pedestrian or cycle journeys to schools or to other destinations. There are also locations where the line is proposed to follow more narrow streets, would pass close to residential properties or impact on existing residential or office parking. It would cross or pass-through parks or areas of amenity green space with possible impacts on playing fields during either construction or operation; and

- On operation, the presence of new stops would attract some localised additional vehicle traffic and car parking demand. Increased footfall would occur in the vicinity of stops, and this could introduce issues for local residents and for passing trade for local businesses, both positive and negative.

Consequently, there are possible impacts in relation to severance, journey amenity, general amenity, and economics. Environmental impacts, specifically those addressed by the assessments of noise and vibration, air quality and climate, and landscape and visual amenity, and those of relevance at a community level, will also be considered within the assessment of population and human health as part of the overall EIA.

6.4 Assessment Methodology

For the assessment of population, potential impacts fall under the categories of journey characteristics and accessibility, journey amenity, general amenity, and economic effects. Assessment will be undertaken for both the construction and operational phases and follow the guidance as set out below:

- EPA Guidance:
  - Advice Notes for Preparing Environmental Impact Statements, Draft, September 2015; and
  - Draft Guidelines on the information to be contained in Environmental Impact Assessment Report, August 2017.
- Department of Transport guidance and the TII PAG, including for pedestrian and cyclist facilities;
- Permeability Best Practice Guide, NTA 2015;
- Project Appraisal Guidelines for National Roads Unit 13.0 – Appraisal of Active Modes (PE-PAG-02036), TII 2021; and with reference also to the UK publications;
- UK Design Manual for Roads and Bridges (DMRB) on Population and Human Health (LA112 January 2020); and
- Pedestrian Comfort Guidance for London, Transport for London 2019.

The study area includes areas of high population density and pockets of social and economic disadvantage which will be assessed through a demographic analysis and through consultation with local bodies familiar with these issues locally. The baseline will examine the existing demographic characteristics of the areas around the proposed stops along the proposed scheme, including the density of population, employment, skill levels, economic activity, levels of deprivation, sectoral breakdown of the economy and the labour catchment area as shown by travel to work patterns. The baseline study will also consider the existing and projected transport and land use characteristics such as accessibility of the area, existing nature of the area in terms of land use and building density, the state of the local economy and property market.

The assessment will address a number of effects likely arising from the proposed scheme. The study area contains numerous community facilities, and an assessment of the local use and access to these facilities will be made with the input of traffic, cyclist and/ or pedestrian counts and information on public transport use or origin/destinations data collected for the scheme. Assessment will be made of the integration of the proposed Luas scheme with the walking and cycling network and of benefits of the proposed new on-road or off-road cycle facilities. Effects on general amenity will be assessed at a community level based on the data collected by the environmental specialists (e.g. Landscape, Biodiversity etc.), but specific issues for Population will include also any impacts on the use of green space or pitches. Issues of personal safety or anti-social behaviour will be examined under the same heading to identify locations or circumstances where the proposed scheme could improve the existing situation or perhaps introduce new issues.

The Development Plan and local plans will be reviewed for issues or proposals of relevance to these impact categories such as land use zoning, development proposals and proposals for complementary transport infrastructure. Planning policies will also be taken into account through reviews of policies and discussions with local planning authorities.

The impact assessment will address a number of potential effects arising from the proposed scheme, these include:

- Enhanced accessibility to employment, education, health and commercial facilities: The assessment will quantitatively and qualitatively assess the commuting times for communities within reach of the proposed scheme for employment, education, health and commercial accessibility. The assessment will assess the existing spatial situation and the post development situation;
- Construction effects on employment: The assessment on effect of employment in the local region will include the degree of displacement, substitution and employment multipliers to determine the additional jobs likely to result from construction of the proposed scheme;
- Economic investment in the region in form of construction expenditure: The assessment will be based on economic spend multipliers and capacity assessment of the local region to supply the requirements of the proposed scheme. The available data and information on local employment levels, labour mix and educational qualifications will be taken into account;
- Strategic level benefits: The assessment will consider regional competitiveness, international profile, rankings and reputation; and
- Access to recreation and amenity: The assessment will determine the effect of the proposed scheme on these facilities on recreation and amenity.

6.4.1 Data and Surveys

For population, information will be collected through data already collected, and on-site observation, at times of peak traffic movement and use of, or journeys to, community facilities such as schools, shops and parks by car, foot, cycling or public transport. Additional assessment of the pedestrian environment will be undertaken for the scheme. Discussions will be conducted with people working locally in the area of social disadvantage, economic development, recreation, and policing and with the managers or principals of community facilities. Discussions will be sought with local representative groups such as community groups, residents' groups, cyclists, and sports clubs. Cognisance will be taken of all official consultations held to date.

6.5 Mitigation Measures

Potential mitigation measures will be proposed to remove or reduce possible negative impacts arising from, for example, new severance, impacts on the journey amenity of pedestrians and cyclists, and accessibility or use of community facilities. Opportunities to enhance predicted positive impacts will also be explored. Mitigation will be developed and proposed for both the construction and operational phases.

7 BIODIVERSITY

7.1 Introduction

This section provides an overview of the receiving ecological environment; the nature and scale of impacts that can be anticipated; a proposed assessment methodology; and the scope of work likely to be required to undertake a detailed ecological assessment of the proposed Luas Finglas scheme, thereby providing the project ecological team with baseline information to support any necessary mitigation measures recommended as part of the EIAR.

7.1.1 Policy, Plan and Guideline Context

The biodiversity assessment will require a comprehensive policy, plan and strategy review, including (but not limited to the documents listed in Section 3.10, and the following:

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive);
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (Birds Directive);
- Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 on the assessment of the effects of certain public and private projects on the environment;
- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) (as amended);
- Wildlife Acts 1976 to 2021;
- Flora (Protection) Order, 2015 (S.I. No. 356 of 2015);
- Inland Fisheries Acts 1959 to 2017;
- National Biodiversity Plan 2017-2021, Department of Culture, Heritage and the Gaeltacht (DCHG) 2017;
- Fingal Biodiversity Action Plan 2010-2015, FCC 2010, (will be superseded by the Fingal Biodiversity Action Plan 2018- 2023 should it be released within the project's timeframe)
- Dublin City Biodiversity Action Plan 2015 – 2020, DCC 2015; and
- Draft Dublin City Biodiversity Action Plan 2021-2025, DCC 2021.

7.1.2 Receiving Environment

The proposed Luas Finglas scheme extends through an urban area extending from Broombridge to the north of Finglas town (Charlestown area), containing within it sections of artificial urbanised areas; green field amenity areas, three parkland areas (Tolka Valley Park, Farnham Drive Park and Mellowes Park); and two watercourses, namely the River Tolka and Royal Canal, the latter of which is also a proposed Natural Heritage Area (pNHA), and both of which hydrologically connect the scheme to Dublin Bay. Dublin Bay is located approximately 6km downstream from the bridging point of the River Tolka and 8.5km from bridging point of the Royal Canal. The bay area hosts four European designated Natura 2000 sites, North Dublin Bay Special Area of Conservation (SAC), North Bull Island Special Protection Area (SPA), South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA; two nationally designated sites, North Dublin Bay pNHA and South Dublin Bay pNHA; and the North Bull Island Nature Reserve.

In establishing which European sites are potentially at risk (in the absence of mitigation) from the proposed Luas Finglas, a source-pathway-receptor approach will be applied. In order for an impact to occur, there must be a risk enabled by having a source (e.g. construction works), a receptor (e.g. a European site or qualifying interest (QI) or special conservation interest (SCI) species) and a pathway between the source and the receptor (e.g. pathway by a watercourse for mobilisation of pollution). For an impact to occur, all three elements must exist; the absence or removal of one of the elements means there is no possibility for the impact to occur.

Considering the potential impacts of the Luas Finglas the ZoI for this scheme is likely to be noise disturbance (1km), air pollution (10km), surface water (15km downstream hydrological connections), groundwater (15km) and any supporting habitat for SAC/SPA species (15km). A complete list of all designated sites within the scheme's general 15km ZoI are listed below in Table 7.1 and displayed in Figure 7.1 and Figure 7.2.

Table 7.1 Designated Sites within the Scheme's General 15km Zone of Influence

European: Natura 2000 Sites (total = 16)	Location Relative to the Proposed Development	National: Proposed Natural Heritage Areas (total = 21)	Location Relative to the Proposed Development
North Dublin Bay SAC [000206]	7.8km	Royal Canal pNHA [002103]	Within site
North Bull Island SPA [004006]	7.8km	North Dublin Bay pNHA [000206]	4.6km
South Dublin Bay SAC [000210]	7.0km	South Dublin Bay pNHA [(000210]	7.0km
South Dublin Bay and River Tolka Estuary SPA [004024]	4.8km	Liffey Valley pNHA [000128]	4.0km
Baldoyle Bay SAC [000199]	10.5km	Rogerstown Estuary pNHA [000208]	12.7km
Baldoyle Bay SPA [004016]	10.7km	Portraine Shore pNHA [001215]	14.9km
Howth Head SAC [000202]	13.3km	Malahide Estuary pNHA [000205]	9.4km
Glenasmole Valley SAC [001209]	13.4km	Feltrim Hill pNHA [001208]	7.8km
Wicklow Mountains SAC [002122]	14.8km	Sluice River Marsh pNHA [001763]	10.2km
Wicklow Mountains SPA [004040]	14.9km	Baldoyle Bay pNHA [000199]	10.5km
Rye Water Valley / Carton SAC [001398]	12.5km	Santry Demesne pNHA [000178]	3.0km
Rockabill to Dalkey Island SAC [003000]	13.9km	Howth Head pNHA [000202]	13.0km
Malahide Estuary SAC [000205]	9.4km	Grand Canal pNHA [002104]	3.9km
Malahide Estuary SPA [004025]	9.4km	Dolphins, Dublin Docks pNHA [000201]	7.5km
Rogerstown Estuary SAC [000208]	12.7km	Booterstown Marsh pNHA [001205]	9.3km
Rogerstown Estuary SPA [004015]	13.3km	Dalkey Coastal Zone and Killiney Hill pNHA [001206]	14.3km
		Dodder Valley pNHA [000991]	9.5km
		Fitzsimon's Wood pNHA [001753]	12.1km
		Lugmore Glen pNHA [001212]	13.3km
		Glenasmole Valley pNHA [001209]	13.4km
		Rye Water Valley / Carton pNHA [001398]	12.5km

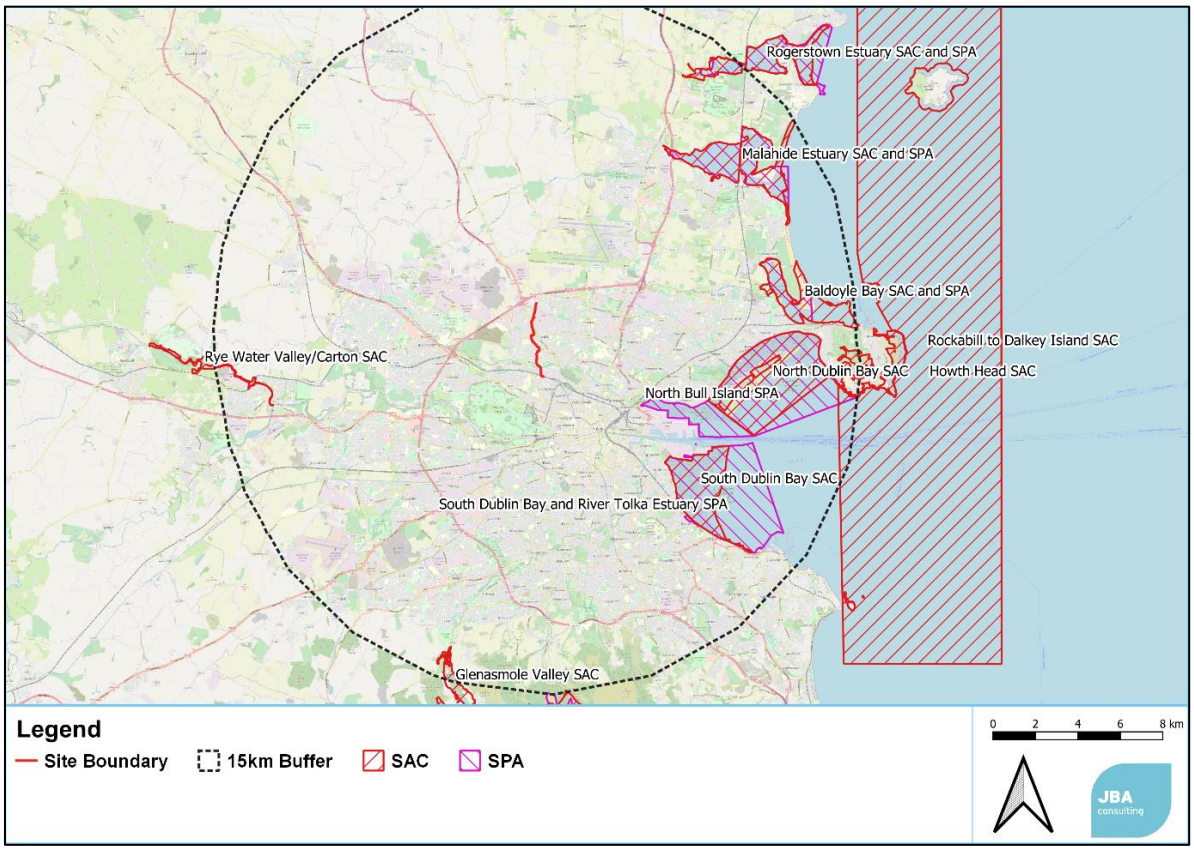


Figure 7.1 Natura 2000 Sites within the Zone of Influence

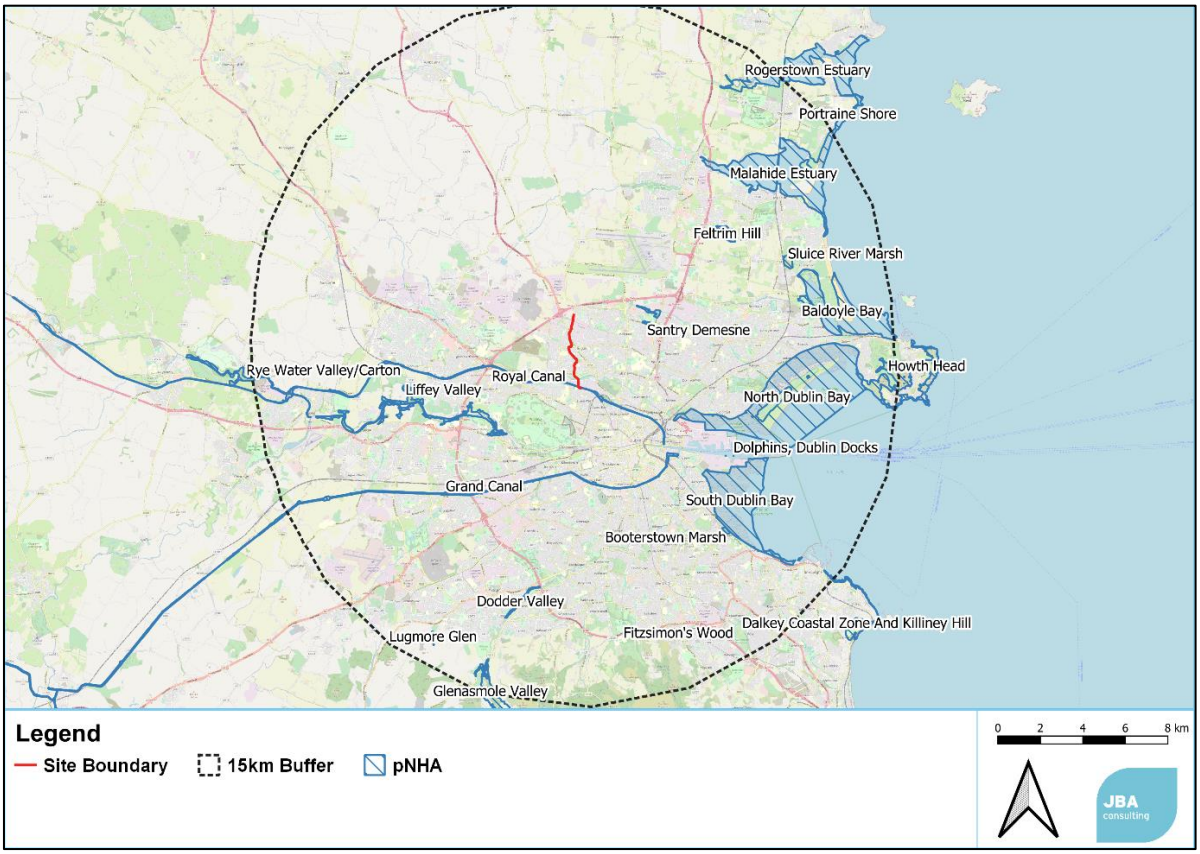


Figure 7.2 Proposed Natural Heritage Sites within the Zone of Influence

The habitats along Luas Finglas PR, as surveyed by Ecologists in May 2021, include areas of artificial urban surfaces (e.g., walls, roads, footpaths), canals and depositing / lowland river (River Tolka), reed and large sedge swamp, marsh, amenity grassland, dry meadows and grassy verges, dry calcareous or neutral grassland, mixed broad-leaved woodland, mixed broad-leaved and conifer woodland, scattered trees and parkland, and scrub within and adjacent to the parklands; as well as linear roadsides strips of dry grassy verges, scrub, hedgerows and treelines. Generally, the condition of these habitats ranges from poor to moderate in terms of their species diversity.

Notable protected species of concern which frequent the above habitats include Otter, Hedgehog, Badger, bat species, Mute Swan, Brent Goose, Kingfisher, Grey Wagtail, Smooth Newt, Common Frog, European Eel, and Lamprey species. Brent Goose in particular will require a detailed assessment of their movements within the Luas PR and the adjacent green areas used by the flocks in the north Dublin area; and the survey wintering bird survey methodology will be tailored to address this assessment.

Tolka Valley Park is home to an Integrated Constructed Wetland (ICW) originally developed in 1999 to improve the quality of the River Tolka, slow flood flows, reduce pollution, and aid wildlife (OIEau, ND). A number of measures were applied including the establishment of detention ponds to manage runoff storage, bank engineering to slow flows and prevent erosion, provision of a fountain to provide aeration, provision of barley straw bales to prevent algal blooms, placement of biodegradable anti-weed matting, and tree planting. The wetland was developed following the identification of leachate entering the Tolka River from the historic on-site landfill. The provision of the ICW is reported to have resulted in significant reductions in Ammonia, Nitrate, Nitrite, and Faecal Coliforms (E. Coli). Luas Finglas PR will pass over, or close to, cell 1 of the ICW, just north of the Broombridge Road.

Groundwater Dependent Terrestrial Ecosystems (GWDTE) are habitats/ species that rely upon groundwater to maintain their required environmental conditions. Groundwater may have a direct input, for example in the case of turloughs, fens, petrifying springs, or alternatively the groundwater may have an indirect influence in maintaining high and stable water levels for the habitat/ species, for example in the case of raised bogs. The European Water Framework Directive (WFD) (2000/60/EC) requires that member states provide protection for GWDTE. To date, GWDTEs within SACs as designated under the European Habitats Directive (92/43/EEC) have been the main priority of work. The EPA have developed the report, *A Framework for the Assessment of Groundwater – Dependent Terrestrial Ecosystems under the Water Framework Directive 2007-2013,* which has identified Annex I habitats and Annex II species that are considered to be GWDTE. The nearest SACs to Luas Finglas are the North Dublin Bay SAC and South Dublin Bay SAC which are located 7.8km downstream via the River Tolka and Dublin Bay. North Dublin Bay has one QI, Humid Dune Slacks [2190], which is an Annex I habitat and a GWDTE.

7.2 Baseline Information

7.2.1 Desktop Study

The desktop study will involve the review of relevant published biodiversity data, collation of existing information on the ecological environment and consultation with relevant statutory bodies. The information sources to be accessed as part of the desktop study include:

- Online data available on Natura 2000 network of sites and on Natural Heritage Areas (NHAs) or proposed Natural Heritage Areas (pNHAs) as held by the National Parks and Wildlife Service (NPWS);
- National Biodiversity Data Centre (NBDC) Online Database;
- Recent Ordnance Survey Ireland (OSI) orthophotography for the proposed scheme study area;
- Records of rare and protected species for the 10km grid squares O12, O13, O14 and O22, held by the NPWS;
- Habitat and species GIS datasets provided by the NPWS;
- Bat records from Bat Conservation Ireland's (BCI) database;
- Environmental Impact Statements for any developments located along the alignment of the proposed scheme;

- Environmental information/data for the area available from the EPA website;
- Information on the status of EU protected habitats and species in Ireland (NPWS 2013); and
- Records from the Botanical Society of Britain & Ireland (BSBI).

7.2.2 Consultation

The following organisations, amongst others as necessary, with relevance to biodiversity will be consulted:

- National Parks and Wildlife Service (NPWS);
- Inland Fisheries Ireland (IFI);
- Bat Conservation Ireland (BCI);
- BirdWatch Ireland (BWI);
- Irish Brent Goose Research Group;
- Botanical Society of Britain & Ireland (BSBI); and
- Other members of the public with local knowledge/ records (e.g. relating to bat roosts).

7.3 Potential Impacts

7.3.1 Construction Phase

Potential impacts arising from the construction phase may include direct and indirect effects on designated sites within the ZoI due to construction activities relating to the construction of the Luas light rail infrastructure. Other impacts arising from construction works may impact upon the ICW in Tolka Valley Park, the River Tolka, and the various parklands along the PR.

Construction phase activities include the construction of two bridges, works in close proximity to rivers and canals (due to bridges crossing river and canal), removal of existing treelines/ hedgerows/ scattered park woodland, and temporary loss of grasslands as a result of track works. Of particular note is the construction of a new bridge in Tolka Valley Park adjacent/ near the existing ICW and Tolka River which may lead to adverse impacts upon the various habitats and species that these areas support.

Potential adverse impacts such as surface water pollution may arise from accidental spillages during all river- and canal-side works, leading to degradation of aquatic habitats and protected designated sites (e.g. Royal Canal pNHA) and the qualifying interest (QI) habitats/ species that they support. Additional potential construction phase impacts include reduction in air quality as a result of dust deposition which could result in habitat degradation; introduction and/or spread of non-native invasive species- habitat degradation; habitat fragmentation; mortality risk to fauna directly due to construction works or indirectly due to pollution; and a temporary increase in noise and vibration levels which could result in disturbance and displacement of fauna species in immediate vicinity.

7.3.2 Operational Phase

Potential impacts arising from the operational phase of the scheme may include those such as:

- Direct loss of habitat;
- Severance of commuting route for ecological features;
- Permanent loss of feeding habitat;
- Mortality through direct collisions;
- Runoff from exposed contaminants;
- Alteration to the hydrodynamics and sediment transport;
- Introduction or spread of non-native invasive species; and
- Increased disturbance (visual, noise, vibration and lighting) impacts from the operational Luas Finglas on biodiversity and ecological features, in particular at stops and river crossings.

The above adverse operational direct and indirect impacts are to be considered for local bat species, wintering Brent Goose (QI species of 5 of SPAs within the ZoI) and local Mute Swans. The local bat species

will mainly be negatively impacted by the introduction of new lighting to previously dark corridor areas along the proposed Luas Finglas PR. Brent Goose flocks must also be considered as the Luas Finglas PR will pass through the aforementioned parks, potentially disturbing their important winter foraging areas. Bird strikes on new physical barriers, such as bridges spanning canals and rivers are not exclusive to Mute Swans, which are a particularly vulnerable species given their poor frontal eyesight. As such, consideration must be given to the potential operational impacts of this scheme.

7.4 Assessment Methodology

The assessment of potential impacts from Luas Finglas scheme on the biodiversity and overall ecology, within the scheme's ZoI will follow criteria published in National Roads Authority (NRA)/ Transport Infrastructure Ireland's (TII) *Environmental Impact Assessment of National Road Schemes - A Practical Guide* (2008). The assessment will also be informed by best practice guidance outlined in the following publications:

- Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes, NRA / TII 2006;
- Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes, NRA / TII 2006;
- Guidelines for the Treatment of Bats during the Construction of National Road Schemes, NRA / TII 2006;
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes, NRA / TII 2006;
- Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub prior to, during and post Construction of National Road Schemes, NRA / TII 2006;
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (EU 2013);
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1, CIEEM 2018;
- Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition) (Collins (ed.), Bat Conservation Trust 2016;
- The Bat Workers' Manual, 3rd Edition (Mitchell-Jones and McLeish), Joint Nature Conservation Committee 2004;
- Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. (Kelleher and Marnell 2006);
- Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (2008). NRA / TII 2008;
- Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads, NRA / TII 2010;
- The Management of Invasive Alien Plant Species on National Roads – Standard (GE-ENV-01104), TII 2020;
- The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (GE-ENV-01105), TII 2020;
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters, IFI 2016; and
- Planning for Watercourses in the Urban Environment. A Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning, IFI 2020.

In conjunction with the consultation process liaison with the wider Luas Finglas Project Team including engineers, lighting designers, and landscape designers will be undertaken in order to ensure appropriate design and operational mitigations. The Dublin City Council Biodiversity Officer and NPWS will also be consulted during the scheme phases.

7.4.1 Data and Surveys

The ecological assessment will be based on a combination of desk-based research and a number of ecological field surveys targeting select groups of protected fauna likely to be impacted by the construction and operation of Luas Finglas scheme. The desk-based research includes a data search for protected and notable species using the National Biodiversity Data Centre (NBDC) Mapping System (National Biodiversity Data Centre, 2021). A customised polygon will be created to extract all the species data from the set Zone of Influence for this scheme.

Information for statutory designated sites including SPAs, SACs, Ramsar Sites, Natural Heritage Areas (NHAs) and pNHAs will be collected from the online resources provided by the National Parks and Wildlife Service (NPWS).

Other information on the local area will be obtained through the following resources:

- The Status of EU Protected Habitats and Species in Ireland Volume 1: Summary Overview, NPWS 2019;
- The Status of EU Protected Habitats and Species in Ireland Volume 2: Habitats Assessment, NPWS 2019;
- The Status of EU Protected Habitats and Species in Ireland Volume 3: Species Assessment, NPWS 2019;
- EPA Online databases on water quality (Available online at https://gis.epa.ie/EPAMaps/);
- Aerial photography available from www.osi.ie and Google Maps http://maps.google.com/;
- National Biodiversity Data Centre (NBDC) - Species Distribution Maps (Available online at www.biodiversityireland.ie);
- NBDC All Ireland Red Data lists for vascular flora, mammals, butterflies, non-marine molluscs, dragonflies & damselflies, amphibians, and fish (Available online at https://www.biodiversityireland.ie/resources/irish-red-lists/);
- EPA Water Framework Directive maps (Available online at https://gis.epa.ie/EPAMaps/);
- International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species (Available online at http://www.iucnredlist.org);
- Dublin City Biodiversity Action Plan 2015 – 2020 (Available online at https://www.dublincity.ie/sites/default/files/media/file-uploads/2018-08/DublinCityBiodiversityActionPlan2015-2020.pdf); and
- Any existing environmental or ecological reports examining the local areas (e.g., use of existing survey data from the nearby Irish Rail DART+ project).

The ecological field surveys will be targeted at gathering the necessary data on existing habitats and vulnerable faunal groups. Some ecological surveys that are seasonally constrained have already commenced to coincide with the optimal survey timing.

The required surveys include:

- **Habitats** – Habitat surveys will allow to identify the most sensitive and highly valued habitats within and adjacent to Luas Finglas PR. Habitat surveys are applicable between 1st April and 30th September during the active growth period of most plants and were completed in 2021. Classification of habitats will be in line with Fossitt (2000) – A guide to Habitats in Ireland;
- **Mammals** – Mammal surveys are conducted to assess the level of Otter, Badger, Hedgehog, Irish Stoat, and Irish Hare activity in the habitats within and adjacent to Luas Finglas PR. These are applicable any time of year, however, the optimum time to conduct these surveys is during the Winter when there is less vegetation to obscure signs of mammals. These surveys were completed in 2021 and followed the methodology detailed in Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (TII, 2008);
- **Bats** - Preliminary bat roost surveys and habitat suitability surveys combined with a series of activity surveys (Summer period 2021) will allow the ecologist to obtain data on potential bat roosts, commuting

routes, and foraging areas. Bat roost surveys are applicable all year round. There are no particular constraints that may affect the schedule of this survey. Bat activity surveys are applicable at specific times of year only. Activity and emergence surveys are advised to be spread out between 1st May and 31st August. Hibernation surveys may be required; however, these are only suitable between 1st November and 31st March. These surveys were carried out in 2021 in accordance with Guidelines for the Treatment of Bats during the Construction of a National Road Scheme (NRA/ TII, 2006), and Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Ed.) (Collins, J. (ed.), 2016);

- **Breeding Birds** – Three breeding bird surveys were conducted to assess potential nests of birds of conservation concern (e.g. Mute Swan, Kingfisher, and Grey Wagtail) within the wooded parkland areas in the vicinity of Luas Finglas PR. These surveys are applicable only between 1st April to 30th June. This survey was conducted in 2021 and followed the methods detailed in The Countryside Bird Survey (CBS), those used by NPWS, and those detailed in Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (2008);
- **Wintering Birds** – Eight wintering bird surveys (each comprising 4hrs with 2hr morning/afternoon split surveys) will examine the use of the green areas within and adjacent to Luas Finglas PR, with particular attention being paid to the disturbance of flocks of Brent Goose. These surveys will be conducted primarily during the optimum winter survey 2021-2022 period (1st December – 28th February), with potential additional wintering bird surveys taking place in the sub-optimal survey periods (November & March);
- **Amphibians** – A Common Frog (and spawn) survey will be completed along with the wintering bird survey in February 2022. Smooth Newt eDNA surveying was conducted during the month of September (2021). The waterbody under examination was the wetland area within the Tolka Valley Park. The drainage ditch waterbody west of Broombridge, where a relatively recent Smooth Newt relocation took place, was be treated as active Smooth Newt habitat;
- **Aquatic Invertebrates** – A total of the three kick-sampling invertebrate samples were taken from sections of the Tolka River within the Tolka Valley Park in 2021. These aquatic invertebrate samples undergo species identification to family level in order to calculate the Q-value metric, which assess the overall biological status of this section of the River Tolka; and
- **Terrestrial Invertebrates** – A terrestrial invertebrate survey was conducted along the PR in 2021, with particular focus on the pollinator species within the Royal Canal pNHA, Tolka Valley Park, Farnham Crescent Park and Mellowes Park. This survey was observation based over the course of one day. Additionally, incidental data recordings of terrestrial invertebrates were obtained during the other summer season surveys.

Reptile surveys for Common Lizard will not be conducted given the lack of appropriate habitat and records of the species within the surrounding area. Freshwater electro-fishing will also not be conducted given the relatively recent data from fish surveys conducted by Inland Fisheries Ireland along the River Tolka.

7.4.2 Appropriate Assessment Process

European Sites (Natura 2000), i.e. Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) are classified under the European Union Birds Directive (2009/147/EC) and Habitats Directive (92/43/EEC).

An Appropriate Assessment Screening process will be undertaken and where it cannot be excluded, in view of best scientific knowledge and on the basis of objective information that the proposed Luas Finglas scheme, either individually or in combination with other plans or projects, will not have a significant effect on any Natura 2000 site(s) in view of the conservation objectives of those site(s), an Appropriate Assessment will be required.

If the proposed scheme is screened in, a Natura Impact Statement will examine, analyse and evaluate in light of best scientific knowledge, of all relevant information in respect of the qualifying interests in any Natura 2000 site(s), the potential impacts and mitigation measures, and whether or not the predicted impacts would affect the conservation objectives that support the conservation condition of the qualifying interests, and

assess whether the proposed Luas Finglas scheme poses a risk of adversely affecting (either directly or indirectly) the integrity of any Natura 2000 site(s).

The Appropriate Assessment process will be undertaken concurrently with the EIA, but both processes will be clearly distinguished. The AA will be documented in a Screening Statement and Natura Impact Statement for the proposed scheme and these documents will be submitted to the competent authority as part of the planning application along with the EIAR.

7.5 Mitigation Measures

Where necessary, mitigation measures will be outlined to avoid, negate, or minimise adverse construction and operational phase impacts on identified ecological features or designated sites. Following the collection of all required field survey data, detailed mitigation measures will be designed during the consultation process. Examples of potential mitigation measures are listed below:

- Adoption of a surface water/ groundwater plan including appropriate barrier controls to prevent any seepage of potentially polluted surface water from the site into the groundwater table below (e.g. geotextile barriers);
- Oil booms and oil soakage pads should be maintained on-site to enable a rapid and effective response to any accidental spillage or discharge. These shall be disposed of correctly and records will be maintained by the environmental manager of the used booms and pads taken off site for disposal;
- Fail-safe site drainage and bunding through drip trays on plant and machinery will be provided to prevent discharge of chemical spillage from the sites to surface water;
- Adoption of a surface water plan including appropriate erosion and silt controls (e.g. trenches, silt fences between the active work site and the local watercourse), when performing excavations on-site in order to prevent any uncontrolled flow of surface water (with high sediment loading) from the site into the local watercourse;
- Consider limiting the working hours to daylight hours to limit disturbance to nocturnal and crepuscular animals, if applicable;
- Due to the potential presence of Otter, Badger, Hedgehog, and bat species, the use of lighting at night should be avoided. If the use of lighting is essential, then a directional cowl should be fitted to all lights to prevent light spill and to be directed away from all treelines, hedgerows, and wooded areas;
- Contractors must ensure that no harm comes to wildlife by maintaining the site efficiently and clearing away materials which are not in use, such as wire or bags in which animals can become entangled;
- Any pipes should be capped when not in use (especially at night) to prevent animals becoming trapped. Any excavations should be covered overnight to prevent animals from falling and getting trapped. If that is not possible, a strategically placed plank or ramp should be placed to allow animals to escape; and
- Ecological monitoring of the scheme's biodiversity enhancements will be conducted during the early stages of the project's operational phase.

Additional and more detailed mitigation measures will be further developed and outlined within the EIAR.

8 WATER

8.1 Introduction

This section of the report examines the potential impacts related to water quality and hydrology as a result of the proposed scheme. It will also consider the potential impacts that Luas Finglas may have on the receiving environment including water quantity, quality, beneficial uses, and flooding both during construction and operational phase. An overview of baseline conditions is provided along with the proposed assessment methodology and overview of scope of works likely to be required to undertake a detailed assessment of the impact of the proposed scheme.

8.1.1 Policy, Plan and Guideline Context

Directive 2000/60/EC of the European Parliament and of the Council establishes a framework for community action in the field of water policy, known as the Water Framework Directive (WFD) which requires '*Good Water Status*' for all European waters by 2015, where 'Good status' refers both to '*Good Ecological Status*' and '*Good Chemical Status*'. The EU WFD aims to improve the water quality and includes rivers, lakes, groundwater, estuaries and coastal waters. Ireland is required to produce a river basin management plan under the WFD. In 2009, the Eastern River Basin District (ERBD) River Basin Management Plan (RBMP) 2009-2015 was published and further the 2nd cycle River Basin Management Plan for Ireland (2018-2021) was published in April 2018 which merges the Eastern, South Eastern, South Western, Western and Shannon River Basin Districts to form one national River Basin District. The latter sets out actions required to improve water quality and achieve 'good' status in waterbodies by 2027.

The strategies and objectives of the WFD have influenced a range of national legislation relevant to management and protection of surface water resources. The assessment for water will require a comprehensive review of plan, policy and strategies, including (but not limited) to the documents listed in Section 3.10 as well as the relevant water quality legislation and guidance listed below:

- European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272 of 2009) (as amended) ;
- European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010 (as amended);
- European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003) (as amended);
- European Communities (Drinking Water) Regulations 2014 (S.I. No. 122 of 2014);
- European Communities (Drinking Water) (No. 2) Regulations 2007 (S.I. No. 278 of 2007);
- European Communities (Quality of Salmonid Waters) Regulations 1988 (S.I. No. 293 of 1988);
- European Communities (Quality of Shellfish Waters) Regulations 2006 (S.I. No. 268 of 2006) (as amended);
- Bathing Water Quality Regulations 2008 (S.I. No. 79 of 2008);
- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) (as amended);
- Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks (Floods Directive); and
- European Communities (Assessment and Management of Flood Risks) Regulations 2010 (S.I. No. 122 of 2010) (as amended).

8.1.2 Receiving Environment

In accordance with the TII Guidelines, the study area will be set at a minimum of 250m beyond the land take boundary. This has been extended to 1km for the scoping stage to ensure that no water body that may be hydrologically connected to the sites is excluded. The scope is further extended to include any site designated for biodiversity that may be hydrologically connected to the waterbodies identified within 1km which are within 10km (downstream) of the proposed scheme.

8.1.2.1 Waterbodies and Designated Sites

From a review of the EPA data waterbody mapping, the PR of Luas Finglas is proposed to cross four watercourses, namely the River Tolka (River Code Tolka_050), Bachelor's Stream (River Code Tolka_050) (also known as the Finglas River), Finglaswood Stream (located entirely underground), and the Royal Canal as shown in Figure 8.1 and Figure 8.2.

It should be noted that the upper reaches of the Finglas River/ Bachelor's Stream is also known as St. Margaret's Stream. This stream is culverted underground in areas.

An Integrated Constructed Wetland (ICW) is located in Tolka Valley Park and plays an important role in managing nutrient load from the Finglaswood Stream and other outfalls to the River Tolka. Luas Finglas PR will pass over, or close to, cell 1 of the ICW.

A number of designated European sites are located within the scheme's 15km zone of influence as discussed previously in Section 7.1.2. Most notably, the following sites are hydrologically linked to the proposed scheme:

- South Dublin Bay and River Tolka Estuary SPA; located approx. 5.8km downstream via the River Tolka and out into Dublin Bay;
- North Bull Island SPA; located approx. 11.3km downstream via the River Tolka and out into Dublin Bay;
- North Dublin Bay SAC; located approx. 11.3km downstream via the River Tolka and out into Dublin Bay; and
- South Dublin Bay SAC; located approx. 13km downstream via the River Tolka and out into Dublin Bay.

As discussed in Section 7.1.2, the Royal Canal is a proposed Natural Heritage Area, Royal Canal pNHA [002103].

The Scribblestown Stream is located approximately 1.3km to the west. This stream is also known as the Cappogue Stream and has been culverted underground. The Claremont Stream is located approximately 850m to the east, see Figure 8.1.

Table 8.1 Watercourses in the Vicinity of the Proposed Scheme

Watercourse	Distance from the PR
Finglas River	Traverses the PR on the R104 near Mellowes park and further up along Saint Margaret's Road near Century Business Park. The river is culverted in this area.
Finglaswood Stream	Traverses the PR along its entire length from Tolka Valley Park to Saint Helena's Road, stream is culverted in this region and discharges into the Tolka Valley, upstream of Finglas Wood Bridge.
Tolka River	Traverses the PR in the Tolka Valley Park close to Ballyboggan Road.
Scribblestown Stream	Approximately 1.3km to the west of the PR.
Claremount Stream	Approximately 1.5km to the east of the PR.

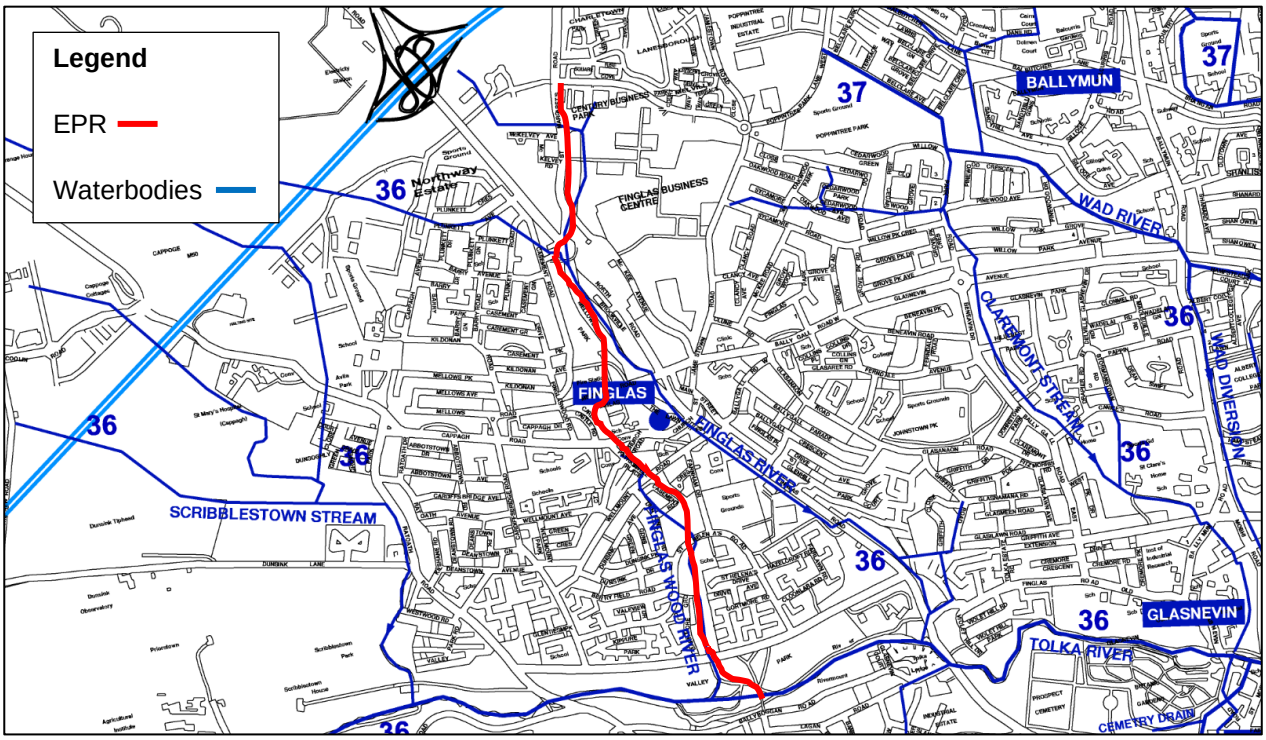


Figure 8.1 Extract from The Rivers of Dublin by Claire Sweeney, as revised by Gerard O'Connell & Michael Curtis (2017), annotated by Barry/EGIS

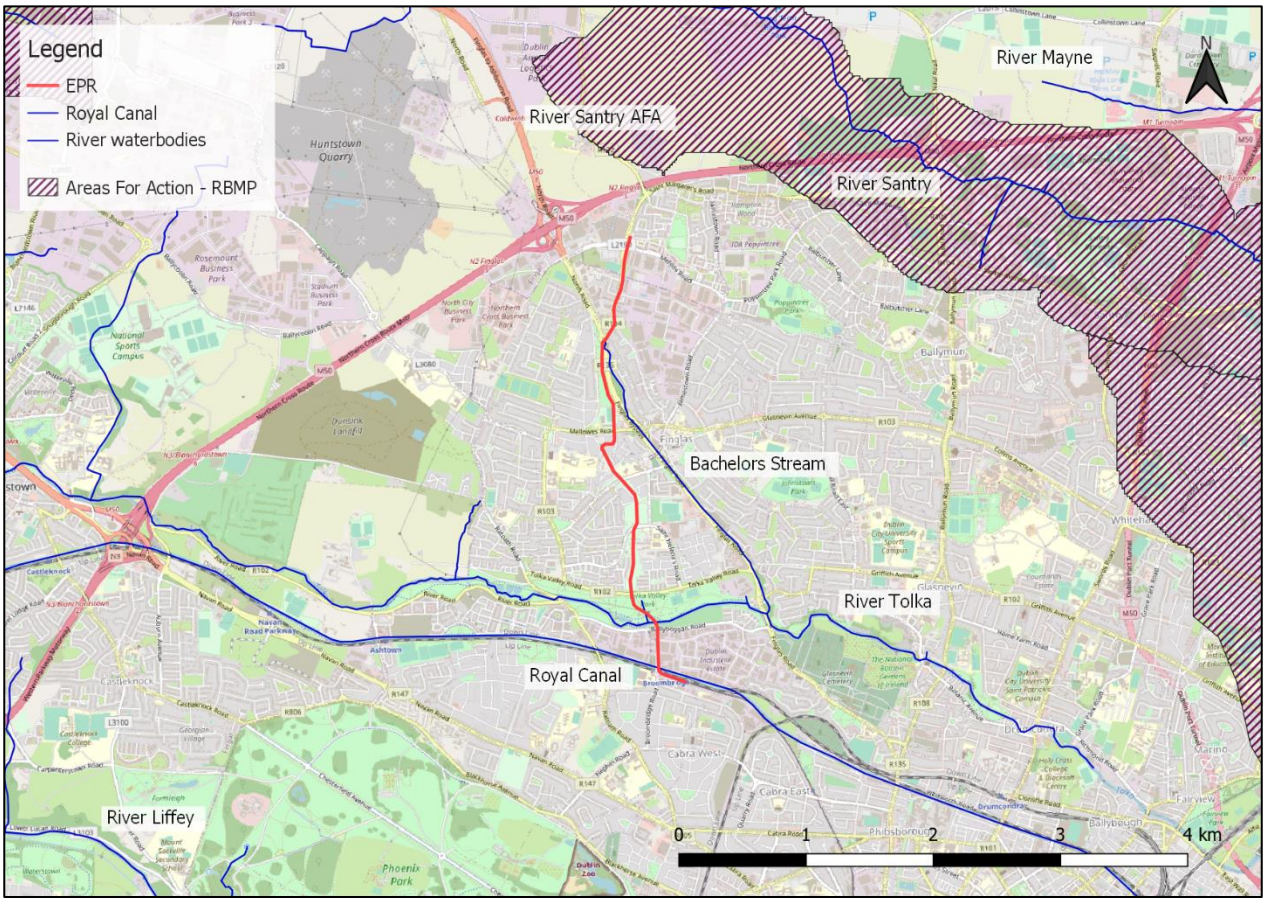


Figure 8.2 Waterbodies

8.1.2.2 Water Quality and WFD Status

Approximately 1.2km downstream of the proposed crossing over the River Tolka the watercourse is classified as a Nutrient Sensitive Area. In the vicinity of the proposed scheme the River Tolka (Tolka_050) is designated as "poor" (during the 2013-2018 WFD status monitoring period). The River Tolka has spawning grounds for fish, including Salmon and Trout. Inland Fisheries Ireland (IFI) has identified spawning habitat throughout most of the River Tolka for Brown Trout.

In the vicinity of the proposed scheme the Bachelor's Stream (Tolka_050), which is a tributary of the River Tolka, and is sometimes referred to as the Finglas Stream, is classified as "poor" (during the 2013-2018 WFD status monitoring period).

The proposed scheme is not located within any Water Framework Directive Area for Action (AFA) under the River Basin Management Plan (RBMP) (DoHLG, 2018). The nearest Area for Action is the River Santry located approximately 280m north east of the northernmost extent of the PR, see Figure 8.2.

8.1.2.3 Catchment Characterisation

The EPA has undertaken an assessment of the significant pressures on each waterbody and identified waterbodies that are "at risk" of not meeting WFD objectives. This section provides baseline conditions for the catchment within which the proposed scheme is located. Conditions of the water bodies at risk within the study area are set out herein also. The sub catchment that the proposed scheme is located within is called Tolka_SC_020, see Figure 8.3.

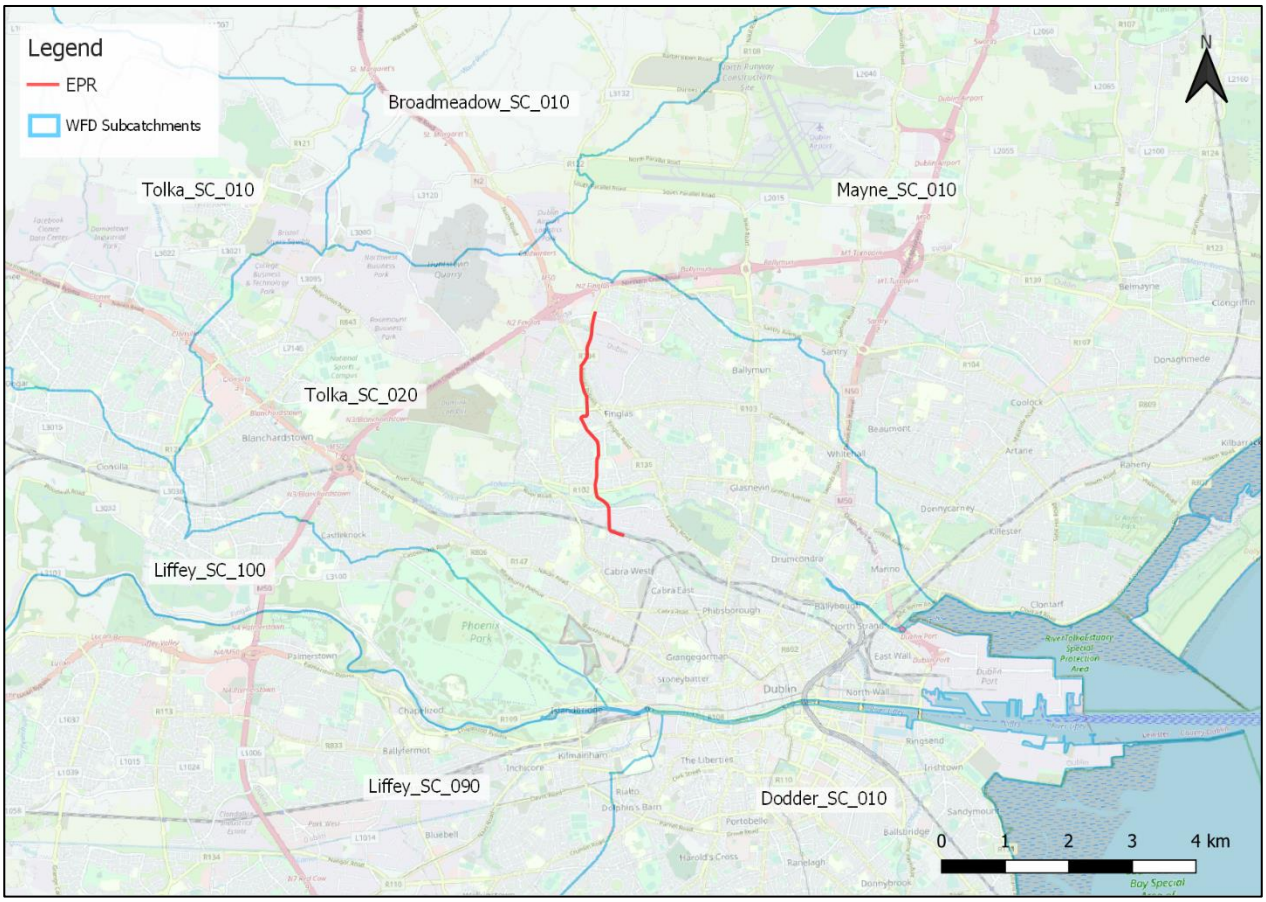


Figure 8.3 WFD Sub-catchments

8.1.2.4 Flood Risk Assessment

Two historical flooding events are recorded to have occurred along the River Tolka (Flood Events ID-5, and ID-3313) on 13/11/2002 and 05/11/2000. In the case of Flood Event ID-5, the River Tolka burst its banks at Tolka Valley Park following extreme rainfall and disrupted traffic. In the case of Flood Event ID-3313, the Ballyboggan Road flooded and was closed for one day.

8.2 Baseline Information

8.2.1 Desktop Study

The desktop study will collate available data in relation to the key aspects below:

- Waterbodies and Designated Sites;
- Water Quality and WFD Status;
- Catchment Characterisation; and
- Flood Risk Assessment.

A Stage 1 Flood Risk Assessment in line with the Office of Public Works (OPW) 'Guidelines for Planning Authorities (GPA): The Planning System and Flood Risk Management' (OPW and DEHLG 2009) will be carried out to identify whether there may be any flooding or surface water management issues relating to the proposed scheme site that may require further investigation. The following information sources will be used to inform the Stage 1 flood risk assessment:

- OPW Preliminary Flood Risk Assessment (PFRA) indicative integrated flood maps;
- National Coastal Protection Strategy Study flood and coastal erosion risk maps;
- Predictive and historic flood maps, and Benefiting Lands Map;
- Predictive flood maps produced under the Catchment Flood Risk Assessment and Management (CFRAM) studies;
- River Basin Management Plans and reports;
- Indicative assessment of existing flood risk under PFRA;
- Previous Strategic Flood Risk Assessments (FRA);
- Consultation with OPW who may be able to provide reports containing the results of detailed modelling and flood-mapping studies including critical damage areas, and information on historic flood events and local studies etc.;
- Topographical maps, in particular digital elevation models produced by aerial survey or ground survey techniques;
- Information on flood defence condition and performance;
- Alluvial deposit maps;
- 'Liable to Flood' markings on the old 6 Inch Maps;
- Local Libraries and newspaper reports;
- Interviews with local people, local history/ natural history societies etc.; and
- Walkover survey to assess potential sources of flooding, likely routes for flood water and the site's key features, including flood defences, and their condition.

Following completion of Stage 1, a Stage 2 Initial Flood Risk Assessment will be completed to confirm:

- Sources of flooding that may affect the proposed scheme site;
- The adequacy of the available flood risk information; and
- The nature of any surveys or modelling approach required to match the resolution and complexity of flood issues affecting the proposed scheme site.

The Stage 2 assessment will consider the potential risk of flooding to the proposed scheme site, including preparing flood zone mapping where appropriate. The potential impacts of the proposed scheme on flood risk will also be assessed with the scope of possible mitigation measures identified.

Based on the outcomes of the Stage 2 assessment, a Stage 3 Detailed Flood Risk Assessment will be undertaken where required to provide a quantitative assessment of the flood risk and arising from the proposed scheme and the effectiveness of planned mitigation. Stage 3 assessments are only anticipated where the proposed scheme is shown to be in an area of high flood risk or where it is likely to affect existing flooding mechanisms.

8.2.2 Consultation

The consultation process will include direct consultation with public bodies as well as consideration of feedback received during public consultation. Specifically related to potential impacts on the water environment, the following organisations will be consulted:

- Environmental Protection Agency;
- Local Authority Waters and Communities Office (LAWCO);
- National Parks and Wildlife Service;
- Irish Water;
- Office of Public Works (OPW);
- Dublin City Council; and
- Fingal County Council.

8.3 Potential Impacts

8.3.1 Construction Phase

The potential impacts on the hydrological regime during construction phase include the following:

8.3.1.1 Flooding

- The risk of flooding during the construction and operational phase of the proposed scheme will to be assessed in the EIAR along with the potential for surface water run-off on adjoining public and private properties; and
- Increased flows to the Finglaswood Stream could potentially impact the effectiveness of the existing Integrated Constructed Wetland ICW (adjacent to the River Tolka) which could ultimately lead to the degradation of water quality in the River Tolka by elevating nutrient loading.

8.3.1.2 Water Quality

- There is potential for run-off containing suspended solids from any earthworks proposed;
- There is potential for run-off from any earthworks proposed in locations of historic landfills (e.g. Tolka Valley Park);
- There is potential for run-off being contaminated by a spillage leakage of oils and fuels stored on site or direct from construction machinery;
- There is also potential for high alkalinity run-off as a result of concrete works;
- There is also potential for disrupting local drainage systems due to diversions required to accommodate the construction works;
- The risk of pollution to nearby watercourses, namely the Royal Canal, River Tolka, Bachelor's Stream, Finglaswood Stream;
- The risk of interference to the current operation of the Integrated Constructed Wetland at Tolka Valley Park will be assessed in the EIAR. Adequate attenuation and flow control will be implemented; and
- Adverse changes in the water quality of the receiving waters has the potential to impact WFD status and the aquatic biodiversity.

8.3.2 Operational Phase

The potential impacts on the hydrological regime during construction phase include the following:

- There is potential for discharge being contaminated by a spillage or leakage of oils and fuels; and

- There is a potential that the proposed scheme could exacerbated any existing local flood risk due to the increased hardstanding areas at infrastructure sites such as the Park and Ride site near St Margaret's Road Stop.

8.4 Assessment Methodology

The following method for the assessment of impact has been adapted from the TII Guidelines, which outline how impact quality, type, magnitude, significance, and duration are considered relative to the importance of the hydrological attribute.

The sensitivity of surface water receptors and their 'attributes', that could potentially be affected by the proposed scheme will be determined with reference to their relative importance or 'value' (e.g. whether features are of national, regional or local value) and by using professional judgment and the TII Guidelines.

The scale or magnitude of potential impacts (both beneficial and adverse) depends on both the degree and extent to which the proposed scheme may impact the surface water receptors during the Construction and Operation phases.

The PR proposes to cross the Tolka River (at Area Reference Tolka18) within the Tolka Valley Park just north of the Broombridge Stop.

It should be noted that the Tolka River is currently under review as part of the statutory consultation on the Ireland's CFRAM Programme draft maps following an objection, submission and/ or further information received (https://www.floodinfo.ie/map/floodmaps/).

The hydrological assessment carried out for the proposed scheme will include

- Review of guidance and legislation;
- Identification of surface water issues relevant to the components of the proposed scheme;
- Review of the receiving hydrological regime in the vicinity of the proposed scheme (relevant baseline data will be obtained from the EPA, OPW, NPWS and field collection of representative water quality samples in summer and winter seasons);
- Assessment of potential impacts of construction and operation on receiving water quality and flow;
- The assessment will take account of sensitive receptors relevant to the proposed scheme. Sensitive receptors include "at risk" and "high" status water bodies, water dependent protected habitats and surface water at risk of flooding; and
- Assessment of potential impacts of construction and operation on receiving water quality and flow. Field assessment of potential discharge locations will be undertaken, and representative seasonal sampling completed, which is further detailed below under data and surveys.

8.4.1 Data and Surveys

Ireland's Catchment Flood Risk Analysis and Management (CFRAM) Programme will be accessed to determine whether any part of the proposed scheme occurs within a flood zone. This is currently under revision in the area of the proposed scheme.

The potential for the increase of surface water run-off will need to be assessed in the EIAR.

Water quality testing surveys will be carried out in the River Tolka and the Royal Canal to determine the baseline aquatic environment.

Surface water quality sampling will be undertaken at four locations: at stream outlets of the Finglaswood Stream, St. Margaret's Stream, and at the River Tolka, and Royal Canal. Four rounds of sampling will be undertaken – 1st round on commencement of the Geotechnical Ground Investigation works, and at intervals of 2/ 3 months thereafter.

The samples will then be submitted to the laboratory in accordance with the laboratory custody protocol for assessment of, but not limited to, the following parameters:

- Biological Oxygen Demand;
- Chemical Oxygen Demand;
- Total Hardness;
- Total Suspended Solids;
- Total Dissolved Solids;
- Nitrate;
- Nitrite;
- Ammoniacal Nitrogen;
- Orthophosphate;
- Chlorophyll;
- Total Coliforms;
- Faecal Coliforms (E.coli);
- pH;
- Conductivity;
- Turbidity;
- Calcium;
- Alkalinity;
- Ammonia;
- Total N;
- Phosphate; and
- Total P.

8.5 Mitigation Measures

The assessment will consider the suitability of proposed mitigation measures to manage sediment in run-off, manage any alkaline run-off due to concrete pouring, manage any accidental releases of hydrocarbons and chemicals, and assess impact of discharge on receiving water flow regime. For the operational phase, the assessment will consider any on-going point discharges or drainage to receiving waters.

Other mitigation measures will be implemented during the construction phase of the proposed scheme, such as settlement on site, avoidance of construction where feasible immediately adjacent to open water, bunding of oil storage tanks, etc.

Relevant water quality and flood mitigation measures, where required, will be detailed in the EIAR. These should be implemented, most notably, in the Tolka Valley Park near the ICW and Tolka River.

9 LAND AND SOILS: SOILS, GEOLOGY, AND HYDROGEOLOGY

9.1 Introduction

This section of the report examines the potential impacts related to land, soils, geology, and hydrogeology as a result of the proposed Luas Finglas scheme. This chapter of the EIAR will address the likely significant impacts on land, soil, geology and hydrogeology during the construction and operation of the proposed scheme. An overview of the known baseline conditions is provided, together with the proposed methodology and an overview of the scope of work likely to be required to undertake a detailed assessment of the impact of the proposed scheme on land, soils, geology and hydrogeology.

The proposed scheme encompasses approximately 4km linear route from Broombridge to Charlestown, Finglas, with four stops. Luas Finglas will interact predominantly with hardstanding areas including roads and pavements, and also green spaces in Tolka Valley Park and in Mellowes Park. There are two proposed watercourse crossings, over the Royal Canal and the River Tolka. See Section 8 for more information on surface water and hydrology.

9.1.1 Policy, Plan and Guideline Context

The land, soils and geology assessment will require a comprehensive policy, plan and strategy review, including (but not limited to) the documents listed in Section 3.10, and relevant legislation and guidance as stated below. Also, as discussed in Section 8, the EU WFD aims to improve the water quality and includes rivers, lakes, groundwater, estuaries, and coastal waters. The strategies and objectives of the WFD have influenced a range of national legislation relevant to management and protection of water resources.

- European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003) (as amended);
- European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010) (as amended);
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for the Community action in the field of water policy (Water Framework Directive);
- Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration (Groundwater Directive);
- Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements, Institute of Geologists of Ireland (IGI) 2013;
- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes, NRA 2009;
- Guidance on the Management of contaminated Land and Groundwater at EPA Licensed Sites, EPA 2013;
- European Communities (Drinking Water) Regulations 2014 (S.I. No. 122 of 2014);
- European Communities (Drinking Water) (No. 2) Regulations 2007 (S.I. No. 278 of 2007);
- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) (as amended);
- Towards Setting Guideline Values for the Protection of Groundwater in Ireland, EPA 2003; and
- Local Authority planning guidance as applicable.

9.1.2 Receiving Environment

The study area for Land and Soils: Soils, Geology and Hydrogeology will extend to 2km from the landtake boundary to capture any potential high yielding water supply springs/wells in the vicinity.

The Luas Finglas PR is predominantly underlain by dark limestone and shale (calp) from the Lucan Formation, with approx. 400m of the northernmost extent of the route underlain by a calcareous shale,

limestone conglomerate from the Tober Colleen Formation (GSI, 2021). There is one small area of bedrock outcrop near the PR in the Tolka Valley Park.

There are no karst features within or near the proposed scheme.

A landfill was operated within Tolka Valley Park until the 1970's, when it was capped with topsoil, towards the northeast quadrant of Tolka Park. The extent of contaminated landfill/ waste material is uncertain and will require investigation. There are incidents of subsidence within Tolka Valley Park with landscaping trees and ESB pylons. There is also potential for soil contamination within St Helena's green area which will require investigation.

There are no designated geological heritage sites that interact with the proposed scheme. The nearest Geological Heritage Site is Glasnevin Cemetery (Site Code DC004) located 870m east of the Broombridge terminus.

There will be no abstractions from or discharges to groundwater as a result of the proposed scheme. The Lucan Formation is classified as a locally import aquifer, which is moderately productive only in local zones.

The following is a breakdown of the groundwater vulnerability along the PR:

- 0.3km: underlain by bedrock at or near surface or karst;
- 0.6km: Extreme vulnerability;
- 1.8km: High vulnerability; and
- 1.2km: Moderate vulnerability.

9.2 Baseline Information

9.2.1 Desktop Study

The desktop review will include a review of baseline information such as:

- Geological Survey of Ireland geological maps and databases;
- Teagasc soil mapping;
- An Foras Talúntais soil and peatland maps;
- Directories of current and historic mining activities (including quarries, pits and mines);
- Aquifer vulnerability;
- Aquifer classification (regionally important, locally important) and the extent of aquifers underlying the proposed scheme;
- High yielding water supply springs/wells in the vicinity of the site to within a 2km radius and the potential for increased risk presented by the proposed scheme;
- Natural hydrogeological / karst / gravel features in the area and the potential for increased risk presented by the activities on site;
- Groundwater-fed ecosystems and the increased risk presented by operations both spatially and temporarily;
- WFD classification for groundwater bodies;
- Water quality assessment reports;
- River basin management plan;
- Sensitive land use designations;
- Local authority records relating to development, land use and industrial licensing;
- Aerial photographs;
- Historical maps; and
- EPA licensing records.

9.2.2 Consultation

The development of the EIAR will be informed by comprehensive consultation that will be undertaken with Geological Survey of Ireland, prescribed bodies, other consultees and the public. Further details of consultation can be found in Section 4 of this report.

9.3 Potential Impacts

There are no discharges to or abstractions from groundwater involved as part of the proposed scheme. Luas Finglas PR will be constructed at grade and there will be no tunnelling or significant cuttings requiring extensive excavation. It is anticipated that construction will be limited to shallow earthworks and carried out above the water table, however this will be confirmed on receipt of Ground Investigation Data. A site specific Groundwater Protection Response will also be developed as the detailed design develops and Ground Investigation data is received. Impacts on the geological and hydrogeological environment are anticipated to be minimal.

The EPA radon mapping shows that the site is not located in a high radon area, an estimate 1-5% of homes in the area are above the reference level (EPA, 2021).

9.3.1 Construction Phase

The potential impacts associated with construction phase include:

- Surplus soil arising from shallow earthworks and how it will be handled and disposed of or recovered;
- Contaminated soils arising from earthworks in the vicinity of historic landfill during construction and their disposal;
- Loss of soil cover, soil erosion and compaction;
- Risk of contamination of existing soils, geology and groundwater by the construction activities such as accidental fuel spills and introduction of new migration pathways;
- Potential for high alkalinity run-off recharging to ground as a result of concrete works; and
- Impacts on any features of geological or geomorphological interest and importance.

9.3.2 Operational Phase

No potential direct impact associated with the operational phase has been identified. Indirect (accidental) discharges may comprise accidental leaks or discharges at the extension to the Luas Broombridge Depot, car parking areas and maintenance compounds resulting in potential contamination of soils and groundwater.

At this stage, there are no anticipated significant impacts on the land, soils, and hydrogeological environments as a result of the proposed scheme but this shall be determined on completion of the assessments as detailed above.

9.4 Assessment Methodology

The methodology for the assessment of impacts on soils, geology and hydrogeology will be undertaken in accordance with the EPA's current guidance, recommendations listed belong along with professional judgement and local circumstance (see Section 9.1.1).

The assessment will include a development of a baseline via review of current soil, bedrock and groundwater conditions and a detailed review of all available and relevant site investigation data for works undertaken and identification of sensitive receptors within the area of the proposed scheme. This will also include a review of hydrogeological regime in the vicinity of the proposed scheme. The assessment will also identify the groundwater monitoring requirements.

To assess the risk posed by contaminated land, conceptual site models (CSMs) will be developed at sites where contaminated material is encountered. These will follow the source, pathway, receptor linkages to identify potential impacts. A receptor can be a person (including construction workers), the water environment, flora, fauna, or building/structures. The CSM represents a network of linkages between potential sources of contamination at the site, and exposure of the receptors through various different possible pathways. Within the assessment, the CSM would disregard pathways that are incomplete and thus do not pose a risk to any of the identified receptors. Where a source, pathway, receptor linkage exists, this would be a complete pollutant linkage, and a contaminated land risk assessment will be carried out to ascertain what remediation works will be required prior to any construction works to ensure there is no mobilisation of leachate or pollutants from contaminated soil to groundwater or surface water receptors.

The assessment will identify potential impacts of construction and operational activities on the land, soils, geology and hydrogeological environment in and around the proposed scheme.

Surplus and contaminated soils will be discussed, and cross referenced with the waste management section of EIAR.

9.4.1 Data and Surveys

A desk study will be carried out to address the potential impacts upon land, soils, and geology from the proposed scheme in both the construction and operational phases.

A detailed ground investigation will be completed for Luas Finglas scheme comprising a range of exploratory holes, sampling, in-situ and laboratory testing that will help in the management of geotechnical uncertainties along the proposed alignment. Sections of the alignment which are suspected to contain contaminated material will be sampled and undergo environmental laboratory testing to assess the nature of contaminants present, if any. This will provide more detailed, site-specific information on the local ground conditions, including the depth and thicknesses of the soils and geology, and potential presence of contaminated ground.

Contamination Testing: A comprehensive suite of environmental testing will be carried out in accordance with the Ground Investigation Specification and assessed by a designated contaminated land specialist. This will include: Moisture Content, Arsenic, Beryllium, Boron, Cadmium, Chromium (III), Chromium (VI), Copper, Lead, Mercury, Nickel, Selenium, Zinc, pH, Acid/Alkali Reserve (pH), Water soluble sulphate (as SO4), Organic matter, Total petroleum hydrocarbons (speciated), Total petroleum hydrocarbons (C6-C40), Speciated polyaromatic hydrocarbons (ESEPA 16 including coronene), Phenol, Cyanide (total), Asbestos, SVOCs, VOCs, PCBs. Further contamination testing will be advised pending review of the site observations and initial contamination test results.

Several groundwater monitoring installations are included as part of the ground investigation works to facilitate regular groundwater monitoring in both the superficial and bedrock aquifers. Ground gas monitoring installations are also included at select locations to screen for potential ground gas. Groundwater level monitoring data will be used to inform the potential likelihood of groundwater flooding. A well survey will be undertaken to determine if there are any operational domestic or commercial wells within 500m of Luas Finglas PR. This will be commenced with an engagement period with the public and followed up with site visits.

9.5 Mitigation Measures

In order to reduce impacts on the land, soils and geology environment a number of mitigation measures will be adopted as part of the construction works on site. The proposed measures will address the main activities of potential impact which include:

- Control of soil excavation and export from site;
- Sources of fill and aggregates for the proposed scheme;

- Fuel and chemical handling, transport and storage during the construction period; and
- Control of water during construction, if encountered during the construction of the proposed Luas Finglas Scheme.

Disposal of contaminated material will be addressed in a Resource and Waste Management Plan, which will form an appendix to the Construction Environment Management Plan (CEMP). CEMP will include the schedule of mitigation measures included with this EIAR. The CEMP will be a working document and will be finalised by the Contractor following appointment and prior to commencing works on site. However, all of the content provided in the CEMP will be implemented in full by the Contractor and its finalisation by the Contractor will not affect the robustness and adequacy of the information presented and relied upon in the EIAR.

10 LAND TAKE

10.1 Introduction

This section of the report examines the potential impacts related to land take as a result of the proposed scheme. This section describes the scope of work and methods to be applied in the identification and assessment of impacts to land take associated with the proposed scheme. This section of the report includes a high-level overview of the baseline conditions, together with the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the impact of the proposed scheme on the properties as part of the EIA.

10.1.1 Policy, Plan and Guideline Context

The land take assessment will require a comprehensive policy, plan and strategy review, including (but not limited to) the documents listed in Section 3.10.

10.1.2 Receiving Environment

The study area for the land take will include lands/properties to be acquired on a temporary or permanent basis as part of the proposed scheme.

This EIAR chapter will address the following aspects within the proposed study area:

- Land use and ownership (including residential, commercial and industrial properties); and
- Land use zonings and planning permissions.

Luas Finglas PR passes through/ near the following land use zones:

- C2.1 - Industrial, enterprise, employment: at Broombridge Road and Saint Margaret's Road;
- C6 - Mixed/general commercial/ industrial/enterprise uses near Charlestown Shopping Centre;
- G5 - Mixed/general 'green'/ recreation/ conservation, other: Tolka Valley Park and environs, Farnham Park, near Wellmount Road, and Mellowes Park; and
- R2 - Existing residential: Barnamore Crescent/ St Helena's Road, Farnham Crescent, Mellowes Road, and McKee Avenue.

These areas are described in further detail in Section 6 Population, and Section 19 Landscape and Visual Amenity.

10.2 Baseline Information

The proposed scheme is based largely in the urban environment of north Dublin City. The types of properties that will be impacted by the proposed scheme generally include public roads, footpaths, parklands and will also include some private land holdings and access routes such as roadways, laneways and car parking areas.

10.2.1 Desktop Study

This will include an initial desktop study to identify residential, commercial, recreational, community, public properties and, access routes within the study area using aerial imagery and information from the Property Registration Authority of Ireland (PRAI), the Ordnance Survey of Ireland and GeoDirectory.

10.2.2 Consultation

The development of the EIAR will be informed by comprehensive consultation that will be undertaken with property owners, prescribed bodies, other consultees, and the public. Further details of consultation can be found in Section 4 of this report.

10.3 Potential Impacts

The main impact to property as a result of the proposed scheme will be the temporary or permanent land take as a result of the need to acquire them where they are currently located in areas directly interacting with the proposed scheme. Some impacts will be permanent where the use of property/lands cannot continue, and some impacts will be short-term where the property/lands will be acquired on a temporary basis.

Impacts to properties/lands will also be considered in other chapters of the EIAR. Impacts due to vibration will be assessed in Section 13 (Noise and Vibration), impacts to properties from dust will be assessed in Section 11 (Air Quality), impacts to the architectural heritage of properties will be considered in Section 18 (Cultural Heritage).

10.3.1 Construction Phase

The potential impacts associated with construction phase include:

- Impacts will be with regard to properties/lands acquired on a temporary or permanent basis

10.3.2 Operational Phase

Once construction is completed, acquisition will be finalised, compensation paid, and temporary acquisitions will be reinstated.

10.4 Assessment Methodology

The assessment of impacts to the properties will be carried out in accordance with the current EIA guidance document from the EPA and established best practice along with professional judgement and local circumstances. The land take assessment will identify potential impacts to non-agricultural properties, describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed scheme.

The assessment will identify the magnitude and significance of any potential impacts, incorporate mitigation measures to mitigate these impacts and assess for any residual effects after mitigation.

The properties/lands that are to be impacted will be listed and assessed individually and a significance rating will be given to each based on the type of property, proportion of the property to be acquired, whether the property is acquired on a temporary or permanent basis and lastly if there is need to demolish any buildings or structures.

10.4.1 Data and Surveys

Walkover surveys will be carried out as required along the proposed scheme in order to identify unregistered properties, and to confirm that the information acquired through the desktop study is accurate.

10.5 Mitigation Measures

Mitigation by avoidance will be the primary mitigation measure implemented during the proposed scheme. As far as possible the proposed scheme alignment has been chosen in order to minimise the required land take, however, due to a largely urban environment some permanent property losses are inevitable.

Consultation will continue with property owners during the EIA process.

Management plans including method statements and risk assessments will be developed for works in proximity to these properties.

11 AIR QUALITY

11.1 Introduction

This section reviews the potential air quality impacts as a result of the proposed Luas Finglas scheme and provides an overview of relevant guidance and standards, the proposed methodology, scope of work to be undertaken and a detailed assessment of the air quality impact of the proposed scheme as part of the EIAR.

11.1.1 Policy, Plan and Guideline Context

The air quality assessment will require a comprehensive policy, plan and strategy review, including (but not limited to) the documents listed in Section 3.10, and:

- Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe (CAFE Directive);
- Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011);
- WHO global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide. World Health Organization, 2021;
- Air Pollution Act 1987 (No. 6 of 1987);
- 2030 Climate and Energy Framework, EC 2014;
- EU Action Plan: 'Towards a Zero Pollution for Air, Water and Soil' (Zero Pollution Action Plan), EC 2021;
- Land-Use Planning & Development Control: Planning For Air Quality, Guidance from Environmental Protection UK and the Institute of Air Quality Management for the consideration of air quality within the land-use planning and development control processes, January 2017;
- Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management (IAQM) 2014;
- A guide to the assessment of air quality impacts on designated nature conservation sites, Institute of Air Quality Management (IAQM) (Version 1.1 May 2020);
- Design Manual for Roads and Bridges (DMRB) Sustainability & Environment Appraisal *LA 105 Air quality*. DMRB LA105 Air quality (formerly HA 207/07, IAN 170/12, IAN 174/13, IAN 175/13, part of IAN 185/15), National Highways, 2019;
- Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes, NRA 2011;
- Draft Dublin Region Air Quality Plan 2021; DCC, FCC, South Dublin County Council (SDCC) and Dun Laoghaire-Rathdown County Council (DLRCC); and
- Local Authority air quality and planning guidance.

11.1.2 Receiving Environment

The study area contains an extensive area of residential housing estates. The Broombridge and Dublin Industrial Estates are located in the south of the study area adjacent to the Royal Canal. This industrial area is separated from the residential areas further to the north in the study area by the Tolka Valley Park. The residential housing estates are in quite close proximity (<20m) to the existing road network infrastructure in the area including Cardiffstown Road (R103), Ratoath Road, Finglas Road (R135) which extends north to the N2, Ballyboggan Road, Tolka Valley Road (R102), Wellmount Road, Cappagh Road (R103) and Mellowes Road. This road network is a source of transport emissions, such as nitrogen dioxide and particulates. The extensive residential development is also a significant source of combustion heating emissions.

The UK DMRB guidance (UK Highways Agency 2007) on which Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes (NRA 2011) is based, states that road links at a distance of greater than 200m from a sensitive receptor will not influence pollutant concentrations at the receptor.

The construction phase study area will be focused on potential impacts arising due to the generation of dust. These impacts usually occur within 500 metres of the dust generating activity as dust particles fall out of suspension in the air beyond this distance (Guidance on the assessment of dust from demolition and construction (IAQM (2014)).

11.2 Baseline Information

11.2.1 Desktop Study

A review of traffic impacts due to the proposed scheme will be carried out. If significant changes in Annual Average Daily Traffic (AADT) occur, an air quality assessment will be carried out following procedures described in the publications by the EPA (EPA 2002, 2003, 2017a) and using the methodology outlined in the policy and technical guidance notes, LAQM.PG (16) and LAQM. TG (16), issued by UK Department for Environment, Food and Rural Affairs (UK DEFRA 2001, 2016a, 2016b; UK Department of the Environment, Transport and Roads 1998, and UK Highways Agency 2007). Transport Infrastructure Ireland's document entitled 'Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes' (NRA 2011) provides guidance on assessment procedures, the primary aspect of which relates to existing ambient air quality and sensitive receptors. This document, although designed for road schemes, is applicable in this instance due to the linear nature of much of the scheme and the potential for significant traffic volumes at associated Park & Ride facilities.

On the basis of the predicted traffic flows at associated Park & Ride facilities, an Air Quality Impact Assessment due to traffic generated by the development may be determined to be required. A conclusion on the need for such assessment, will be based on Table 6.2 (Table 11.1 below) extracted directly from the IAQM Land-Use Planning & Development Control: Planning For Air Quality (January 2017) guidance. This Guidance is from Environmental Protection UK and the Institute of Air Quality Management for the consideration of air quality within the land-use planning and development control processes.

Table 11.1 Indicative criteria for requiring an air quality assessment (Table 6.2 from EPUK / IEMA Guidance 2017)

The development will:	Indicative Criteria to Proceed to an Air Quality Assessment:
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans)	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere.
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.

Therefore, the actual change in traffic flows will be considered in terms of potential significance against the DMRB and EPUK criteria and if required, an assessment of the road traffic emissions will be undertaken using the DMRB Screening Tool.

Assessment criteria for the impact of dust during the construction phase are set out in TII guidelines referenced above (NRA 2011) and the IAQM guidelines (IAQM 2014). These are used to assess the impact of dust emissions from construction and demolition activities based on the scale & nature of the works and the sensitivity of the area to dust impacts. It is important to note that the predicted impacts associated with the earthworks and construction phases of the proposed scheme are short-term and temporary in nature.

The following data sources will be referred to during the air quality assessment:

- EPA National Ambient Air Quality Monitoring Network;
- EPA Air Quality in Ireland 2019 Report and previous reports (1997 – 2018);

- Dublin Regional Air Quality Management Plan 2009- 2012, DCC 2009;
- National Parks and Wildlife Service Maps; and
- EPA Integrated Pollution Control Licences.

11.2.2 Consultation

The development of the EIAR will be informed by comprehensive consultation that will be undertaken with prescribed bodies, other consultees and the public. Further details of consultation can be found in Section 4 of this report.

11.3 Potential Impacts

11.3.1 Construction Impacts

A detailed construction dust impact assessment will be undertaken. The type of activities that could cause fugitive dust emissions are demolition, earthworks, handling and disposal of spoil, wind-blown particulate material from stockpiles, handling of loose construction materials, and movement of vehicles, both on and off site. The main effect of any dust emissions, if not mitigated, could be annoyance due to soiling of surfaces, particularly windows, cars, and laundry. However, it is normally possible, by implementation of proper control, to ensure that dust deposition does not give rise to significant adverse effects. As detailed above, a Dust Impact Assessment will be undertaken in accordance with the Guidance on the Assessment of Dust from Demolition and Construction (IAQM) 2014, to predict the risk of dust impacts and the level of mitigation that is required to control the residual effects to a level that is “not significant”.

Construction phase impacts also include emissions from HGVs and on-site construction plant and equipment which may give rise to emissions including particulates (PM_{10} and $PM_{2.5}$), benzene, nitrogen oxides (NOx) and carbon monoxide (CO).

11.3.2 Operational Impacts

11.3.2.1 Rail Traffic – Air Emissions

The operation of the proposed rail line will not be a significant source of transport emissions. Associated fixed plant and equipment such as substations will not be a significant emission source. The operation of the proposed rail line will have no impact on the pre-existing baseline environment.

11.3.2.2 Associated Road Traffic Changes – Air Emissions

Traffic flow changes on the surrounding road network will be used to assess the impact on local air quality due to predicted associated road traffic flow changes. The associated Park & Ride facilities near St Margaret’s Road Stop may result in changes to local traffic flows in proximity to the scheme. The impact of changes to local traffic flows will be assessed using the methodology outlined in the Design Manual for Roads and Bridges (DMRB) Sustainability & Environment Appraisal *LA 105 Air quality*. DMRB LA105 Air quality (formerly HA 207/07, IAN 170/12, IAN 174/13, IAN 175/13, part of IAN 185/15), (Highways Agency, 2020). The DMRB Screening Method can be run to predict pollutant concentrations at receiver locations near to roads. It can be used to predict annual mean concentrations of nitrogen dioxide (NO_2) and PM_{10}, as well as oxides of nitrogen (NO_x), carbon monoxide, benzene, and 1,3-butadiene. It also predicts the number of exceedances of 50 µg/m^3 as a 24-hour mean PM_{10} concentration. The model requires input data on Annual Average Daily Traffic flow (AADT), annual average speeds, the proportion of different vehicle types, the type of road, and the distance from the centre of the road to the receiver location.

11.4 Assessment Methodology

In order to assess the impact of the proposed Luas Finglas scheme in terms of Air Quality, the following methodology is proposed:

- Review of relevant standards and legislation. Air Quality impacts will be assessed in accordance with best practice;
- Reference to EPA background PM_{10} and $PM_{2.5}$ monitoring data at Finglas monitoring station, close to the proposed Luas Finglas PR;
- Nitrogen dioxide surveys will be conducted at a number of locations representative of background air quality in proximity to existing residential properties along the length of the proposed scheme;
- Identification of key sources of air quality and dust emissions during the Construction Phase of the proposed scheme;
- Identification of key sources of air quality and dust emissions during the Operation Phase of the proposed scheme;
- An assessment of the Air Quality impacts associated with changes to road traffic volumes and distribution in the vicinity of the scheme study area;
- Outline detailed mitigation measures required to reduce potentially significant dust impacts during the Construction Phase;
- Cumulative Air Quality & Climate impacts will be assessed; and
- Assessment of residual impacts.

The assessment will take account of sensitive receptors relevant to the proposed scheme. The sensitive receptors include locations where people spend significant periods of time. This will also include ecological receptors which are habitats that might be sensitive to dust. The sensitive receptors to be identified and assessed include but are not limited to:

- Residential dwellings;
- Industrial or commercial uses sensitive to dust;
- Recreational areas and sports grounds;
- Schools and other educational establishments;
- Buildings of religious sensitivity;
- Designated ecological areas of conservation (either Irish or European designation); and
- Hospitals and nursing homes.

Data and Surveys

The baseline survey data will make reference to EPA background PM_{10} and $PM_{2.5}$ monitoring data at Finglas monitoring station, close to the proposed Luas Finglas PR.

Nitrogen dioxide surveys will be conducted at a number of locations representative of background air quality over a period of three months in proximity to existing residential properties along the length of the proposed scheme.

An 'Urban Background' concentration will be reported in accordance with the classification descriptions based on the siting criteria listed in Annex VII of the CAFE Directive.

A project specific Luas Finglas Sustainability Plan shall be developed outlining the sustainability design solutions incorporated into the scheme. The climate impact will continuously be assessed utilising the bespoke TII “Carbon Assessment and Reduction Tool” at each project stage.

11.5 Mitigation Measures

In order to minimise dust emissions during construction, a series of mitigation measures will be proposed in the EIAR and will be implemented during the construction phase of the scheme. Typical mitigation measures include the implementation of speed restrictions on site, wheel washing and water misting. The mitigation measures will ensure that significant impacts on sensitive receptors are minimised.

Detailed construction mitigation measures will be outlined in the form of a Dust Management Plan which will be implemented as part of the Construction Environmental Management Plan. Luas Finglas Sustainability Plan will be implemented, also.

Operational air quality mitigation measures are not foreseen as a requirement.

12 CLIMATE

12.1 Introduction

This section reviews the potential impact on climate as a result of the proposed Luas Finglas scheme. It also provides an overview of relevant guidance and standards, the proposed methodology, scope of work to be undertaken and a detailed assessment of the impact on climate due to the proposed scheme as part of the EIAR.

12.1.1 Policy, Plan and Guideline Context

In order to reduce the risk due to climate change, National and European statutory bodies have set targets for future greenhouse gas (GHG) emissions. Ireland has signed up to several Climate agreements including the '2030 Climate and Energy Framework' (EC 2014) which aims to reduce GHG emissions by 40% compared with 1990 levels by 2030. The assessment of climate will be conducted with consideration of the documents in Section 3.10 of this report and relevant legislation and guidance including:

- 2030 Climate and Energy Framework, EC 2014;
- Guidance on the Assessment of Dust from Demolition and Construction, IAQM 2014;
- Climate Action and Low Carbon Development Acts 2015 to 2021;
- Climate Action and Low Carbon Development – National Policy Position Ireland, Department of Communications, Climate Action and Environment (DCCAE) now Department of the Environment, Climate and Communications (DECC) 2013;
- Climate Action Plan, DECC 2021;
- Interim Climate Actions 2021, DECC;
- National Energy and Climate Plan 2021 – 2030, DECC 2021; and
- Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes, NRA 2011.

12.1.2 Receiving Environment

The effects on climate are unbounded and if significant emissions occur, they have the potential to impact Ireland's commitments and targets under several EU and International Climate Agreements. Due to this reason, no study area boundary has been defined and impacts are considered for all of Ireland.

Ireland has signed up to several Climate agreements including the '2030 Climate and Energy Policy Framework' (EC 2014) which aims to reduce GHG emissions by 40% compared with 1990 levels by 2030. 2013 and 2014 saw a decreasing trend in Ireland's GHG emissions, this can be attributed to a decrease in economic activity. The agriculture and transport sectors make up the majority of non-EU Emission Trading Scheme (ETS) emissions making up 72.4% of emissions in 2014. Energy production using fossil fuels is continually decreasing in recent years with renewable energy production increasing. Renewable energy production increased by 6.6% on 2012 levels in 2013 and by 12.6% based on 2013 levels in 2014. This increasing trend continued into 2015 with a 4% increase in renewable energy production based on 2014 levels. However, overall, 2015 data shows a 3% increase in other non-ETS emissions. This change in trend is a result of increasing economic growth and employment. National emissions reduced by 0.1% from 2017 to 2018 largely due to progress in the Electricity sector. Other sectors have not delivered emissions reductions on the scale required. The Climate Change Advisory Council has now advised in their Annual Review 2020 states '*Ireland will not meet its 2020 targets and will require huge efforts to meet its existing 2030 targets, notwithstanding progress made in the development of the Climate Action Plan.'* The Council emphasised the need to increase implementation and delivery, to meet EU targets and to put Ireland on track to meet our 2050 ambitions of achieving net-zero emissions (Climate Change Advisory Council 2020).

12.2 Baseline Information

12.2.1 Desktop Study

The desktop study will entail a detailed description of Ireland's existing GHG emissions, which are estimated to be a total of 57.70 million tonnes carbon dioxide equivalent (Mt CO2eq). A further breakdown of the existing GHG emissions from various sectors of our economy will also be described.

Luas Finglas is a TII pilot project to incorporate circular economy objectives and principles. Project specific design opportunities will be identified to incorporate circular economy within the scheme followed by integration and implementation across all disciplines and stages of the project. TII's key principles of circular economy including but not limited to designing out waste pollution, regenerating natural systems and keeping products and materials in use will be incorporated into the design and outlined in the EIAR.

12.2.2 Consultation

The development of the EIAR will be informed by comprehensive consultation that will be undertaken with prescribed bodies, other consultees and the public. Further details of consultation can be found in Section 4 of this report.

12.3 Potential Impacts

12.3.1 Construction Phase

Construction traffic and embodied energy are expected to be the dominant source of GHG emissions as a result of the proposed scheme. GHG emissions from construction traffic and embodied energy from construction materials will increase Ireland's GHG emissions potentially having a climate change effect. The potential effects, if any of this will be assessed in the EIAR.

The climate impact from the construction phase will be assessed using the Transport Infrastructure Ireland Carbon Assessment Tool for Road and Light Rail Projects.

12.3.2 Operational Phase

The climate impact from the operational phase will be assessed using the Transport Infrastructure Ireland Carbon Assessment Tool for Road and Light Rail Projects. A Carbon Assessment Tool for the Light Rail project will be completed for 'Phase 3: Statutory Processes' and the IEMA document entitled 'Assessing Greenhouse Gas Emissions and Evaluating Their Significance' (IEMA, 2022). The IEMA guidance sets out a 'good practice' approach to assess a development's potential impact on climate and presents results in terms of a percentage contribution relative to carbon budgets together with appropriate mitigation. The assessment of greenhouse gas (GHG) emissions will be presented in this assessment. Reference will also be made to the TII Sustainability Implementation Plan.

It is predicted that the greenhouse gas emissions are likely to be reduced during the operational phase due to the displacement of cars and other vehicles as passengers will utilise the Luas for transportation purposes.

12.4 Assessment Methodology

The assessment will cover potential impacts to climate and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed scheme. The impact assessment process will involve:

- Review of relevant standards and legislation. Climate impacts will be assessed in accordance with best practice;

- An assessment of the Climate impacts associated with changes to road traffic volumes and distribution in the vicinity of the scheme study area;
- Review of baseline greenhouse gas emissions;
- Identification of climate issues relevant to the proposed scheme;
- Outline detailed mitigation measures required to reduce potential impacts on climate during the Construction Phase;
- Cumulative Climate impacts will be assessed; and
- Assessment of residual impacts.

12.5 Mitigation Measures

Construction mitigation measures will be inherent within the scheme design. The Transport Infrastructure Ireland Carbon Assessment Tool for Road and Light Rail Projects will allow for carbon savings methods to be investigated. Information on design options can be explored and provide a record of considered options. The Transport Infrastructure Ireland Carbon Assessment Tool for Road and Light Rail Projects will outline carbon saving methods that have been implemented as part of the scheme and will demonstrate that low-carbon design has been considered and implemented.

Energy management systems and plans incorporating the implementation of energy initiatives in line with evolving technology such as continuous improvement in tram efficiency, sustainable procurement by monitoring environmental product declarations and the development of Operational Sustainability implementation plans will be implemented within the design and operation of the scheme.

13 NOISE AND VIBRATION

13.1 Introduction

This section is a high-level overview of relevant guidance and standards, the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the noise and vibration impact of the proposed scheme as part of the EIAR.

13.1.1 Policy, Plan and Guideline Context

The noise and vibration assessment will require a comprehensive policy, plan and strategy review, including (but not limited to) the documents listed in Section 3.10. There are no statutory standards in Ireland relating to noise and vibration limit values for railway sources or construction works. In the absence of specific statutory Irish guidelines, the assessment will make reference to other national guidelines and standards, where available, in addition to international standards relating to noise and or vibration impact for environmental sources.

The following standards and guidelines will form the main basis for the impact assessment methodologies to be adopted and for setting appropriate criteria:

- BS 5228–1:2009+A1:2014 – Code of Practice for noise and vibration control of construction and open sites- Part 1: Noise;
- BS 5228–2:2009+A1:2014 – Code of Practice for noise and vibration control of construction and open sites –Part 2: Vibration;
- BS 6472–1:2008 – Guide to evaluation of human exposure to vibration in buildings, Part 1 Vibration sources other than blasting;
- BS 6472–2:2008 – Guide to evaluation of human exposure in buildings – Part 2: Blast-induced vibration;
- BS 7385–2:1993 – Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration;
- BS 8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings – Code of Practice;
- BS 4142:2014 – Method for Rating and Assessing Industrial and Commercial Sound;
- DMRB HE-DMRB-SE LA 111 Revision 2 Noise and vibration (formerly HD 213/11, IAN 185/15), National Highways 2020;
- Dublin Agglomeration Environmental Noise Action Plan 2018 – 2023, SDCC 2018;
- Noise Action Plan for Fingal County 2019 – 2023, FCC 2018;
- European Communities (Noise Emission by Equipment for Use Outdoors) Regulations 2001 (S.I. No 632 of 2001) (as amended);
- Good Practice Guide on Noise Exposure and Potential Health Effects – EEA Technical Report, EEA 2010;
- Environmental Management Guidelines –Environmental Management in the Extractive Industry (Non-Scheduled Minerals), EPA 2006;
- ISO 9613:1996 – Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation;
- ISO 1996–1:2016 – Acoustics – Description, Measurement and Assessment of Environmental Noise. Part 1 2016: Basic Quantities and Assessment Procedures;
- ISO 1996–2:2017 – Acoustics – Description, Measurement and Assessment of Environmental Noise. Part 2 2017: Determination of Sound Pressure Levels;
- Guidelines for the Treatment of Noise and Vibration in National Road Schemes, NRA 2004;
- Good Practice Guide for the Treatment of Noise during the Planning of National Road Schemes, NRA 2014;
- Calculation of Railway Noise (CRN), UK Department of Transport 1995;
- Calculation of Road Traffic Noise (CRTN), UK Department of Transport 1988;
- Guidelines on Community Noise, WHO 1999;
- Night Noise Guidelines for Europe, WHO 2009; and

- Environmental Noise Guidelines for the European Region, WHO 2018.

13.1.2 Receiving Environment

The proposed scheme covers a linear study area between Broombridge and Charlestown via Finglas West. From an airborne noise and vibration point of view, the key study areas during the construction phase include all the surrounding sensitive environments to construction work areas. This includes works areas around park and ride site (St Margaret's Road Stop), construction compounds, light rail lines and overhead lines, platforms, and construction of ancillary structures (bridges, etc.). Construction traffic haul routes will also be assessed as part of the study area for this phase of the works.

For the construction phase, this study area covers a geographical area in close proximity (<20m) to high density sensitive residential, educational, amenity, religious and commercial receptors.

The study areas for the operational phase impact assessment is reduced compared to the construction phase impact assessment due to the extensive portion of the proposed scheme being underground. The key study areas include the following:

- The proposed Park and Ride site near St Margaret's Road Stop;
- Light rail section between Broombridge and Charlestown;
- Operational noise sources from substation and communication and signalling systems along length of route;
- Operational vibration sources from light rail along the length of the route; and
- Break-out noise from platform public address systems.

The existing noise environment along the proposed scheme alignment will vary depending on the proximity of sensitive receptors to existing sources of noise. To the north of the scheme between Charlestown and Finglas village, the existing noise environment is dominated by road traffic along the local roads and the key noise sensitive locations adjacent to the proposed scheme are predominately residential located in close proximity (<20m) to this road.

Between Finglas and Broombridge the proposed scheme alignment traverses existing park and green space and in those areas the baseline environment is expected to be dominated by pedestrian activity within these spaces and distant road traffic noise.

Existing baseline vibration sources are limited to areas in close proximity to the operational intercity, commuter and Luas lines at Broombridge. Some low level of baseline vibration may also exist on existing structures due to road traffic. This will be further defined during baseline surveys to be carried out.

13.2 Baseline Information

13.2.1 Desktop Study

The key sources of desktop available baseline data include published noise mapping studies undertaken by Córas Iompar Éireann (CIÉ), Transport Infrastructure Ireland (TII), Dublin Airport Authority and Local Authorities which feed into the Dublin Agglomeration Noise Action Plan 2018-2023 (DCC 2018). The available noise mapping includes existing sources of major rail, road and aircraft noise sources within the Dublin Agglomeration area. This information provides a useful high-level overview of noise levels in the wider study area but does not provide accurate noise levels for specific locations, taking account of localised features (e.g. boundary walls). The parameters presented in terms of the noise mapping are the Lden and Lnight noise parameters which are both long term noise indicators based on annual traffic and transport modes.

13.2.2 Consultation

The development of the EIAR will be informed by comprehensive consultation that will be undertaken with prescribed bodies, other consultees and the public. Further details of consultation can be found in Section 4 of this report.

13.3 Potential Impacts

13.3.1 Construction Impacts

Construction noise calculations will be undertaken and assessed in accordance with current best practice guidelines to evaluate the potential impact on nearby sensitive receptors. It is anticipated that there is potential for a significant noise impact during this phase. In particular, the following construction activities are likely to produce the highest impacts:

13.3.1.1 Structures

The construction of various foot and vehicular bridges will likely give rise to high levels of construction noise in their respective locations. Due to the close proximity of some of the works to the rail tracks at Broombridge it is likely that a portion of the works in this location will be undertaken during the evening and night hours.

Given the proximity of the works to noise sensitive receptors, the nature of the construction works, the potential for works taking place outside of daytime hours and the duration of the construction works at each location, it's expected that a moderate to significant noise impact will likely occur. Notwithstanding this, the duration of the impact is expected to be temporary in nature and therefore will be limited as the works progress at different work sites.

Vibration impacts during construction on sensitive structures, such as Broome Bridge (RPS 909) and Wood Bridge (RPS 906) will be considered and assessed.

13.3.2 Operational Impacts

13.3.2.1 Rail Traffic – Noise

The proposed rail line will be modelled using a propriety acoustic modelling software. The noise prediction results will be compared with current best practice guidelines. Impacts will be assessed based on both the absolute level of rail noise with the scheme in place and a comparison of the predicted future noise level with the pre-existing baseline environment.

13.3.2.2 Rail Traffic – Vibration

Vibration levels from the operational Luas will be compared against best practice guidance to protect against significant human impacts. Generally, the magnitude of the vibration rather than the number or duration of occurrences dictates the level of annoyance. Potential for vibration impacts on existing protected structures will also be considered.

13.3.2.3 Road Traffic – Noise

Traffic numbers will be provided by others to inform road traffic noise predictions of which results will be assessed through a change in noise level for existing routes or compared with national guideline values for new routes.

Typically, a change in traffic volumes of 25% will result in a change in noise level of only 1 dB which can be deemed insignificant. A change in traffic volume of 100% will result in a change in noise level of 3 dB which can be considered just perceptible. Consequently, a large change in traffic volume is required for a significant impact to be predicted.

13.3.2.4 Operational Phase Maintenance

The required maintenance works during the operational phase of the scheme will predominantly occur at night when rail traffic is minimal. As a result, there is potential for noise impacts to occur due to the greater sensitive of nearby receptors to noise at night. Source noise levels for maintenance activities will be derived making reference to published data, data sets from other projects and measurements of existing Luas maintenance works where required. The likely level of noise emissions from the proposed scheme will be predicted in accordance with standard guidance.

13.3.2.5 Operational Phase Fixed Plant

Some fixed plant, e.g. substations, will be provided with the scheme. This plant has the potential to generate noise and will be assessed. Source noise levels will be derived making reference to published data, data sets from other projects and measurements of existing Luas fixed plant where required. The likely level of noise emissions from the proposed scheme will be predicted in accordance with standard guidance.

13.4 Assessment Methodology

In order to assess the noise impact associated with the proposed Luas Finglas scheme, the following methodology is proposed:

- Baseline noise and vibration surveys will be conducted along the length of the study area to determine the existing noise and vibration environment at the most sensitive properties along the length of the proposed scheme;
- Noise modelling will be done to identify predicted noise levels during construction and operational phases;
- Receptor sensitivity will be assigned;
- Noise and vibration impacts will be assessed in accordance with best practice including cumulative noise and vibration impacts;
- An assessment of the noise impacts associated with the modifications to Broombridge station will be undertaken in accordance with best practice;
- An assessment of the noise impacts associated with changes to road traffic volumes and distribution in the vicinity of the affected junctions will be undertaken in accordance with best practice;
- Magnitude and significance of potential impacts will be identified; and
- Mitigation measures will be identified followed by assessment of residual impacts.

13.4.1 Data and Surveys

A detailed baseline study will be undertaken to characterise the baseline noise and vibration environment at sensitive locations along the length of the proposed scheme in proximity to construction works and operational sources.

The surveys will be undertaken through the use of monitoring installations to capture baseline noise levels at identified sensitive areas. This will be undertaken using both attended and unattended noise monitoring programmes as follows.

- Unattended measurements will be conducted at the selected locations to determine existing noise levels at these locations over a period of approximately 24 to 48 hours; and
- Attended measurements will be conducted at the specified locations for short-term periods in order to obtain a snapshot of the existing environment during different time periods.

All surveys will be conducted in accordance with ISO 1996: Description, Measurement and Assessment of Environmental Noise Part 1: Basic quantities and assessment procedures, 2016, and Part 2: Determination of Sound Pressure Levels, 2017.

A series of vibration monitoring surveys will be conducted in the vicinity of sensitive areas along the proposed Luas Finglas PR in order to establish the baseline vibration levels. Vibration assessments will demonstrate how they have taken into consideration impacts on cultural (built) heritage constraints in particular at Broome Bridge (RPS 909) and Wood Bridge (RPS 906).

13.4.2 Noise Modelling

Predicted noise levels during the construction phase will be calculated in accordance with the guidelines and standards outlined in Section 13.1.1. Proprietary noise modelling software, Predictor v2021, or detailed spreadsheet calculations will be used for the purposes of construction noise calculations which enables detailed analysis of source and receiver interfaces and the various factors affecting the propagation of sound.

Construction noise models will be developed for the construction work areas in order to assess noise levels at boundary locations and nearest noise sensitive locations. The models will be based on information provided by the design team in terms of construction methodologies, activities, location, duration, etc. The development of the construction noise models will allow identification of the likely significant effects.

Construction traffic noise impacts along the proposed haul routes and in proximity to the site works areas and compounds will also be assessed as part of the airborne noise impact assessment.

Operational rail noise models will be developed using proprietary noise modelling software, Predictor v2021, for the new rail line. Operational noise levels will be calculated for the nearest sensitive receptors taking account of the operational frequency, speed, track type, rolling stock, screening, etc. to be provided by the design team. Vibration will also be considered from this source.

Source noise levels for other activities and sources will be derived making reference to published data and data sets from other projects. The likely level of noise emissions from the proposed scheme will be predicted in accordance with standard guidance.

13.4.3 Impact Assessment

The noise and vibration assessment carried out on the proposed scheme will include the following elements:

- Review of relevant standards and legislation and setting appropriate criteria for noise and vibration;
- Identification of key sources of above ground noise and vibration issues relevant to the components of the proposed scheme;
- Review of baseline noise and vibration (where relevant) in the vicinity of the proposed scheme obtained from detailed baseline study work;
- Assessment of potential impacts associated with the construction phase using the guidelines and standards outlined in Section 13.1.1;
- Assessment of potential impacts associated with the operational phase associated with operational rail, fixed plant items and traffic, using the guidelines and standards outlined in Section 13.1.1;
- Identification of required mitigation measures required to reduce identified significant impacts to within the adopted criteria; and
- Assessment of residual impacts following implementation of mitigation.

The assessment will take account of sensitive receptors relevant to the proposed scheme. Sensitive receptors include locations where people spend significant periods of time and where concentration, sleep and amenity are important considerations. Examples of these sensitive receptors include:

- Residential dwellings;
- Recreational and amenity areas;
- Schools and other educational establishments;
- Buildings of religious sensitivity;
- Hospitals and nursing homes; and
- Offices.

13.5 Mitigation Measures

Where required mitigation measures will be provided to minimise construction phase or operational phase noise and vibration impacts. During construction typical mitigation measures include:

- Binding construction hours;
- Noise and vibration limits and monitoring during construction;
- Screening of construction work; and
- The use of low noise and vibration construction techniques.

During the operational phase of the scheme mitigation measures may include:

- Low vibration track types;
- Speed restrictions;
- Noise enclosures to fixed plant; and
- Ongoing proper maintenance of the track including rail grinding and rail lubrication.

14 ELECTRO MAGNETIC COMPATIBILITY AND INTERFERENCE

14.1 Introduction

This section describes the scope of work and methods to be applied in the identification and assessment of impacts arising from Electromagnetic Fields (EMF) and Electromagnetic Interference (EMI) as a result of the proposed scheme. The section provides a high-level overview of relevant guidance and standards, the proposed methodology and a scope of work likely to be required to undertake an assessment of the EMI impact of the proposed scheme as part of the EIAR.

EMF comprise an electric field and a magnetic field and are emitted from both natural and manmade sources in the environment. All sources of EMF below 300GHz in the electromagnetic spectrum are considered Non-Ionising Radiation, which means the EMF does not carry enough energy to remove an electron from its atomic structure.

Sources of EMF in the existing environment includes items such as electrical equipment, power lines, telephone lines, signals from existing telecommunications masts (mobile phone and radio), underground communication cables, electrified rolling stock, broadcast transmitters etc. The emissions from these sources combine to make up the current baseline environment.

The proposed scheme will include for an electrified DC rail system. The construction and operation of the new system poses the potential for EMI on receptors. The following potentially sensitive receptors will be considered:

- Local landowners and the community;
- Domestic and industrial electrical equipment;
- Telecommunications infrastructure (including wireless radio services);
- Sensitive medical and research equipment;
- Utilities; and
- Mainline rail, suburban rail and light rail systems

14.1.1 Policy, Plan and Guideline Context

The assessment for electromagnetic compatibility and interference will require a comprehensive review of plan, policy and strategies, including (but not limited) to the documents listed in Section 3.10 and below:

- Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast) (EMC Directive);
- Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC (Radio Equipment Directive);
- European Communities (Electromagnetic Compatibility) Regulations 2016 and 2017 (S.I. No. 145 of 2016, S.I. No. 69 of 2017);
- European Union (Radio Equipment) Regulations 2017 (S.I. No 248 of 2017);
- European Union (Low Voltage Electrical Equipment) Regulations 2016 (S.I. No. 345 of 2016);
- European Standards EN 50121 (Parts 1-5), which address railway Electromagnetic Compatibility (EMC), European Committee for Electrotechnical Standardisation (CENELEC) 2006; and
- Guidelines on limiting exposures to electromagnetic fields as published by the International Commission on Non-Ionising Radiation Protection (ICNIRP) and the EU EMF Recommendation (1999/519/EC).

The EMC Directive and the Radio Equipment Directive do not cover emissions from DC and near DC fields which are also an interference risk to particularly sensitive equipment such as Scanning Electron

Microscopes (SEMs) and Magnetic Resonance Imaging (MRI) equipment. Nonetheless an assessment of this type of EMI will be included in the scope of the investigation.

Potential impacts from stray currents arising from the operation of the system will also be covered as per European Standard EN 50122-2 (CENELEC 2010).

14.1.2 Receiving environment

The EMI field strength dissipates over distance. The precise distance at which EMI could be considered an influence will depend on the sensitivity of individual receptors. The protection distance provided in the European Directive on Electromagnetic Compatibility (2014/30/EU) is 10m and therefore all systems located 10m or greater from the rail system should not encounter radio frequency interference. However, due to the potential for extremely sensitive equipment used in medical, research or manufacturing facilities the study area is extended to 100m. Refer to Table 14.1.

Table 14.1 Study area and potential for impact

Criteria	Width of study area (on both sides of the alignment)
Potential impacts from Direct Current (DC) fields	100m
Potential impacts from Alternating Current (AC) fields	10m
Potential impacts from radiofrequency (RF) and microwave fields	100m
Potential impacts from stray current	100m

The proposed scheme traverses a mix of urban areas and some parkland. The areas that are most sensitive to EMI are likely to be the overpass of the Maynooth railway line just off Luas Broombridge Stop and the Garda Station near Finglas Village. The baseline receiving EMI environment will change depending on location and proximity to existing sources.

Particular attention must be paid to other railway infrastructure, industrial or medical compound with equipment potentially sensitive to EMI.

14.2 Baseline Information

14.2.1 Desktop Study

For a detailed investigation of EMI, sensitive locations along the proposed scheme will be selected and predicted levels for these areas estimated based on modelling and the maximum allowable limits imposed on the proposed scheme by industry standards (such as EN 50121). The locations will be selected based on a review of GeoDirectory information and site survey.

Particularly sensitive sites will be provided with a questionnaire to list any equipment that they perceive to be most at risk from EMI (such as SEMs, MRIs etc.) and will be requested to include the physical location within of these pieces of equipment. Also, other locations within 100m of the proposed alignment will also be provided with questionnaires to identify any other potentially sensitive equipment.

Predicted levels of emissions will be estimated based on preliminary design stage details for the new system with respect to the electrification scheme, signalling and communications systems to be used.

14.2.2 Consultation

Consultation will be undertaken with some of the larger stakeholders such as hospitals, universities, utility providers and Commission for Communications Regulation to establish what particularly sensitive

equipment they have, and where it is located on their campuses, to determine proximity to the proposed alignment. Based on these consultations, additional baseline surveys or modelling may also be required.

14.3 Potential Impacts

14.3.1 Construction Phase

No impacts on the public from an EMI, EMF or stray current are envisaged during the construction phase of the proposed scheme.

14.3.2 Operational Phase

The potential impacts are associated with the operation phase and mainly include:

- EMI caused by potential additional mast to ensure radio coverage of the Finglas extension;
- EMI caused by transient emitted by the Tramway power supply and motorisation;
- The proposed scheme itself could be susceptible to external electromagnetic fields that are generated by sources such as electricity cables and local radiofrequency (RF) transmitters;
- Stray currents may occur on several potential receptors including buried tanks, water pipes and utilities running parallel to the system. The entry/exit points of these potential receptors for the stray current may experience corrosion over time without adequate mitigation measures;
- Rail systems can generate transient emissions that are not controlled by EMC regulations. Such emissions can pose a threat to the operation of neighbouring electrical and electronic equipment; and
- Large electrical installations can also cause voltage fluctuations on the public supply that can cause the phenomenon of flicker.

14.4 Assessment Methodology

The Electromagnetic Interference and Radiation Assessment will be carried out in accordance with the EPA guidance in Section 3.10 as well as all relevant existing or emerging national and European legislation. The assessment methodology for EMI will also follow European Standard EN-50121. In line with the guidance, the assessment will describe the baseline conditions, determine the likely potential effects associated with the construction and operation of the proposed scheme, determine appropriate mitigation and monitoring and define residual effects.

The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

All details of the proposed scheme will be assessed including the proposed electrification scheme, overhead lines, signalling, public interfaces, ESB and telecoms operators. Compliance with relevant standards and guidelines shall be achieved through design studies, mitigation measures and verification testing/modelling.

The significance of the impact for each identified receptor, or group of receptors, will be evaluated according to limits defined in consideration of the European Directives for the receptor equipment and the known susceptibility of sensitive apparatus. Significance evaluation criteria will be laid out based on these limits.

14.4.1 Data and Surveys

An EMI survey will be undertaken to determine potential sources and victims of electromagnetic interference in the vicinity of the proposed Luas Finglas PR.

The aim of the EMC site survey is to obtain a global view of the electromagnetic environment in the vicinity of the forecasted Line and Depot extensions, with two main objectives:

- To list, identify, and evaluate all the external EMI sources (such as radars, radio/ TV broadcasting stations, industrial plants, and power facilities etc.); and
- To list, identify, and evaluate the possible external victims (radio receivers, communication systems, analogue audio telephone lines, and laboratory sensitive sensors etc.) and sensitive installations (hospitals, military facilities, and airport etc.) in the vicinity of the tramway system.

These investigations will be conducted through visual recon of the site, direct contacts with local operators, and in-situ measurements, when necessary.

This activity (investigations and/or measurements) will be performed by the specialist consultant on the basis of the Inter-System EMI Analysis.

14.5 Mitigation Measures

Where potential impacts are identified the EIAR will identify mitigation measures to reduce these impacts as low as reasonably practicable during construction and operation. Where required monitoring requirements will be laid out to monitor the effectiveness of the proposed design and mitigation measures in terms of ensuring that EMI remains as low as reasonably practicable.

Mitigation measures include quieting the sources of interference, inhibiting coupling paths and/or hardening the potential victims (i.e. equipment listed in Section 14.4.1).

15 MATERIAL ASSETS: INFRASTRUCTURE AND UTILITIES

15.1 Introduction

This section of the report examines the potential impacts related to infrastructure and utilities as a result of the proposed scheme. Material assets may include archaeology and cultural heritage, properties, utilities, and natural resources. The EPA revised Advice notes (2015) state that the *"assessment shall be concerned primarily with ensuring equitable and sustainable use of resources".* Material assets of natural origin include renewable and non-renewable resources and assimilative capacities of such resources. Material assets of human origin include cultural heritage, cities/ towns/ settlements, transportation infrastructure, utilities/ services infrastructure, land use, ownership and access, agronomy, property, and tourism/ recreational infrastructure. The Draft Guidelines on information to be contained in Environmental Impact Assessment Reports (EPA, 2017), state that "*Material assets can now be taken to mean built services and infrastructure*" and includes rail, roads, traffic and waste management, which are discussed in the next sections of this report.

Material assets are appraised in a number of sections of this EIA Scoping Report as follows:

Land, Soils, Geology and Hydrogeology are examined in Section 9, Hydrology in Section 8. Cultural heritage is examined in Section 18, whilst amenities, communities and settlements are examined in Section 5 and Section 6. The proposed Luas Finglas scheme and the associated traffic and transport assessment and waste management is presented in Section 16 and Section 17, respectively.

This Material Assets EIAR Chapter will therefore address the infrastructure and utilities (such as power, water supply, gas, sewerage, telecommunications) aspects of the proposed scheme and provide a high-level overview of the baseline conditions, together with the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the impact of the proposed scheme on infrastructure and utilities as part of the EIA.

15.1.1 Policy, Plan and Guideline Context

The infrastructure and utilities assessment will require a comprehensive policy, plan and strategy review, included (but not limited to) the documents listed in Section 3.10 of this report.

15.1.2 Receiving Environment

The proposed scheme will cross a number of infrastructural elements and utility providers, however, the main interfaces with existing utilities and infrastructure will be in areas where excavation will be required. One of the main infrastructural elements to be considered will be the overpass of the Maynooth railway line adjacent to the Broome Bridge (Royal Canal) (RPS 909) and associated construction interfaces.

There are a number of utility providers and infrastructure which traverses the proposed scheme which are further detailed in this section.

15.1.2.1 ESB

A number of existing 110 kilovolt (kV) electricity transmission circuits traverse the alignment of the proposed Luas Finglas scheme and are widespread throughout the study area. These comprise both overhead power lines as well as an underground cable circuit.

Also present throughout the study area are distribution cables and ducting along with associated cabinets and infrastructure which will also need to be assessed and possibly diverted to facilitate the main infrastructure works. All proposed designs and diversions will be undertaken with agreement from ESB Networks.

15.1.2.2 Telecommunications

Telecommunication services are provided throughout the study area by the following providers:

- Eir;
- BT Ireland;
- Virgin Media;
- Three;
- E-Net; and
- Vodafone.

Throughout the study area there are several telecommunication services which will require assessment and agreement in relation to the necessary design measures to be taken with their services. All proposed designs and diversions will be undertaken in agreement with the service providers to ensure that the network and assets are protected, and customer service is maintained and safeguarded.

15.1.2.3 Gas Supplies

Gas Networks Ireland (GNI) manages the national natural gas transmission and distribution network in Ireland. The supply is via a small number of high-pressure transmission mains. These transmission lines then branch off as distribution lines which serve the residential areas and follow housing estate patterns.

The proposed Luas Finglas scheme crosses the gas transmission and distribution lines at the following locations:

- 500mm 40bar Transmission Main on Tolka Valley Road; and
- Distribution mains of varying sizes and material being present throughout the remainder of study area.

All Gas Network Ireland assets throughout the study area will be reviewed and assessed to determine the optimum design approach to divert the necessary pipework to facilitate the main infrastructure works of the project. All design proposals will be developed through liaison with and approved by Gas Networks Ireland.

15.1.2.4 Public Water & Foul Water Supply

Dublin County Council in conjunction with Irish Water have potable water infrastructure serving the settlement areas within the study area. Properties located in the urban area are generally connected to the public watermains. The proposed Luas Finglas scheme traverses a number of watermains throughout the study area, and will be affected by the scheme, all design proposals necessary to ensure assets are protected and supply is maintained and safeguarded will be completed via close liaison with Irish Water.

There are a number of large diameter mains which are located as follows:

- 600mm Dia CI main running along Broombridge Road;
- 18” Dia AC main at St Helena’s Stop; and
- 800mm Dia Material TBC at St Margaret’s Road just past Charlestown Stop.

The local authorities and Irish Water also have surface water and foul water sewers in areas within the study area. The proposed scheme traverses a number of foul and surface water sewers in the urban areas. All combined, foul and surface drainage pipes and associated manholes will be assessed including the undertaking of CCTV surveys to assess the condition of the pipes and culverts, the locations of any connections to the pipes and the precise GPS location of the pipes and exact depth of the services. Where conflicts occur any necessary design proposals will be developed in liaison with the asset owner and approval agreed for all works which may be required.

15.2 Baseline Information

15.2.1 Desktop Study

The study area for infrastructure and utilities will comprise all areas of proposed construction work including areas where utility and infrastructural diversions are proposed. The following service providers have been identified within the study area.

- Electricity (ESB);
- Telecommunications (Eir, BT Ireland, Virgin Media, Three, E-Net, and Vodafone);
- Gas supplies (Gas Network Ireland); and
- Public water and foul water supply (Irish Water).

The exact location of services will be identified and outlined through consultation with relevant service providers and will be presented within the EIAR. All proposed designs and diversions will be undertaken in agreement with the service providers to ensure that the network and assets are protected, and customer service is maintained and safeguarded.

15.2.2 Consultation

The development of the EIAR will be informed by comprehensive consultation that will be undertaken with prescribed bodies, other key consultees, relevant service and utility providers and public. Further details of consultation can be found in Section 4 of this report.

15.3 Potential Impacts

15.3.1 Construction Phase

The potential impacts associated with construction phase include:

- Damage to utilities during excavation works;
- Interruption to the Irish Rail Maynooth railway line during construction; and
- Disruption to Utilities: Any diversions or new connections will be planned and accommodated by Utility providers to minimise disruption.

15.3.2 Operational Phase

It is considered unlikely that there will be any additional impacts during the operational phase which will not have already been considered as part of the construction phase.

15.4 Assessment Methodology

The assessment of material assets will involve a desk study to identify properties, utilities, resources, and amenities etc. that may be affected by the proposed scheme. Consultation will be made with stakeholders and potential utilities providers in the local area.

This EIAR chapter will be prepared in accordance with the following guidance documents:

- Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), EPA 2003;
- Guidelines on the Information to be contained in Environmental Impact Statements, EPA 2002;
- Environmental Impact Assessment of National Road Schemes – A Practical Guide, NRA / TII 2008;
- Environmental Protection Agency (EPA) Draft Revised Guidelines on Information to be contained in Environmental Impact Statements (EPA, 2015);
- Draft Advice Notes for Preparing Environmental Impact Statements, EPA 2015; and
- Draft Guidelines on Information to be contained in Environmental Impact Assessment Reports, EPA 2017.

15.4.1 Data and Surveys

This assessment will be based on a desk study and on information gathered during consultations with landowners, utility and service providers and members of the public. The desk study will include an inspection of land registry records, examination of aerial photography and inspection of planning records.

Other surveys which will be undertaken in relation to existing utilities are as follows:

- Ground Penetrating Radar (GPR), radar mapping of the existing utilities to verify existing record information and confirm precise location of the existing services;
- Slit Trenching surveys; these are focused surveys to verify existing utilities in areas where GPR data is inconclusive or where GPR was not undertaken, these also serve to corroborate the accuracy of the GPR mapping; and
- CCTV as mentioned in section 15.2.1.4: relating to foul and surface drainage.

Consultation will take place with the relevant utility providers to determine the exact location, depth, and properties prior to commencement of works. Utility providers will be consulted well in advance and provided with design drawings to determine the extent of their utilities. If present, they may be required on site to monitor the works.

15.5 Mitigation Measures

Mitigation by avoidance will be the primary mitigation measure implemented during the proposed scheme. This will be applied to avoidance of utilities such as underground services and pipelines, the properties of Gas Networks Ireland (GNI), ESB Networks, Irish Water, and Virgin Media etc.

Consultation will be made with utility providers to determine the location of services prior to commencement of works.

Management plans including method statements and risk assessments will be developed for excavations in proximity to underground utilities.

16 MATERIAL ASSETS: TRAFFIC AND TRANSPORT

16.1 Introduction

This section describes the proposed methodology and the scope of work likely to be required to undertake a detailed identification and assessment of the traffic and transport effects of the proposed scheme as part of the EIAR. The proposed scheme is a major public transport project which will deliver many benefits to both the commuting public of Dublin and to the overall economic growth and sustainability of the Greater Dublin Area. As with all major projects of this nature, its construction and operation will have significant impacts in terms of traffic and the general movement of people and goods.

The objective of this section of the Report is to set out the baseline situation identifying the potential impacts of the proposed scheme on traffic and transport during construction and operational phases. On this basis the proposed methodology for measuring these impacts, identifying mitigation measures and, finally, identifying residual effects is outlined.

16.1.1 Policy, Plan and Guideline Context

The traffic and transport assessment will require a comprehensive policy, plan and strategy review, included (but not limited to) the documents listed in Section 3.10 and also:

- Project Ireland 2040: National Planning Framework, DHPLG 2018;
- National Development Plan 2018 – 2027: DHPLG 2018;
- Smarter Travel: A Sustainable Transport Future: A New Transport Strategy for Ireland 2009 – 2020, Department of Tourism, Transport and Sport now Department of Transport (DoT) 2009;
- Regional Spatial and Economic Strategy for the Eastern & Midland Region 2019 – 2031, EMRA 2019;
- Transport Strategy for the Greater Dublin Area 2016 – 2035, NTA 2016;
- Draft Transport Strategy for the Greater Dublin Area 2022 – 2042, NTA 2021; and
- Climate Action Plan, DECC 2021.

16.1.2 Receiving Environment

This section provides an overview of the existing traffic and transport conditions in the area close to the proposed scheme as illustrated in Figure 16.1.

16.1.2.1 Traffic Movements

The majority of the alignment will be close to existing, relatively low density, residential type areas and parkland. The most significant interaction of the proposed Luas Finglas scheme PR and the existing road network will be where the alignment crosses the R135, Finglas Road, a dual carriageway which carries a significant amount of traffic in a north-south direction through the study area.

R135 Finglas Road between R104 St. Margaret's Road and Ballyboggan Road is a two-way dual carriageway with a general north to south alignment, in which both carriageways have an average width of approximately 7.5m. The dual carriageway passes beneath the R103 Seamus Ennis Road bridge located 350m north of Wellmount Road. R135 Finglas Road and R103 Seamus Ennis Road are connected by a pair of access and egress slip roads that provide for both northbound and southbound traffic. The speed limit of the R135 Finglas Road dual carriageway is 60km/hr.

The adjacent side-roads are single carriageway regional and local roads and have a speed limit of 50km/hr.

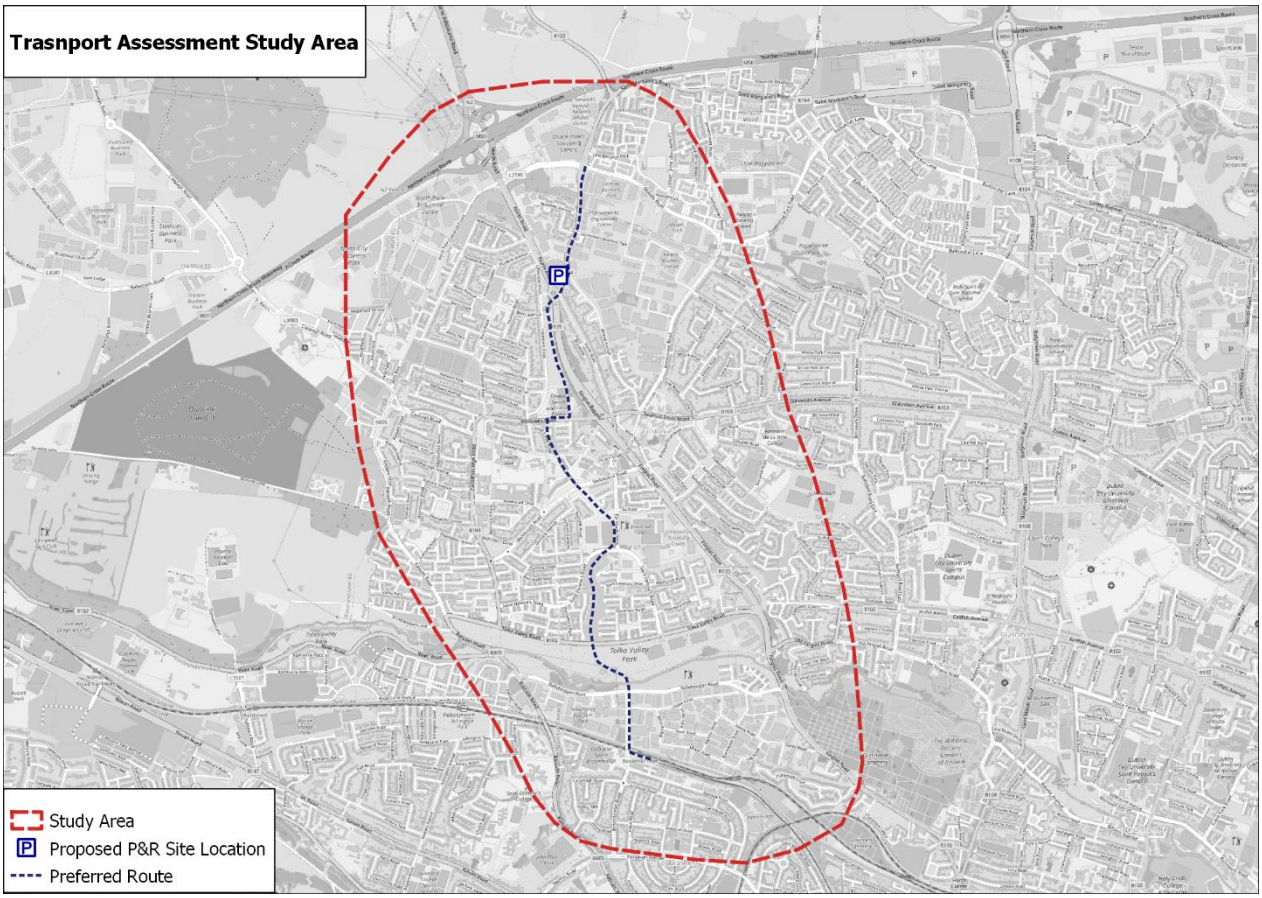


Figure 16.1 Transport Assessment Study Area

16.1.2.2 Public Transport

Bus lanes are provided for northbound and southbound traffic for the majority of R135 Finglas Road. Outside of the R135 there are no dedicated bus lanes close to the proposed Luas Finglas scheme PR.

There are no Bus stops located along the R135 from St Margaret's Road to Wellmount Road. The Southern section of the R135, from Wellmount Road to Ballyboggan Road, contains nine bus stops as outlined below:

- Finglas Road, Stop No.101141/4542;
- Bottom of the Hill, Stop No. 100891/4543;
- Clearwater SC, Stop No. 1538;
- Clearwater SC, Stop No. 1531;
- Prospect Hill, Stop No. 1512;
- Prospect Hill, Stop No. 1532;
- Tolka Vale, Stop No. 1533;
- Tolka Vale, Stop No. 151; and
- Ballyboggan Road, Stop No. 1510.

There are six bus routes (40, 40B, 40D, 103, 109X and 140) that provide services along R135 Finglas Road between Wellmount Road and Ballyboggan Road, as outlined in Table 16.1.

Table 16.1 R135 Bus Services and Frequency

Service	Route	Typical Service Frequency		
		Weekday	Saturday	Sunday
40	Charlestown Shopping Centre – Finglas Village – St Helena's Road (Tolka Valley) – Dorset St. Lwr (North Circular Road) – O'Connell Street – Inchicore – Ballyfermot Road (Markievicz Park) – Neilstown Road (Finches) – Liffey Valley Shopping Centre	10 / 12 mins	10 / 15 mins	15 mins
40B	Parnell Street – Finglas – Toberburr	6 a day	5 a day	4 a day
40D	Harristown – Glasanoan Rd – Church Street – College Street – Lwr. Camden Street – Sundrive Road (Stannaway Road) – Stannaway Avenue	15 / 30 mins	40 mins	50 mins
103	Dublin – Ashbourne – Ratoath – Tayto Park	20 mins	20 / 30 mins	30 / 60 mins
109X	Dublin – Kells – Cavan	60 mins	60 mins	60 mins
140	Ballymun (IKEA) – St Margaret's Road – Finglas Road (Finglas Bypass) – Phibsoro – O'Connell Street – Rathmines (Palmerston Park)	15 mins (10 mins in peak hours)	15 mins	20 / 30 mins

16.1.2.3 Active Modes

In general, the walking facilities along the R135 close to the scheme have street lighting on both sides of the road with numerous pedestrian crossing opportunities. The eastern footpath adjacent to the southbound carriageway varies from 2m to 3m wide, whilst the western footpath adjacent to the northbound carriageway is slightly wider varying from 2.5m to 4m wide. The majority of this road also includes off-road cycle tracks that are usually indicated by a clear solid white line down the middle of the footpaths, and on occasion can create pinch points for pedestrians.

Outside of the R135, most regional and local roads have good footpath provision on both sides with limited dedicated cycle lanes.

16.2 Baseline Information

16.2.1 Desktop Study

The existing impacts on traffic and baseline information will be identified using desktop study. The latest traffic counts on the roads and streets within the study area will be collated and gaps will be identified for further assessments. The assessment will also identify material asset management locations. The stop locations will be assessed for access/egress capacity, safety, wayfinding, interchange, etc.

The traffic and transport assessment study area will include the areas affected by the construction and operation of the proposed scheme from its current terminus in Broombridge to a new terminus in Charlestown.

Furthermore, effects beyond the extent of the proposed scheme such as those resulting from haul routes used during the construction phase, impacts on traffic and transport networks during the construction phase and the impacts on traffic and transport networks resulting from the provision of park and ride facilities (St Margaret's Road Stop) will also be considered as all of the scenarios modelled, including construction, will be modelled in the Eastern Regional Model (which covers the entire Greater Dublin Area) and our scheme Local Area Mode.

The desktop traffic study will focus on the following areas:

- Traffic movements;
- Public transport; and
- Active modes.

16.2.2 Consultation

The development of the EIAR will be informed by comprehensive consultation that will be undertaken with prescribed bodies, other consultees and the public. Further details of consultation can be found in Section 4 of this report. Key consultees are Local Authorities, An Garda Siochana, Irish Rail and Dublin Bus.

16.3 Potential Impacts

16.3.1 Construction Phase

Construction of the Proposed Scheme has the potential to impact people's day-to-day activities along the proposed alignment. The scheme has potential to cause traffic disruption during the construction phase, for example, traffic management arrangements required for the construction of the proposed scheme may results in a temporary reduction in capacity of the existing road network with a resulting increase in traffic congestion and re-routing.

The Construction Strategy developed for the Proposed Scheme will identify impactful activities, consider their effect, and identify mitigation measures to reduce or remove their impact insofar as practicably possible.

A worst case "construction Scenario" will be developed and modelled to represent the most impactful construction phase (in terms of traffic impacts). This scenario will be used to identify the traffic and transport impacts likely to arise as a result of haul routes and traffic management during construction including the following:

- Impacts on general traffic;
- Impacts on vulnerable road users; and
- Impacts on Public Transport users.

Strategic (network wide) impacts will be determined by modelling this worst case construction scenario in the Eastern Regional Model (ERM). Local traffic impacts will be determined using the Local Area Model developed for the study area.

This strategic and local construction impact assessment will be used to identify appropriate mitigation measures to minimise the impact on all modes of travel within the immediate zone of influence.

16.3.2 Operational Phase

The integration of the proposed alignment and associated stops along the proposed Luas Finglas scheme PR will influence local traffic conditions. In addition to the physical alterations at existing junctions along the proposed Luas line, changing route patterns and modes of travel will also occur.

16.4 Assessment Methodology

In order to assess the traffic and transport impacts associated with the proposed Luas Finglas scheme, the following methodology is proposed:

- Review of relevant standards and legislation;
- Baseline survey data will be collated along the length of the study area to determine the baseline traffic conditions;

- Traffic and Transport impacts associated with the construction and operation of the scheme will be assessed and categorised in accordance with best practice. This assessment will be informed by a 3-tiered modelling approach (more info provided below). This quantification of impacts will assess various key performance indicators for both the Do-Minimum (without Scheme) and Do-Something (with Scheme) scenarios. Among the KPI's assessed will be:
  - Vehicle journey times (separated by Car and Bus);
  - Mode Share;
  - Network wide statistics (total delays on the network, average speed, etc); and
  - Volume / Over Capacity at key junctions in the study area.
- Required mitigation measures will be identified to reduce any significant impacts identified during the step above; and
- Assessment of residual impacts following implementation of mitigation.

The above methodology has been developed in accordance with latest guidance including the 'Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2017) and the 'Traffic and Transport Assessment Guidelines' (TII, 2014).

A transport assessment will be undertaken in accordance with Traffic and Transport Assessment Guidelines (NRA 2014a), Project Appraisal in accordance with Department of Transport, Tourism and Sport (DTTAS) Common Appraisal Framework 2016 (as updated) (DTTAS 2016), and transport modelling using a range of model tools such as the Eastern Regional Model, Saturn, CUBE, and Vissim etc. which will be used to assess overall project demands/impacts and local project demands/impacts. These tools will also be used to assess local and regional construction impacts and tested with proposed mitigation measures.

Three tiers of transport modelling will be used to inform the assessment of the Proposed Scheme:

- **Tier 1 (Strategic Level):** The NTA's East Regional Model (ERM) will be the primary tool used to undertake the strategic modelling of the Proposed Scheme and provides impacts on the strategic, multi-modal, demand changes likely to occur as a result of the scheme;
- **Tier 2 (Local Level):** A Micro-simulation Local Area Model (LAM) will be developed for the Proposed Scheme to assist in the operational validation of proposed designs. This LAM will also be used to provide consistent road-based outputs to inform the junction design models. This would include information such as forecast traffic flows and road network speed data;
- **Tier 3 (Junction Level):** Local junction models will be developed, for key junctions along the Proposed Scheme to support local junction design development. These models are informed by the outputs from the above modelling tiers, as well as the junction designs.

One of the key deliverables for this scheme will be a Transport Modelling Report providing details on the development, calibration & Validation of all of the models used to assess the scheme and summarising the modelling assessment outlined above.

16.4.1 Data and Surveys

A detailed baseline analysis will be undertaken to characterise the baseline traffic and transport environment along the length of the proposed scheme in proximity to construction works and operational sources. As part of this baseline analysis, a detailed review of all existing traffic survey data in the area has been undertaken and is summarised in the Figure 16.2 below. The Primary source of existing data will be the traffic data collected as part of the Bus Connects project in 2019/ 2020.

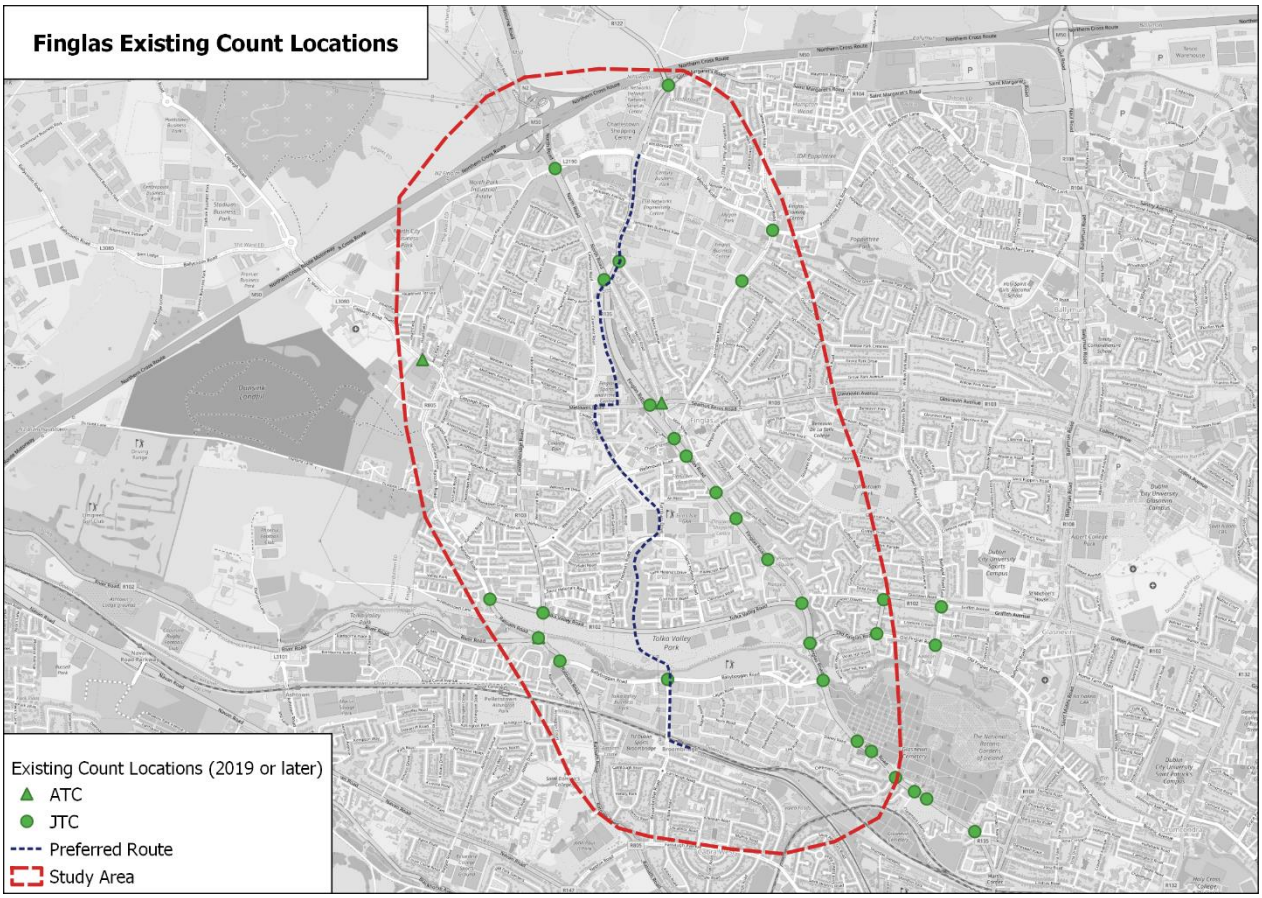


Figure 16.2 Existing Traffic and Transport Survey Locations

This exercise revealed that there is a considerable level of count data throughout the study area from 2019 and early 2020 (pre-Covid restrictions), however some gaps have been identified where data either does not exist or is out of date. For example, the area west of the Finglas Road near Cappagh Road and Wellmount Road.

It is proposed to carry out additional surveys at these sites in the coming months to supplement existing data and aid the model development process. The proposed survey sites are coloured red in the Figure 16.3 below and it is intended to carry out these surveys at a time when all schools and colleges will have returned from mid-term breaks and all remaining Covid-19 related travel restrictions will have been removed.

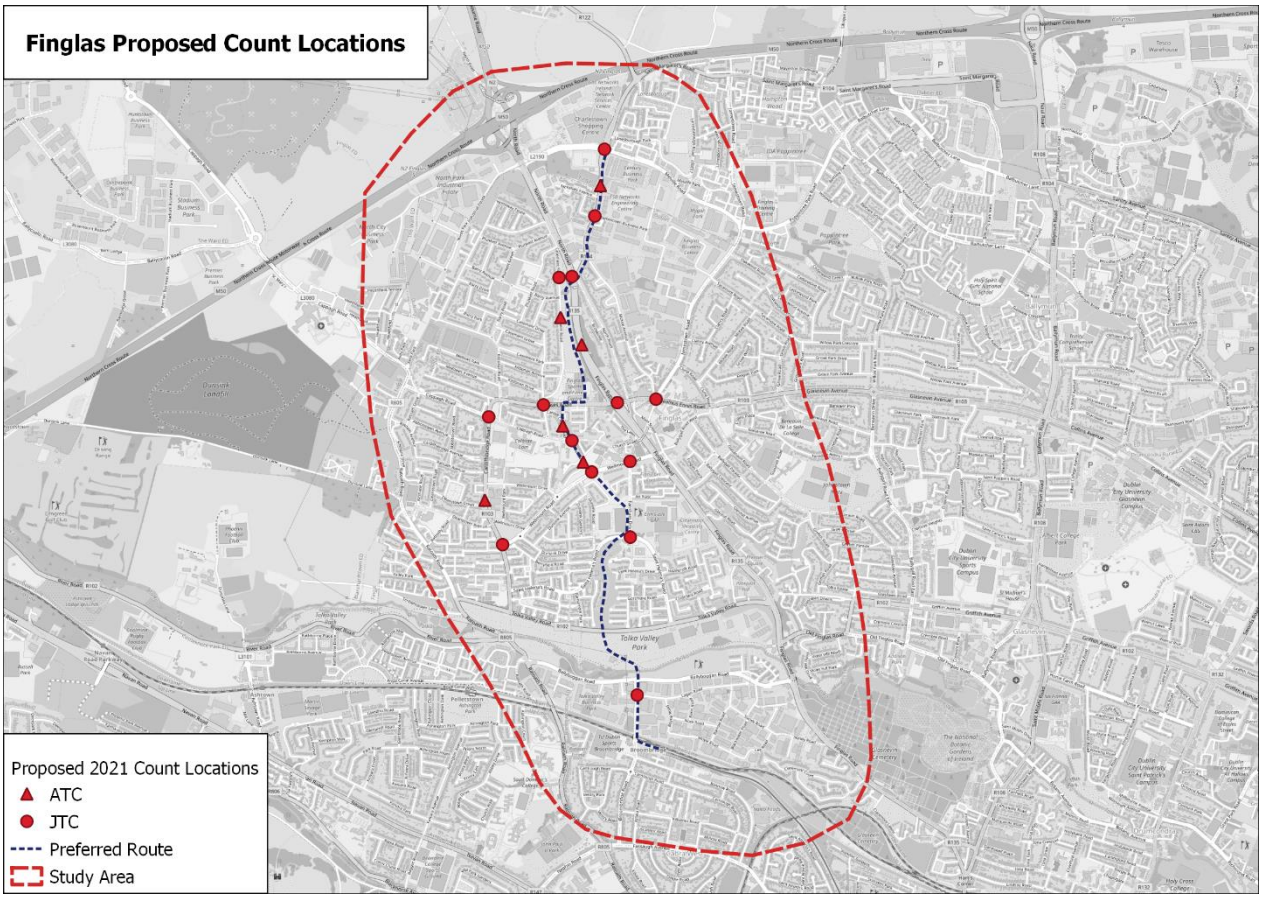


Figure 16.3 Proposed Traffic and Transport Survey Locations

16.4.2 Scheme Appraisal

The Appraisal Tools in-built in the Eastern Regional Model (ERM) were developed to align with the Common Appraisal Framework (DTTAS March 2016, Updated October 2021) criteria for:

- Economy (using TUBA Transport User Benefit Appraisal software);
- Safety (using COBALT road traffic collision appraisal software);
- Physical Activity (World Health Organisation HEAT tool);
- Environment (tailpipe emissions assessment and GIS mapping);
- Accessibility and Social Inclusion (GIS mapping linking transport benefits and areas of deprivation); and
- Integration (Interchange levels between public transport networks and network journey time improvements).

The above appraisal tool outputs will be used, as part of, and to inform, the Scheme Appraisal and Business Case development.

16.5 Mitigation Measures

Where required mitigation measures will be provided to minimise construction phase or operational phase traffic and transport impacts. These will be outlined in the Construction Traffic Management Plan (CTMP) which will be developed as part of the design process and will advance on the detail contained in the transport chapter of the EIAR. During construction typical mitigation measures may include:

- Binding construction hours to avoid peak periods; and
- Dedicated haulage routes for any spoil etc from the construction site.

Following the detailed Construction Impact Assessment the following measures will be implemented where feasible:

- Pedestrians/Mobility Impaired: Existing levels of service on footpaths and streets maintained in so far as possible for most of the busy shopping periods;
- Cyclists: Existing cycle facilities will be preserved except through work sites. Further cycle facilities will be provided or replaced where possible;
- Buses: Minimise potential impacts to bus services;
- Taxis: Where it is necessary to move taxi ranks these will be replaced as close as possible to the removed ranks and rank capacity will be retained;
- General Traffic: General traffic will be diverted away from work sites and alternative traffic routes identified;
- Heavy Goods Vehicles: Haul routes will be identified for HGVs associated with the proposed scheme. These routes will be utilised by all HGV delivering or returning from work sites. Mitigation measures associated with these routes will be identified;
- Shops/Retail premises directly fronting work sites: Pedestrian walkways to remain open in so far as is possible. Facilities for mobility impaired and the disabled provided and maintained at access points to affected premises. Wheelchair/buggy ramps provided across work sites and at access points to premises. Alternative arrangements for service access provided to retail commercial premises during the course of both enabling and main works, and;
- Community Facilities: Access to churches, schools, car parks and other community facilities will be maintained during the construction phase in so far as possible.

An outline Construction Traffic Management Plan (CTMP) will be developed as part of the design process which will advance on the detail contained in the transport chapter of the EIAR. The CTMP is intended as a guiding plan to manage traffic within the study area during the proposed scheme enabling and main works contracts. The CTMP will constitute a live document throughout the life of the proposed scheme design, planning, construction and initial operational period.

The CTMP will identify both strategic and where necessary local impacts of the proposed scheme construction programme on all traffic modes (including vulnerable modes) as well as on business and commercial activities affected by the programme.

During the operational phase of the scheme typical mitigation measures may include:

- Signal optimisation to provide required level of priority to vulnerable road users and the Luas while at the same time limiting the impact on general traffic; and
- Junction upgrades and reconfiguration to accommodate changed traffic patterns.

17 MATERIAL ASSETS: WASTE MANAGEMENT

17.1 Introduction

This section of the report examines the potential impacts related to Waste Management as a result of the proposed Luas Finglas scheme. A high-level overview of the baseline conditions is included, together with the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the impact of the proposed scheme on waste as part of the EIA.

17.1.1 Policy, Plan and Guideline Context

The resource and waste management assessment will require a comprehensive policy, plan and strategy review, including (but not limited to) the documents listed in Section 3.10, and:

- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Waste Framework Directive);
- Waste Management Act 1996 (No. 10 of 1996) (as amended);
- Eastern – Midlands Region Waste Management Plan 2015 – 2021, DCC 2015;
- National Hazardous Waste Management Plan 2014 – 2020, EPA 2014; and
- Draft National Hazardous Wase Management Plan 2021 – 2027, EPA 2021.

17.1.2 Receiving Environment

The receiving environment encompasses any areas in which waste material will arise. This involves the whole extent of the PR alignment, approximately 4km, and required additional space either side of the tracks including compounds and construction sites. Material will need to be removed for levelling works and for the laying of tracks. This material may involve surplus soil arising, trees, and also pavement materials and walls etc. As detailed in Section 9 the potential for historic landfill waste to be encountered in park lands (inc. Tolka Valley Park) also exists.

17.2 Baseline Information

17.2.1 Desktop Study

The study area for the waste assessment will initially extend for 50m from either side of the alignment and will include the areas affected by the construction and operation of the proposed scheme from its current terminus in Broombridge to a new terminus in Charlestown.

The study area extents will be applied to the alignment/temporary or permanent land takes (whichever is greater) as part of the EIAR and, therefore, all constraints will be subject to review as the design evolves.

A desktop study will be undertaken to identify materials and wastes that require management as a result of the proposed scheme. This will include identification of suitable opportunity for re-use of the materials and also to identify suitable waste management facilities licensed by the EPA and facilities holding waste facility permits or certificates of registration from Local Authorities.

As discussed in Section 12.2, Luas Finglas is a TII pilot project to incorporate circular economy objectives and principles. Project specific design opportunities will be identified to incorporate circular economy within the scheme followed by integration and implementation across all disciplines and stages of the project. TII's key principles of circular economy including but not limited to designing out waste pollution, regenerating natural systems and keeping products and materials in use will be incorporated into the design and outlined in the EIAR.

A detailed ground investigation campaign will also be undertaken as outlined in Section 17.4.1.

17.2.2 Consultation

The development of the EIAR will be informed by comprehensive consultation that will be undertaken with prescribed bodies, other stakeholders (including waste management facilities) and the public. Further details of consultation can be found in Section 4 of this report.

17.3 Potential Impacts

17.3.1 Construction Phase

The potential impacts associated with construction phase of the proposed scheme include:

- Spillage of potentially contaminated material on land and in the waters of the Royal Canal and the Tolka River;
- Production of quantities of spoil material arising from excavation activities on site which are unsuitable for reuse within the proposed scheme;
- A landfill was operated within Tolka Valley Park until the 1970's, when it was capped with topsoil, towards the northeast quadrant of Tolka Park. The extent of contaminated landfill/ waste material is uncertain and will require investigation. Excavation of possible contaminated soils and materials would require disposal off site at a suitable licensed facility; and
- The waste generation and transport of waste from site may cause a number of direct and indirect impacts on other environmental aspects such as air quality (dust, odour), traffic, noise, water and human health.

17.3.2 Operation Phase

The potential impacts associated with the operation phase include:

- Production of quantities of mixed municipal waste, mixed dry recyclables, and food waste from public and staff areas of the stops and infrastructure; and
- Production of waste associated with maintenance activities at the stops and other infrastructure.

Waste generated from the works is not likely to result in a significant impact on the receiving environment given that standard best practice guidelines and procedures are followed.

17.4 Assessment Methodology

The assessment methodology for waste management and removal will follow the following guidance document along with professional judgement and local circumstances:

- The Management of Waste from National Road Construction Projects (GE-ENV-01101), TII 2017;
- Guidance on Soil and Stone By-products in the context of article 27 of the European Communities (Waste Directive) Regulations 2011, Version 3, EPA 2019;
- Draft By-Product Guidance Note, A Guide to by-products and submitting a by-product notification under Article 27 of the European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011), EPA, 2020;
- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects, DEHLG 2006;
- Draft Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects, EPA 2021;
- A Waste Action Plan for a Circular Economy, Ireland's National Waste Policy 2020 – 2025, DCCAE (now DECC) 2020; and
- Waste Minimisation in Construction (SPU SP 133), Construction Industry Research and Information Association (CIRIA) 1997.

The assessment will determine the potential impacts with regard to waste management, outline the existing conditions and the potential impacts associated with the construction and operation of the proposed scheme, as per Annex IV of the EIA Directive. The assessment process will identify the following:

- The types and quantities of materials required for the proposed scheme;
- The quantities of material to be generated during the construction and operational phase of the proposed scheme;
- The types and quantities of waste arising from the proposed scheme, including the identification of any potentially hazardous wastes;
- Opportunities for re-use of materials within the proposed scheme;
- Waste requiring treatment and/or disposal off site;
- The impacts that will arise in relation to the generation, re-use and disposal of materials and waste;
- Measures to mitigate and monitor these impacts; and
- Significance of any residual effects after mitigation.

17.4.1 Data and Surveys

A desk study will be carried out to address any potential impacts associated with waste arising from construction works.

As outlined in Section 9 (Land & Soils: Soils, Geology & Hydrogeology) a detailed ground investigation campaign will be undertaken to provide detailed, site-specific information on the local ground conditions, including potential presence of contaminated ground. The findings of this investigation will inform the extent of contamination encountered and the likely disposal/ treatment options proposed.

17.5 Mitigation Measures

Management Plans including method statements will be developed for excavations and construction activities that may encounter contaminated or hazardous material.

Circular Economy principles are to be adopted through all stages of the project to optimise the use of natural resources and recycled materials and minimising waste. Waste material arising from construction will be sent to a suitably licenced waste facility.

18 CULTURAL HERITAGE

18.1 Introduction

This section of the report describes the scope of works and methods to be applied in the identification and assessment of cultural heritage impacts associated with the proposed scheme (inclusive of archaeological and architectural heritage). It presents a high-level overview of baseline conditions as well as the proposed methodology and scope of work likely to be required to undertake a detailed assessment of the proposed scheme on cultural heritage as part of the EIAR.

18.1.1 Plan, Policy and Guideline Context

The cultural heritage assessment will require a comprehensive policy, plan and guideline review, including (but not limited to) the documents listed in Section 3.10, and:

- National Monuments Act 1930 (as amended);
- Planning and Development Act 2000 (as amended);
- Heritage Acts 1995 (as amended);
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999 (No. 19 of 1999);
- Frameworks and Principles for the Protection of the Archaeological Heritage, Department of Arts, Heritage, Gaeltacht and Islands (DAHGI) 1999;
- Code of Practice for Archaeology agreed between the Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs (now the Minister of Housing, Local Government and Heritage) and Transport Infrastructure Ireland, National Monuments Service (NMS) 2017;
- Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes, NRA / TII 2005;
- Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes, NRA / TII 2005;
- Architectural Heritage Protection Guidelines for Planning Authorities; DAHG 2011;
- Guidance on Heritage Impact Assessments for Cultural World Heritage Properties, International Council on Monuments and Sites, (ICOMOS) 2011;
- Dublin Principles: Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes, ICOMOS 2011;
- National Inventory of Architectural Heritage (NIAH) Handbook 2021;
- Understanding Historic Buildings A Guide to Good Recording Practice, Historic England 2016;
- Land Contamination and Archaeology Good Practice Guidance, Historic England 2017;
- Garden and Park Structures Listing Selection Guide, Historic England 2017; and
- Street Furniture Listing Selection Guide, Historic England 2017.

18.1.2 Receiving Environment

The proposed scheme extends through an urban area from Broombridge, on the southern bank of the Royal Canal to Charlestown north of Finglas Village and also contains sections of green field and parklands areas. The extent of the study areas reviewed during the compilation of this report are based on those applied to cultural heritage constraints on other Luas and Bus Rapid Transit assessments. The study area reviewed for the archaeological and cultural heritage resources extends for 100m from either side of the PR alignment in urban areas and 250m in greenfield areas. The study area reviewed for the architectural heritage resource extends for 50m from either side of the alignment in urban areas and 100m in greenfield areas. These study area extents will be applied to the alignment/temporary or permanent land takes (whichever is greater) as part of the EIAR and, therefore, all constraints will be subject to review as the design evolves.

The earliest evidence for human occupation along the alignment of the proposed scheme dates to the 6th century AD when an ecclesiastical enclosure dedicated to St Canice was founded in Finglas. The Finglas area was occupied by a manor, which contained an episcopal residence, in the ownership of the Archbishop

of Dublin for much of the medieval period and various estate houses then began to be established in the area during the 17th and 18th centuries by which time Finglas village had developed as a market centre. The cultural heritage constraints on or immediately adjacent to the alignment of the proposed scheme reflect the continued occupation of the receiving baseline environment from the 6th century to the present day.

The study area contains a number of known archaeological sites (and their associated Zones of Notifications) which are listed in the Record of Monuments and Places (RMP) (Table 18.1). The key archaeological constraints within the study area are the historic settlement of Finglas (RMP DU014-066----) and its defences (King William's ramparts) (RMP DU014-066008-), St Patrick's well (RMP DU014-066002-) and the levelled site of a tower house in Tolka Valley (RMP DU014-076001-), which is located approximately 1.8km to the south of the historic core of Finglas village. The site of St Canice's Church and Graveyard (RMP DU014-066009- and RMP DU014-066012-), which is located outside the eastern side of the study area, forms a key archaeological constraint within the wider environs of the proposed scheme and the potential that sub-surface remains of an earlier ecclesiastical site extending beyond its current boundary is noted. There are no RMPs within the section of the study area to the north of the historic core of Finglas village, however there is the potential for the presence of sub-surface archaeological sites, features and artefacts within the environs of the proposed scheme, including buried elements of known archaeological sites as well as previously unrecorded archaeological sites.

The study area also contains a number of architectural heritage constraints identified in the Dublin City Development Plan 2016-22, including those included in the Record of Protected Structures (RPS) as well as the Royal Canal, Tolka and Finglas Conservation Areas. The Draft Dublin City Development Plan 2022-2028 was also reviewed and this revealed that there are no proposed additions to, or deletions of, the existing Record of Protected Structure within the study area and its environs. The Draft Plan also identifies fifteen priority Architectural Conservation Areas which will be considered for designation over the development plan period and none of these are located within the study area or its environs. Protected Structures include their curtilages which can comprise features such as associated outbuildings, lands (including garden features) and boundary elements. Three of the Protected Structures within the study area are also included in the RMP and in the National Inventory of Architectural Heritage (NIAH) (Table 18.2). The NIAH, which is under the administration of the Department of Housing, Local Government and Heritage (DHLGH), was established to identify and record the post-1700 architectural heritage of Ireland and provides the basis for the recommendations of the Minister to planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS). The key architectural heritage constraints within the study area, which are not also listed in the RMP, include Broome Bridge (RPS 909/ NIAH 50060126), Finglaswood Bridge (RPS 906/ NIAH 50130015) and St Helena's House (RPS 7575/ 50130011). In addition, the NIAH Garden Survey includes an entry for the garden of St. Helen's House (NIAH Site ID 2322) which it records as being now covered by residential development. St Canice's Church and Graveyard (RPS 1552), which are outside and to the east of the study area, also comprise a key architectural heritage constraint within the wider environs of the proposed scheme. There are no Protected Structures or NIAH sites located in the section of the study area to the north of the historic core of Finglas village. The Royal Canal, and its associated banks, tow paths and access routes, and the Midland Great Western Railway extend into the south end of the study area, and these comprise important constraints of both cultural and industrial heritage merit.

RMPs and Protected Structures are afforded legal protection through their inclusion in the Record of Monuments and Places (RMPs) in accordance with the National Monuments Act 1930-2014; or through their inclusion in the Record of Protected Structures (RPS) in accordance with the Planning and Development Act 2000 (as amended). Conservation Areas also have non-statutory protection as objectives within Development Plans. The cultural heritage resource within the study area is not limited to these known designated constraints and also includes other potential tangible and intangible assets of significance including, but not limited to, undesignated buildings, boundary walls, industrial heritage, street furniture, handball alley, cultural heritage centres, historical associations, and folklore. While such cultural heritage assets are not afforded protection under current legislation, unless they form a component of an existing RMP, RPS or are included within an existing Architectural Conservation Area (ACA), they are features which can be of very high local importance and, therefore, comprise constraints of cultural heritage merit.

Table 18.1 Record of Monument and Places within Study Area

RMP no.	Classification
DU014-066----	Town
DU014-066002-	Holy well
DU014-066003-	17th century House
DU014-066005-	16th/17th century House
DU014-066008-	Town defences
DU014-076001-	Tower house

Table 18.2 Record of Protected Structures and NIAH Sites within Study Area

RPS no.	NIAH no.	RMP	Name (Location)
906	50130015	-	Finglaswood Bridge (Tolka Valley)
909	50060126	-	Broome Bridge (Royal Canal)
7575	50130011	-	St Helena's House (St Helena's Road)
8733	-	DU014-066008-	King William's Ramparts, Southern Section (Patrickswell Court)
8734	-	DU014-066008-	King William's Ramparts, Northern Section (The Lawn)
8735	-	DU014-066002-	St. Patrick's Well (Mellowes Crescent/ Mellowes Court)

18.2 Baseline Information

18.2.1 Desktop Study

The cultural heritage section of the EIAR will incorporate the results of a detailed desktop study which will include a review of all available cartographic and historical sources, in addition to a review of the results of archaeological investigations previously undertaken within the study area of the proposed scheme.

The cultural heritage section of the assessment will identify all known archaeological and architectural constraints that are afforded statutory protection. In addition, any sites of archaeological and cultural heritage merit and key built heritage receptors within the study area of the proposed scheme will also be considered and assessed. It will consider the direct and indirect effects likely to arise from either the construction or operational phases of the proposed scheme.

18.2.2 Survey Requirements

The assessment will be informed by a programme of archaeological geophysical survey, and if deemed appropriate targeted archaeological test excavations, as well as ground penetrating radar (GPR) surveys of bridges, underwater archaeological surveys and building condition surveys. In addition, the results of the archaeological monitoring of Geotechnical Investigations (GI) and Utility Slit trenches, will also be utilised as part of the assessment. The scope of all required surveys will be determined in consultation with the TII Project Archaeologist.

18.2.3 Consultation

In compliance with the Code of Practice for Archaeology agreed between the Minister for Arts, Heritage Regional, Rural and Gaeltacht Affairs (now Minister for HLGH) and TII; TII will consult with the Minister (through the National Monuments Service of the Department) on all aspects of the scheme. Consultation with statutory and non-statutory stakeholders, inclusive of Local Authorities, will also take place as required.

18.3 Potential Impacts

There is the potential for impacts to arise during both the construction and operation phases of the proposed scheme.

18.3.1 Construction Phase

The construction phase will have the potential to result in direct negative impacts on cultural heritage constraints, including above ground structures of architectural heritage significance and sub-surface archaeological remains. These potential construction phase impacts may arise during ground reduction works undertaken during elements of the proposed scheme including, but not limited to, excavation of the track bed, stops, depots, car parks, hard and soft landscaping and work compounds, including hoarding and the passing of plant and equipment, as well as during any required utility/road diversions, overhead catenary system (OCS) foundations, pavement resurfacing and road widening works. Given the proximity of the proposed scheme to a number of designated cultural heritage constraints, the potential for indirect negative visual impacts on their setting will also exist during the construction phase as will the potential for vibration impacts.

18.3.2 Operational Phase

Operational phase impacts may arise from above ground scheme elements including, but not limited to, hard and soft landscaping and permanent infrastructure such as stop furniture, overhead catenary system (OCS), substations, altered traffic/street plans, passing trams, depots, and car parks, which will have the potential to result in indirect, negative visual impacts on the cultural heritage resource of the study area. The potential for positive operational phase impacts on the cultural heritage resource through landscape improvement designs also exists.

18.4 Assessment Methodology

18.4.1 Assessment of Impacts

The assessment of the proposed scheme will include a comprehensive consideration of the potential direct, indirect, residual and cumulative impacts and will include, where applicable, an assessment of visual impacts on cultural heritage constraints. While the assessment of potential scheme impacts will have regard to TII Archaeological and Architectural Heritage Guidelines for Road Schemes, and the Draft Cultural Heritage Impact Assessment of TII Project Guidelines, these guidelines are not directly applicable to rail projects within urban environments and are also not directly applicable to rail design or legislation. The TII Project Archaeologist will, therefore, be consulted during the assessment process in relation to the appropriate application of these guidelines.

18.4.2 Data and Surveys

The assessment will be based on a combination of 1) desk based research, 2) site inspections and 3) the results of non- invasive and invasive archaeological investigations the strategy for which will be agreed in consultation with the TII Project Archaeologist and the Minster for HLGH via the National Monuments Service of DHLGH. These studies will be undertaken to identify known and previously unrecorded features of archaeological, architectural, or cultural heritage significance which may be potentially impacted by the proposed scheme.

The programme of desktop research will entail systematic reviews of available and relevant documentary sources which will include, but not be limited to, the following:

- Record of Monuments and Places for County Dublin;
- Sites and Monuments Record for County Dublin;
- National Monuments in State Care Database;
- Monuments subject to Preservation Orders;

- Register of Historic Monuments;
- Topographical files of the National Museum of Ireland;
- Cartographic and written sources relating to the study area;
- Place names analysis;
- Dublin City Industrial Heritage Record;
- Dublin County Heritage Webmap;
- TII Digital Repository;
- Database of Irish Excavations (1970-2021);
- National Inventory of Architectural Heritage: Building and Garden Surveys;
- Irish Architectural Archive;
- Record of Protected Structures;
- Geological Survey of Ireland industrial heritage database; and
- Relevant ACA documentation.

A series of cultural heritage baseline site inspections, including architectural and cultural heritage condition surveys, will be undertaken to confirm the accuracy of the information collected during the desktop study and will also assess any previously unrecorded features of cultural heritage merit, which could be significantly affected by the proposed scheme. A preliminary site inspection will be carried out at the outset of the scheme in order to visit the locations of all known constraints to ascertain their existing condition, extent, and potential sensitivities. This will also include inspections of green field and parkland areas in order to assess current land use, evidence for modern interventions, and the potential for the presence of sub-surface archaeological remains. Inspections of the existing streetscape will also be carried out to assess the nature of the general built environment and the presence of historic street furniture and other features of cultural heritage interest. A series of additional site inspections will then be carried out as the design and assessment processes continue and these will include the compilation of detailed written, photographic, and drawn records as required.

Other onsite investigations required during the design and assessment processes, including GPR surveys of bridges, building condition surveys by appropriate consultants, geophysical surveys, any targeted archaeological test excavations that may be deemed necessary, and underwater archaeological surveys, will be scoped in consultation with the TII Project Archaeologist.

An ongoing process of consultation with the wider Project Team, including designers, landscape/visual and vibration specialists, will be maintained to ensure that cultural heritage considerations form an integral part of the scheme design and assessment phases. Any invasive surveys for other disciplines e.g., invasive species, GI, utility slit trenches, will also be reviewed for their potential to result in archaeological impacts. This review will also assess the need for, and scope of, archaeological monitoring of such surveys and the results of any required monitoring will inform the EIAR chapter. This review will be carried out in consultation with the TII Project Archaeologist. A process of consultation with the Landscape team to in relation to any cultural heritage features which rely on landscape setting for their importance will also be carried out.

The designations, locations and known extents of all constraints identified during the above studies will be collated as an inventory (written, photographic and digitally mapped).

18.5 Mitigation Measures

Where required, mitigation measures will be provided to avoid or minimise construction and operational phase impacts on identified constraints. This will include a process of consultation with other disciplines to ensure that the potential for interaction with other mitigation measures has been scoped and assessed. These may include, but not be limited to, mitigation measures for other disciplines in relation to landscape, invasive species and utilities. While the development of detailed mitigation measures will be formulated during the design, assessment, and consultation processes, they may include the following examples:

- Preservation by avoidance (design phase);

- Use of best practice conservation practices at locations of sensitive architectural heritage constraints and in compliance with *Architectural Heritage Protection: Guidelines for Planning Authorities* (2011);
- Pre-construction detailed building/structural architectural heritage surveys (preservation by record) for resources scheduled for temporary removal to secure storage and subsequent reinstatement/resources scheduled for demolition/in danger of inadvertent collapse;
- Mitigation of potential operation phase visual impacts by detailed design;
- Archaeological monitoring of geotechnical investigations, utility slit trenches and construction phase ground works;
- Potential preservation by record (archaeological excavation);
- Supervision of construction phase works at sensitive locations by Luas Finglas Project Conservation Architect; and
- Ongoing monitoring of potential vibration effects at sensitive locations during construction phase.

19 LANDSCAPE AND VISUAL AMENITY

19.1 Introduction

This section, which is carried out at an early stage in the assessment process, provides an outline of the work and the key aspects to be considered within the Landscape and Visual Impact Assessment (LVIA) for the EIAR. The work will involve a description of the receiving environment and identification of the sensitive receivers who may be impacted by the proposals, potential impacts both on landscape character and on visual amenity, the relevant guidance and methodology to be employed and the likely mitigation measure which may be applied to the scheme, and which will be detailed in the project EIAR and illustrated in the scheme conceptual design.

19.1.1 Policy, Plan and Guideline context

The landscape and visual assessment will require a comprehensive policy, plan and strategy review, including (but not limited to) the documents listed in Section 3.10; and as listed below. Any specific landscape designations and protected views and prospects will be identified as well.

- Landscape Institute and the Institute of Environmental Management & Assessment “Guidelines for Landscape and Visual Impact Assessment” Third Edition, Routledge 2013;
- Landscape character assessment (LCA) and landscape impact and visual impact assessment (LVIA) of Specified Linear Infrastructure Projects – Overarching Technical Document (OTD) (PE-ENV-01101), TII 2020;
- Landscape character assessment (LCA) and landscape impact and visual impact assessment (LVIA) of Proposed National Roads – Standard (PE-ENV-01102), TII 2020;
- A Guide to Landscape Treatments for National Road Schemes in Ireland, TII 2006;
- Dublin City Parks Strategy 2019-2022, DCC 2019;
- Dublin City Council Biodiversity Action Plan 2015-2020, DCC 2015;
- Dublin City Tree Strategy 2016-2020, DCC 2016;
- Fingal County Development Plan 2017-2023 Chapter 9 Natural Heritage, Landscape Character Assessment; FCC 2017; and
- Dublin City Development Plan 2016-2022 Chapter 10 Green Infrastructure, Open Space & Recreation; DCC 2016.

19.1.2 Receiving Environment

The receiving environment commences at the Broombridge Green Line Luas terminus on the southern side of the Royal Canal at Broombridge, Cabra, and continues as far as Charlestown, north of Finglas Village. The proposed Luas Finglas scheme PR alignment comprises mostly public open space including established parks and linear open spaces close to residential, industrial and community buildings, and the PR passes over several roads. The majority of the PR alignment is within the area defined by the Dublin City Development Plan 2016-2022; the portion north of McKelvey Avenue, south of Charlestown Shopping centre is covered by the Fingal County Development Plan 2017-2023.

In terms of visually sensitive receivers these include amenity users of the public open spaces, vehicle drivers and their passengers on the transportation routes (road, rail, Luas and canal), residents living in the properties overlooking the PR alignment and those working in the industrial, commercial and community properties located close to the alignment.

The preliminary landscape character assessment carried out for earlier stages of the project by the TII Project Team categorises the proposed Luas Finglas scheme PR into ten Local Landscape Character Areas (LLCA) (see Figure 19.1), each LLCA represents the nature of the environment. The LLCA’s are listed below, a preliminary landscape and visual rating has also been carried out:

- LLCA 01 Royal Canal – a linear zone comprising canal and railway with amenity walkway and the Royal Canal Way on northern bank;
- LLCA 02 Broombridge Road / Ind Estate – a mixed commercial and light industrial road corridor;
- LLCA 03 Tolka Valley Park – an established park with passive and active spaces including the Tolka River;
- LLCA 04 St Helena's – a residential low rise development with rear boundaries and gables walls creating poor boundary to green space;
- LLCA 05 Farnham Park- an active public open space;
- LLCA 06 Wellmount Road – a residential low rise development;
- LLCA 07 Finglas Main Street West – a road corridor overlooked by community and commercial properties;
- LLCA 08 Mellowes Park – a linear public open space which visually contained by planting along the southern boundary;
- LLCA 09 Finglas Road Corridor – a road corridor with dense boundary planting south of Mellowes Park;
- LLCA 09a Finglas Road Corridor – a mixed commercial and light industrial road corridor; and
- LLCA 10 Charlestown / St Margaret's – a mixed commercial and light industrial corridor with some residential.

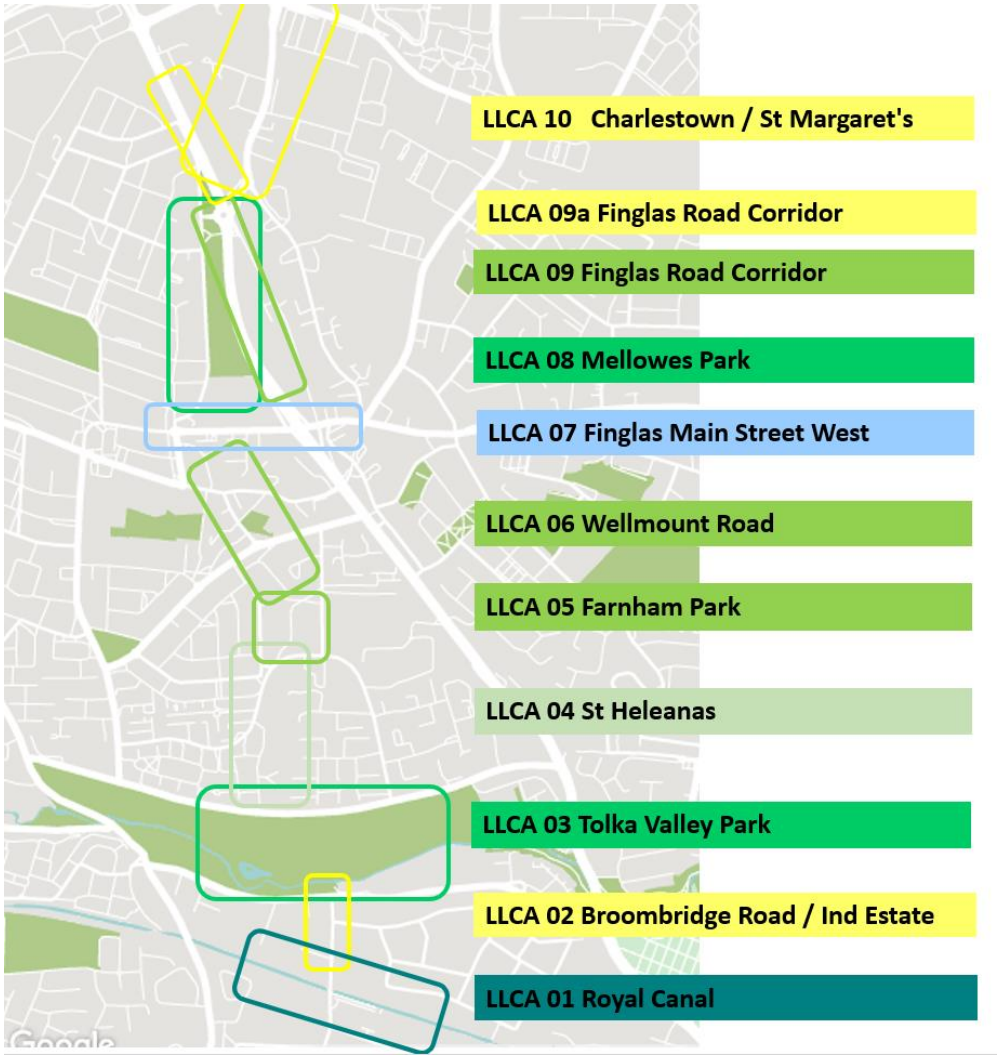


Figure 19.1 Local Landscape Character Areas (LLCAs, TII)

19.2 Baseline Information

19.2.1 Desktop Study

The Development Plans for Fingal and Dublin City will be reviewed regarding their landscape character assessments and scenic routes. Initial desktop study used existing satellite imagery / photography, existing online facilities such as Google Streetview etc., and a variety of historic and Ordnance Survey mapping to outline the existing landscape character adjacent to the proposed scheme alignment and the local landscape character associated with proposed stop locations.

The preliminary design drawings will be assessed in outline to determine the scale and potential magnitude of impact of the various elements of the proposed scheme, and this is set against the degree of potential visibility from adjacent areas in order to identify key potential visual impacts.

19.2.2 Consultation

Consultations will be undertaken with prescribed bodies, local authorities, other consultees and the public. This will assist in identifying key views and protected views and prospects, along with those already identified within the current respective development plans for each Local Authority area. Further details of consultation can be found in Section 4 of this report.

19.3 Potential Impacts

There is the potential for impacts to arise during both the construction and operation phases of the proposed scheme.

19.3.1 Construction Phase Impacts

During construction temporary negative impacts on the landscape character will arise from the presence of construction plant, storage of material, hoarding and construction traffic associated with the proposed working width of the PR alignment. This will cause disruption to the use of the public open spaces, active and passive recreation, and footpaths. At certain locations trees may be removed to facilitate the construction works.

Impacts on the visual amenity will arise during the construction of the elevated structures including vehicular bridges and pedestrian overpasses and from the presence of tall plant and construction traffic which will obstruct views across the proposed Luas Finglas scheme PR alignment.

19.3.2 Operational Phase Impacts

In the operation phase the presence of the Luas tracks, raised platforms, the Overhead Catenary System, supporting poles and night lighting at the stops plus the sub stations will add visual clutter to the open space along the alignment causing varying degrees of visual intrusion for sensitive receivers. Additionally, the movement and congregating of passengers at Luas stops will alter the character of those spaces.

19.4 Assessment Methodology

The LVIA will be carried out using a blended methodology of the guidelines mentioned in Section 19.1.1.

The study area for the LVIA will be defined in consultation with the client, modelling of the Zone of Theoretical Visibility (ZTV) if required, will be based on a bare earth scenario. We will identify the open space and built areas where the site could be visible and gave an initial indication of the zone of influence for the scheme. We will liaise with both Fingal and Dublin City Council in the location for the photomontages for the scheme and illustration of mitigation.

19.4.1 Data and Surveys

A preliminary site inspection will be carried out by the landscape team at the outset of the scheme in order to visit the locations of all known constraints, open spaces, and areas of significant vegetation to ascertain their existing condition, current land use, and potential sensitivities. The site visit will also record the extent of visibility from residential properties towards the proposed Luas Finglas scheme alignment and proposed stops in order to record the potential change in visual amenity. We will also record the type and condition of boundary treatment which may provide a level of visual screening for the PR alignment. The site survey will inform the optimum locations for 3D visualisations / photomontages showing “before” and “after” Scheme implementation images.

The Landscape team will liaise with the cultural heritage team to ascertain if any cultural heritage features rely on landscape setting for their importance, similarly we will liaise with the ecological team to understand the biodiversity value of any trees or riparian vegetation which may be affected by the proposed Luas.

A qualified arborist will undertake a tree survey to BS 5837 2012 Trees in relation to Design, Demolition and Construction-Recommendations. This will comprise an individual tagged Tree-Survey to include: the species, height, diameter (DBH), tree condition, crown clearance, canopy spread, root protection area and recommendations regarding preservation/ maintenance/ removal both within the footprint of the PR and extending either side of the alignment also to account for ancillary works, i.e. temporary construction works areas, construction compounds etc…

19.5 Mitigation Measures

Mitigation measures are likely to form an important part of the final scheme design in reducing landscape and visual impacts. Mitigation proposals will be developed to address impacts as they are determined as part of the appraisal and assessment process. This will be an interactive process. Where proposed mitigation measures are incorporated into the scheme design, they will inform further impact assessment, and this will in turn will inform refinement of the mitigation. Residual effects will also be assessed and described.

Mitigation measures will be designed in accordance with ‘A Guide to Landscape Treatments for National Road Schemes in Ireland’ (TII/NRA Feb 2006). The approach to this will be high-level and will include generally indicative levels of mitigation along broad sections of the PR alignment. The levels of mitigation necessary will be dependent on the needs for personal safety within an urban location and the need to screen trackside equipment or night time lighting for residential properties. The mitigation is likely to comprise:

- Providing visual screening between the Luas alignment and stops and visually sensitive properties or areas of sensitive landscape character using a mixture of landform and/or planting;
- Reconnection of severed and fragmented habitats and creation of green corridors and compensation planting within PR alignment;
- Reducing the perceived visibility of raised platforms, Overhead Catenary System, supporting poles and lighting by sensitive design;
- Ensuring adequate space is maintained below bridges to allow for continuation of access and riparian strips;
- Creating or maintaining vistas or views from the proposed alignment towards focal points or features of local importance by creating gaps in planting and/or lowering earth mounding; and
- Integrating local features such as sites of architectural and cultural heritage significance or Per Cent for Art Scheme commissions.

20 RISK OF MAJOR ACCIDENTS AND DISASTERS

20.1 Introduction

This section of the report identifies and assesses any likely significant impacts on the environment arising from the vulnerability of the proposed scheme to the risk of major accidents and disasters as a result of the proposed Luas Finglas scheme. This section presents a high-level overview of relevant guidance, the proposed methodology and scope of work likely to be required to undertake a detailed assessment of the proposed scheme to the risk of major accidents and disasters as part of the EIAR.

20.1.1 Policy, Plan and Guideline Context

The assessment will require a comprehensive policy, plan and strategy review, including (but not limited to) the documents listed in Section 3.10. Also, the EIA Directive (2014/52/EU) lists the factors which must be assessed with respect to environmental impact in Paragraph 1 of Article 3. Paragraph 2 of Article 3 states:

'The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/ or disasters that are relevant to the project concerned.'

Annex III of the directive lists the characteristics of a project to be considered as part of the EIAR, including:

'(f) the risk of major accidents and/or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge.'

IEMA publication 'Major Accidents and Disasters in EIA: A Primer' (September 2020) will also be adhered to in the assessment.

20.1.2 Receiving Environment

The study area for the purposes of identifying risk of major accidents and disasters is the proposed scheme extent and the areas in vicinity of the scheme as well as any haul routes to and from the proposed scheme during the construction phase. The assessment will review the current risk profile with respect to natural disasters, transportation accidents, construction accidents, and security.

The sites that have potential for major accident hazard under the Chemical Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) will also be assessed.

With regard to natural disaster, the most common type that Ireland experiences is flooding. Dublin has experienced a number of significant flood events over the last decade, both of a fluvial and coastal nature. Flood risk assessment for the proposed scheme will be undertaken and presented in the EIAR. Apart from that Ireland is volcanically inactive, relatively stable seismically, and does not tend to experience frequent destructive weather events such as hurricanes or tornadoes.

The Commission for Railway Regulation (CRR) is responsible for regulating Ireland's railways. According to the latest Railway Safety Performance in Ireland 2019 Report (CRR 2021), there were no passenger fatalities in 2019 (the last year reported on). However, there were seven fatal occurrences on the national heavy and light rail networks. Five of these occurred on the Iarnród Éireann network and two on the LUAS Tramway in Dublin with the fatalities reported to have been as a result of trespass / misadventure by persons.

With respect to current safety trends in the construction sector, the Health and Safety Authority (has) published Annual Review of Workplace Injury, Illness and Fatality StatistichasHSA 2020) which provides statistics for the period of 2018-2019. In 2019, the number of fatalities in the construction sector more than doubled. Also, in 2019 construction reported the second highest number of fatalities after the agriculture,

forestry and fishing sector, with twelve fatalities recorded. In 2019 there were also 867 reported injuries related to the construction sector. Between 2010-2019, there have been 81 fatalities recorded in the construction sector.

With respect to Ireland's safety and security, the threat of terrorism is categorised as possible but unlikely. Ireland is ranked 8th place on the Global Peace Index 2021, and 7th in Europe. This is an annual ranking of 163 independent states and territories using 23 qualitative and quantitative indicators and measures the state of peace across three domains, the level of Societal Safety and Security, the extent of Ongoing Domestic and International Conflict, and the degree of Militarisation.

20.2 Baseline Information

20.2.1 Desktop Study

The assessment will be entirely desk-based, with the other assessments being carried out as part of the EIA to inform the assessment of risk to the environment as a result of accidents or disasters and will be largely informed by the other chapters of EIAR, in particular climate, population and human health, biodiversity, traffic and transport, hydrology, and land, soils, geology and hydrogeology. The assessment will involve review of the following documentation:

- National Risk Assessment 2019 Overview of Strategic Risks, Department of the Taoiseach 2019;
- Guidance on Assessing and Costing Environmental Liabilities, EPA 2014;
- A Guide to Risk Assessment in Major Emergency Management, DEHLG 2010;
- A Guide to the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015), HSA 2015;
- Railway Safety Performance in Ireland, CRR 2019;
- Iarnród Éireann Safety Report 2017, Iarnród Éireann 2018;
- Tolka River CFRAM Programme draft maps (currently under review) (https://www.floodinfo.ie/map/floodmaps/) OPW, 2021; and
- A National Risk Assessment for Ireland 2020, Department of Defence 2021.

20.2.2 Consultation

The development of the EIAR will be informed by comprehensive consultation that will be undertaken with Health and Safety Authority (HSA), Office of Public Works (OPW), Commission for Railway Regulation (CRR), and Major Emergency Planning Units for Dublin City Council and Fingal County Council, prescribed bodies, local authorities, other consultees and the public. Further details of consultation can be found in Section 4 of this report.

20.3 Potential Impacts

For the purposes of determining the potential impacts and risk of major accidents and disasters, the assessment assumes a worst-case scenario and also the absence of any mitigation measures.

20.3.1 Construction Phase

The potential risks during the construction phase include the following:

- Damage to high voltage lines which cross the proposed scheme;
- Risk of fire in any work areas during construction;
- Road traffic collisions involving construction vehicles or as a result of temporary traffic management measures put in place as a result of construction activities, or vehicular collisions within the construction sites;
- Use of oils, fuels and other dangerous goods, their transportation to or storage on site; and
- Flooding in and around proposed works.

20.3.2 Operational Phase

The potential risks during the construction phase include the following:

- Loss of power to the rolling stock causing operation to halt;
- Flooding of Luas Stops or the tracks;
- Tram derailment or collision;
- Security incidents occurring on vehicles or at Luas Stops; and
- Fire within the rolling stock or Luas Stops.

20.4 Assessment Methodology

The risk assessment will be carried out in three stages:

- Identification and Screening –identify potential unplanned risks that the proposed scheme may be vulnerable to, and screen them with respect to whether they are already addressed elsewhere (e.g. other EIAR chapters, within the design or covered by legislation), or where the incident cannot be plausibly linked to the proposed scheme;
- Risk Classification –evaluation of each identified risk with regard to the likelihood of occurrence (as per Table 2 of A Guide to Risk Assessment in Major Emergency Management) and the potential impact (as per Table 3 of A Guide to Risk Assessment in Major Emergency Management). As per those tables, the likelihood is ranked from 1 (extremely unlikely) to 5 (very likely), and potential impact is ranked from 1 (minor) to 5 (catastrophic); and
- Risk Evaluation –risks will be subject to a risk matrix to determine the level of significance of each risk based on the multiplication of their likelihood and impact rankings, grouped into three categories, high risk (score from 15 to 25), medium risk (score of 8 to 12), and low risk (score of 1 to 6).

20.5 Mitigation Measures

Following identification, classification and evaluation of each identified risk; mitigation and monitoring measures will be proposed for any occurrences which are categorised as medium or high risk. New scoring for the likelihood and consequence post-mitigation will be assessed in order to give a post-mitigation score.

21 INTERACTIONS

All environmental factors are inter-related to some extent. Interactions within the study area can be one-way interactions, two-way interactions and multiple-phase interactions may be influenced by the proposed scheme. An assessment of the interaction between environmental factors are required under Article 3(1)(e) of the EIA Directive –

1. The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

a) population and human health;

b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;

c) land, soil, water, air and climate;

d) material assets, cultural heritage and the landscape;

e) the interaction between the factors referred to in points (a) to (d).

The interactions between impacts on different environmental factors will be considered, addressed and outlined as relevant throughout the EIAR. The Project Team will ensure close co-ordination and management within the EIA team to ensure that interactions are adequately addressed through the EIAR.

A matrix will be included to show interactions between effects on different factors have been addressed. This will be accompanied by a brief text describing the interactions. The use of matrix will ensure that issues arising under separate factors are all assessed to ensure compliance. Refer to Table 21.1 Sample Matrix below.

The assessment will also take into account pathways- direct and indirect that can magnify effects through the interactions or accumulation of effects. Also, some factors could be placed under more than one heading, this chapter of the EIAR will resolve this issue by ensuring that effects are cross-referenced between topics, thus reducing the need to duplicate coverage of such topics.

Table 21.1 Sample matrix to show Interactions between different Environmental factors

Interactions	Population & Human Health	Biodiversity	Water	Soils, Geology and Hydro-geology	Land Take	Air Quality	Climate	Noise and Vibration	EMC	Infrastructure and Utilities	Traffic and Transport	Waste Management	Cultural Heritage	Landscape and Visual Amenity	Risk of Major Accidents and Disasters
Population & Human Health		x	x	x	x	CP	CP	CP	OP	x	CP, OP	x	x	CP, OP	x
Biodiversity															
Water															
Soils, Geology and Hydro-geology															
Land Take															
Air Quality															
Climate															
Noise and Vibration															
EMC															
Material Assets: Infrastructure and Utilities															
Material Assets: Traffic and Transport															
Material Assets: Waste Management															
Cultural Heritage															
Landscape and Visual Amenity															
Risk of Major Accidents and Disasters															

Construction Phase Interaction- CP;

Operational Phase Interaction- OP;

No Interaction- x.

22 CUMULATIVE IMPACTS

During EIA the totality of the project is considered, including off-site and secondary projects as well as indirect, secondary and cumulative impacts. Cumulative impacts are caused by the combined results of past, present or future activities. It refers to addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects. A single activity may itself result in a minor impact, however, it may when combined with other impacts (minor or significant), can result in a cumulative impact which as a whole is significant. It is therefore not only important to look at the impacts caused specifically by the project being assessed, but also the impact in the wider context of similar impacts from unrelated projects in the area. It is also important to fully consider interactions between impacts and cumulative effects arising from the mitigation measures.

The cumulative impact section of the EIAR will be prepared in accordance with the 'Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions', prepared for the European Commission (EC 1999). The cumulative impacts of the proposed scheme together with other existing and proposed projects will be addressed. The proposed projects that will be considered are generally those that are "committed developments", i.e. those that have received planning permission, have applied for planning permission or are in the process of applying for planning permission. Publicly available information will be utilised to make educated predictions of the potential for likely significant impacts.

Some of the known projects/ plans that will be included within this section of the EIAR for the assessment of cumulative/ in combination impacts include:

- Dublin City Development Plan 2016 - 2022, Finglas Village Key District Centre;
- Iarnród Éireann Dart+West;
- NTA Bus Connects;
- NTA Greater Dublin Area Cycling Network Plan;
- NTA Transport Strategy for the Greater Dublin Area 2016 - 2035;
- NTA Draft Transport Strategy for the Greater Dublin Area 2022 – 2042; and
- Project Ireland 2040: National Development Plan 2021 - 2030.

The project/plan list will be further developed during scoping and throughout the EIA process.

23 CONCLUSION

An Environmental Impact Assessment Report (EIAR) as outlined in the previous sections will be undertaken as part of the Railway Order Application process associated with the proposed Luas Finglas scheme. Barry Transportation Egis JV (BTEG) and associated specialists will prepare a detailed EIAR describing the potential environmental impacts which may arise as a result of the construction and operational phases of the proposed scheme.

An Appropriate Assessment Screening Report and potentially a Natura Impact Statement will be carried out in support of the proposed scheme. The completed EIAR, AA Screening Report and NIS (if required) with all required materials will be prepared for the submission of a Railway Order Application under Section 37 of the Transport (Railway Infrastructure) Act 2001 (as amended).

This EIA Scoping Report describes the approach to be taken in assessing each of the listed environmental topics, including a description of the study area for each topic; a description of the methodology to be used in assessing each topic including the desk-based, survey work and consultation to be undertaken to inform the assessment; as well as outlining the current baseline conditions and the likely impacts which will occur as a result of construction and operation of the proposed scheme.

Transport Infrastructure Ireland (in conjunction with the National Transport Authority) are now inviting submissions on the issues and methodologies outlined in this EIA Scoping Report, or any other issues which they deem relevant to the EIA process. The consultation period will run for 6 weeks from 12th April 2022 to 24th May 2022.

To make a submission please use the following contact details:

Email: info@luasfinglas.ie

Postal Address: Luas Finglas, Transport Infrastructure Ireland
Parkgate Business Centre
Parkgate Street
D08DK10
Freepost: FDN7406

Freephone: 1800 666 888

Further project information at https://www.luasfinglas.ie/

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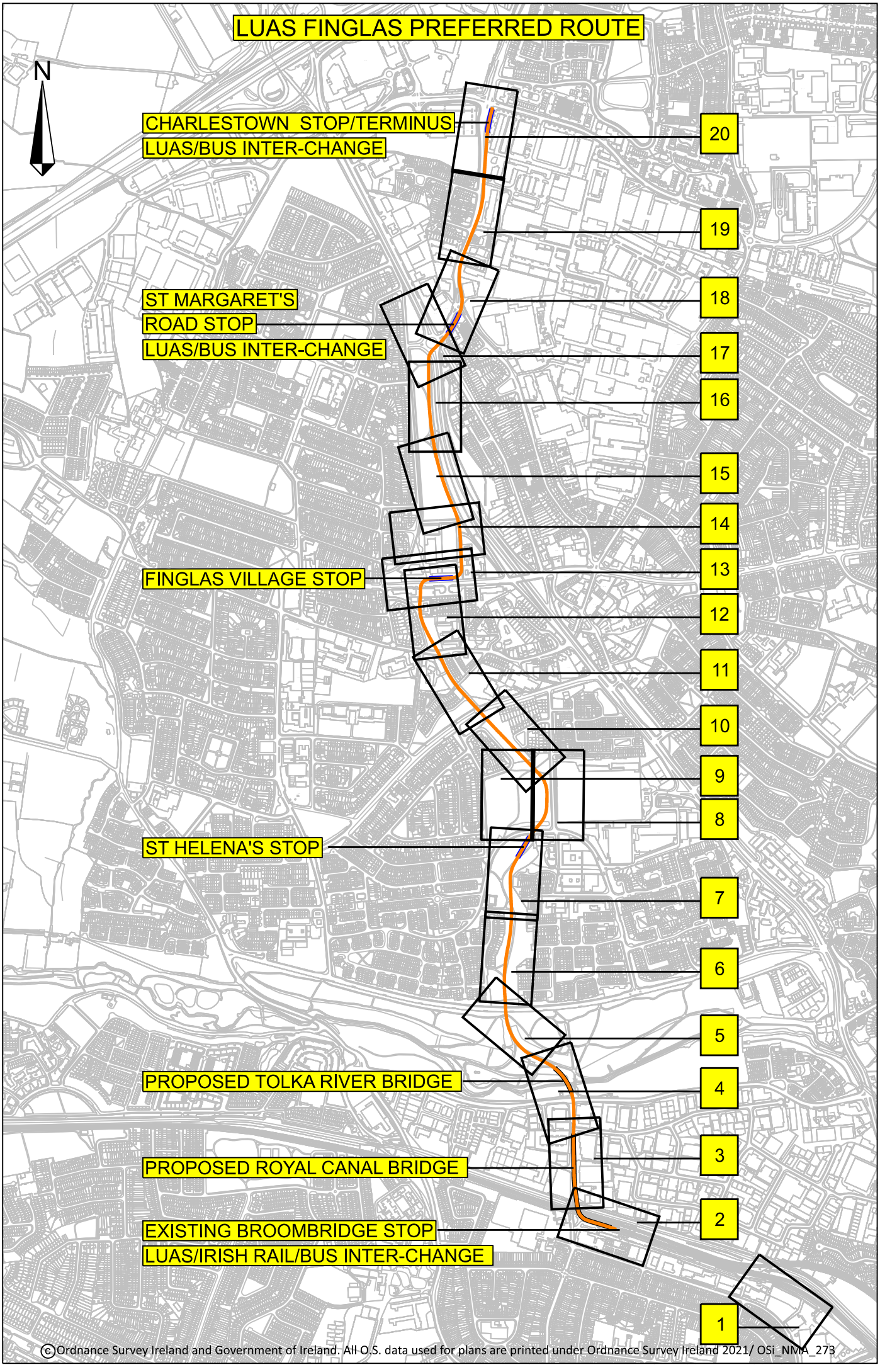
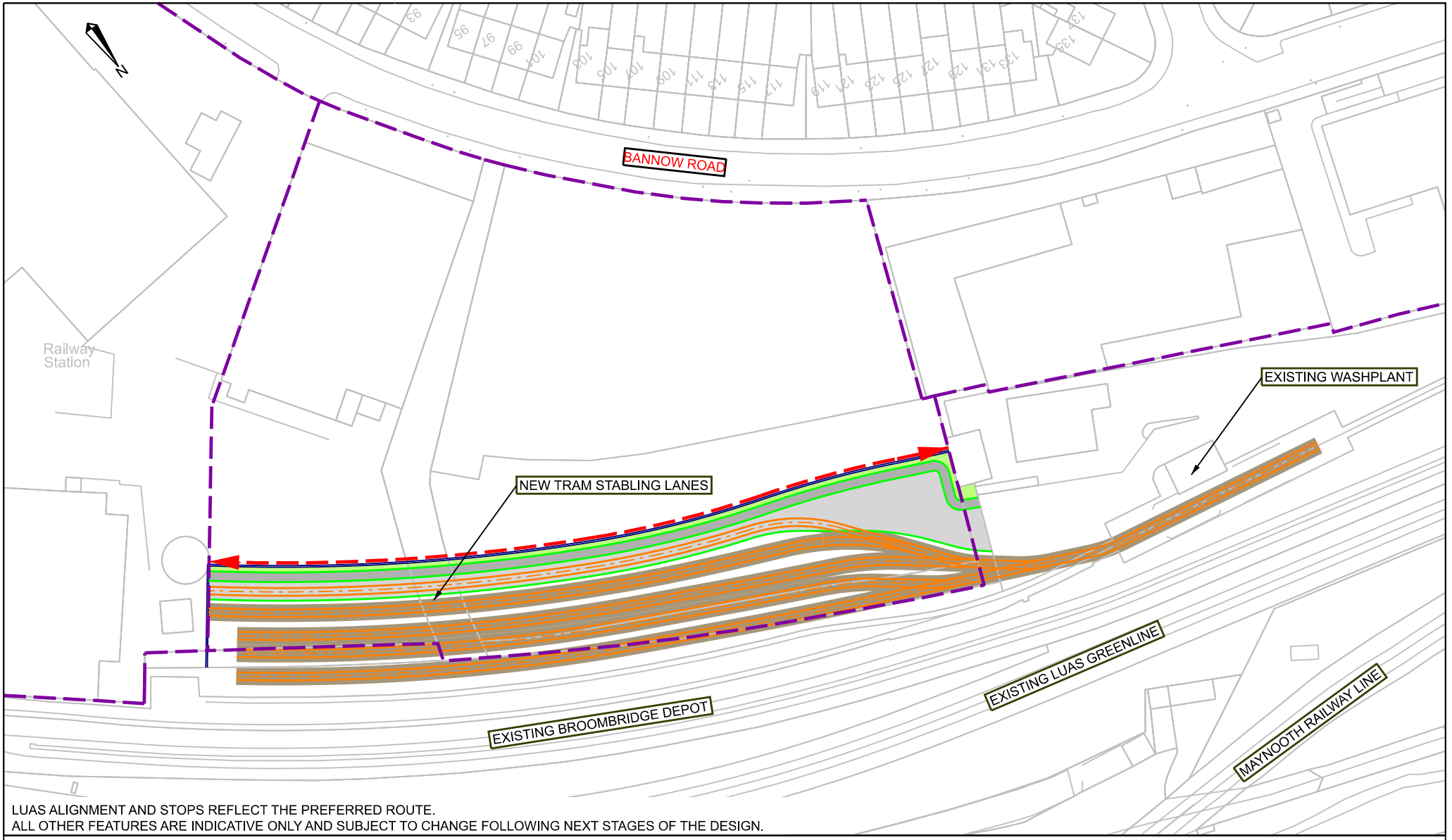
Appendix A: Preferred Route Public Consultation Drawings





LUAS ALIGNMENT AND STOPS REFLECT THE PREFERRED ROUTE.
ALL OTHER FEATURES ARE INDICATIVE ONLY AND SUBJECT TO CHANGE FOLLOWING NEXT STAGES OF THE DESIGN.

LEGEND

- PROPOSED TRAM STOP
- LUAS CORRIDOR / SHARED WITH TRAFFIC
- LUAS CORRIDOR / GRASS TRACK TYPE
- BUS LANE
- BUS STOP
- DETERRENT PAVING
- GRASS AREA / VERGE
- CYCLE LANE - ON CARRIAGEWAY
- CYCLE TRACK - OFF CARRIAGEWAY
- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

CYCLE PARKING

EXISTING BOUNDARY

PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

DRAWING 1 OF 20

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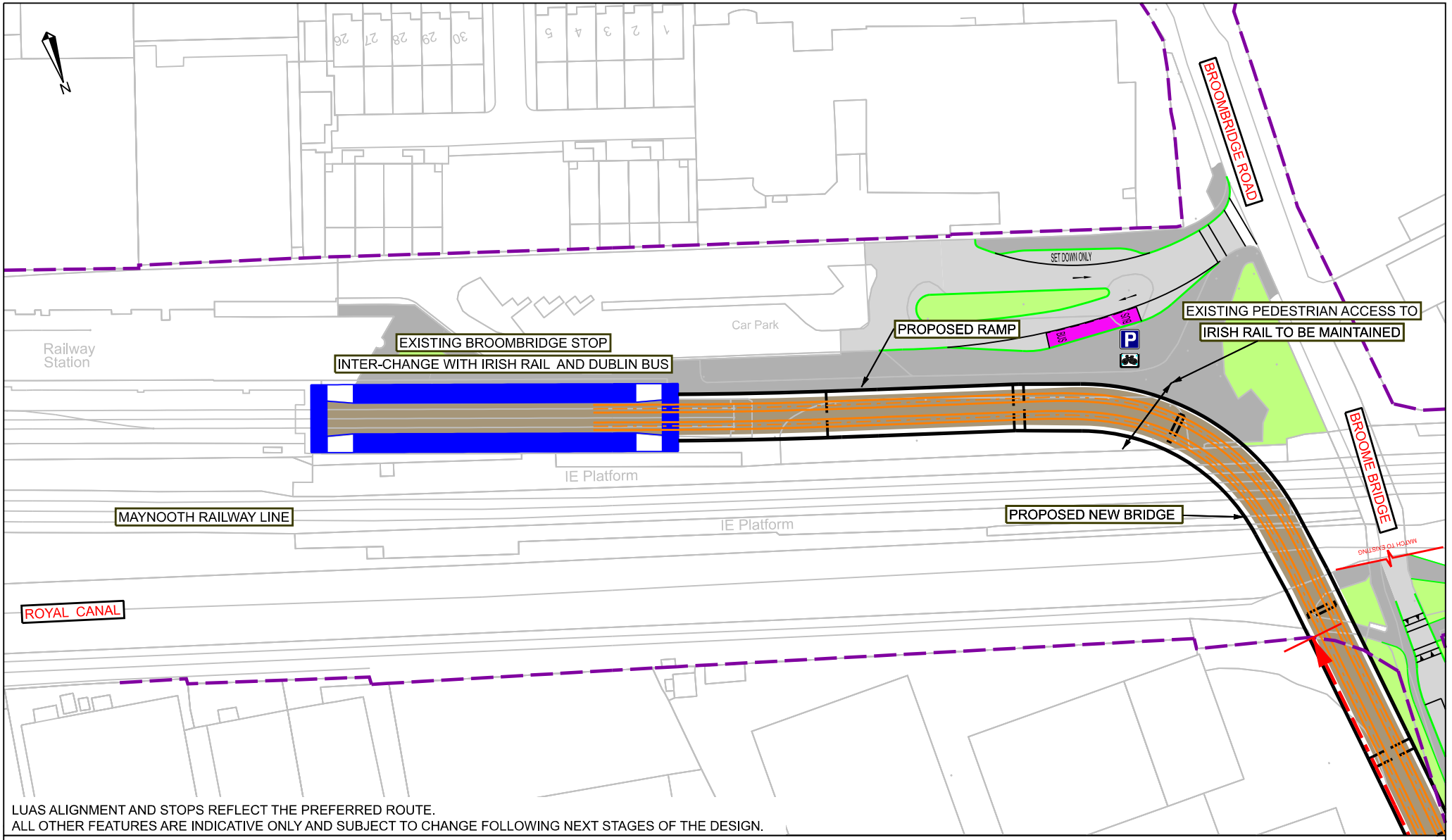

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- LUAS CORRIDOR / SHARED WITH TRAFFIC
- LUAS CORRIDOR / GRASS TRACK TYPE
- BUS LANE
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- DETERRENT PAVING
- GRASS AREA / VERGE
- CYCLE LANE - ON CARRIAGEWAY
- CYCLE TRACK - OFF CARRIAGEWAY
- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

P CYCLE PARKING

EXISTING BOUNDARY

PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

DRAWING 2 OF 20

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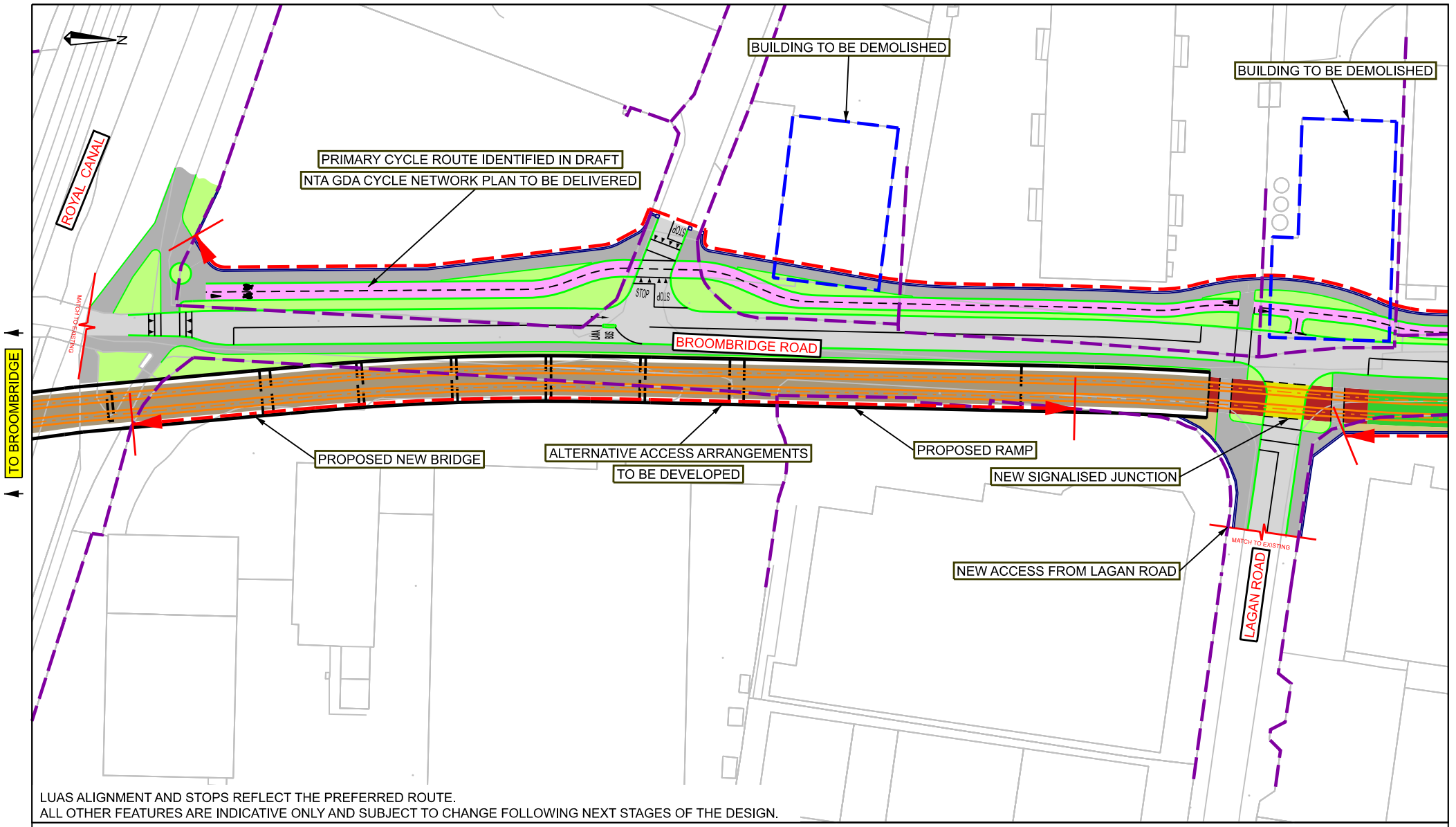

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- LUAS CORRIDOR / SHARED WITH TRAFFIC
- LUAS CORRIDOR / GRASS TRACK TYPE
- BUS LANE
- BUS STOP
- DETERRENT PAVING
- GRASS AREA / VERGE
- CYCLE LANE - ON CARRIAGEWAY
- CYCLE TRACK - OFF CARRIAGEWAY
- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

CYCLE PARKING

EXISTING BOUNDARY

PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

DRAWING 3 OF 20

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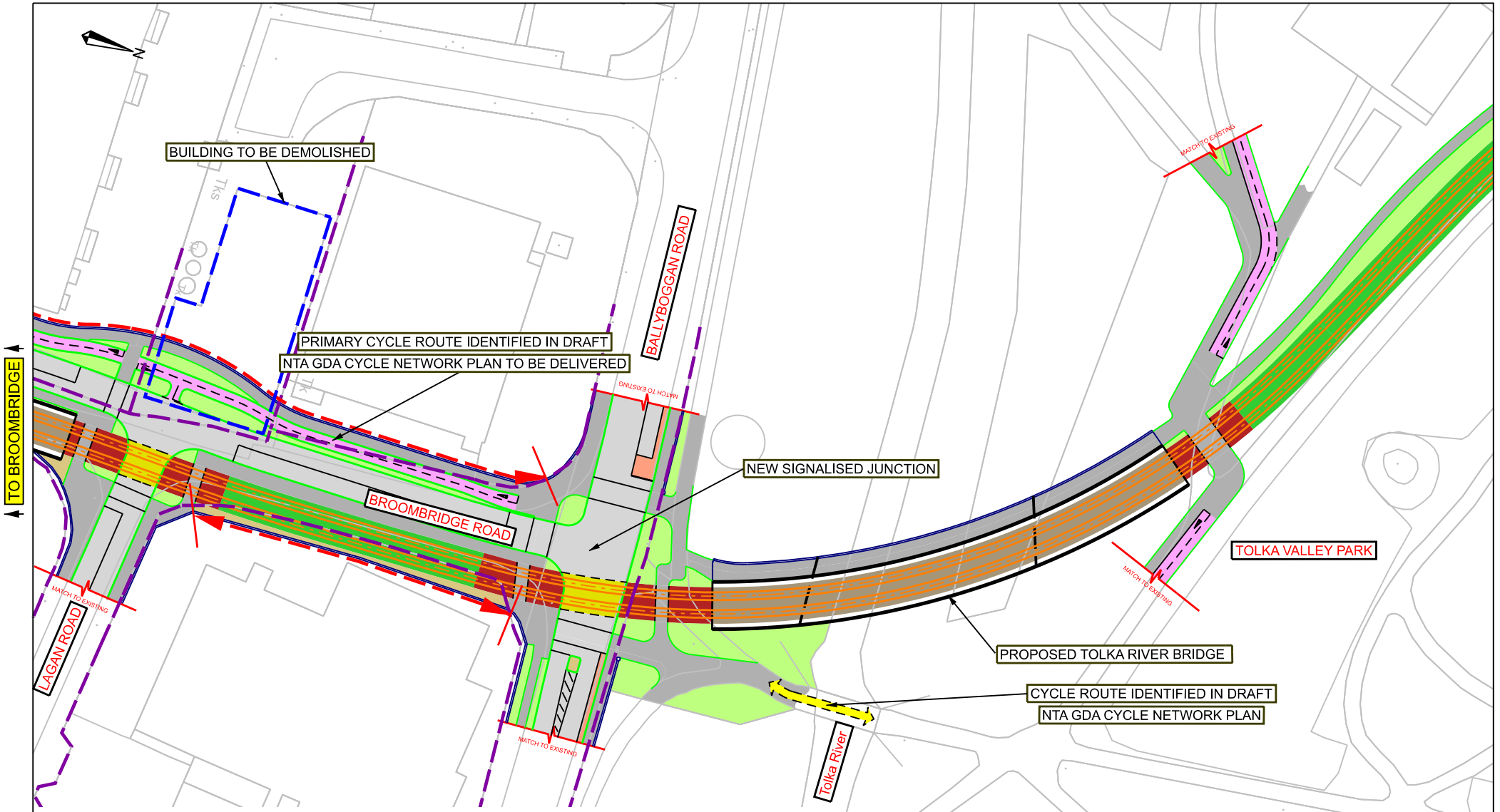

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- LUAS CORRIDOR / SHARED WITH TRAFFIC
- LUAS CORRIDOR / GRASS TRACK TYPE
- BUS LANE
- BUS STOP
- DETERRENT PAVING
- GRASS AREA / VERGE
- CYCLE LANE - ON CARRIAGEWAY
- CYCLE TRACK - OFF CARRIAGEWAY
- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

CYCLE PARKING

EXISTING BOUNDARY

PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

DRAWING 4 OF 20

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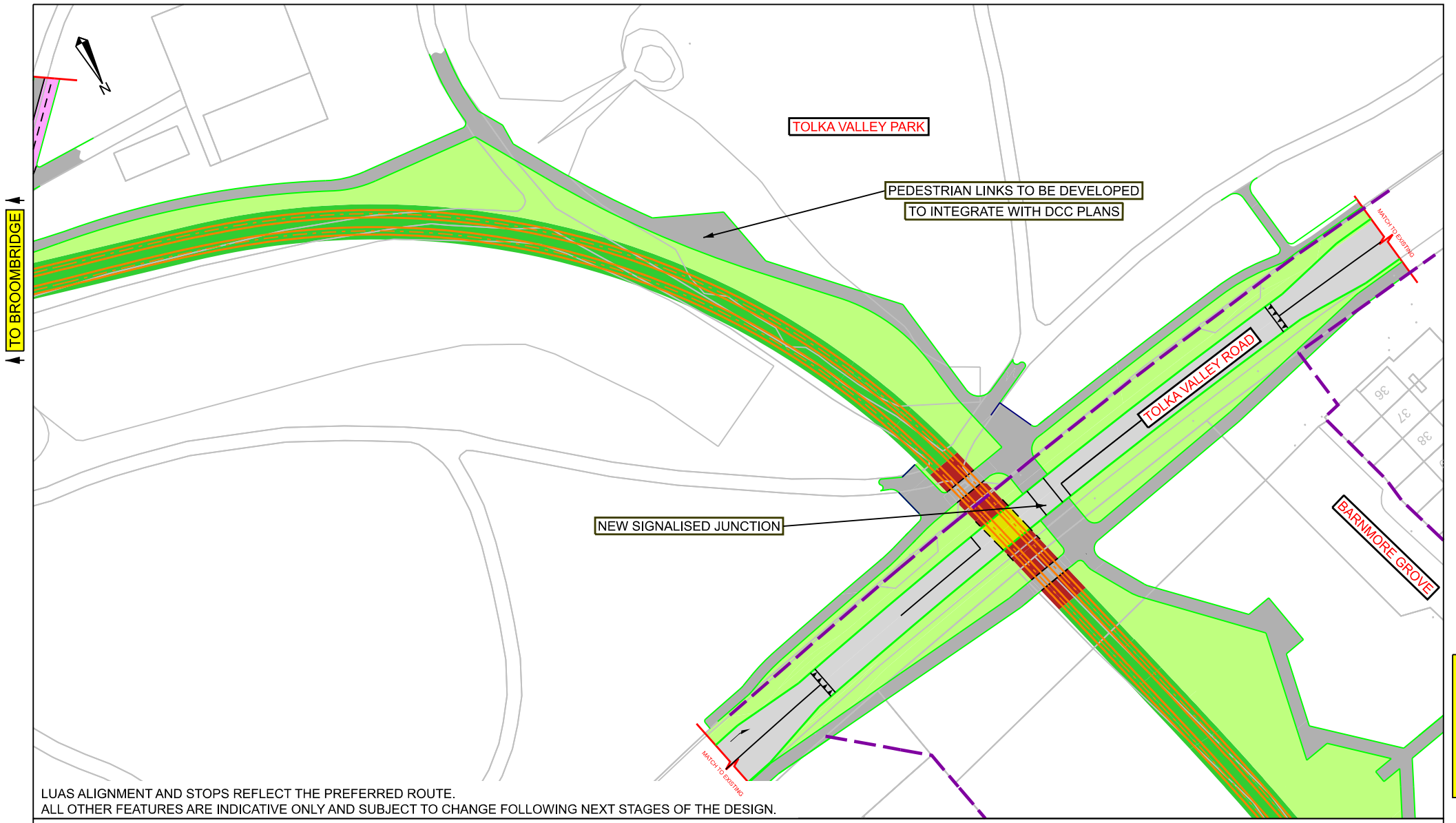

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- LUAS CORRIDOR / SHARED WITH TRAFFIC
- LUAS CORRIDOR / GRASS TRACK TYPE
- BUS LANE
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- DETERRENT PAVING
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- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

P CYCLE PARKING

EXISTING BOUNDARY

PROPOSED NEW BOUNDARY
(POSSIBLE LAND ACQUISITION)

DRAWING
5 OF 20

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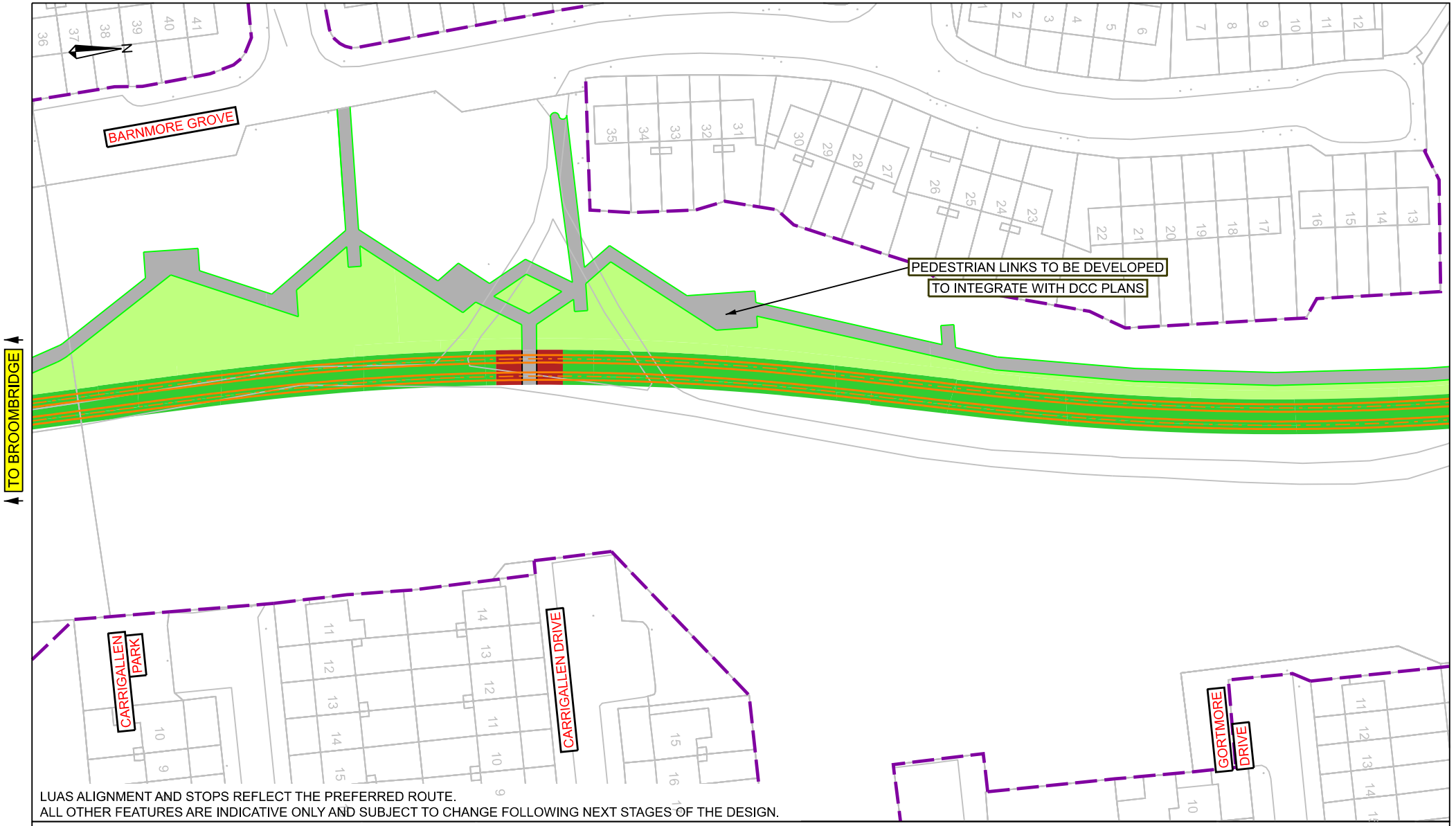

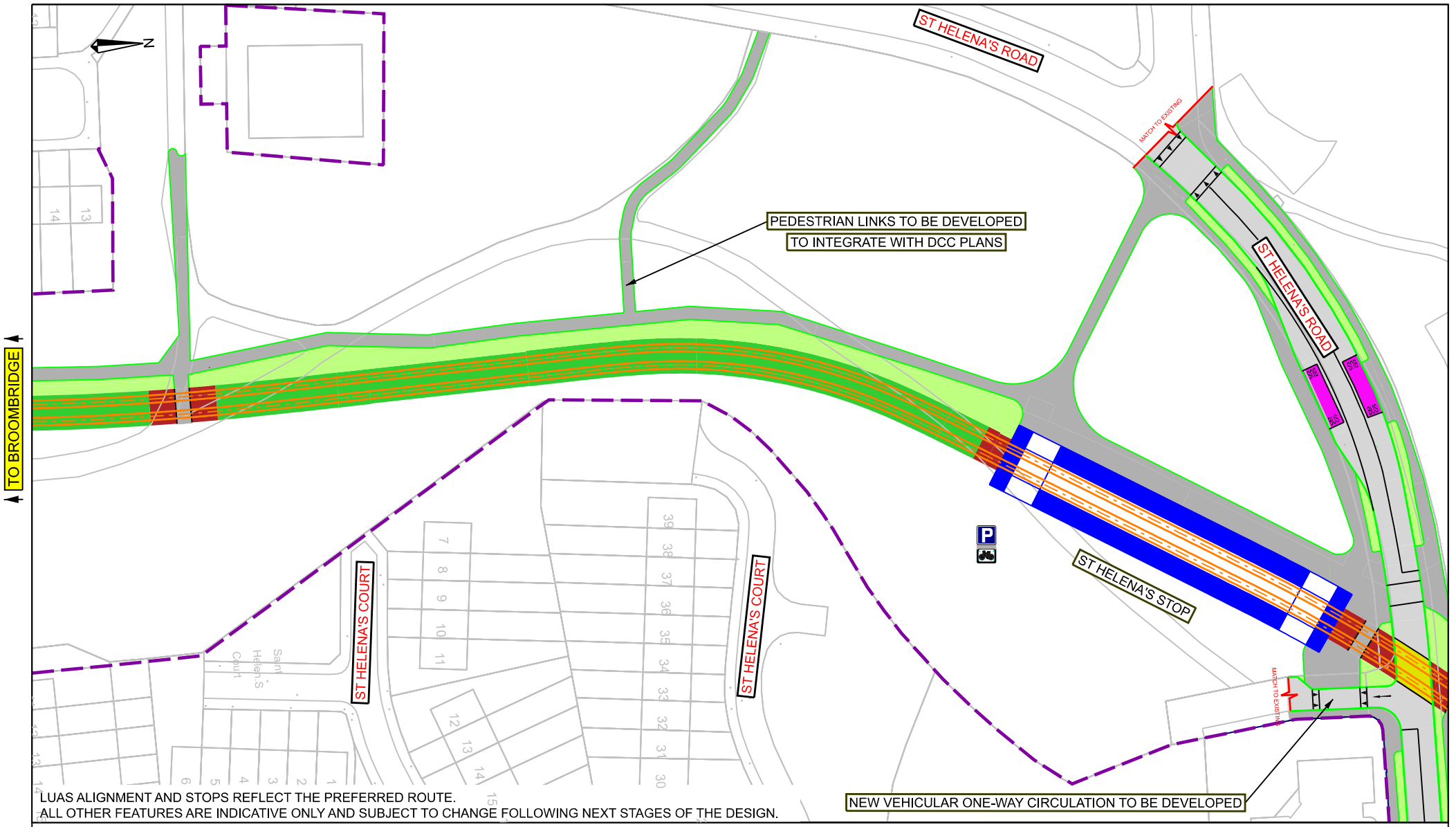

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- LUAS CORRIDOR / SHARED WITH TRAFFIC
- LUAS CORRIDOR / GRASS TRACK TYPE
- BUS LANE
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- CYCLE TRACK - OFF CARRIAGEWAY
- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

CYCLE PARKING

EXISTING BOUNDARY

PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

DRAWING 7 OF 20

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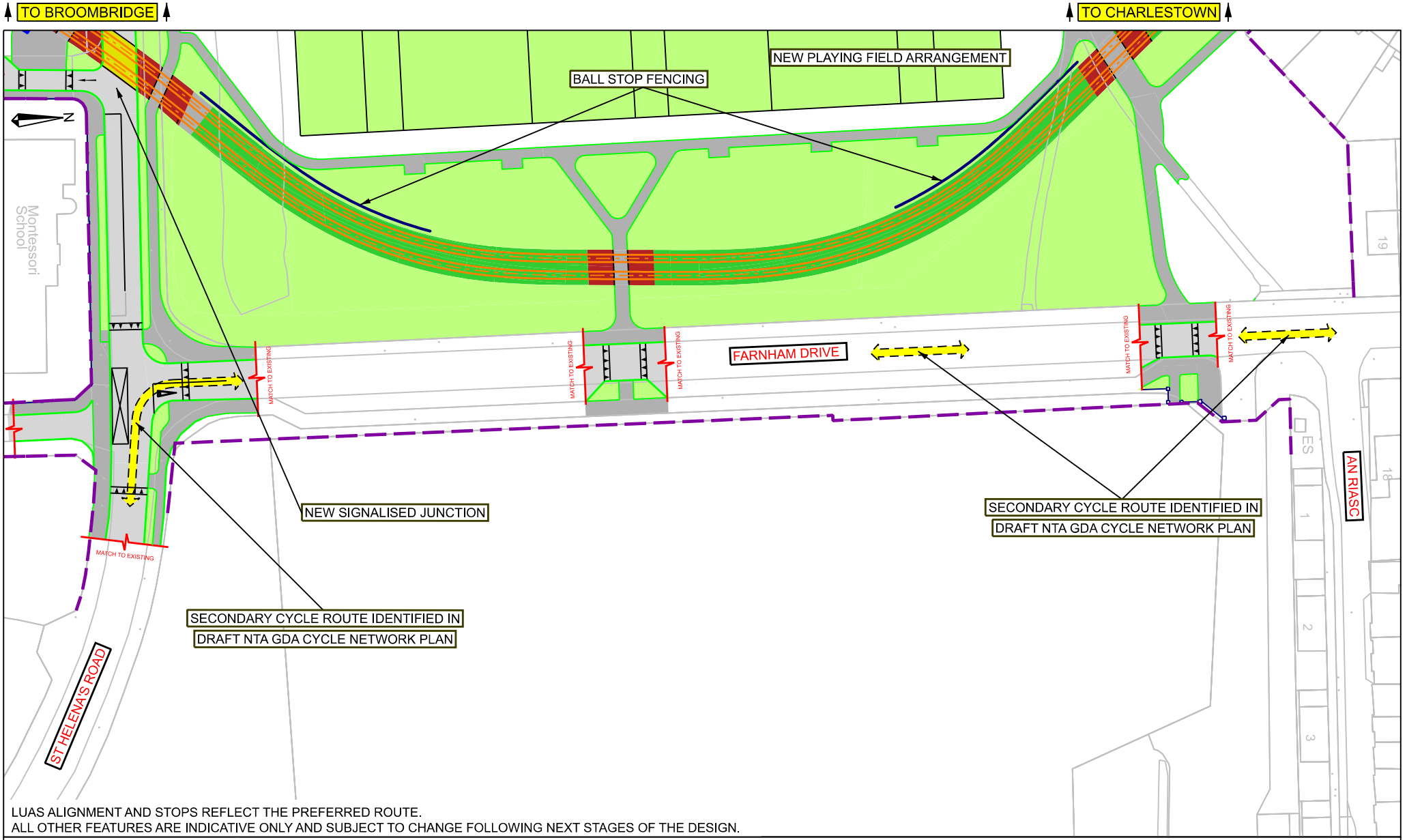

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- LUAS CORRIDOR / GRASS TRACK TYPE
- BUS LANE
- BUS STOP
- DETERRENT PAVING
- GRASS AREA / VERGE
- CYCLE LANE - ON CARRIAGEWAY
- CYCLE TRACK - OFF CARRIAGEWAY
- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

CYCLE PARKING

EXISTING BOUNDARY

PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

DRAWING 9 OF 20

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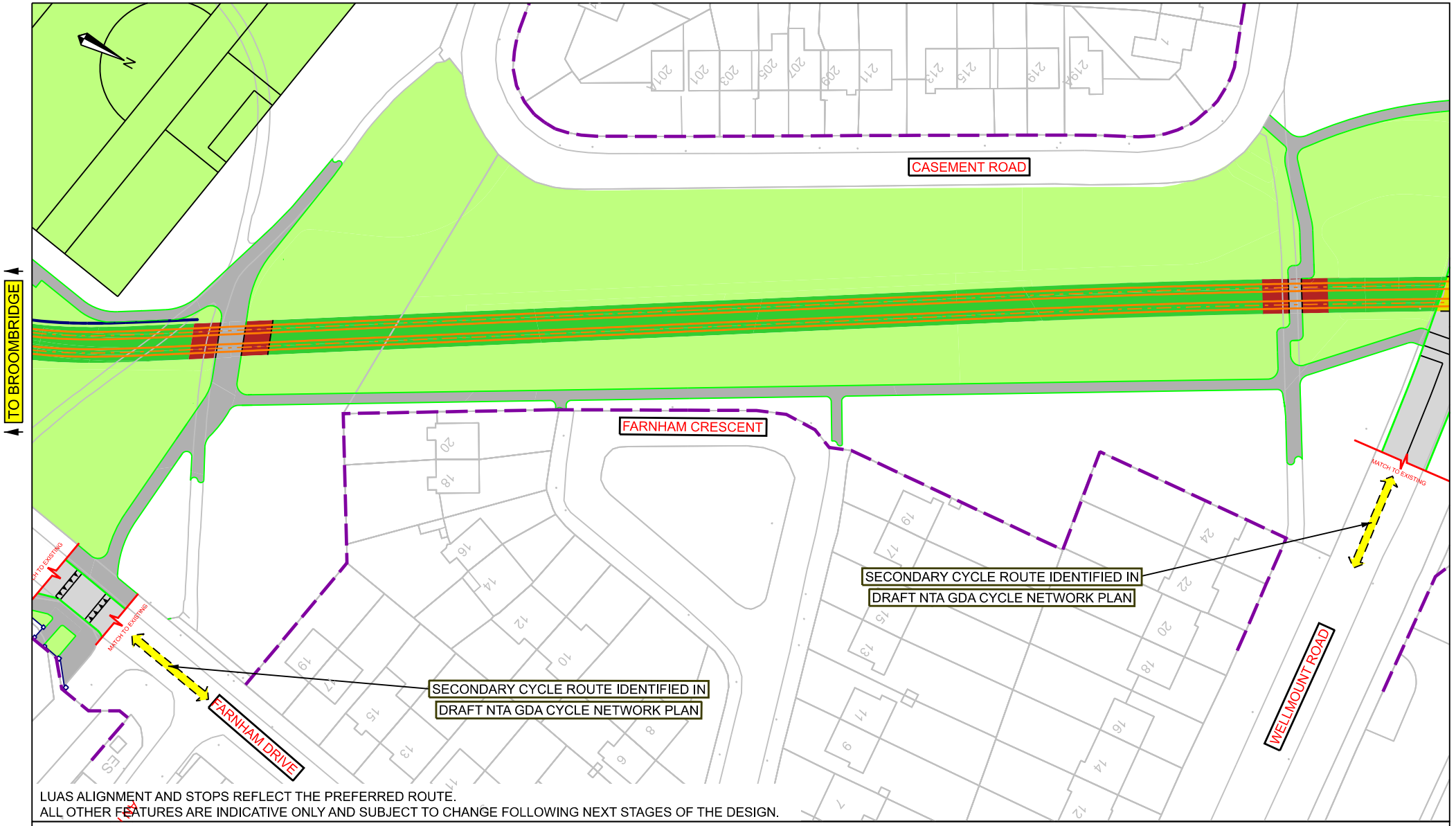

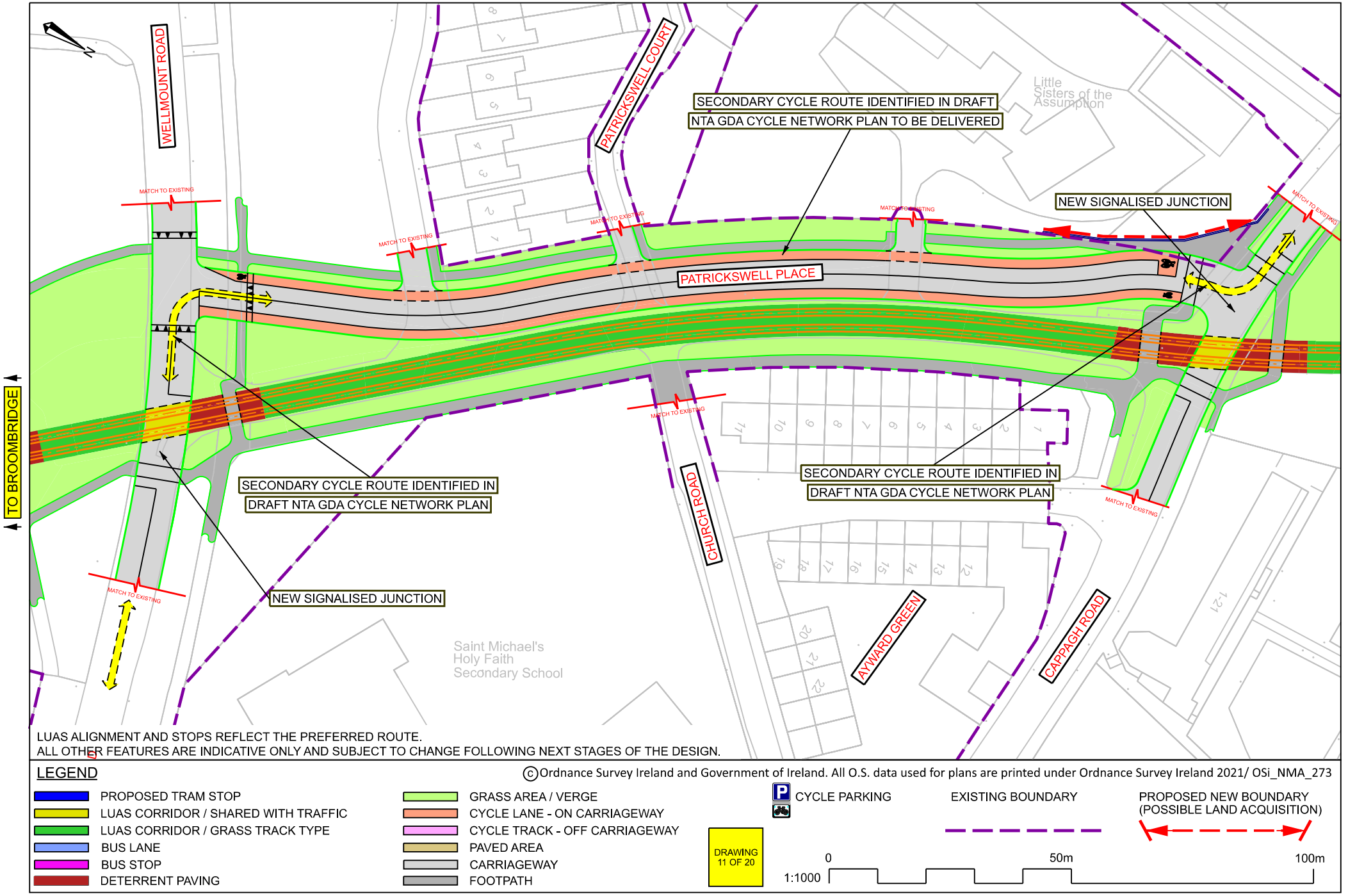

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- PROPOSED TRAM STOP
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- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

P CYCLE PARKING

EXISTING BOUNDARY

PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

DRAWING 11 OF 20

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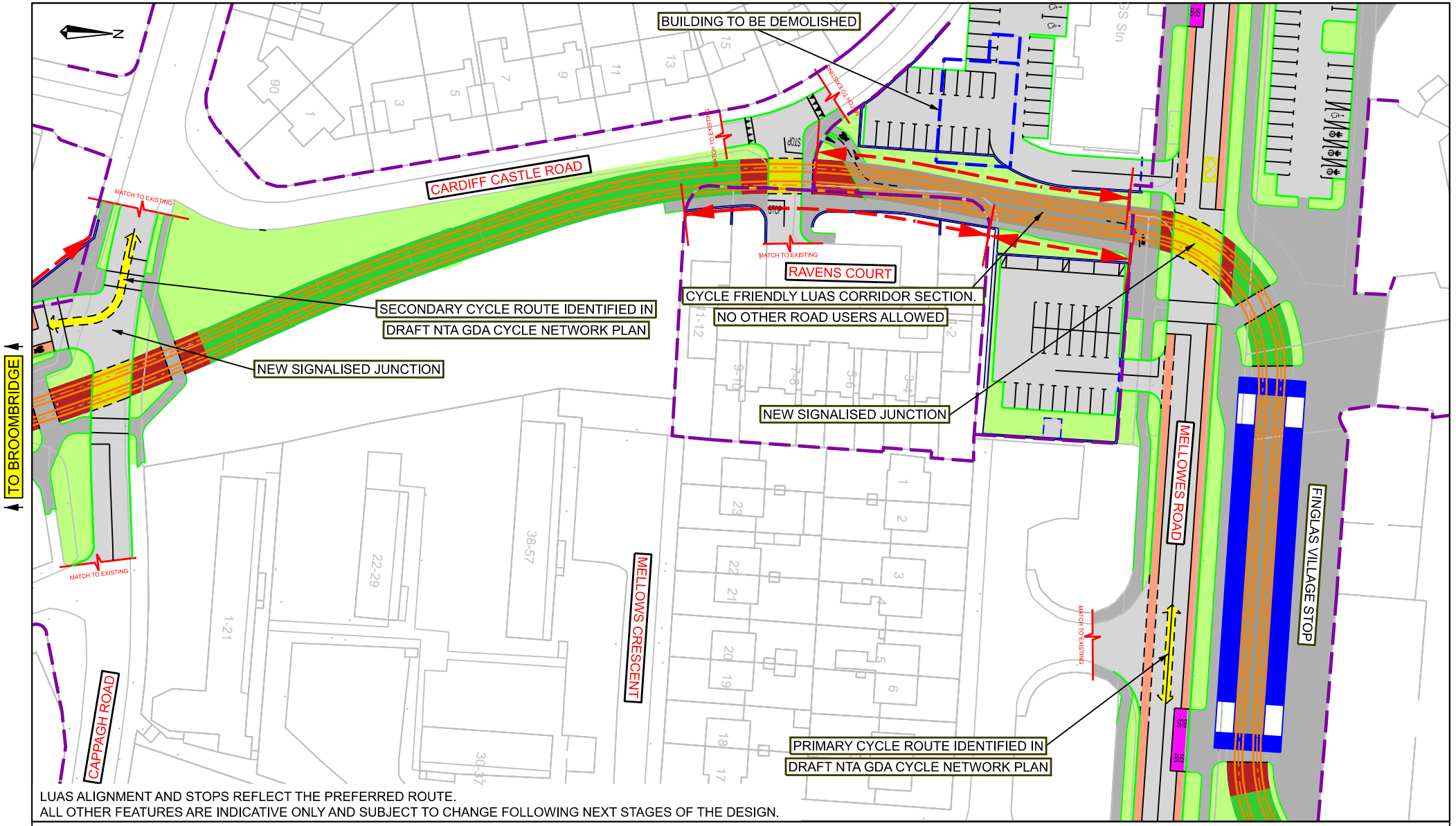

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CYCLE PARKING

EXISTING BOUNDARY

PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

DRAWING 12 OF 20

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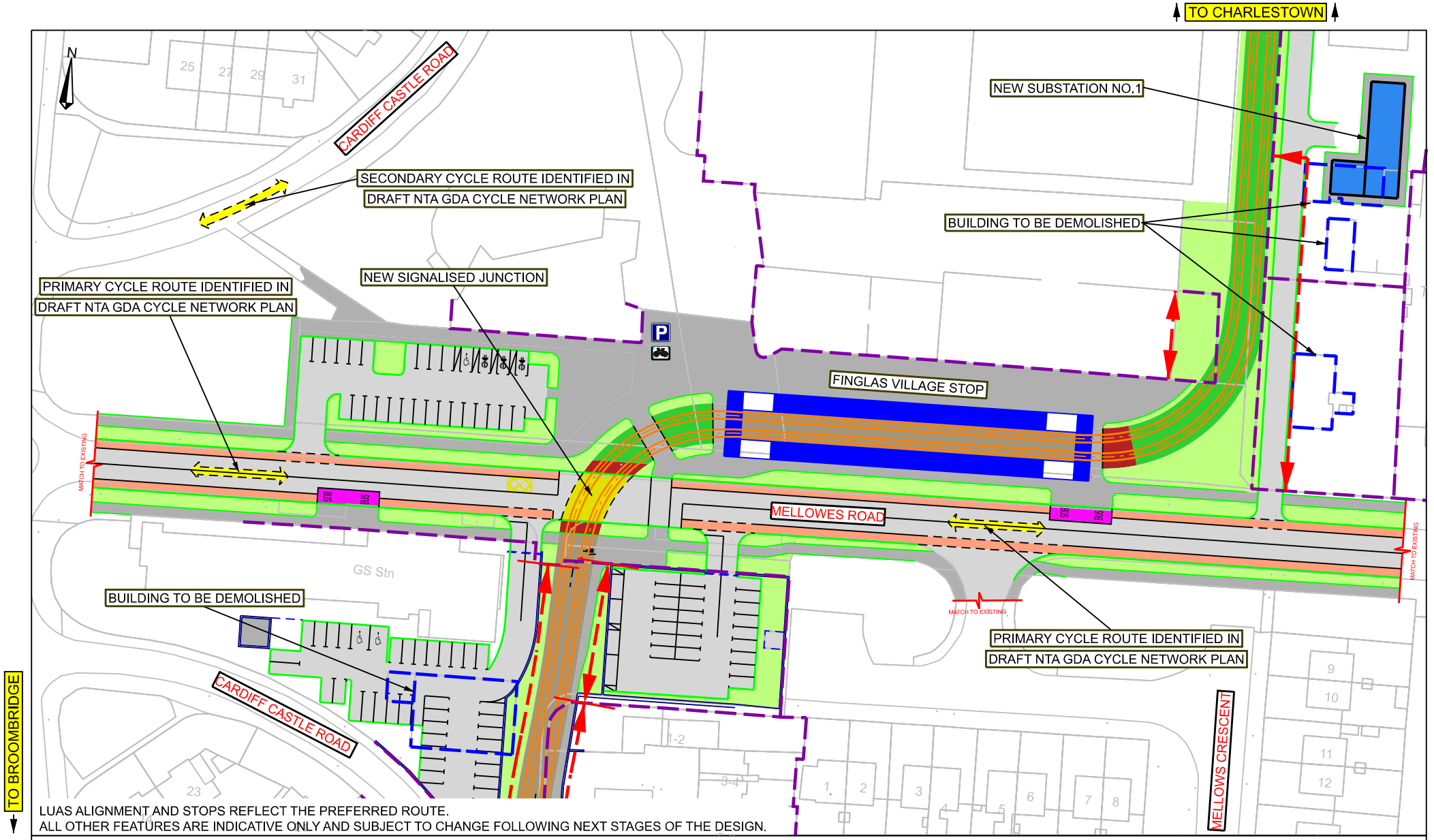

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- CARRIAGEWAY
- FOOTPATH

P CYCLE PARKING

EXISTING BOUNDARY

PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

DRAWING 13 OF 20

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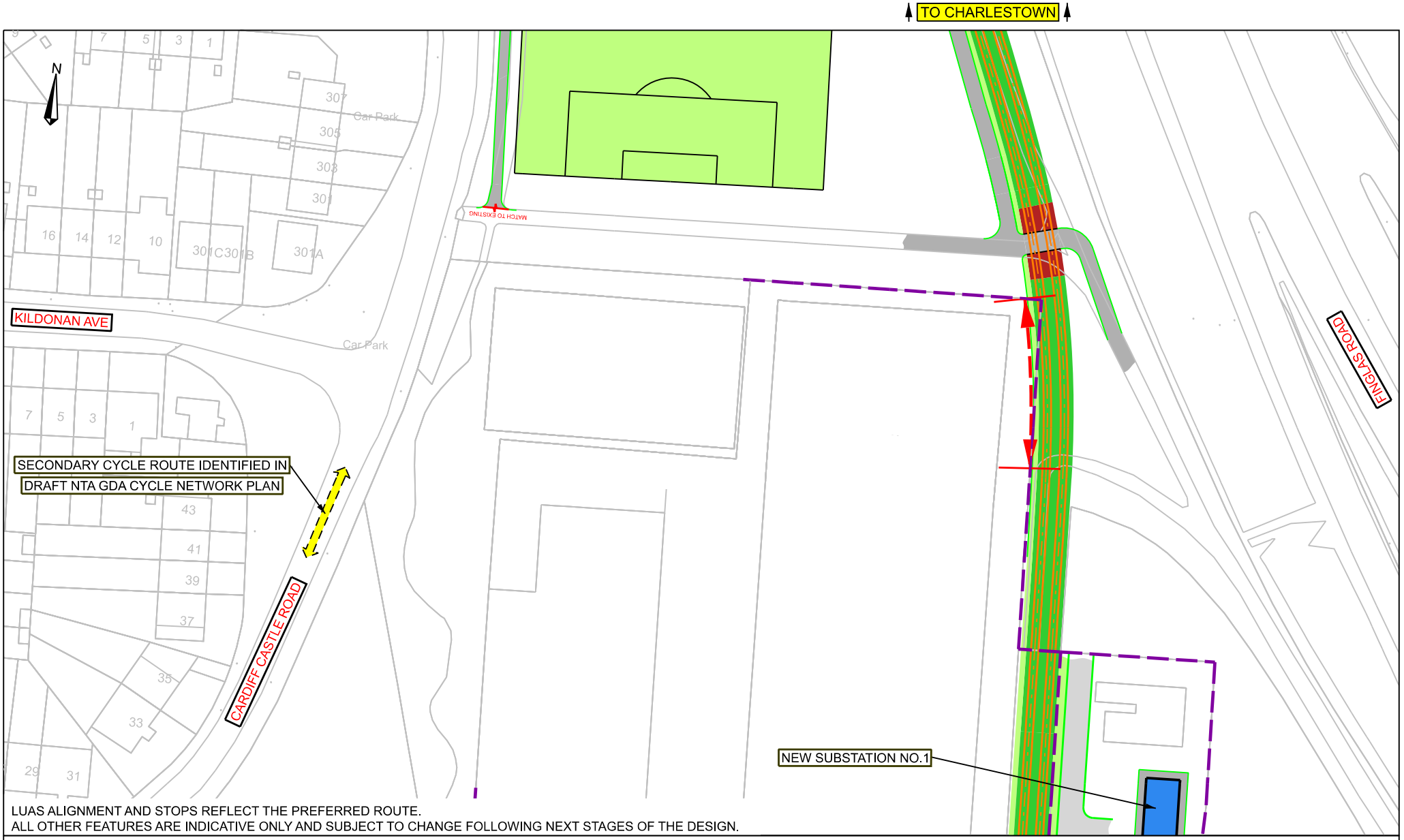

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- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

P CYCLE PARKING

EXISTING BOUNDARY

PROPOSED NEW BOUNDARY
(POSSIBLE LAND ACQUISITION)

DRAWING
14 OF 20

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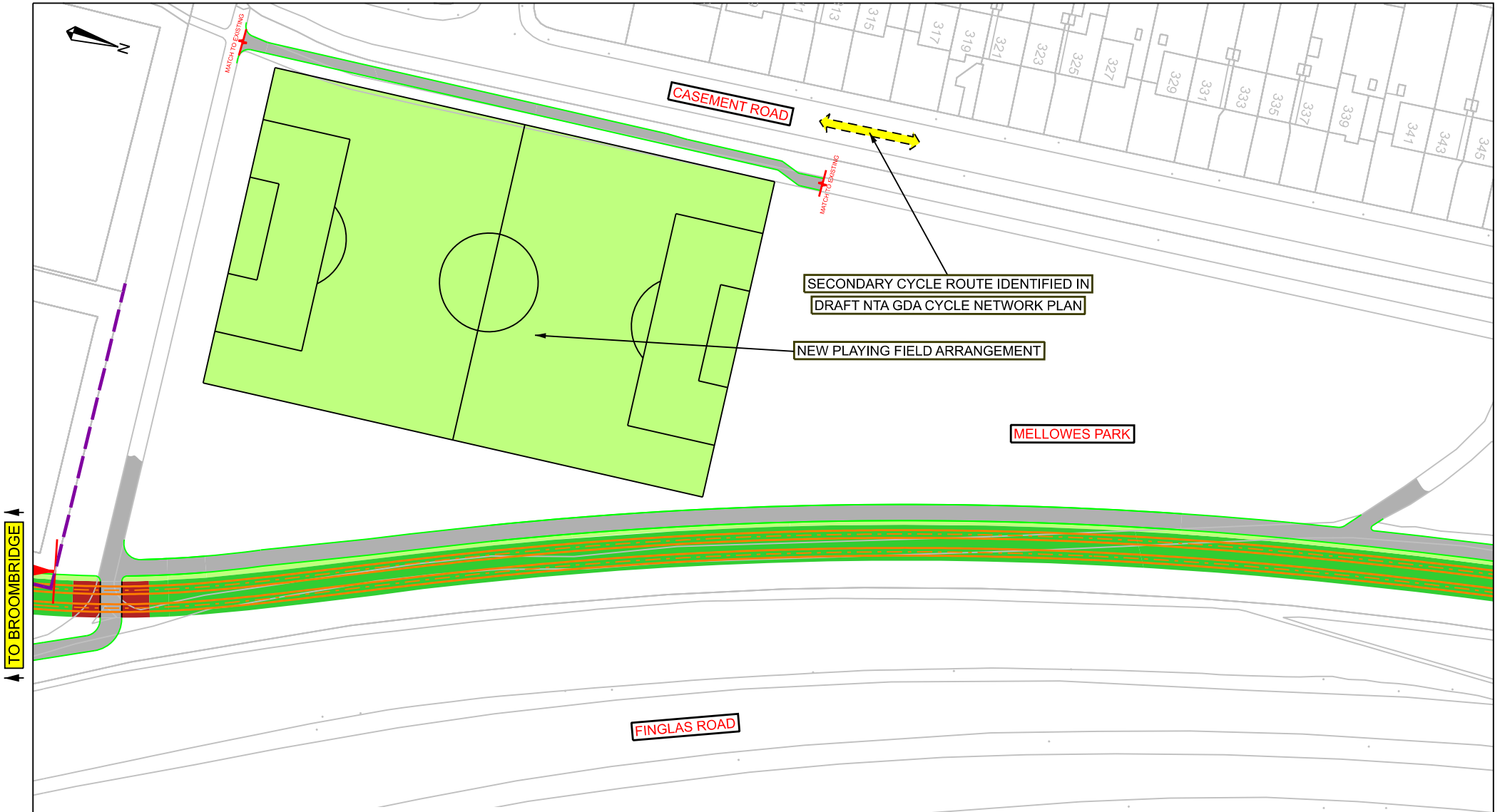


LUAS ALIGNMENT AND STOPS REFLECT THE PREFERRED ROUTE.
ALL OTHER FEATURES ARE INDICATIVE ONLY AND SUBJECT TO CHANGE FOLLOWING NEXT STAGES OF THE DESIGN.

LEGEND

- PROPOSED TRAM STOP
- LUAS CORRIDOR / SHARED WITH TRAFFIC
- LUAS CORRIDOR / GRASS TRACK TYPE
- BUS LANE
- BUS STOP
- DETERRENT PAVING
- GRASS AREA / VERGE
- CYCLE LANE - ON CARRIAGEWAY
- CYCLE TRACK - OFF CARRIAGEWAY
- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

CYCLE PARKING

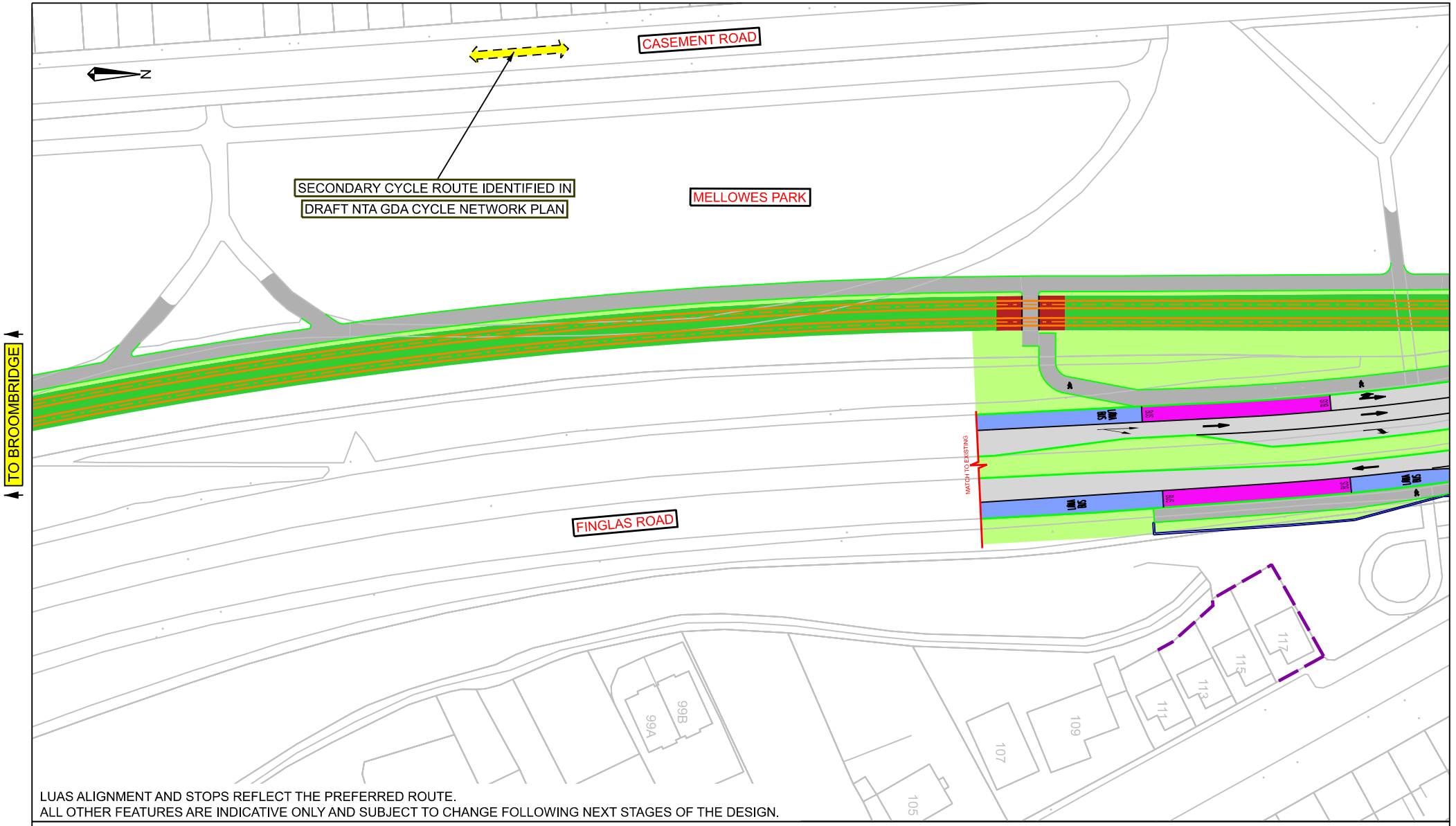
EXISTING BOUNDARY

PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

DRAWING 15 OF 20

1:1000

0 50m 100m



LUAS ALIGNMENT AND STOPS REFLECT THE PREFERRED ROUTE.
ALL OTHER FEATURES ARE INDICATIVE ONLY AND SUBJECT TO CHANGE FOLLOWING NEXT STAGES OF THE DESIGN.

LEGEND

- PROPOSED TRAM STOP
- LUAS CORRIDOR / SHARED WITH TRAFFIC
- LUAS CORRIDOR / GRASS TRACK TYPE
- BUS LANE
- BUS STOP
- DETERRENT PAVING
- GRASS AREA / VERGE
- CYCLE LANE - ON CARRIAGEWAY
- CYCLE TRACK - OFF CARRIAGEWAY
- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

CYCLE PARKING

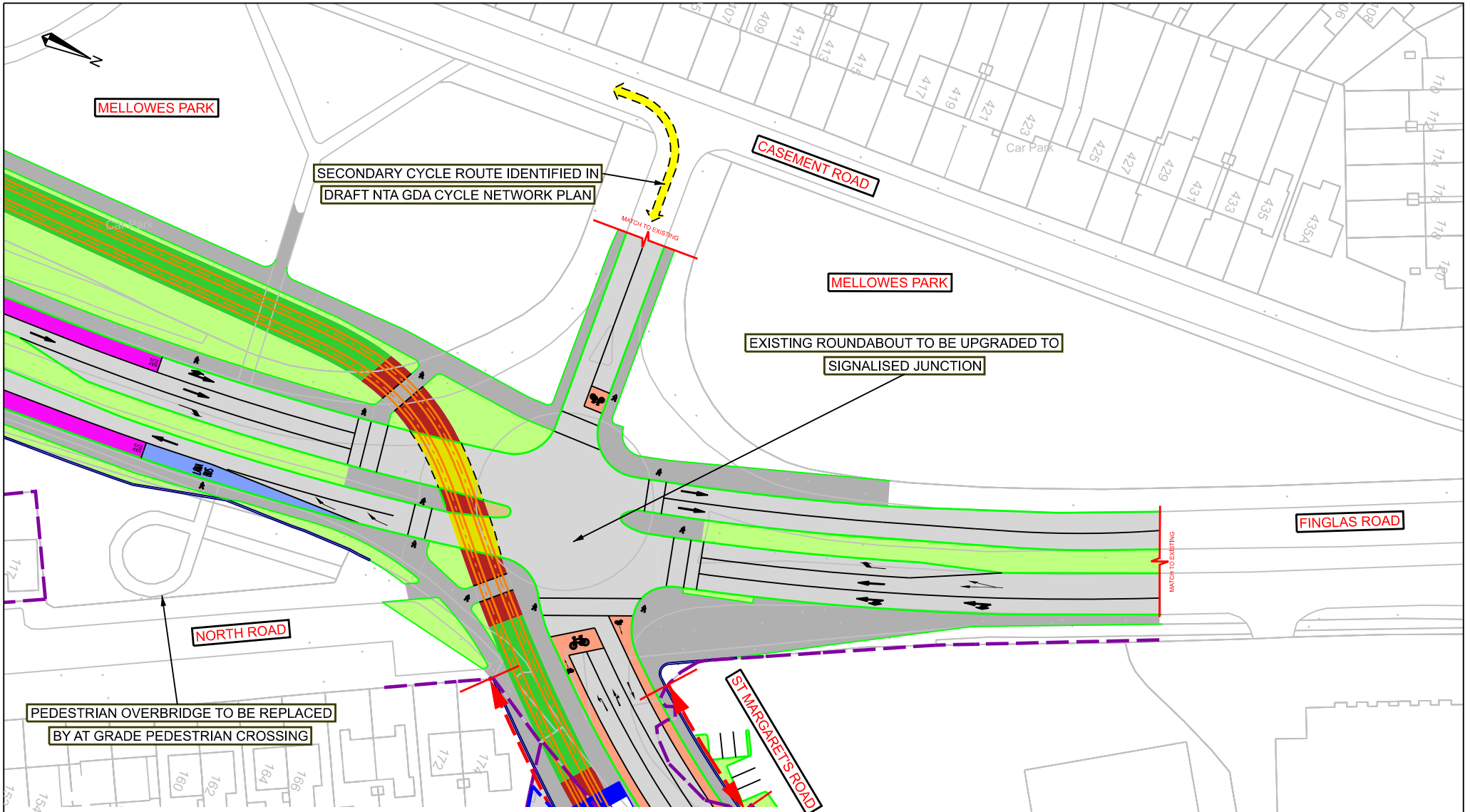
EXISTING BOUNDARY

PROPOSED NEW BOUNDARY
(POSSIBLE LAND ACQUISITION)

DRAWING
16 OF 20

1:1000

0 50m 100m



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- BUS STOP
- DETERRENT PAVING
- GRASS AREA / VERGE
- CYCLE LANE - ON CARRIAGEWAY
- CYCLE TRACK - OFF CARRIAGEWAY
- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

CYCLE PARKING

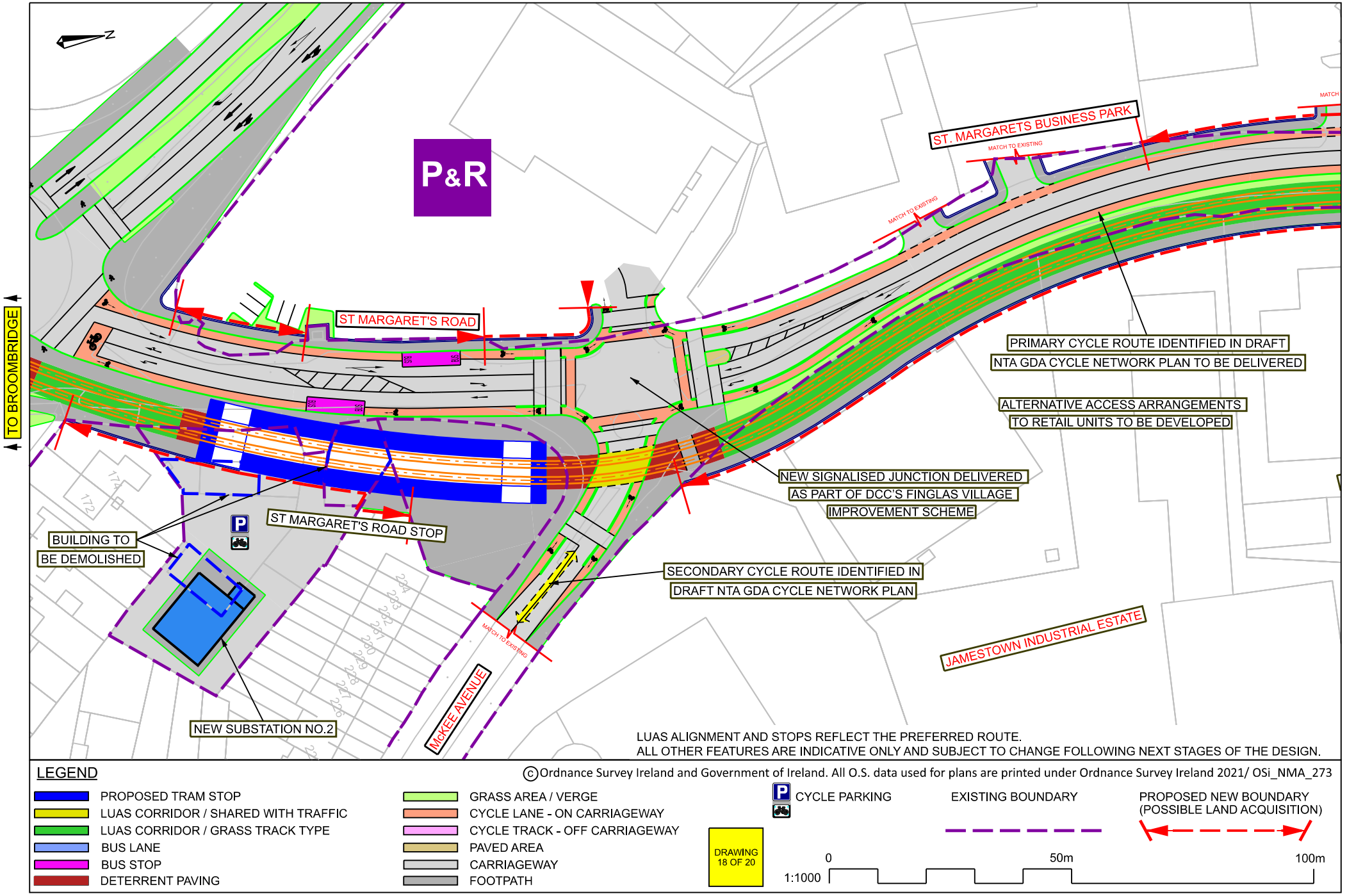
EXISTING BOUNDARY

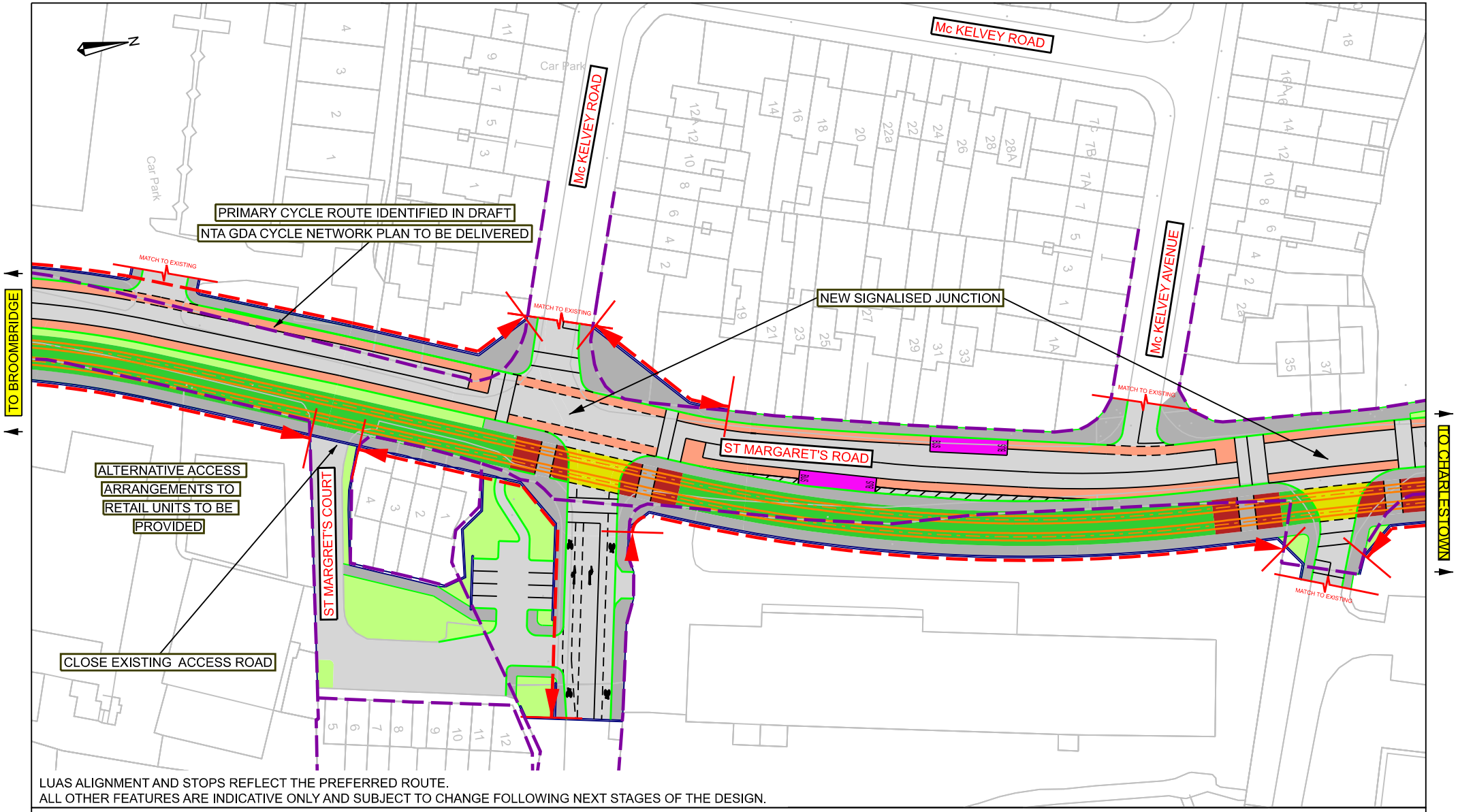
PROPOSED NEW BOUNDARY
(POSSIBLE LAND ACQUISITION)

DRAWING
17 OF 20

1:1000

0 50m 100m





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ALL OTHER FEATURES ARE INDICATIVE ONLY AND SUBJECT TO CHANGE FOLLOWING NEXT STAGES OF THE DESIGN.

LEGEND

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- LUAS CORRIDOR / SHARED WITH TRAFFIC
- LUAS CORRIDOR / GRASS TRACK TYPE
- BUS LANE
- BUS STOP
- DETERRENT PAVING
- GRASS AREA / VERGE
- CYCLE LANE - ON CARRIAGEWAY
- CYCLE TRACK - OFF CARRIAGEWAY
- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

P CYCLE PARKING

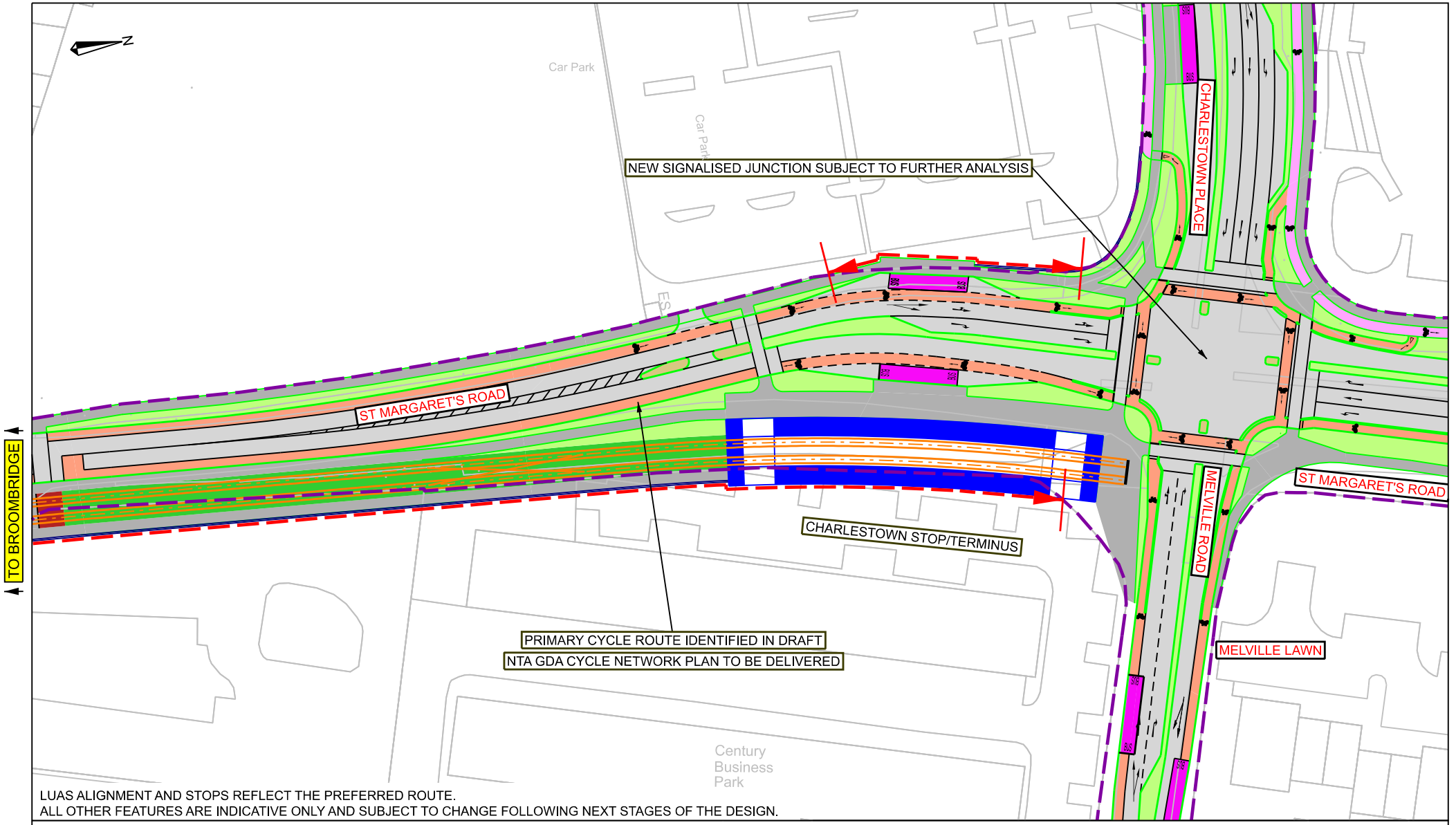
EXISTING BOUNDARY

PROPOSED NEW BOUNDARY
(POSSIBLE LAND ACQUISITION)

DRAWING
19 OF 20

1:1000

0 50m 100m



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- CYCLE TRACK - OFF CARRIAGEWAY
- PAVED AREA
- CARRIAGEWAY
- FOOTPATH

P CYCLE PARKING

EXISTING BOUNDARY

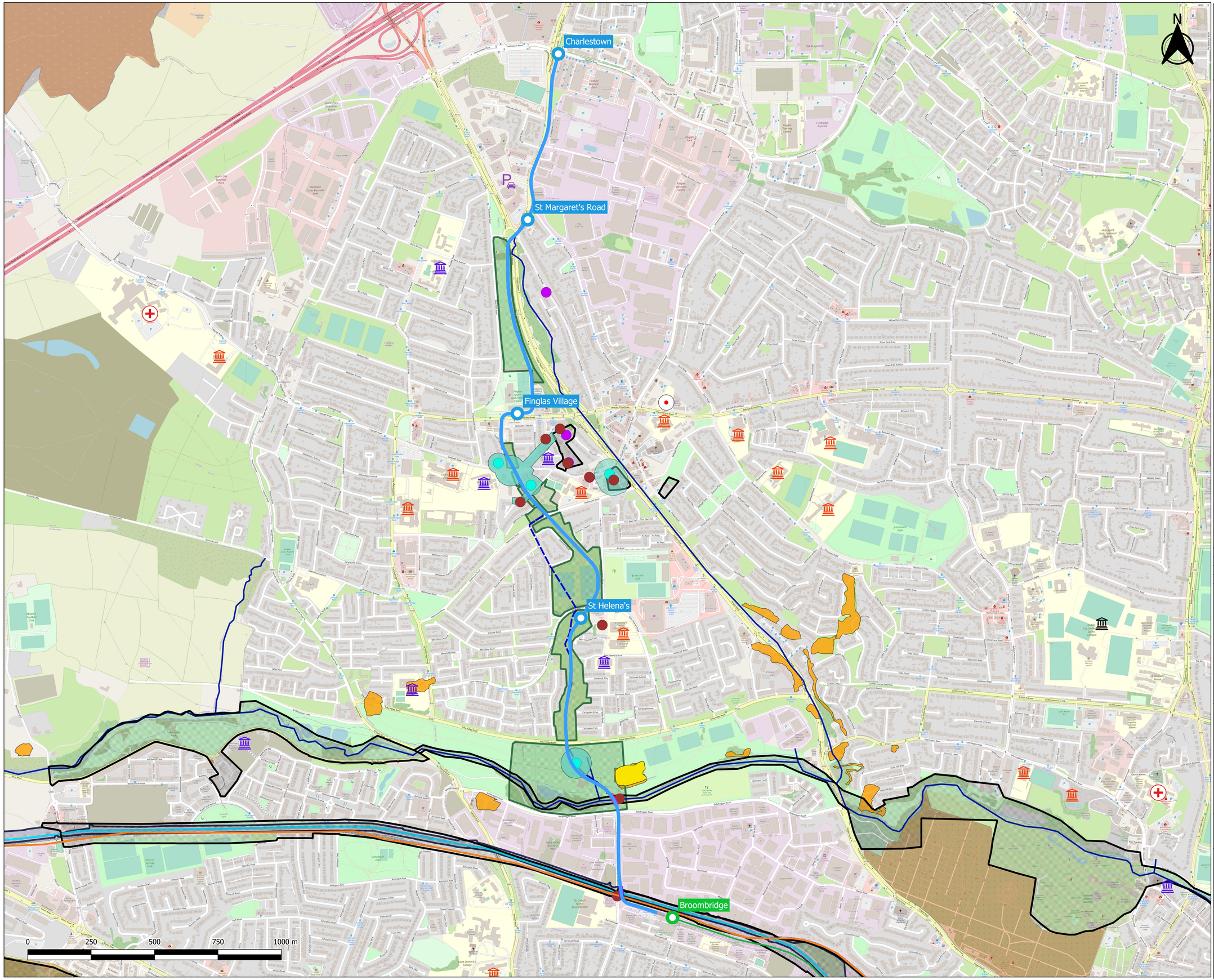
PROPOSED NEW BOUNDARY
(POSSIBLE LAND ACQUISITION)

DRAWING
20 OF 20

1:1000

0 50m 100m

Appendix B: Combined Constraints Drawing



Base map and data from OpenStreetMap and OpenStreetMap Foundation available from https://www.openstreetmap.org

Measurements for indicative purposes only. Dimensions not to be scaled from this map figure.

LEGEND

- Existing Luas Stops
- New Stops
- Park and Ride
- Existing Luas Green Line
- Luas Finglas (PR)
- New Bridge at Tolka River
- New Bridge at Broombridge
- Rail Network
- Tolka Valley Park Quarry (Historic Landfill Extent TBC)

Sensitive Receptors

- University
- Secondary Schools
- Primary Schools
- Health Centres
- Hospitals

Cultural Heritage

- Record of Protected Structures (RPS)
- Record of Monuments and Places (RMP)
- RMP Zone of Notification
- National Inventory of Architectural Heritage (NIAH): Built Heritage
- DCC Conservation Area (CA)

Surfacewater

- Canals
- Finglaswood Stream indicative
- River

Biodiversity Constraints

- Proposed Natural Heritage Areas (pNHA) (2015)
- Parks and Amenity Grassland

Geology

- Mineral Locations 08/18
- Pits and Quarries
- Geological Heritage Sites

Rev.	Suit.	Description	Drawn	Ch'kd	Date
P03	S3	Third Revision	AS	JF	23/02/22
P02	S3	Second Revision	NK/AS	JF	20/12/21
P01	S3	Initial draft for discussion	NK	JF	23/09/21

Client

Bonneagar Iompair Eireann
Transport Infrastructure Ireland

NTA
Údarás Náisiúnta Iompair
National Transport Authority

Client's Representative

BARRY TRANSPORTATION
egis

Barry Transportation Limited
Classon House, Dundrum Business Park, Dundrum Road, Dublin 14
www.jbbarry.ie

EGIS RAIL S.A
170 Avenue Thiers, 69006 Lyon, France
www.egis-group.com

Project

LUAS FINGLAS
PRELIMINARY DESIGN &
STATUTORY PROCESS

Map Title

Environmental Constraints Mapping

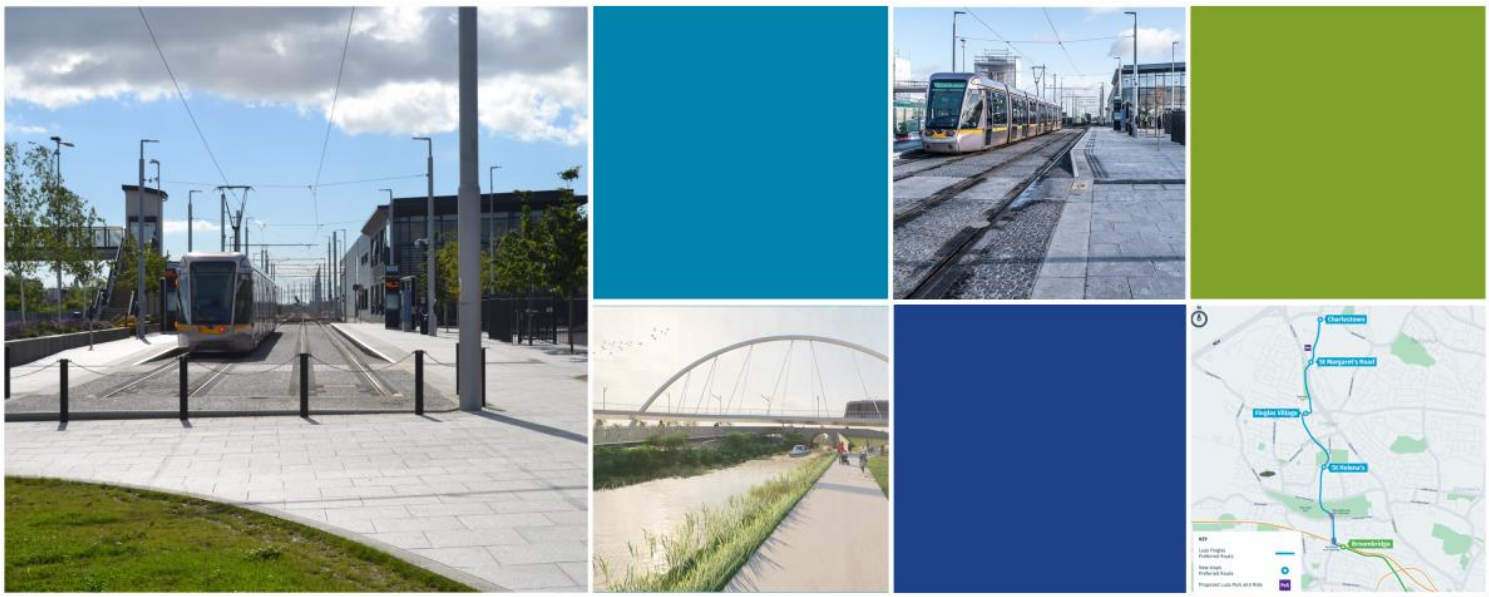
Drawn by :	AS	Date :	23/02/2022
Checked by	JF	Date :	23/02/2022
Approved by	ED	Date :	23/02/2022
Internal Project REF :	BT: 21401		
Scales :	1:6800 @ A1		
Stage :			

Drawing No.	Revision	Suitability Code
LDD101-BEV-GN-ROUT-XX-LE-00001	P03	S3

Transport Infrastructure Ireland

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Luas Finglas
Preliminary Design & Statutory Process



EIA Scoping Report – Summary of Submissions Received & Responses

BARRY TRANSPORTATION

egis

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SECTION 1: INTRODUCTION

1.1 Introduction

This report is the summary of submissions received following the publication of the Luas Finglas Environmental Impact Assessment Report (EIAR) Scoping Report and the subsequent responses to these submissions by the design team.

Scoping is a key stage of the EIA process and describes what information should be contained in the Environmental Impact Assessment Report (EIAR) and what methodology is proposed to gather and assess that information. The potential for likely significant effects throughout construction and operational phase of the proposed scheme are considered as far as possible at this scoping stage.

The EIA Scoping Report describes the approach to be taken in assessing each of the listed environmental topics, including a description of the study area for each topic; a description of the methodology to be used in assessing each topic including the desk-based, survey work and consultation to be undertaken to inform the assessment; as well as outlining the current baseline conditions and the likely impacts which will occur as a result of construction and operation of the proposed scheme.

The EIA Scoping Report consultation period ran for 6 weeks from 12th April 2022 to 24th May 2022.

Scoping will continue throughout the preparation of the Luas Finglas EIAR. If information or analysis emerges after the initial scoping stages indicating that additional issues should be considered, then these will also be included in the Environmental Impact Assessment. It is not however the intention to continually update and re-issue the EIA Scoping Report throughout this process.

1.2 Scheme Overview

Barry Transportation Egis JV (BTEG) have been appointed by Transport Infrastructure Ireland (TII) to undertake the Luas Finglas Preliminary Design and Statutory Process.

Luas Finglas involves the proposed extension of the Luas Green Line from its current terminus in Broombridge to Finglas. The Preferred Route (PR) for the proposed extension is approximately 4km long, includes four new stops, a cycle and pedestrian path along part of the route, a Park and Ride facility near St Margaret's Road, two bridges (Tolka River and Broombridge) and an extension to the tram storage area at the Hamilton Depot at Broombridge. The route will provide interchange opportunities with bus networks at three of the four proposed stops and to the rail network via the existing Luas Broombridge Stop.

Approximately 180m east of Broome Bridge there is an existing pedestrian footbridge linking the existing Luas Broombridge stop to the Irish Rail Broombridge Station platforms. Following consultation with Waterways Ireland, DCC and other key stakeholders it is the intention that this pedestrian footbridge will be extended north over the Royal Canal and rail line to improve accessibility with the Royal Canal (proposed Greenway) / development lands to both the Luas and Irish Rail platforms.

This decision was agreed after the Scoping Report was published for consultation. However, the EIAR project team is reviewing and assessing the need for additional surveys and any likely impacts will be addressed in its respective chapter of the EIAR. Figure 1-1 below indicates the location of the proposed extension of the existing pedestrian bridge to link the northside of the Royal Canal to both the Luas and IÉ platforms. Consultation with key consultees with regard to this pedestrian footbridge extension including Waterways Ireland, Irish Rail, Dublin City Council is ongoing.

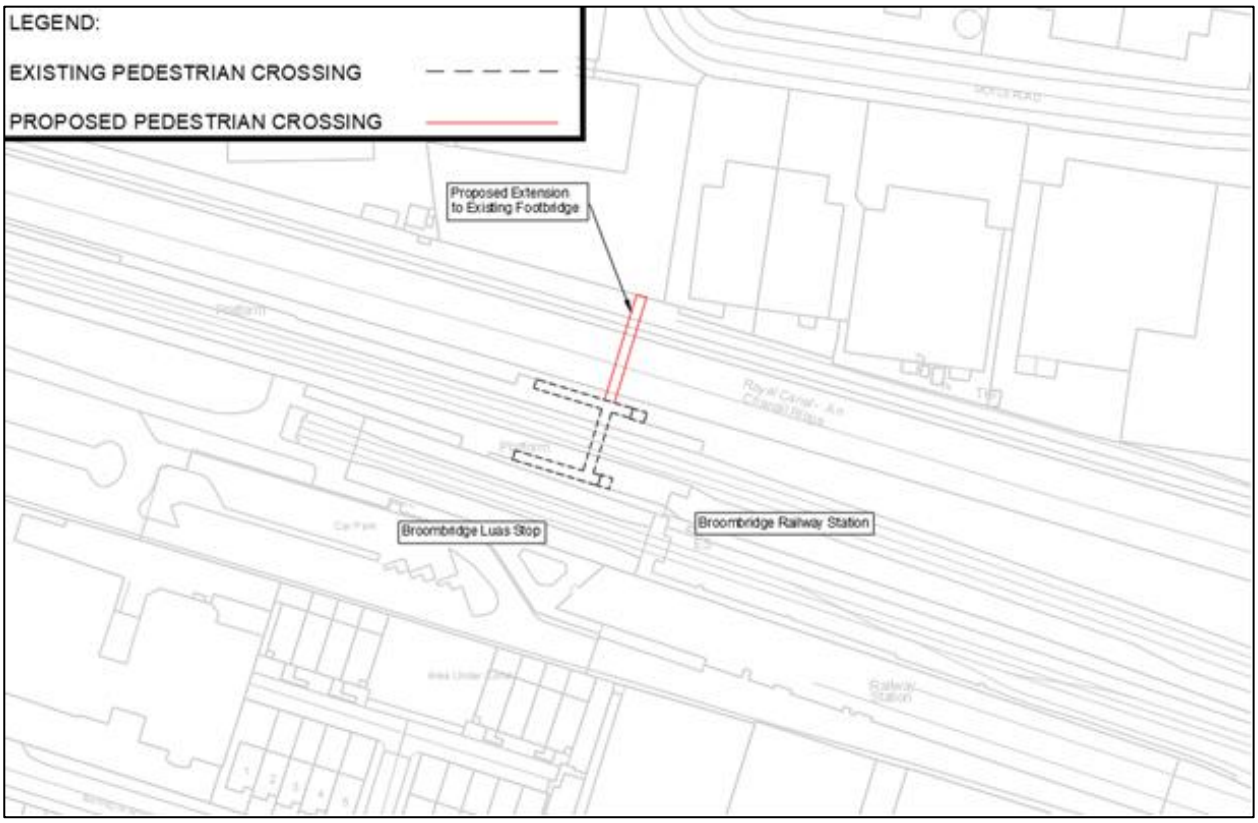

Figure 1-1: Proposed extension of the pedestrian footbridge over the Royal Canal

1.3 Next Steps

Scoping is an ongoing process that continues throughout the preparation of the EIAR.

The design going forward will be adapted and continually reviewed accounting for the feedback received, as described in the next sections, in tandem with the continued environmental assessment. If any new information or analysis comes to light that indicates that additional issues should be considered, it will feed back into the design iterative process.

SECTION 2: CONSULTEES

The following are the details of Luas Finglas' consultees and also the comments made by them in relation to the Environmental Impact Assessment (EIA) Scoping Report for Luas Finglas.

2.1 Scoping Consultees

A summary of the organisations consulted regarding the EIA Scoping Report for the Luas Finglas, including contact details and whether feedback was received or not, is shown in Table 2.1 below.

Table 2.1: EIA Scoping Consultees

Scoping Consultee	Contact Email	Email Sent 12.04.22	Reminder Sent 10.05.22	Date of Response & Response Type
Age Action	info@ageaction.ie	Yes	Yes	No response received
An Bord Pleanála	bord@pleanala.ie	Yes	Yes	No response received
Association of Consulting Engineers	info@acei.ie	Yes	Yes	No response received
An Chomhairle Ealaíon (the Arts Council)	planning@artscouncil.ie.	Yes	Yes	No response received
An Garda Síochána	traffic_dv@garda.ie	Yes	Yes	24.05.2022 / Email
An Taisce	info@antaisce.org	Yes	Yes	No response received
An Post	Maurice.Blake@anpost.ie	Yes	Yes	No response received
Badgerwatch Ireland	bernadettembarrett@gmail.com	Yes	Yes	No response received
Bat Conservation Ireland	admin@batconservationireland.org	Yes	Yes	Acknowledgement
BirdWatch Ireland	info@birdwatchireland.ie	Yes	Yes	No response received
Bus Éireann	info@buseireann.ie	Yes	Yes	Automated response
CIÉ Group (Irish Rail, Dublin Bus, Bus Éireann)	info@cie.ie	Yes	Yes	No response received
Climate Change Advisory Council	info@climatecouncil.ie	Yes	Yes	No response received
Coach and Tourism Council	info@cttc.ie	Yes	Yes	No response received

Scoping Consultee	Contact Email	Email Sent 12.04.22	Reminder Sent 10.05.22	Date of Response & Response Type
Coillte	info@coillte.ie	Yes	Yes	No response received
Commission for Railway Regulation	info@crr.ie	Yes	Yes	No response received
Commission for Regulation of Utilities	info@cru.ie	Yes	Yes	No response received
Construction Industry Federation	info@cif.ie	Yes	Yes	No response received
Cycling Ireland	programmes@cyclingireland.ie	Yes	Yes	No response received
DAA	info@daa.ie	Yes	Yes	Automated response
Development Applications Unit (DAU)	manager.dau@housing.gov.ie	Yes	No	Acknowledgement
Department of Housing, Local Government and Heritage	qcsofficer@housing.gov.ie	Yes	No	24/05/2022 / Letter
Department of Agriculture, Food and the Marine	info@agriculture.gov.ie	Yes	No	Acknowledgement. No observations
Department of Enterprise, Trade and Employment	info@enterprise.gov.ie	Yes	No	No response received
Department of Environment, Climate and Communications	customer.service@decc.gov.ie	Yes	No	23/05/2022 / Email
Department of Justice	info@justice.ie	Yes	No	Acknowledgement
Department of Rural and Community Development	info@drcd.gov.ie	Yes	No	Acknowledgement
Department of Public Expenditure and Reform	pressoffice@per.gov.ie	Yes	No	Acknowledgement
Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media	ministers.office@tcagsm.gov.ie	Yes	No	Automated response
Department of Transport	info@transport.gov.ie	Yes	No	Automated response
Department of Education	info@education.gov.ie	Yes	No	No response received
Department of the Taoiseach	webmaster@taoiseach.gov.ie	Yes	No	No response received
Dublin Bus	info@dublinbus.ie	Yes	Yes	Automated response

Scoping Consultee	Contact Email	Email Sent 12.04.22	Reminder Sent 10.05.22	Date of Response & Response Type
Dublin Chamber	fergus@dublinchamber.ie	Yes	Yes	No response received
Dublin City Council	brendan.obrien@dublincity.ie	Yes	Yes	14/06/2022 / Report
Dublin City Fire Brigade	fire@dublincity.ie	Yes	Yes	Automated Response
Dublin City University	ioe@dcu.ie	Yes	Yes	No response received
Dublin Civic Trust	info@dublincivictrust.ie	Yes	Yes	No response received
Dublin Commuter Coalition	Info@dublincommuters.ie	Yes	Yes	No response received
Dublin Cycling Campaign	kevinb@dublincycling.com	Yes	Yes	No response received
Dublin City Local Enterprise Office	info@leo.dublincity.ie	Yes	Yes	No response received
Dublin Port Company	info@dublinport.ie	Yes	Yes	No response received
Dublin Town	info@dublintown.ie	Yes	Yes	No response received
Dun Laoghaire - Rathdown County Council	info@dlrcoco.ie	Yes	Yes	Acknowledgement
Eastern and Midlands Regional Assembly	info@emra.ie	Yes	Yes	No response received
Eirgrid	info@eirgrid.com	Yes	Yes	No response received
Enterprise Ireland	client.service@enterprise-ireland.com	Yes	Yes	No response received
Environmental Protection Agency	eiaplanning@epa.ie	Yes	Yes	Acknowledgement
Ervia - Gas Networks Ireland	networksinfo@gasnetworks.ie	Yes	Yes	No response received
ESB	esbnetworks@esb.ie	Yes	Yes	Automated Response
Fáilte Ireland	planning.applications@faiteireland.ie	Yes	Yes	No response received
Fingal County Council	matthew.mcaleese@fingal.ie david.murray@fingal.ie Paul.Carroll@fingal.ie	Yes	Yes	No response received
Fingal Chamber	info@fingalchamber.ie	Yes	Yes	No response received
Fingal Local Enterprise Office	info@leo.fingal.ie	Yes	Yes	No response received

Scoping Consultee	Contact Email	Email Sent 12.04.22	Reminder Sent 10.05.22	Date of Response & Response Type
Friends of the Earth	info@foe.ie	Yes	Yes	Automated Response
Friends of the Irish Environment	admin@friendsoftheirishenvironment.org	Yes	Yes	No response received
Geological Survey of Ireland	GSIPlanning@gsi.ie	Yes	Yes	23/05/2022 / Letter
Housing Agency IBEC	info@ibec.ie	Yes	Yes	No response received
Health and Safety Authority	contactus@hsa.ie	Yes	Yes	Automated Response
Health Service Executive	nationalhr@hse.ie	Yes	Yes	No response received
Heritage Council	mail@heritagecouncil.ie	Yes	Yes	No response received
Inland Fisheries Ireland	info@fisheriesireland.ie	Yes	Yes	11/05/2022 / Letter
Irish Aviation Authority	info@iaa.ie	Yes	Yes	No response received
Irish Rail	customercare@irishrail.ie	Yes	Yes	Automated Response
Irish Water	chsmith@water.ie	Yes	Yes	No response received
Irish Deaf Society	info@irishdeafsociety.ie	Yes	Yes	No response received
Irish Farmers Association	kells@ifa.ie	Yes	Yes	No response received
Irish Georgian Society	info@igs.ie	Yes	Yes	No response received
Irish Planning Institute	info@ipi.ie	Yes	Yes	Automated Response
Irish Raptor Study Group	secretary@irsg.ie	Yes	Yes	No response received
Irish Road Haulage Association	info@irha.ie	Yes	Yes	No response received
Irish Tourist Industry Confederation	info@itic.ie	Yes	Yes	No response received
Irish Wheelchair Association	info@iwa.ie	Yes	Yes	No response received
Irish Wildlife Trust	info@iwt.ie	Yes	Yes	Automated Response
Irish Brent Goose Research Group	kcolhoun@btinternet.com	Yes	Yes	No response received
Local Authority Waters and Communities Office	info@lawaters.ie	Yes	Yes	No response received

Scoping Consultee	Contact Email	Email Sent 12.04.22	Reminder Sent 10.05.22	Date of Response & Response Type
Local Government Management Agency	info@lgma.ie	Yes	Yes	No response received
Luas	info@luas.ie	Yes	Yes	Automated response
National Council for the Blind Ireland	info@ncbi.ie	Yes	Yes	24/05/2022 / Email
National Disability Authority	nda@nda.ie	Yes	Yes	Automated Response
National Youth Council of Ireland	info@nyci.ie	Yes	Yes	No response received
Retail Excellence Ireland	info@retailexcellence.ie	Yes	Yes	No response received
Sustainable Energy Authority of Ireland	info@seai.ie	Yes	Yes	No response received
The Irish Small and Medium Enterprise Association	info@isme.ie	Yes	Yes	No response received
TransDev	Dervla.Brophy@tdlr.ie	Yes	Yes	Acknowledgement. No observations
Tree Council of Ireland	trees@treecouncil.ie	Yes	Yes	No response received
Waterways Ireland	info@waterwaysireland.org	Yes	Yes	24/05/2022
Young Planners Network	ypn@ipi.ie	Yes	Yes	No response received

2.2 Submissions Received & Responses

Table 2.2: Consultation Responses

EIAR Scoping Report Consultee	Date of Consultee Response	EIAR Chapter / Topic	Full Consultation Response	EIAR Project Team Response
An Garda Síochána	24/05/2022	Material Assets (Traffic and Transport)	Primary Area of concern: Traffic management during the construction of the Luas line and associated infrastructure - The line will cross over the railway line at Broombridge on the East side of the current road bridge. The line will cross the Ballyboggan Road and Tolka River. There will be a signal-controlled junction at Tolka Valley Road. There will be an infrastructure build for the Luas Stops at St Helena's Road, Mellowes Road, St Margaret's Road at Lidl and at the terminus at Charlestown Shopping Centre. These infrastructural changes will require a traffic management intervention.	Noted: Traffic Management during construction will be assessed as part of a dedicated EIAR Traffic & Transportation Chapter. This will be further supplemented by a Construction Traffic Management Plan.
An Garda Síochána	24/05/2022	Noise and Vibration	Primary Area of concern: Noise Pollution – The green route Luas line will extend from Broombridge Station to Charlestown Shopping Centre. There will be four additional Luas stops including a terminus at Charlestown Shopping Centre. There is a Luas stop scheduled at Mellowes Road adjacent to Finglas Garda Station. The Luas line will travel through the carpark of Finglas Garda Station. Mitigations will be required to ensure that the noise levels are retained within the current Regulations to ensure a safe place of work for the employees at Finglas Garda Station.	Finglas Garda Station will be assessed as a noise sensitive location to ensure that noise levels during both construction and operational phases of Luas Finglas are within the adopted standards for the development. These standards will be fully defined within the EIAR and are based on international guidance on the assessment of noise on the environment.
An Garda Síochána	24/05/2022	Material Assets (Infrastructure and Utilities)	Primary Area of concern: The requirement to identify an alternative location for the DMR West Divisional PEMS Store from the current location at the carpark of Finglas Garda Station. The proposed site for the re-location is at Cabra Garda Station. A decision is required in respect of the retention of responsibility for the realignment of the carpark at Finglas Garda Station and the	Noted: Liaison to be maintained with Garda Estate Management

EIAR Scoping Report Consultee	Date of Consultee Response	EIAR Chapter / Topic	Full Consultation Response	EIAR Project Team Response
			build for the PEMS Store at Cabra Garda Station. Liaison will be maintained with Garda Estate Management.	
Dublin City Council (DCC)	13/06/2022	Planning and Policy context	The "Dublin City Development Plan 2016-2022" (the current Development Plan) is under review. The process for making the "Dublin City Development Plan 2022-2028" (the new Development Plan) is currently on-going and it is anticipated that the new Development Plan will be made in the 4th quarter of 2022. DCC strongly advise that the EIAR, including the various assessments and studies take account of the new Development Plan when this is made. As noted in a previous submission, the concept of Transport Orientated Development (TOD) is a central policy tenant of the new Development Plan. As a result, DCC will be promoting the TOD potential of existing and planned public transport infrastructure by seeking to maximise the redevelopment/regeneration opportunities within proximity to transport nodes associated with the Project. While not applying for development as part of the Railway Order (RO) application, TII should collaborate closely with the NTA (where necessary) to demonstrate that the design of the stations and surrounding land use context should be future-proofed taking cognisance of potential future development. In particular, DCC advises that a new extended Strategic Development and Regeneration Area (SDRA) is proposed for Finglas village and its environs, to include the Jamestown lands (which are already subject to a SDRA designation in the current Development Plan, as per Variation no. 33). The proposed SDRA sets out a number of guiding principles for the regeneration of the wider area, to include various public realm proposals, and identifies a number of potential development sites. When adopted, it is important that the EIAR considers this policy, including anticipated future development and population growth in the area, throughout all relevant sections and studies.	Reference to updated Plan and future proofing the scheme is noted. The scheme design will continue to be developed in consultation with DCC.

EIAR Scoping Report Consultee	Date of Consultee Response	EIAR Chapter / Topic	Full Consultation Response	EIAR Project Team Response
Dublin City Council (DCC)	13/06/2022	Planning and Policy context	It is advised that the "Guidelines on the information to be contained in Environmental Impact Assessment Reports" (May 2022) published by the Environmental Protection Agency (EPA) be consulted and inform the preparation of the EIAR.	The update EPA guidelines issued following publication of the EIAR Scoping report will be utilised in production of the Luas Finglas EIAR.
DCC	13/06/2022	Procedural matters	Redline and Works in Public Realm -further clarification is required regarding the legal red line boundary around each element of the works and what proposals for DCC lands/street network will be included in the Project. TII is advised that the red line boundary should include any alterations to lands in DCC control that are necessary to facilitate the development. Clarity is required regarding cycle lane infrastructure and their wider connectivity. Clarity is also required regarding the proposed timing of works on lands in DCC control and what legal agreements and/or consents may be required to firstly include these lands in the RO application and secondly undertake these works as part of the Project.	Comments regarding the red line boundary are noted and will continue to be developed through consultation with DCC in advance of Railway Order / EIAR. Cycle Lane Infrastructure: Comments regarding cycle lane infrastructure and connectivity are noted and will continue to be developed through consultation with DCC in advance of the Railway Order / EIAR. Timing of the Works comments are noted and will continue to be developed through consultation with DCC in advance of Railway Order / EIAR.
DCC	13/06/2022	Procedural matters	Redline and Works in Public Realm - Where works are proposed to be undertaken on lands in DCC's control, these should be to DCC requirements and in particular should comply with Construction Standards for Roads and Street Works in Dublin City. Where any works are proposed in the public realm on lands in DCC control, clarity is required regarding what areas are intended to remain in charge or to be taken in charge post construction.	Redline and Works in Public Realm comments are noted and will continue to be developed through consultation with DCC in advance of Railway Order / EIAR.
DCC	13/06/2022	Procedural matters	Land Title, Acquisitions and Compensation - Where DCC land is impacted by the Project, the following should apply: i. DCC should be compensated for its lands utilised for the Project (including tenanted and leased properties), whether title is/is not taken, in accordance with the Acquisition of Land (Assessment of Compensation) Act, 1919,	Land Title, Acquisitions and Compensation will be dealt with as part of the Railway Order Process. It is not appropriate for the assessment of Environmental Impacts as required by the EIAR Scoping process. i. As above

EIAR Scoping Report Consultee	Date of Consultee Response	EIAR Chapter / Topic	Full Consultation Response	EIAR Project Team Response
			as amended. ii. If title to DCC land is being transferred to TII or another, DCC, in addition to compensation under (i) above, should retain the air-rights for development purposes. iii. Appropriate accommodation works should be provided at DCC properties affected by the Project. iv. Where alterations are proposed to the road network and/or alternative access and parking arrangements are sought, TII should clearly identify which of the lands affected are public or private.	ii. As above iii. Yes, Appropriate mitigation measures and accommodation works will be agreed at DCC properties affected by the Project and outlined in the EIAR. iv. Where alterations are proposed to the road network and/or alternative access and parking arrangements are proposed these will be clearly identified as public or private.
DCC	13/06/2022	Description of proposed Scheme	It is considered that the scope and extent of the works that form part of the project requires further clarification. These clarifications are imperative as they will inform the assessments that will be included within the EIAR. In particular, the extent and nature of public realm works need to be clarified. Further clarification is also required regarding cycle lanes and associated infrastructure, including their wider connectivity into the surrounding area and to the existing/proposed network. Clarity regarding the phasing of construction works is also required in order to inform the assessments, in particular the construction traffic assessment, which currently references a worst case scenario assessment approach in section 16.3.1 of the Scoping Report. Once operational, it is expected that the proposed scheme will be capable of operating a tram every 7.5 minutes. It is not clear if this is the starting frequency at first operation or whether frequency is proposed to be increased over time. This requires clarity.	Noted, the scope and extent of the works that form part of the project will be fully detailed in the Description of the Scheme Chapter of the EIAR. For the purposes of the EIAR Scoping report sufficient information / design has been provided to allow a reasonable plan to inform the assessments that will be included within the EIAR. The extent and nature of public realm works will be fully detailed in the Railway Order and EIAR Drawings. Noted: Scoping will continue throughout the preparation of an EIAR and through ongoing consultation with DCC. If information or analysis emerges after this initial scoping stage which indicates that additional issues should be considered, then these will be included. Cycle lanes and associated infrastructure have been provided in the EIAR Scoping report - notwithstanding detailed design development it is deemed that these design developments would not overly influence the environmental impact assessment methodology developed at this stage. The methodology identified in proposing to identify the reasonably foreseeable worst-case scenario (Section 16.3.1 of the Scoping Report) as a context for 'likely significant effects' is consistent with EPA Guidelines.

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				The operational detail will be fully detailed in the operational section of the Project description and will be utilised by all specialists in their assessments.
DCC	13/06/2022	Human Health	It is recommended that consideration be given to the potential effect public lighting could have on human health, in particular LED light sources. Public Health England was commissioned by the Chartered Institution of Building Services Engineers and the Society of Light and Lighting to produce a report on "Human responses to lighting based on LED lighting solutions - CRCE-RDD 01-2016". This report looks at street lighting and considers the potential effects of colour temperature, flicker and spectrum on health. It is recommended that this publication be included in the list of publications cited in this section.	The referenced document will be considered alongside the more recent EU publication below (2019). https://health.ec.europa.eu/system/files/2019-02/scheer_o_011_0.pdf
DCC	13/06/2022	Human Health	Consideration should also be given to the potential impacts of any contaminated land within the study area.	The Human Health assessment methodology will make reference to the environmental pathways through which Human Health (and any other applicable topics e.g. land and soils, waste…) could be affected, such as air, water or soil which will include taking account the results of Land & Soils (including any contaminated land) assessments.
DCC	13/06/2022	Population	The potential impacts of flooding downstream on the population should be considered in this section and cross referenced to Section 8.3. Consideration should also be given to pollution and the impacts on water quality and cross reference to Section 8.3.	This impact will be addressed in the Hydrology chapter of the EIAR rather than the Population chapter. However, the Population chapter of the EIAR will cross reference where there is an impact on general amenity and accessibility. The Flood Risk Assessment will consider the downstream flooding risks to the population. The cross referencing between the impacts on water quality and the population chapter is noted and will be incorporated into the production of the EIAR.
DCC	13/06/2022	Biodiversity	The "Dublin City Habitat Map" (2020) identified Tolka Valley Park as the third most important area for biodiversity in the city after North Bull Island and the Phoenix Park. This is due	Biodiversity sensitivities are noted and will be addressed in the assessment of Biodiversity in the EIAR Chapter and NIS. The reference to the "National Biodiversity Action Plan" and no net loss of biodiversity is noted. We are currently adopting

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			to the wetlands, woodlands and terrestrial and freshwater species found in the park. The area for the proposed construction of an approximate 70-metre long and 12-metre wide bridge is in a sensitive area within Tolka Valley Park, which contains species in need of strict protection, including bat species (Annex IV); otter (Annexes II and IV); lamprey species (Annexes II and V); and priority habitat for Kingfisher (Annexes I and II) and eel (Annex II). The scheme also has the potential to impact Light-bellied Brent geese and species found in the ICW and ponds. The construction of the bridge will require removal of a section of the woodland. The project also requires the widening and crossing of a proposed Natural Heritage Area (pNHA) across the Royal Canal, which the National Parks and Wildlife Service (NPWS) identified as an important site for breeding otter in the city. Here there are also important populations of bat species, flora, and protected badger and white clawed crayfish. Under the "National Biodiversity Action Plan", there should be no net loss of biodiversity.	(and trialling) the Natural England biodiversity metric which is a habitat-based approach used to minimise the schemes impact on biodiversity.
DCC	13/06/2022	Biodiversity	In addition to the "Dublin City Biodiversity Action Plan", the "Dublin Tree Strategy 2021-2025" should be consulted and referenced. The Dublin City Tree Officer should be consulted.	Reference to inclusion of Dublin City Biodiversity Action Plan noted. Dublin City Tree Strategy referenced in the Landscape Chapter. The latest DCC Tree strategy will be considered as part of the EIAR. The Dublin City Tree Officer has been consulted and site walk over undertaken with members of the design team.
DCC	13/06/2022	Biodiversity	In addition to the resources noted in the EIA Scoping Document, the following survey data should be considered: 1. "Dublin City Otter Survey" (2019). 2. "Otter Survey along the Royal Canal" (2021-2022) – commissioned as part of the Royal Canal Greenway project. 3. "Bat surveys along the Royal Canal" (to be updated in 2022) – commissioned as part of the Royal Canal Greenway	Design team (BTEG) including Project Ecologist will continue to liaise with DCC Biodiversity Officer to establish robust baseline biodiversity data.

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			project. 4. “Aquatic plant surveys” – commissioned as part of the Royal Canal Greenway project. 5. Comments from NPWS in relation to the proposed Royal Canal Greenway project. 6. IAS surveys conducted by DCC Parks. 7. Bird monitoring data collected by the Irish Midlands Ringing Group. 8. Location of dipper boxes installed along the River Tolka by the Irish Midlands Ringing Group. 9. River birds survey data – to be collected by Birdwatch Ireland from autumn 2022. 10. “Dublin City Swift Survey” (2021).	
DCC	13/06/2022	Biodiversity	The following organisations should be consulted: 1. Irish Midlands Ringing Group. 2. Tolka Anglers Association (for information on IAS location and freshwater species data).	Design team (BTEG) including Project Ecologist will continue to liaise with DCC Biodiversity Officer to initiate consultation with referenced groups.
DCC	13/06/2022	Biodiversity	In addition to the impacts outlined in the EIA Scoping Document, the EIAR should include distance(s) from construction works to locations of breeding sites, such as holts/roosts/dens/nests of relevant protected species, and any Brent goose feeding sites, and the proposed dates (period in the year) when the works are due to take place. It is recommended that consideration be given to the effects of construction work (vibrations) on freshwater species.	Noted: distances from construction works and any implications regarding proposed construction dates will be required for the development of specific mitigation measures. Vibrations potential regarding potential impacts on freshwater species noted and will be considered where applicable.
DCC	13/06/2022	Biodiversity	The assessment should also consult the reference sections of the following documents: 1. Dublin City Otter Survey (2019) 2. NIEA. (2014) Otters and Development. Northern Ireland Environment Agency. It is also recommended that the assessment methodology reference publications by the Institution of Lighting Professionals (ILP) https://theilp.org.uk/.	The Biodiversity Guidelines section will be included to make reference to these publications.

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DCC	13/06/2022	Biodiversity	Mammals data/survey - the Royal Canal was resurveyed in 2022 for the presence of otter dens (i.e., holts) and should be consulted in addition to the data collected. The survey method for this study involved the use of boats and located holts.	Design team (BTEG) including Project Ecologist will continue to liaise with DCC Biodiversity Officer to utilise existing surveys to ensure a robust baseline.
DCC	13/06/2022	Biodiversity	Bats Surveys - Surveys should include for summer roosts, maternal roosts and hibernation roosts. Existing bridges adjacent to the proposed new Luas bridges plus the next bridge(s) upstream and downstream should be surveyed for roosting bats. Trees along the banks near the proposed works should also be checked for roosting bats or bat roosting potential, along with any trees earmarked for felling.	Agreed. Bat surveys currently being undertaken by the Luas Finglas team are as per DCC proposal.
DCC	13/06/2022	Biodiversity	Wintering Birds – standard now is to have two years' worth of survey data for wintering birds. Therefore, follow up surveys of Brent Goose should be conducted during the winter of 2022-2023 unless relevant data can be sourced from Birdwatch Ireland or the Irish Brent Goose Research Group.	Noted: Follow up surveys of Brent Goose are being conducted during the winter of 2022-2023. Further attempts will again be made to source relevant data from Birdwatch Ireland or the Irish Brent Goose Research Group also.
DCC	13/06/2022	Biodiversity	Aquatic flora – these studies were conducted as part of the Royal Canal Greenway and should be consulted for any relevant information.	Design team (BTEG) including Project Ecologist will continue to liaise with DCC Biodiversity Officer to establish robust baseline biodiversity data.
DCC	13/06/2022	Biodiversity	Reptile surveys – data from the Royal Canal Greenway should be consulted in relation to Common Lizard, which has been recorded along the Royal Canal. This relates to impacts from the construction of the Luas bridge over the Royal Canal.	Design team (BTEG) including Project Ecologist will continue to liaise with DCC Biodiversity Officer to establish robust baseline biodiversity data.
DCC	13/06/2022	Biodiversity	AA process - the in-combination effects of both the Royal Canal Greenway Amendment and this proposed development should be considered due to the overlap along the Royal Canal	Agreed - This will be considered in the Cumulative Effects assessment of both the EIAR and the AA process.
DCC	13/06/2022	Biodiversity	Pollution is a significant risk to biodiversity in the Tolka during construction and operation phases. This should be appropriately addressed.	Agreed, this is referenced in the EIAR Scoping report and will be considered through assessment of the environmental pathways through which the Tolka could be affected e.g. air, water, or soil.

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DCC	13/06/2022	Biodiversity	Daubenton's bat use the Tolka River and Royal Canal and are particularly sensitive to artificial light. Inappropriate lighting can result in the loss of feeding sites and cause bats to become entombed in roosts. Night-time lighting, particularly bright LED lighting, can also impact roosting and migratory birds (geese, swallows, swifts) as well as other nocturnal species, such as badger. The EIA Scoping Document notes using directional cowls for mitigation to prevent light spill. However, further measures should be outlined in the EIAR considering the following guidelines and the existing bat friendly lighting that is used along the River Tolka in the Cardiffsbridge side of Tolka Valley Park. 1. Lighting for Bats (Guidance Note 08/18 – "Bats and artificial lighting in the UK, published by Bat Conservation Trust and Institution of Lighting Professionals 2018"). 2. Bat Conservation Ireland's Bats & Lighting (2010) "Guidance Notes for: Planners, engineers, architects and developers". Other mitigation measures in relation to public lighting should be outlined which may include the use of appropriate colour temperature light sources, dimming lighting at certain times to facilitate feeding, the use of sensor lights and utilising remote technology to monitor, control and program street lighting.	Reference to artificial lighting noted and the existing bat friendly lighting. Coordination between the project ecologist and the lighting expert will work to minimise impacts in consultation with DCC. Reference to documentation will be included in EIAR
DCC	13/06/2022	Biodiversity	There are planned works affecting the Tolka Valley Integrated Constructed Wetland. It is vital that any impacts are fully mitigated, to the satisfaction of DCC, to protect the Tolka and downstream water bodies.	An Integrated Constructed Wetland Specialist has been engaged to assist in the design of the mitigation measures to ensure design protects the Tolka and downstream water bodies.
DCC	13/06/2022	Biodiversity	Contaminated lands / historic dump locations should be established prior to construction and mitigation measures introduced.	Noted: A detailed intrusive Ground Investigation and associated laboratory environmental testing has been undertaken to establish extent of historic dump.
DCC	13/06/2022	Biodiversity	The cumulative effects of both the Royal Canal Greenway (and Amendment) and this proposed development should be considered due to the overlap along the Royal Canal and close proximity of the Royal Canal and Tolka Valley Park.	Noted: This will be considered as part of the Cumulative effects Chapter of the EIAR. BTEG will continue to liaise with DCC in particular with regard to projects at Tolka Valley and the Royal Canal.

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			There is the potential for cumulative impacts to the same individuals (such as otter, badger and bat) as well as populations of species.	
DCC	13/06/2022	Water	Extra flows into the Finglaswood Stream surface water pipeline may need to be addressed with preference given to hydro morphological interventions including daylighting this stream and the use of other sustainable drainage systems (SuDS).	It is intended that the design and associated mitigation (including all potential hydro morphological interventions) will continue through the development of the design in consultation with DCC and based on the findings of associated surveys and investigations.
DCC	13/06/2022	Water	A Section 50 licence is required from the OPW for all works to bridges and culverts on watercourses.	Section 50 licence will be applied for from OPW for bridge structures
DCC	13/06/2022	Water	There is the potential for contamination from existing historic dump areas.	Potential Impacts associated with the historic landfill and the potential for the Luas Finglas site works / interfaces (e.g., new drainage systems) will be fully assessed by the design team (and subsequently in EIAR) through the detailed Ground Investigation, soils / groundwater monitoring and associated laboratory environmental testing.
DCC	13/06/2022	Water	It is considered that surface water sampling be conducted quarterly over 3 years rather than just over one year.	Water Sampling will be extended to ensure 2 years of water sampling which our specialist team have deemed sufficient to establish a robust baseline. Note: We will continue to engage with DCC and utilise the existing bank of water quality analysis within the study area to supplement
DCC	13/06/2022	Water	In general, the implementation of SuDS measures can alleviate concerns relating to flooding and water quality and should be introduced throughout the scheme.	SuDS measures have been indicated on the preliminary design proposals and will be further developed during the reference design stage in consultation with DCC for inclusion and assessment in the EIAR.
DCC	13/06/2022	Water	There are planned works affecting the Tolka Valley Integrated Constructed Wetland. It is vital that any impacts are fully mitigated, to the satisfaction of DCC, to protect the Tolka and downstream water bodies.	An Integrated Constructed Wetland Specialist has been engaged to assist in the design of the mitigation measures to ensure design protects the Tolka and downstream water bodies.
DCC	13/06/2022	Water	It is noted that potential impacts on the surface water drainage networks are discussed in Chapter 15. Surveys and	Noted. Surveys and mitigation works required relating to the existing surface water drainage systems will be undertaken in consultation with DCC.

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			mitigation works need to be carried out by TII to DCC's satisfaction.	
DCC	13/06/2022	Land Take	It is recommended that engagement with DCC continue in order to clarify the potential impact that the project may have on the delivery of future DCC housing projects and also to identify potential opportunities for development.	Agreed, it is envisaged that engagement will continue with DCC throughout the development of the Railway Order Process including design development.
DCC	13/06/2022	Land Take	It is recommended that a planning search be undertaken to identify any permitted developments that may be affected by the project.	Agreed, this will be undertaken as part of the cumulative impact assessment
DCC	13/06/2022	Air Quality	No reference is made to potential for construction traffic impacts. Cross reference to Chapter 16 is required before this can be scoped out.	Section 11.3.1 of the Scoping Report references the construction phase air quality impacts including emissions from HGVs and on-site construction plant and equipment. The intention is that this will not be scoped out.
DCC	13/06/2022	Climate	DCC welcomes the inclusion of a dedicated chapter that addresses climate. While it is important that this chapter provides a comprehensive assessment, it is also acknowledged that individual chapter areas should also incorporate climate into their respective assessments. Therefore, the EIAR should include appropriate cross referencing, where relevant.	Individual chapter areas will incorporate climate into their respective assessments where applicable. i.e., Water Chapter will incorporate climate change in any Flood Risk Assessments undertaken. The interactions chapter of the EIAR will clearly highlight where interactions with climate occur.
DCC	13/06/2022	Climate	Overall, this chapter should provide a much stronger focus on climate adaptation measures. It is recommended that consideration be given to the incorporation of nature based solutions and how this could increase resilience to climate change.	Climate change mitigation and adaptation measures as referenced elsewhere in the document i.e. nature based solutions, resource management, flood resilience etc. will be developed in the EIAR in-line with most recent technical guidance on climate-proofing of infrastructure projects.
DCC	13/06/2022	Climate	The construction and operational potential impacts of an extreme weather event should be given consideration in the EIAR, i.e., flooding, hot or cold weather.	Section 20 of the Scoping Report - Risk of Major Accidents & Disasters refers to extreme weather events with regard to flooding. This will also be assessed as part of the Climate chapter of the EIAR.
DCC	13/06/2022	Climate	Climate adaptation measures should be considered	The principles of Sustainable development and Circular economy adopted for the Luas Finglas scheme will be to the forefront of the assessment.

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DCC	13/06/2022	Climate	The assessment methodology should provide a stronger focus on climate adaptation measures.	Climate adaptation measures will be considered in the Climate Mitigation Section of the EIAR and also as referenced elsewhere in the document i.e., nature based solutions, resource management, flood resilience etc.
DCC	13/06/2022	Noise and Vibration	No reference is made to the potential construction traffic impacts. Cross-referenced with Chapter 16 Traffic and Transport is required before can be scoped out.	Reference is made in Chapter that "Construction traffic haul routes will also be assessed as part of the study area for this phase of the works". It is not the intention to scope this out. Construction traffic impacts will be assessed fully in the Noise & Vibration EIAR chapter.
DCC	13/06/2022	Material Assets (Infrastructure and Utilities)	Potential impacts on the surface water drainage network, surveys and mitigation works need to be carried out to DCC's satisfaction	Noted. This will be agreed in consultation with DCC with proposed works to the s/w drainage network detailed in the Utilities Section of the Description of Proposed Scheme chapter of the EIAR. Potential Impacts, surveys, mitigation etc. will be addressed in the Material Assets – Infrastructure and Utilities of the EIAR (and Water Chapter where required).
DCC	13/06/2022	Material Assets (Infrastructure and Utilities)	Consider beneficial impacts of SuDS, maximising opportunities to make enhancements to the surface water network	Noted. The SuDs proposed for the scheme will continue to be agreed in consultation with DCC and ultimately detailed in the Description of Proposed Scheme chapter of the EIAR. Potential opportunities for enhancements to the surface water network will be considered by the project ecologist/ water specialist (addressed in the Biodiversity and Water chapters respectively).
DCC	13/06/2022	Material Assets (Traffic and Transport)	No reference to Greater Dublin Area Cycle Network Plan despite reference to implementing cycle tracks alongside the Luas.	The Greater Dublin Area Cycle Network Plan is referenced in Population Section 6 of the EIA Scoping Report. Full cross referencing between environmental factors will be addressed in the EIAR.
DCC	13/06/2022	Material Assets (Traffic and Transport)	Reference to worst case 'construction scenario' and likely impacts is not clear. The phasing of the proposed works would need to be clarified to inform the scope of the assessment.	It is important to ensure that the reasonably foreseeable worst-case scenario is assessed. This is the scenario that would be likely to give rise to the most significant environmental impacts and is in line with EPA Guidelines. A detailed construction plan and schedule will be developed for the proposed scheme and submitted as part of the EIAR. The impacts on traffic and transport networks resulting from

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			No reference to potential impacts during the operation phase to the extension to Luas Broombridge Depot or the 350 park and ride facility/spaces at St Margaret's Road Luas stop	the provision of park and ride facilities (St Margaret's Road Stop) will be referenced as appropriate in the Traffic chapter of the EIAR. Reference to Luas Broombridge Depot is included in EIAR Scoping Report and on associated Drawings and will be considered in full in the EIAR.
DCC	13/06/2022	Material Assets (Traffic and Transport)	The Scoping report notes that the primary source of existing data will be the traffic data collected as part of the Bus Connects. The Scoping report notes that the primary source of existing data will be the traffic data collected as part of the Bus Connects some locations. It is recommended that traffic counts be updated at the following locations: Charlestown Rd/North Road junction and St Margaret's Rd / McKee Ave due to its proximity to the proposed park and ride facility. It is recommended that TII liaise further with DCC specifically regarding the extent and location of traffic counts. Figures 16.2 and 16.3 are noted but provide insufficient detail.	A significant data collection exercise was undertaken for the corridor to assist with the BusConnects EIAR in 2019. For the development of the Luas Finglas Local Area Model a selection of additional count sites were identified to gain an understanding of wider traffic movements in the corridor particularly along the proposed Luas alignment. These additional counts were undertaken in November 2021, and some locations were re-surveyed to understand changes in traffic flows between these new counts and the ones previously undertaken in 2019. We undertook comparisons for these sites and noted that overall traffic flows through the junctions hadn't changed significantly. For the two junctions specifically mentioned: • Charlestown Rd/North Rd Junction: It is not proposed that this junction will be fundamentally altered as part of the Luas Finglas works. We can infer traffic volumes and movements from nearby ATCs and JTCs undertaken in 2019 and 2021. • St. Margaret's Rd/McKee Ave: This junction was surveyed extensively in 2019. We also have updated 2021 counts at the North Rd/St. Margaret's Rd junction and at other locations along St. Margaret's Rd which allowed us to take into account any changes in traffic flows through this area between the two survey periods. Consultation is ongoing with DCC regarding the extent and location of traffic counts
DCC	13/06/2022	Material Assets (Traffic and Transport)	Operational mitigation measures should include Active Travel facilities along the route.	Noted: Active Travels facilities are integral to the scheme and will be detailed in the EIAR.

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DCC	13/06/2022	Cultural Heritage	The six protected structures and three NIAH entries that have been included in table 18.2 of the Scoping Report are noted. It is recommended that the rich Architectural Heritage of Church Street along its length is also acknowledged.	Noted: The Protected Structures and NIAH within the study area will be addressed in EIAR Chapter. The Cultural (archaeological and architectural) Heritage background for the receiving baseline environment will generally address the Cultural Heritage of Church Street. Please note individual constraints on Church Street will only be assigned unique constraint numbers and assessed where they are located within the boundary of the Luas Finglas study area.
DCC	13/06/2022	Cultural Heritage	Although the proposed new bridge and elevated track to carry the Luas Extension is somewhat removed from the subject structures, it is sufficiently close to have a negative visual impact on the setting of Broome Bridge and Finglaswood Bridge. It is recommended that detailed survey drawings are provided that clearly indicate the canal construction including stone kerbs, walls and other features, and the proposed new construction including piers and any other interventions required to the canal banks. A set of drawings should be provided indicating where historic or other fabric is to be removed or altered.	A detailed topographic survey of the canal and bridge environs has been undertaken. The RO reference design drawings will be prepared in accordance with the Transport (Railway Infrastructure) Act 2000 (as amended). Any impacts (direct or indirect) to either the bridge or canal will be assessed in the EIAR. No direct impact on historic bridges is currently proposed, and TII are reviewing the proposed bridge designs to minimise potential interventions to the canal towpath. Where interventions are proposed to the canal or bridge structures these will be discussed in an iterative manner with Waterways Ireland and DCC. Detailed Design drawings will be prepared post lodging of the Railway Order which will show any proposed or required alteration to historic fabric. These will be developed in consultation with DCC.
DCC	13/06/2022	Cultural Heritage	In order to fully assess the visual impact of the proposal on the setting of the Protected Structures and the Royal Canal, it is recommended that additional photomontage viewpoints are taken to include: (i) from the east and west of Broome Bridge and Finglaswood Bridge, (ii) a view from the principal elevation of St Helena's House looking northwest towards the new Luas stop and tracks, and (iii) from the northwest of St Helena's Court taking in the new Luas stop and the principal elevation of St Helena's House.	We have responded to this separately already and summarised again rationale below. i). Agreed -these bridges are key heritage constraints and are covered by viewpoints 1 and 2 respectively. The Landscape / Cultural Heritage specialists are satisfied that we have adequate photomontages here for the Landscape and Visual Impact Assessment (& Cultural Heritage Assessment) within the EIAR. We would envisage that the BIM model will play a more important role in capturing these visualisations from a range of perspectives and presenting to DCC as the design for each bridge develops.

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				ii). Agreed - St. Helena's House is also a key heritage constraint and are covered by viewpoints 3. The Landscape / Cultural Heritage specialists are satisfied that we have adequate photomontages here for the Landscape and Visual Impact Assessment (& Cultural Heritage Assessment) within the EIAR. We would envisage that the BIM model will play a more important role in capturing these visualisations from a range of perspectives and presenting to DCC as the design around St. Helena's House develops. iii). Agreed - St. Helena's House is also a key heritage constraint and are covered by viewpoints 3. The Landscape / Cultural Heritage specialists are satisfied that we have adequate photomontages here for the Landscape and Visual Impact Assessment (& Cultural Heritage Assessment) within the EIAR. We would envisage that the BIM model will play a more important role in capturing these visualisations from a range of perspectives and presenting to DCC as the design around St. Helena's House develops.
DCC	13/06/2022	Cultural Heritage	Although the proposed route is somewhat removed from St Helena's House, it is sufficiently close to have a negative visual impact on its setting. It is recommended that all drawings pertaining to St Helena's House indicate the red-line site boundary of the Luas Works and the present site boundary of St Helena's House.	The Railway Order General Arrangement drawings will indicate the red-line site boundary of the Luas Works and any proposed works within the environs of St Helena's House. The Railway Order Property Drawings will illustrate the present property boundary of St Helena's house. The EIAR Cultural Heritage Drawings will illustrate and afford unique numbers to any extant or historical elements of St Helena's House within the study area of Luas Finglas, these will be appropriately described in the EIAR Chapter. The asset will also be discussed in the Landscape and Visual Chapter. The Cultural Heritage specialist and Landscape and Visual Specialist will liaise accordingly in the determination of any visual or other impacts on the setting of this asset. DCC will be kept updated on all findings and determinations.

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DCC	13/06/2022	Cultural Heritage	To safeguard the special interest of affected Architectural Heritage in the vicinity of the Luas Finglas works and to ensure that any repair works required to the historic fabric will be carried out in accordance with best conservation practice with no unauthorised or unnecessary damage or loss of historic fabric, it is recommended that all works be designed and supervised with the input of an expert in architectural conservation in accordance with best practice.	The potential impacts on Architectural Heritage will be identified and assessed within the EIAR by an appropriately qualified and competent Architectural Heritage specialist. The assessment will be undertaken in accordance with EIAR Guidelines (EPA 2022) and Architectural Heritage Protection Guidelines for Planning Authorities (2011). At the appropriate stage of the Railway Order Process, a Conservation Architect will be appointed to devise specifications for any required works to ensure such works will be carried out in accordance with best conservation practice. This will be undertaken by an appropriately qualified and skilled craftsperson. TII will liaise with DCC on all aspects of this work. Please note a Grade 1 Conservation Architect has been appointed as a member of the EIAR Cultural Heritage Team.
DCC	13/06/2022	Landscape and Visual Amenity	It is recommended that TII liaise with DCC in relation to the identification of suitable locations for photomontages.	Additional Viewpoints added as per ongoing consultation with TII/DCC.
DCC	13/06/2022	Landscape and Visual Amenity	In addition to those mentioned in section 4.15, it is recommended that additional views for assessment are identified at this juncture. Please refer to appendix 1.	Additional Viewpoints added as per ongoing consultations with TII/DCC Consultation.
DCC	13/06/2022	Cumulative Impacts	Include cumulative impacts associated with other transport project, including BusConnects.	BusConnects is referenced in the Cumulative Impacts Section of the EIA Scoping Report (Section 22). Note: A full assessment of the proposed Luas Finglas scheme together with other existing and proposed projects will be addressed in the Cumulative Impacts Chapter of the EIAR.
DCC	13/06/2022	Cumulative Impacts	Consider construction of any adjacent sites in the vicinity of the Luas works.	Yes, this is under ongoing review for inclusion in Cumulative Impacts assessment
Department of Environment, Climate and Communications	23/05/2022	Waste	In respect of waste in the documentation, we would be obliged if the Local Authority would consult directly with their respective Regional Waste Management Planning Office regarding development of the final plans.	Noted: The Regional Waste Management Planning Office will be consulted regarding the development of the EIAR and in particular the Waste Chapter.

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Department of Housing, Local Government and Heritage	24/05/2022	Cultural Heritage	The archaeological component of the proposed EIA should be carried out by a qualified Consultant Archaeologist. While it is noted that the proposed scheme will be largely located within the existing public realm, there are significant sections that are currently greenfield/green space (notably the Tolka Valley Park). In addition, the route will pass close to and within the zones of archaeological potential for a number of designated archaeological sites including DU014-066---- (Town), DU014-066001- (Town defences), DU014-066002- (Ritual site - holy well), DU014-066003- (House - 17th century), DU014-066005- (House - 16th/17th century), DU014-066008- (Town defences) DU014-076001- (Castle - tower house) and DU014-076002- (Building). Subject to statutory protection Section 12 National Monuments (Amendment) Act 1930-2014. The town defences are also designated as a National Monument. The Department advises that the following are carried out as part of the Archaeological Impact Assessment: 1) the planned desk-study and field inspection should inform: targeted non-intrusive advance geophysical survey or prospection, targeted advance archaeological test excavation, targeted underwater archaeology surveys or wade surveys and targeted built heritage surveys. 2) Any and all intrusive advance investigations carried out as part of the EIA or design process should be subject to a programme of archaeological monitoring by a suitably qualified archaeologist. The results of these investigations should form part of the EIA and be incorporated in the EIA Report.	The archaeological component of the proposed EIA will be carried out by a qualified archaeologist and will include desk-based research and site inspections. In accordance with the Code of Practice for Archaeology agreed between the Minister of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (now Minister for Housing, Local Government and Heritage; MHLGH) and Transport Infrastructure Ireland (TII) in 2017 the extent of any required targeted intrusive and non-intrusive archaeological investigations will be scoped in consultation with the TII Project Archaeologist and NMS and results will be incorporated in the EIAR and the Luas Finglas Cultural Heritage Strategy. In light of the receiving environment, it may not be possible to undertake bespoke invasive or non-invasive archaeological investigations. However, TII will review all proposed contracts (e.g. Ground Investigations and Utility Slit Trenches) both for their potential for adverse archaeological impacts and their opportunity to inform on the archaeological potential of the baseline environment. This will be communicated to the NMS through the bi-monthly tracker and Luas Finglas Cultural Heritage Strategy. Any invasive works undertaken within or in the environs of a Recorded Monument and Place will be subject to archaeological monitoring/excavation and a Section 26 Licence will be applied for.
Geological Survey of Ireland	23/05/2022	Land and soils	We recommend using these various data sets, when conducting the EIAR, SEA, planning and scoping processes. Use of our data or maps should be attributed correctly to 'Geological Survey Ireland': Geological Mapping, Geochemistry of soils, surface waters and sediments,	Noted: GSI data will be used and attributed appropriately.

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			Geophysical data, GSI appreciate copy of reports detailing any site investigation carried out. Data can be sent to GeologicalMappingInfo@gsi.ie	
Inland Fisheries Ireland	11/05/2022	Biodiversity and Construction Activities	The Royal canal supports significant populations of coarse fish not to mention a range of other freshwater aquatic species, plus all associated floral and faunal components in adjacent habitats. Waterways Ireland should be consulted in relation to any works that could potentially impact on the canal. The Tolka River supports Atlantic salmon, Lamprey and Brown trout populations in addition to other fish species and provides a particularly important nursery function for salmonid species throughout. It is recommended that the "Guidelines on protection of fisheries during construction works in and adjacent to waters" (2016) should be consulted when planning to undertake works near any of the relevant rivers and streams. IFI should be consulted directly in relation to any proposals to manipulate surface water channels in this area and should in-streams works be required (works must be carried out between 1July to 30 Sept as per IFIs guidelines) The new bridges crossing the Royal Canal and the Tolka must be fish passable structures and preferably in the form of clear span designs to minimise in-stream impact. Pollution of the adjacent freshwaters from poor on-site construction practices could have a significantly negative impact on the fauna and flora of this surface water system. A comprehensive and integrated approach for achieving river protection during construction and operation should be implemented through environmental construction management planning. IFI have recently published revised "Planning for watercourses in the urban environment" which can provide guidance on site specific measures to enhance, protect,	Noted: Waterways Ireland will be consulted in relation to any Canal works. Noted: Potential impact on fish species and nursery function will be assessed in the Water and Biodiversity Chapters of the EIAR. Noted: IFI Guidelines will be taken into account in the Water Chapter of the EIAR. The need for fish passable structures and preferable form of the new bridges crossing the Royal Canal and Tolka is noted and it has been incorporated into the design. Noted: The Surface water Management Plan will reference both Construction & Operational Phases.

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			rehabilitate or establish riparian and aquatic habitats. This should be referred to in the EIAR.	
National Council for the Blind of Ireland (NCBI)	24/05/2022	Population	In relation to Section 4 'Consultation', we would ask that for all public consultations and engagements on this scheme, that all related documentation would be screened for accessibility before being published, including accessible and alternative document formats as appropriate, so as to afford the same independent and equitable access to relevant information and opportunities for participation to all stakeholders. To this end, we can provide further information and best practice guidance on request to ensure all apps, files and websites are accessible and we can also provide guidance on the application of emerging Assistive Technologies (ATs) as necessary. I In respect of Section 4.3 'Public Consultation Undertaken on the Preferred Route', we welcome the commitment to improving the accessibility of stops in response to earlier feedback at several locations. We ask for the accessibility of all modes and adjoining uses, particularly essential services, to be the foremost consideration in the development of detailed designs for all Luas Finglas infrastructure. We ask for earlier proposed linkages to adjoining development to be retained and new ones included wherever possible, in the interest of enhancing permeability and improving safety for pedestrians and other active modes by way of increased footfall and passive surveillance in these areas. With regard to sub-sections 5.3.1 and 6.3.1 'Construction Phase', we note among those Construction Phase impacts not listed but which may be anticipated are temporary (whether short or long term) diversions to pedestrian traffic which would disrupt the daily lives of vulnerable pedestrians and people with disabilities. While the potential for temporary disturbance to business and non-commercial institutions is noted in the latter sub-section and there are also references to "severance", disturbance to vulnerable pedestrians and	TII have a designated access officer responsible for providing assistance to members of the public with disabilities and regularly engages on the project through the Luas User Group and through consultation with Disabled Persons Organisations (DPOs). TII have committed to ensuring that all publications and consultation material for Luas Finglas is fully accessible. We very much welcome your offer to provide further information and best practice guidance to ensure all apps, files and websites are accessible as well as guidance on the application of emerging Assistive Technologies (ATs). Accessibility to stations (and across tracks outside of stations) will be addressed in the EIAR Population chapter. The accessibility within the stations' design will be addressed by a transport specialist. The EIAR Population chapter will assess, along with the Design Team, the Planning chapter and Human Health chapter, issues of permeability and the safety of pedestrians and other active modes of travel, along with opportunities for passive surveillance. Construction impacts on human beings, including diversions and effects on vulnerable subsets, will be addressed along with the Design Team and Traffic specialists. Construction impacts on sensitive groups will be addressed along with the health specialist and with severance addressed exclusively by the Population specialist once detailed design drawings are available for assessment within the EIAR. The Population specialist will be pleased to confer with the NCBI on the nature of existing journeys and on mitigation, and on the suitability of the extent of the receiving environment.

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			people with disabilities is not specifically acknowledged as a potential impact. It is stated that particular attention will be given to 'sensitive receptors', namely 'pedestrians… younger and older population groups… and people with disabilities' although it is not clear what impacts, if any, are currently envisaged nor do we know the form of particular attention to be given to these groups. We wish to note as a possible consequence of diversions and such temporary disturbance that some of NCBI's Service Users may require additional resources, including renewed mobility instruction and training on revised local access routes in order to navigate away from established and familiar pedestrian routes as they access their homes, healthcare, community facilities, education, employment, public transport, local shops and other essential services. We ask for a baseline analysis of existing journey amenity for vulnerable pedestrians in the Luas Finglas catchment to be undertaken and for appropriate mitigation measures to be proposed and additional resources made available so that any possible barriers to pedestrian journeys for both the construction and operational phases may be reduced to a minimum or preferably eliminated. We note an absence of detail on such measures as currently outlined in Sections 5.5 and 6.5 'Mitigation Measures' although we look forward to learning more about same in due course. We welcome some of the potential positive impacts for population which are envisaged under the operational phase (ref. sub-section 6.3.2), specifically "(increased) opportunities in terms of access to employment, retail, and social facilities social and economic inclusion particularly (for) people falling within lower CSO socio-economic categories and people with disabilities". With this common objective in mind NCBI would be delighted to assist TII, the Design Team and stakeholders through further rounds of public consultation and engagements on this scheme as proposals take shape.	

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			In relation to section 16.5 Mitigation Measures, we would ask on foot of the detailed Construction Impact Assessment that measures to maintain continuity of universal access to shops, retail premises and community facilities would be implemented as necessary, rather than “where feasible”, in the interest of affording safe, independent and equitable access to premises and facilities for everyone in the community. In relation to Section 6.1.2 Receiving Environment, we would ask to give due consideration as to whether the ‘Receiving Environment’ of the Luas Finglas might extend considerably beyond either 500m or 1km. Consider in particular those public transport users who might access Luas Finglas services by means of extended walks, other public transport services (e.g. Dublin Bus, BusConnects, etc.), taxis or vehicular drop-off and note that such circumstances are particularly prevalent among public transport users who are blind or vision impaired. As a relevant stakeholder, engage with NCBI on a timely and ongoing basis as design proposals for Luas Finglas are being developed, that NCBI be included in discussions and consulted on draft proposals.	
National Museum of Ireland	25/04/2022	Cultural Heritage	Due diligence should be given to consulting with all relevant statutory bodies.	Due diligence will be given to consulting with all relevant statutory bodies.
National Museum of Ireland	25/04/2022	Cultural Heritage	We would expect normal Environmental Impact assessment procedures to be carried out including an archaeological component in respect of the proposed scheme. This should be undertaken by a license eligible archaeologist.	The Cultural Heritage chapter will be prepared by a suitably experienced and competent Cultural Heritage specialist. Where works requiring a Section 26 Licence are proposed, a licence eligible archaeologist will be appointed by the appropriate Contractor. The undertaking of any such works will be managed by the TII Project Archaeologist in accordance with the TII/MHLGH Code of Practice for Archaeology.

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National Museum of Ireland	25/04/2022	Cultural Heritage	The NMI (National Museum of Ireland) Topographical files database within the National Museum of Ireland - Archaeology, Kildare Street, should be consulted. These will provide details on stray finds within the various townlands, which may be impacted/affected by the proposed scheme. From this, it may be possible to ascertain the density of archaeology which might remain in the areas, and from what period(s). We recommend searching at townland and other levels to gain a broader understanding of the overall archaeological potential of the area.	The NMI (National Museum of Ireland) Topographical Files will be consulted.
National Museum of Ireland	25/04/2022	Cultural Heritage	The Database of Irish Excavation Reports should be consulted to gain a further understanding of the potential for archaeology along the proposed development.	Database of Irish Excavation Reports will be consulted.
National Museum of Ireland	25/04/2022	Cultural Heritage	The National Monuments Service (NMS) map viewer should also be consulted for the various townlands, which may be affected. This could indicate monuments, and any subsurface archaeology in their vicinity, which may be impacted by the scheme. The NMS should be contacted directly for further information in this regard.	NMS (National Monuments Service) Historic Environment Viewer will be consulted.
National Museum of Ireland	25/04/2022	Cultural Heritage	We note the route will pass through a number of townland boundaries. This should be noted, as there is increased potential for archaeology at these locations.	Location of all townland boundaries directly intersected by the proposed scheme will be appraised.
National Museum of Ireland	25/04/2022	Cultural Heritage	We note that the route will cross four watercourses. It should be considered that within riverine and wetland locations there is a very high potential for the survival of archaeological features and finds. These can include stone, metal, and crucially, organic waterlogged material. Any changes to their current local conditions could have a severe negative impact on their survivability. Mitigation may be necessary to protect and/or recover any such archaeological finds to ensure their long-term preservation.	All watercourses directly intersected by the proposed scheme will be appraised and appropriate mitigation measures will be formulated.

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National Museum of Ireland	25/04/2022	Cultural Heritage	We further note the presence of wetland/flood-land areas at points along the route. Construction could negatively affect archaeological features and finds in those locations. As such, predevelopment testing, and/or monitoring of these locations may be necessary to determine if archaeology is present. Similarly, mitigation/rescue excavations may be necessary to preserve by record any identified archaeological features and recover any archaeological objects.	All wetlands / flood lands directly intersected by the proposed scheme will be appraised and appropriate mitigation measures will be formulated.
National Museum of Ireland	25/04/2022	Cultural Heritage	Adequate funding for archaeological works (to include excavation and post-excavation works) should be agreed prior to the commencement of any works.	Adequate funding for archaeological works (including excavation and post-excavation works) will be agreed prior to the commencement of any works and appropriate Letters of Financial Support as agreed with MHLGH provided.
National Museum of Ireland	25/04/2022	Cultural Heritage	These necessities should be taken into consideration with regard to the timeline for the scheme.	Noted
Waterways Ireland	24/05/2022	Biodiversity	A key area of concern would be around the protection of EU annex IV species Otter. The Royal Canal Greenway has identified the south bank in this area as key Otter Habitat and in particular the heavily vegetated canal bank. We would recommend that a fully informed Otter Conservation Management and Protection Plan be completed for the construction of this Luas Bridge at broom bridge.	An Otter Conservation Management and Protection Plan will be included within the EIAR Biodiversity assessment.
Waterways Ireland	24/05/2022	Biodiversity	Any instream works required for the works should be fully consulted with Inland Fisheries Ireland and any closure of the canal and dewatering will require provision of water through the works area to downstream sections and will require electrofishing of the area to be dewatered. Otter passage between upper and lower works sections would also have to be provided to ensure otter feeding and habitats are not impacted by the works and to ensure Otter and not negatively impacted or disturbed by the works.	Noted: IFI will be fully consulted if there is a requirement for Instream works (currently not anticipated). Clear span bridge design proposed with no in-stream works anticipated.
Waterways Ireland	24/05/2022	Biodiversity	An invasive species management plan would be required for the bridge works as there are known locations of Japanese knotweed north and south of the canal in close proximity to	A Management Plan for Invasive Alien Plant Species will be drawn up detailing the biosecurity, control and management

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			the proposed bridge works. Also, an invasive species biosecurity management plan should also form part of the overall Works CEMP.	measures being undertaken at the site and appended to the CEMP/EIAR.

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Transport Infrastructure Ireland

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