Independent Expert Review

External Assurance Process for Major Projects at Approval Gate 1

Project Under Review: Luas Finglas

Client: The Department of Transport

July 2024

Strictly private and confidential

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In preparing this report, we have had access to information provided by the Department of Transport and publicly available information. The findings and recommendations in this report are given in good faith but, in the preparation of this report, we have relied upon and assumed, without independent verification, the accuracy, reliability and completeness of the information made available to us in the course of our work and have not sought to establish the reliability of the information by reference to other evidence.

Any findings or recommendations contained within this report are based upon our reasonable professional judgement based on the information that is available from the sources indicated. Should the project elements, external factors and assumptions change then the findings and recommendations contained in this report may no longer be appropriate. Accordingly, we do not confirm, underwrite or guarantee that the outcomes referred to in this report will be achieved.

We have not compiled, examined or applied other procedures to any prospective financial information in accordance with Irish, or any other, auditing or assurance standards. Accordingly, this report does not constitute an expression of opinion as to whether any forecast or projection of the project will be achieved, or whether assumptions underlying any forecast or projections of the project are reasonable. We do not warrant or guarantee any statement in this report as to the future prospects of the project.

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Document Details	
Project Title	External Review of Preliminary Business Case for Luas Finglas
Sponsoring Agency	Transport Infrastructure Ireland ("TII")
Approving Authority	National Transport Authority ("NTA")
Parent Department	Department of Transport ("DoT")
Review Team	PwC Capital Projects and Infrastructure
National Investment Office, DPENDR Contact	Frank Newman
Date Material Supplied	23 November 2023 A list of the original documents received is outlined in Section 1 of this report
Presentation to Review Team	September 2024
Date of Review Commencement	21 November 2023
Dates for Points of Clarification	4 December 2023 – 25 June 2024
Date of Completion	September 2024

Executive Summary

Executive Summary

PricewaterhouseCoopers has been engaged by the Department of Transport to perform an Independent Expert Review of the preliminary business case for Luas Finglas, the proposed extension of the existing Luas Green Line light rail service in Dublin to Finglas.

This review has been performed under the External Assurance Process in accordance with the Public Spending Code and the transport specific sectoral guidance, the Common Appraisal Framework. We understand that this preliminary business case was developed in advance of the issuance the new Infrastructure Guidelines and Transport Appraisal Framework as the new transport sectoral guidance and consequentially the above dispensation to align with the new requirements, has been granted.

The purpose of the External Assurance Process is to support decision makers in prioritising public investment proposals in order to improve outcomes and deliver value for money. It is the aim of the External Assurance Process report to provide structured scrutiny to ensure that the Government has better evidence in considering its decisions on major infrastructure projects. The External Assurance Process consists of an independent peer review at Approval Gate 1 following the submission of a preliminary business case seeking approval in principle at this Approval Gate.

In our review we have found that a significant amount of work has been undertaken by the Sponsoring Agency, Transport Infrastructure Ireland, and their advisors, in relation to demand analysis, options appraisal, procurement in particular.

We have performed a detailed clarification process involving all parties with a number of queries resulting in minor revisions to the preliminary business case.

This report outlines a number of conclusions and recommendations across each aspect of the preliminary business case. We have identified that the preliminary business case outlines a financial analysis solely for the preferred option. We have assessed the impact of this and have noted that should a financial analysis be performed for all short-listed options, it is unlikely to result in a different option selected as the preferred option. We also have identified that an element of sunk costs is also included within the financial analysis performed however this is a wholly immaterial amount. We have assessed the impact of both of these deviations from the Infrastructure Guidelines and note that given they are immaterial in nature and were any amendments made in relation to these, neither the preferred option is unlikely to change, nor would the outlined preliminary cost difference associated with this be materially adjusted within the preliminary business case. As a result we have concluded in relation to both of the above matters that these do not impede the ability to adequately appraise this project.

As a result of our review, we have concluded that this preliminary business case is **Compliant** with the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

Review Summary

Preliminary Business Case Area	Conclusion
Purpose Alignment and Scope	
Strategic Relevance of the Project	**Compliant**
Project Objectives and Rationale	**Compliant**
Feasibility, Capability and Enabling Projects	
Detailed Demand Analysis	**Compliant**
Options Appraisal	**Compliant**
Proposed Approach to Procurement Strategy and Implementation	**Compliant**
Implementation of Delivery and Operation	**Compliant**
Plan for Monitoring and Evaluation Including Key Performance Indicators	**Compliant**
Capacity for Industry	**Compliant**
Cost and Benefits	
Accuracy of Project Costs and Benefit Forecasts	**Compliant**
Benchmarking of Costs	**Compliant**
Contingency and Optimism Bias	**Compliant**
Time, Cost and Function	**Compliant**
Value for Money and Affordability	**Compliant**
Governance and Risk	
Risk Identification and Management	**Compliant**

Preliminary Business Case Area	Conclusion
Appropriateness of Governance Structure	**Compliant**

Results Summary	
No significant issues have been identified	**X**
A number of issues require further consideration by the Sponsoring Agency and Approving Authority	
Significant issues have been identified for the Sponsoring Agency and Approving Authority to consider	

1 External Assurance Process – Overview

1. External Assurance Process – Overview

The purpose of the External Assurance Process is to support decision makers in prioritising public investment which improves outcomes and represents value for money. The External Assurance Process consists of an independent expert review at Approval Gate 1 of the project lifecycle.

PricewaterhouseCoopers ("we" or "PwC") has been engaged by the Department of Transport ("the Department") to perform an Independent Expert Review under the External Assurance Process ("EAP") on the preliminary business case ("PBC") for Luas Finglas.

We are aware that this PBC was prepared by Transport Infrastructure Ireland in accordance with the National Transport Authority's Project Approval Guidelines ("PAG") in their capacity as the Approving Authority for this proposal. This EAP review has been performed in accordance with the Public Spending Code ("PSC"), in the form of its interim revision as of 29th March 2023, as per Circular 06/23 and the transport sectoral guidance, the Common Appraisal Framework ("CAF"). We note the National Transport Authority's PAG is aligned with that of the PSC and CAF.

The Infrastructural Guidelines came into effect on 1st of January 2024 and the new transport sectoral guidance, the Transport Appraisal Framework ("TAF"), effective 13th June 2023. Whilst we have been informed by the Department of Transport that this report is prepared in compliance with the PSC and CAF, we understand that all subsequent requirements for this project to proceed will be prepared in accordance with the latest guidance, i.e., the Infrastructure Guidelines and TAF. As a result, this report refers to all stage gates and future requirements in the project lifecycle in accordance with these new guidelines i.e., references to stage gates are that of Approval Gates and not Decision Gates and the applicability of the Detailed Business Case at the next stage.

The purpose of the EAP is to provide structured, independent scrutiny of major public investment projects and to lead to more realistic assessment of projects. The key objectives of this review are to provide project assurance including a review of the:

- robustness of planned delivery;
- accuracy of cost forecasts;
- consideration of risk; and
- appropriateness of procurement strategies.

This EAP review is designed to be a validation of the preliminary business case against the requirements of the Public Spending Code major public investment projects. This report does not purport to give assurance over the completeness, accuracy or appropriateness of the project cost information, procurement strategy, risk identification process or other aspects of the proposed design, delivery or operation of the proposed Project.

The table below outlines the roles of the parties involved in the EAP of the Project.

Role	Party
Approving Authority for Major Projects (Over €200m)	Government of Ireland
Approving Authority for Major Projects (Over €200m)	Department of Public Expenditure, NDP Delivery and Reform
Parent Department	Department of Transport
Approving Authority	National Transport Authority
Sponsoring Agency	Transport Infrastructure Ireland
Advisors to the Sponsoring Agency in the preparation of the preliminary business case reports	Barry Transportation, Egis and Systra
External Assurance Process Reviewers	PwC

1.1 Documents Provided

We received copies of the following documents from the Department for review as part of the EAP. The PwC team performed a review of the preliminary business case and the below outlined supporting documentation against the requirements of Approval Gate 1 (Approval in Principle) of the Public Spending Code.

Document	Description
Luas Finglas PBC	Preliminary business case report as submitted to the Department by NTA and TII
Core_Scenario_TUBA_Out_Road	Transport modelling inputs to PBC
Core_Scenario_Out_PT	Transport modelling inputs to PBC
Common Appraisal Framework for Transport Projects and Programmes	Guidance document explaining steps to be used in the appraisal of transport projects and programmes for the Department of Transport

Document	Description
DoT Review of PBC	Document provided by the Department of Transport reviewing the preliminary business case
Financial Appraisal Workbook	Workbook showing calculations for financial appraisal
Luas Finglas PBC (Revised)	Revised Preliminary Business Case submitted to the Department by NTA and TII

1.2 EAP Review Process Methodology

This report outlines each of the core aspects of a preliminary business case in separate sections. At the end of every section, we have summarised a conclusion and, in some areas, we have flagged recommended actions for improvement and to add value.

- **Conclusions** are drawn to determine if the section is deemed to be in line with the requirements of the Public Spending Code Approval Gate 1. Each section is clearly identified as either **Compliant** or **Non-Compliant**, with an explanation as to this finding. Below we outline an explanation of each conclusion type:

Conclusion Type	Explanation
Compliant	Compliant with the Common Appraisal Framework and Public Spending Code.
Non-Compliant	Non-Compliant with the Common Appraisal Framework and/or the Public Spending Code to the extent that failure to update the preliminary business case would impede the ability to adequately appraise the project.

- **Recommendations** are made where it is considered that the recommended actions will either address gaps in a non-compliant section or add value and strengthen the proposal for compliant sections.

Meetings and Circulation of Clarifications

A number of meetings were held in relation to the review process as outlined below.

Meeting	Parties Present	Date
Kick off meeting	PwC | Department	23/11/2023
Clarifications Discussion	PwC | Department	14/12/2023
Clarifications Discussion	PwC | Department | NTA | TII	08/02/2024
Clarifications Process Complete	PwC | Department | NTA | TII	25/06/2024

Table 1

2 Purpose, Alignment and Scope

2. Purpose, Alignment and Scope

Relevant Public Spending Code Considerations:

- Does the preliminary business case and supporting documentation clearly articulate the purpose of the project?
- Does the preferred option identified in the preliminary business case align with government policy?
- Have the policy and delivery assumptions been captured, challenged and agreed with key stakeholders?

The proposed Luas Finglas project involves a 3.9km extension of the Luas Green Line from Broombridge to Charlestown via Finglas, with a 350-space Park & Ride facility located just off the M50 at St Margaret's Road. The proposal outlines the intention to develop four stops along this extension located at St Helena's, Finglas Village, St Margaret's Road and finally Charlestown. the project will provide interchange opportunities with bus networks at all the new stops inclusive of mainline rail services at Broombridge. Luas Finglas intends to provide a tram in each direction every 7.5 minutes during peak times with an approximately journey time of 30 minutes from Charlestown to Trinity College.

In May 2023, a Strategic Assessment Report ("SAR") for Luas Finglas submitted by TII to the NTA and onward to the Department. This SAR sought approval to move from the then Approval Gate 0 and the Strategic Assessment stage through to the PBC stage. In 2019, TII received approval from the NTA to proceed beyond Approval Gate 0 of the PSC and develop the PBC for the proposed project which forms the subject of this review. The PBC is currently seeking "Approval in principle" from NTA, the Department of Transport and Government through the Department of Public Expenditure, NDP Delivery & Reform, to proceed through Approval Gate 1 of the Public Spending Code.

2.1 Strategic Relevance of the Project

The Public Spending Code states that the "overall strategic relevance, rationale and objectives of the proposal should be reconsidered at this point.

We have reviewed the preliminary business case in the context of how it is consistent with:

- National and regional planning policy;
- National public investment policy;
- Specific sectoral policy; and
- Climate action policy

The preliminary business case references clear alignment with government policy and in particular cites the following as publications which are supportive of the purpose of the Project.

- Project Ireland 2040;
- National Investment Framework for Transport in Ireland;
- National Sustainable Mobility Policy;
- Transport Strategy for the Greater Dublin Area 2022-2042;
- Regional Spatial & Economic Strategy 2019-2031;
- Climate Action Plan 2023;

- Dublin City Development Plan 2022-2028; and
- Well-Being Framework.

The importance of this section lies in the ability to link the rationale for this project with past assessments and the evolution to present policies to illustrate its continued relevance. In section 2, the PBC clearly outlines the case for change and strategic policy alignment. The policy progression is also evident beyond the SAR submission which is highlighted in a clear and concise manner.

Conclusion

Based on our review of the strategic relevance aspects of the preliminary business case, we have determined that a clear case for change is outlined noting concise objectives for the Project which are clearly aligned with core national policy objectives.

It is concluded that the purpose, alignment and scope is **Compliant** and meets the requirements of the Public Spending Code and Common Appraisal Framework at Approval gate 1.

2.2 Project Objectives and Rationale

The five strategic objectives of the project as in the PBC were originally presented in the SAR. These objectives are again noted in section 2.3 of the PBC and are as follows:

1. Serve existing and future transport demand;
2. Provide a frequent, reliable and sustainable public transport connection from Charlestown and St Margaret's Road, with a strategic Park & Ride, to the city centre via Finglas;
3. To reduce the journey times between Charlestown / Finglas and the city centre in comparison to private cars;
4. To contribute to the Climate action Plan targets for the decarbonisation of transport; and
5. To promote economic growth for both the residents and businesses of Charlestown, Finglas and their surrounding areas.

The PBC has also devised the objectives to be SMART – specific, measurable, attributable, realistic and time-bound, as per the PSC.

The Key Performance Indicators ("KPIs") are linked to the Common Appraisal Framework to assess the performance of Luas Finglas.

Conclusion

Our conclusion on this section is that the preliminary business case clearly articulates the purpose, rationale and objectives of the Project.

It is concluded that the purpose, alignment and scope is **Compliant** and meets the requirements of the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

3 Feasibility, Capability and Enabling Projects

3. Feasibility, Capability and Enabling Projects

Relevant Public Spending Code Considerations:

- Has the demand for the intervention been clearly assessed?
- Have reasonable alternatives been considered?
- Have all requirements been clearly defined based on outputs and outcomes?
- Is the delivery strategy feasible?
- Is the procurement strategy feasible?
- What steps are being taken to align incentives of delivery stakeholders to support cost effective delivery?

The PBC should outline early the analysis performed in relation to the demand for the proposed need for intervention, a thorough assessment of the options under consideration in addition to the proposed approach for procurement, the implementation timescales and the capacity of the Sponsoring Agency to deliver and of industry to supply the project. Whilst initial consideration of each of the above aspects is required at this stage, evidence shows that a thorough assessment at this stage of potential procurement strategies, approaches to construction and implementation management as well as issues relating to operation, can lead to better outcomes should a proposed project proceed.

3.1 Detailed Demand Analysis

The PSC requires that the PBC contains a detailed demand analysis which builds upon the preliminary demand analysis conducted as part of the SAR. The detailed demand analysis must set out current demand and forecast future demand for the services resulting from an investment proposal. The Luas Finglas PBC clearly sets out current demand and includes forecasts for future demand based on detailed transport modelling. Project Ireland 2040 forecasts the population of Finglas to grow by 23% by 2035. Currently there are 15,000 work-related trips as well as 8,000 school / college trips which is expected to grow as the population does.

The PBC provides robust demand analysis which captures the need for the Project. The demand analysis included in the PBC establishes baseline demand data and layers population projections and other assumptions based on accessibility and transport demand factors on top of this. Assumptions are clearly detailed in section 4.3 of the PBC.

We also note that the demand analysis was undertaken as part of the GDA Strategy update 2022-2042 which highlighted that the Finglas corridor could have a demand for public transport exceeding 5,000 passengers per hour per direction (“PPHPD”) in the AM peak hour by 2042.

The PBC clearly outlines the justification for exchequer intervention in the form of a mode of transport based on to the results of the detailed demand analysis. It is noted within Section 3 of the PBC that, in line with the National Transport Authority’s Project Approval Guidelines, the demand analysis was assessed against the capacity of alternative modes of transport as part of the initial stages of project inception. This was performed as part of the North-West Corridor Study (“NWCS”) (2015) aligning with the development of the current Transport Strategy for the Greater Dublin Area 2016-2035.

Conclusion

We have concluded that the detailed demand analysis is clearly articulated within the PBC to an extent which is **Compliant** with the requirements of the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

Recommendations

We propose the following **recommendations** for the preliminary business case:

- There would be benefit to providing clarity within the PBC for the reader that the North-West Corridor Study was based off forecast planning sheets and used NTA Regional Models. We understand that the population/ employment projections and distribution of growth used also considers targets from the National Planning Framework and were agreed with by the local authorities. This information would provide beneficial background if included within the PBC.
- From the clarifications process, we understand that significant analysis was performed in relation to the demand and resulting capacity requirements for the proposed park and ride facility, prior to the development of the PBC. We are aware that the intention for Luas Finglas is that it would not constitute a core transport service for communities beyond its immediate catchment area, hence the modest 350 space capacity proposal. It is intended that other transport modes would cater for commuters within the wider Greater Dublin Area in line with the NTA Greater Dublin Area Transport Strategy. This detailed consideration and conclusion is not however clearly outlined within the PBC itself which would be of benefit to the reader. It is important to ensure that justification for the proposed scale of the park and ride is outlined to ensure it is clear that proper consideration has been made as to the proposal.

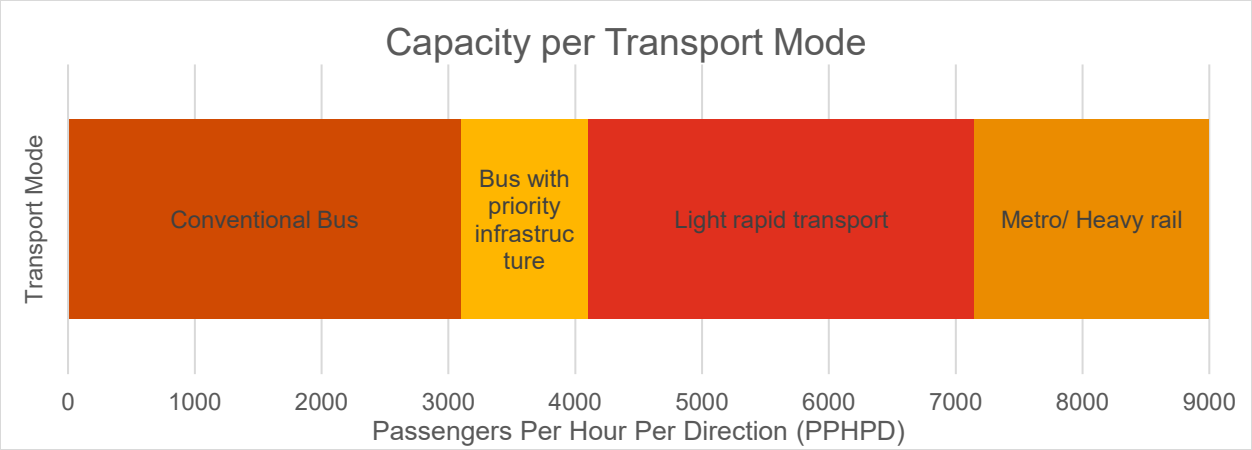
3.2 Options Appraisal

The PSC requires that the preliminary business case includes an options appraisal which incorporates: (i) a short-listing process; (ii) a financial appraisal; (iii) an economic appraisal and; (iv) sensitivity analysis. Guidance on what is included in each of these aspects of the options appraisal is outlined in Sections 4.6, 4.7, 4.8 and 4.9 respectively of the PSC.

On reviewing the options appraisal included in the PBC, we note the following:

3.2.1 Shortlisting

- In line with the CAF and NTA's PAG, the options appraisal process commenced in advance of the development of the PBC. The PBC outlines that at that point, the demand analysis performed which concluded a projected demand of 5,000 PPHPD was assessed against the capacity of each alternative mode of transport to determine viable options to meet this need. Section 3.2 outlines this assessment which we have articulated in the below graphic.



- The PBC outlines that alternative modes such as buses would not meet the demand of 5,000 PPHPD whilst heavy rail was considered unsuitable due to the significance of such an intervention. The PBC robustly concludes that the most suitable transport mode is light rail.
- The PBC proceeds to outline a proposed three route-based options on the basis of light rail being the transport mode proposed and takes a top-down and bottom-up approach to review the scoring of these options under each performance criteria and associated indicator. Consequentially, a number of optimisations were developed by TII during earlier stages of the PAG process which resulted in a fourth option being developed. The shortlisted options are:
    - Option 2A – Preferred option
    - Option 3A
    - Option 3JA
    - Option 3JB

3.2.2 Economic Appraisal

- Section 5.2 of the PBC details the economic appraisal performed with further details provided within Appendix D of the PBC. The PBC outlines the core assumptions underpinning the economic appraisal, the scenarios that are considered, the modelling approach, how benefits are monetised and costs are assessed, and presents the results of the economic appraisal.
- The underpinning assumptions are reasonable and clearly stated. Four scenarios are considered, each with varying degrees of transport infrastructure delivery and demand. This is carried out in place of an economic appraisal of different options. The justification for this approach, as provided by TII and their advisors, is that the development of major transport projects is brought through various stages of development, over several years, within the envelope of the GDA Transport Strategy. The Strategy identifies the appropriate modes and broad corridors for investment to meet future demand across the GDA. As such, the higher-level options analysis has already been carried out, with alternative modes (options) being rules out.
- A cost-benefit analysis ("CBA") was carried out based on scenarios underpinned by a comparison of a 'Core' or "Do Minimum" scenario where all committed transport projects that serve Broombridge and Finglas corridor are progressed without Luas Finglas against "Do Something" scenarios which include the Core scenario plus Luas Finglas.
- A multi-criteria analysis assessment was performed against the four proposed routes under consideration and it was determined that Route 2A was the most strongly positive corridor for Luas Finglas (see Appendix 2 for details of the preferred option).

- The economic appraisal and identified benefits have been assessed in detail in section 4.1.2 of this report.

3.2.3 Financial Appraisal

As part of the options appraisal process, a detailed financial appraisal has been performed and is outlined within the PBC for the preferred option. No financial appraisal is presented in the PBC for the alternative shortlisted options. As part of our clarification process, TII noted that a detailed cost associated for each route had been prepared as part of the Stage 2 Options Selection Report which is referenced in the PBC.

Each shortlisted option is outlined within figure 3.7 of the PBC and appended within Appendix 1 of this report. As previously mentioned, the progression through the NTA's Project Approval Guidelines from "Stage 1 to Stage 2 saw a number of optimisations identified and developed by TII. These improvements came in light of new analysis and design details being available. The optimisations, which also resulted in a fourth option being developed, comprised:

- Mellowes Park route optimisation for Route 2A and 3A
- Cycle track and facilities inclusion
- Development of Route 3J sub-options divided into Route 3Ja and Route 3Jb respectively splitting the two directions of Luas travel to both sides of the R135 and maintaining both directions of Luas travel on the western side of the R135."

Comparative Analysis of Preferred Option Costs to Shortlisted Options

A financial appraisal for a project such as this requires consideration of the investment and operating costs against the revenues generated. In response to a clarification raised, TII confirmed that, in line with NTA Cost Management and Project Approval Guidelines, cost estimates and demand analysis was developed as part of the Stage 2 Options Selection Report.

As part of our review of the PBC, we have reviewed the Stage 2 Options Selection Report and the information and analysis contained therein relating to the cost analysis of the four shortlisted Luas Finglas selected routes. The Stage 2 report concluded that Option 2A was assessed as being the lowest capital cost with Option 3A and Option 3Jb being marginally higher (+3%). Option 3Ja was the highest estimated cost option (11% higher than Option 2A). This is largely due to Option 2 A being shorter in length and less complex design relative to the three alternative options. Operations and maintenance costs are largely driven by the length of the line so it is reasonable to assume that Option 2A would present at least the same if not lower operations and maintenance costs relative to the alternatives. In relation to demand analysis, the Stage 2 report concluded that the plausible catchment of Option 2A was in excess of all other options with Option 3JA and 3JB having a significant comparative disadvantage relative to the other options.

Based on the above, we can reasonably conclude that were the financial appraisal for all shortlisted options presented, none of the alternative shortlisted options would present a more favourable option in terms of either impact or affordability.

Scenario Analysis

- Several cost scenarios we're assessed:
    - Management Stretch Target: which denotes the probability that 30% of the costs are less than or equal to those which are outlined ("P30").
    - Management Base Target: which denotes the probability that 50% of the costs are less than or equal to those which are outlined ("P50").

- Prudent Appraisal Value: which denotes the probability that 80% of the costs are less than or equal to those which are outlined ("P80").
- High Risk Sensitivity: which denotes the probability that 90% of the costs are less than or equal to those which are outlined ("P90").

- For the purposes of the financial appraisal, the base case scenario has been chosen with cashflows outlined across the 30-year time horizon required under the Common Appraisal Framework and Public Spending Code for such projects. The resulting net present value for the project is noted in table 5.2 of the PBC to be approximately (€180) million.
- The costs outlined within the financial appraisal are discussed in detail within section 4.1.1 of this report.

3.2.4 Sensitivity Analysis

Taking the prudent appraisal value at P80 and the associated benefits, a benefit to cost ratio ("BCR") has been derived at 1.4 (see section 4.1.2 for further details). Three sensitivity tests were considered for Luas Finglas in relation to these cost and benefits as outlined below:

1. Increasing project costs by applying the P90 risk. This was assessed against the economic appraisal and associated benefits quantified and resulted in a reduced BCR of 1.1.
2. Decreasing the costs by applying the P30 risk, results in an increased BCR of 2.0.
3. Accounting for the risk associated with calculation and monetisation of Luas Finglas benefits by applying a 20% reduction to their value would result in a reduced BCR of 1.2.

It is noted within the PBC that it is the intention of the sponsoring agency to conduct additional sensitivity testing at the Final Business Case stage.

Conclusions

The options appraisal process requires consideration of both economic and financial analysis of each option to ensure that value for money is clearly being obtained through the preferred option outlined and the affordability of the intervention can be assessed.

We recognise that significant analysis of the most suitable transport mode to meet the forecasted demand, was performed prior to the development of the PBC, in line with the NTA's Project Appraisal Guidelines. It is clear from this analysis that the most suitable mode has been progressed to this stage where route selection has been outlined.

This PBC outlines a multi-criteria analysis of the four short-listed route options in line with CAF requirements and with the support of technical analysis and financial analysis. It is clear from this multi-criteria analysis that the preferred option brought forward, on balance, represents the most significant advantages in comparison to the other route options.

The financial appraisal has been presented solely on the preferred option in the PBC with cost and demand analysis having been undertaken as part of the Stage 2 Options Selection Report. Our team have therefore worked to assess at a high level whether the provision of costs for each option would potentially result in a different preferred option chosen. For the benefit of the reader, it may be useful to present a financial appraisal for all shortlisted options in the PBC however, based on our review of the Stage 2 Options Selection Report, it is clear that the preferred option performs more favourably in terms of impact and affordability.

We also recognise that this approach to the financial appraisal of a transport project is considered standard practice by the NTA as Approving Authority.

Conclusions

Given that this issue is unlikely to alter the resulting preferred option and the ability to assess viability of this project, we have concluded that this section is **Compliant** with the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

Recommendations

We **recommend** the following points to be included in the PBC:

- Given the options appraisal solely outlines a financial appraisal of the emerging preferred option, we recommend that a robust justification of this is outlined within the PBC to clarify why this deviation from the PSC was made and accepted by the Approving Authority and Parent Department as reasonable. Whilst we acknowledge the approach is in line with NTA guidelines, it is important to ensure this clarification is outlined to ensure the PBC cannot be in any way interpreted as non-compliant with the clear requirements of the PSC and CAF.
- The timeline for the project should be updated to reflect accurate timings for the benefit of MPAG's review as they are currently outdated. The updated timeline should also seek to incorporate the new requirements at subsequent stages under the Infrastructure Guidelines and TAF, namely the requirement for a Detailed Business Case ("DBC") at the next stage. The DBC is the full and complete statement of the investment proposal expressed in output requirements and is required to outline the finalised governance structure, procurement strategy, project execution plan, detailed project brief and finalised costs for the project. The DBC is required to be submit to the Department of Transport as the Parent Department for Ministerial Approval at Approval Gate 2.
- Whilst it is recognised that the PBC was developed prior to the implementation of the Infrastructure Guidelines and TAF, the sensitivity analysis noted within the PBC as intended to be expanded at the Final Business Case ("FBC") stage within the PBC, should be performed within the newly required DBC at the next stage.

3.3 Proposed Approach to Procurement and Implementation

Section 4.10 of the Public Spending Code outlines that the PBC should consider options for procurement and implementation.

3.3.1 Procurement

The procurement strategy has been appropriately separated into a programme of works, specifically:

- enabling works;
- structural works (bridges);
- main construction works; and
- system works.

The PBC outlines a requirement to procure four additional trams as part of the extension, however appropriate consideration has not been outlined in relation to the procurement strategy of these. Whilst we

are aware that the most suitable approach has been considered in relation to this, the PBC would benefit from elaboration and details in relation to this to ensure it is not interpreted by the reader as an oversight.

We understand from discussion with the Sponsoring Agency that there has been engagement with internal and external procurement specialists in relation to this project, further indicating the awareness of the importance of this aspect of the project progression. However, this has not been demonstrated within the PBC and as such needs to be further articulated and referenced to reflect a full picture of the procurement strategy.

Adequate consideration has been given to the most suitable procurement route form of contract for each type of works and the phasing of each. We note that TII has significant experience in this area having procured these packages for other Luas projects. However, the market is always changing, and it would be beneficial for up-to-date procurement strategy considerations to be included.

3.3.2 Implementation of the Procurement Strategy

The PBC outlines in detail the intentions in relation to the implementation of the procurement strategy for the programme of works as segmented above. The PBC also outlined the most suitable implementation approach noting this may require revision to facilitate any potential fast tracking of the project.

We are aware that the Sponsoring Agency intends to perform market engagement in relation to the procurement strategy beyond this approval gate however elaboration of this approach would be beneficial to the reader and further enhance the PBC.

Conclusions

It is clear that detailed consideration of the procurement strategy for the preferred option has been made at this stage and has been clearly outlined within the PBC, with high level justification for the selection.

As a result, we have concluded that the procurement strategy is **Compliant** and meets the requirements of the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

Recommendations

The following **recommendations**, arising from our review of the preliminary business case:

- We believe the PBC would benefit from further information on the use of NEC or equivalent form of contracts. TII have highlighted that their members sit on the Government Construction Contracts Committee and have advised that it is premature in the project lifecycle to submit the derogation request. This background narrative would be of benefit to be included in the PBC.
- We understand that TII are engaging with internal procurement specialists and external industry experts before deciding on an exact procurement route. The involvement of any such specialists is not clearly mentioned in the PBC which would be beneficial to reference to articulate the robust consideration of the procurement strategies which has been undertaken to date.
- We note that the purchase of 4 trams is required however not referenced within the procurement strategy. We suggest that detail of the efforts of TII as the Sponsoring Agency in relation to this be outlined within the PBC to ensure it is not interpreted as an oversight.

Recommendations

- The PBC would benefit from including information regarding market engagement for contract bundles, procurement and strategy/contract selection. We are aware that the NTA has agreed a preliminary market consultation being carried out at the next stage following submission of the Railway Order as it is believed it would be more beneficial at this point. We recommend that the PBC is updated to reference this detailed consideration.

3.4 Implementation of Delivery and Operation

The Public Spending Code requires that the PBC considers the implementation and operation of the proposal. It further directs that the PBC should consider the Capacity of the Sponsoring Agency to deliver the project.

3.4.1 Implementation of Delivery

We note that it is the intention of TII as Sponsoring Agency to oversee the delivery of the programme of works associated with this project. The PBC references the experience that TII has gained in relation to delivery of existing Luas services and overseeing their operation. At this stage it is clear that sufficient consideration has been given to the implementation of delivery.

3.4.2 Operation

We understand from discussions with the Sponsoring Agency and clarifications received, there is a clear intention of the operation of this project to be aligned with that of the existing Luas Green Line service, currently provided by Transdev on behalf of TII, as it is an extension of an existing service and will not operate in isolation. No details have been given on discussions or contractual status with Transdev.

We understand that the current contract with Transdev will expire within 2025 however there is an option to extend this contract for five to seven years. Given the lack of clarity as to TII's intentions in relation to the operator contract, the PBC would benefit from further explanation as to how TII intends to manage this situation in the next number of years, i.e., via re-procurement of a Luas Operator for services including Luas Finglas, or through an initial extension of the existing contract. Should an extension occur, the PBC should outline the impact this project will have on the existing contract and whether a variation to the contract would arise as a result.

No risk has been identified in relation to the existing operator accepting the requirement to operate the extended service should a contract extension occur similarly there is no reference in the risk register to the need to reprocure a Luas Operator for services including Luas Finglas. Whether this is significant or not based on the operator's contract terms and duration, this should be acknowledged within the risk register and mitigated accordingly.

Conclusions

Following our review of the implementation of delivery and operation aspects of the PBC we have concluded that these aspects of the preliminary business case are **Compliant** and meets the requirements of the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

Recommendation

We recommend that appropriate reference is made to the interfacing of this extension with the current and/or future Luas operator contract. This should be reflected in the risk register and articulated within the preliminary business case as to how TII intends to manage the interface with existing operations.

3.5 Plan for Monitoring & Evaluation Including Key Performance Indicators

The preliminary business case should set out the plan for monitoring and evaluation of the proposal. The plan should set out the key performance indicators by which the impact of the proposal will be measured against its stated objectives.

The PSC outlines how key performance indicators (KPIs) of the inputs, outputs, performance and impacts to be generated from the project, form the basis of a monitoring and evaluation plan that should be developed as part of the preliminary business case and rolled out during project implementation.

Section 4.3 of the PBC outlines the intended impacts this project will have and categorises them in a quantifiable manner.

The monitoring and evaluation plan is also explained within section 6.5 and further outlined within the monitoring and evaluation plan provided in Appendix F of the PBC

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Conclusions

Following our review of the monitoring and evaluation plan including the associated KPIs, we have concluded that the preliminary business case is **Compliant** and meets the requirements of the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

3.6 Capacity for Industry

The Public Spending Code notes that the PBC should consider the capacity of the industry to deliver the project. This will directly influence the strength of competition for the contract and consequently the value for money to be realised through the procurement strategy.

We are aware that the capacity for industry has been inherently considered in a number of aspects.

3.6.1 Project Timeline

The National Development Plan has outlined the intention of this project to be delivered beyond 2030. Whilst there is a funding consideration here, this is also due to an awareness of the capacity of industry to deliver this project in addition to those also earmarked for delivery before this period.

3.6.2 Market Engagement

We understand that this PBC has been developed with a view to having this project ready for immediate delivery, should the green light be given in advance of the proposed timeline. However, it is currently not envisaged to commence delivery for a number of years and TII, as Sponsoring Agency, note that it is their intention to commence market engagement on this project at a later date, aligned to the commencement of a railway order process.

Conclusions

The PBC is being developed some years out from the proposed commencement of the procurement. TII have stated their intent to engage with the market once a railway order process commences. This, is coupled with TII's ongoing engagement with the market as an agency involved in capital delivery.

We can conclude that this aspect of the PBC is **Compliant** and does meet the requirements of the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

Recommendations

The following **recommendations**, arising from our review of the preliminary business case:

- The significance of the current market constraints to delivery multiple major projects is well known. TII as Sponsoring Agency have acknowledged this by proposing market engagement for this project around the railway order process and in line with the National Development Plan project delivery timeframe as well as noting the intention to ideally deliver this project ahead of schedule if capacity and funding permits. The PBC would however benefit from clear articulation of such an intention in a specific section.

4 Costs and Benefits

4. Costs and Benefits

Relevant Public Spending Code Considerations:

- Are project costs including contingencies realistic?
- Have cost ranges been identified for different performance scenarios?
- Have these been benchmarked?
- Has a funding model and/or expenditure trajectory been mapped out?
- Is the envisaged spend affordable?
- What drives the cost, schedule, benefits, productivity and performance of the project?
- Is the estimated project cost range realistic?
- If not, what are the likely range of costs?
- Are project benefits realistic?
- Has a benefits realisation strategy been considered?

In our EAP review of the preliminary business case, we aim to validate the robustness of the considerations, assumptions and methods used in deriving estimates of costs and benefits and verify that they will stand up to scrutiny as the project develops. It is not the role of the EAP to rectify or re-evaluate the estimates of costs or benefits or to determine the accuracy of costs outlined; the EAP role is rather to identify any gaps or opportunities to improve on the robustness of the estimates as presented.

This chapter begins with a high-level discussion of the costs and benefits estimates. This is then considered in more detail across three themes: benchmarking of costs; contingency and optimism bias; and time, cost, and function.

4.1 Accuracy of Project Cost and Benefit Forecasts

In accordance with the Public Spending Code, all projects are subject to a financial appraisal where the total costs incurred throughout the life of a project are outlined. This is considered against the economic appraisal performed which details the potential benefits of the project. As part of the assessment of project costs, items such as total investment cost, operating cost, maintenance costs and forecasted revenue streams are evaluated as well as any terminal/residual value of the asset or assets at the end of the evaluation period.

Whilst only the preferred option has been costed, a consideration and conclusion to which can be noted within section 3.2.3 of this report, this section focuses on the accuracy of costs outlined in addition to the benefits forecasted.

From our review of the preliminary business case, we note the following:

4.1.1 Project Costs

Accuracy of Costs

- Our team have reviewed the costs outlined within the PBC and have discussed these in detail with TII and their advisors. We understand that robust consideration has been given to the various aspects of delivery and operation of this project.

- A discount rate of 1.79% has been used for discounting project cash flows in line with the DPENDR / National Development Finance Agency (NDFA) guidance at the time of the development of the financial appraisal.
- A residual value has been included as Luas Finglas will have an asset life in excess of the mandated 30-year financial appraisal period under the PSC.
- The base cost for the project has been outlined as €234 million.
- As noted within section 3.2.3 of this report, several risk-based scenarios have been performed in relation to the cost forecasts, P30 as a stretch target, P50 as base case and P80 which was deemed the client prudential appraisal value based on reference class forecasting. A risk weighting for each scenario has been applied to the base cost of €234 million as noted below:

	Management Stretch Target - P30	Management Base Target - P50	Client Prudent Appraisal - P80
Risk Allowance	€36 million	€100 million	€167 million

Inflation

- The cost of inflation within the financial appraisal is estimated over the full delivery period to 2035. Inflation was assessed against the P30, P50 (Base), and P80 scenarios. Low, medium and high probability levels were assessed against each scenario.
- As part of the project inflows, fare revenue is considered as Luas Finglas is expected to attract a high number of passenger journeys. An inflation rate of 2% per annum has also been applied to these future rates. Inflation rates have been included as per the NDFA guidelines. For services with a labour component below 50%, the Harmonised Index of Consumer Prices ("HICP") has been applied with the applicable medium to long-term rate being 2%. For services in excess of 50%, HICP + 1% has been applied. Whilst transport fares are currently reducing, in the lifecycle costing of this proposal it is prudent to incorporate annual inflation to recognise likely incremental increases in fares across the project lifecycle to account such inflation. The inclusion of inflation is in line with the Common Appraisal Framework and the Public Spending Code.
- Inflation has been included within the project costs as follows:

	Management Stretch Target - P30	Management Base Target - P50	Client Prudent Appraisal - P80
Inflation	€94 million	€162 million	€255 million

VAT

- Within the financial appraisal, the PBC outlines that VAT has been identified as a transfer cost as it would be offset on an overall Exchequer basis. Whilst the PBC is correct in that this ultimately will be reimbursed through revenue, it is inaccurate to disregard the relevance of VAT. The Public Spending Code recognises that the Sponsoring Agency, who will ultimately incur the cost of development of any project, should outline the costs inclusive of VAT as this will be paid as a

portion of the ultimate project costs. With consideration for the above statement in relation to offsetting in mind, the costs of this project are however outlined in table 5.2 of the PBC inclusive of VAT as required.

Vat has been applied to each scenario as follows:

	Management Stretch Target - P30	Management Base Target - P50	Client Prudent Appraisal - P80
VAT	€57 million	€78 million	€103 million

Total Project Costs

As outlined within the PBC and detailed in the below table, the total project costs equate to a range of €421 – €759 million.

	Management Stretch Target - P30	Management Base Target - P50	Client Prudent Appraisal - P80
Base Cost	**€234 million**	**€234 million**	**€234 million**
Risk Allowance	€36 million	€100 million	€167 million
Risk Adjusted Cost	**€270 million**	**€334 million**	**€401 million**
Inflation	€94 million	€162 million	€255 million
Pre-Tax Cost	**€364 million**	**€496 million**	**€656 million**
VAT	€57 million	€78 million	€103 million
Total Project Cost (CAPEX)	**€421 million**	**€574 million**	**€759 million**

Sunk Costs

- The PSC specifically notes within Section 3.1.2 of the Supplementary Guidance – "Carrying out a Financial Appraisal" that sunk costs should not be included within a financial appraisal but should be detailed within the preliminary business case for context. We understand that the financial appraisal of this project includes approximately €2.68 million of costs incurred before the financial appraisal was performed. These are sunk costs and in line with the PSC should be excluded from the financial appraisal. Below we have outlined the percentage of costs within the base and project costs which are considered sunk.

	Management Stretch Target - P30	Management Base Target - P50	Client Prudent Appraisal - P80
Sunk Costs	€2.68 million	€2.68 million	€2.68 million
% of Base Case	1.15%	1.15%	1.15%
% of Total Project Cost	0.72%	0.53%	0.40%

Impact of Timeline on Costs

- The timeline for completion of this project, which we will discuss within section 4.4, outlines an expected construction commencement in 2030. Given this is 6 years from today, the estimated cost outlined with PBC for this project includes a material inflationary cost solely related to this prolonged period before commencement. It is important to note that if the project were to commence earlier, i.e., in the next 2-3 years the projected cost associated with it would be materially less than what is currently projected within the PBC.

4.1.2 Identified Benefits

Scheme impacts and benefits have been estimated using the NTA's Regional Modelling System and they have been monetised where possible. The benefits have been categorised as follows for analysis:

- Tram user benefits,
- Park & ride user benefits,
- Journey time reliability benefits;
- Active mode benefits; and
- Road safety benefits

Scheme costs are represented in economic terms, using a social discount rate of 4% and removing the effects of VAT and inflation. A shadow price of public funds has been applied.

The above benefits have been monetised for assessment within the economic appraisal and in order to determine the benefit to cost ratio which has been discussed within section 4.5 of this report.

Conclusions

Having reviewed the accuracy of costs and benefits for this project within the financial and economic appraisal performed, we have noted that robust analysis has been performed to develop the costs and benefits outlined within the PBC. An element of sunk costs have been included within the financial appraisal to the value of approximately €2.68 million. As outlined above, the sunk costs equate to approximately 0.40% of the client prudent appraisal costs at P80 which can be considered wholly immaterial. We have therefore concluded that this section of the PBC is **Compliant** with the requirements of the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

Recommendations

The following **recommendations**, arising from our review of the preliminary business case:

- Sunk costs should not be incorporated within the financial appraisal under the newly implemented Infrastructure Guidelines and Transport Appraisal Framework. We recommend that the approach to the financial appraisal of such projects which results inclusion of a degree of sunk costs, is amended for future projects.
- We are aware that the discount rate chosen of 1.79% reflects the NDFA determined rate at the time the financial appraisal was being performed. This has however significantly increased by over 100bps to 2.91% for Q1 2024. This increase in the rate would outline a lower NPV. Whilst we are aware it is the intention of TII to update the discount rate at the next stage when finalising costs of the preferred option, we recommend that consideration is given to appropriately reflect this discount rate uplift within the PBC through either updating the financial appraisal to reflect the rate change or through performing a sensitivity analysis to the rate change.
- The timeline for completion of this project, which we will discuss within section 4.4, outlines an expected construction commencement in 2030. Given this is 6 years from today, the estimated cost outlined with PBC for this project includes a material inflationary cost solely related to this prolonged period before commencement. It is important to emphasise that if the project were to commence earlier, i.e., in the next 2-3 years the projected cost associated with it would be materially less than what is currently projected within the PBC.

4.2 Benchmarking of Costs

Benchmarking of project costs against the costs of comparable projects is an important aspect of the Public Spending Code.

The inclusion of benchmarking of costs is set out in section 4.2 of the PBC and we note the following in relation to this aspect of the PBC:

- Independent reviews of the costs were performed by advisors, a report in relation to which is appended to the PBC.
- Reference class forecasting (RCF) has also been performed to ensure these are appropriately benchmarked. Which has been derived from the cost performance history of numerous complete light rail extension projects.
- A table outlining the risk allowance within the costs outlined as a result of the RCF performed is included within the PBC. This shows a P30, P50 and P80 allowance which equate to the probability of 30%, 50% and 80% of the final costs being at or lower than the estimated total amount respectively.

Conclusions

The PBC outlines robust consideration for benchmarking of costs through the use of independent experts and reference class forecasting.

Conclusions
We have concluded as a result that this section is **Compliant** and meets the requirements of the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

4.3 Contingency and Optimism Bias

The Public Spending Code requires that the financial appraisal performed includes a contingency cost and accounts for optimism bias.

We have noted that:

- Significant consideration has been given to the importance of contingency and optimism bias within the financial appraisal through the use of a risk-based allowance and reference class forecasting. The risk allowance chosen within the financial appraisal, as outlined within section 4.1.1 of this report, equates to €100 million under the P50 base case scenario.
- The PBC references acknowledgment of potential optimism bias when considering the history of previous successful projects and this has been factored into the financial appraisal through the use of a risk allowance.

Conclusions
We conclude that there has been adequate consideration of contingency and optimism bias in the PBC and as such this area is **Compliant** and meets the requirements of the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

4.4 Time, Cost and Function

As part of the EAP, we have considered the progress of the project in terms of time, cost and function. We have replaced quality with function in this assessment to account for the special nature of the project. It is not sufficient that the new development is of good quality - it must also satisfy the functional requirements and enhancements as identified under the objectives.

4.4.1 Time

The PBC is required to present an up to date, realistic and comprehensive implementation timeline. As previously stated, we are aware that the timeline for this project envisages a construction start date in 2030 to align with the expectations of the National Development Plan. TII as the Sponsoring Agency are proactively progressing this project now to ensure it is prepared to be delivered should the opportunity arise in advance of the stated expectation of a 2030 commencement period.

4.4.2 Cost

As previously outlined in section 4.1, the associated cost is clearly articulated within the PBC however a material inflationary element is included due to the projected construction commencement of 2030. Should

this project proceed to delivery in advance of the current 2030 timeframe the projected costs would be significantly lower due to a lower inflationary impact.

4.4.3 Function

The PBC clearly outlines the function of the project to be as follows:

1. To deliver a 3.9km extension of the Luas Green Line from Broombridge to Charlestown by 2035.
2. Deliver habitat creation during design and construction periods, replanting trees and incorporating a grass track design.
3. To increase transport capacity to the city centre from the north-west of the city and cater for 10,000 'disadvantaged people near Luas Finglas.
4. Provide a reduction in journey times to those currently travelling the route during peak hours and to support land redevelopment near each of the proposed Luas Finglas stops.
5. To develop a 350-space Park & Ride facility and integrate the wider public transport system.
6. Deliver walking and cycling routes along the proposed route as well as cycle parking at each new station.

The PBC outlines that in order for the proposed project to be considered to have achieved functional success, it is required to achieve the above stated objectives however little reference is made to the interfacing of this extension with existing services as outlined within section 3.4.2 of this report.

Conclusions

The time, cost and function of the project have been sufficiently considered within the PBC. We therefore can conclude that these aspects are **Compliant** and meet the requirements of the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

4.5 Value For Money and Affordability

The Public Spending Code requires that the preliminary business case assesses the affordability of the proposal within existing resources. It also requires that throughout the planning stages of a project, the Sponsoring Agency verifies the continuing viability of the project, including the project being affordable and representing value for money in the context of constrained Exchequer resources.

4.5.1 Value for Money

- Detailed analysis has been performed in relation to the determination of the benefits under multiple scenarios including whether or not MetroLink is built and the consequential impact on the benefits forecasted for this project.
- The incremental cost and benefit of Luas Finglas in the Core Future Scenario generates a Benefit to Cost Ratio ("BCR") of 1.4 and a Net Present Value ("NPV") of €108 million within the economic analysis with a considerable gap of 0.3 between it and the next best scenario. The analysis has been underpinned by reference class forecasting and sensitivity analysis and the results appear to be robust, with a BCR ranging from 0.83 to 2.0.
- Based on this analysis, the project represents a net positive to society. It is noted in the PBC that the project will deliver significant monetised benefits estimated to be €349.2 million. It is important

to note that some of the benefits of Luas Finglas cannot be monetised and therefore BCR should be considered with the MCA to capture value.

- It is clear that significant analysis has been performed in relation to this aspect of the PBC with detailed sensitivity analysis and a CBA performed.
- As previously stated, the above BCR is impacted by the existing time lag included within the timeline for the delivery of this project, noted to exist to ensure alignment with the National Development Plan stated timeframe for delivery. Should the project be delivered ahead of schedule, the estimated cost would be expected to materially reduce as a result of a reduction in the incorporated inflation cost. This would consequentially increase the BCR and therefore enhance the value for money achieved by the delivery of this project.

4.5.2 Affordability

- The peak Exchequer funding request which will be net of VAT is due to occur in 2032 / 2033 for approximately €206 million combined.
- The costs involved in implementing Luas Finglas are intended to be offset by the increase in fare revenue generated in line with demand growth as a result of the provision of this extension to the existing service. Fare inflation has also been considered which, as noted in section 4.1.1 of this report, is considered prudent due to the expectation for incremental fare increases across the project's lifecycle to account for the cumulative inflationary impact. This is in addition to the residual value reflected the life of the asset which is expected to extend beyond the 30-year appraisal period.
- The PBC concludes that total cost for implementing Luas Finglas is €105m in nominal terms excluding VAT.

Conclusions

In our review of the preliminary business case, we have concluded that the Public Spending Code requirement for detailing the value for money assessment and affordability have been addressed.

On this basis, our conclusion is that this section is **Compliant** and meets the requirements of the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

Recommendations

The following recommendations, arising from our review of the preliminary business case:

- The funding requirement for the project should be further considered within newly required DBC where finalised costs based on the detailed design completed are outlined.

5 Stakeholder and Risk

5. Governance and Risk

Relevant Public Spending Code Considerations:

- Has initial development of an appropriate governance structure occurred?
- Is the risk identification and management strategy feasible?
- How will the risk management strategy be communicated to key stakeholders?

Our EAP of the preliminary business case for Luas Finglas seeks to verify that due consideration has been given to detailed risk identification, a risk management strategy, an outline of the intended governance structure which includes reference to an appropriate mechanism for communication with key stakeholders. It is not the role of the EAP to define or correct the approach to stakeholder and risk management; but to identify any gaps or opportunities to improve the stakeholder and risk management approaches as presented.

This chapter contains two subsections. The first subsection considers risk identification and management while the second considers the appropriateness of the governance structure with a particular focus on stakeholders and how they impact the Project.

5.1 Risk Identification and Management

The Public Spending Code requires that the preliminary business case addresses and considers a risk assessment noting appropriate mitigation measures and details a risk management strategy to ensure mitigations are actioned and monitored accordingly.

Through our review of the preliminary business case, we note the following:

- A live risk register has been created for Luas Finglas which identifies risk events relating to pre-procurement, procurement, design and construction changes which shows proactivity in risk management.
- Qualitative and quantitative risk assessments have been developed using a three-point estimate of schedule or cost impact for probable risk events – low, medium, high.
- TII Advisors, Barry Transportation and Egis, have actively pursued risk management through their Monitoring and Evaluation Sustainability Plan for the Project.
- The risk register and risk management strategy have been developed with consideration of lessons learnt from other relevant projects both internationally and in Ireland.

Conclusions

It is our conclusion that risk has been sufficiently addressed and considered within the preliminary business case, and that this section is **Compliant** and meets the requirements of the Public Spending Code and Common Appraisal Framework at Approval Gate 1.

5.2 Appropriateness of Governance Structure

An appropriate governance structure is central to the purpose of the Public Spending Code. For Approval Gate 1 considerations, the PSC requires that the PBC consider arrangements for governance of a project and arrangements for commercial management of contracts. The PSC requires that the PBC provides early-stage governance options for the implementation and operation phases of investment proposals. It notes that advanced engagement with these issues can ensure a more robust treatment of risks, early identification of potential obstacles and smoother execution of later stages of the project lifecycle.

For this project, we note the following:

- A governance framework has been developed which integrates corporate governance requirements of both TII and NTA. It's key focus' are as follows:
    - Informed decision making
    - Oversight
    - Scrutiny and challenge
    - Accountability
- The PBC notes that this project follows the other Luas projects delivered by TII in Dublin and there has been significant delivery experience gained because of these and other projects, consideration of which has been factored into the developed governance structure for Luas Finglas.
- The Luas Finglas Project Board has been delegated authority by the TII and NTA board to deal with all matters not reserved by TII, NTA and DoT. It is their responsibility to regularly update involved parties throughout the Project.
- The Project Director will act as the main point of contact between the Project Board and the Project team.
- Whilst the implementation governance structure is clearly identified, as outlined within section 3.4, the PBC assumes that Luas Finglas will align to the existing operating model and governance structure when it reaches the operational phase. It would be appropriate to reference that due consideration in relation to incorporation of this extension into the governance model within the PBC as not only is it an extension of the existing line but also new stations and a park and ride facility which will include operations teams for each aspect falling under the existing structure.

Conclusions

Overall, the governance structure sets out a clear and established path of governance for the delivery and operation of Luas Finglas.

Our conclusion is that this section is **Compliant** and meets the requirements of the Public Spending Code at Approval Gate 1.

Recommendations

The following **recommendations**, arising from our review of the preliminary business case, would reinforce a strong governance structure and add value to the project delivery from early on:

- The PBC would benefit from further detail regarding the Stakeholder Engagement Strategy and Interface Management Plan which is in place.
- We suggest that the communication channels and protocols that have been developed throughout the governance structures as well as the consultation process which involves all the stakeholders should be developed further at this point.
- A more detailed and comprehensive account of the external assurance on the project should be developed. It would be beneficial to place more focus on the involvement of external assurance efforts within the PBC. We are aware of the following:
    - NTA requires peer review of key aspects of the project;
    - NTA has undertaken external review of the cost estimate, procurement strategy and preliminary design aspects;
    - An independent review of the PBC was undertaken on behalf of the NTA; and
    - Internal TII specialists and independent industry experts have provided scrutiny and challenged the Project Team during the production of the PBC.
- The governance structure should be updated to account for the new requirements of the Infrastructure Guidelines and TAF at subsequent stages, namely the DBC.
- When completing the DBC, we recommend that a governance structure for project delivery beyond the appointment of project director should be outlined. We recognise that due to the National Development Plan timeline for the delivery of Luas Finglas, TII will aim to finalise this at the DBC stage as required.
- Whilst it is assumed the operational phase will be governed under the existing governance structure, this project includes a few aspects including a park and ride facility and new stations. We recommend further expanding the existing governance structure at the next stage to ensure it sufficiently references the consideration of these operational services under the intended alignment with the existing governance structure to ensure this is clearly articulated as the PSC requires.

Appendix 1 – Shortlisted Route Options

Luas Finglas Option 2A

Luas Finglas Option 3A

Luas Finglas Option 3JA

Luas Finglas Option 3JB

Source: Transport Infrastructure Ireland, 2019

Appendix 2 – Preferred option – 2A

Appendix 3 – Project Timeline

Milestone	*Anticipated Timeline*
Preliminary business case Submission	Quarter 2 2023
Approval in Principle: Approval Gate 1	Quarter 3 2024
Submit Railway Order Application	Quarter 4 2024
Railway Order Granted	Quarter 1 2026
Approval to Proceed to Tender: Detailed Business Case, Project Design, Planning and Procurement Strategy Submission – Approval Gate 2	Quarter 2 2028
Tenders Issued	Quarter 1 2030
Final Business Case Submission	2030
Approval to Proceed: Post Tender – Final Business Case - Approval Gate 3	2030

Appendix 4 – Clarifications Process

Clarifications which Resulted in PBC Update

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
EAP-PBC-002	PBC 17	Typo: "from population growth is not be met by…"	• Text to be updated in PBC as suggested	N/A	Text will be updated in PBC as suggested	**Closed** subject to changes being made as outlined
EAP-PBC-004	PBC 23	Should objective #1 be more specific to state where / who the existing and future demand being served is?	• Objective 1 has been developed throughout the project including the previous SAR and PAR, and relates to the existing and future demand for travel across the transport network. The nature of this demand is influenced by a range of factors including population, employment and other destinations in the network along with the characteristics of the network particularly the public transport and active travel networks. The preferred solution will not just serve the population along the North West Corridor, it should also open up more opportunities for people to access these areas from anywhere across the transport network. • The minor change in wording of the objective will also not substantially change the PBC or its outcome but would add delay and additional expense to the project at this stage to retain consistency across multiple elements	No further comments. We note that the measurable elements associated with the objective will be reconsidered per responses to DoT		Agree with DoT comment - please ensure this update is made

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
EAP-PBC-006	PBC 25	Bottom of the page notes that "A series of KPIs are linked to the Appraisal Criteria to assess the performance of Luas Finglas". Should these KPIs be to assess the options available to deliver upon the objectives and need for the intervention rather than the performance of Luas Finglas?	• Will update text in PBC as suggested	No further comments	Text will be updated in PBC as suggested	**Closed** subject to changes being made as outlined
EAP-PBC-007	PBC 26	Consider the appropriateness of the inclusion of the Logic Path Model in this section of the report. The LPM should establish the objectives, outputs impacts and KPIs once the preferred options is established and set this out as part of the monitoring and evaluation plan	• The LPM shows linkages between the objectives and economic appraisal criteria and KPIs and, therefore, is of benefit in this section • Noted that the LPM could also establish linkages to the monitoring and evaluation plan and propose to also include a condensed version of the LPM in the M&E section in Chapter 6 linking the objectives to potential KPIs for monitoring and evaluation of the preferred option	No further comments	Section 6.5 of the PBC will be updated with a condensed version of the Logic Path Model linking the study objectives clearly with potential KPIs for monitoring and evaluation	**Closed** subject to changes being made as outlined
EAP-PBC-012	PBC 30	Can the expectation of time frame for submission of a railway order be reconsidered? I assume 2023/2024 is no longer the case given it is the end of 2023.	• At the time of submission the reference in the PBC was correct as to intention, it is not reasonable to suggest that the PBC would be updated to reflect small changes of this nature. However where possible such changes will be facilitated if the PBC is updated	Noted	Text will be updated in PBC to reflect latest timelines for railway order submission	**Closed** subject to changes being made as outlined
EAP-PBC-014	PBC 38	It is unclear what work has been performed to conclude that a 350 vehicle P&R is appropriate? It is important to outline why this is the case and what modelling was performed in relation to the demand analysis for this and impact on the service.	• The scale of the Luas Finglas Park & Ride has been defined within the NTA Greater Dublin Area Transport Strategy, however the demand analysis and impact on service as a result of providing a 350 space P&R has been considered in the appraisal of the Luas Finglas scheme.	We kindly suggest that this detail be included in the PBC to reinforce the PBC	Text in the "Sponsoring Agency Response" will be added into Table 3.3 of the PBC under 13 Park & Ride Alternatives	**Closed** subject to changes being made as outlined

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
		If there potential for greater demand which will impact the capacity from the start of the line towards the city centre etc. If a larger capacity is needed in time, can this be facilitated?	• The Luas Finglas Park & Ride (P&R) forms part of the wider P&R Strategy for the Greater Dublin Area conducted by the NTA in line with the GDA Transport Strategy objectives. The P&R Strategy set out objectives for Park & Ride which seeks to intercept private vehicle traffic at the earliest point on the network that would support the provision of higher frequency public transport. In developing the strategy in the GDA and applying these principles a key focus was ensuring that the demand generated along a corridor was served by Park & Ride Facilities on that corridor and in that regard provision of facilities within the M50 corridor should be limited. This approach is detailed in the GDA Park & Ride Strategy that was published as a background paper to the GDA Transport Strategy 2022-2042. • A travel demand analysis was undertaken along the M2 corridor between the M50 and Ashbourne. Select links from the Eastern Regional Model (ERM) were taken at various locations along the corridor for both the current and future year (2043), to determine the destinations of cars passing each location based on the model. The recorded data included the number of car trips passing each of the selected links, heading southbound during the AM peak and northbound during the PM peak. Two separate destination zones within Dublin City were chosen i.e. the Canal Cordon and Docklands Zone, and the Suburban Zone, defined as a 2 to 3km wide corridor between the M50 and the Canal Cordon Zone. Different capture rates for both base and future years were applied, and the results determined the optimal location and daily usage of the P&R facilities along the M2 corridor.			

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
			• For the M2 corridor a 350 bus based Park & Ride in the environs of Ashbourne complemented by a 350-space Luas P&R at Finglas was defined as the appropriate provision to meet demand in line with the objectives for Park & Ride. It should be noted that the northern bus-based P&R facility is currently at option selection stage and a planning application is expected to be lodged by the end of 2024. • A key consideration in determining the appropriate sizing for the Luas Finglas Park & Ride was to ensure that it does not attract higher levels of demand from other corridors via the M50 (e.g. N3 and M1) or that is does not attract significant volumes of local trips which would have access to high quality frequent public transport. For this reason future expansion of the facility at Finglas has not been considered as the potential future demand for Park & Ride generated on the corridor between Ashbourne and the M50 does not warrant higher levels of parking.			
EAP-PBC-021	PBC 46	The outlined inflation rates for construction are below that of current inflation, we would suggest these are updated to reflect current rates.	• The inflation model extends to 2035 and utilises bespoke inflation rates across four separate sub-indices which align with the constituent elements of the scheme base cost. • Each of the sub-indices are further broken down per quarter across the proposed approximate 150 month project lifecycle. As the actualised monthly inflation data is released it is unlikely to exactly mirror the data included in the cost models. • The review clarification focuses on one of the four constituent elements of the scheme base cost (namely construction). The estimate base date for construction costs was Q1 2022 which has enabled the base forecast to factor in market performance during COVID-19 and measure the impact on inflation as economies have unlocked and reawakened after the initial effects of the pandemic.	No further comments		

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
			• The inflation model does not take account of the relatively recent inflationary pressures in energy and commodities markets because of the Russia / Ukraine conflict. The wider effects of such have extended through the construction supply chain since Q1 2022. It is not practical to update the model to account for actualised monthly data over the approximate 150 month duration and take account of all geo-strategic situations which may or may not affect the construction supply chain. • Seven inflation quarters have passed since scheme base cost production (Q2 2022 to Q4 2023). Unfortunately data is not currently available to compare the estimated inflation indices against the actualised percentages up to Q4 2023. Notwithstanding this the historical 10-year inflation average for the period 2010 to 2019 broadly aligns with the inflation forecast included in the Preliminary Business Case. The European Central Bank main interest rate (Deposit Facility) has increased substantially since Q1 2022 from around 0% to 3.75% as at August 2023 in an attempt to control the inflation being experienced across the euro area. The expectation is that due to this ECB adjustment the inflationary pressure will revert to the long-run trend and therefore at this stage it is not proposed to update the cost models.			
EAP-PBC-027	PBC 76	Under "Affordability" it is noted that VAT is considered a transfer cost as it would be offset on an overall Exchequer basis. Does the project sponsor not have to fund VAT in any case and therefore should it be included in the affordability assessment?	• Suggest removing the sentence "VAT is considered a transfer cost as it would be offset on an overall Exchequer basis" to avoid any confusion. All costs have been presented including and excluding VAT.	No further comments	Identified text will be deleted from the PBC	**Closed** subject to changes being made as outlined

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
EAP-PBC-028	PBC 79	In Delivery is there does not appear to be consideration given to how the Luas will be operated but rather how it will be procured.	• Luas Finglas is an extension of the existing green line, the operation of which is procured using competitive tender process. As such, Luas Finglas will not be operated in isolation. The option for the operation of Luas Finglas will be included at the appropriate time during the cycle of contract renewals.	Would suggest that the PBC would incorporate this Sponsoring Agency response to make clear to readers that it is the intention of the Sponsoring Agency that the operation of Luas Finglas will be included in the operator contract renewal.	Sponsoring Agency response will be included in Chapter 6 of the PBC as suggested	**Closed** subject to changes being made as outlined
EAP-PBC-039	PBC 90	Project key milestones should be updated to the extent that there is further clarity. PBC approval will not be obtained within Q4 2023 at this stage. Is it reasonable to assume that it will take 4 years from railway order approval to obtain final approval to go to site?	• At the time of submission this was the intention, it is not reasonable to suggest that the PBC would be updated to reflect small changes of this nature. However where possible such changes will be facilitated if the PBC is updated. • On the second point this timeline is based on National Development Plan and Greater Dublin Area Transport Strategy 2022-2042. It is possible to shorten the 4 year duration in question should the aforementioned strategy or plan change.	Noted	Project key milestones in Section 7.2 of the PBC will be updated in-line with latest anticipated timelines	**Closed** subject to changes being made as outlined
EAP-PBC-048	PBC 92	We intend to outline the build up of cost through the financial analysis for clarity purposes. The financial model and table 5.2 note this to be €506,896,000 however on pages 10, 46 and 47, this is noted to be €504m as the management base target inclusive of inflation and VAT.				

Clarifications to be Addressed at Next Stage

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
EAP-PBC-016	PBC 43	Table 4.1 outlines the inclusion of €23m for an additional 4 trams to increase the rolling stock to manage additional usage as a result of the extension. Can you please clarify the procurement approach to these additional trams as we are aware of a wider TII procurement of upgraded and expanded rolling stock for the Luas network. Is the intention to seek funding approval for these trams here however procure them as part of a call option on the upgrade project? The approach to the procurement of these trams should be acknowledged and outlined to the extent that it is known at this stage.	• TII's proposed procurement approach for the 4Nr. light rail vehicles is to seek funding approval under the Luas Finglas scheme, however the required trams are proposed to be included as part of a call off option which will be included under the 'Tram Supply Framework' or Rolling Stock supply contract. • Section 6 of the PBC summaries the Emerging Contracting and Procurement Strategy which is preliminary in nature. Approval of the Procurement Strategy occurs at Approval Gate 2. TII will refine and further advance the Procurement Strategy prior to Approval Gate 2 which will not only encompass consideration of developments which have taken place at the design and planning stage but also pay cognisance to expert industry advice and market consultation feedback. • The detailed procurement strategy will consider all aspects under S.I. No. 286/2016 - European Union (Award of Contracts by Utility Undertakings) Regulations 2016 in advance of Approval Gate 2 to ensure a full and robust assessment. • This matter is being considered in detail and therefore it is not recommended to amend Section 6 of the PBC at this stage.	No further comments		
EAP-PBC-017	PBC 43	Purchase of 4 new trams is mentioned however, not included for in the procurement strategy. Has this been considered?	• See response to EAP-PBC-016	The DBC should develop this element, however the PBC would benefit from the background on this.		

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
EAP-PBC-018	PBC 45	Has consideration been given to the revision of the RCF amounts given they are 18 months old and do not account for the significant construction inflation since that date?	• The financial appraisal is based on Scheme Base Cost + Risk + Inflation. Reference Class Forecasting (RCF) uses a database of schemes of a similar "class" to ascertain risk allowances to apply to projects. • The cost curves utilised for Luas Finglas were derived from the cost performance history of numerous complete light rail extension projects. RCF considers the original base costs quoted for these historic projects against their final cost performance, to generate an assessment of uplift percentages that ought to be added to base cost estimates to generate a particular level of confidence that project budgets will be achieved. The resultant risk percentage is applied to the Scheme Base Cost and an inflation allowance is then added to the sum or product of Scheme Base Cost + Risk. • Inflation is not directly linked to the RCF amounts as has been suggested in the clarification but is instead derived via a separate inflation calculation or mechanism. The Scheme Base Cost has a base date of Q1 / Q2 2022 so in theory inflation only should be applied after this date. While it is acknowledged that 'significant construction inflation' has been encountered over the past number of years some of this would be accounted for in the Scheme Base Cost (up to Q1 / Q2 2022) with the remainder (between Q1/Q2 2022 and present day) captured in the inflation allowance separate to the RCF calculation. As such no consideration has been given to revising the RCF amounts at this stage. The RCF amounts will be revisited at Final Business Case stage.	No further comments		

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
EAP-PBC-019	PBC 46	The inflation assumptions included in table 4.4 are averaged even though these inflation rates are across different categories of costs. Is an overall average therefore appropriate given the indices relate to different and distinct cost categories?	• Overall averages have been included in table 4.4 to provide the reader with a high-level overview which is easy to comprehend, so the question posed is understandable. However, 'overall averages' have not been used in the development of the cost model. • The included averages are unweighted and are targeted at the majority of readers of the document to simply explain the use of 3 different inflation scenarios across the four constituent components of the scheme base cost i.e. cost models have been developed based on low, medium and high inflation scenarios with the medium and low scenarios being 1 and 2 percentage points respectively below the high scenario. • The actual exercise to derive the inflation figures is much more complex and detailed than has been alluded to on page 46 of the PBC and it not recommended to include all details in the publication. The included inflation indices commence from the base date Q1 / Q2 2022 and provide Quarterly data to 2031. These indices have been applied against the relevant cost elements of the Scheme Base Cost estimate to establish the inflation element of the Total Preliminary Cost Estimate. The inflation model trends were extrapolated to 2035 for Luas Finglas, so as to align with the expected completion date of the scheme. • The core model contains several inflation indices which aim to track cost and price trends deemed to be relevant to the general make-up of Luas Finglas including: 1. Civil Engineering (Construction) 2. Rolling Stock 3. Land & Property 4. Preparation & Administration Costs (Indirect). The indices measure changes in costs of labour, materials and plant.	No further comments		

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
			• The four components of the SBC were cash flowed based on the information available at the time. The inflation calculation compounds the figures over the 13-year period in question. The RCF allowances have also been inflated to 2035 on a reducing cashflow basis. In the instance of RCF the total risk pot was divided into each of the constituent components of the scheme base cost to form an appropriate split. • An overall average is deemed appropriate to satisfy the vast majority or readers of the document. • The references to unweighted averages can be removed at Final Business Case Stage.			
EAP-PBC-026	PBC 74	The noted discount rate of 1.79% should be updated for current DEPNDR rate (3.4%)	• Discount rate was correct at the time of undertaking the Financial Appraisal for the PBC. • The change in the discount rate would strengthen or have a negligible impact on the financial appraisal of the scheme given the timing of costs on the scheme. In addition, given that there is limited income the financial appraisal is primarily considering the costs • the Financial Discount rate is revised every quarter and the prevailing rate at FBC stage will be used in the FBC.	No further comments		
EAP-PBC-029	PBC 79/80	The PBC sets out 4 procurement paths for contracting bundles - has a risk assessment or other high level assessment been undertaken to come to these indicative strategies?	• TII have successfully delivered many similar schemes to Luas Finglas through differing procurement routes and are well aware of the risks associated with differing approaches. • The Emerging Contracting and Procurement Strategy included in the PBC is preliminary in nature and does not address risk assessment. TII will refine and further advance the Procurement Strategy prior to Approval Gate 2 which will ensure a full and robust risk assessment of the proposed approach is documented.	The DBC should develop this element, however the PBC would benefit from the background on this.		

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
			• Numerous workshops have been held to date to discuss the risks associated with specific procurement & contracting routes. External industry experts have also been engaged to plan and assess the most suitable way forward in advance of Approval Gate 2. Planned future market consultation will also inform the process.			
EAP-PBC-030	PBC 79/80	Has market engagement been considered for the contract bundles and procurement strategy/contract selection	• Market engagement has been considered, however as agreed with the NTA a preliminary market consultation will be carried out at a later stage. • Due to market pressures and numerous market consultations being held on Irish public works projects at present (or recent past) it is felt that the market could do without another consultation process particularly considering the NDP timeline for project delivery which participants will be aware of. • It is expected that the once the Preliminary Business Case has been approved by government and the Railway Order has been lodged that the market would be more inclined to provide useful feedback.	The DBC should develop this element, however the PBC would benefit from the background on this.		
EAP-PBC-031	PBC 79/80	It is noted that the CWMF or NEC contract equivalents are put forward as part of the procurement bundles - and it is noted that the derogation from the CWMF will be investigated at Decision Gate 2. Has it been considered to review this further at DDG 1, to front load the planning and review for the procurement strategy at FBC?	• TII have successfully secured multiple derogations to use NEC contract equivalents across numerous major projects under the organisations remit over the past 15 years. TII are aware of what is involved in the derogation process and the appropriate timing for submission to GCCC. TII members sit on the GCCC and have advised that now is not an appropriate time to submit the derogation request due to the premature nature of the project.	The DBC should develop this element, however the PBC would benefit from the background on this.		

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
EAP-PBC-033	PBC 79/80	The procurement routes for procuring the 4 delivery bundles has not been mentioned. Has this been considered? I.e. competitive dialogue, restricted procedure, etc?	• Similar to the EAP-PBC-016 response the Emerging Contracting and Procurement Strategy included in the PBC is preliminary in nature and does not address the exact procurement route. • In the context of Luas Finglas, the Competitive Dialogue Procedure and Innovative Partnership Procedure are not deemed applicable. The Open Procedure (1 Stage) could be used for low value, non-complex Enabling Packages. The Restricted Procedure is commonly used for Infrastructure Works although TII may require the added flexibility of the Negotiated Procedure for the more complex work packages to provide for negotiation with Tenderers including Best and Final Offer which is not permitted under the Restricted Procedure. • The exact procurement route is being further explored and will be detailed in the procurement strategy prior to Approval Gate 2. TII are engaging with internal procurement specialists and external industry experts before deciding on the exact route.	The DBC should develop this element, however the PBC would benefit from the background on this.		
EAP-PBC-034	PBC 79/80	An assessment/consideration of risk allocation and co-ordination between the delivery bundles should be considered. Has this be done specifically in selecting the phasing/bundles?	• Like the response to EAP-PBC-029 the Emerging Contracting and Procurement Strategy included in the PBC is preliminary in nature and does not address the risk allocation and co-ordination between the delivery bundles, however this has been considered by the Project Team with particular focus on interfaces between enabling works, bridge structures, main infrastructure and power & systems. Having delivered multiple major infrastructure packages in the past, TII are well aware of the risk that come with co-ordination between the delivery bundles and these will be further evolved and assessed in the detailed procurement strategy prior to Approval Gate 2. • Process risk minimisation will form one of the key Procurement Objectives.	The DBC should develop this element, however the PBC would benefit from the background on this.		

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
EAP-PBC-038	PBC 88	Governance structure for project delivery (beyond the appointment of project director) should be outlined if known or at least noted that this will be finalised at the FBC stage.	• Due to the National Development Plan timeline for the delivery of this project the governance structure for project delivery has not yet been completed. TII will aim to finalise this at the FBC stage.	Noted		

Further Clarifications which Required no Further Action

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
EAP-PBC-001	PBC 16	2016 Census data used, if there is 2022 Census information available that would be better to inform	• 2022 Census data not available at the time of writing and submitting the PBC • Very limited benefit for additional work in processing 2022 Census data as much of the analysis within the PBC is based on future population and employment projections. These forecasts, and the distribution of growth used, have been agreed with the local authorities and based on the targets and caps set in the National Planning Framework. As such, they provide a robust basis for informing the future year assessment within the PBC.	No further comments		
EAP-PBC-003	PBC 19	Consider documenting any update to strategic relevance / policy since the SAR in this section or if not consider documenting this.	• Section 2.2 of the PBC includes updated relevant policy since the SAR • To keep the PBC succinct, a limited number of key policy documents are presented	No further comments		
EAP-PBC-005	PBC 23	Should objective #3 focus on reduced journey times and be agnostic on the PT form or private car as per Section 2.2 of CAF?	• Objective 3 has been developed throughout the project including the previous SAR and PAR and is agnostic on PT form. Relevant policy, strategies and previous studies highlight the requirement for a public transport solution for the corridor.	No further comments		

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
			This is predominantly a public transport scheme though there are elements of active mode infrastructure within the options which complement the investment in public transport. The requirements to support future sustainable demand from the Finglas corridor cannot be met by an active modes solution alone. As outlined in the PBC, and previous documents throughout this project including the SAR and PAR, car use is still relatively high within the Finglas corridor. Policy such as the Climate Action Plan, Sustainable Mobility Policy etc. is now strengthening towards shifting people away from car use and onto more sustainable forms of travel. In order to do this, it is important that the public transport solution for the corridor is competitive in terms of journey times when compared to private car otherwise it will fail to encourage a mode shift. As such, objective 3 is considered appropriate in its wording and should not be changed in the PBC. • This minor change in wording of the objective will also not substantially change the PBC or its outcome but would add delay and additional expense to the project at this stage to retain consistency across multiple elements			
EAP-PBC-008	PBC 28	The "Assessing Alternatives" section describes how the NTA study devised PT options based on demand & capacity and assessed these based on functionality and cost. Per the PSC, this assessment of the longlist and sifting exercise should be carried out in the PBC and linked to the objectives and carried out in a structured way drawing on frameworks. Currently it's not evident how this longlist and	• The PBC is the culmination of a number of years work dating back to the North West Corridor Study (NWCS) and the GDA Tran relation to level of overall demand & deliverability.sport Strategy. • Chapter 3 of the PBC provides quite a lot of detail of these previous assessments. Sou relation to level of overall demand & deliverability are referenced, with links provided, to other publicly available documents where the reader can find more detailed information.	Nothing further - it's noted that the short-listing process took place at NWCS stage and that this is referenced in the PBC. Noted also that the longlist of options were considered in relation to level		

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
		shortlist of options were devised and how these options were linked to the objectives of the intervention.		of overall demand & deliverability.		
EAP-PBC-009	PBC 28	Further to the above point, Pg. 28 notes that preferred options were selected based on sifting the options and that the preferred option was modelled within the GDARM to confirm its viability. This infers that the preferred option was selected in advance of the PBC and without the due appraisal required under the PSC	• See response above to comment #8 • The development of major transport infrastructure projects is brought through various stages of development over a number of years. The GDA Transport Strategy sets out the statutory plan for the development of the transport network. The Strategy identifies the appropriate modes and broad corridors that are required to meet the existing and future demand for travel across the region. The Strategy is developed and informed using a range of studies and is modelled using the NTA Regional Modelling System. From this basis the individual projects commence the task of identifying the appropriate route within the corridor to meet the requirements of the GDA Strategy. This options selection process is informed by detailed analysis using a range of assessment tools including the NTA Regional modelling System, multi-criteria analysis and CBA are included during these stages. The options selection process is also informed by non-statutory pubic consultation along with engagement with key stakeholders including the local authorities. Once a preferred option is selected further detailed appraisal is undertaken which is again developed using a range of appraisal tools including the ERM. On this basis the comment does not reflect the process undertaken and it is our view that the PBC adequately outlines the options selection process, which is standard across most transport investment projects.	No further comments		
EAP-PBC-010	PBC 29	Pg. 29 describes that the five options in the study were considered in relation to the	• See response above to comment #8	No further comments		

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
		overall demand and notes how certain options were discounted but it is not clear how this sifting process was established and the criteria and framework used to conduct this discounting of options.				
EAP-PBC-011	PBC 29	Further to the above point, there does not seem to be a defined counterfactual option assessed. A "Do Minimum" is referenced and defined in the Transport Modelling Report Appendix but it is not clear what is the counterfactual for the purposes of the PBC appraisal. Per the PSC, the counterfactual should be appraised relative to the Do Something options	• See response above to comment #8 • As per TAF, the "Do-Nothing" option was discounted as it represents an unrealistic future scenario, and therefore, the "Do-Minimum" option establishes a baseline against which the various "Do-Something" options are assessed. • The objectives for the proposed scheme cannot be fully met with the "Do-Minimum" solution, and as such, the option selection process is based on defining the "Do-Something" option that delivers the best levels of additionality • All options have been assessed relative to a "Do-Minimum" and further details of this is provided in the supporting documents referenced in the PBC.	No further comments		
EAP-PBC-013	PBC 35	We would expect the Stage 2 MCA assessment (tables 3.2 & 3.4) to include the base case/counterfactual, can you please clarify why this is not the case?	• See response to comment #11	No further comments		

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
EAP-PBC-015	PBC 43	We would expect the detailed financial analysis to include the cost estimation for each of the options proposed. Can you please clarify why these are not included within the PBC?	• As noted in previous response the development of the option selection process takes place over a number of phases with differing levels of design maturity at the various stages. During the earlier phases of the option selection process, in line with the NTA Cost Management and Project Approval Guidelines, cost estimates are developed as Option Comparison Estimates and subsequently a Feasibility Working Cost Estimate is developed for the preferred option. The Option Comparison Estimates may not include all costs associated with the project where such costs are common across options, furthermore the design maturity of the options does not allow for detailed cost estimation to be undertaken. It is only following the development of the preferred option and preliminary design that a cost estimate which is developed to a level of certainty upon which financial appraisal in line with the PSC can be undertaken. This cost estimate also allows for the use of QRA and RCF can be developed.	No further comments		
EAP-PBC-020	PBC 46	Under "Management Target (Stretch and Base)" it states that management will seek opportunities to achieve the target of P30 with low inflation. Given that P30 is a probability-based cost estimate which measures both controllable and uncontrollable risks is this a target that management can design for or rather simply the risk probability output of a cost modelling exercise?	• P30 is a risk probability output of a cost modelling exercise, however opportunities do exist to manage the design process with the aim of trying to minimise project costs across a range of disciplines. However as the project design progresses there opportunities become sparse. • While P30 and P50 reflect TII's goals for delivering Luas Finglas, the P80 allowance has been utilised in the estimation of the overall delivery costs for the purposes of evaluating the economic benefits of the project. As a consequence of meeting stakeholder and third party requirements it is not always possible to implement the lowest cost design solution.	No further comments		
EAP-PBC-022	PBC 48	There is reference to a 'Luas Finglas Whole Life Cycle Cost Estimation Report' is this report available to be shared?	• Yes - This can be provided.	Please provide	Changed to 'Closed' as this report has been issued to DoT	

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
					(NTA email 01/03/2024)	

Ref. No.	Doc Page Ref.	Clarification	Sponsoring Agency Response	PwC Follow Up	SYSTRA Response	PwC Additional Comments
EAP-PBC-023	PBC 27-49	The demand analysis appears to rely on the North West Corridor Study, from 2015. This forms part of the options appraisal, which is summarised in Chapter 3 of the PBC. This analysis is based on data from the 2011 Census and was used to determine that Light Rail was required in order to have sufficient capacity to meet demand. If there is concern over the evolution of demand since 2011, consideration should be given to updating/refreshing this analysis. If it is believed that the existing demand analysis is sufficiently robust and/or takes a conservative view, which should give comfort to decision makers, the basis for this view should be discussed in the PBC.	• Assessment in the NWCS was based off forecast planning sheets and using NTA Regional Models • This assessment was also more recently undertaken as part of the GDA Strategy update 2022-2042. This again used forecast planning sheet data on population, employment and education provided by the NTA which is not reliant on Census 2011 information. The population and employment projections and distribution of growth used are agreed with the local authorities and based on the targets set in the National Planning Framework. • The modelling assessment concluded that an LRT solution (such as Luas Finglas) is required, working in conjunction with upgrades to the bus service proposed as part of BusConnects to serve future demand for travel in the Finglas corridor. • A summary of this analysis is provided in Chapter 3, with a link provided in a footnote to the modelling report accompanying the GDA Strategy which includes information on all data, assumptions and results.	No further comments	Change status to 'Closed' as per NTA email 01/03/2024	
EAP-PBC-024	PBC 62	Can you please clarify how the €6.1 million in health benefits outlined as a result of the scheme has been quantified?	• Generated using TII TEAM tool reflecting increase in physical activity as a result of Luas Finglas and associated active travel infrastructure. • Further details included in Appendix D Economic Appraisal of the PBC • For this KPI we combined general health benefits (reduced mortality and absenteeism) with mode shift benefits (improved air quality, noise etc.)	No further comments		

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EAP-PBC-025	PBC 63	The economic appraisal typically compares the benefit-to-cost ratio of a number of options but this PBC considers only one option under a number of sensitivities/scenarios. What is the reason for this?	• The development of major transport infrastructure projects is brought through various stages of development over a number of years. The GDA Transport Strategy sets out the statutory plan for the development of the transport network. The Strategy identifies the appropriate modes and broad corridors that are required to meet the existing and future demand for travel across the region. The Strategy is developed and informed using a range of studies and is modelled using the NTA Regional Modelling System. • From this basis, the individual projects commence the task of identifying the appropriate route within the corridor to meet the requirements of the GDA Strategy. This options selection process is informed by detailed analysis using a range of assessment tools including the NTA Regional Modelling System, multi-criteria analysis and CBA are included during these stages. In addition, BCR's were calculated at this stage for the 4no. shortlisted options. The options selection process is also informed by non-statutory pubic consultation along with engagement with key stakeholders including the local authorities. • Once a preferred option is selected further detail appraisal is undertaken which is again developed using a range of appraisal tools including the ERM. It is only following the development of the preferred option and preliminary design that a cost estimate which is developed to a level of certainty upon which financial and economic appraisal in line with the PSC can be undertaken.	No further comments		

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EAP-PBC-032	PBC 79/80	There is little noted in the PBC on Lessons learned from other similar projects - patricianly in relation to procurement, contracts, governance and risk. Has this been considered?	• Yes, Section 4.2 states that "Due to the intricate nature of work involved in the Luas Finglas scheme, the project team have taken a comprehensive approach to dealing with risk / contingency. This stems from lessons learned from other public infrastructure projects". The assessment of delivery risk as detailed in Section 6.3 has been developed taking into account lessons learned from previous Luas projects. In addition the design of the scheme has been progressed based on lessons learned from previous Luas Lines.	Closed		
EAP-PBC-035	PBC 86-88	Has a protocol been structured for Stakeholder engagement and management during either design development and planning, or delivery stages?	• A Stakeholder Engagement Strategy and Interface Management Plan is in place for the project, which are updated as needed throughout the project.	The PBC would benefit from this context and background. And at a minimum, the DBC should develop this elements		
EAP-PBC-036	PBC 86-88	Have communication channels and protocols been developed throughout the governance structures?	• Yes, similar to comment 35, these are managed in a structured manner. An extensive consultation process is in place with all Stakeholders impacted by the scheme.	The PBC would benefit from this context and background. And at a minimum, the DBC should develop this elements		
EAP-PBC-037	PBC 86-88	It is noted that Independent experts and TII will provide scrutiny and challenge the Project Team. Has consideration been given to external assurance on the project development over the lifecycle?	• The requirement to engage external assurance throughout project development is carefully considered in line with: - TII's policies including governance procedures, - The Project Execution Plan, - Infrastructure Guidelines; and - NTA's project approval guidelines (PAG's)	The PBC would benefit from this context and background. And at a minimum, the DBC should develop this elements		

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			• In Line with the Public Spending Code / Infrastructure Guidelines and NTA PAGs, there is a range of assurance processes in place. At various stages in the process, NTA requires peer review of key aspects of the project to be undertaken and submitted as part of the approval gateways. In addition, as part of the NTA approval and review of the deliverables independent reviews are undertaken, to date NTA has undertaken external review of cost estimates, procurement strategy and preliminary design aspects. In addition, an independent review of the PBC was undertaken on behalf of NTA. This approach continues through the subsequent stages of the project • Both internal TII specialists and independent industry experts have also provided scrutiny and challenged the Project Team throughout the production of the preliminary business case. • The 'Infrastructure Guidelines' require an External Assurance Process (EAP) for major capital projects (at this stage) which PWC are now undertaking on behalf of DoT. The EAP recommendations will be highlighted to MPAG and it will be made clear what updates or changes were made to the Preliminary Business Case as a result of the EAP submitted to MPAG for their review. • Further additional external assurance processes will be looked at in future if deemed required.			
EAP-PBC-040	PBC 91	It is important to clearly identify the preferred option as part of the recommendation to the approving authority.	• The NTA, as approving authority, have reviewed the PBC and are satisfied with the recommendation as presented	Noted		

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EAP-PBC-041	PBC 78	We note no enabling works included within the financial model. The PBC outlines these works to be separately procured in addition to structural works for Broombridge canal and rail bridge, main works and system works. Can you confirm that whilst these will be separately procured, they are all included within the financial model and costs outlined within the PBC?	• TII confirm that an allowance for enabling works is included within the financial model and costs outlined within the PBC. The main components of which are captured under Items 1.11, 1.22 and 1.24 of the Construction Costs Estimate.	No further comments		
EAP-PBC-042	PBC 78	Do the design team costs within the financial model include all consultancy fees? We note consultancy fees to be a separate line item however this is blank.	• All design team costs and consultancy fees are included for under Preparation & Administration Cost element of the Scheme Base Cost	No further comments		
EAP-PBC-043	PBC 78	Does construction costs include investigative works? We note this to be a separate line item however this is blank	• Investigative works are accounted for under the Preparation & Administration Cost element of the Scheme Base Cost	No further comments		
EAP-PBC-044	PBC 47	In relation to the reference class forecasting performed, can you please outline the justification for the uplifts derived in order to assess the reasonableness of the assumptions.	• Following updates to the Public Spending Code (PSC) – A Guide to Evaluating, Planning and Managing Public Investment in December 2019, the Department of Public Expenditure and Reform provided guidance in respect to considerations in the forecasting of project costs. It advised 'Project Sponsors' that at various points in the project process and to gain greater confidence in cost forecasting, it should consider using several tools to support this, one of which is Reference Class Forecasting (RCF). • TII have been early adaptors of RCF techniques in cost estimation with similar techniques adopted on the MetroLink project and road schemes. TII applies RCF methodologies to all major transport projects.	No further comments		

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			• RCF is a methodology which attempts to manage and mitigate optimism bias in the estimating process which can ultimately result in the underestimation of projects costs and schedules. TII utilised RCF to gain an 'outside view' also known as a top-down view to support the cost forecast developed for the project. Oxford Global Projects, a leading expert in the field, produced a 'Report on Reference Class Forecasting for the Luas Finglas Light Rail Extension' (See Appendix F) which provided the option to use two RCF curves: 1. Outline Business Case (OBC) 2. Final Business Case (FBC) • At P80 the OBC curve recommends a 'generic' 72% addition to the Scheme Base Cost while the corresponding FBC curve recommends a 59% addition. It is to be noted that the P50 figure is the same for both OBC & FBC at 43%. While the Luas Finglas design is thought to be at a greater maturity than other comparable projects at a similar stage i.e. Phase 3 – Prelim Design. To investigate this assumption in more detail the Design Maturity Report and other project information was cross referenced against the 'Guide to Developing the Project Business Case – Better Business Cases for Better Outcomes' published by the UK's HM Treasury (2018). This exercise found that Luas Finglas was not yet able to satisfy the main evidence required to address the key review criteria under Section 8 of the publication to justify selecting the Final Business Case RCF Curves. As a prudent client and the fact that Luas Finglas is indeed at Outline or Preliminary Business Case Stage TII took the conservative approach and decided to proceed with RCF OBC Curves. This will facilitate a step down in risk allowance at the Final Business Stage where and if applicable. TII are conscious to avoid optimism bias and the decision is deemed to satisfy this aspiration.			

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			The United Kingdom Green Book Guidance, sets out the UK approach to optimism bias for light rail programmes. The Green Book Guidance, outlines the recommended adjustment ranges for projects to allow for optimism bias, in addition to normal project contingency provisions. Light rail falls within the "Non-standard Civil Engineering" category, suggesting that a range of 6% - 66% of optimism bias is required at Outline Business Case (OBC). • The final step is to review the cumulative distributions and identify the necessary uplifts to debias the estimates. For this the curve is reinterpreted. The cumulative percentage of projects with a given overrun in the reference class now becomes the acceptable chance of overrun and the uplift to add to the base estimate to de-bias it'. TII interpret that the RCF percentage added to the Scheme Base Cost includes for optimism bias in line with the ranges recommended in the UK's Green Book Guidance. While the proposed estimate figures are based on applying the 'project level reference class' applicable to the whole project: ➢ Light rail (extension/ upgrade) TII also looked at the 'blended' or 'asset level reference classes' applicable to individual work packages: ➢ Construction (civil engineering) ➢ Rolling Stock ➢ Land & Property ➢ Prep & Admin These were broadly in alignment at P80 levels (€167m generic v €150m blended) but significantly different at P50 (€100m generic v €31m blended).			

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			Taking the Oxford Global guidance on board: Projects might need to consider whether any additional adjustments to the chosen level of certainty (P-level) are needed or whether the RCF should only apply to parts of the base estimate. In other words, whether the project at hand is more or less risky than past projects. Examples for deviation could be: a) If a project has progressed further with a detailed design development at a given stage than projects normally would have; b) If all necessary land had already been acquired, then there would be no need to apply an uplift to this element of the work; c) If the financial risk has been fully transferred to a subcontractor; however, this would need to be exercised with caution to make sure the risk is fully financially transferred through a mechanism such as a fixed firm price with no potential for clawbacks. Keep in mind that a project will never be risk free if it has not yet completed even with an extensive contract in place. Thus, even at this stage, consideration should be made of the potential for strategic non-transferrable risks and design changes which could still affect the outturn; Any adjustment to the application of RCF ought to be based on hard evidence in order to avoid reintroducing optimism back into the estimate. • The Luas Finglas project is not at the stage to satisfy any of the above examples and as such no adjustment to the recommended application of RCF has been made: 'While the most appropriate reference class for the Luas Finglas line is the high level Light Rail (Extension/Upgrade) reference class, the asset-level data is useful for identifying relative risk between work packages'. The Oxford Global Reference Class Forecasting report is available under Appendix F.			

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			• The application of the uplifts derived, and the reasonableness of the assumptions were endorsed by the Expert Judgement Panel.			
EAP-PBC-045	PBC 78	We note the financial model to include costs from 2019. On the assumption that these costs have been now incurred to date, can you please clarify if the included costs are accurate? We would also expect no costs that have been incurred to date to be included within the financial appraisal as these are considered sunk costs.	• Yes costs incurred going back to 2019 make up a portion of the total for the Preparation & Administration cost element forming part of the Scheme Base Cost. • Cost that were incurred and paid between 2019 and June 2022 are included in the financial appraisal which totalled €2,683,754.80. • The actual spend to date on the project up to the end of 2023 is €7million. • The comparative financial appraisal (P50 Medium) forecasted spend for the same timeline is €8.4million (made up of €5.8m base cost + €2.5m risk + €0.18m inflation). • At time of estimate preparation it was planned for the project to be further advanced at this stage - hence underspend - The included costs are accurate. • All costs incurred on the Luas Finglas project should be represented in the financial appraisal. This will ensure a true representation of the cost to plan, design and build the infrastructure is portrayed. This will also assist with future cost planning of additional Luas lines. If this logic was used whereby spent cost did not make its way into the business case the Final or Detailed Business Case could be short in this instance by as much as €20 million.	Whilst sunk costs should be noted within the business case, the infrastructure guidelines note that these should not be included within the financial analysis. Any costs incurred before the point at which the financial analysis was performed, should be removed from such.	Suggest expanding the Luas Finglas Cashflow Summary in Table 5.3 of the PBC to highlight spend from 2019 up to end of 2023. This will be included in its own separate column to allow the reader to clearly identify the sunk cost element in the financial analysis.	**Follow up:** we would kindly ask when making this change that this is shown at the bottom of this table to effectively back out the sunk costs so that within table 5.2 where the discounted cash flows are shown, the NPV does not include any sunk costs as required. Can you please confirm your acceptance of this approach? **Closed** following conclusion of query as a result of email received from NTA via DoT on 30 May 2024.

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EAP-PBC-046	PBC 78	Can you please clarify the relevance of the risk assessment tab within the financial model?	• Tab included in the standard Financial Appraisal template workbook available on the Gov.ie website • This tab was not used in the Luas Finglas Financial Appraisal • All risk should be captured in the Reference Class Forecasting and it's inclusion in the scheme costs	No further comments		
EAP-PBC-047	PBC 78	We note within the summary tab, the residual value is hard coded with reference to a separate workbook. Can this workbook please be provided?	• - Yes this can be provided.	Please provide	Changed to 'Closed' as this workbook has been issued to DoT (NTA email 01/03/2024)	

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