ARUP

Tipperary County Council

N24 Cahir to Limerick Junction Project

Peer Review Report

Reference: 272687-ARUP-02-OS-RP-YE-000034

P02 | 28 July 2022

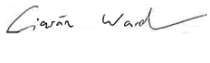
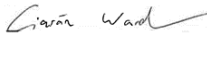
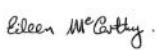
Job number 272687-00

Ove Arup & Partners Ireland Limited
Arup Corporate House
City East Business Park Ballybrit
Galway
Ireland
arup.com

ARUP

Document Verification

Project title	N24 Cahir to Limerick Junction Project
Document title	Peer Review Report
Job number	272687-00
Document ref	272687-ARUP-02-OS-RP-YE-000034
File reference	272687-ARUP-02-OS-RP-YE-000034

Revision	**Date**	**Filename**			
P01	27/06/2022	**Description**	Issue 1		
			Prepared by	**Checked by**	**Approved by**
		Name	Ciarán Ward	Mary Hurley	Eileen McCarthy
		Signature			
P02	28/07/2022	**Filename**			
		Description	Issue 2 – actions closed		
			Prepared by	**Checked by**	**Approved by**
		Name	Ciarán Ward	Mary Hurley	Eileen McCarthy
		Signature			
		Filename			
		Description			
			Prepared by	**Checked by**	**Approved by**
		Name			
		Signature			

Issue Document Verification with Document ☑

Contents

Appendices

1. Introduction

Tipperary County Council, Limerick City and County Council and Transport Infrastructure Ireland are collaborating in developing a solution to the existing transportation issues along the N24 transport corridor between Cahir in County Tipperary and west of Brooks Bridge in County Limerick as part of the N24 Cahir to Limerick Junction Project. This is a transportation project aimed at providing a sustainable transport solution over the N24 corridor extents under consideration whilst also providing efficient regional connectivity between Limerick and Waterford cities and the Western, Southern and Eastern Regions.

Arup has been appointed to provide multi-disciplinary technical consultancy services for the delivery of Phase 1 - 4 of the TII Project Management Guidelines for the project.

The N24 national primary route, is a strategic corridor linking the cities of Limerick and Waterford traversing through the counties of Limerick, Tipperary and Kilkenny with a total length of approximately 116km. The section of the N24 under consideration in this project, the N24 Cahir to Limerick Junction Project, is located between the M8 Cork to Dublin Motorway, north of Cahir in Co. Tipperary and Brooks Bridge west of Oola in County Limerick.

The extent of this corridor is approximately 37km and it passes through Tipperary Town and the villages of Oola, Monard, Limerick Junction and Bansha. The project falls within two local authority administrative areas, namely Tipperary County Council and Limerick City & County Council. There is a Section 85 agreement in place between these two local authorities with Tipperary County Council acting as the lead authority. Mid West National Road Design Office are acting as 'Project Co-ordinator' for the project.

The project is currently at the end of Phase 2 Option Selection. The purpose of this phase is to examine feasible alternatives and options to address the transport problems identified and to carry out a systematic assessment of these with a view to selecting a preferred transport solution which will form the basis for the detailed design.

This report has been prepared to document the TII Peer Review of the Option Selection Report for the project and decisions made in the identification of the Preferred Transport Solution.

2. Overview of Peer Review

The peer review took place on 7 April 2022 in the Arup Galway Office. in Corporate House, City East Business Park, Ballybrit, Galway, H91 K5YD. For those who could not attend in person, video conferencing was set up in the meeting room which could be joined via MS TEAMs. A further meeting was held on 11 May 2022 to allow the third Peer Reviewer who was unable to attend the review ask their questions. This additional meeting was held via MS TEAMs.

The participants of both meetings are listed below.

Table 1 Participants of review held on 07/04/2022

Name	Role	Email
Geraldine Fitzpatrick	TII Peer Reviewer	geraldine.fitzpatrick@tii.ie
John Fitzsimons	TII Peer Reviewer	john.fitzsimons@tii.ie
Paul Moran	TII Regional Manager	paul.moran@tii.ie
Conor Evans	TII Engineering Inspector	conor.evans@tii.ie
John Nolan	TCC Senior Engineer	john.nolan@tipperarycoco.ie
Tim Fitzgerald	MWNRDO Senior Engineer	tfitzgerald@midwestroads.ie

Name	Role	Email
Seamus Linehan	MWNRDO Senior Executive Engineer (Project Co-ordinator)	slinehan@midwestroads.ie
Ian Crowley	MWNRDO Executive Engineer	icrowley@midwestroads.ie
Eileen McCarthy	Project Director	eileen.mccarthy@arup.com
Mary Hurley	Project Manager	mary.hurley@arup.com
Lisa Hanly	Environmental Assistant	lisa.hanly@arup.com
Trevor VanRensburg	Senior Engineer	trevor.vanrensburg@arup.com
Ciarán Ward	Project Engineer	ciaran.ward@arup.com
John O'Toole	Project Engineer	john.otoole@arup.com
Chris Whitehead	Appraisal Lead	cwhitehead@systra.com
Karen Whitaker	Traffic Consultant	kwhitaker@systra.com

Table 2 Participants of review held on 11/05/2022

Name	Role	Email
Daragh Delaney	TII Peer Reviewer	daragh.delaney@tii.ie
Conor Evans	TII Inspector	conor.evans@tii.ie
John Nolan	TCC Senior Engineer	john.nolan@tipperarycoco.ie
Seamus Linehan	MWNRDO Senior Executive Engineer (Project Co-ordinator)	slinehan@midwestroads.ie
Ian Crowley	MWNRDO Executive Engineer	icrowley@midwestroads.ie
Eileen McCarthy	Project Director	eileen.mccarthy@arup.com
Mary Hurley	Project Manager	mary.hurley@arup.com
Lisa Hanly	Environmental Assistant	lisa.hanly@arup.com
Ciarán Ward	Project Engineer	ciaran.ward@arup.com
Chris Whitehead	Appraisal Lead	cwhitehead@systra.com
Karen Whitaker	Traffic Consultant	kwhitaker@systra.com

A register of the comments and issues raised by the Peer Reviews, responses from Arup and further actions required are included in Appendix A of this report.

Appendix A - TII Peer Review Comments & Responses

N24 Cahir to Limerick Junction Project

TII Peer Review of OSR Issues and Responses (Doc Ref. 272687-ARP-ZZ-ZM-RG-YE-000003) **Issue P04**

Comment Reference Number	Commentary/ Queries/ For information	Arup Response	Action Reference Number	Action	Action Status Complete?
Need for the Project & Supporting Policy					
C1	Have you considered the Town Centres First Policy and is there any impact on the Project?	1. Yes. A key objective of the project is to resolve the congestion within Tipperary Town and enable placemaking within the town. In addition the projects seeks to improve safety along this section of the N24 and improve road safety within the villages of Oola, Monard, Limerick Junction and Bansha. The project objectives align with the ethos of the Our Rural Future and the Towns First Policy. Chapter 2 of the OSR will be updated to include the Our Rural Future and Town Centres First policies. 2. NTA had a recent consultation on Connecting Ireland - Mobility for Rural Mobility Plan and a submission was made on behalf of this project.	A.1	Update Chapter 2 of the OSR to include Our Rural Future, Towns Centres First and other recently published policies and how this project aligns with these plans and policies.	Yes
C2	The OSR makes some reference to the fact that the N24 provides a gateway to Rosslare Port in the introduction but this theme and key message does not come out strongly enough through the report.	Acknowledged, the OSR will be reviewed to further develop this need for the project. Additional traffic surveys were undertaken in September 2021 which included ANPRs on cars and HGVs. This information will be used identify the HGV movements from Europort Rosslare and the Port of Waterford to Shannon Foynes Port and between the east and west of the county and identify how many HGVs from these ports actually utilise the main street of Tipperary Town.	A.2	Add text throughout the documents reinforcing the N24 providing a gateway to Rosslare Port among other ports.	Yes
C3	What emerges very strongly is the need to find a solution for Tipperary Town throughout Volume 2 but the strong need for the entire route from Cahir to beyond Oola is missing.	Noted, OSR to be reviewed and updated to explain better the overall need for the project in terms of safety and the strategic link between Limerick and Waterford. TCC noted that the N24 is the road to everywhere for the people living in Tipperary Town and is a critical piece of infrastructure for the county.	A.3	Bulk up the need for the project outside of Tipperary Town. Possible include map to illustrate how you get from Galway to Waterford, to get from Limerick to Waterford, Cahir to Kilkenny	Yes
C4	NIFTI is an important framework. Consider expanding the NIFTI section included in Chapter 2 and illustrate how this project could meet the 4 investment priorities set out in NIFTI (Figure 5 of NIFTI Document). Consider how NIFTI can be woven into all of the OSR Chapters.	Chapter 2 to be updated in relation to NIFTI and how the project can achieve at least 2 of the 4 priorities of the framework. Where possible reference to how the principles of NIFTI underpinned the Option Selection Process.	A.4	Update Chapter 2 to expand on NIFTI and how the project can achieve at least 2 of the 4 investment priorities of the framework. Add text throughout the documents reinforcing how the project aligns with NIFTI. Relate the Preferred Transport Solution back to the Intervention Hierarchy in NIFTI - the justification to go from a short bypass of Tipperary Town with a new off-line route to the south of Tipperary Town and on-line upgrade to the north of Tipperary Town which has been recommended for the road component.	Yes
C5	Expand on the explanation of the economic link between Limerick and Waterford cities.	Agree, Chapter 2 to be updated	A.5	Update Chapter 2 to further explain the economic link between Limerick and Waterford Cities.	Yes
C6	What is the safety record in Sections 1 and 3 - is the main safety issue on the road between Bansha and Tipperary Town? Are they isolated issues that could be taken care of in isolation?	No, these safety issues can not be addressed by localised road improvements. The section of the N24 between Tipperary Town and Bansha is very constrained with the walls for Kilshane Demesne on one side and Bansha Woods (NHA) on the other. The River Aherlow, a salmonoid and sensitive watercourse, also flows along the southern side of the existing road and there are multiple crossings of the rail. There were 4 fatalities over the years on this section of the road another one again since Christmas. There is a narrow cross-section on this section of the road and no room for cyclists on the road either.	A.6	Graphics will be added to Chapter 2 of the OSR to help illustrate the safety issues and constraints to local improvements to these sections.	Yes
C7	Consider expanding the national policy section of Chapter 2 to highlight more how the project achieves the objectives set out in the national policy. Currently it just states that the project aligns with the policy, include direct quotes.	Noted	A.7	Expand on the national policy and how the project aligns with the policy in Chapter 2 of the OSR	Yes
C8	Expand on the need and justification of Section 1 of the project - bypass of Oola, Monard and Limerick Junction.	The existing N24 is severing the communities along this section of the N24, at Monard the school is on one side of the N24 and housing on the other. These villages experience congestion and noise and air pollution due to this congestion. Removing the bypassable traffic from these villages will enable the facilitation of place making opportunities within the villages and enable more active travel measures.	A.8	Chapter 2 of the OSR to be updated to further explain the need for Section 1 of the project	Yes
C9	Check the exact wording NSO 2 - once traffic is within an urban area does the inter urban 90kmh apply?	The exact wording of NSO2 is "improving average journey time targeting an average inter-urban speed of 90kph". Our understanding of this objective is that traffic travelling on the road network which is inter-urban should achieve an average journey time of 90kph, i.e. not local traffic within Tipperary Town or the other villages. For example Limerick to Waterford is 130km apart, and should be possible to make this journey in 1.5 hours. However, the minimum time that it will take is 2.5 hours and significantly longer by public transport.	N/A	N/A	

Comment Reference Number	Commentary/ Queries/ For information	Arup Response	Action Reference Number	Action	Action Status Complete?
C10	New guidance on appraisal of projects that will better align with NIFTI is due to be published by the Department of Transport in early Summer 2022. This guidance will require an assessment of the project affordability and deliverability.	Acknowledged	N/A	N/A	
Project Objectives					
C11	There are a considerable number of Project Objectives - are any a priority or a key objective? What is the key priority?	To resolve the congestion and safety issues along the N24, in particular in Tipperary Town and the villages along the corridor. This in turn enables place making along the corridor for the communities living on it, gets people moving in a safer, reliable sustainable manner and improves the connectivity ultimately between Limerick and Waterford From the local authorities point of view, safety is also a key priority. The N24 is one of the most notorious roads in the county with many fatalities occurring on this stretch of the road. In 2021 Tipperary had one of the highest fatality rates in the country at either side of Cahir, Bansha and Clonmel.	N/A	N/A	
C12	Review the Project Objectives and consider the inclusion of "congestion" in the economic objectives and an over arching objective to minimise the impact on the environment	Noted	N/A	N/A	
Extents of Project					
C13	Current Government Policy is focused on not increasing capacity for private vehicles and enabling more sustainable modes of transport. Therefore it is going to be extremely difficult to get a roads project through the various approval / funding stages. Part of this project includes a bypass of Tipperary Town. Has consideration been given to progressing a local bypass of the town to be delivered in advance of the overall project? Is this a deliverable project?	This project could be built in incremental stages. A local bypass of the town, i.e. a new road from the N24 north of Tipperary Town to the N74 on the eastern side of the town (including the inclusion of demand management measures and two new link roads within Tipperary Town) has a positive BCR of approx. 2.65. However, we are recommending that the minimum bypass of Tipperary Town includes a bypass of Bansha due to the safety issues immediately south of the town near Curtin's Cross and recent fatalities on that section of the road. The BCR for a bypass from the N24 north of Tipperary Town to the N74 on the eastern side of Tipperary Town and on south to bypass Bansha is 1.5. If you were forced to build in stages you could build that piece first, thus delivering on the bypass element.			
C14	If the project brief was to just build a bypass of Tipperary Town and did not include the extent of the N24 between Oola and Cahir, would the route selected for the bypass of the town be the same? If only bypassing Tipperary Town, would you still be selecting a longer bypass to include Bansha? Could you still stand over that bypass and bring it through the planning process and answer all the criteria and questions in its own right?	Yes, regardless of the overall extents of the project, the route for the bypass of Tipperary Town would not change. As part of the Stage 2 appraisal process the section around Tipperary Town was assessed separately to the sections north and south of the town to ensure the solution that best addressed the issues around the town was identified. In addition, an incremental analysis was undertaken in line with NIFTI which considered the level of intervention required, i.e. what would the alternatives on their own do in terms of benefits for the project. The next step included a bypass of the town to the north and to the south and compared which provided the best return on money spent, and considered the benefit before moving on to consider further extension of the scheme to the south of the town and to the north of the town. As noted above we are recommending that the minimum bypass of Tipperary Town includes a bypass of Bansha due to the safety issues immediately south of the town near Curtin's Cross and recent fatalities on that section of the road. Additionally, our transport modelling shows a decrease in congestion within the town with the inclusion of the bypass only, freeing up road space within the town to facilitate the provision of active travel measures. It is justified in terms of economics, safety, integration and all the CAF criteria. Careful consideration will be required during Phase 3 of the project to ensure the correct extents of the project is submitted for planning and there is no risk of Project Splitting. It is important that this project fully considers both direct and indirect impacts as well as cumulative and in-combination impacts due to its construction and operation.	A.9	Phase 3 of the project will detail the construction sequencing of the project and timeline of when each phase is likely to be built	Yes
C15	There is a lot of political focus on prioritising the bypass first. It was discussed at the transport committee meeting recently. Given the funding constraints and the amount of money available, it is likely that there is going to be a strong push for a bypass that is deliverable on its own. If the bypass for Tipperary Town needs to include a bypass of Bansha and the section of the N24 near Curtin Cross, the team will need to ensure that scheme can be substantiated.	Noted			

Comment Reference Number	Commentary/ Queries/ For information	Arup Response	Action Reference Number	Action	Action Status Complete?
C16	Consider 'Alternative F' which is just a bypass of Tipperary Town- there seems to be an emerging bypass from nodes H-L-M-O-R. Alternative F could be two shorter bypasses of the town that might be a combination of the yellow Option Corridor and Switch 3 (Purple).	The assessment of the Option Corridors was split into three sections with Section 2 isolating the options around Tipperary Town. This was done to ensure the best option to bypass the town was identified. Equally the issues north (Section 1) and south (Section 2) of Tipperary Town differ from those within Section 2 and each were assessed separately and the best combination of the preferred within each section selected. The Stage 2 appraisal was also undertaken in three separate ways: 1. Project Appraisal Matrix; 2. Incremental Analysis and 3. Pair wise comparison for each section to test if each process arrived at the same conclusion.	N/A	N/A	
C17	Did you consider constructing the Section between nodes H to L to M as a stand alone option? This is the Yellow Option Corridor from node H to L coupled with the Switch 3 (Purple), nodes L to M, in Section 2.	Yes, this was assessed in the incremental analysis presented in Chapter 8 of the OSR. The Yellow Option Corridor is required in Section 3 to bypass the sub-standard road to the south of Tipperary Town at Curtins Cross. It is also necessary to bypass Bansha; otherwise the HGVs are still coming through Bansha and up along the sub-standard geometry on the exiting N24 south of the town. When considering building the options incrementally, there was only 1,000 vehicles on Switch 3 (Purple) between nodes L to M when it is built in combination with Section 2 of the Yellow Option Corridor between nodes H and L. When Alternative E (Link Roads 1 and 2) is included in the PTS, they provide the same function as Switch 3 (Purple) and there is no requirement to duplicate Link Road 2 with Switch 3 (Purple) as there would be even less than 1,000 vehicles on it daily and Link Road 2 provides better in terms of active travel and movement of traffic. The shortest bypass possible for Tipperary Town is the Yellow Option Corridor in Section 2 with the two link roads as per Alternative E, noting that this still brings the trucks around the street network and back onto the sub-standard geometry to the south of Link Road 2 on the N24. The conclusion is that the Switch 3 (Purple) between nodes L and M, in combination with the Yellow Option Corridor between nodes H and L and Link Road 1 and 2 (Alternative E) in Section 2 as a stand alone bypass is a waste of money as it is only required to facilitate vehicular traffic. It becomes further redundant when Section 3 is added.	N/A	N/A	
C18	Is the exclusion of Switch 3 (Purple) from Node L to M justified on the basis of the low traffic volumes on it and because of your objective to bypass Bansha?	As noted above, we are recommending that the minimum bypass of Tipperary Town includes a bypass of Bansha due to the safety issues immediately south of the town near Curtin's Cross and recent fatalities on that section of the road. The BCR for a bypass from the N24 north of Tipperary Town to the N74 on the eastern side of Tipperary Town and on south to bypass Bansha is 1.5. Furthermore, as noted above in C17, there are low traffic volumes on Switch 3 (Purple) and these would reduce further once Section 3 of the project is built.	N/A	N/A	
C19	If severe funding constraints prevent delivery of the section to bypass Bansha, is the option of constructing a road between nodes H-L-M viable?	No, as that option provides additional capacity for the private car and is not the correct solution.	N/A	N/A	
C20	If the Yellow Option Corridor is the bypass for Tipperary Town, will the presence of Rossmore Village to the north of the route lead to increased development and will the bypass become inundated with planning permissions seeking access from it?	We are recommending that the proposed road is made a Protected Road under a Protected Scheme Order to prevent this from happening. Future development should be to the south of the proposed route and within the town area in keeping with the compact growth policies outlined in the NPF and reiterated in RSES.	N/A	N/A	
C21	Consider rationalising the number of junctions between node H and L and reduce the roundabout junctions at all of the intersections with the existing road network in the area.	This review has been undertaken and it is proposed to only provide one connection with the R497 and remove the connection with the R661.	N/A	N/A	
C22	Mapping- it would be useful if there was some colouration to identify the existing national and regional roads on the Chapter 9 Figures.	Yes	A.10	Update Figures 9.1.0 to 9.1.11 of the OSR to show the existing national roads in green, motorway in blue and the regional roads in orange.	Yes
C23	If the section south of Bansha from Q to X of the Preferred Option Corridor was constructed would it negate the need for the link from Q to R?	No, this link is necessary to provide a link to the N24 in the area of Bansha Village to facilitate connectivity of public transport to the villages and transfer the traffic from the sub-standard geometry on the existing N24 north and south of Bansha to the new corridor.	N/A	N/A	
C24	If the connection to Bansha and safety issues from Bansha to Tipperary Town is the reason for the extra length, this argument needs to be very strong.	Agreed and it is - OSR to be reviewed and updated to ensure the supporting data is included in the report.	A.37	OSR to be reviewed and updated to ensure the supporting data is included in the report	Yes
C25	The Preferred Option Corridor between nodes H-L-Q-R includes a bypass of Bansha to address the safety issues from Bansha into Tipperary Town. What is the difference in length between H-L-Q-R and H-L-M?	H-L-M = 6.5km and H-L-Q-R = 13km	N/A	N/A	

Comment Reference Number	Commentary/ Queries/ For information	Arup Response	Action Reference Number	Action	Action Status Complete?
C26	In terms of deliverability, a bypass has a much better chance getting through, is that the priority or are you going for the full scheme? If you're going for the full scheme, the timing of deliverability is very important. It would be sensible to go with the bypass first - not saying the shorter or longer one. This decision needs to be made in the near future. Project splitting is not a risk if the project can stand up in its own right. Ultimately what is your best chance of getting something through? The first step is not getting it through planning, its getting it through government to even be allowed publish it which includes multiple reviews, i.e. government approval to publish and to proceed to planning.	The conclusion of Phase 2 is a Transport Strategy for this section of the N24 Corridor. The extents of what will be delivered by the project will be made during Phase 3 of the project. The Preferred Transport Solution includes the full extents of the Preferred Option Corridor for the road component and it is important that this full corridor is protected by planners for the local authorities as there is a need for the full length of the project. Sequencing and phasing of construction will be further considered during Phase 3 of the project but it is important to protect the full extents of the corridor now in terms of plannings.	A.9	Phase 3 of the project will detail the construction sequencing of the project and timeline of when each phase is likely to be built	Yes
C27	It will be important to consider the extents of the scheme to be included as part of the planning application to An Bord Pleanala. The EIAR needs to detail the sequencing of construction and the estimated timeframe of construction to ensure fully assessed. It will be difficult to assess the environmental impacts if the timeframe for the implementation of the project is unknown.	Agreed, the timeframe for the implementation of the project and the phasing of construction will need to be fully thought out and agreed during Phase 3 of the project. If funding will not be available to construct the full length of the project consideration will be given to the extents necessary in the short term whilst also ensure project splitting and its associated risks are avoided.			
C28	If the proposed Tipperary Bypass (Nodes H - L - Q -R) were built in advance of Q to X, consider altering the alignment and junction layout at Node Q to cater for the main movement of traffic which will be different if Q to X were built and how the alignment and junction are currently designed.	Noted and to be reviewed during Phase 3 of the project and the constructability and construction sequencing is developed.	A.11	Review junction layout during Phase 3 of the project	Yes
Sustainability					
C29	Carbon reduction - What do you see as the main defence to explain why this project should go ahead when every effort is being made to reduce carbon?	The principles of NIFTI which align with trying to reduce carbon emissions in the transport sector underpinned the selection process during Phase 2 of the Project. It is necessary to remove the 700 HGVs from the main street of Tipperary Town and the other bypassable traffic and facilitate the reallocation of road space to active travel measures. In addition, the provision of demand management measures within the town results in a 7% reduction of traffic on the main street of Tipperary Town. Improvements to the N24 outside of the town will also improve journey times and safety for bus serves providing more reliable and sustainable modes of transport and encourage the modal shift away from the private vehicles. In addition, 18% of the Preferred Option Corridor for the road component of the Preferred Transport Solution is the Management Option which is upgrading the existing N24 and reutilising it as much as possible. The principle of NIFTI, mode hierarchy and intervention hierarchy formed the building blocks for the work during Phase 2 of the project.	N/A	N/A	
C30	Do you have the space within the town to dedicate the space fully to active travel- is that achievable?	TCC prepared a Part 8 planning design in recent years which included reduced parking and reallocation of existing road space to active travel measures. It was rejected by the local councillors as there was a belief that a bypass of the town was required before these measures could be implemented as the main street is the primary transport corridor to get around and through the town. This project considers more than just building a bypass of the town. It also includes the consideration of active travel and demand management measures and what those measures could do to address the transport issues identified. This aligns with NIFTI but it is also important to have considered the full transport strategy for the N24 corridor and how the project fits within it when submitting the planning application to ABP.	N/A	N/A	
Stakeholder Engagement					

Comment Reference Number	Commentary/ Queries/ For information	Arup Response	Action Reference Number	Action	Action Status Complete?
C31	With the assessment of rail? Did you coordinate with NM20 or did you look at it in isolation?	A co-ordination meeting between the project team and N/M20 project team takes place bi-monthly. A consultation meeting was also held with the NTA last year and a separate consultation with Irish Rail around the same time to ensure the project team fully understand both NTA and Irish Rail plans for the rail network within the study area and in particular the Limerick to Waterford railway Line. Modelling was undertaken on an enhanced rail provision along this Limerick to Waterford railway line. The transport modelling concluded that the patronage to utilise the rail, even with all the proposed enhancement measures to make rail as attractive as possible (removal of all 100 level crossings, upgrade of the platforms and timetabling that aligned with working patterns) was lacking. This showed that there was not enough population density around the train stations and the disparate population in the rural hinterland did not transfer from the private car to rail due to the relatively short journey times of most trips i.e. they would have the trip completed in the time it took to get to the rail station, park and board the train. Even with all these enhancement measures there was a negligible transfer of patronage to rail and the majority of that transfer was from bus and not the private car. Therefore, the cost associated with that intervention required to remove the level crossings and upgrade the platforms was not offset by the benefits and it did not meet the project objectives in terms of congestion relief on the N24 corridor. Rail has not been discounted it in its entirety, it will be reviewed again in Phase 3 of the project once the All Island Rail Strategy is complete. Consultation with the NTA and Irish Rail will also be undertaken during Phase 3 of the project.	A.12	Add section to Chapter 1 of the OSR to document this co-ordination	Yes
C32	Is there on-going coordination with the N24 Waterford to Cahir project?	Yes. A co-ordination meeting between the project team and N24 Waterford to Cahir project team takes place bi-monthly. There is also internal communication within Arup between the two projects to ensure they are aligned. The one transportation model will be used for both projects (this will be used for Phase 3 of this project and Phase 2 and 3 of the N24 Waterford to Cahir Project). Both projects also jointly meet with the NTA, Irish Rail, the Southern Regional Assembly and the teams working on WMATS and LSMATS. The initial meeting with the NPWS was also a joint meeting and future meeting with the NPWS will be separate unless an issue arises which is common to both projects.			
Design Details					
C33	Is the cross-section proposed for the project a single carriageway?	Yes, a Type 1 Single Carriageway is proposed.	N/A	N/A	
C34	Option Cost Estimates are no longer to be quoted in the OSR or any other reports to be published as this data is commercially sensitive and subject to change as the project is not developed to a sufficient level for robust costings at this stage. Instead OCE banded costs as per DPER are to be included.	Noted and OSR will be updated accordingly.	A.13	Remove Costs and commercially sensitive data from the OSR	Yes
Transport and Economic Assessment					
C35	General comment - The main text of the OSR (Volume 2) and the traffic modelling report does not fully articulate that there is a strong economic demand between Limerick and Waterford initially or between Cahir and Limerick.	Acknowledged, Chapters 1 to 3 of the OSR and the TMR will be reviewed and updated to better articulate this economic demand and the overall strategic need for the project.	A.14	Add text that reinforces the economic demand between Limerick and Waterford and/or Cahir and Limerick	Yes
C36	Volume 2 of the OSR (the main report) should be self contained. Although there is a lot of information in Chapter 3 of the main report, the current draft of this chapter does not give enough information on the current and future travel demand on the N24 between Cahir and limerick. One needs to revert back to the TMR to get a lot of the data which should be in the main report and not only in the appendices. In addition, Chapter 3 is missing an overall conclusion on the locations of the main points of congestion or the make-up of the current and future AADTs on the network. This information is in the TMR but also needs to be in the main report.	Acknowledged and Chapter 3 of the OSR will be reviewed and updated to ensure all important information is within the main report and not just in the TMR.	A.15	Add more data from the TMR into Chapter 3 identifying current and future demand, the locations of the main points of congestion, type of AADTs on the existing network and the projected future AADTs. This chapter should inform the reader about current and future traffic demand and the need for the project (existing congestion, safety issues).	Yes

Comment Reference Number	Commentary/ Queries/ For information	Arup Response	Action Reference Number	Action	Action Status Complete?
C37	In developing the LAM for this particular project it appears that the LAM from the N/M20 project was utilised which in turn was extracted from TIIs National Transport Model. Why was a new extraction from TIIs National Transport Model for the corridor between Limerick to Waterford not extracted?	At the start of Phase 2 of the project, given Government Restrictions due to the Covid-19 Pandemic, a review of the N/M20 LAM was undertaken as it was not possible to undertake new traffic surveys. This review concluded that the N/M20 LAM boundary included N24 Cahir to Limerick Junction Project study area and was built using traffic data from 2019 / 2020 that covered this projects road network and that it included sufficient data to allow a robust assessment of alternatives and options as Phase 2 of the project. Furthermore, the traffic modellers for the N24 Cahir to Limerick Junction Project input to the location of the N/M20 traffic surveys in the N24 corridor area so that the overall model could cater for this project at Phase 2. The interim model is not sufficient for Phase 3 of the project as lacks sufficient detail at a granular level, including detail at turning movements at existing junctions and within Tipperary Town, which will be necessary for Phase 3 Detailed design but not Phase 2 Options Selection. In addition the N/M20 project included an option to upgrade the N24 between Limerick and Cahir and as such their LAM extends east of Cahir to inform their assessments. Therefore, the N/M20 model fully encompassed the study area of the N24 Cahir to Limerick Junction Project and a new extraction was not required.	A.16	Review Chapter 3 of the OSR and explain better the use of the N/M20 LAM	Yes
C38	Assuming the N/M20 origin destination is between Cork and Limerick it is important to ensure that those trip matrices are sufficient for the Phase 2 analysis for the N24 Cahir to Limerick Junction Project and that there is no information between Waterford and Limerick in the TII NTM missing from the Interim LAM.	Noted and check will be undertake to ensure no data is missing	A.17	Check TII NTM to ensure no data is missing from the N24 Interim LAM	Yes
C39	The transfer of traffic out of Tipperary Town and off the main street as a result of the PTS does not appear to be substantial because a lot of the traffic is actually going into the town itself and movements within the town. How do you propose to answer that particular issue?	The transport modelling shows that 95% of the HGVs currently traversing the main street of Tipperary Town (700 HGVs a day currently use the main street) are bypassable i.e. they don't need or want to be on the main street. The removal of 655 HGVs per day from the town centre will be a huge benefit and will facilitate the reallocation of road space to more active modes. 16% of traffic within the town are local trips - there is the opportunity to provide for these trips by active modes of travel. If the HGVs and bypassable traffic are removed out of the town, the road space can be reallocated for those walking and cycling measures and make a "place" out of Tipperary Town. The bypass is not proposed to facilitate the motorised vehicles **only** - it is also required to enable reallocation of the road space within the town by removing the bypassable traffic and providing the facilities for local trips to be undertaken by more sustainable modes.	N/A	N/A	
C40	Chapter 2 of the TMR (data collection) includes a lot of textual information on the various types of data that was collected. It would be useful in relation to the automatic traffic counter data that was installed to inform the transport studies and the two TII TMU traffic counters that are on the N24 to present two tables - one for each showing the five years of AADTs leading up to March 2020 to give some idea of what's happening on the route.	Agreed, tables to be added.	A.18	Update TMR: Chapter 2 to include two tables- one for each showing the five years of AADTs leading up to March 2020 to give some idea of what's happening on the route in terms of traffic numbers	Yes
C41	Plates 3.13 and 3.14 of Chapter 3 appear to contradict what is being said earlier in the report in terms of trip lengths	Figures and text to be reviewed.	A.19	Review plates in chapter 3 in comparison to text	Yes
C42	Mix of mapping used in the Figures in the TMR. The majority use OS discovery series. However, Figures 34 and 35 state that the mapping is crown copyright. Use OS discovery for consistency.	Noted and figures to be updated to ensure all use OS discovery	A.20	Change background mapping use for the Plates in the TMR	Yes
C43	Figure 36 of the TMR - analysing traffic movements around Tipperary Town would be useful to identify alternative E links. Also, add OS mapping.	Noted and figure to be updated	A.21	Identify Alternative E on Figure 36 of the TMR which analyses traffic movements around Tipperary Town. Also, add OS mapping.	Yes
C44	Page 40 and 41 of the OSR - journey time on the network, are the total amount of vehicle hours the time of travel on the option including the residual traffic on the N24 or just the total time of travel on the option?	The total vehicle hours is for the full model extents not just the option being assessed.	N/A	N/A	

Comment Reference Number	Commentary/ Queries/ For information	Arup Response	Action Reference Number	Action	Action Status Complete?
C45	It appears that the transfer of traffic to Link 45, on the Yellow Option Corridor from N74 to the Bansha Link Road, is 4,500 which would be relatively low by national standards.	Acknowledged, however it should be noted that the AADT on the N24 to the north and south of Tipperary Town is circa 6,000 and 8,000 vehicles respectively.	N/A	N/A	
C46	Is the use of Google data to inform the existing Journey times analysis robust enough for Phase 2 of project?	For Phase 2, comparison of option corridor and assessment of alternatives, our expert opinion is that the extensive data provided by Google is robust for Phase 2 of the project. Note that for Phase 3 of the project the Traffic surveys undertaken in September 2021 will be used to build the traffic model for Phase 3 of project and included journey times survey.	N/A	N/A	
C47	Include explanation as to why the COBALT assessment includes such low benefits when a new road is being constructed. Does COBALT allow for single lane carriageway with median separation which would improve the safety benefits?	COBALT only offers the selection of the following cross-sections - 50kph single, 100kph single, 100kph dual and 120kph dual. It does not allow for single lane with median separation. This will be further reviewed during Phase 3 when a final decision will be made on the cross-section and design.	N/A	N/A	
Constraints Study					
C48	Chapter 4 of the OSR - Section 4.2.3.5 other transport modes - appears to identify geographic constraints but also includes bus services which are not a geographic constraint. Also include walking route constraints.	Agree, bus services are not a geographical constraint and relate more to the need for the scheme. Section to be updated.	A.22	Section 4.2.3.5 of constraints study includes bus services - move to Chapter 6	Yes
C49	4.15 Soils and Geology - could not find the conclusion of what the key soils and geological constraints are for the Preferred Option Corridor - consider the inclusion of a column to Table 4.15.12 which includes impacts on the Preferred Option Corridor.	Chapter 4 sets out the key constraints for the entire study area. The Stage 1 assessment presented in Chapters 6 and 7 and the Stage 2 assessment presented in Chapter 8 identifies the impacts on those key constraints. This additional column does not belong in Chapter 4.	N/A	N/A	
C50	Are made ground or old mines a difficulty on the Preferred Option Corridor?	There are no historic mines on the Preferred Option Corridor, earthworks imbalance and the excess fill requirements are the main concern from a soils and geology perspective	N/A	N/A	
C51	Alternative E - It would be useful in Chapter 6 to include some commentary as to why these two links were chosen as alternatives - why were those two particular links chosen as a stand alone alternative because in the traffic modelling they achieved an insignificant change to the traffic in Tipperary Town at link 22 in the model? It is not clear why they were chosen.	Agree, text to be added to Chapter 6 to explain why. The Tipperary Town & Environs Local Area Plan identified a similar path to Link Road 1 and the land around Link Road 2 is zoned for industrial development. These were seen as missing links with the towns street network. In addition, the east of Tipperary Town is a high disadvantage area so from a local connectivity perspective and to enable walking and cycling it was deemed to be worth including and assessing these two link roads to assess their ability to resolve the transport issues identified.	A.23	Add text to Chapter 6 of the OSR to explain why these two links were chosen as alternatives?	Yes
Rail Assessment					
C52	Chapter 6 of the OSR - detailed level of the consideration of rail in appendix but lightweight in the main report	Noted, Chapter 6 of the report to be reviewed and updated to ensure it is standalone and not dependent on the appendix.	A.24	Consideration of rail to be bulked up in the main report	Yes
C53	Chapter 6 describes the proposed rail enhancements - consideration to be given to the inclusion of a description of the existing rail services and their inadequacies so the reader can understand the constraints. Is it adequate in terms of frequency, timetables, and ability to facilitate business or leisure users at peak times?	Agreed, OSR to be updated to include this detail.	A.25	In addition to enhanced rail services, add description of the existing rail services in Chapter 6	Yes
C54	The rail assessment includes significant improvements to the rail service yet there is a very low transfer to rail services. Consider expanding Section 6.3.3.3 to explain why.	Agree, Section 6.3.3.3 to be updated to explain that the population density is low around this railway line and trips originating in the rural hinterland do not transfer to rail. By the time a person drives to the station, parked, paid for the train, waited and taken the trip, they would be half way to their destination. The Stage 1 assessment showed no transfer, however the enhancement measures for the Stage 2 assessment were expanded to make rail as attractive as possible with cost no barrier to the level of enhancement considered however there was only a 0.31% shift to rail and a lot of this transfer was from the bus.	A.26	Add explanation to the rail assessment in Chapters 6 and 8 the reason for the low transfer to rail	Yes
C55	Did the rail assessment consider the increase to the price of fuel for private vehicles? Model using a base rate on fuel but if that increases to €3/4 per litre how would that impact on the use of rail? It is important that as a 'roads' project that full consideration was given to rail and a sensitivity test on the price of fuel would be beneficial.	The price of fuel is also increasing for the individual driving the 5/10 k in to get the train - the person still has to have the expense of owning the car. The number of end to end (Limerick to Waterford trips) is low. The trip from Clonmel to Cahir is 13k - it is highly unlikely that a person will drive 3k into Clonmel to take the train to Cahir when it would only take an extra 10k to driver there and time transferring to the train is not lost. A sensitivity test on the impact of the price of fuel on the rail alternative can be undertaken during Phase 3 of the project. It will also be raised in the next consultation meeting with the NTA. Rail is still part of the Preferred Transport Solution.	A.27	Sensitivity test at Phase 3 on rail to include significant fuel price increases	Yes

Comment Reference Number	Commentary/ Queries/ For information	Arup Response	Action Reference Number	Action	Action Status Complete?
C56	Review the costs for the rail - it appears to be low for the Stage 1 assessment. Why isn't the overall cost of the Stage 1 rail assessment included (and infrastructure costs only is used)? Is there some guidance regarding what should be used for these assessments of rail investment? How did the project team get from the scale in investment at the Stage 1 assessment of rail to the scale used for the Stage 2 assessment? What justification for this is there at Stage 2 to assess such large scale investment, that is not there at Stage 1? Why isn't the full rail package considered at the early stage (assessment of alternatives), and why is it ruled out if a further assessment is done anyway?	The costs associated with the Stage 1 rail assessment relate to the infrastructure costs only and do not include for additional fleet of trains etc. that maybe required. The conclusion of the rail assessment for stage 2 showed that the infrastructure costs alone are significant for any serious level of intervention. Even with such major investment, there is minimal mode transfer, and furthermore, the mode transfer is not from the private vehicle. Therefore, it is not necessary to include a design of the upgrade to the rail fleet to enable detailed costing of the rail - rail is discounted as it does not meet the project objectives of removing congestion or improving safety along the existing N24. The Stage 1 assessment of rail did not include any infrastructural improvements. It assessed only the level of impact improved time tabling and frequency of trains could do to achieve the project objectives. At the time of drafting the Stage 1 proposals for rail, we genuinely believed that we would see a modal shift by implementing said proposals. However, we discovered on the conclusion of the Stage 1 assessment that there would be a low modal shift to rail. As a result, it was decided to extend the assessment of rail and include every possible measure to improve the journey time to 1.5 hours to investigate what level of impact that would have on the modal shift, with costs not being a constraint. It is important that the OSR documents the actual assessments undertaken, hence there is a difference in the Stage 1 and Stage 2 rail costs. There is no guidance on the level of detail required in the assessment of alternatives. We are satisfied that the level of detail undertaken for the Stage 1 and Stage 2 assessment is robust for our Phase 2 assessment. Rail will be considered again during Phase 3 of the Project. Rail has not been ruled out entirely, we will be consulting with NTA and Irish Rail during Phase 3 of the project to ensure our project facilitates any measures they are proposing to improve their time tabling etc. What we did rule out however is that the level of investment required to reduce the journey time to 1.5hours with the removal of all level crossings on the rail as it does not meet our project objectives and will not be progressed as part of our Preferred Transport Solution.	N/A	N/A	
General					
C57	A difficulty in the report is that sometimes the links are numbered and sometimes they are lettered e.g. L-M-Q becomes link 45	The traffic model uses number for the existing and proposed road network. This differs from nodes used to describe the extents of the option corridors. OSR to be reviewed to explain and where the section of an option between nodes corresponds with a link from the traffic model a footnote will be added to explain.	A.28	Add footnote where the section of an option between nodes corresponds with a link from the traffic model to explain	Yes
C58	Consider the inclusion of more plates in the OSR similar to what was included in the executive summary.	Agree, chapters 1, 2 and 3 will be updated with more plates to illustrate the issues and need for the project.	A.29	Additional plates to be added to OSR where necessary	Yes
C59	Given the size of Volume 2 some of the important information could be difficult to find. Consider moving some of the assessment to appendices.	Question to be raised with the legal team as previous advice is that the main report should be standalone and should contain all the information necessary to understand the assessment - only technical detail should be put into an appendix.	A.30	Raise question with the legal team	Yes
C60	Review wording on page 2 of the OSR - the starting point for the project is not determining alternatives and options.	Agree and text to be revised to explain that the starting point is fully understanding the transport issues to be resolved and the existing travel patterns.	A.31	Update text in Chapter 2	Yes
C61	Check references in report are correct, including the year quoted for the RSA strategy	Noted	A.32	Check references throughout the report are up to date	Yes
C62	Consider the inclusion of graphics to explain the purpose of the switches and the extents of the three assessment sections. Add text to note that it is possible to 'mix-n-match' option corridors. Also show how switches are included with options to ensure that it is an apples vs apples comparison.	Noted.	A.33	Explanation of Switches to be expanded in the OSR	Yes
C63	Give more context to the 564 access and 48 junctions - how many are within each speed limit zone, what are rural / urban.	60% of the accesses and 40% of the junctions occur in the rural sections where the speed limit is at or over 80km/h.	A.34	Chapter 2 of the OSR to be updated to put the number of accesses and junctions in context.	Yes
C64	The Stage 2 assessment includes 6 criteria but 3 of the criteria only makes up 30 pages of Chapter 8 of the report. Is there an imbalance?	Whilst there are 6 main criteria some of these criteria include sub-criteria for example there are 12 sub-criteria for environment and it is important that the full assessment is documented. Arup are satisfied that the level of detail for each of the 6 criteria is sufficient and that there is no imbalance.	N/A	N/A	

Comment Reference Number	Commentary/ Queries/ For information	Arup Response	Action Reference Number	Action	Action Status Complete?
C65	Expand the explanation of the how professional judgement informed the rankings of Preferred, Intermediate and Least Preferred and how the overall rankings for an option corridor was determined. For example give more explanation as to why the Blue Option Corridor in Section 2 is Preferred over the Yellow Option Corridor in Section 2.	Agreed, Chapters 7 and 8 to be updated to explain the rationale behind the rankings and overall assessment.	A.35	Add more explanation to Chapters 6, 7 and 8 on the professional judgement used in the rankings.	Yes
C66	PAG Unit 4 sets out that one of the alternatives is a road based solution. Consider the inclusion of text in Chapter 5 of the OSR to explain how the road based alternative is assessed as part of the option corridors assessment set out in Chapter 7 and 8 of the OSR.	Agree, wording in Chapter 5 to be reviewed and updated.	A.36	Update Chapter 5 of the OSR to explain how the road based alternative is assessed as part of the option corridors assessment set out in Chapter 7 and 8 of the OSR.	Yes
C67	It would be useful to have some link between Table 4.15.12 and Ch. 8 Section 8.5.12 - possibly highlight which soil categories in 4.15.12 impact on which Route Options (cross reference to tables 6.31 to 6.33 in 8.5.12 ???) and reference where these are dealt with in 8.5.12. There is a significant amount of data/information in section 8.5.12 which is also broken down by section and it can be difficult to absorb all of the information.	The constraints presented in Chapter 4 lists all the constraints within the study area. However, as detailed in the Stage 1 and 2 methodology sections, some of these constraints were screened out during the Stage 1 and Stage 2 assessments as they were not impacted by the alternatives or/and they are not key differentiators between the option corridors. Text will be added to Chapter 4 of the OSR to explain this and it will be highlighted again in the summary for each of the soils and geology sections. A review of Chapter 8 will be undertaken to ensure it is explained clearly and linked to chapter 4 of the OSR for clarity.	A.38	Text will be added to Chapter 4 of the OSR to explain the methodology of the Stage 1 and 2 assessments and will be summarised in each of the soils and geology sections. A review of Chapter 8 will be undertaken to ensure it is explained clearly and linked to chapter 4 of the OSR for clarity.	Yes