

A494 River Dee Bridge Replacement – WelTAG Stage 3 Full Business Case

June 2026

1. Introduction

- 1.1. This document sets out the WelTAG Stage 3 – Full Business Case – for the replacement of the A494 River Dee Bridge (referred onwards as the ‘Scheme’). The Scheme is a part of Welsh Government’s Major Asset Renewal (MAR) Programme for the trunk road network and its delivery is identified as the second highest priority.
- 1.2. This document follows the WelTAG Review Group that was held on 13 May 2025. This supported the Preferred Option of a new off-line single structure River Dee Bridge plus active travel link within the existing rail underbridge.
- 1.3. The Preferred Option has been further developed and has been assessed in greater detail. The WelTAG Stage 3 is linked to the outcomes of the **Environmental Statement (ES)** as well as the **Economic Appraisal Report (EAR)**.

2. Recommendation

2.1. This document recommends:

- A 31.6-metre-wide 142 metre long three span bridge across the River Dee, that will accommodate a dual carriageway, 3-metre-wide hard shoulders, and a 3-metre-wide shared-use active travel path.
- A new shared-use path will run along the southeast side of the A494 westbound carriageway and reconfiguring the existing highway verge at the existing railway bridge to accommodate an active travel link through the existing side-span of the railway bridge. Up to 3 km of new and enhanced walking, wheeling and cycling infrastructure is proposed as part of the bridge replacement scheme.
- A new improved junction will provide access to and from the A494 to the Riverside area just beyond the river crossing.
- The Queensferry Drain, a main river managed by Natural Resources Wales, currently flows in a culvert beneath the A494 west of the railway line and in an open channel to the east. The scheme proposes new open-channel sections on both sides of the railway, while retaining the existing culvert beneath the railway line.
- A new river pumping station and drainage outfall will be constructed to discharge into the River Dee.
- Environmental mitigation and biodiversity enhancement works with earthworks and areas of soft estate including wildflower verges, swales, native woodland plantations and amenity grassland.

- Demolition of the existing river bridge deck and bridge abutments following the completion of the replacement bridge.

2.2. The following elements of the Scheme have been amended during the transition from the preliminary to the developed design stage:

- **Riverside Way Junction** The alignment of the junction has been altered to provide longer on / off slips along with relocating vulnerable road users away from the trunk road to improve the overall geometry, safety and functionality of the junction.
- Additional land has been incorporated into the Scheme to accommodate **Biodiversity Enhancement Areas**, including items such as double hedgerows.
- The alignment of the **Queensferry Drain** has been adjusted to increase the separation between the shared-use path and the watercourse as a result of further engagement with Natural Resources Wales.
- The provision of **sustainable drainage systems** has been increased to better manage surface water and support environmental resilience.
- The existing **in-river piers** of the A494 River Dee Bridge will be retained to bring about carbon and cost benefit as well as offering potential futureproofing benefits, such as for utilities infrastructure.

2.3. A general arrangement of the Scheme can be found in **Appendix I**. The recommendation is based on the following:

Dimension	Summary
Strategic Fit	Will make a positive contribution to Well-being and Welsh Government objectives. This includes improving the resilience of the strategic road network and contributing towards the delivery of the Welsh Government's MAR programme.
Integrated Well-being	The Scheme is expected to make a positive contribution towards 12 Wellbeing Indicators. Its proposed construction approach will minimise disruption and is estimated to deliver value-for-money benefits of £35.3 million (at 2010 prices), compared to an on-line bridge replacement and the prolonged lane closures that such an approach would require.
Affordability	The latest Scheme outturn costs, dated August 2025, estimate £146.9m. This figure includes a quantified risk calculation, an allowance for employers costs but excludes inflation and tax.
Deliverability	Following feedback from market testing, it is proposed that the Scheme will be delivered through a two-stage Early Contractor Involvement (ECI) using the NEC4 suite of contracts, Option C

Dimension	Summary
	and PSC Option E. The delivery model will include incentivisation mechanisms and carbon reduction targets to promote sustainable outcomes.
Management	Subject to the necessary approvals and completion of preliminary activities, it is estimated that the Scheme can be constructed between 2 and 3 years. Appropriate governance structures are in place, along with identified risks and corresponding mitigation measures, to support the successful delivery of the Scheme.

3. Context and Background

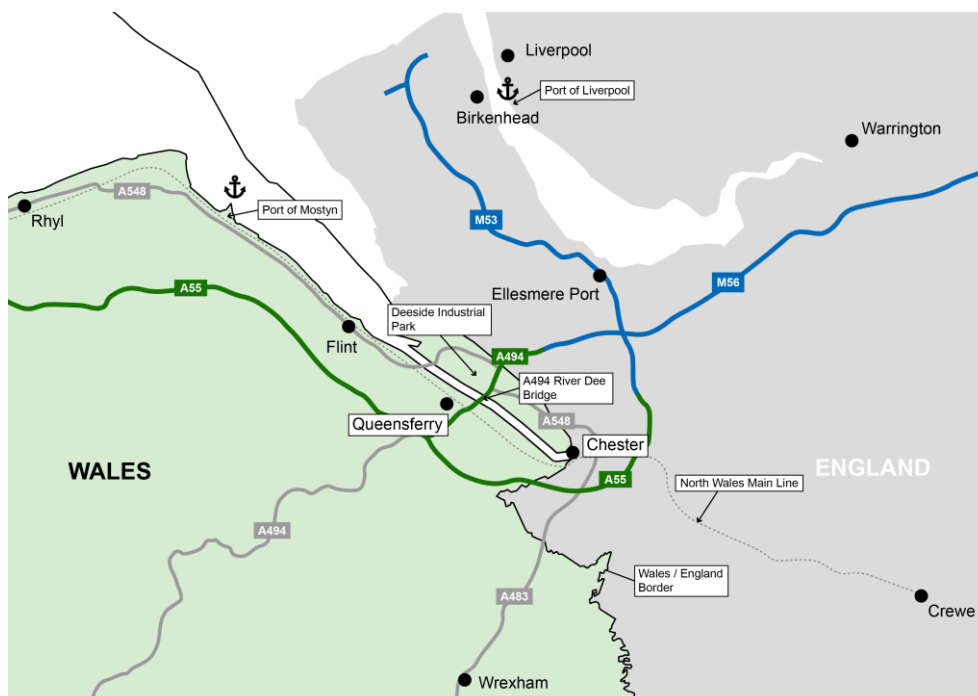
- 3.1. The need for intervention is driven by the poor quality of the existing A494 bridge across the River Dee – which is fundamental to maintaining connectivity into North Wales. The bridge is currently in special measures and is approaching life expiry with a contingency plan for a failure event that would limit vehicle use. As a result, the bridge has been identified as the **second highest priority** for the Welsh Government's MAR programme.
- 3.2. The A494 – together with the A55 and A550 – form a primary east-west link between North Wales and the Northwest of England. The existing River Dee bridge crossing of the A494, constructed in 1960, remains a critical part of this corridor and is the busiest length of the North Wales trunk road network.
- 3.3. It runs mostly as a two-lane dual carriageway between Queensferry, Flintshire and around the north of Chester, before carrying traffic onwards as the M56 towards Manchester (**Figures 1 & 2**). It is maintained on the Welsh side by NWMTRA, including the River Dee bridge, and in England by National Highways.
- 3.4. The bridge lies at the heart of an economic sub-region of the Mersey Dee – the immediate population of the area totalling close to one million people. Deeside Industrial Park (DIP) forms part of the Deeside Enterprise Zone to the west of the A494 corridor. The Zone consists of a cluster of automotive, construction, electronics, food and sustainable energy sectors. It is home to several international companies such as Airbus, Toyota, James Fisher, Tata and Ifor Williams Trailers. It also includes Eren's new £1bn Shotton Mill paper plant.

Figure 1: General view of the A494 River Dee Bridge (foreground) and its surroundings, viewed from the east



Source: Mott MacDonald

Figure 2: Location plan



Source: Mott MacDonald

4. Strategic Fit

Evidence Update

- 4.1. The **Strategic Fit** consists of a review of the evidence base that has informed the Scheme. This evidence is used to assess how the Scheme will contribute to transport and wellbeing policy and legislation as outlined by the Welsh Government – principally, Llwybr Newydd – the Wales Transport Strategy and the Well-being of Future Generations (Wales) Act 2015 (WBFGA). It also aligns with the draft Regional Transport Plan (RTP) for North Wales and the plans for Network North Wales.
- 4.2. The Transport, Highway and Economic context for the Scheme remains **largely unchanged** since the completion of WelTAG Stage 2.
- 4.3. In terms of economic change, proposals for the Flintshire and Wrexham Investment Zone are being developed. Through targeted funding as well as tax breaks, three strategic sites (Deeside Gateway, Warren Hill and Wrexham Industrial Estate) have been identified and are forecasted to generate over 6,000 new jobs across the manufacturing sector and attract £1bn of investment.
- 4.4. Due to the deteriorating condition of the existing bridge, an interim contingency plan is in place to ensure that this section of the Strategic Road Network (SRN) remains operational – in any event where it would be required. This would involve the construction of a thin over-slab of concrete to stabilise the existing bridge deck – the implementation of which may require partial or full closures of the A494, with significant disruption to local and strategic traffic¹. This could extend the life of the bridge from 5 to 10 years but would not remove the need to replace the bridge.
- 4.5. Maintenance works on the adjacent A548 Flintshire Bridge are scheduled for Summer 2028. Full closures of this route for maintenance could see an increase in demand on the A494 to carry cross-border movements. This will be considered when planning any closures of the A494 to avoid the risk of both roads being closed concurrently.

Sustainable Transport Hierarchy and Interfacing Schemes

- 4.6. Whilst the Scheme is largely a renewal of an existing trunk road asset, consideration has been given to the Sustainable Transport Hierarchy defined within the Wales Transport Strategy. This has ensured that options which would have resulted in the generation of additional traffic were not progressed at earlier stages of the WelTAG appraisal. Opportunities to maximise provision for alternative modes within the confines of the Scheme have also been pursued.
- 4.7. Engagement with bodies such as Transport for Wales (TfW) and Flintshire County Council (FCC) has focussed on alignment with the strategic planning that has been undertaken including the **RTP** for North Wales and the **Strategic Development Plan (SDP)**.

¹ Strategic traffic can be defined as: 'road users who primarily utilise the Strategic Road Network), carrying a significant proportion of overall traffic and freight, particularly long-distance journeys and heavy goods vehicles, crucial for the national economy.' <https://nationalhighways.co.uk/our-roads/roads-we-manage/>

- 4.8. The **RTP** for North Wales has been formulated by the Corporate Joint Committee (CJC) of Ambition North Wales which is comprised of six Local Authorities and the Eryri National Park. As of Summer 2025, the draft **RTP** has been out to consultation with the final Plan expected to be submitted for Ministerial approval at the end of September 2025.
- 4.9. Several interfacing schemes are being progressed (as of Summer 2025). These includes schemes identified as part of the RTP as well as forming part of the recently announced '**Network North Wales**'. These are summarised in **Table 1**.
- 4.10. It is important to note that these schemes are currently at different stages of development, however if implemented, will help to address the key headings of carbon reduction, modal shift and delivering economic growth within the region.

Table 1: Interfacing schemes (as of spring 2025)

Year	Scheme	Summary
2022 - 2027	A494 Aston Hill iRAP Route Study	Early stage optioneering to improve resilience, safety and sustainable transport options.
2025 - 2028	Wrexham – Liverpool Railway Line Enhancements	Increase in the number of trains per hour and better linkages with Merseyrail into Liverpool as part of Network North Wales.
2025 - 2030	Seasonal and visitor bus services	To improve seasonal and visitor bus services. Delivery to be confirmed through North Wales RTP.
2025 - 2030	Deeside Park Active Travel and Bus Enhancement	Improve access by active travel and bus priority. Taken forward by FCC.
Q1 2030	A494 River Dee Bridge Replacement	Open for traffic.
2026 - 2035	North Wales Coast Mainline Enhancements	Increase in speeds and service frequency. Being progressed by DfT and Transport for Wales as a part of “Network North Wales”.
2030+	Deeside Parkway Station and Shotton Interchange	New station to serve Deeside Park. Better linkages between the North Wales Main Line and the Wrexham - Liverpool Line.

Source: Mott MacDonald

Highway, Transport and Economic Context

- 4.11. Headline traffic figures estimate an annual average daily flow on the A494 to be around 71,700 vehicles when considering a 7-day week, and 75,400 vehicles per day when considering weekdays only.
- 4.12. Analysis of the data collected from the study area suggests a mix of both strategic and commuter traffic, with regular cross-border movements. The A494 and adjacent routes (such as the A55, A550 and M53) serve both a strategic function and perform a wider role by being principal roads connecting major settlements in the region.
- 4.13. The region has three main urban areas in Chester, Birkenhead and Wrexham. Industrial centres in Deeside, Ellesmere Port and Wrexham represent the wide spread of economic development across the area.
- 4.14. As a result, Light Goods Vehicles (LGVs) and Other Goods Vehicles (OGVs) combined make up 15% of all traffic.
- 4.15. The public transport network in the region is fragmented. Public Service Vehicle (PSV) figures are relatively low for the A494, owing to the limited number of public transport services using the strategic road network. These are much more defined on principal roads leading into Chester such as the A56.
- 4.16. Rail services operate on both the North Wales Main Line (Chester to Holyhead) and the Wrexham - Liverpool Line, which see a mix of both passenger and freight services.
- 4.17. There are limited active travel routes in the area and existing routes can be discontinuous in places. These are largely confined to settlements in the study area with few direct links between adjacent towns and villages. The principal crossing point for pedestrians across the River Dee is at the B5441 Jubilee Bridge, and at Hawarden Bridge for cyclists.

Public Consultation

- 4.18. Public consultation was undertaken between 9 December 2024 and 4 March 2025, with the aim to capture stakeholder views on the options for the A494 River Dee Bridge. The consultation was advertised through a letter drop, posters, and press releases. The public was engaged via an online consultation document and response form, email, freepost, and an in-person public exhibition event held on 21 January 2025.
- 4.19. Stakeholders, including local elected members, transport bodies, environmental groups, community organisations, and businesses, were invited to respond to a dedicated email address. In addition, local elected members were invited to an in-person briefing session held on 10 December 2024.
- 4.20. Stakeholders demonstrated strong support for replacing the A494 River Dee Bridge as soon as possible. There was support for Option E as a solution which would minimise impacts during construction, provide noise screening for residents through new green spaces, and provide active travel connections across the River Dee. However, participants identified concerns about congestion on the A494 and supported further measures that would alleviate

this. Further information regarding the consultation outcomes is provided in the **A494 River Dee: Public Exhibition & Consultation WelTAG Stage 2 Summary of Responses report**.

- 4.21. While the primary driver for the Scheme is to replace the A494 River Dee Bridge and to maintain the critical link between North Wales and the Northwest of England, there is a need to acknowledge the consultation concerns relating to congestion. In response, future proofing to potential future demand has been explicitly considered as part of the Scheme's objectives, logic map (see **Appendix II**).

Transport Planning Objectives

- 4.22. The Scheme's SMART objectives have been reviewed and updated to reflect the latest policy ambitions and priorities and are to:
- Maintain connectivity of the A494 strategic corridor by addressing the life expired River Dee bridge.
 - Maximise opportunities for modal shift through better provision for alternative modes.
 - Minimise scheme whole life carbon emissions through applying carbon reduction measures to design, construction and operation.
 - Maintain and enhance the local environment by securing long term net benefit for biodiversity.
 - Improve the resilience on the A494 corridor by minimising the impacts of incidents and accidents and enhancing safety for road users and maintenance personnel.
 - Maintain connectivity along the A494 strategic corridor during construction to minimise impacts on residents, businesses, strategic and local traffic.

- 4.23. In terms of the future proofing aspect, the first objective relating to maintaining connectivity was assessed in that it would meet this requirement. Nevertheless, the underpinning logic map was refreshed with outcomes and impacts updated to demonstrate how future proofing would be achieved.

WelTAG Stages 1 and 2 (Option development and identification of Preferred Option)

- 4.24. At WelTAG Stage 1, a long list of 44 identified options were identified. These were sifted down to a total of 5 option packages, based on deliverability, potential for adverse impacts (such as induced traffic), capacity and operational requirements. The options were also tested in terms of their fit with the objectives and contribution to Welsh Government's priorities.
- 4.25. At WelTAG Stage 2, the 5 option packages were assessed in greater detail, and were consulted upon through public and stakeholder consultation.
- 4.26. In terms of future proofing, the focus has centred on that any replacement for the River Dee Bridge is likely to last up to 120 years. Following feedback from public consultation, it was felt widening would provide additional flexibility for

future operational use of the bridge and would benefit future generations. Increasing the widths by 0.7m would allow an additional lane or lane earmarked for public transport without the need for further major works to the bridge itself. This would require converting the hard shoulder and hard strips to become part of the live running lanes.

- 4.27. Package E was confirmed as the Preferred Option by the Cabinet Secretary for Transport and North Wales on 6 June 2025. This decision was based on the option being the most affordable, has a lower environmental footprint, and construction and deliverability.

5. Integrated Well-being Appraisal

- 5.1. The Integrated Well-being Appraisal considers the contribution of the Scheme towards well-being. It provides both a quantitative and qualitative assessment of benefits towards communities, environment, the economy and culture.

- 5.2. **Table 2** outlines the methodology that has been used for the appraisal. Details for the specific headings and measurements are outlined in **Appendix III**. In line with appraisal guidance and practice, prices are quoted in 2010 prices.

Table 2: Well-being appraisal methodology

Appraisal Heading	Methodology	Evidence Source
Air Quality	Qualitative	Environmental Statement
Noise	Quantitative	Environmental Statement
Physical Activity	Qualitative	Walking, Cycling and Horse Riding Assessment
Equalities and Barriers to Sustainable Transport	Qualitative	WelTAG Stages 1 and 2 / socio-economic analysis
Safety Collision	Quantitative	Economic Assessment Report
Safety Confidence	Qualitative	Design
Whole Life Carbon Emissions	Quantitative	Environmental Statement
Modal Shift	Qualitative	Economic Assessment Report
Biodiversity	Qualitative	Environmental Statement
Waste	Quantitative	Environmental Statement

Appraisal Heading	Methodology	Evidence Source
Placemaking	Qualitative	Environmental Statement
Economy	Quantitative	Economic Assessment Report
Sustainable Transport Innovation	Qualitative	Design
Sustainable Distribution of Goods	Quantitative	Economic Assessment Report
Personal Affordability	Qualitative	WelTAG Stages 1 and 2 / socio-economic analysis
Welsh Language	Qualitative	WelTAG Stages 1 and 2 / socio-economic analysis
Arts, Sports and Culture	Qualitative	WelTAG Stages 1 and 2 / socio-economic analysis
Historic Environment	Qualitative	Environmental Statement

Source: Mott MacDonald

- 5.3. A summary of the appraisal is outlined in **Appendix IV**. The main conclusions of the assessment are:

Good for People and Communities

- 5.4. The **air quality** assessment (February 2025) determined that the Scheme is not expected to cause any significant adverse impacts and therefore assessed as **negligible**.
- 5.5. Two areas of receptors have been identified. The first is the traveller site on Riverside Way, and the proposed westbound carriageway would be 40m closer. Nevertheless, it would remain approximately 70m north of the site. The second site is to the western end of Claremount Avenue, Garden City. The eastbound carriageway alignment would be approximately 30m south of the existing alignment and so would move emissions away from this receptor.
- 5.6. With **noise**, a quantitative assessment using Department for Transport's Transport Analysis Guidance (TAG) has been undertaken. The assessment has calculated that 13 households during the day will experience more noise whereas 139 households will experience less. For nighttime, the figures are 4 in terms of increase, and 104 in terms of decrease.
- 5.7. Translated into monetary values, the Scheme is likely to bring a benefit of £0.80m over a typical 60-year appraisal period. On this basis, the Scheme will bring **moderate benefits**.

- 5.8. A qualitative assessment has been made of the benefit to **physical activity**. A Walking, Cycling and Horse-Riding Assessment and Review (WHCAR) has been completed. It identified active travel links on and close to the existing bridge to be discontinuous and of variable quality, which was reflected in the number of observed users. The improvements across the River Dee, as well alongside the river and at the railway bridge will improve comfort and reduce severance. On this basis, it has been determined that there will be a **slight benefit** or uplift in physical activity levels.
- 5.9. In terms of **Equalities and Barriers to Sustainable Transport**, an assessment has been made of the socio-economic profile in both the immediate area surrounding the bridge (such as Queensferry) as well as a wider area covering the local authorities of Flintshire, and Cheshire West and Chester. Within Wales, data from the 2021 Census as well as the Index of Multiple Deprivation has been applied.
- 5.10. The analysis points to a **slight** benefit, as improved resilience of the route will improve access to economic opportunities. Additional future proofing is likely to improve opportunities for sustainable transport.
- 5.11. Monetised **safety collision** benefits for the construction period have been calculated from the highway model. Modelling using COBALT (Cost and Benefits of Accidents – Light Touch) software has estimated a total of 52 casualties will be saved over a two-year period (estimated at 5 serious, 47 slight reductions by severity) compared to contraflows or other more significant temporary closures. This translates as a £2.1m benefit saving (at 2010 prices)) during the construction period.
- 5.12. There will be **moderate benefits** arising from improvements to **safety confidence**. This is based on the provision of a hard strip along the new River Dee Bridge, as well as an improved environment for active travel users. The design of the tie-in with the existing arrangement at Drome Corner should also improve driver confidence at this location.

Good for the Environment

- 5.13. The Scheme is estimated to result in an increase in **whole life carbon emissions** over the 60-year appraisal period principally from construction. Construction related carbon is mainly linked with structure works, although these are less than the options considered at previous WelTAG stages. This equates to 16,200 tCO₂e with materials, transport and manufacturing making the bulk at 13,452 tCO₂e.
- 5.14. In terms of operational carbon, given this is a replacement scheme, the traffic model has calculated the monetised benefits arising from minimising the level of disruption during construction only. The Scheme is likely to reduce the operational carbon disbenefits in monetary terms by £1.1m (in 2010 prices) compared to options that involve full or partial closure of the bridge during works.
- 5.15. A further perspective on carbon is that both the appointment of a contractor and also further design changes such as the retention of the in-river piers will

reduce the construction estimates of carbon. These will be refined as the design matures further, and the detail of the construction approach is agreed.

- 5.16. As a result of the two elements, the assessment points to a **slight disbenefit** in terms of whole life carbon emissions.
- 5.17. The Scheme will contribute positively towards **modal shift**, with up to 3km of new or improved active travel links being constructed. These links will connect with Flintshire Council's network and will provide a fully compliant east-west active travel route across the River Dee. In addition, provision for future public transport demand as part of the future proofing has been included.
- 5.18. Initial **biodiversity** assessments have indicated that there will be a moderate benefit arising from the Scheme. The Net Benefit for Biodiversity (NBB) Statement (WelTAG Stage 2) identified marginal gains in broadleaved woodland and mixed plantation habitats. There is a high retention rate for native habitats with minimum loss in scrub areas and moderate gain in neutral grasslands. This demonstrates a gain for achieving NBB. A more detailed assessment of NBB is currently being finalised as of June 2025.
- 5.19. An estimation of the **waste and recycling** has been undertaken. Following Design Manual for Roads and Bridges (DMRB) guidance, the assessment has included:
 - Understanding the Scheme's ability to recover and reuse onsite material, thereby reducing waste regeneration.
 - Estimate of waste generation relative to landfill capacity.
 - The impact on waste infrastructure.
- 5.20. The assessment has calculated potentially up to 70% of excavated material will be reused on the Scheme including the existing bridge and its main component, concrete. Additional mitigation is proposed including a Material Management Plan that will be compiled by the contractor as part of the Construction Environment Management Plan. An outline Site Waste Management Plan has been drafted, and it will be refined and updated by the contractor.
- 5.21. On this basis, it is assessed that there will be a **moderate benefit** in terms of waste and recycling arising from the Scheme.

Good for Places and the Economy

- 5.22. For Placemaking, the Scheme is likely to lead to a **moderate benefit** as a result of improvements to a largely industrial townscape. Use of screening materials including vegetation as well as enhancements to the active travel network will strengthen placemaking.
- 5.23. The assessment of **economy** and has been undertaken at two principal levels. The first relates to user benefits and a Scheme specific traffic model has been utilised to calculate and monetise the benefits. It is important to note that the latest WelTAG guidance (February 2024) is clear that benefits should focus on the gains to sustainable modes, particularly in relation to the value

for money. Nevertheless, as a MAR priority Scheme, an assessment has been made of the relative construction related benefits and disbenefits.

- 5.24. The assessment essentially compares the preferred construction method of keeping the **bridge open** compared to three scenarios (known as control tests). The aim is to minimise the disbenefits and disruption that could emerge from the construction of the Scheme. The benefits of keeping the link open have been monetised using TUBA (Transport User Benefits Appraisal) for one and two year construction periods and are reported in 2010 prices. Further detail on the traffic and economic modelling is contained within the **Economic Appraisal Report**. The Report also includes further analysis by geographical sector, time period and distance travelled.
- 5.25. The three control tests that have been applied are:
- **Control Test 1** – Full bridge closure.
 - **Control Test 2** – Eastbound deck closed; westbound deck open with widths restrictions.
 - **Control Test 3** – Contraflow (one lane in each direction) on Eastbound bridge deck.
- 5.26. The Table below shows the economic benefits of retaining the link open during the construction. Compared to closing the bridge (Control Test 1), there would be £37.4m of user benefits, with business users being the largest beneficiaries. This is, in part, a reflection of the relatively high proportion of HGVs that use the bridge as well as longer distance strategic traffic.

Table 3: Transport economic efficiency benefits for 1 year (£m, 2010 prices)

Benefits	Control Test 1 Full Bridge Closure	Control Test 2 Eastbound Desk Closure	Control Test 3 Contraflow
Commuting	£7.2	£3.3	£2.8
Non-business User	£11.4	£5.8	£5.4
Business User	£18.8	£9.8	£5.4
Present Value of Transport Economic Efficiency Benefits (TEE)	£37.4	£19	£15.3

- 5.27. The second assessment are wider economic impacts. Although impacts could be quantified such as change in jobs, productivity and agglomeration, the fact this is a MAR Scheme makes it difficult to quantify with confidence the change here. Nevertheless, as outlined in the evidence review underpinning the Strategic Fit of the business case, the bridge is a critical link in the heart of an economic subregion. The provision of a hard strip will improve route resilience especially during incidents and routine maintenance by allowing two lanes of

traffic to be retained. On this basis, the Scheme is assessed in having a **slight benefit** in terms of wider economic impacts.

- 5.28. The assessment of **Sustainable Transport Innovation** is qualitative and is based on the technologies and behavioural change approaches used. On this basis, the assessment presents a **slight positive** benefit, as of June 2025. A technical working group has been established and is looking at wider use of Variable Message Signs (VMS) and other ITS interventions across the network. Proposals for ITS for the Scheme will be confirmed out of this process.
- 5.29. A qualitative assessment has been applied to the **Sustainable Distribution of Goods**. This is largely derived from the traffic and economic modelling undertaken as well as other evidence sources such as the count data within the Initial Traffic and Collision Report. This points to relatively higher proportion of HGV and LGV traffic. There is likely to be a **slight benefit** to the sustainable distribution of goods arising from improved resilience of the route and during construction.
- 5.30. The assessment of **Personal Affordability and Socio-economic Disadvantage** is qualitative but has been informed by some of the socio-economic analysis that underpinned previous stages of WelTAG. The assessment points to a **slight benefit** through improved resilience of the route and access to economic opportunities such as those at Deeside.

Good for Culture and the Welsh Language

- 5.31. The Scheme is likely to have a **negligible** benefit for the **Welsh Language**. Replacing the existing link will support access to existing Welsh Language based assets such as schools.
- 5.32. Similarly with **arts, sports and cultural activities**, it is anticipated the benefits will be **slight**. The link is likely to support access existing assets, but improved route resilience should strengthen the visitor economy across North Wales.
- 5.33. In terms of the **historic environment**, there is an expected **minor disbenefit** arising from potential conflicts with archaeological remains in the Rive Dee itself, particularly at the former river piers.

Contribution and Monitoring towards the Wales Transport Strategy

- 5.34. An assessment has also identified the Scheme's contribution to the Wales Transport Strategy by measuring against the WTS Monitoring Framework measures. The full assessment is included within the **Appendix V**.

Table 4: Summary of contribution towards WTS measures

Contribution to Measure	No. of Key Measures	No. of Subsidiary Measures
Major Benefit (+++)	0/6	1/27
Moderate Benefit (++)	2/6	6/27
Slight Benefit (+)	2/6	9/27

Contribution to Measure	No. of Key Measures	No. of Subsidiary Measures
Negligible (0)	1/6	5/27
Slight Adverse (-)	1/6	0/27
Not applicable (N/A)	0/6	6/27

Value for Money

- 5.35. The latest WeITAG guidance (February 2024) is clear that Value for Money (VfM) assessments require full consideration of Well-Being benefits, as well as alignment with Welsh Government priorities. Given this Scheme is classed as a 'WeITAG plus' there is a need to combine monetised and non-monetised elements. In particular, examination of journey time benefits should focus on sustainable modes rather than the private car.
- 5.36. As this is a priority MAR Scheme, and the application of the sustainable transport hierarchy, means many elements are being taken forward by interfacing schemes. Nevertheless, there is a need to consider VfM in the context of the construction impacts as well as the longer-term benefits such as improved route resilience arising from replacing a life-expired structure.
- 5.37. **Appendix V** provides an outline of the methodology that has been used to assess VfM. This includes the monetisation of the traffic impacts associated with the proposed construction approach and is linked with the approach and outcomes reported in the **Economic Assessment Report**.
- 5.38. The monetised VfM assessment is derived from comparing keeping the bridge open during works to the three control tests as outlined in Section 5.18. The figures here do include the impacts on all vehicles, including cars. As stated earlier, the aim of the exercise is to minimise adverse impacts on the network with corresponding disbenefits for local communities, businesses as well as visitors and longer distance traffic.
- 5.39. The costs presented here do vary from the values presented as part of the Affordability Dimension. Following recommended approaches to economic modelling, the costs are presented in 2010 prices and exclude specific items such as inflation.
- 5.40. **Table 5** provides the summary of the monetised benefits and costs. It demonstrates that there is an economic benefit from keeping the link open during construction and the significance of greater disruption. The Benefit to Cost Ratio needs to be treated with caution. It gives a scale of the benefit at construction.

Table 5: Analysis of monetised costs and benefits (£m, 2010 prices)

Monetised Benefits and Costs Only	Best Case Online (EB Deck Closure year 1; Contraflow Year 2)	Worst Case Online (Full Bridge Closure for 2 years)
Greenhouse Gases	£1.1	£3.6
Accidents	£2.2	£3.4
Commuters	£5.9	£14.2
Other Users	£10.8	£22.3
Business Users	£16.3	£37.0
Indirect Tax Revenues	-£0.9	-£3.1
Present Value of Benefits (PVB)	£35.3	£77.4
Present Value of Costs (PVC)	£50.1	£50.1
Net Present Value (NPV)	-£14.8	£27.3
Benefit to Cost Ratio (BCR)	£0.7	£1.54

5.41. Overall, the VfM assessment points to positive contributions in terms of people and communities and place and economy. Other impacts are expected to be negligible or at a very low level.

Table 6: Value for money assessment

People and Communities	Environment	Place and Economy	Culture and Welsh Language
Slight Benefit (+)	Negligible (0)	Medium Benefit (++)	Slight Benefit (++)

Source: Mott MacDonald, using the 7-point Likert scale from major benefit (+++) to major disbenefit (---)

6. Deliverability

6.1. An assessment has been made of the deliverability of the Scheme. In particular, the consents required as well as the procurement strategy.

Specification of Outputs

6.2. An Output Based Specification is in the process of being prepared and includes the following elements:

- A 31.6m River Dee bridge including a dual carriageway, 3m wide hard shoulders and a 3m wide active travel link.

- An active travel link through the existing railway bridge structure and a reconfiguring the highway verge.
- A new junction to provide access to and from the A494 to the Riverside area just beyond the river crossing.
- New open-channel sections of the Queensferry Drain on both sides of the railway, while retaining the existing culvert beneath the railway line.
- A new river pumping station and drainage outfall to discharge into the River Dee.
- Environmental mitigation and biodiversity enhancement works with earthworks and areas of soft estate including wildflower verges, swales, native woodland plantations and amenity grassland.

Consenting Strategy

- 6.3. The main planning consent for the Scheme is through the Highways Act (1980), however a number of related permits and consents are required. The bridge element itself requires numerous environmental consents and licences. These are outlined in the **Permits and Consents Tracker**.
- 6.4. Of the known required consents, most relate to environmental consents issued by Natural Resources Wales and Flintshire County Council. Consents include specific permits for water and drainage works (particularly in relation to culvert diversions) and the protected species licences. This covers activities which may affect protected species – such as demolition of existing structures and new construction works.

Procurement Strategy

- 6.5. A Procurement Strategy has been prepared and builds upon the Outline Procurement Strategy (OPS) that was developed for the MAR programme in 2022/23. The Strategy has been developed using best practice and guidance tools (such as the Cabinet Office's Construction Playbook) with a strong focus on the Wales Transport Strategy.
- 6.6. Market engagement was undertaken in early 2025 of the delivery and contracting model and responses from 16 organisations were received. This confirmed support for the following key elements of the Procurement Strategy:
 - Implementation of an Early Contractor Involvement (ECI) 2 stage model
 - Utilisation of the NEC4 suite of contracts, Option C and PSC Option E
 - A two-stage tender process that involves shortlisting and a tender stage covering technical and commercial evaluation
 - Incentivisation and carbon reduction to be built into the delivery model
- 6.7. Contract notices have already been posted on Sell2Wales. Prequalification of design and build contractor is programmed to commence in late July 2025.
- 6.8. Further detail relating to the procurement options that were evaluated are outlined in the **Procurement Strategy** document.

7. Affordability

- 7.1. The affordability has been tested, and an indicative funding profile has been developed for the Scheme. Several assumptions have been applied to the reporting of costs, including general and specific inclusions and exclusions. The full list of assumptions is reported in the **Cost Plan**.

Inclusions and Exclusions

- 7.2. The current estimate base date for costs is August 2025. Several key assumptions have been considered:
- An anticipated start of works in September 2027 and construction completed by March 2030.
 - Inflation has been excluded.
 - Preliminaries at 24% with overheads and profits at 10%
 - Exclusion of VAT and other taxes and levies, including statutory and planning fees.
 - An allowance of £4.3 million for employers' costs.
- 7.3. In terms of risk, a value of £28.63m has been applied, representing the P50 level from the Quantified Cost Risk Analysis (dated August 2025), i.e. there is a 50% chance that the risk value will not be exceeded.

Capital Costs

- 7.4. **Table 7** provides a high-level overview of capital costs for the Scheme.
- 7.5. A full breakdown of outturn costs are included in the **Appendix VI**. The costs are deemed to have an accuracy range of -10% to 20%.

Table 7: Scheme capital costs (£m August 2025)

Item	£m
Direct Construction	£56.2
Indirect Construction	£31.3
Design, PM and Other	£24.7m
Contractor and Survey fees	£6.1
Risk	£28.6
Anticipated Final Cost	£146.9m

Source: Mott MacDonald

Funding Profile and Sources

- 7.6. Funding for the Scheme is expected to be delivered through direct Welsh Government capital funding, as the Scheme is part of the MAR programme for the trunk road network.
- 7.7. The funding profile indicates that most funding would be required **from 2027 to 2030**. This is in line with the anticipated preliminary works and construction period. Remaining costs for the Scheme include the initial design and project management work prior to 2027 and the inclusion of risk from 2025 onwards.

Financial Risks

- 7.8. Specific financial related risks have been assessed. The risks include:
- Scheme funding – this includes the Scheme not having access, losing or running out of funding. The response actions include the Project Board monitoring sensitivity to funding constraints, as well as cost and risk plans kept up to date and reviewed against allocated funding.
 - Tender returns are higher than pre-tender estimates – the response actions include the Project Board using the Risk Management Plan to provide governance and to further develop contingency plans and funding.

8. Management Dimension

- 8.1. An assessment has been undertaken of the mechanisms used to deliver the Scheme, including project governance, risk management and delivery programme. The aim of this dimension is to demonstrate that the Preferred Option can be successfully delivered and that these mechanisms are robust enough for the Scheme to deliver benefits upon completion.

Governance, Roles and Responsibilities

- 8.2. The project team is comprised of four levels: the Project Board, the core management team, expert witnesses and the support team. A diagram showing the governance structure is included in **Appendix VII**.
- 8.3. The Project Board provides the overarching direction and oversight for the Scheme and is comprised of Welsh Government and NMWTRA representatives. Its core functions include:
- Provide governing steer, direction, oversight and assurance
 - Assess risks, issues, assumptions and dependencies to the Scheme
 - Escalate high impact risks to decision makers where appropriate
 - Remove any barriers to resolution of issues, assumptions and dependencies and mitigation of risks that fall outside the project manager's control
 - Reduce and avoid where possible, delays to decision-making particularly if they threaten the Scheme's planned timeframes and ultimately its agreed target implementation date
 - Ensure that the Scheme is suitably prioritised within the Welsh Government's strategic plans and work schedules in order for the Scheme to achieve its planned implementation date

- 8.4. The Project Board is supported by the core management and support teams which encompasses various project management leads and technical experts which inform the Scheme – formed of NWMTRA representatives and external consultants appointed to deliver the Scheme.
- 8.5. Expert witnesses may be utilised for public inquiry if required. The extent of the involvement will vary according to the need of the specialism to aspects of the Scheme.

Programme

- 8.6. The key events for the duration of the Scheme occur across two periods:
- Between the first quarter of 2024, to the first quarter of 2027. During this period, the planning and preliminary stages of Scheme development occur.
 - Construction of the Scheme between the third quarter of 2027 and the first quarter of 2030.
 - The opening of the Scheme for traffic in the final quarter of 2029.
- 8.7. Whilst there is some variation associated with each of the options, the programme assumes a **start of works in September 2027** and a completion of works in **March 2030**.
- 8.8. Certain constraints to Scheme delivery have also been factored in, including the need for works on the adjacent Flintshire Bridge in the summer of 2028. This may see an increase in demand on the A494 as a result.
- 8.9. Works within the River Dee itself also need to consider fish migration periods. Activities such as percussive piling should not take place between March to August (inclusive) and other working hours are restricted between November and February.

Risk

- 8.10. A full, detailed breakdown of Scheme risks is included within the **Appendix VIII** as the **Risk Register (dated August 2025)**. This applies a scale of severity to each risk and details the potential impact on the Scheme and the proposed methods of risk mitigation.
- 8.11. Risks are monitored on an ongoing basis in accordance with the **Risk Management Plan**. This captures threats, opportunities, issues and assumptions of risk in relation to the Scheme.
- 8.12. The major risks for the Scheme include pre-construction delays, such as prolongation of the design programme and delays to completion arising from construction activities. Appropriate contingency plans would be put in place to mitigate these risks.

Monitoring, Evaluation and Benefits Realisation

- 8.13. The **Benefits Realisation Plan** (BRP) proposes mechanisms that will be implemented to ensure that the benefits of the Scheme are maximised during delivery and throughout the project lifecycle.
- 8.14. To ensure that these expected benefits are translated into real world impacts for end users, **Appendix IX** sets out a proposed **monitoring framework**. This utilises the logic map and applies measurement indicators – in terms of baseline evidence capture, subsequent monitoring, frequency and the resources required.
- 8.15. To ensure that the Scheme is being monitored effectively against the expected benefits, the post-construction outcome figures will be compared to similar data gathered before the Scheme has been implemented, including existing regular datasets from NMWTRA and Welsh Government departments.
- 8.16. The dissemination of monitoring and evaluation processes is critical to obtaining a representative picture of the Scheme's impact and performance. This will be the responsibility of the Project Board and delivered in accordance with established framework documents.
- 8.17. The monitoring framework is further supported by the WTS Monitoring Measures (as assessed in the **Integrated Well-being Appraisal** and as **Appendix V**). This links the Scheme's objectives with the WTS Monitoring Framework to provide an additional layer of evaluating the Scheme's performance against material transport policy objectives.

Baseline Reporting

- 8.18. The baseline data collection will record a number of traffic, safety and environmental metrics to present the situation associated with the Scheme prior to construction.
- 8.19. The following documents and data sources will be used as a part of the evaluation baseline:
- Environmental Statement
 - Traffic Modelling
 - STATS19 reporting
 - Carbon Management Plan
 - Materials Management Plan
 - Construction Environment Management Plan
 - Traffic Management Plan
- 8.20. A three-year monitoring report will be produced a part of WelTAG Stage 5 and regular monitoring (at a frequency to be determined) will apply to specific metrics.

Data Compliance

- 8.21. The Scheme is not anticipated to handle any information or data which would require a specific plan for the management of data – beyond the use of the

General Data Protection Regulation (GDPR) when handling and storing personal information.

8.22. All relevant parties (NWMTRA, Welsh Government and external contractors/consultants) have adhered to their internal data compliance policies to ensure data is securely managed.

9. Ways of Working and Engagement Plan

- 9.1. Throughout the development of the Scheme to date, the Five Ways of Working have been actively utilised. This has been reinforced by the **Engagement Plan**. This identified those have been engaged with and for what purposes. This included directly affected parties, statutory stakeholders and other parties.
- 9.2. Further statutory engagement will be undertaken as part of the publication of orders. This will include separate events for local councillors and an exhibition for the public.
- 9.3. Demonstration of how Ways of Working has been applied is shown in **Table 9**.

Table 9: Demonstration of the Ways of Working

Way of Working	Demonstration to Date
Long Term	The Scheme objectives have sought to balance the impacts and benefits associated with replacing the River Dee Bridge with a long-term asset, whilst ensuring short term disbenefits are minimised.
Integration	It is recognised that the Scheme sits within a wider range of other schemes and interventions that seek to improve opportunities for sustainable travel and achieve Well-Being objectives. These integrate the sustainable transport hierarchy.
Involvement	The importance of the existing bridge to the local area as well as North Wales, has ensured active engagement with stakeholders and the public. Given the reset of the Scheme, further public consultation was undertaken from December 2024 to March 2025 to reflect this.
Collaboration	The Scheme interfaces a number of elements such as the River Dee, the North Wales Coast Main Line and the wastewater treatment works. Active collaboration (and formalised through liaison and technical working groups) has been undertaken with organisations such as Natural Resources Wales.

Way of Working	Demonstration to Date
Prevention	One of the challenges associated with the Scheme is the need to improve the resilience of the network, in line with Wales Transport Strategy, whilst not substantially increasing whole life carbon and creating induced traffic. The application of the Sustainable Transport Hierarchy has led to options with these disbenefits not being progressed.

Glossary

AACE	Advancement of Cost Engineering
BRP	Benefits Realisation Plan
CJC	(North Wales) Corporate Joint Committee
COBALT	Cost and Benefits of Accidents – Light Touch
DfT	Department for Transport
DIP	Deeside Industrial Park
DMRB	Design Manual for Roads and Bridges
EAR	Economic Appraisal Report
ECI	Early Contractor Involvement
ES	Environmental Statement
FCC	Flintshire County Council
GDPR	General Data Protection Regulation
HGV	Heavy Goods Vehicle
ITS	Intelligent Transport Systems
LGV	Light Goods Vehicle
MAR	Major Asset Renewal
NMWTRA	North and Mid Wales Trunk Road Agent
OGV	Other Goods Vehicle
OPS	Outline Procurement Strategy
PSV	Public Service Vehicle
RTP	Regional Transport Plan
SDP	Strategic Development Plan
SRN	Strategic Road Network
TAG	Transport Analysis Guidance
TEE	Transport Economic Efficiency
TUBA	Transport User Benefits Appraisal
TfW	Transport for Wales
VAT	Value Added Tax
VfM	Value for Money
VMS	Variable Message Signs
WHCAR	Walking, Cycling and Horse-riding Assessment and Review

WTS	Wales Transport Strategy / Llwybr Newydd – the Wales Transport Strategy
WBFGA	Well-being of Future Generations (Wales) Act
WeITAG	Welsh Transport Appraisal Guidance

Appendices / Integrated Well-being Appraisal

Appendix I – General Arrangement

Appendix II – Logic Map

Appendix III – Integrated Well Being Appraisal Methodology

Appendix IV – Integrated Well Being Appraisal

Appendix V – Contribution to Wales Transport Strategy Monitoring Framework

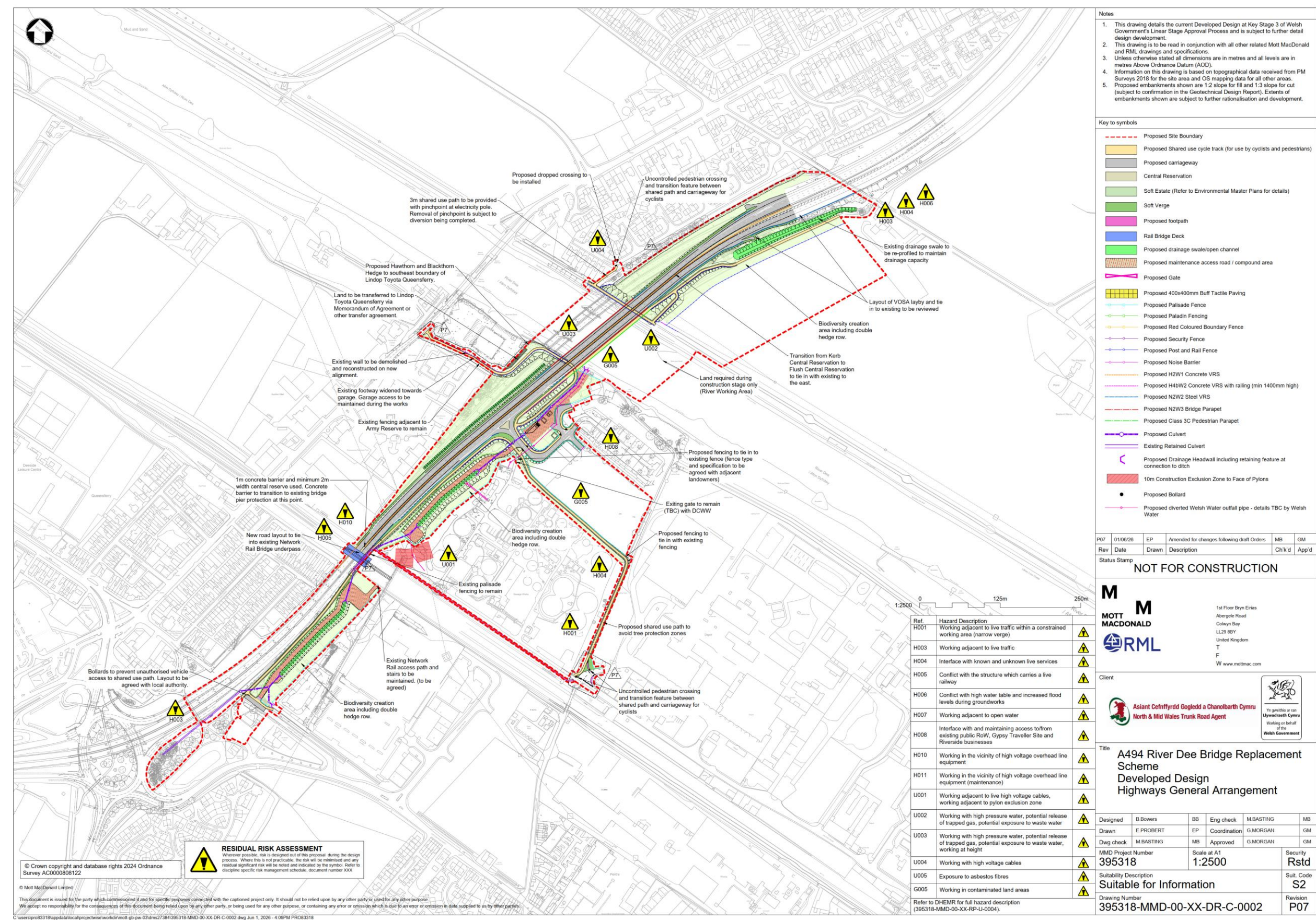
Appendix VI – Outturn Costs (as of August 2025)

Appendix VII – Governance Structure

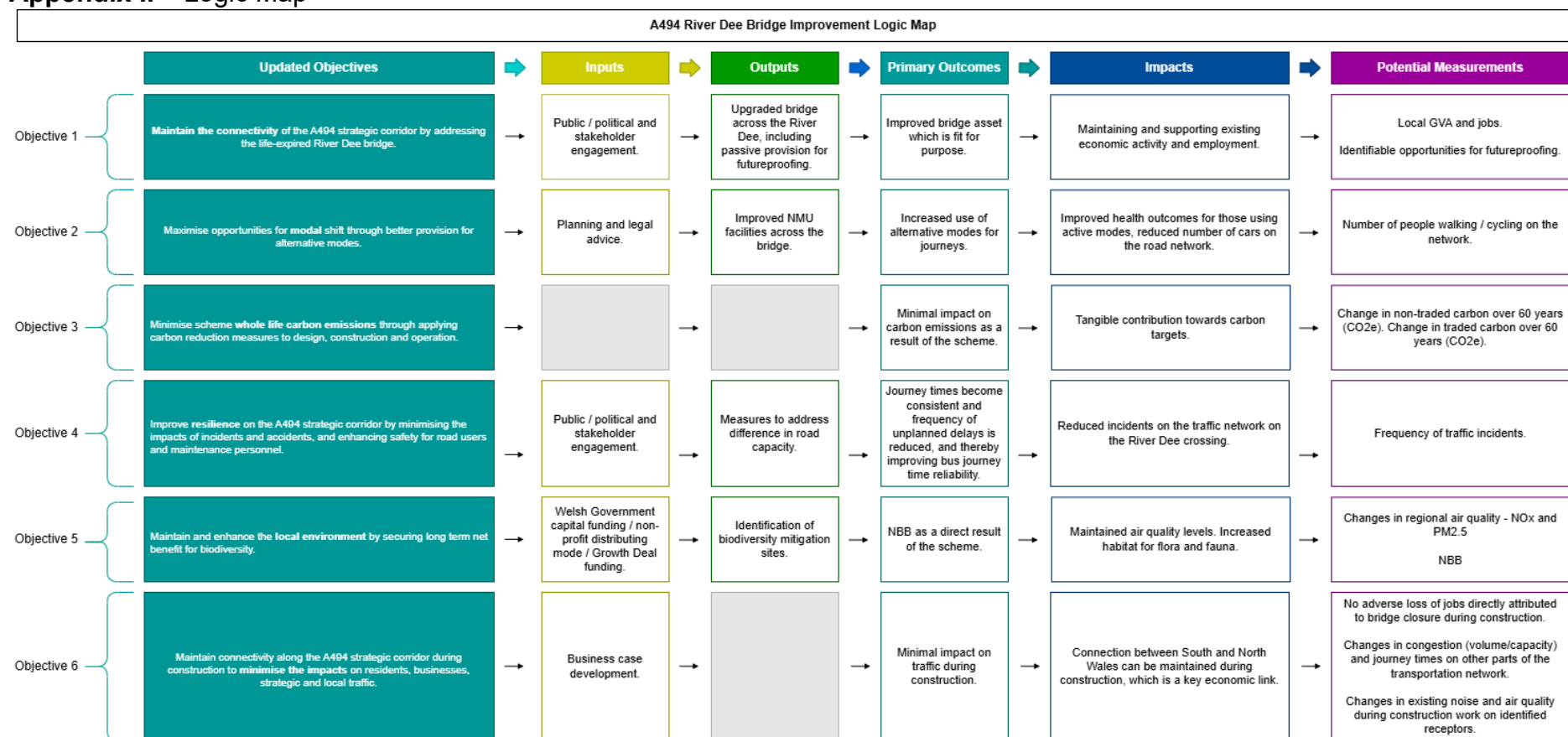
Appendix VIII – Quantified Risk Register (top risks only)

Appendix IX – Benefits Realisation Monitoring Framework

Appendix I – General Arrangement



Appendix II – Logic Map



Appendix III – Integrated Well-being Appraisal Methodology

Heading	Subheading	Quantitative / Evidence Source	Qualitative	WTS Monitoring Framework Measure
People and Communities	Health – Air Quality	Environmental Statement	+++ Major improvement in air quality (construction and operation), to --- Major adverse impact on air quality (construction and operation), measured on the number of receptors.	M2 – Percentage of vehicles that are ultra-low or zero emission M3 – Total vehicle kilometres travelled M4 – Average distance travelled per person S23 – Level of air pollutants from the transport sector
People and Communities	Health – Noise	Environmental Statement	+++ Major improvement in noise (construction and operation), to --- Major adverse impact on noise (construction and operation), measured on the number of receptors	M2 – Percentage of vehicles that are ultra-low or zero emission M3 – Total vehicle kilometres travelled M4 – Average distance travelled per person S24 – Percentage of people regularly bothered by noise from outside the home caused by transport
People and Communities	Health – Physical Activity	Walking, Cycling and Horse Riding Assessment	+++ Major improvement in physical activity, to --- Major adverse impact on physical activity, measured by the number of active travel journeys	M1 – Percentage of journeys by walking, cycling and public transport M3 – Total vehicle kilometres travelled M4 – Average distance travelled per person S1 – Average travel time to education, health and leisure services S2 – Percentage of people satisfied with their ability to access services in their local area S3 – Percentage of people within walking distance of sustainable modes of transport S4 – Percentage of people who walk or cycle at least once a week as means of transport S5 – Percentage of journeys to a rail station by walking, cycling or bus
People and Communities	Equalities and Barriers	WelTAG Stage 1 and 2 Socio-economic Analysis	+++ Major improvement in equality opportunities, to --- Major adverse impact on equality opportunities	Not applicable.
People and Communities	Safety – Collisions	Economic Assessment Report. Monetised safety collision benefits calculated using COBALT.	+++ Major reduction in KSIs, to --- Major increase in KSIs	M3 – Total vehicle kilometres travelled S19 – Number of people killed or injured on the transport network

Heading	Subheading	Quantitative / Evidence Source	Qualitative	WTS Monitoring Framework Measure
People and Communities	Safety – Confidence	Scheme Design	+++ Major improvements in safety confidence (based on overall journey quality), to --- Major adverse impacts on safety confidence (based on overall journey quality)	M3 – Total vehicle kilometres travelled S11 – Percentage of people satisfied with their journey S20 – Percentage of people who feel safe and welcome when travelling
Environment	Decarbonisation – Whole Life Carbon	Environmental Statement	+++ Major improvement in whole life carbon emissions, to --- Major adverse impacts from whole life carbon emissions	M2 – Percentage of vehicles that are ultra-low or zero emission M3 – Total vehicle kilometres travelled M6 – Greenhouse gas emissions from the transport sector S16 – Average delay per kilometre travelled
Environment	Decarbonisation – Modal Shift	Economic Assessment Report	+++ Major increase in sustainable journeys, to --- Major reduction in sustainable journeys	M1 – Percentage of journeys by walking, cycling and public transport M3 – Total vehicle kilometres travelled S1 – Average travel time to education, health and leisure services S17 – Average cost per kilometre travelled by public transport
Environment	Biodiversity and Ecosystems	Net Benefit for Biodiversity Statement	+++ Major enhancement to biodiversity, to --- Major adverse impact on biodiversity	S22 – Percentage of transport infrastructure at risk of flooding S25 – Hectares of habitat on the transport estate maintained or improved for biodiversity benefit
Environment	Waste	Environmental Statement	+++ Minimum level of waste and refuse, to --- Major waste created	S26 – Percentage of waste produced by the transport sector that is reused or recycled
Places and Economy	Placemaking	Environmental Statement	+++ Major enhancement to placemaking, to --- Major adverse impact on placemaking	Not applicable.
Places and Economy	Economy	Economic Assessment Report	+++ Major improvement in local economic performance (jobs, agglomeration, GVA), to --- Major adverse impacts to local economic performance (jobs, agglomeration, GVA)	M3 – Total vehicle kilometres travelled M5 – Percentage of workforce working remotely on a regular basis S9 – Percentage of bus and rail services on time S16 – Average delay per kilometre travelled
Places and Economy	Sustainable Transport Innovation	NWMTRA wider network VMS review	+++ Major opportunities for sustainable transport innovation, to	M2 – Percentage of vehicles that are ultra-low or zero emission M5 – Percentage of workforce working remotely on a regular basis

Heading	Subheading	Quantitative / Evidence Source	Qualitative	WTS Monitoring Framework Measure
			--- Limited opportunities for sustainable transport innovation	
Places and Economy	Sustainable Distribution of Goods	Economic Assessment Report	+++ Major opportunities for sustainable goods distribution, to --- Limited opportunities for sustainable goods distribution	M2 – Percentage of vehicles that are ultra-low or zero emission M3 – Total vehicle kilometres travelled S8 – Percentage of land-based freight moved by rail
Places and Economy	Affordability and Socio-economic Disadvantage	WelTAG Stage 1 and 2 Socio-economic Analysis	+++ Major improvements in socio-economic conditions, to --- Major adverse impacts on socio-economic conditions	S1 – Average travel time to education, health and leisure services S2 – Percentage of people satisfied with their ability to access services in their local area S17 – Average cost per kilometre travelled by public transport
Culture and Welsh Language	Welsh Language	WelTAG Stage 1 and 2 Socio-economic Analysis	+++ Major improvement in boosting and promoting use of the Welsh language, to --- Major adverse impacts to the use of the Welsh language	S1 – Average travel time to education, health and leisure services S2 – Percentage of people satisfied with their ability to access services in their local area
Culture and Welsh Language	Arts, Sports and Culture	WelTAG Stage 1 and 2 Socio-economic Analysis	+++ Major improvements to arts, sports, culture and events, to --- Major adverse impacts on arts, sports, culture and events	S1 – Average travel time to education, health and leisure services S2 – Percentage of people satisfied with their ability to access services in their local area S6 – Percentage of trips to visitor attractions by sustainable modes of transport
Culture and Welsh Language	Historic Environment	Environmental Statement	+++ Major improvements to the historic environment, to --- Major adverse impacts on the historic environment	S27 – Percentage of designated historical assets on the transport estate that are in a stable or improving condition

Appendix IV – Integrated Well-being Appraisal

Heading	Sub-heading	Quantitative	Qualitative	Summary
People and Communities	Health – Air Quality	Not applicable.	Neutral / Negligible	The main air quality assessment (February 2025) determined that there were no significant adverse impacts on air quality. Two areas of receptors were identified. Firstly, at the traveller’s site, the westbound carriageway would be 40m closer (although remaining a sufficient distance away at 75m). Secondly, at Claremount Avenue, Garden City, the eastbound carriageway alignment would be moved 30m further south of this receptor.
People and Communities	Health – Noise	£811,919 over the 60-year appraisal period. Daytime increase: 13 dwellings Daytime decrease: 139 dwellings Nighttime increase: 4 dwellings Nighttime decrease: 104 dwellings	Moderate Benefit	A quantitative assessment using Department for Transport’s Transport Analysis Guidance (TAG) has been undertaken. The assessment has calculated that 13 households during the day will experience more noise whereas 139 households will experience less. For nighttime, the figures are 4 in terms of increase, and 104 in terms of decrease. Translated into monetary values, the Scheme is likely to bring a benefit of £811,919 over a typical 60-year appraisal period. On this basis, the Scheme will bring moderate benefits.
People and Communities	Health – Physical Activity	Not applicable.	Slight Benefit	A Walking, Cycling and Horse-Riding Assessment and Review (WHCAR) has identified active travel links on and close to the existing bridge are discontinuous and of variable quality, which was reflected in the number of observed users. The improvements across the River Dee, as well alongside the river and at the railway bridge will improve comfort and reduce severance. On this basis, it has been determined that there will be a slight benefit or uplift in physical activity levels.
People and Communities	Equalities and Barriers	Not applicable.	Slight Benefit	An assessment has been made of the socio-economic profile in both the immediate area surrounding the bridge (such as Queensferry) as well as a wider area covering the local authorities of Flintshire, and Cheshire West and Chester. Within Wales, data from the 2021 Census as well as the Index of Multiple Deprivation has been applied. The analysis points to a slight benefit, as improved resilience of the route will improve access to economic opportunities. Additional future proofing is likely to improve opportunities for sustainable transport.
People and Communities	Safety – Collisions	Estimated saving of 52 casualties over a 2-year period compared to contraflows / forcing of temporary closures. 5 serious. 47 slight. £2.1 million benefit saving at 2010 prices.	Moderate Benefit	Monetised safety collision benefits for the construction period have been calculated from the highway model. Modelling using COBALT (Cost and Benefits of Accidents – Light Touch) software has estimated a total of 52 casualties will be saved over a two-year period (estimated at 5 serious, 47 slight reductions by severity) compared to contraflows or other more significant temporary closures. This translates as a £2.1m benefit saving (at 2010 prices) during the construction period.
People and Communities	Safety – Confidence	Not applicable.	Moderate Benefit	There will be moderate benefits arising from improvements to safety confidence. This is based on the provision of a hard strip along the new River Dee Bridge, as well as an improved environment for active travel users. The design of the tie-in with the existing arrangement at Drome Corner should also improve driver confidence at this location.
Environment	Decarbonisation – Whole Life Carbon	16,200 tCO2e over the 60-year appraisal period. £1.06m reduction in disbenefits at 2010 prices (compared with other options).	Slight Disbenefit	The Scheme is estimated to result in an increase of whole life carbon emissions over the 60-year appraisal period, mainly from construction and maintenance. Construction related carbon is mainly linked with structure works, although these are less than the options considered at previous WelTAG stages. This equates to 16,200 tCO2e with materials, transport and manufacturing making the bulk at 13,452 tCO2e. In terms of operational carbon, the traffic model has calculated the benefits arising from minimising the level of disruption during construction. The Scheme is likely to reduce the operational carbon disbenefits in monetary terms by £1.06m (in 2010 prices) compared to options that involve greater full or partial closure of the bridge during works.
Environment	Decarbonisation – Modal Shift	Not applicable.	Slight Benefit	The Scheme will contribute positively towards modal shift, with up to 3km of new or improved active travel links being constructed. In addition, provision for future public transport demand as part of the future proofing has been included.
Environment	Biodiversity and Ecosystems	Net Benefit for Biodiversity Statement	Moderate Benefit	There is potential for net gains in biodiversity. There are marginal gains in broadleaved woodland and mixed plantation habitats, will contribute towards biodiversity. Overall, there is a high retention rate for native habitats with minimum loss in scrub areas and moderate gain in neutral grasslands. A more detailed assessment of NBB is currently being finalised as of June 2025.
Environment	Waste	Up to 70% of excavated material will be reused.	Moderate Benefit	The assessment has calculated that up to 70% of excavated material will be reused, including the existing bridge and the main component, concrete. Additional mitigation is proposed through a Material Management Plan that will be compiled by the contractor.
Places and Economy	Placemaking	Not applicable.	Moderate Benefit	Use of screening materials as well as enhancements to the active travel network to a largely industrial townscape.
Places and Economy	Economy	£37.4m of user benefits (of keeping the bridge open during construction) compared to closing the bridge (during construction).	Slight Benefit	Two assessments have been made. Firstly, comparing the preferred construction method of keeping the bridge open compared to three scenarios (control tests) and the amount of user benefits maintained (monetised using TUBA). Compared to closing the bridge during construction, there would be £37.4m of user benefits, with business users being the largest beneficiaries, of building the new route off-line. This is a reflection of the proportion of HGVs and strategic traffic using the route. Secondly, wider economic impacts are likely to receive a benefit as the route is a critical link of an economic sub-region and a hard strip will improve resilience during incidents and maintenance.
Places and Economy	Sustainable Transport Innovation	NMWTRA wider network VMS review.	Slight Benefit	The assessment of Sustainable Transport Innovation is based on the technologies and behavioural change approaches used. The assessment presents a slight positive benefit as of June 2025. A technical working group has been established and is looking at wider use of Variable Message Signs (VMS) and other ITS interventions across the network. Proposals for ITS for the Scheme will be confirmed out of this process.
Places and Economy	Sustainable Distribution of Goods	Not applicable.	Slight Benefit	There is likely to be a slight benefit to the sustainable distribution of goods arising from improved resilience of the route and during construction. This is largely derived from the traffic and economic modelling undertaken as well as other evidence sources such as the count data within the Initial Traffic and Collision Report. This points to relatively higher proportion of HGV and LGV traffic.
Places and Economy	Affordability and Socio-economic Disadvantage	Not applicable.	Slight Benefit	The assessment points to a slight benefit through improved resilience of the route and access to economic opportunities such as those at Deeside.

Heading	Sub-heading	Quantitative	Qualitative	Summary
Culture and the Welsh Language	Welsh Language	Not applicable.	Neutral / Negligible	The Scheme is likely to have a negligible benefit for the Welsh Language. Replacing the existing link will support access to existing Welsh Language based assets such as schools.
Culture and the Welsh Language	Arts, Sports and Culture	Not applicable.	Slight Benefit	With arts, sports and cultural activities, it is anticipated the benefits will be slight. The link is likely to support access existing assets, but improved route resilience should strengthen the visitor economy across North Wales.
Culture and the Welsh Language	Historic Environment	Not applicable.	Slight Disbenefit	In terms of the historic environment, there is an expected minor disbenefit arising from potential conflicts with archaeological remains in the Rive Dee itself, particularly at the former river piers.

Appendix V – Contribution to Wales Transport Strategy Monitoring Framework

Key Measures	Indicator	National Score (WTS Source Date)	Contribution to Measure	Commentary (if applicable)
M1 Percentage of journeys by walking, cycling and public transport	Percentage of journeys by walking and public transport	28.1% (2012)	Slight Benefit	The improved active travel network through the link across the River Dee bridge will contribute towards the percentage of journeys made.
M2 Percentage of vehicles that are ultra-low or zero emission	Percentage of vehicles in Wales that are ultra-low or zero emissions	1.7% (2023 Q4)	Neutral / Negligible	The Scheme will have no direct impact on the percentage of vehicles which are ultra-low or zero emissions.
M3 Total vehicle kilometres travelled	Total kilometres travelled on the Welsh road network (billions)	30 (2023)	Moderate Benefit	The Scheme does not generate significant induced traffic. The Scheme will reduce the severance impact of railway bridge collisions (at the railway overbridge) and improves opportunities to cross the River Dee.
M4 Average distance travelled per person	Average distance travelled per person (kilometres)	12,043 (2012)	Moderate Benefit	The Scheme does not generate significant induced traffic. The Scheme will reduce the severance impact of railway bridge collisions (at the railway overbridge) and improves opportunities to cross the River Dee.
M5 Percentage of the workforce working remotely on a regular basis	Percentage of the workforce who usually work remotely	33.9% (2022/23)	Slight Benefit	Although the Scheme is unlikely to change the established working patterns in the region, given the manufacturing clusters and the proximity to the English border, there is likely to be indirect benefits from improved operational resilience of the A494 to remote workers.
M6 Greenhouse gas emissions from the transport sector	Greenhouse gases from domestic transport in Wales 2022 (KtCO ₂ e)	5,653 (2022)	Slight Adverse	The Scheme will result in an increase in whole life carbon emissions over the 60-year appraisal period of 16,200 tCO ₂ e with materials, transport and manufacturing making the bulk at 13,452 tCO ₂ e.

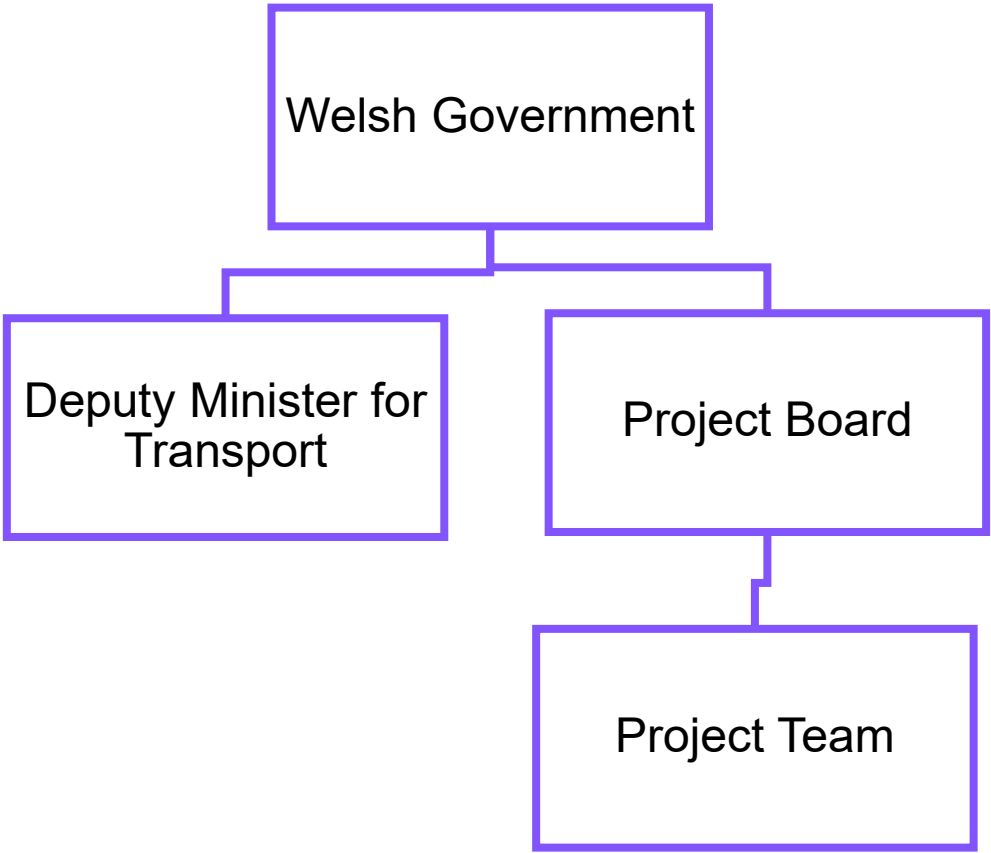
Subsidiary Measures	Indicator	National Score (unless otherwise stated)	Contribution to Measure	Commentary
S1 Average travel time to education, health and leisure services	Average time by walking to key services (GP Surgery, Primary School, Secondary School and Sports Facilities) (minutes)	26.5 (2023)	Neutral / Negligible	No major change in reducing the severance impact of walking to key services.
S1 Average travel time to education, health and leisure services	Average time by cycling to key services (GP Surgery, Primary School, Secondary School and Sports Facilities) (minutes)	10.2 (2023)	Slight Benefit	Journey times by cycling are likely to be improved through the provision of the active travel link.
S1 Average travel time to education, health and leisure services	Average time by bus and rail to key services (GP Surgery, Primary School, Secondary School and Sports Facilities) (minutes)	14.7 (2023)	Slight Benefit	The Scheme will improve the flow of traffic on the A494, through greater operational resilience. Provision of hard shoulders (and a hard strip through the River Dee bridge) will reduce the impact of accidents on the flow of traffic. This will result in a benefit to bus journey times.
S1 Average travel time to education, health and leisure services	Average time by motor vehicle to key services (GP Surgery, Primary School, Secondary School and Sports Facilities) (minutes)	5.6 (2023)	Moderate Benefit	The Scheme will reduce the severance impact of railway bridge collisions (at the railway overbridge) and improves opportunities to cross the River Dee.
S2 Percentage of people satisfied with their ability to access services in their local area	Percentage of people satisfied with their ability to access services available within a 15 to 20-minute walk of home	85.8% (2021/22)	Neutral / Negligible	No major change in journey times of walking to key services.
S3 Percentage of people within walking distance of sustainable modes of transport	Percentage of people within walking distance of public transport	49.9% (2023)	Neutral / Negligible	No major change in journey times of walking to key services.
S4 Percentage of people who walk or cycle at least once a week as a means of transport	Percentage of people who walk or cycle at least once a week	51.8% (2022/23)	Slight Benefit	Scheme reduces the severance impact through providing an active travel link and is likely to encourage greater uplift in walking and cycling.
S5 Percentage of journeys to a rail station by walking, cycling or bus	Percentage of trips to a rail station by walking, cycling or bus in Wales (average)	47.25% (2029-2022)	Slight Benefit	Scheme reduces the severance impact through providing an active travel link and is likely to encourage greater uplift in walking and cycling.
S6 Percentage of trips to visitor attractions by sustainable modes of transport	Percentage of trips to visitor attractions by sustainable modes of transport	31.9% (2022)	Neutral / Negligible	Although the Scheme forms part of a major leisure route into North Wales, it is unlikely to increase the number of sustainable trips made to key attractors.
S7 Percentage of rail network that is electrified	Percentage of the rail network that is electrified	6.5% (2024)	N/A	Not applicable.
S8 Percentage of land-based freight moved by rail	Proportion of land-based freight moved by rail	6.6% (2023)	N/A	Not applicable.
S9 Percentage of bus and rail services on time	Percentage of bus services on time	63.8% (2023)	Slight Benefit	The Scheme will improve the flow of traffic on the A494, through greater operational resilience. Provision of hard shoulders (and a hard strip through the River Dee bridge) will reduce the impact of accidents on the flow of traffic. This will result in a benefit to bus journey times.
S10 Number of publicly available electric vehicle charging points	Number of public charging devices	2,770 (2024)	N/A	Not applicable.

Subsidiary Measures	Indicator	National Score (unless otherwise stated)	Contribution to Measure	Commentary
S11 Percentage of people satisfied with their journey	Percentage of people satisfied with bus services	52.4% (2022/23)	Slight Benefit	The Scheme will improve the flow of traffic on the A494, through greater operational resilience. Provision of hard shoulders (and a hard strip through the River Dee bridge) will reduce the impact of accidents on the flow of traffic. This will result in a benefit to bus journey times.
S12 Percentage of people satisfied with their ability to access public transport independently	Percentage of people who did not require assistance when travelling by rail	93.8% (2023/24)	N/A	Not applicable.
S13 Percentage of railway stations that are step-free	Percentage of rail stations in Wales that are step-free	29% (2024)	N/A	Not applicable.
S14 Percentage of buses and trains with audio-visual information	Percentage of buses with audio-visual information	40.5% (2024)	N/A	Not applicable.
S15 Percentage of Welsh speakers using Welsh language services in the transport sector	Percentage of Welsh speakers who use Welsh in everyday life	10.7% (2022/23)	Neutral / Negligible	The Scheme is likely to have a negligible benefit for the Welsh Language. Replacing the existing link will support access to existing Welsh Language based assets such as schools.
S16 Average delay per kilometre travelled	Average strategic road network delay, seconds per kilometre	3.5 (2023/24)	Major Benefit	The Scheme will reduce the severance impact of railway bridge collisions (at the railway overbridge) and improves opportunities to cross the River Dee. Through improved operational resilience, this will result in a major benefit translating to a reduction in delays on the strategic road network, given the volume of traffic using the existing bridge.
S17 Average cost per kilometre travelled by public transport	Average cost per kilometre travelled by bus	£0.52 (2022)	Neutral / Negligible	No anticipated change in the cost of bus services.
S18 Percentage of people who feel they can't afford to travel by public transport	Average weekly household expenditure on public transport fares	£2.40 (2022/23)	Neutral / Negligible	No anticipated change in the cost of public transport.
S19 Number of people killed or injured on the transport network	Number of people killed or injured on the road network	4,348 (2023)	Moderate Benefit	Although mainline collisions on the A494 are relatively low in comparisons to traffic volume, the provision of improved safety features (hard shoulder/strips) will translate to a reduction in accidents and better resilience to incidents, resulting in a moderate benefit.
S20 Percentage of people who feel safe and welcome when travelling	Percentage of people who feel safe travelling by walking or cycling after dark	97.4% (2021/22)	Slight Benefit	Improved provision for active travel across the River Dee bridge should result in a better environment for users, compared to current provisions.
S21 Percentage of transport infrastructure in good condition	Percentage of pavement on the strategic road network in good condition	74% (2022/23)	Moderate Benefit	The existing bridge is a life expired asset, with both strategic and local importance. Replacement of the bridge will be a major renewal of a key transport asset and improve the condition of the carriageway.
	Percentage of pavement on the local road network not in poor condition	91% (2018/19)	Slight Benefit	Improvement of traffic flows on the bridge and A494 will reduce stress on the local road network and minimise the reduction of pavement wear down.
S22 Percentage of transport infrastructure at risk of flooding	Percentage of transport infrastructure at risk of flooding	5.2% (2023)	Slight Benefit	The new open-channel sections of the Queensferry Drain on both sides of the railway (retaining the existing culvert beneath the railway line) will minimise negative impacts associated with flooding and improve resilience to climate-change driven events.
S23 Level of air pollutants from the transport sector	Average NOx concentration from road transport in Wales (µg/m³)	0.84 (2018)	Neutral / Negligible	The main air quality assessment (February 2025) determined that there were no significant adverse impacts on air quality. Two areas of receptors were identified. Firstly, at the traveller's site, the westbound carriageway would be 40m closer (although remaining a sufficient distance away at 75m). Secondly, at Claremount Avenue, Garden City, the eastbound carriageway alignment would be moved 30m further south of this receptor.
S23 Level of air pollutants from the transport sector	Average PM10 concentration from road transport in Wales (µg/m³)	0.04 (2018)	Neutral / Negligible	The main air quality assessment (February 2025) determined that there were no significant adverse impacts on air quality. Two areas of receptors were identified. Firstly, at the traveller's site, the westbound carriageway would be 40m closer (although remaining a sufficient distance away at 75m). Secondly, at Claremount Avenue, Garden City, the eastbound carriageway alignment would be moved 30m further south of this receptor.
S24 Percentage of people regularly bothered by noise from outside the home caused by transport	Percentage of people dissatisfied with traffic noise in their local area	15.2% (2018/19)	Moderate Benefit	The assessment has calculated that 13 households during the day will experience more noise whereas 139 households will experience less. For nighttime, the figures are 4 in terms of increase, and 104 in terms of decrease. On this basis, the Scheme brings moderate noise benefits (monetised in the IWBA above).
S25 Hectares of habitat on the transport estate maintained or improved for biodiversity benefit	Hectares of habitat on the strategic road network maintained or improved	3,145 (2022/23)	Slight Benefit	There are marginal gains in broadleaved woodland and mixed plantation habitats, will contribute towards biodiversity. There is a high retention rate for native habitats with minimum loss in scrub areas and moderate gain in neutral grasslands. This equates to a slight benefit overall.
S26 Percentage of waste produced by the transport sector that is reused or recycled	Percentage of waste from the transport sector that is reused or recycled	44.2% (2018)	Moderate Benefit	The assessment has calculated that up to 70% of excavated material will be reused, including from the existing bridge with the main component being concrete.
S27 Percentage of designated historical assets on the transport estate that are in a stable or improving condition	Percentage of scheduled monuments on the transport estate in stable or improving condition	48.2% (2023)	Neutral / Negligible	The Scheme is not expected to have a significant impact (beneficial or adverse) impact on scheduled monuments.
S27 Percentage of designated historical assets on the transport estate that are in a stable or improving condition	Percentage of listed buildings on the transport estate in stable or improving condition	84.3% (2023)	Neutral / Negligible	The Scheme is not expected to have a significant impact (beneficial or adverse) impact on listed buildings.

Appendix VI – Cost Plan (as of August 2025)

Group Element	Preferred Option	Category
SERIES 200: SITE CLEARANCE	£3,624,000	Construction
SERIES 300: FENCING	£467,000	Construction
SERIES 400: ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN)	£795,000	Construction
SERIES 500: DRAINAGE AND SERVICE DUCTS	£3,389,000	Construction
SERIES 600: EARTHWORKS	£5,568,000	Construction
SERIES 700: PAVEMENTS	£2,975,000	Construction
SERIES 1100: KERBS, FOOTWAYS AND PAVED AREAS	£1,613,000	Construction
SERIES 1200: TRAFFIC SIGNS AND ROAD MARKINGS	£74,000	Construction
SERIES 1300: ROAD LIGHTING COLUMNS AND BRACKETS, CCTV MASTS AND CANTILEVER MASTS	£303,000	Construction
SERIES 1400: ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS	£636,000	Construction
SERIES 1500: MOTORWAY COMMUNICATION	£0	Construction
SERIES 1600: PILING AND EMBEDDED RETAINING WALLS	£18,005,000	Construction
SERIES 1700: STRUCTURAL CONCRETE	£6,112,000	Construction
SERIES 1800: STEELWORK FOR STRUCTURES	£8,727,000	Construction
SERIES 1900: PROTECTION OF STEELWORK AGAINST CORROSION	£0	Construction
SERIES 2000: WATERPROOFING FOR STRUCTURES	£236,000	Construction
SERIES 2100: BRIDGE BEARINGS	£540,000	Construction
SERIES 2300: BRIDGE EXPANSION JOINTS AND SEALING OF GAPS	£63,000	Construction
SERIES 2400: BRICKWORK, BLOCKWORK AND STONework	£168,000	Construction
SERIES 2500: SPECIAL STRUCTURES	£86,000	Construction
SERIES 2700: ACCOMMODATION WORKS	£0	Construction
SERIES 3000: LANDSCAPING AND ECOLOGY	£1,014,000	Construction
UTILITY DIVERSION COSTS	£1,758,000	Construction
Sub total - Direct Construction Works Costs (DCC)	£56,153,000	
Contractors Preliminaries including Traffic Management	£22,749,000	Construction
Overheads and Profit	£8,506,000	Construction
Sub total - Indirect Construction Works Costs (IC)	£31,255,000	
Surveys	£1,016,000	Preparation
Design Team Fees	£5,138,000	Preparation
Contractor Risk	£0	
D&B Contractors Base cost total	£93,562,000	
Project Management Team Fees	£2,886,000	Supervision
Other Project Costs	£21,843,000	Land / Utility
Sub total for PM and Other costs	£24,729,000	
Sub total (D&B Contractor cost + PM and Other costs)	£118,291,000	
Risk		
Client Risk	£28,630,000	Prorate
Anticipated final cost (excluding inflation)	£146,921,000	
Inflation		
Inflation	£15,562,000	Prorate
Anticipated final cost (Including inflation)	£162,490,000	
Taxation and Grants		
Taxation and Grants	Excluded	
Anticipated final cost (Including inflation) + Taxation and Grants	£162,490,000	

Appendix VII – Governance Structure



Appendix VIII – Quantified Risk Register (top risks only)

Risk Category	Risk Title	Risk Description (Cause>Risk>Effect)	Current Likelihood (Quant)
Utilities	Unknown utilities are encountered	Cause: Utility record information incorrect or not available Event: Unknown utilities are encountered Effect: Additional time and costs amending the proposals or a particular element of the scheme may be unable to progress or additional utility diversion and protection work required	0.6
Programme	Approvals	Cause: Failing to agree the strategies, technical reports, design proposals, studies and appraisals Event: The scheme will be unable to go ahead Effect: A delay in impact on the programme	0.25
Financial	Tender returns are higher than pre-tender estimates	Cause: Tender returns are higher than pre-tender estimates Event: Insufficient budget to delivery scheme Effect: Budget sponsor to identify additional funding or scheme is de-scoped to reduce costs	0.6
Stakeholder	Affected business object to the scheme	Cause: Impact of the proposal on business and land Event: Affected business object to the scheme Effect: Potential delay and additional cost	0.6
Stakeholder	Objection - Opposition from Environmental Groups	Cause: Environmental lobbying groups disagreeing with the scheme Event: The groups will object during statutory consultation Effect: Delays to the scheme in approvals	0.6
Utilities	Utility Diversions Delay (Pre-Construction)	Cause: Resource availability within the stats company's and/ or provision of information from design team Event: Utilities diversions taking longer than expected Effect: Delay to main scheme construction works and impact to seasonal seabed migration	0.6
Utilities	Additional Utilities Costs	Cause: utility costs estimate re-submitted Event: There is a risk that utilities companies re-submit estimates higher than previously submitted. Effect: additional funds required.	0.6
Design	Design Creep / Employer Change (% of Fees and Increase to Construction Costs)	Cause: Employer requests additional scope, design enhancements, or late-stage changes. Event: Incremental changes accumulate beyond original scope, increasing design complexity and workload. Effect: Higher design fees, extended timelines, increased construction costs, and potential disputes over scope and budget.	0.5
Environmental	Weather Risk	Cause: Adverse weather conditions such as heavy rain, snow, or high winds. Event: Disruption to construction activities, reduced productivity, or damage to temporary works. Effect: Project delays and increased costs due to downtime or rework.	0.5
Geotechnical	Additional Ground Investigation (GI) Required	Cause: Inadequate initial GI scope or unexpected ground conditions. Event: additional Ground Investigation (GI) is required. Effect: Increased investigation costs, design revisions, and potential delays to construction start.	0.5

Programme	Time Delays (pre-construction): Inflation impact of delay to construction starting	Cause: Delays in design activities. Event: Prolongation of the design programme delaying constructions start date. Effect: Inflation cost impact of delay to construction starting date	1
Programme	Time Delays (construction): Delay to completion (site overheads/prelims)	Cause: Delays in construction activities. Event: Prolongation of construction programme. Effect: Additional costs for site overheads, prelims, etc.	1

Appendix IX – Benefits Realisation Monitoring Framework

Objective	WBFGA goal	WTS Monitoring Measure	Indicators for measuring	Baseline and location	When it will be measured	Resources
Maintain connectivity of the A494 strategic corridor by addressing the life expired River Dee bridge.	A Prosperous Wales A Resilient Wales A Wales of Cohesive Communities	M3, M4, S1, S2, S9, S11, S21	Number of unplanned closures	Baseline reporting before start of works utilising existing NMWTRA network monitoring processes.	Existing NMWTRA network monitoring process after open for traffic. Three-year monitoring report required as part of WeITAG Stage 5.	Existing NMWTRA network monitoring processes after open for traffic.
Maximise opportunities for modal shift through better provision for alternative modes.	A Healthier Wales A Wales of Cohesive Communities A More Equal Wales	M1, M2, M4, M6, S1, S2, S3, S4, S5, S6, S9, S11, S12	Number of people walking and cycling.	Baseline recording at identified locations (referencing the Walking, Cycling and Horse-Riding Assessment Report) prior to start of works. Need to be capture seasonal and weekend demand.	Regular monitoring (at a frequency to be determined) up to three years (and aligned with Active Travel Guidance). Three-year monitoring report required as part of WeITAG Stage 5.	Additional count sites and cameras to be installed at agreed locations.
Minimise scheme whole life carbon emissions through applying carbon reduction measures to design, construction and operation.	A Healthier Wales A Resilient Wales A Globally Responsible Wales	M2, M5, M6, S26	Carbon Management Plan will identify the indicators under	Carbon Management Plan will identify baseline and subsequent measurement and monitoring. This will be linked with the Materials Management Plan and the Construction Environment Management Plan	Identified in the Carbon Management Plan both during construction, open for traffic and up to three years after opening.	Carbon Management Plan will specify the resources required to capture the information.
Improve the resilience of the A494 corridor by minimising the impacts of incidents and accidents and enhancing the safety for road users and maintenance personnel.	A Healthier Wales	S9, S11, S16, S19	Number of accidents / collisions	Existing STATS19 reporting	Included within the existing STATS19 reporting	Continuation of exiting STATS19 reporting
Maintain and enhance the local environment by securing long term net benefit for biodiversity.	A Globally Responsible Wales	M6, S22, S23, S24, S25, S26	NBB plan being developed and will be confirmed	Baseline reporting as outlined in the Environmental Statement.	NBB plan being developed and will be confirmed	NBB plan being developed and will be confirmed

Objective	WBFGA goal	WTS Monitoring Measure	Indicators for measuring	Baseline and location	When it will be measured	Resources
Maintain connectivity along the A494 strategic corridor during construction to minimise impacts on residents, businesses, strategic and local traffic.	A Prosperous Wales A Resilient Wales	M3, M4, M5, S1, S2, S9, S11, S16, S21	Journey times, volumes and delays during construction for both traffic and pedestrians / cyclists.	Before start of works, additional monitoring will be undertaken in relation to journey times, volumes and delays. This should take account of seasonality and weekend demands on the network.	Timing will be dependent upon the construction management plan as well as the traffic management plan. Reporting during construction will be captured by WeITAG Stage 4.	The Traffic Management Plan will identify the level of resourcing.