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A494 River Dee Bridge Replacement Scheme

Scheme Assessment Report - September 2025

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1. INTRODUCTION

The Welsh Government is responsible, as the highway authority, for all Motorway and Trunk Road networks in Wales. The A55, A550 and A494 corridor forms a primary East-West link between Queensferry/ Ellesmere Port/ the Northwest and the rest of North Wales. The A494 River Dee bridge, constructed in the early 1960s, forms a critical part of this link.

Bridge inspections have recorded evidence of concrete deck deterioration which has continued despite routine maintenance and repairs. If nothing is done, the structure will continue to deteriorate, and weight restrictions and / or lane closures may need to be introduced to maintain the A494 River Dee bridge in the short to medium term and the likelihood is that the bridge would have to be closed in the medium to long term.

The existing A494 River Dee bridge was constructed in the early 1960s and carries approximately 70,000 vehicles per day. This volume of traffic means that any long road closures required for replacing the deteriorated parts would result in severe disruption and delays to journeys both for bridge users and for those travelling on the local road network.

After considering a number of options, the Welsh Ministers propose a scheme that would provide a new bridge over the River Dee, located to the south of the existing bridge crossing, which would be demolished, with the exception of the in-river support piers that will remain in place.

The proposed A494 River Dee Bridge Replacement Scheme (“the Scheme”) involves constructing a new bridge to carry a dual two-lane urban highway, complete with hard shoulders and a shared-use path for walking, wheeling, and cycling on the south-eastern side. The Scheme also includes highway, active travel, and biodiversity enhancements along a 1.3 km corridor from Queensferry Interchange in the southwest to Garden City in the northeast.

To minimise traffic disruption, the new bridge and much of the associated highway infrastructure will be built offline, allowing traffic to continue using the existing bridge during construction Once completed the A494 would then be reconnected to the new bridge and the old bridge deck and beams removed leaving the in-river support piers.

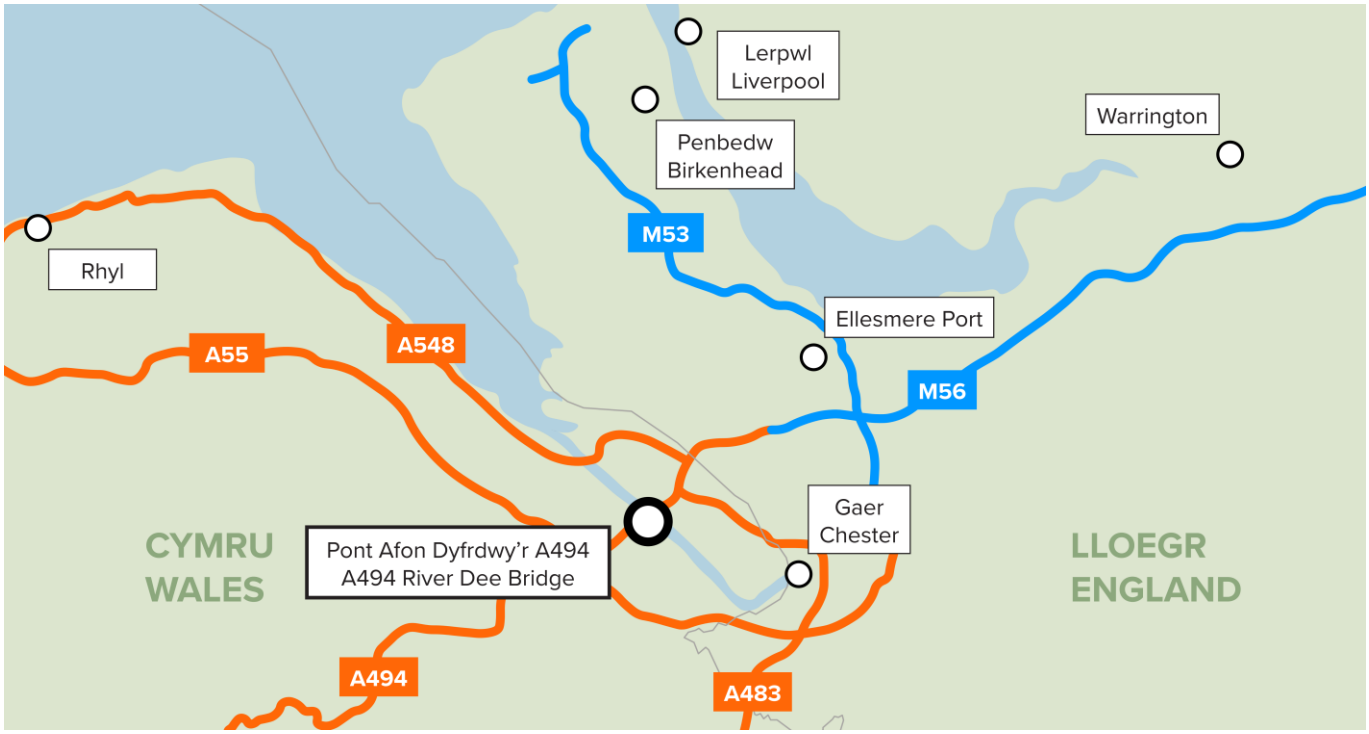

Figure 1: Scheme Location (Source: Mott Macdonald)

This Scheme Assessment Report (SAR) outlines the proposals in non-technical language, focusing on non-environmental aspects such as the background and rationale for the selected option. An Environmental Statement (ES) has also been prepared, detailing the Scheme's environmental impacts, proposed mitigation measures and potential enhancements where feasible. A Non-Technical Summary (NTS) of the ES is available and should be read alongside this SAR.

The SAR accompanies the draft Statutory Orders now published for consultation. These orders define the land required for construction and maintenance of the Scheme, as well as the associated environmental mitigation works. They also set out the legal powers to construct, improve, and stop up highways, as provided under the Highways Act 1980. The draft orders are:

The Welsh Ministers (The Dolgellau To South Of Birkenhead Trunk Road (A494) (Queensferry Interchange To Garden City Improvement)) Compulsory Purchase Order 202;

The Dolgellau To South Of Birkenhead Trunk Road (A494) (River Dee Bridge Replacement) Order 202;

The Dolgellau To South Of Birkenhead Trunk Road (A494) (Queensferry Interchange To Garden City Improvement) (Side Roads) Order 202_.

2. EXISTING CONDITIONS

The section of A494 under consideration is a dual carriageway with continuous central reserve. Each carriageway is 7.3m wide and kerbed with no hard shoulder or offside hard strips. Residential areas close to the road include parts of Queensferry, Garden City and the Riverside Gypsy Travellers Site.

The road crosses beneath the North Wales Coast Line railway and over the River Dee. The River Dee is designated as a 'main river' by Natural Resources Wales (NRW) and is tidal. The river is part of the River Dee and Bala Lake Special Area of Conservation, and the bridge is about 1km upstream of the Dee Estuary Special Area of Conservation (SAC) / Special Protection Area (SPA) / Ramsar site. The adjacent landscape is flat and low-lying, being land originally reclaimed from the estuary. There is a second designated 'main river', known as the Queensferry Drain, flows along the south-east boundary of the A494 and within the Scheme site area. Within the Scheme area it flows in a mixture of open channel and culverted sections. The Queensferry Drain discharges into the River Dee by gravity during periods of low water in the River Dee and is pumped during periods of high water. Heritage features near the route include sites of former industry, coal wharves and ship building near the river, but affected features are not of listed status.

Sections of the road do not meet current design standards, and as a result of previous air quality issues, the road is subject to a 50mph speed limit extending from west of the St David's Park Interchange to east of Deeside Industrial Park Interchange. There is a sub-standard left in / left out junction on the westbound carriageway between the river and the rail bridge that provides access to residential and commercial properties, a river pumping station and to the rear of a Welsh Water wastewater treatment works.

Walking and cycling provision adjacent to the Scheme is currently fragmented and of varied quality. National Cycle Network (NCN) Route 568 runs along the Wales Coast Path along the northern bank of the River Dee between Chester and Hawarden Bridge. A narrow footway is present alongside the eastbound carriageway between the Queensferry Interchange and the eastern side of the River Dee however access is now prohibited. Generally, the existing highway surface drainage consists of kerbs and gullies, connected to carrier drains, which drain into the Queensferry Drain. The A494 is a route of local, national and international importance. At a regional and local level, it serves as the main economic artery for North Wales.

Figure 2: Existing eastbound carriageway (Source: Mott MacDonald)

Figure 3: Aerial view of existing highway layout (Source: Mott MacDonald)

3. WHY THE SCHEME IS NEEDED

The need for a new bridge is driven by the poor structural condition of the existing bridge deck. The inspections and monitoring to date have concluded that the frequency of repairs and the risk of major repair and intervention requiring the closure of the bridge is growing year-on-year.
If nothing is done, the bridge will continue to deteriorate which may require measures such as weight restrictions and lane closures in the short to medium term and result in full closure in the medium to long term. Replacing the deteriorated parts of the bridge would require the full / partial closure of the A494 for significantly long periods, resulting in severe disruption and delays to journeys both for bridge users and for those travelling on the local road network. Replacement of parts would also only be a temporary solution as it would not fully address the structural issues in the long term. If the bridge is not substantially replaced, then the likelihood is that it would have to be fully closed.

The absence of hard shoulders on the route and a lack of good local diversionary routes, compounds the poor performance of the bridge at peak times when long delays occur and which can hinder emergency services. There are currently no provisions for walking, wheeling, or cycling on the existing bridge, and traffic-free active travel crossings are limited in the surrounding area. The nearest traffic free active travel crossing over the River Dee is located approximately one mile downstream.'

Figure 4: Existing A494 River Dee bridge (Source: Mott MacDonald)

4. POLICIES AND OBJECTIVES

These proposals support the direction and policy objectives of the Welsh Government as set out in the following documents:

- Net Zero Strategic Plan 2022
- National Transport Delivery Plan for Wales (2022 to 2027)
- Llwybr Newydd: the Wales Transport Strategy (2021)
- Llwybr Newydd i Natur: the Nature Recovery Action Plan for our Strategic Road Network (2023)
- The Future of Road Investment in Wales (2022)
- Future Wales: the National Plan 2040
- Welsh transport appraisal guidance (2025)
- The recommendations of the North Wales Transport Commission Report (2023)
- Maintaining the Strategic Road Network in Wales – The Lugg Review.
- Relevant Local Development Plans

A wide range of legislation documents were also considered as part of the Scheme development work:

- Highways Act 1980
- Environment (Wales) Act 2016
- 'Well-being of Future Generations Act (Wales) 2015'
- The Historic Environment (Wales) Act 2023
- 'Active Travel (Wales) Act 2013'
- Human Rights Act 1998
- Climate Change Act 2008

Further details of the national, regional and local legislative and policy context for the Scheme are provided in Chapter 5 of the ES. The Scheme has been developed using Welsh Transport Appraisal Guidance (WelTAG), published in February 2024. WelTAG is the Welsh Government's guidance on planning and appraisal for transport. It sets out a structured approach to project development, from identifying the case for change through to delivery and post-implementation review.

By working with key stakeholders and by obtaining a developed understanding of the current problems, the Welsh Ministers have developed a Scheme which has the following objectives:

1. Maintain connectivity of the A494 strategic corridor by addressing the life expired A494 River Dee bridge.
2. Maximise opportunities for modal shift through better provision for alternative modes.
3. Minimise scheme whole life carbon emissions through applying carbon reduction measures to design, construction and operation.
4. Maintain and enhance the local environment by securing long term net benefit for

biodiversity.

5. Improve the resilience on the A494 corridor by minimising the impacts of incidents and accidents and enhancing safety for road users and maintenance personnel.
6. Maintain connectivity along the A494 strategic corridor during construction to minimise impacts on residents, businesses, strategic and local traffic.

5. PROJECT HISTORY AND ALTERNATIVES

Project history

Replacing the A494 River Dee bridge was first proposed as part of the A494 Drome Corner to Ewloe Major Improvement Scheme which aimed to address traffic congestion within the Deeside corridor.

Following a Public Inquiry in 2007, the Minister for Economy and Transport agreed with the Inspector's recommendation that the scheme should not proceed, as the scheme proposed at the time "would be inappropriate in the landscape and would have a significant impact on the community through which the road passes".

Further work was then undertaken to look at suitable options to increase capacity within the corridor which led to the announcement of the Deeside corridor "Red Route" as the Welsh Government's preferred option in September 2017. The Red Route did not include any proposal to replace the A494 River Dee bridge.

The previous iteration of the Scheme progressed through to WelTAG Stage 3. The preferred option proposed three lanes in each direction with an improved carriageway length of 1.5 km and included a new shared-use footway/cycleway adjacent the westbound carriageway. This would have required a new river bridge for the westbound carriageway, while the eastbound carriageway would use the existing bridge structure. Additionally, a new North Wales Coast Line rail underbridge was required to accommodate the new westbound carriageway. The proposals reached WelTAG Stage 3 before Welsh Government made the decision to reappraise the scheme in light of:

- Recent policy changes, specifically Wales Transport Strategy and the four 'Road Building Tests'.
- The need for a more explicit carbon objective to meet environmental goals.
- A stronger focus on modal shift and behavioural change.
- An improved definition of 'resilience' in context of journey time reliability, route credibility and climate change.

It was concluded that the version of the Scheme proposed at WelTAG Stage 3 underperformed against the above criteria, primarily due to carbon uplift and limited opportunities for modal shift. Consequently, it was determined that a new appraisal was necessary.

Scheme alternatives

Do nothing

If nothing is done then existing structural issues with the A494 River Dee bridge will persist, ultimately leading to its deterioration. This scenario would have serious consequences for both the regional and national economy due to disrupted strategic traffic flows and freight movement

to and from north Wales.

Inaction would likely result in weight restrictions, lane closures and eventually a full closure of the bridge. Such measures would cause significant disruption, congestion, and delays for the travelling public, businesses, and freight operators.

Any closure of the A494 at the River Dee would divert traffic onto alternative routes, many of which lack the capacity to handle increased volumes. This could negatively affect walking and cycling infrastructure, compromise road safety, degrade air quality, increase noise pollution, and disrupt public transport services.

Overall, the “Do nothing” option poses substantial risks to infrastructure, mobility, and environmental quality, making it an unsustainable and high-cost choice.

Do minimum

The 'Do minimum' option involves renewing the existing A494 River Dee bridge in its current location. This would require the complete removal and reconstruction of the bridge deck, replacement of the abutments and approaches, and repairs to the beams and river piers.
To undertake these works, a full closure of the A494 eastbound carriageway would be required for a substantial period, currently estimated at up to 12 months. During this time, westbound traffic would be subject to lane width and speed restrictions. Following the initial phase, traffic would operate under a single-lane contraflow arrangement for a further estimated duration of 12 months. These measures are expected to cause significant disruption to traffic both locally and across the wider network, leading to congestion, delays, and rerouting to less suitable alternative routes. Construction activities would also result in temporary but notable impacts on air quality and noise levels. This option also does not deliver the broader benefits associated with the 'Do something' alternatives, such as encouraging modal shift – given the absence of dedicated walking and cycling provision, improving road safety, or enhancing flood resilience.

Do something

An initial longlist of 44 intervention options was identified and then appraised on how they meet the Scheme objectives and design, engineering, wellbeing, and environmental considerations. In addition, they were tested on how they contribute towards the objectives of the Wales Transport Strategy. From the longlist of option appraisal, a shortlist of five options was identified as described below.

Option B

New twin structure River Dee Bridge plus active travel link within existing rail underbridge.

- This would replace the River Dee Bridge with two new bridges.
- Work at the railway would be minimised with the existing highway verge area through the structure being reconfigured to facilitate an active travel path.
- Up to 3km of new and improved active travel paths.

Option C

New twin structure River Dee Bridge plus separate rail underbridge for active travel.

- This would replace the River Dee Bridge with two new bridges.
- A new underbridge would be constructed through the railway embankment for an active travel path.
- Up to 3km of new and improved active travel paths.

Option D

New off-line single structure River Dee Bridge plus new westbound rail underbridge.

- This would replace the River Dee Bridge with a new bridge immediately upstream.
- The existing river bridge would either be re-purposed for a non-motoring usage or demolished.
- A new underbridge would be constructed through the railway embankment for westbound road traffic and an active travel path.
- Up to 3km of new and improved active travel paths.

Option E (Preferred Option)

New off-line single structure River Dee Bridge plus active travel link within existing rail underbridge.

- This would replace the River Dee Bridge with a new bridge immediately upstream.
- Work at the railway would be minimised with the existing highway verge area through the structure being reconfigured to facilitate an active travel path.
- Up to 3km of new and improved active travel paths.

Option F

New off-line single structure River Dee Bridge plus separate rail underbridge for active travel.

- This would replace the River Dee Bridge with a new bridge immediately upstream.
- A new underbridge would be constructed through the railway embankment for an active travel path.
- Up to 3km of new and improved active travel paths.

Overall, the WelTAG appraisal concluded that Option E was the best performing option against the objectives and was the best option to resolve the problems associated with the existing A494 River Dee bridge and hence this option was taken forward to public consultation.

The public consultation was held between 9 December 2024 and 4 March 2025, with the aim to capture the public and stakeholder views on the options for the A494 River Dee bridge. 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 at some locations, new green spaces for amenity and biodiversity, and active travel connections across the River Dee. Option 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 Option E being the most cost-effective choice, having a

low environmental impact, and offering advantages in terms of construction and deliverability.

Figure 5: Existing layout looking north towards Garden City (Source: Mott MacDonald)

6. THE SCHEME

Scheme description

The full Scheme length is approximately 1.3 kilometres, extending from the north-east side of Queensferry Interchange in the south-west, north eastwards to a point approximately 380 metres north-east of the north-east bank of the River Dee at Garden City. The Scheme would comprise a Dual 2 Urban Motorway (D2UM) road providing two lanes and a hard shoulder in each direction, tying into existing alignment and cross-sections at either end of the scheme. New or diverted Public Rights of Way (PRoW) and Private Means of Access would be provided as required to replace those affected by the Scheme.

The Scheme involves the construction of a new single-structure river bridge, accommodating eastbound and westbound traffic on a D2UM cross-section with a concrete barrier central reserve, along with a shared-use active travel route for pedestrians and cyclists. The new bridge would be constructed prior to the demolition of the existing structure, which is no longer required.

Figure 6: Proposed scheme looking north towards Garden City (Source: Mott MacDonald)

The Scheme provides for the eastbound and westbound carriageways to run parallel on a single alignment throughout the length of the proposals, with the primary highway elements extending from Foxes Lane to the existing railway bridge (North Wales Coast Line railway bridge). Starting at Foxes Lane, the proposed carriageway diverges south from the existing A494 alignment, rising gradually above existing ground levels before crossing the River Dee on the

new bridge.

The new bridge deck is offset approximately 12m to the south-east of the existing bridge structure, with the abutments set back from the riverbanks to improve clearance for pedestrian and cyclist movements beneath the structure. The headroom clearance from the Mean High Water Spring Tide (MHWST) is approximately 5.1m.

Continuing west over the River Dee, the new carriageway continues across land occupied by the J&M Garner Haulage company before crossing the existing Riverside Way access road. The existing left in/left out junction to access Riverside Way will be realigned as part of the Scheme. The route then turns slightly north to tie into the existing A494 alignment, merging back into the existing cross-section approximately 30m east of the existing railway bridge.

A shared-use path for pedestrians and cyclists will be provided parallel to the westbound carriageway from Foxes Lane, over the River Dee and beneath the existing railway bridge to connect with existing infrastructure at Chester Road East.

Figure 7: Proposed scheme looking south towards Queensferry (Source: Mott MacDonald)

Figure 8: Proposed scheme looking north towards Garden City (Source: Mott MacDonald)

7. THE COSTS

The following cost estimate is based upon 2nd Quarter 2025 prices:

Table 1: Cost Estimate *(Source: Mott MacDonald)*

Component	**Estimate**
Preparation	£7.64m
Supervision	£3.59m
Construction and Land	£135.69m
Total (excluding VAT and inflation to completion)	**£146.92m**

8. ENGINEERING ASSESSMENT

Engineering standards

The Scheme has been designed considering all relevant national and local planning policies, plans and standards. The trunk road has been designed to a speed limit of 50mph which is the same as the current speed limit (introduced to improve air quality).

Detailed design work will continue to progress throughout the duration of the project. Should any Departures from Standards be identified, they will be reviewed and assessed in accordance with the Welsh Government's Departure from Standards procedure.

Structures

The proposed new A494 River Dee bridge comprises of a continuous three span composite steel girder and reinforced concrete deck bridge, with the deck of the new bridge being approximately 12m to the south-east of the existing bridge's deck. The bridge would be supported by abutments on either riverbank, with two in-river piers offset approximately 42.5m from the edge of the abutments. Each side span would be approximately 42.5m between abutment and river pier, whilst the central span would be approximately 57.0m between the river piers. Navigational clearances within the river channel will be maintained, and the proposed new bridge will not adversely affect river traffic.

The total width of the bridge would be approximately 31.7m and encompasses a D2UM cross-section. This includes a 2.2m wide central reserve that accommodates a concrete step barrier plus 1.0m wide hard verges and 0.5m wide edge beam supporting vehicle containment parapets as edge protection. The deck also incorporates the proposed active travel route along its southern (westbound) side as a 4.0m wide facility with a pedestrian/cyclist parapet provided to the outer edge of the deck. The minimum 2.7m headroom requirement has been provided for the shared-use paths passing underneath the bridge.

To ensure the structure can accommodate three lanes in each direction in the future, the overall deck width has been set at 31.7m. The bridge cross-section has been set to include a widened hard shoulder for both carriageways at 3.0m. This additional width allows for the potential future reallocation of road space without impacting kerb lines. The 11.0m width between kerb lines permits the provision of three traffic lanes in the future, involving the removal of the nearside hard shoulders and offside hard strips.

Other structures that would be required as part of the Scheme include earth retaining structures; culverts and headwalls; trash screen; highway signs, water pumping stations and noise barriers.

Walking, cycling and horse-riding infrastructure

The Welsh Government seeks to enable more people to walk, cycle, wheel and generally travel by more active methods. Under the Active Travel (Wales) Act 2013 the Welsh Ministers, in so far

as it is practicable to do so for new road schemes, take reasonable steps to enhance the provision made for walkers and cyclists. Active Travel has been a key consideration in the design of the scheme. In developing the Scheme's Active Travel proposals, the project delivery team liaised with cycling and walking groups such as Sustrans, Cycling UK, the Ramblers Association, Flintshire Council, Transport for Wales, and Welsh Government Active Travel officers. By working with these stakeholders, it has been possible to integrate a new shared use path parallel to the A494 connecting into the wider network and enhance existing routes. New and improved connections would be provided between communities and places of work, including new connections to the Wales Coast Path, National Cycle Network (NCN) Route 568, Garden City, Factory Road; Station Road and other existing routes in the area.

The Scheme provides a clear route for cyclists and pedestrians from Drome Corner junction in the northeast to Chester Road (East) in the southwest, also linking to the B5441 Station Road, for a total of approximately 3km of new and improved facilities. This would bring potential safety benefits to cyclists and pedestrians by segregating these users from vehicle traffic.

The Scheme would have an effect on PRoW to the west and east of the River Dee. Improved PRoWs will provide better surfaced, as well as wider shared pedestrian and cyclist facilities over many of the existing unsurfaced and narrow footpaths. Some temporary closures and diversions would be required to the existing routes during construction works.

There are no existing bridleways affected by the Scheme. The nearest bridleway is over 2km from the A494 River Bridge and runs from Sealand in a north-westerly direction to Deeside Park Junction.

Land use

The Scheme would require approximately 20.9 hectares (ha) of land. Of this, approximately:

- 6.5 ha is already owned by the Welsh Government
- 5.1 ha of new land Title would require purchasing
- 7.5 ha would be for essential licences in order to undertake the works (land returned to landowner)
- 1.8 ha of land would be secured as easement for construction and future maintenance of the bridge (land ownership unchanged)

The following properties would be demolished as a result of the Scheme:

- Haulage business workshop, buildings and yard situated immediately southeast of the existing A494 and on the west bank of the River Dee.
- NRW river pumping station and Scottish Power sub-station (within the same building) situated to the northeast of the existing Riverside Way junction.
- Old Flintshire Depot and storage yard on Chester Road East, adjacent to the railway line.
- Four derelict residential properties, known as 1 – 4 Bridge Houses, located on Chester Road East, approximately 200m east of Queensferry Interchange.

- Garage and workshop buildings on Chester Road East.

Ground conditions

The Scheme area has been the focus of intense industrial activity and infrastructure development for at least 100 years. The ground conditions within the Scheme area are complex as a result of widespread filling and reworking of the ground at shallow depths and contamination at some locations due to historical industrial practice.

To ensure that the Scheme design would be appropriate for the ground conditions and that the proposed works do not have an adverse impact on the environment, a ground investigation has been completed throughout the Scheme area. The made ground within the footprint of the proposed western approach embankment to the new A494 River Dee bridge varies in thickness from 1m to 4m. The made ground is generally described as gravelly silty sand and sandy clayey gravel. It has been proposed that the eastern approach embankment to the new A494 River Dee bridge will be up to 6m in height.

The existing embankment fill is described as very dense, becoming medium dense, gravelly, very silty sand. The embankment appears to have been found on the Marine Deposits – Sand comprising medium dense very silty sand. Marine Deposits – Silt underlie the Made Ground on either side of the River Dee, with a maximum thickness of 2.7m recorded underlying the western approach embankment to the existing A494 River Dee bridge. The thickness of the Marine Deposits – Silt was observed to reduce away from the River Dee. This stratum is generally described as very soft to firm slightly gravelly sandy silt and very sandy slightly gravelly clay. The Marine Deposits – Silt, are underlain by the Marine Deposits – Sand which range in thickness from approximately 12m immediately south of the River Dee, to 16m further south and north of the river. This stratum is generally described as medium dense becoming dense slightly gravelly silty sand. Evidence of the presence of organic matter within this stratum was identified during the ground investigation. The water table is relatively shallow.

Drainage

The Queensferry Drain (NRW “Main River”) currently flows in a culvert below the existing A494 (west of the railway line) and in open channel (east of the railway line) immediately to the southeast of the A494. Surface water runoff from both the proposed new carriageway and existing re-profiled carriageway will be collected and disposed of using a combination of underground piped drainage systems and open ditches.

To the west of the North Wales Coastline railway, existing gullies/outfalls along with run-off from the new active travel route will discharge into a newly created open channel (ditch) that replaces a length of the existing Queensferry drain between Chester Road East and the railway bridge. At the northern end of the open channel, a new pipe will then connect to the existing culvert that sits within the southern verge of the A494 and passes below the railway bridge. The existing culvert will be extended, and its outfall relocated on the north side of the railway to outfall to a

further length of open channel that will replace the existing Queensferry ditch alignment running northwards towards Riverside Way. The ditch will be designed to accommodate the existing and proposed highway drainage, and the existing watercourse flows. Prior to crossing below Riverside Way, the ditch will outfall to a new culvert which will then pass through a new pumping station and outfall at the River Dee. The discharge rate from the pumping station will be agreed with NRW as this will replace their existing pumping station. Due to the scale of the changes in the alignment of the carriageway, the existing drainage network along the A494 between the North Wales Coastline railway and the River Dee will be replaced. New surface water carrier drains will be installed east of the railway up to the new river bridge within the north and south verge of the new carriageway. A new drainage swale is proposed to the north of the new road for attenuation and treatment of surface water drainage.

Surface water collection on the river bridge will be in the form of a bridge deck drainage system which will discharge to the highway drainage system. The surface water collection on the carriageway will be in the form of traditional kerbs and gullies. An existing swale located to the south of the A494 (north of the River Dee) is to be reprofiled as part of the scheme proposals. Where no carriageway modifications will be undertaken, the existing drainage will be retained and any existing outfalls will be incorporated into the new network.

A water quality risk assessment was undertaken to assess potential impacts of routine runoff and accidental spillage risk to watercourses resulting from the Scheme. The assessment concluded that no additional mitigation is required for spillage risk. As the proposed land use in the site will remain similar in post development, the pollution loading is not expected to increase. The water quality assessment concludes that no additional measures are required.

Road lighting

LED lighting will be installed along the nearside verges of both carriageway directions, as well as in the central reserve of the new bridge and near the new Riverside Way Junction, to provide safe and effective road illumination.

Lighting will also be included along key sections of the proposed shared use paths for pedestrians and cyclists, including beneath the new bridge on the western side of the river. This will be provided where it supports environmental considerations and active travel goals, helping to ensure safe and accessible routes for people walking and cycling.

Soft Landscaping and Biodiversity

The Scheme includes a variety of soft landscaping measures to improve biodiversity, visual appeal, and ecological connectivity. Species-rich grassland will be established along the realigned Queensferry Drain, with native hedgerows planted nearby to form wildlife corridors. Existing embankment planting will be retained and enhanced to separate roads from shared-use paths while preserving views. In areas affected by construction, woodland will be selectively managed, and roadside verges will be landscaped with native trees, shrubs, and bulb-rich grassland. Near Drome Corner, grassland areas will be expanded and embankment planting reinforced, with

scattered trees added to create a natural transition between farmland and the road.

Between 2018 and 2025, surveys and desk studies identified a range of species and habitats within the Scheme area, including bats, badgers, amphibians, birds, and other mammals. Key habitats include woodland, scrub, grassland, hedgerows, and water features. The Scheme design incorporates mitigation measures such as habitat retention, sensitive vegetation clearance, and ecologist oversight to minimise harm. Features like green corridors, shaded routes, and carefully designed lighting will support species movement and reduce disturbance. New planting and habitat creation will help offset losses and improve biodiversity over time, aligning with environmental policies and supporting long-term ecological resilience.

Typical cross sections and long section

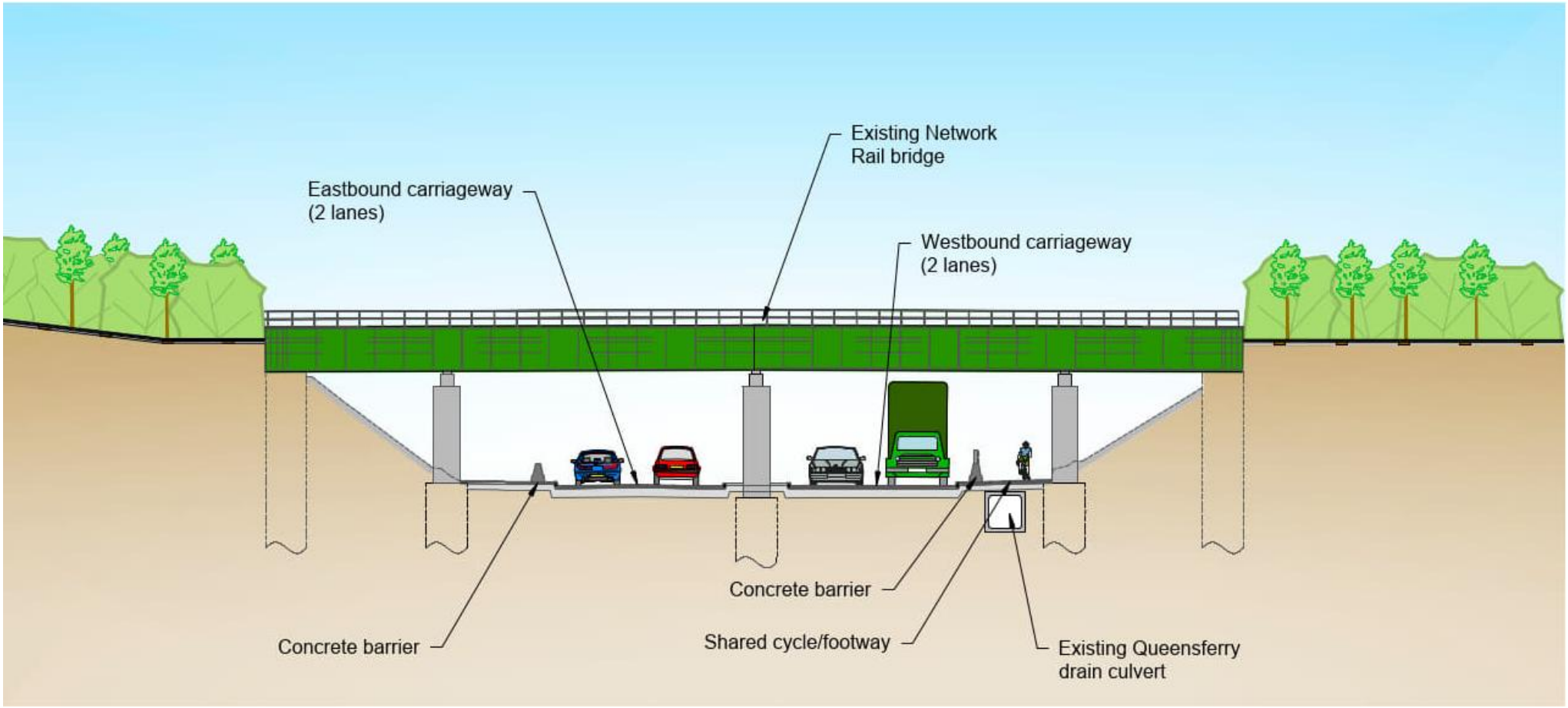

Figure 9: Typical cross section through the existing railway bridge facing north east *(Source: Mott MacDonald)*

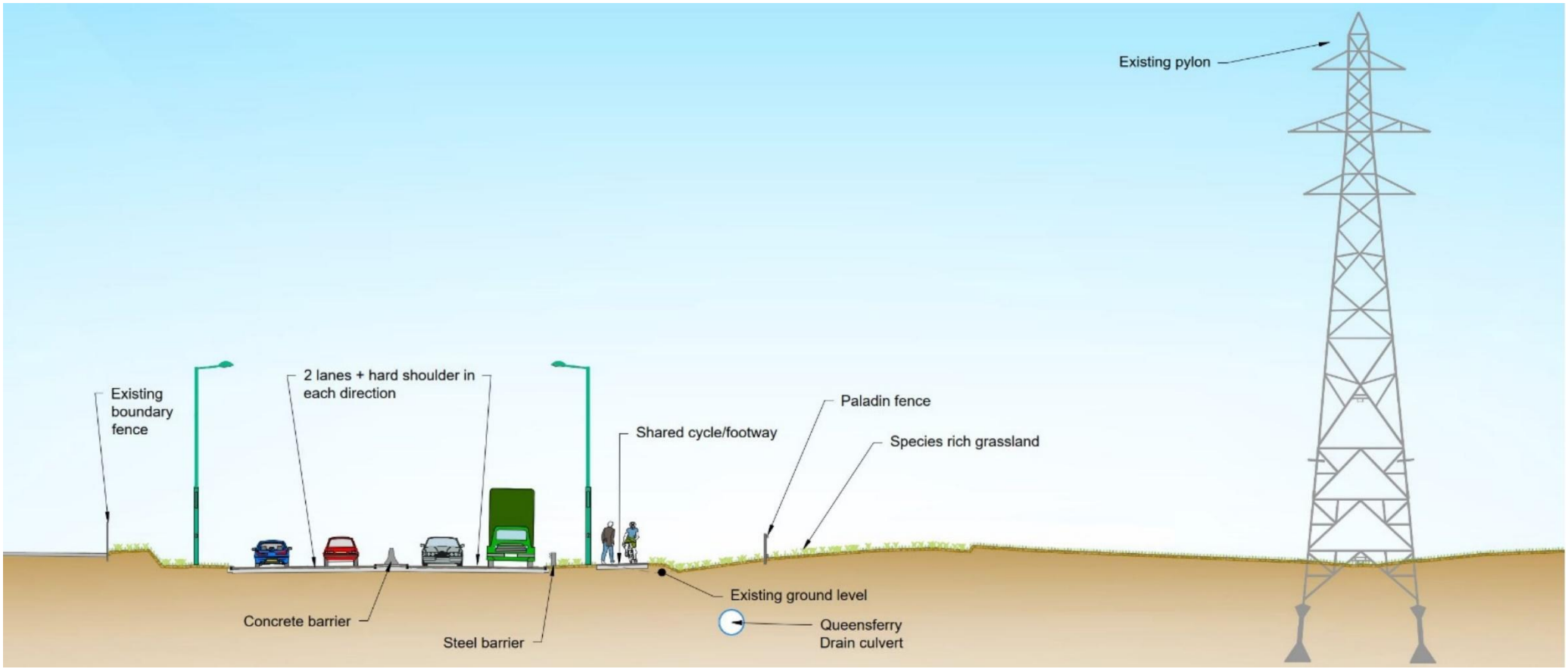

Figure 10: Typical cross section through the new highway adjacent the existing electricity pylon facing north east *(Source: Mott MacDonald)*

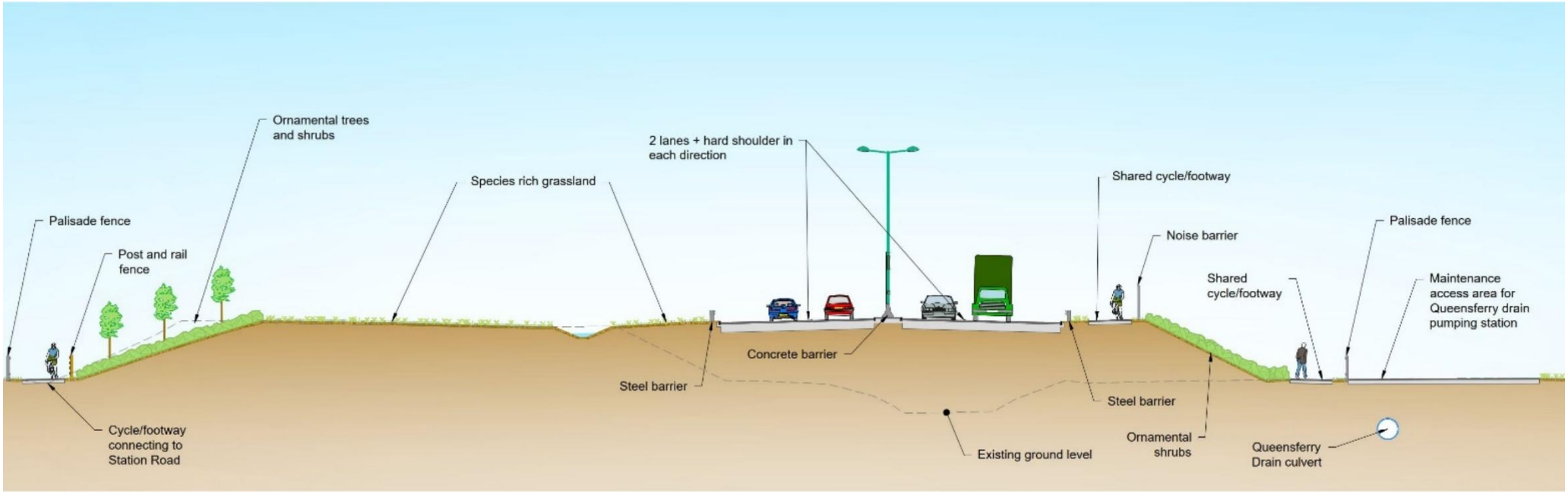

Figure 11: Typical cross section through the new highway embankment area on the approach to the river bridge facing north east *(Source: Mott MacDonald)*

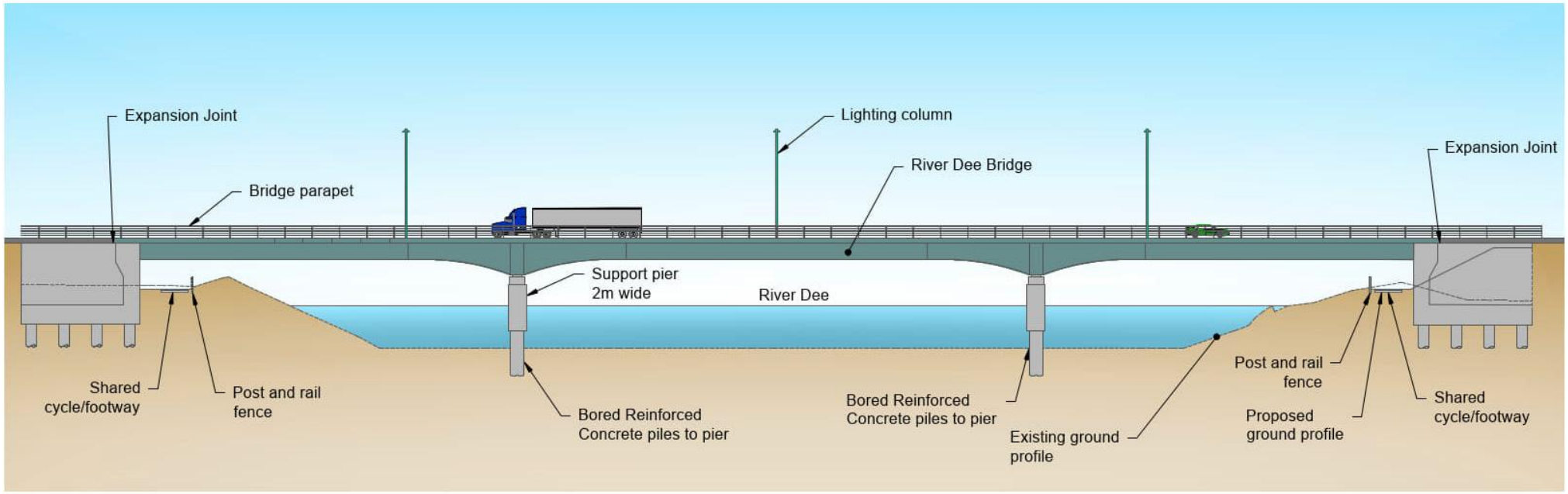

Figure 12: Typical long section of the new river bridge facing south east *(Source: Mott MacDonald)*

Public utilities

There are several utilities in the area which would be affected by the Scheme. All utility owners and operators have been consulted to establish how their equipment would be affected by the Scheme and to allow them to plan any diversions required.

Some of the most significant diversion works that would be required include:

- Pressurised rising mains
- 33kV electricity cables
- Existing NRW pump station and secondary sub-stations

Construction

The construction phase, including the demolition of the existing bridge, is expected to last approximately 2 to 3 years. Following construction, the environmental mitigation would be managed and monitored by the contractor for up to 5 years, and then in the long term by the North and Mid Wales Trunk Road Agent (NMWTRA) on behalf of Welsh Government.
Traffic disruption will be minimised during construction, with existing routes remaining open and property access maintained. The new highway alignment will be constructed offline to the south of the existing A494 carriageway, with two lanes of traffic maintained during peak times. The existing river bridge will be removed following the opening of the new bridge to traffic. Some limited lane closures are anticipated to be necessary to facilitate specific construction activities, such as verge works and tie-in operations. The Wales Coast Path beneath the A494 will not be accessible during construction on safety grounds and will be diverted along a purpose built temporary route, other walking and cycling routes will also be subject to diversions. All diversions will be available for use before any temporary closures.

The construction programme is reliant on diversion of existing public utilities and the construction programme may extend or need to be phased to allow for some of the significant utility diversions. It is anticipated that some utility diversions will need to be completed in advance of certain elements of the bridge replacement works.

The construction activities and programme would be subject to modification during both the detailed design and the construction phases. Early site works are likely to be:

- Establishment of contractor site offices and compound areas
- Implementation of temporary walking and cycling route diversions
- Demolition of existing buildings
- Construction of revised local highway arrangements to access the Riverside area
- Diversion of rising main sewers, either fully or temporarily, where they conflict with proposed bridge abutments
- Diversion of 33kV overhead electricity cables east of the river
- Construction of the new pumping station
- Carry out environmental mitigation works

What happens to existing roads

The existing A494 River Dee Bridge will be demolished, with the river piers retained. Redundant road approaches will be repurposed for landscaping and soft estate. The left-in/left-out junction to Riverside Way will be realigned and upgraded as part of the Scheme. Upon completion, the highway layout at Foxes Lane Underpass and Queensferry Interchange will remain unchanged.

9. TRAFFIC AND ECONOMIC ASSESSMENT

Transport modelling

The benefits of the proposed Scheme have been assessed by comparing traffic conditions with and without the Scheme. It is important to note that 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 Major Asset Renewal (MAR) priority Scheme, an assessment has been made of the relative construction related benefits and disbenefits.
Due to this section of the A494 being on the Strategic Road Network, if the existing River Bridge required closure due to structural failure, the Do Minimum scenario would be a 'like for like' online replacement.

There is no difference in traffic flows between the Do Minimum scenario (online bridge replacement scheme) and the Do Something scenario (offline bridge replacement scheme) from assumed scheme opening year (2029) onwards. Therefore, the traffic flows are the same for both scenarios.

The key differences in traffic flows relate to the construction period between 2027 and 2029 when the new bridge is planned to open. The Do Minimum scenario is subject to temporary traffic management works (full or partial closure of the existing bridge) compared to the Do Something scenario which would enable the existing bridge to remain open during construction of the new offline bridge.

The methodologies applied to develop the forecasts shown in Table 2 are all compliant with the technical standards and guidance as set out by WelTAG and the Department for Transport (DfT) Transport Appraisal Guidance (TAG).

Table 2: Forecast Annual Average Daily Traffic (AADT) Flows (Source: Mott MacDonald)

Road Name	**2029 AADT Flow (Vehicles)**	**2044 AADT Flow (Vehicles)**
A548 Flintshire Bridge	14,346	15,957
B5441 Blue Bridge	6,076	7,697
A494 River Dee Bridge	73,536	86,252
B5129 Saltney Ferry Road – east of Manor Lane Roundabout (Hawarden Airport)	8,842	9,152
A5104 Chester Road – between Bretton and Saltney	14,769	15,027
A55 North Wales Expressway – between Junctions 36a and 38	48,833	56,597
Total	**166,402**	**190,682**

Economic performance of the Scheme

As stated above, WelTAG guidance is clear that journey time savings for vehicles should not be presented unless it involves sustainable modes. However, a major consideration has been to minimise highway network disruption during construction. As such, the economic performance of the Scheme has been assessed by comparing the costs (summarised in Table 1 earlier in this document) against the monetary value of the traffic benefits achieved by the Do Something scenario (offline bridge replacement scheme) in comparison to the Do Minimum scenario (online bridge replacement scheme)

Based on this economic appraisal during the construction period, the Do Something scenario offers benefits compared to the Do Minimum scenario. This is due to the traffic impact of the bridge closure if online replacement took place.

An assessment of the wider economics impacts confirmed the importance of the Scheme to the local, regional and national economy in terms of jobs, productivity and industrial sectors such as manufacturing.

Table 3: Economic performance of the Scheme (£'000s, 2010 prices, discounted to 2010) (Source: Mott MacDonald)

Component	**Estimate**
Present Value of Benefits (PVB)	£77,427
Present Value of Costs (PVC)	£49,457
Net Present Value (NPV = PVB – PVC)	£27,970
Benefit Cost Ratio (BCR = PVB / PVC)	1.57

10. WHAT HAPPENS NEXT?

Any person or organisation can now support, object or suggest alternatives to the draft Orders, or comment on the Environmental Statement.

Depending on the nature and number of any comments or objections received to the published draft Orders, a Public Local Inquiry may be held before an independent Inspector.

If a Public Local Inquiry is to be held, all those who have responded would normally be notified within four weeks of the end of the objection period and the Inquiry held within 22 weeks of that notification. Full details of the Public Local Inquiry would be confirmed, and notices would appear in the local press.

All correspondence would be copied to the Inspector and kept in the Inquiry Library which would be available to the public. Publicity would be given to any feasible alternative proposal received within a time limit to be specified within the Public Inquiry Notice.
The Welsh Government's timescale is presented in the table below.

Table 4: Outline delivery timescales (Source: Mott MacDonald)

Activity	**Key dates**	**What does this mean?**
Publication of draft Orders, Environmental Statement	Autumn 2025	These will set out the land that would be required to build the Scheme and the environmental mitigation work that would be involved. It would detail local accesses and provision of Private Means of Access. You will then be able to formally object or support the Scheme or suggest an alternative.
Potential Public Inquiry	Summer 2026	If a Public Inquiry is required, an independent inspector would hear evidence, in front of the public, from interested parties and stakeholders. The inspector would make a recommendation to the Welsh Ministers on how to proceed.
Welsh Ministers decision to make the Orders	Summer 2026	The Welsh Ministers would decide whether to make Statutory Orders and to go ahead with the construction of the project
Commence construction *	Autumn 2026 – Early Site Preparation Works Spring 2027 - Main Works	Works to build the new section of Trunk Road will start.
Works complete *	Autumn 2029 – New Road Open	The whole improved section of road will be open to the public. The existing river bridge will then be demolished.

	Spring 2030 – Existing River Bridge Removed	
* - construction programme is subject to utility diversion timescales.		

11. FURTHER INFORMATION

If you want to view any of the available documents and information, you will find them on the Welsh Government website at https://www.gov.wales/a494-river-dee-bridge.

A paper copy of the complete set of the Environmental Statement (ES) including its Non-Technical Summary (NTS) may be obtained from the Welsh Government address given below at a cost of (plus postage & packaging):

- The Non-Technical Summary: £11.50
- Volume 1 (Technical Assessment Reports): £150.00
- Volume 2 (Figures): £397.00
- Volume 3 (Appendices): £312.50

Orders Branch, Transport, Welsh Government Cathays Park, Cardiff, CF10 3NQ

12. YOUR VIEWS

If you wish to support, comment or object to the draft Orders, put forward alternative proposals, or comment on the Environmental Statement, you should write to the Welsh Government by email to TransportOrdersBranch@gov.wales or at the address below: **Orders Branch, Transport, Welsh Government, Cathays Park, Cardiff, CF10 3NQ**

All such correspondence will be handled in accordance with the guidance on data protection and should be sent to arrive at the above address no later than the end of the objection and comment periods, as advised in the statutory public notices.