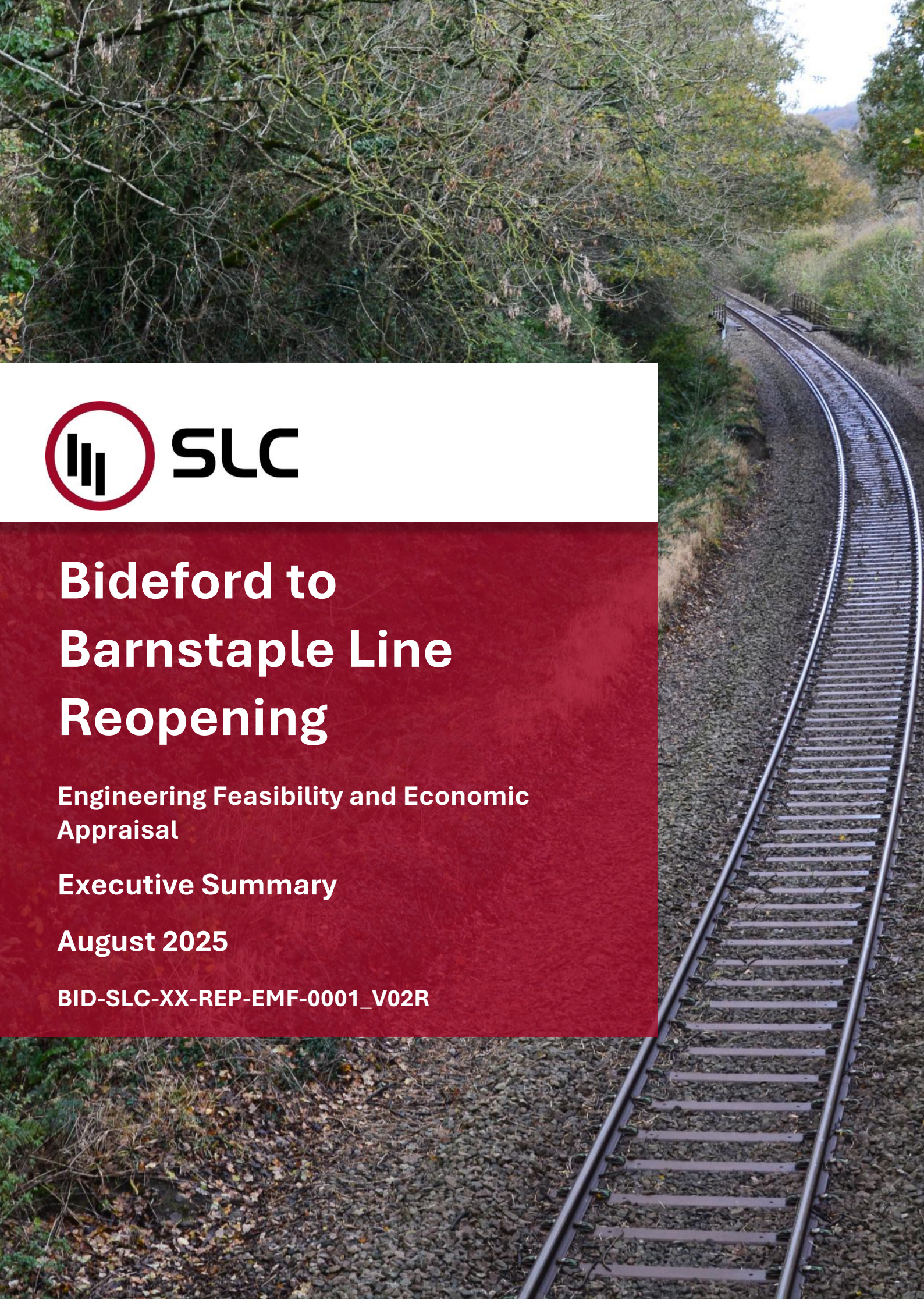

Bideford to Barnstaple Line Reopening

Engineering Feasibility and Economic Appraisal

Executive Summary

August 2025

BID-SLC-XX-REP-EMF-0001_V02R

Bideford to Barnstaple Line Reopening

Engineering Feasibility and Economic Appraisal Executive Summary

August 2025

Client	Railfuture		
Prepared By	**Pawel Bugajski**	**Date**	**29/04/2025**
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	Ian Baxter	**Date**	**13/05/2025**
Client comment revisions	**Ian Baxter**	**Date**	**01/08/2025**
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Overview

1. The withdrawal of passenger services between Bideford and Barnstaple in 1965 severed a vital transportation link in North Devon. In recent years, campaigning has sought to make a case for reopening the line to Bideford for passenger use. By 2024 the work had been developed into an emerging Strategic Outline Business Case (referred to within Railfuture as a 'Preliminary Strategic Business Case') for reinstating passenger rail services along the route. The Preliminary Strategic Business Case set out the Strategic Case for the scheme and had developed high-level capital cost estimates derived from existing publicly available business cases for other routes for the line's reinstatement. This was done primarily in order to compare and contrast potential route options, and the Preliminary Strategic Business Case explicitly warned that the estimates so derived were not intended to indicate what actual construction costs were likely to be, for which an engineering study would be necessary. This study is the start of the process described in the Preliminary Strategic Business Case.

2. To further develop the SOBC, Railfuture commissioned SLC to assess both the **engineering feasibility** and **economic viability** of re-establishing the railway link. The study was funded jointly through Torridge District Council's UK Shared Prosperity Fund, from Railfuture Ltd, Bideford and Barnstaple Town Councils, and Devon County Council's Locality Budget for Bideford East. The engineering assessment produced more robust, but still relatively high-level, capital cost estimates. The economic assessment took the capital cost estimates and demand and revenue estimates, including sensitivity testing of the scheme's Benefit Cost Ratio (BCR) with respect to capital costs, service quality on the Barnstaple to Exeter line, and potential housing development around Bideford. This summary highlights the key conclusions from both documents.

Engineering Feasibility: Summary of Challenges and Opportunities

3. The proposed route would largely follow the historic railway alignment, but the engineering requirements would need to reflect current complexities, especially around environmental sensitivity, coastal defence and physical infrastructure.

Route Constraints

4. The line runs through Flood Zone 3, the area designated by the Environment Agency as being at the highest risk of flooding, and crosses areas of high ecological value, including SSSIs (Sites of Special Scientific Interest).

5. Construction on embankments and new flood defences is required to mitigate coastal and surface water flooding. This will also lead to ground stabilisation challenges including high water table, erosion and poor soil strength. The reduced capital cost, used as a 'low-range' value in sensitivity testing of the economic appraisal, excludes this cost and assumes the work is funded by other parties.

6. The proposal includes re-routing sections of the existing Tarka Trail Active Travel corridor, which would require stakeholder consultation and may conflict with some Active Travel design standards.

7. Several critical structures, including Fremington Viaduct, Instow Tunnel and the A361 and A3125 overbridges, pose major civil engineering risks.

8. The legacy track alignment is constrained along the existing route with limited opportunity for deviation. This leads to increased risk of revised route and additional civils works in the towns of Bideford and Instow.

Capital Costs

9. The mid-range cost estimate of £422 million, with an upper and lower range of £305 million to £539 million. reflecting the route's engineering challenges and has been benchmarked against industry data.

10. This cost estimate range significantly exceeds earlier assumptions from the Preliminary Strategic Business Case. This differential is due to the inclusion of new risks and the costing of risks identified but not costed in the Preliminary Strategic Business Case, in particular the scope of environmental, flood defence, and structural interventions.

11. There is potential for the capital costs *borne by the scheme* to be reduced through ongoing dialogue with other government agencies to reapportion costs associated with factors such as coastal/flood defence.

Operating Costs

12. There is insufficient slack in the current Exeter-Barnstaple timetable to extend to Bideford without the need for an additional train set. Operating costs would therefore include fixed costs of annual lease for a 2-car train, the variable mileage-based costs and the cost of operating and maintaining the new station.

13. Operating costs have been provided to the study by GWR in commercial confidence and have been used within the economic appraisal.

14. Should the route between Exeter and Barnstaple be upgraded with better line speeds then the extension to Bideford could potentially be achieved within existing resources and only the mileage-based costs would accrue to the scheme.

Economic Appraisal: Key Findings

15. The economic dimension focuses on potential passenger demand/revenue, and value-for-money reflected in a benefit-cost ratio (BCR). Sensitivity tests explored the implications of local-area housing growth and potential service enhancements on the Exeter-Barnstaple line.

Passenger Demand

16. Initial estimated usage: A new Bideford station could attract 343,000 annual one-way trips (c. 527 daily return passengers), with about 89% being new-to-rail and the remainder abstracted from Barnstaple and Umberleigh stations.

17. With anticipated population growth driven by housing developments in the area, annual trips could rise to 553,000 (c. 851 daily return passengers) by 2040.

18. Propensity to use rail reflects the existing service characteristics. A route upgrade resulting in line speed improvements and frequency increase to 2 trains per hour could boost annual demand to around 968,000 trips per annum.

Value for Money Assessment

19. A core scenario, using mid-range capital costs and current train service levels, results in a BCR of 0.23 – in other words for every £1 spent on the scheme only 23p is captured in economic benefit. This is classified by the Department of Transport as "Poor" value for money.

20. Sensitivity tests demonstrate that with a certain combination of future assumptions the scheme could achieve a BCR of around 2.0 placing the scheme between 'Medium' and 'High' value for money categories. These assumptions are as follows:

    a) The railway scheme bears only the 'low' capital cost – in effect elements of the coastal defence works built into the mid-range and high-cost estimates would be borne by other agencies.

    b) Future housing growth identified in the current Local Plan is delivered and additional housing through the new mandatory targets is focused around the proposed railway.

    c) The Exeter-Barnstaple line is upgraded to provide faster and more frequent journeys.

21. The approach to modelling demand reflects existing rail travel patterns and propensities. The potential for the scheme to attract visitors to the local area is almost certainly not fully captured and would benefit from further investigation should the scheme go forward through the business case process.

	With Future Housing Growth			No Housing Growth		
	Capital Cost			Capital Cost		
Train Service	Low	Medium	High	Low	Medium	High
As today	0.43	0.23	0.16	0.19	0.12	0.09
2tph	0.57	0.29	0.19	0.22	0.14	0.10
1tph –20 mins	1.43	0.53	0.32	0.41	0.23	0.16
1tph -30 mins	4.81	0.89	0.49	0.64	0.33	0.23
2tph –20 mins	4.71	0.83	0.45	0.59	0.31	0.21
2tph -30 mins	-3.34[1]	2.38	0.88	1.28	0.52	0.33

Table 1 Summary of Benefit Cost Ratio Sensitivities

[1] This method of presenting cost-benefit ratios assumes that train fare income is treated as a negative cost. A negative BCR means that the discounted revenue exceeds discounted capital and operating cost over the appraisal period.

Conclusions and Recommendations

Conclusions

22. The railway reinstatement has high social and connectivity value, supporting regional development, sustainable transport and tourism in North Devon.

23. The economic case is highly sensitive to scheme costs, service quality, improved journey time/frequency between Exeter and Barnstaple and assumptions on housing development in the area.

24. The railway scheme should not bear the full cost of coastal defence works and further exploration is needed with other agencies to understand the apportionment of capital costs.

25. Enhanced services - i.e. increased train frequency and faster journey times between Barnstaple and Exeter - are essential to unlocking suppressed passenger demand and improving the scheme's economic value-for-money.

26. An upgraded Exeter-Barnstaple line would potentially allow the Bideford extension to be delivered operationally with only mileage-related costs borne by the scheme.

Recommendations

- **ONE - Refine Capital Costs**: More detailed engineering assessments, particularly of flood mitigation and structural reuse, are needed to reduce uncertainty of cost estimates.

- **TWO - Stakeholder Engagement**: Early discussions with the Environment Agency, local councils, and active travel groups are essential to understand flood defence requirements and balance rail and trail users' needs.

- **THREE - Better Understanding of Additional Revenue Streams**: Consider additional revenue streams e.g. parking, any dependent development, and how rail can play a role in attracting new leisure visitors to the area. This would have a positive impact on the demand/revenue and ultimately the BCR.

- **FOUR - Housing Growth**: The Local Plan and the additional development requirements through the new mandatory housing targets should recognise the role of the railway in helping to make this development sustainable.

- **FIVE - Phased Investment**: Consider early-stage investment in route protection, environmental studies, and service upgrades between Barnstaple and Exeter to improve the baseline attractiveness of the scheme.

SLC
May 2025
Revised August 2025

Bideford to Barnstaple Line Reopening

Economic Dimension

August 2025

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Bideford to Barnstaple Line Reopening

Economic Dimension

August 2025

Contents

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Version Control

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V1.0	10.03.2025	Pawel Bugajski	First Draft
V1.1	14.04.2025	Pawel Bugajski	Issued Final Draft
V1.2	12.06.2025	Pawel Bugajski	Issued Final
V1.3R	01.08.2025	Ian Baxter	Client Comment Revisions
V1.4R	06.08.2025	Andrew Helm	Addition of list of tables and figures
V1.5R	22.08.2025	Andrew Helm	Clarification on housing numbers
V1.5R	08.09.2025	Andrew Helm	Consolidation into single document

Approvals

Version No.	Name of approver	Title & organisation	Date
V1.0	Andrew Helm	Head of Economic Appraisal - SLC	14.04.2025
V1.1	Ian Baxter	Strategy Director - SLC	13.05.2025
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V1.3R	Ian Baxter	Strategy Director - SLC	01.08.2025
V1.5R	Ian Baxter	Strategy Director - SLC	29.08.2025

Executive summary

1. The rail line between Bideford and Barnstaple was closed to passengers in 1965 and used by freight until 1982. Subsequently, the track was lifted, and parts of the route were later converted into the Tarka Trail cycling and walking path. In recent years, campaigning has sought to make a case for reopening the line to Bideford for passenger use.
2. This report summarises the early-stage economic appraisal of the Barnstaple to Bideford Rail Reinstatement and is commensurate with the work required for an Economic Dimension of a Department for Transport Strategic Outline (Business) Case. SLC has undertaken modelling work to estimate the economic benefits of the scheme and its engineering team has developed initial capital cost estimates for the rail reinstatement.
3. This economic appraisal contains an initial assessment of the scheme's Value for Money expressed as a Benefit Cost Ratio (BCR).

Key findings

4. Based on current catchment populations and the existing Exeter to Barnstaple train service specification (1 train per hour and a journey time from Bideford to Exeter of c. 85 minutes), a new station at Bideford is estimated to attract c.343,000 one-way journeys per annum with around 283,000 (89%) of new-to-rail and 60,000 abstracted from Barnstaple and Umberleigh.
5. Early-stage, high-level capital cost estimates for the reinstatement of the line to Bideford are between £305m and £539m. This wide range is driven by complexities related to extent of flood defence, ground stabilisation and provision of a new rail alignment around Fremington Quay.
6. The BCR is sensitive to three factors: rail journey times to Exeter and beyond, the quantum of future housing in the Bideford catchment and the scheme's capital cost.
7. A 'central' case scenario which assumes mid-range capital cost, Barnstaple-Exeter journey times and train frequency as today, and significant future population growth generates a BCR of 0.23 which represents a net economic cost to society and poor value-for-money in DfT categorisation.
8. An enhanced train service to Exeter and the assumption of a low-range capital cost pushes the BCR above 1.0 and towards 2.0 where traditionally a scheme would have a sufficiently strong economic case to begin to compete for public sector funding.

1 Introduction

1.1 SLC was commissioned by Railfuture to produce an economic assessment of the case for restoring the rail link between Barnstaple and Bideford to be served by extension of existing Exeter to Barnstaple services.

1.2 This report follows the typical layout of an Economic Dimension within a business case using an established procedure set by the Department for Transport (DfT) and enshrined within the Treasury's Green Book and in DfT's Transport Appraisal Guidance (TAG). Its scope includes an initial Value for Money assessment as an economic Benefit Cost Ratio (BCR) and a range of sensitivity tests to determine the scheme's robustness at this early stage in the business case pathway.

1.3 This economic assessment was commissioned further to progress the business case for the railway reinstatement and to build upon highly detailed work by the Northern Devon Railway Development Alliance which led, in 2024, to a Preliminary Strategic Business Case for the scheme – in effect the Strategic Dimension of a business case.

1.4 This earlier strategy document reviewed a number of options for reintroducing passenger services between Bideford and Exeter and was intended to form an initial view to shape early-stage decision-making. In undertaking this economic appraisal, we have sought to align our option testing with the thinking developed in the strategy review. Some of these scenarios consider alternative future service levels on the route between Barnstaple and Exeter and these have a significant bearing upon the economic case for extending to Bideford as will be demonstrated during the reporting of the analysis.

1.5 We have considered a core scenario in which the service between Barnstaple and Exeter is as of today – c.70 minutes journey time and 1 train per hour. The running time between Barnstaple and Bideford would be approximately 15 minutes giving a journey time to from Bideford to Exeter of c.85 minutes. Sensitivity tests are based around combinations of frequency improvement (an increase to 2 trains per hour) and journey time reductions (20 minutes and 30 minutes faster).

1.6 To complete the economic assessment, the following workstreams have been undertaken to provide the principal inputs to the appraisal:

a) Modelling work to estimate demand and revenue forecasts for travel between the Bideford area and Exeter (and beyond).

b) Estimation of incremental operating costs for the extension of train services beyond Barnstaple to Bideford.

c) Development of capital costs for the reinstatement of the railway (produced by SLC's engineering team and subject of a separate technical note).

d) A cost-benefit appraisal of a range of train service options and comprising a set of sensitivity tests around a 'core' scenario.

2 Demand & Revenue Forecasts

2.1 Demand at Barnstaple

2.1.1 As a precursor to the demand forecasting it is helpful to begin with an analysis of existing rail travel patterns. Barnstaple, as the nearest station to Bideford, provides a suitable local benchmark to give an indication of the likely pattern of origins and destinations for journeys to/from Bideford. Source information was kindly supplied by Great Western Railway in the form of LENNON (revenue and journeys) data for the Year-to-September 2024 for Barnstaple i.e. including post-COVID growth exceeding pre-COVID volumes.

2.1.2 Over this 12-month period, Barnstaple had a footfall of c.548,000, equivalent to around 850 return passengers per day. The data shows an approximate 70/30 ratio of outbound to inbound journeys, with 68.8% of journeys originating in Barnstaple and 31.2% travelling to Barnstaple. Revenue, however, was more evenly split, with 57.6% generated from trips travelling from Barnstaple and 42.4% from inbound trips. Inbound journeys comprise a higher proportion of longer distance flows with an overall higher average yield per journey compared to outbound journeys.

2.1.2 Table 1 shows the top flows by demand and revenue and their contribution towards the overall totals. Rail demand at Barnstaple is influenced by a combination of high-volume commuting trips to Exeter and lower-volume, yet higher-yield long-distance trips for business and leisure. Flows to Exeter stations account for 67% of the overall demand at the station.

2.1.3 Revenue impact of some high-volume flows is limited due to the prevalence of season tickets. For example, Digby & Sowton trips account for 26% of all journeys, and yet only contribute 5% to the overall revenue pot. This is due to 94.0% of outbound trips to Digby & Sowton being made on season tickets.

Flow	Percentage of Overall Demand	Percentage of Overall Revenue
Exeter Central & St. David's	40%	21%
Digby & Sowton	26%	5%
Central London	8%	35%
Plymouth	4%	3%
Bristol Temple Meads	2%	5%
Top 5 Flows as % of Total	80%	69%
Overall volume	548,165	

Table 1 Top flows to/from Barnstaple - Source: GWR LENNON Data Year-to-Sep 2024)

2.1.4 In recent years, Barnstaple station has seen a substantial increase in passenger numbers, rising from 423,176 in 2021/22 to 549,860 in 2023/24 (ORR Station Entries and Exits). This represents a significant recovery and growth in rail demand, with usage now 24.0% higher than the strongest pre-pandemic year of 2016/17. Patronage at Barnstaple is not only above pre-COVID levels but continues to show robust upward momentum.

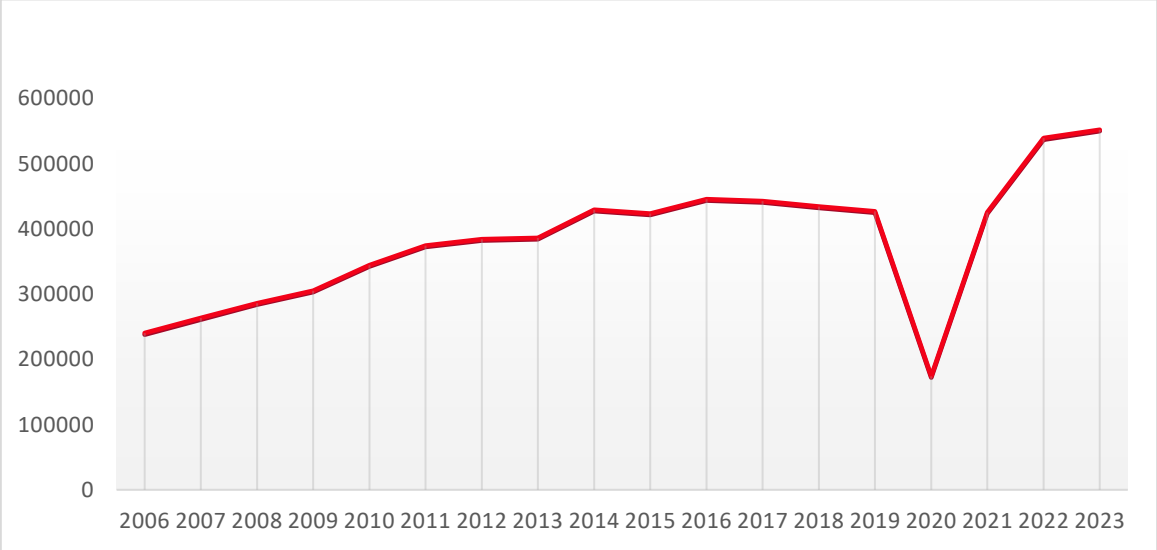

Figure 1 Barnstaple ORR Station Entries and Exists, 2006/07 to 2023/24

2.2 Introduction to the Demand Modelling Approach

2.2.1 To estimate demand at Bideford it was necessary to create two separate models that would capture different future markets. The main model to estimate demand between Bideford and Exeter and beyond assumes that trip rates and travel patterns at Bideford station would roughly follow these at Barnstaple. However, such a model could not capture the very local market between Barnstaple and Bideford. For this purpose, a separate model was created based on trip rates benchmarked against similar town pairs in the region.

2.2.2 Demand Model 1 – Bideford to/from Exeter and Beyond

2.2.2.1 The demand and revenue uplifts resulting from the introduction of the scheme were generated using a trip-rate model developed in-house by SLC. The model is fully compliant with Passenger Demand Forecasting Handbook (PDFH) techniques.

2.2.2.2 The model works on a distance-decay trip-rate basis, with propensity to use rail assumed to decline with distance from a station. The model predicts rail use propensity based on catchment population (using 2021 Census Output Areas) and their estimated drive distance from the nearest station. The model was calibrated against LENNON data (supplied by GWR for year-to-September 2024) for Barnstaple and Umberleigh.

2.2.2.3 The methodology assumes that future trip rates at Bideford are similar to those seen currently at Barnstaple. As such, the recent growth in patronage at Barnstaple is factored into the demand forecasts for Bideford, ensuring that projections reflect current and emerging travel trends in the area.

2.2.2.4 That said, the propensity to use rail inferred by the calibration is relatively low giving a strong indication of suppressed demand - likely a reflection of the current relative unattractiveness of the Barnstaple-Exeter service compared with car journey times.

2.2.2.5 Figure 2 shows the current extent of Barnstaple and Umberleigh's catchments. These were assigned based on the shortest drive distance from each Census Output Area (OA) to its nearest station. Drive distances were derived from accessibility software Podaris® and are taken from OA 'centroid' (its geographical central point) to the nearest station. This is a somewhat more sophisticated approach than using simple crow-fly catchment buffers (e.g. 1km, 2km, 3km etc.), as it recognises the existing highway network when generating the trip rates decay function.

2.2.2.6 Whilst these catchments might look relatively extensive, they do reflect a rural area where some people will rail head from quite a distance. The nature of the trip decay function means that at the extremities of these areas the trip rates are very low. The majority of demand will come from households located within a few kilometres of the station.

2.2.2.7 Figure 3 repeats the station assignment with a new station at Bideford. The extent of the Bideford catchment illustrates that most of Bideford's natural reach is taken from Barnstaple's catchment area, with a small amount coming from an area that would naturally look towards Umberleigh.

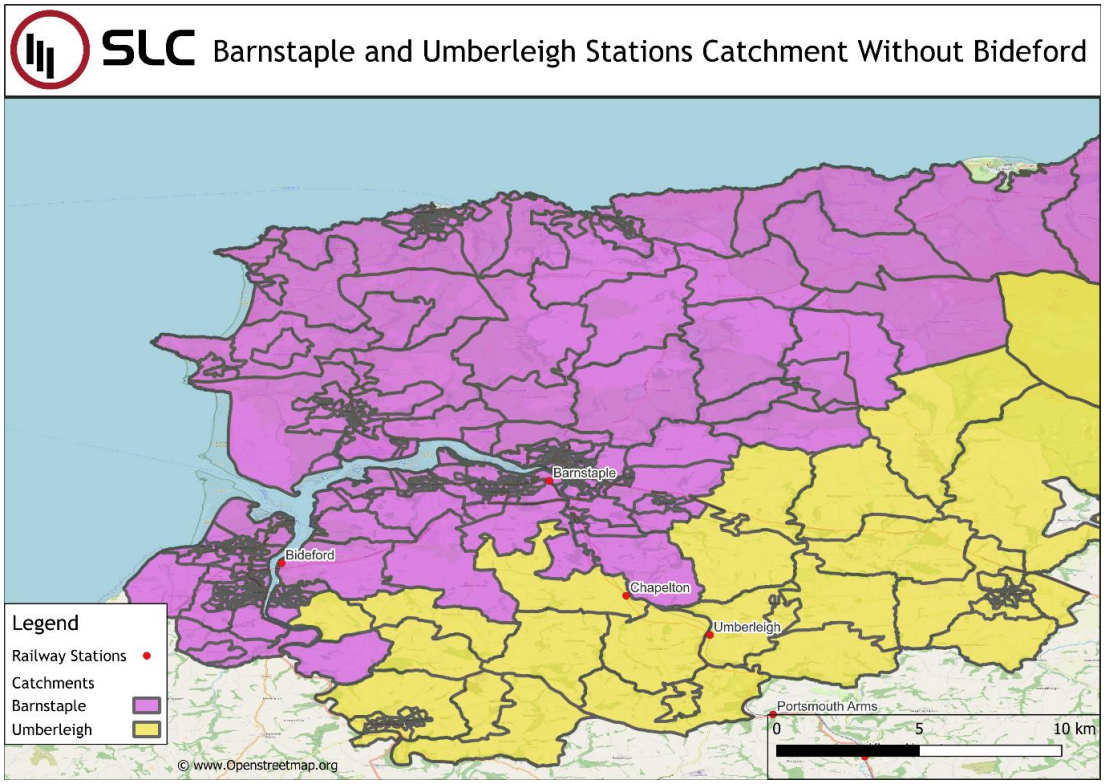

Figure 2 Base Case Existing Catchments

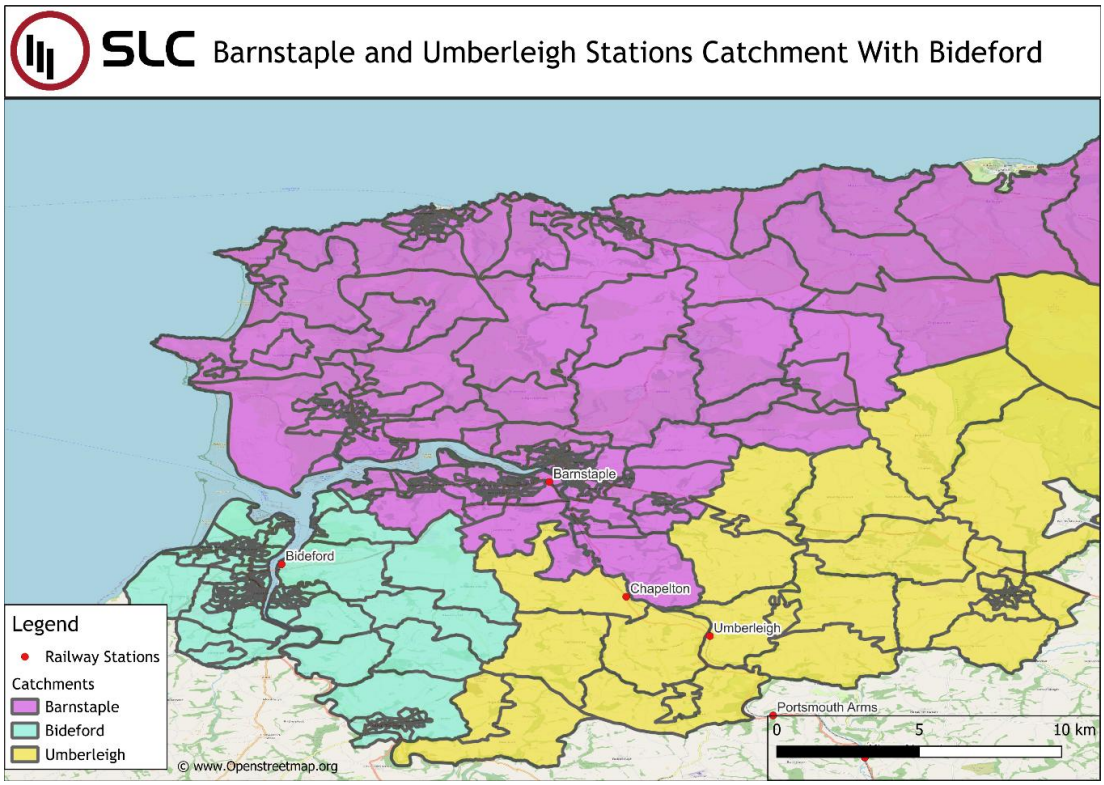

Figure 3 Catchments with Bideford station

2.2.2.8 Table 2 presents the population within each catchment for both scenarios. Bideford is estimated to 'adopt' around 30% of Barnstaple's catchment population and around half that of Umberleigh giving it around 32% of the combined catchment's population. This does not mean that Bideford will 'abstract' 32% of the demand of these two stations. There will certainly be some people who currently use Barnstaple that will switch to Bideford but due to the shape of the distance-decay curve the extent of abstraction will be considerably lower than 32%.

Station	Existing station catchments	Station catchments 'with scheme'
Barnstaple	107,671	74,252
Umberleigh	18,802	12,082
Bideford	-	40,139

Table 2 Population within station catchments

2.2.2.9 The estimated annual demand for Bideford is summarised in Table 3. In this scenario we are estimating demand based on the current population base and upon existing rail trip-propensity. As mentioned above, the willingness or propensity to use rail reflects the attractiveness of the existing train service between Barnstaple and Exeter. Consideration of demand potential at Bideford with differing assumptions on future population and a more attractive train service (journey time and/or frequency) is covered in Section 4 of this report.

Demand segment	Annual Journeys	Daily Return Passengers
Bideford New to Rail Trips	*283,000*	*435,000*
Bideford (Abstracted from Barnstaple & Umberleigh)	*60,000*	*92,000*
Bideford Total Journeys	343,000	527,000
Abstraction as a proportion of total Bideford demand	17%	
Abstraction as a proportion of Barnstaple & Umberleigh base demand	10%	

Table 3 Demand at Bideford station

2.2.3 Model 2 - Bideford to Barnstaple Trip Model

2.2.3.1 The model described above was calibrated using existing trips at Barnstaple and Umberleigh. However, the provision of a new station at Bideford would also result in the creation of a new market for trips between Bideford and Barnstaple that is not captured by the distance decay model. Consequently, this market was estimated using a trip-rate approach derived from benchmarked flows across the South West region, specifically:

a) Axminster to Honiton
b) Totnes to Ivybridge
c) Lostwithiel to St Austell
d) Teignmouth to Newton Abbot
e) Redruth to Cambourne

This resulted in the demand estimate included in Table 4.

Demand segment	Annual Journeys
Bideford to Barnstaple	24,000

Table 4 Bideford to Barnstaple demand estimates

2.3 Demand Forecasts Summary

2.3.1 Table 5 presents a summary of estimated demand for the extension of the Exeter-Barnstaple line to Bideford, based upon existing population figures for the catchment area. The forecast demand at the station is c.**343,000** p.a. (527 return passengers per day) based on current catchment populations. This consists of c.**24,000** Bideford to Barnstaple trips, c.**259,000** of new trips between Bideford and all other stations, and c.**60,000** abstracted trips from Barnstaple and Umberleigh.

Demand segment	Annual Journeys 2030	Annual Journeys 2040
New-to-Rail Journeys		
Bideford to Exeter & Beyond (Model 1)	260,000	271,000
Bideford to Barnstaple[1] (Model 2)	23,000	24,000
Total New-to-Rail Journeys	**283,000**	**295,000**
Abstracted Rail Journeys	*60,000*	*63,000*
Overall demand at Bideford	**343,000**	**358,000**

Table 5 Summary of Estimated Demand at Bideford

[1] This market will include an element of abstraction from local bus services which has not been estimated due to a lack of data on bus flows. Whilst this will not impact the economic value for money from the perspective of the rail industry, it will have an impact on overall Transport Economic Efficiency which will need to be quantified at further stages of the business case pathway.

2.3.2 The method deployed to assess Bideford rail markets assumes that trip destinations from Bideford will broadly align with those at Barnstaple. This is based on similar distances to key economic centres, similar character of both towns etc. After including Bideford to Barnstaple market this gives the split at Bideford shown at Table 6.

Flow	Trips per annum (2030)	Percentage of all trips from Bideford
Exeter Central, St David's & St. Thomas	148,000	43%
Digby & Sowton	40,000	12%
London	26,000	8%
Barnstaple	24,000	7%
Plymouth	12,000	3%
Bristol Temple Meads	8,000	2%
Umberleigh	5,000	1%
Crediton	4,000	1%
Other Destinations	76,000	22%
TOTAL	343,000	100%

Table 6 Top flows from Bideford

2.3.3 Flows from Bideford are expected to be focused upon Exeter stations, constituting 43% of all trips. The London market, important from revenue perspective as it is associated with higher yield, is expected to constitute 8% of all trips to/from Bideford.

2.4 Benchmarking Bideford Station Footfall

2.4.1 The estimated demand was benchmarked against 2023/24 Office or Rail and Road (ORR) estimated station entries and exits at selected existing stations across the South-West. This places demand at Bideford, based on current catchment populations, regionally between Axminster and Okehampton, which would rank it currently around 1000th of c.2690 stations nationally (comparable with places such as Llandudno Junction in North Wales, and Pangbourne and Beckenham Hill close to London).

Station	ORR Station Entries & Exits (2023/24)
Barnstaple	549,860
Dawlish	534,856
Torquay	464,904
Bridgewater	442,188
Axminster	379,754
Bideford	***343,000***
Okehampton	314,984
Honiton	313,530

Table 7 Comparable Station Footfall

2.5 Impact of Projected Housing Growth

2.5.1 To understand demand resulting from housing growth, standardised planning and development data provided through Landstack[2] was analysed. Using a best-case scenario, where all Local Plan site allocations exceeding 50 units are developed, it was estimated that 4,921 new dwellings will be delivered within the joint North Devon and Torridge Local Plan 2011-2031 adopted on 29th October 2018, in the period to 2031. This includes 781 in Great Torrington, 2,136 in southern Bideford, 1,542 in Northern Bideford and 462 from East-The-Water. Using a factor of 2.3 residents per dwelling[3], the projected population growth would be 11,318. The maps below show the Local Plan allocations and their projected number of dwellings.

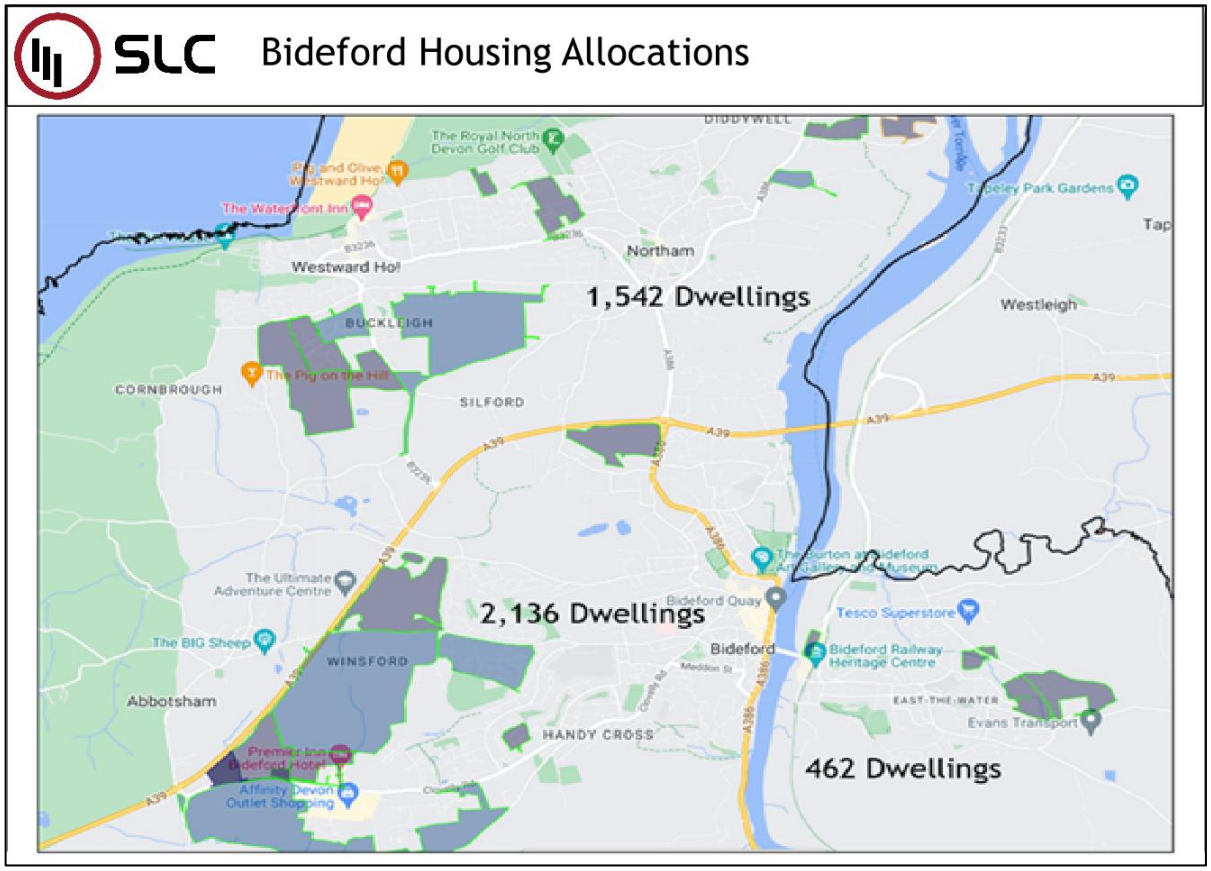

Figure 4 Local plan allocations included in the housing growth scenario (Bideford)

[2] A software platform that gathers and allows to visualise land allocated for development e.g. within Local Plans
[3] ONS figures give a UK average household size of 2.4 but this is distorted by a higher average figure for Greater London. A more appropriate figure for a shire county is 2.3.

Figure 5 Local plan allocations included in the housing growth scenario (Great Torrington)

2.5.2 Beyond the commitments within the Local Plan, we have also incorporated the housing number uplifts implied by the new calculations for local housing need (LHN) released by the government in the Autumn of 2024. The modelled area does not cover the entirety of either Torridge or North Devon and consequently the new LHN figures have been pro-ratad to reflect this. The impact upon the two relevant local authorities within the demand model is as follows: Torridge – an additional 306 housing units per annum; North Devon – an additional 522 units per annum. We have assumed this additional delivery over a 15-year period to 2040.

2.5.3 The two models were re-run with the additional housing-related populations allocated to census zones. Model 1 was re-run twice – both with and without the new station at Bideford. This picks up additional abstraction from Barnstaple that would be expected to derive from the new population. In other words, if the housing is delivered but the rail scheme is not, then some of the new population would be expected to use Barnstaple station when making rail trips.

2.5.4 Using the method described above, additional population from assumed housing growth translates into an additional c.**195,000** trips at Bideford by 2040 (compared to a future scenario with no further housing). The table below shows the impact of housing growth on the demand estimates. The 'with housing growth to 2040' scenario of approx. 553,000 annual demand at Bideford is similar to that seen at Barnstaple in 2023/24.

Demand segment	No housing growth (current base population) 2040	With future housing growth 2040 (Local Plan plus New LHN Figures)
New-to-Rail Journeys		
Bideford to Exeter & Beyond (Model 1)	271,000	434,000
Bideford to Barnstaple[4] (Model 2)	24,000	37,000
Total New-to-Rail Journeys	**295,000**	**471,000**
Abstracted Rail Journeys	63,000	82,000
Total Demand at Bideford	**358,000**	**553,000**
Daily return passengers	**552**	**851**

Table 8 Demand at Bideford – without and with housing

[4] This market will include an element of abstraction from local bus services which has not been estimated due to a lack of data on bus flows.

2.6 Impact of An Enhanced Barnstaple-Exeter Train Service

2.6.1 It was noted in the review of current rail demand that propensity to use rail within the Barnstaple and Umberleigh catchments is relatively low and that this is likely to reflect the relative unattractiveness of the existing train service between Barnstaple and Exeter. The upgrade of services on this corridor is the subject of a separate feasibility study and as such within this piece of work we have considered a scenario in which the level of service between Barnstaple and Exeter is improved from its current offer of 1 train per hour and an end-to-end journey time of, typically, 70 minutes.

2.6.2 The impact on rail use of improved Barnstaple – Exeter train services, i.e. improvements to journey times and/or service frequency (defined in Section 1), has been considered. This was done through the application of Generalised Journey Time (GJT) elasticities derived from the Passenger Demand Forecasting Handbook (PDFH). GJT is a measure of train service level that includes end-to-end journey time and penalties to reflect frequency and the need tom interchange. GJTs for top flows were calculated using the formula:

$$GJT = T + S + I,$$ where:

T – is the total station-to-station journey time (including interchange time),

S – is the service interval (i.e. frequency) penalty

I – is the sum of the interchange penalties for any interchange required.

The following train service enhancement scenarios have been modelled:

For journey time improvements:

a) 20 mins betterment between Barnstaple and Exeter – assuming close to maximum line speeds, with no line speed improvements,

b) 30 mins betterment between Barnstaple and Exeter – assuming some line speed improvements between Barnstaple and Exeter to be in place

For service frequency improvements:

c) 2tph between Bideford and Exeter

2.6.3 Table 9 shows demand impact of enhanced Barnstaple-Exeter train service.

Scenario	Gross Annual Journeys 2040 (000s)
Base Case – Existing Populations	358
2 trains per hour (tph)	403 (+12%)
Journey Time Improvements (-20 mins) with 1tph	435 (+21%)
Journey Time Improvements (-30 mins) with 1tph	497 (+38%)
Journey Time improvements (-20 mins) with 2tph	512 (+42%)
Journey Time Improvements (-30 mins) with 2tph	620 (+72%)

Table 9 Bideford Demand with Improved Barnstaple - Exeter Service

2.7 Demand Scenario Summary

2.7.1 Table 10 presents the results of annual demand forecasts for various service enhancements scenarios at 2040. The range of values from 358,000 to 620,000 trips illustrates the value of the various Barnstaple to Exeter service enhancements on the propensity to use rail. The new housing adds around 27% to the gross demand at Bideford compared to a scenario with no housing growth. The 2040 annual demand of 795,000 trips in the 'with housing growth, 2tph and 20 minutes-reduced journey time' scenario would currently place Bideford about 605th of c.2690 stations nationally (regionally between St. Ives and Digby & Sowton and comparable to Clacton-on-Sea in the South East), significantly higher than its 1000th position without this housing growth.

	Current Housing/Population		With Projected New Housing	
Scenario	**Gross Annual Journeys 2040**	**Daily Return Passengers**	**Gross Annual Journeys 2040**	**Daily Return Passengers**
Current Train Service	358,000	552	553,000	851
2tph	403,000	620	622,000	957
1tph + JT 20 mins better	435,000	669	673,000	1,035
1tph + JT 30 mins better	497,000	765	772,000	1,187
2tph + JT 20 mins better	512,000	787	795,000	1,223
2tph + JT 30 mins better	620,000	954	968,000	1,489

Table 10 Demand Scenario Summary

3 Appraisal Overview

3.1 Methodology

3.1.1 The appraisal method is consistent with the latest DfT Transport Appraisal Guidance (TAG) issued in November 2024. The following overarching assumptions have been used to shape the appraisal.

a) Scheme Opening Year - 2030[5]

b) Exogenous growth from scheme opening to 2045, with the same rate extrapolated forward to 2050 whereupon a demand cap is applied

c) Appraisal period - 60 years from commencement of service

d) Demand ramps up over 4 years from scheme opening in line with PDFH guidance for new stations

e) Costs and benefits have been deflated and discounted to the DfT's base year of 2010.

3.1.2 The calculation of farebox revenue, is based on LENNON data provided in commercial confidence by GWR, with average yield per flow calculated for key flows from Bideford and combined with the incremental yield between Bideford and Barnstaple, assumed to be £2.50. This is based on average fare per mile for similar distance trips on the Barnstaple to Exeter line.

3.2 Capital Cost

3.2.1 A scheme cost estimate has been undertaken by SLC's engineering team. Within this exercise a range of costs were developed and are referenced here as Low-, Mid- and High-Cost estimates. The Mid-Cost estimate is used here as a 'core' scenario with the Low- and High-Cost estimates testing the sensitivity of the Benefit-Cost Ratio. Table 11 presents an itemised build-up of the capital expenditure for each of the three estimates. More detail on the derivation of the costs can be found in the accompanying Engineering Feasibility Review Technical Note.

[5] At this early-stage assessment, the assumption is very much an earliest possible opening year and is used here as a basis for discounting costs and benefits. This assumption will need to be refined as the project progresses.

3.2.2. The High and Low range capital cost values apply a factor to the route infrastructure and flood defence interfaces to support a sensitivity test of the business case:

a) Low-Cost - Exclude Flood Defence cost + Route Infrastructure cost x 0.90,

b) High-Cost - Double Flood Defence cost + Route Infrastructure cost x 1.10.

Capital Cost	Total (Excl. Risk)	Risk	Total (Incl. Risk)
Track System	£55m	£33m	£88m
Route Infrastructure	£128m	£77m	£205m
Station Infrastructure	£20m	£12m	£32m
Flood Defence Interface	£60m	£36m	£97m
Mid-Cost (Core)	£264m	£158m	£422m
Sensitivity Range			
Low-Cost	£191m	£114m	£305m
High-Cost	£337m	£202m	£539m

Table 11 Detail of cost build-up

3.2.3 All figures in the table above presented as rounded to the nearest million. Where above figures constitute a sum of several parts, the total of the sum may not add up to the stated parts due to rounding.

3.2.4 Following Transport Appraisal Guidance recommendation risk is removed then, for projects at early stage of development, a market price uplift of 19% and Optimism Bias (a substitute for risk) of 56% is applied to the cost estimates. Construction is assumed to take three years preceding the scheme opening year.

3.3 Rail Service Operating cost

3.3.1 We have reviewed the existing Barnstaple-Exeter train service operation to establish whether the extension to Bideford is possible within existing resources. The round-trip journey time between Barnstaple and Bideford for the purposes of the analysis is assumed to be 30 minutes.

3.3.2 Network Rail's operational rules pertaining to Barnstaple-Exeter operation set the minimum turnaround times for diesel multiple units (DMUs as 5 minutes at Barnstaple if the train has come from Exeter St. David's/Central and 10 minutes if from beyond Exeter (which may be reduced if there is extended dwell time at Exeter). At Exeter Central the turnaround allowance is 4 minutes for a train from Barnstaple and at Exeter St. David's it is 5 minutes. Table 12 gives a summary of the train diagrams across the middle of the day, most of which are wholly contained within the route with the exception of one train in the early evening which swaps in from another route.

3.3.3. Services are operated with three diagrams and turnaround time of typically 7-10 minutes at Barnstaple and 28-29 minutes at Exeter Central – a total of 35-39 minutes. The operational rules require a minimum of 9 minutes which means there is 26-30 minutes to make the move to Bideford and back. The extension to Bideford is not always possible so we have assumed for our costings that an additional rolling stock diagram is required. 'A', 'B' and 'C' each illustrate one rolling stock diagram.

	A	B	C	A	B	C	A
Exmouth							
Exeter Central	08:04	09:14	10:14	11:14	12:14	13:12	14:14
Barnstaple	09:28	10:28	11:25	12:25	13:28	14:27	15:25
Barnstaple	09:35	10:35	11:35	12:35	13:35	14:35	15:35
Exeter Central	10:45	11:45	12:45	13:46	14:46	15:45	16:45

Table 12 Train Service Pattern

3.3.4 The reinstatement of a new line will generate operating costs which will comprise two main elements:

a) Fixed cost - consisting of annual lease of a 2-car DMU (assumed to be a Class 158) and the additional train diagram is assumed to require 4 sets of train crew.

b) Mileage-based cost of operating the proposed timetable on new section of the railway, covering variable track access charges, vehicle maintenance and fuel.

3.3.5 Additional daily train mileage has been calculated to be 296.3 miles based on 16 bi-directional workings of 9.26 miles between Bideford and Barnstaple. For mileage-based cost 363 days of operations were assumed.

3.3.6 Operating costs, based on a requirement to lease an additional 2-car DMU with 4 crew diagrams to support the additional train diagram, have been provided to the study by GWR in commercial confidence and have been used to generate this financial and economic appraisal.

3.3.7 In the economic appraisal to follow we have considered two scenarios for train operating cost. In the core scenario, based on existing operations the scheme bears the cost of a new train diagram and mileage-related variable cost. If, in the future, train services between Barnstaple and Exeter were speeded up then it is more likely that the Bideford extension could be accommodated within existing resources. In sensitivity tests where Barnstaple-Exeter services are enhanced the scheme merely bears the mileage-related variable costs as it is assumed that the journey time improvements would allow the extension to Bideford within 'base' resources.

3.3.8 The cost of maintenance of new station at Bideford is assumed to be £75k per annum at current prices. This figure is broadly consistent with suggested values in the Department for Transport's Better Value Rail Toolkit and has been benchmarked against costs for single-platform unstaffed stations in other work in which SLC has recently been involved.

3.4 Revenue

3.4.1 The calculation of farebox revenue is based on LENNON data provided by GWR. For each flow the average yield is calculated and applied to a flow's demand. Total net annual revenue resulting from the scheme is presented in the table below.

Scenario	Value (£m)
Ramped Up (2040) @ 2024 prices	£8.4
Discounted Present Value (60-year stream)	£74.1

Table 13 Revenue Summary

3.5 User Benefits

3.5.1 User time saving benefits have been derived by considering the comparison between road and rail journey times for the top flows from Bideford.

Benefit stream	Value (£m)
Value of time saving benefits (2040 at 2010 prices)	£0.2
Present Value (60-year stream)	£2.9

Table 14 User Benefits Summary

3.5.2 The calculated value time savings are relatively low due to lengthy journey times on the Barnstaple-Exeter Line resulting in rail journey times that are no better than road for the principal demand flow into Exeter. See below for comparison of rail and road journey times for the Top 10 flows from Bideford. From these flows, rail journey times are competitive for London, Umberleigh and Barnstaple.

Bideford flow	Average JT by road minutes	Average JT by rail minutes
Exeter Central	85	85
Digby & Sowton	87.5	**105**
Exeter St Davids	80	81
London Paddington	275	**235**
Barnstaple	23	**15**
Plymouth	115	**165**
Bristol Temple Meads	150	**176**
Exeter St Thomas	85	90
Umberleigh	30	**23**
Crediton	62.5	68

Table 15 Journey times by road and rail comparison

3.6 Marginal External Costs

3.6.1 The reduction in car kilometres resulting from a transfer or road trips to rail generates wider benefits which are captured under the heading of Marginal External Costs (MEC, in this instance *benefits* rather than *costs*). We have derived a change in car kilometres using standard TAG mode shift factors and for the top flows from the station. This figure is then used in conjunction with further TAG guidance to generate a change in MEC.

3.6.2 MEC encompasses the following factors:

a) Congestion
b) Road collisions
c) Local air quality
d) Noise
e) Greenhouse Gases
f) Infrastructure (reduced maintenance spend)
g) Indirect taxation (loss of fuel duty income to the Treasury).

3.6.3 Since the modelling has been done 'within mode' we do not have a highway model with link characteristics (speed-flow relationships, capacity etc). Furthermore, the change in rail journeys covers small number of trips across a wide geographical area. For simplicity therefore we have used rural parameters for A Roads from TAG A5.4.2.1 in the appraisal. Benefit values are assumed to grow in real terms in line with the tables in up to 2060 with no further growth to the end of the appraisal period. The car diversion factor used is 30% 'non-London Inter-Urban'.

Benefit stream	Value
Change in rail passenger miles (2040 trip rate model output) (000s)	31,790
Change in car miles (2040) (000s)	9,537
Value of MEC (2040 at 2010 prices) (£000s)	£1.2
Present Value of MEC benefit stream (£m)	£18.9

Table 16 Summary of Marginal Economic Costs

4 Appraisal Results

4.1 Introduction

4.1.1 A scheme's Benefit Cost Ratio (BCR) represents indicative value for money of the scheme and indicates how much benefit is obtained for each unit cost, with a BCR greater than 1.0 indicating that the benefits outweigh the costs. In standard cases, where transport cost outlays exceed revenues or cost savings, the Department for Transport uses six value-for-money categories. They are defined as follows:

VfM Category	Implied by
Very High	BCR greater than or equal to 4.0
High	BCR greater than or equal to 2.0 and less than 4.0
Medium	BCR greater than or equal to 1.5 and less than 2.0
Low	BCR greater than or equal to 1.0 and less than 1.5
Poor	BCR greater than or equal to 0.0 and less than 1.0
Very Poor	BCR less than 0.0

Table 17 DfT's Standard VfM Categories

4.1.2 Table 19 presents the results of the appraisal for a Core Scenario which assumes no journey time improvements on the Barnstaple-Exeter Line, Mid-range capital cost estimates and with future housing growth.

4.1.3 The calculated Benefit Cost Ratio of **0.23** puts the scheme in the Department for Transport's *Poor Value for Money* category and which represents a net economic cost to society. To understand the BCR's responsiveness to changes into various factors we have undertaken sensitivity analysis.

Item	Value (£m)
User Benefits (a)	£2.9m
Non-User Benefits (b)	£18.9m
Indirect Taxation (c)	£1.2m
PVB (d = a + b + c)	£22.9m
Operating Costs (e)	£9.4m
Capital Costs (f)	£163.1m
Revenue (g)	-£74.1m
PVC (h = e + f +g)	£98.4m
NPV (i = d – h)	-£75.4m
BCR (j = d / h)	**0.23**

Table 18 Appraisal Summary Table

4.2 Sensitivity Testing

4.2.1 To understand a variance of potential scheme's Value for Money outcomes, a series of sensitivity tests were undertaken as follows:

a) Capital Costs – considering higher and lower cost estimates,

b) Journey time improvements on Barnstaple-Exeter services – considering 20- and 30 min journey time improvements

c) An increase of frequency to 2tph

Results of these sensitivity tests are discussed below.

4.2.2 *Capital Costs*

4.2.2.1 While Mid-cost estimates were used in the Core Scenario, the scheme's capital cost varies depending on assumptions on infrastructure. We tested sensitivity to Low and High Range cost estimates and the results are presented at Table 21.

4.2.3 *Journey Time Improvements*

4.2.3.1 No journey time improvements on the Barnstaple-Exeter Line were included in the Core Scenario, with train running times between Barnstaple and Bideford assumed to be similar to those as per weekday regular service. The scheme's Value for Money sensitivities to the following journey time improvements on the Barnstaple-Exeter Line were tested:

a) 20 mins between Barnstaple and Exeter.

b) 30 mins between Barnstaple and Exeter.

4.2.3.2 Capital cost within this sensitivity test only consists of the cost of the Bideford scheme i.e. the cost of the upgrade of the Barnstaple-Exeter Line is excluded. Results are presented at Table 19 below.

	No JT improvements	JT improvement, no line speed improvements	JT improvements, with line speed improvements
Bideford to Exeter JT	85 mins	65 mins	55 mins
BCR	0.25	0.61	1.08

Table 19 BCR Sensitivities to Service Enhancements

4.2.4 *Higher frequency at Bideford*

4.2.4.1 For the Core scenario the frequency of 1tph was assumed. We have tested the scheme's Value for Money if frequency at Bideford station was to be increased to 2tph. This is based on Bideford demand (i.e. excludes benefits for Barnstaple and other existing stations) and excludes capital cost of an intervention needed *on the Exeter-Barnstaple section* to achieve the frequency increase.

4.3 Summary of Sensitivity Tests

4.3.1 Tables 20 and 21 report the Value for Money (VFM)/Benefit-Cost Ratios for a future with- and without- housing growth.

WITH FUTURE HOUSING GROWTH	Capital Cost		
Train Service	Low	Medium	High
As today	0.43	0.23	0.16
2tph	0.57	0.29	0.19
1tph –20 mins	1.43	0.53	0.32
1tph -30 mins	4.81	0.89	0.49
2tph –20 mins	4.71	0.83	0.45
2tph -30 mins	-3.34[6]	2.38	0.88

Table 20 Sensitivity Test Summary BCRs - with future housing growth

NO HOUSING GROWTH	Capital Cost		
Train Service	Low	Medium	High
As today	0.19	0.12	0.09
2tph	0.22	0.14	0.10
1tph –20 mins	0.41	0.23	0.16
1tph -30 mins	0.64	0.33	0.23
2tph –20 mins	0.59	0.31	0.21
2tph -30 mins	1.28	0.52	0.33

Table 21 Sensitivity Test Summary BCRs – no housing growth

[6] This method of presenting Benefit-Cost Ratios assumes that train fare income is treated as a negative cost. A negative BCR means that the discounted revenue exceeds discounted capital and operating cost over the appraisal period.

4.3.2 In this latter ‘no housing growth’ scenario shown at Table 22 it is hard to make an economic case for the project. Only in a scenario with Low-range capital cost and the most significant upgrade to Barnstaple-Exeter services (2 tph/30-minute journey time reductions) is the BCR greater than 1.0, at 1.28 (DfT ‘Low VFM’ category).

4.3.3. Table 20, the ‘with future housing growth’ scenario summary, shows that even with significant housing growth the Mid-range capital costs generally are too high to make a strong economic case for intervention other than, again, with the most significant upgrade to Barnstaple-Exeter services generating a BCR of 2.38 (DfT ‘High VFM’ category).

4.3.4 It generally needs the Low-range capital costs and some degree of journey time improvement to get the BCR above 1.0, but once these offer 2 tph together with 20 to 30 -minute Barnstaple-Exeter journey time reductions BCRs rise to over 4 (DfT ‘Very High VFM’ category).

4.3.5 Overall, the conclusion is that in order to make the scheme attractive economically the following assumptions are required:

a) Capital costs towards the lower end of the range.

b) An increase in the catchment population via the ‘with housing growth’ scenario.

c) An improvement in the quality of the Barnstaple-Exeter service via enhanced journey times and frequency.

4.3.6 It may also be noted that whilst BCRs offer a useful and interpretable ‘VFM’ metric, these are indicative rather than definitive given being based on monetisable benefits that are relatively easy to quantify, which means that other important benefits, both quantifiable and qualitative, are excluded from the calculation.

4.3.7 Additionally, BCRs lack aspects of social dimensions such as who benefits, which is a crucial factor in understanding the distributional impacts of a project. They can also give a misleading impression of certainty, especially when risks in early-stage assessments are represented simplistically as a single percentage uplift to costs.

4.3.7 More fundamentally, HM Treasury's recent June 2025 Green Book review highlights a critical limitation: while the appraisal methodology is effective at assessing marginal changes, it does not adequately capture the value of combinations of reinforcing projects that are designed to deliver transformational change. The review also highlights the insufficient emphasis on place-based objectives in the appraisal.

5 Conclusions and recommendations

5.1 Conclusions

5.1.1 The economic case for extending the Exeter-Barnstaple railway to Bideford based upon the existing Exeter to Barnstaple train service specification and the current catchment population is challenging.

5.1.2 The capital costs for the scheme are high and require some combination of an improved train service and an increased local catchment population (generated by new housing) to produce a Benefit-Cost Ratio (BCR) in excess of 1.0 – the point at which economic benefits outweigh the costs.

5.1.3 It is worth noting that a BCR threshold of 1.0 has traditionally been insufficient to give a scheme a strong chance of gaining public sector funding. Whilst not being a net overall economic cost to society, priority would be given to projects with much higher BCRs – typically in excess of 2.0.

5.1.4. The sensitivity tests suggest that with some local housing growth, an improvement in Barnstaple-Exeter rail journey times and an assumption of capital costs at the lower end of the estimated range, a BCR of 2.0 or above is possible.

5.1.5 In recent years however, schemes have been granted funding with relatively low BCRs, locally the Exeter-Okehampton reopening being a good example. In such instances, social value, as demonstrated through the Strategic Dimension part of a business case, can play a strong role in helping to make the case for intervention. In the case of the Bideford catchment there would be considerable social value in, for example, improving access to jobs, training and education and medical facilities.

5.2 Recommendations for further work

5.2.1 The approach to demand forecasting is proportionate and commensurate with a Strategic Outline Case. Should the scheme progress further through the business case cycle, more detailed demand modelling would be required.

5.2.2 Part of this more detailed forecasting will involve a more granular understanding and tracking of housing growth going forward and in particular the impact of the government's proposed mandatory housing targets on future Local Plans.

5.2.3 Better understanding of the capital expenditure is needed. Cost estimates that were produced for the purpose of the Economic Dimension are, at this early stage, by definition 'high-level' and result in wide range of potential cost outcomes. Whilst greater cost certainty is expected through a business case pathway, the issue here is exacerbated by the uncertainty over the scale of flood defence work needed and whether the rail project would be expected to bear the full cost of coastal defence works.

5.2.4 More revenue streams may need to be explored e.g. originating from parking or the scheme's dependent developments. Additionally, greater understanding of current ticketing practices e.g. split ticketing beyond Exeter and local usage of combined bus-rail tickets may need to be investigated. Split ticketing can 'hide' some revenue from a scheme if for example a Barnstaple-London ticket is split enroute – the portion of the fare past the split point won't be recorded in the base revenue for Barnstaple.

5.2.5 It is recommended that the future in-bound leisure market in Bideford is understood better. The demand assessment methodology deployed for this study assumed that this market to be broadly similar to the one in Barnstaple (with respect to outbound vs inbound demand). However, rail in Bideford could have a significant role in attracting new leisure visitors to the area, especially if Bideford and key tourist destinations around it are actively promoted.

5.2.6 Due to the scheme's Value for Money dependency on Barnstaple-Exeter Line improvements it is recommended that these are promoted either first or together with the case for the scheme. Synergies to provide both schemes simultaneously are advised to be sought. It is unlikely that the Bideford to Barnstaple reinstatement scheme can be promoted prior to some upgrade to the Barnstaple-Exeter Line.

Bideford to Barnstaple

Engineering Feasibility Review Technical Note

Client	Railfuture		
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Figures and Tables

1 Introduction

This technical note explores the engineering constraints in extending the North Devon line from Barnstaple to Bideford following the legacy coastal route and reviews the order of magnitude of associated capital costs, based on review of previous studies and benchmarking against comparator schemes. The legacy route has been converted to an Active Travel corridor known as the Tarka Trail which preserves the envelope and several of the grade-separated structures along the route, particularly at Bideford and Instow.

A significant amount of work in understanding the engineering constraints has been developed as part of the SOBC Lite V10, authored by Peter West in November 2024. Any reference to SOBC Lite (SOBC-L) refers to this report and the work completed as part of its Annex A - Choosing the Infrastructure for Reinstated Bideford Train Services. The SOBC-L analysis has been tabulated and reviewed in Table 2. The proposed route and its interfaces are shown in Figure 1.

Since the completion of this Technical Note in May-25, continued work on developing what was then described as the SOBC Lite (SOBC-L) has led to its redefinition as the Preliminary Strategic Business Case. All subsequent references to 'SOBC-L' in this note should therefore be read with that in mind.

2 Proposed Route

The route, Figure 1, as proposed in the SOBC-L broadly follows the legacy route with a diversion at Fremington Quay to preserve the existing characters and local amenities. The proposed reinstatement diverts the Tarka Trail at pinch points including through Instow and Bideford. The diversion of the Active Travel route will be a significant challenge at both locations due to the on-street constraints and alignment with Local Transport Note (LTN) 1/20. Understanding if one-way systems can be implemented or on street parking can be removed will be critical in understanding the feasibility of the diversion. These topics should be explored with early stakeholder engagement to ensure buy-in to the proposals.

The SOBC-Lite was written to start the development of a business case for the reinstatement of train services to Bideford. At the date this Engineering Feasibility Review was written, the SOBC-L remained in draft and was subject to further amendment. The key focus of the SOBC-L is on the Strategic Case and on the establishment of draft objectives. To that end it also contains early-stage analysis and outline estimates of the cost of coastal and inland routes based on the small number of current, publicly available figures for recently reinstated rail lines.

The SOBC-L says the following about the cost figures it contains: *'The analysis of both options below includes some very early-stage cost analysis based on publicly available rail construction comparators. No inflation has been included in the prices. The main intention at this very early stage of business case development has been to compare and contrast the two main alignment options for a restored railway in terms of orders of magnitude in order to help inform an early choice of Preferred Option. It is not the intention to suggest a point estimate of what construction would cost in actual terms, which would need far higher levels of engineering design and a reduction in inflation uncertainty.'*

This Engineering Feasibility Review is the first step in that process of further addressing design and potential costs. Part of this has been structured around Annex A of the SOBC-L, as it provides a wide-ranging review of many of the issues involved.

The SOBC-L raises the question of which side of the railway the Tarka Trail should be placed on, reviews options and remits the question to more detailed design and public consultation, including potential expansion of Active Travel routes towards Barnstaple. Due to environmental constraints and to preserve the character of the Tarka Trail, this review assumes that the railway will be built on its land side. The railway will likely need to be constructed on embankments and require a larger footprint due to the interface with Flood Zone 3. There are salt marshes, grazing marshes, mudflats and sand dunes of high ecological value along the proposed route. The construction on an embankment with 1 in 2.5 to 1 in 3 slope would have a large impact to this environment if constructed land side. There is also an interface with the flood zone, as the railway would act as a barrier which may impact flooding to neighbouring communities. Bringing the railway inland and using existing topography would help to mitigate impacts.

The above flood zone interface consideration will also need to be balanced with access requirements compliant with LTN 1/20., which mandates a 5% gradient for Active Travel routes. The embankment levels would be driven by the flood and hydrology considerations. With the track needed to be elevated on an embankment, the solution is then to provide underpasses for access to the Active Travel route. These access points need to be designed to avoid becoming hot spots for surface water and coastal flooding. At this location the railway alignment may need locally raising over a significant distance to ensure suitable clearances.

A further assumption from the SOBC-L is the reuse of the existing platforms and station infrastructure at Instow and Bideford. These sites are complex and the value at this project stage of committing to reusing the stations is low. Reusing the existing station infrastructure does not offer a significant cost advantage over rebuilding, as the civil engineering costs for constructing new platforms are relatively low, and the overall scope and complexity of the works are primarily driven by the rail and station systems. As such this capital cost review has assumed that an allowance will be required for a new station at the existing location of Bideford.

The rail system for the Barnstaple line is operated under a No Signaller Token Remote (NSTR) system with tokens, see Appendix B. The route is controlled from Crediton Signal Box with the requirement for trains to stop to collect the single line token at Crediton and similar requirements at Eggesford. This limits the single line to one train in section between Crediton – Eggesford and Eggesford – Barnstaple. This arrangement would need to be reviewed as part of the route wide interventions and any signalling modernisation or line speed improvements. The signalling operation has been included as a per km cost only in the capital cost review due to the need for a route wide approach, including consideration for controlling the line from Exeter. This is a key project risk as outlined in Section 3.3.

The rail system would also impact the risk at level crossings, including User Worked Crossings (UWC), Automatic Barrier Crossing Locally monitored (ABCL) and Automatic Open Crossings Locally monitored (AOCL). This depends on the frequency of the traffic (rail and users) and the control measures in place. Any control measure requiring signaller interfaces would be unworkable in the current system, as the signalling system does not provide the signaller with precise train position information over a long section of route.

Several other changes to the SOBC-L assumptions and scope have been identified which are documented under key risks and shown in Table 2.

Key

- Embankment or Retained structure for coastal flood protection
- Major civil works, overbridge, underbridge and viaducts
- Cutting, existing or proposed
- At Grade

1. Barnstaple Station
2. A361 and A3125 highways overbridge
3. Fremington Quay Viaduct
4. Marshes
5. East Yelland Power Station
6. Instow Legacy Station
7. Westleigh
8. Bideford Legacy Station

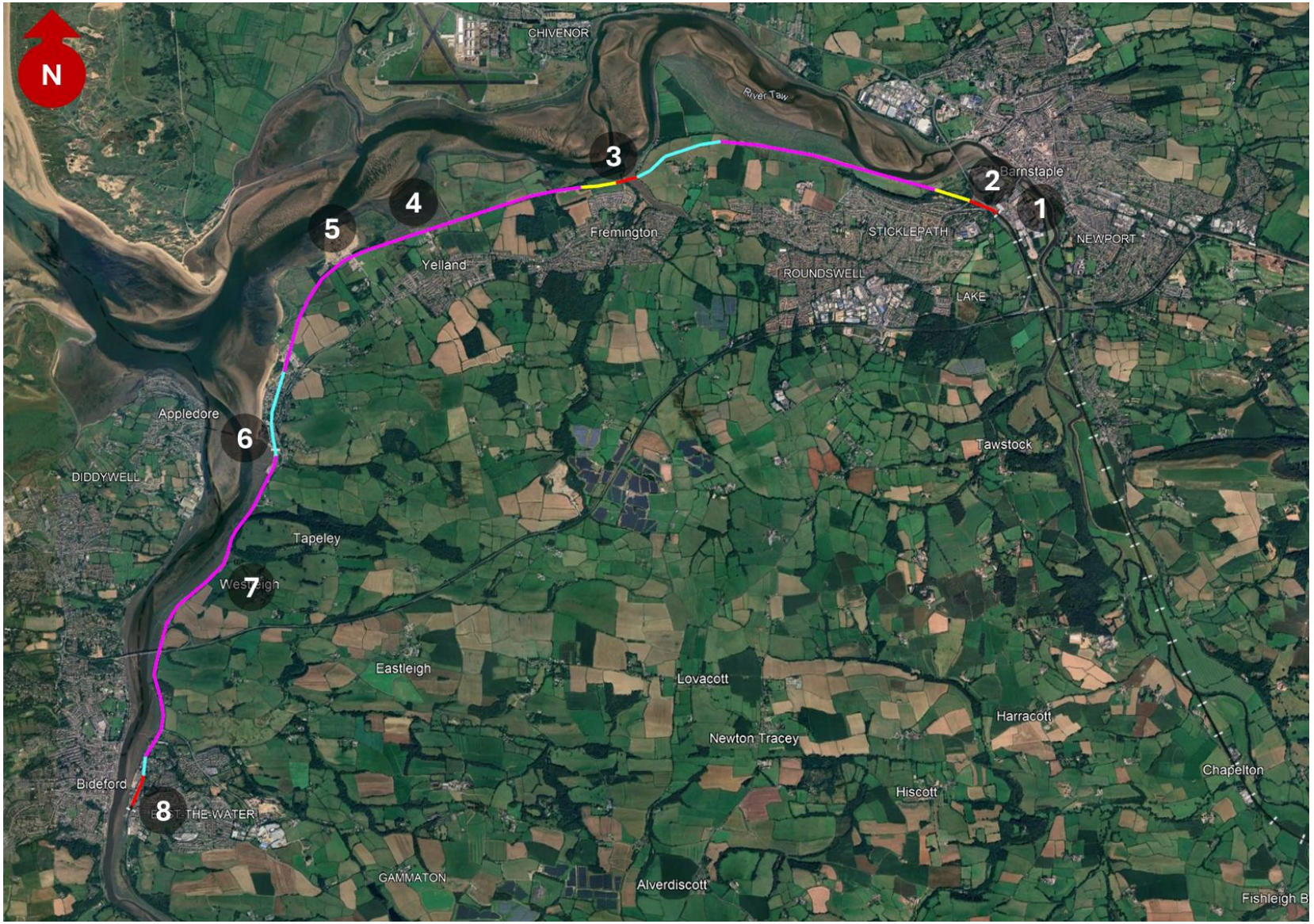


Figure 1 - Bideford to Barnstaple proposed Coastal Route (SLC graphic on Google Earth base map, 2025)

3 Review of Risks

3.1 Environmental and Hydrology

The proposed railway is located in Flood Zone 3, as shown in Figure 2, and is at risk of both coastal and surface water flooding. These flood plains serve as a primary habitat with the estuary being classed as a SSSI (Sites of Special Scientific Interest), as shown in Figure 3. The design will need to carefully consider balancing these impacts and ensuring the environmental and social value of the landscape is preserved.

The following items are critical risks:

- **Flood zone considerations between Barnstaple and Instow**. As outlined above it is critical to understand the wider impact and modelling of the river Taw. The new railway system should be designed to be resilient to climate change and as such will need to be built with coastal flood and surface flooding mitigation measures in place. When reviewing the flood zones shown in Figure 2, we note that the Tarka Trail is not a flood defence measure but that the Flood Zone 3 extends further than the trail. Any measure that looks to constrain this flood plain to the existing limits of the Tarka Trail could lead to a worsening of the flood condition along the estuary. This could also impact the adjacent communities with a build-up in surface water flooding.
- **Flood defences between Instow and Bideford**. The current section of route shows several flood defence measures in place. These will likely be impacted by the railway with the limited availability of land along the corridor and the need to preserve the Tarka Trail. Any impact on the flood defence will need to consider current standards and may lead to additional measures.
- **Environmental interfaces along the route** are a significant challenge and include passing through the SSSI. This should prioritise ecological input to ensure that the character of the route is maintained and that the sustainable objectives of a new railway are achieved.
- **Ground stabilisation** has been excluded. The local coastal environment presents significant ground stabilisation challenges due to high water tables, poor soil strength, erosion risks, and potential liquefaction. Mitigation could include the requirement for deep foundations like piling for stability, reinforcing ground with geotextiles or soil stabilization techniques, and employing erosion control methods.

3.2 Structures and Civils

The overall basis for selecting the existing legacy alignment along the Tarka Trail is to make use of the existing land and structures along the route. There are, however, several significant gaps including the crossing of Fremington Pill, which will add significant civils cost to the project and should be better understood to ensure that feasible and affordable solutions are in place. There are also key risks with the existing infrastructure including that associated with the tunnel at Instow.

The following items are critical risks:

- **A361 and A3125**. The interface with the existing overbridge at the A361 is unlikely to fully support the railway alignment. This should be reviewed due to the need for a long single span structure at this location to manage the skew between the highway and railway alignment. There may be an opportunity to reuse parts of the existing structure. From the initial review, the requirement of a new single span structure has been assumed. It is understood by SLC that the local authority has considered the interface with the extension of the railway and designed the bridge to future-proof for a railway. This would need to consider the overall alignment and interface with the highways alignment and the A361

/ A3125 junction and any modification to the station and track interface. The future-proofing may have considered heavy rail vertical and horizontal structural clearances. However, the consideration and constraints of the skewed alignment may restrict the delivery to the point where a new overbridge is still required.

- **Fremington Viaduct**, which requires a significant civils intervention to bridge the estuary. The alignment and cutting on approaches to the viaduct should be reviewed by a track and structures engineer to understand any opportunity for efficiently bridging the gap and balancing the cut and fill requirements.
- **Existing overbridges**. A visual and track alignment review of these structures would help to manage the assumption on their retention. Any modification or replacement would be significant additional capital expenditure.
- **Tunnel at Instow**. A specialist tunnelling and alignment review would support the case for retaining the existing structure. Any requirement around structural clearance, venting or emergency egress would result in significant additional capital expenditure.
- **Bideford station** is located on an embankment with limited space both in the width and length, interfaces with multiple underbridges, steep embankment, sections of retained embankment and proximity to several residential properties. A review of the existing structures and alignment would indicate whether the existing spatial provision is suitable and the level of intervention required to deliver the new railway. There are no clear alternative locations, as any out-of-town station would need to manage the topography with additional access requirements and the need for on-site parking. Understanding if the alternative site is feasible is a key project risk.
- **Utility considerations**, including the diversion of a sewer pipe between Yelland and Westleigh, have not been assessed.

3.3 Track Alignment and Rail System

Track, signalling and communications systems requirements need to be defined including the extents of works to the existing single-track system from Barnstaple. The track geometry and line speed will be constrained by existing pinch points, mainly from Instow to Bideford. There is also a need to understand any proposed (new/reinstated) level crossings including User Worked Crossings and how these would operate safely.

The following items are critical risks:

- **Alignment *through* Instow and Bideford**. The sites are very constrained and could lead to low line speeds, substandard alignment with reverse curves, tight curves and general deficiencies which increase the track maintenance cost and operational safety risk. The alignment could also increase the noise impact on the local community.
- **Alignment *between* Instow and Bideford** is also constrained potentially reducing line speed or impacting the extent of civils works and coastal defence measures.
- **User Worked Crossings (UWCs)** will need to consider the interfaces with the rail alignment and line speed to manage the operational safety risk. A more detailed review of the feasibility of these crossings and the need for additional safety measures will be needed at a future business case stage.
- **Rail system, signalling requirements and connection to the existing Network Rail (NR) line** require further definition. The number of station platforms at Barnstaple and Bideford, the requirements for passing loops and the need for suitable level crossings will impact the signalling system. The signalling system needs to be developed and integrated with the existing system, including interfaces with Crediton Signal Box. Changes to the signalling system and signaller workload (including due to a large number of new UWCs being

proposed) can also lead to step changes with significant additional CapEx and OpEx.

- **New level crossings**, including UWCs, will need to be risk assessed. NR has an active policy to close level crossings with the Office of Rail and Road (ORR) not approving new crossings. This would form part of the wider delivery strategy for a new railway with the requirement for a TWAO (Transport Works Act Order) or a Development Consent Order (DCO).

Figure 2 - Bideford to Barnstaple Flood Zones (Environment Agency Flood Mapping, 2025)

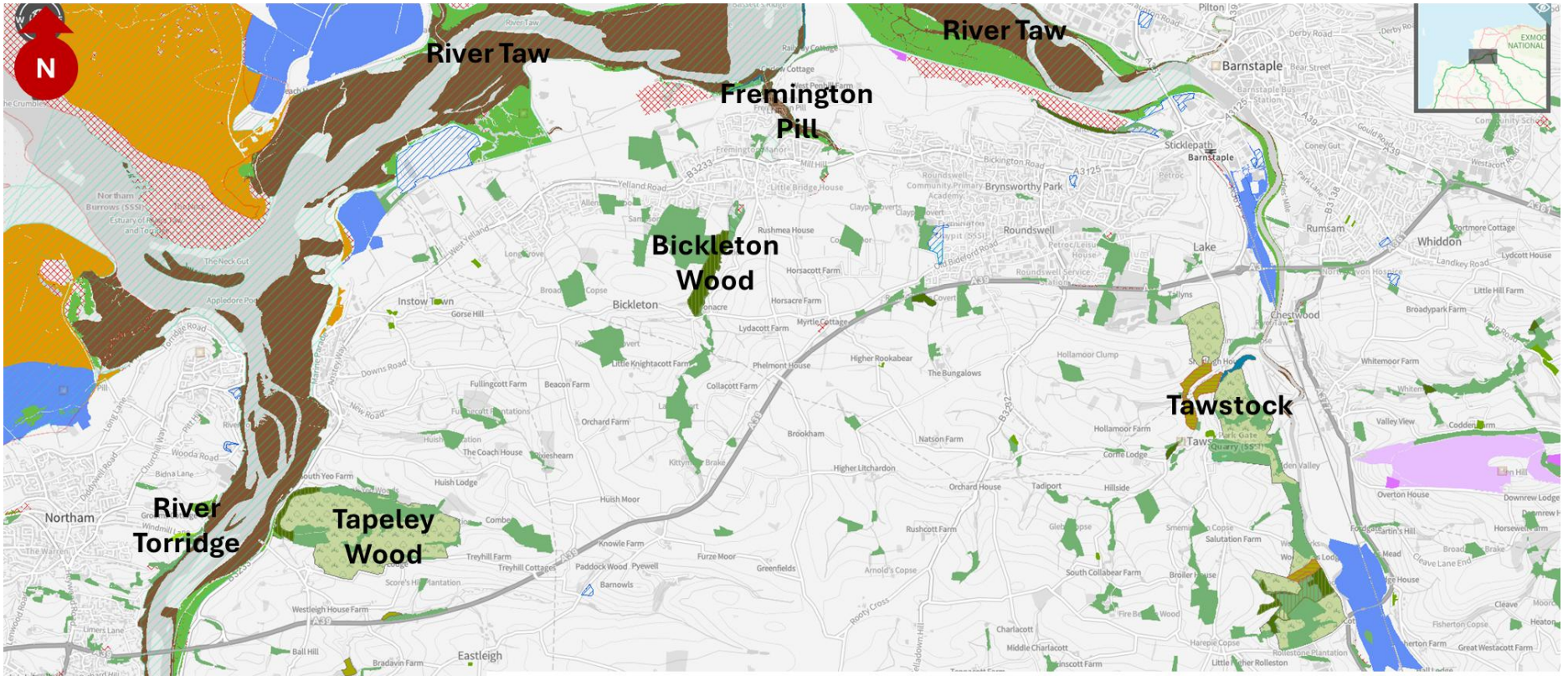


Figure 3 - Bideford to Barnstaple Environmental Interfaces (SLC graphic on Magic Maps base map, 2025)

4 Cost Review and Benchmark

A capital cost review and benchmarking exercise was undertaken based on the above risks. The estimated capital cost, as shown in Appendix C, was circa £422m. Further detail of the cost build up is provided in Table 1 and Figure 4.

The capital cost should be reviewed in line with Section 3, which details several outstanding risks and exclusions and Table 2, which details the list of assumptions and exclusions. In addition to this the cost estimate does not include land purchase cost. The cost estimate is stated in Feb 2025 prices, with no allowance for inflation. There are multiple percentage allowances applied to the cost, including other project costs, which provides an allowance for items such as surveys and legal requirements. These percentage are high level allowance suitable for a benchmark type cost.

This estimate of £422 million is significantly higher than the £106m to £212m range assumed in the SOBC-L, which was primarily derived from top-down benchmarking, using per-kilometre costs from other UK rail reopening schemes, notably the Tavistock Line. The approach in this present review, however, is based on a bottom-up build-up of cost items, taking into account the specific risk profile and complex interfaces along the Bideford route.

A summary of scope review and key differences between SOBC-L costs and this review are provided in Table 2 below.

4.1 Benchmarking Comparison

The SOBC-L estimate was based on several cost benchmark sources:

- Tavistock Line (Devon) – £11m/km (based on WSP's 2022 SOBC, itself a review of a 2015 Jacobs study)
- Levenmouth (Scotland) – £12m/km for 9.7km (line previously used for freight until 2005, minimal closure impacts)
- Northumberland Line (Newcastle) – £10.3m/km for 29km (freight-only line upgraded for passenger services)
- Mid-Cornwall Metro – £57m for signalling and station upgrades.

Of these, the Tavistock Line formed the primary basis for the SOBC-L cost range of £106m–£212m. A top-down benchmark approach was applied, with the upper end of this range reflecting a 2x multiplier on the Tavistock cost to allow for potential risks and uncertainties associated with the Bideford route.

However, the Tavistock line is not considered a suitable benchmark for the Bideford scheme due to major differences in condition and risk profile:

- The Tavistock formation was largely intact with extant structures in reasonable condition.
- The route passed through greenfield sites with limited town interfaces.
- The WSP estimate did not account for the type or scale of risks now identified for the Bideford line.

In contrast, the Bideford route includes several high-cost infrastructure items:

- Interfaces at the A361/A3125.
- Works to the Fremington Viaduct.
- Coastal flood defences. For example, while the Dawlish sea wall cost £80m for 815m of defences. The flood defence benchmark rate used for Bideford is approximately ten times lower, reflecting the estuarine —not open sea —

conditions. Nonetheless, these interventions remain expensive and are vital for a climate-resilient and maintainable railway.

These make the Bideford route more aligned to the cost of new railway construction, rather than a simple reactivation.

4.2 Cost Sensitivity

The Low, Medium, and High cost ranges used in this review, see Table 1, are based on a sensitivity analysis of route infrastructure and flood defence risks. These apply the following adjustments:

[1] Low – Excludes flood defence cost and applies a 10% reduction to route infrastructure

[2] High – Doubles flood defence cost and applies a 10% increase to route infrastructure

This approach supports the business case by transparently accounting for uncertainty and varying levels of intervention required.

Table 1 – Detail of cost build-up

CapEx	Total (Excl Risk)	Risk	Total (Incl Risk)
Track System	£55 m	£33 m	£88 m
Route Infrastructure	£128 m	£77 m	£205 m
Station Infrastructure	£20 m	£12 m	£32 m
Flood Defence Interface	£60 m	£36 m	£97 m
Low Range [1]	£191 m	£114 m	£305 m
Mid Range (As costed)	**£264 m**	**£158 m**	**£422 m**
High Range [2]	£337 m	£202 m	£539 m

All figures in Table 1 are presented as rounded to the nearest million. Where figures constitute a sum of several parts, the total of the sum may not add up to the stated parts due to rounding.

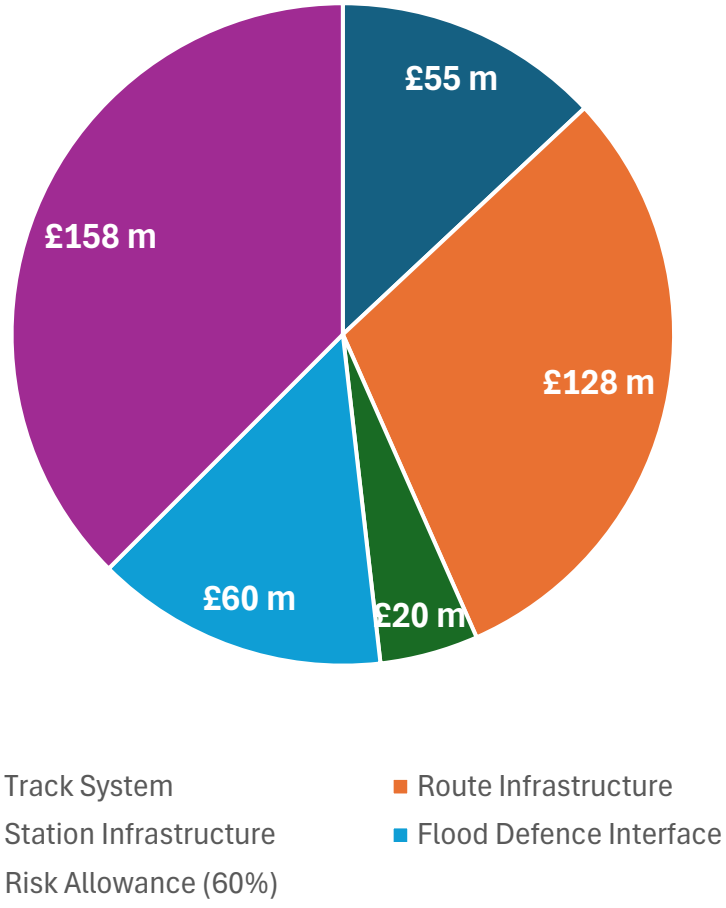


Figure 4 – Breakdown of Mid Range cost estimate by intervention category

Table 2 - Bideford to Barnstaple Cost Review Summary

Scope Item	Assumption (From SOBC Lite)	Review	Cost
Route Wide - Track Alignment	Coastal route is the most effective with 14.9km of single track to support a 1tph service. Journey time between Barnstaple and Bideford of 15 minutes. Providing that could be reduced a little, for example with faster accelerating new trains and/or the second train per hour missing out Instow or any other intermediate station, it would in principle be possible to accommodate the higher frequency train service. A suitable signalling and control system would need to be designed and installed to ensure the safe operation of the additional track, as north of Eggesford the current system only allows one train at a time to operate.	14.9km of single track to be installed assumed to be a 15min journey time between Barnstaple and Bideford. This provides a line speed target of 60kph (40mph). With an extension to an improved Barnstaple to Exeter service to Bideford will run on a single track and is expected to be limited to 1tph. To increase to 2tph the review would need to account for dwell time at the station, timetable constraints and acceleration curves. A 2tph service would be challenging especially with the constraints between Instow and Bideford and potential additional stops along the route. It is therefore assumed that an increase to 2tph service would require a passing loop between Instow and Barnstaple. This is excluded from this review and the cost estimate.	14.9km of single track. 33km cabling for extension of signalling system from Eggesford. Exclusion: Passing loop for an increase in service to 2tph. Exclusion: No review of signalling works and capacity for additional signalling has been completed. This includes to the existing NR route from Exeter and its operation into Barnstaple. A nominal allowance per km has been made to cover Rail Systems (signalling, GSM-R), a key risk which requires detailed review. Exclusion: No electrification of the line is required; traction is assumed to be powered by diesel or battery. No allowance is made for charging or battery technology infrastructure. Exclusion: Feasibility and cost of journey time improvements between Barnstaple and Exeter not reviewed. Exclusion: No review or option for an inland route option has been completed.

Scope Item	Assumption (From SOBC Lite)	Review	Cost
Route Wide - Social	The Trail and Path are of high value for leisure and Active Travel purposes and important to the local tourism economy. Torridge and North Devon District Councils set out the need to retain the Tarka Trail in the event of train services being reinstated to Bideford. The SOBC-L raises the question of which side of the railway the Tarka Trail should be placed on, reviews options and remits the question to more detailed design and public consultation, including in connection with potential expansion of Active Travel routes towards Barnstaple.	There are considerations as to the interface with the Tarka Trail. Specifically, these include the views from the Tarka Trail of the estuary which make it an attractive leisure route. To preserve these views and reduce the visual impact of the railway embankment, it is proposed that the new railway be located on the landward side of the trail. Several access points will be provided between the communities and the trail to mitigate severance caused by the railway corridor. Access points to the trail have been rationalised by reducing their number and combining existing access points where feasible. At Fremington, the trail is expected to remain accessible beneath the required viaduct.	Fencing to be of a quality such that the amenity value of the trail is not impacted. 4 Active Travel access points to the Tarka Trail, assumed to be underpasses to accommodate pedestrians and cycle users. Exclusion: No allowance has been made for any improvement works to the Tarka Trail, only allowances made are for diversionary routes. Assumption: The railway will be installed land side of the existing Tarka Trail to maintain its quality and reduce the environmental impacts.
Route Wide – Environment	The SOBC-L recognises the environmental importance of the area and raises the need for mitigation measures in design and construction.	The proposed route interfaces with the estuary which is a Site of Special Scientific Interest. This is a rich ecosystem with mudflats, salt marshes, sand dunes and grazing marsh. Civils interventions will need careful consideration of the environment and propose suitable mitigations.	Exclusion: No allowance has been made for environmental mitigations.

Scope Item	Assumption (From SOBC Lite)	Review	Cost
Barnstaple Station – Rail Systems and NR connection	The most obvious solution would be to reinstate a second track and platform. There is an operational piece of point-work leading towards it, albeit only available for very occasional use.	The additional switch and crossing (S&C) and track required to bring the second platform back into use would improve operational flexibility of the combined scheme for services between Exter and Bideford. This is assumed to be delivered as part of the Barnstaple to Exeter works and is excluded from this assessment. However, this assessment does include one set of S&C at the western end of Barnstaple station to enable onward services to Bideford. Bringing back into use the disused platform, and providing a new footbridge compliant to Equality Act 2010, is included as part of this assessment.	1 set of S&C and formation. Equality Act 2010-compliant footbridge with lifts and stairs Resurfacing works to second platform over 150m by 3m Exclusion: the Track and S&C for the second platform at Barnstaple and the signalling system has been excluded.
Barnstaple Station - Barnstaple Car Park and bus interchange	The SOBC-L mentions the risk of a complex engineering solution being needed to cover the bus access road, but does not cover the car park.	The impact on the A361 is likely to remove the bus connectivity to Barnstaple station in its current arrangement. This could be replaced with a bus turning circle or providing a new connection onto the A3125. This could negatively impact bus interchange at the station by increasing journey times. A significant proportion of the car park would be lost by the extension of the rail alignment. This equates to a loss of approximately 100 bays of 143 total bays (70% reduction). These could be potentially re-provided on adjacent sites, such as using the existing bus lane or through provision of a decked car park solution.	Allowance for bus turning circle. Allowance for 100 bay surface car park. Assumption: Loss of bus-only route is acceptable to the Local Authority and bus operators.

Scope Item	Assumption (From SOBC Lite)	Review	Cost
A361 and A3125	The A361 overbridge is constructed with sufficient height for reinstatement of the railway line. A potentially complex piece of engineering may be required for the reinstated Bideford railway to traverse the A361 / A3125 Barnstaple bypass roads and bus access road.	The A361 overbridge is centrally supported with two set of bridge piers. The railway alignment and A361 run parallel into Barnstaple with the station located on a wide radius. The existing highway structure poses significant challenges to thread a rail alignment through and is significantly constrained by the station platforms. As a result, the highway bridge will likely need to be reconstructed as a single span structure. The bridge is approximately 50m span by 20m width. A single span structure will have an increased span to depth ratio and may require a bespoke structural form or amendment to the geometry of the highway. In terms of the A3125, as there is no existing structure. Aa new circa 10m span by 35m width skewed bridge structure would be required. A potential solution could comprise a reinforced concrete box structure constructed using the cut and fill method. The width of 35m is due to the interface with the junction.	A361 replace overbridge span with single 50m span by 20m width A3125 new overbridge 10m span by 35m width Assumption: Existing highway alignment to be maintained. No level changes required.
Penhill Farm Cottages	A bridleway (horse and cycles as well as pedestrians), combined with a private farm occupation crossing, crosses the former railway alignment a little to the east of the former Fremington station. If the reinstated railway was diverted at this point to avoid Fremington Quay, the creation of a lower cost crossing with the railway in a cutting would be facilitated, as the land rises to the north of Penhill where the bridleway originates.	The assumption for single track overbridge aligned with the cutting location would be a sensible approach.	Single track overbridge.

Scope Item	Assumption (From SOBC Lite)	Review	Cost
Muddlebridge Cottage Road	Not covered.	Assume that the Fremington Quay viaduct will span the existing road.	Assumption: Fremington Quay viaduct will span Muddlebridge Cottage Road.
Fremington Quay	Deviation inland from the original track bed, with public access retained via an over bridge. The ground level rises a little on the inland side of Fremington Quay, meaning that the realigned railway would be in a shallow cutting.	The assumption looks to be correct and mainly balances the public amenity value with the cost of cut and fill interventions for an inland route. The crossing point of Fremington Pill estuary a significant civils works intervention. This will likely require a circa 160m viaduct single track structure, balancing the track alignment and crossing point with the wider environmental and social impacts. It has been assumed that an alignment that sits between Fremington Quay and The Barn (Fremington, EX31 2NG) would work best and provide a more efficient crossing of the estuary. The track design here will be critical both in the vertical and horizontal alignment to manage the extent of civils infrastructure. The cutting has been assessed as a circa 500m long, 10m deep cutting, this could potentially be value engineered with an efficient vertical track layout.	Viaduct crossing of Fremington Pill 160m long, single track width and 10m heigh structure 500m cutting circa 10m deep
Route section - Barnstaple to Instow	Former rail alignment as a river wall. The former railway line is mostly constructed on a low embankment across low-lying farmland. This raises separate points about engineering integrity and about resilience to rising sea levels.	7.5km of route is in Flood Zone 3. Track to be on a 2.5m high embankment to maintain operation during floods. This also needs to interface with any crossing points and ensure these do not become unusable with surface flooding. Additionally, several culverts and hydrology interventions will be required along the route to mitigate the impact of flooding.	7.5km of 2.5m high embankment for single track corridor 15no box culvert structure 3m by 1m every 500m to maintain the existing flood plain Exclusion: Hydrology interventions. Exclusion: Ground stabilisation.

Scope Item	Assumption (From SOBC Lite)	Review	Cost
Lower Yelland Farm to Home Farm Marsh	There is a private occupation crossing from Lower Yelland Farm to Home Farm Marsh, which is also used by the public to access the Gaia Trust's site on Home Marsh Farm. A further Gaia Trust site access point is to the north of the former railway near Saltpill Duck Pond.	Assume a User Worked Crossing is required and that the Gaia site is access by foot only from the Tarka Trail.	1 User Worked Crossing Assumption: access to the Gaia Trust site by Active Travel is provided as part of the route wide approach to manage access to the Tarka Trail.
Route section – Yelland to Westleigh – South West Water pipe	South West Water laid a sewage pipe on the former railway alignment between Yelland and a point between Bideford and Instow at Westleigh. This affects around one third of the former railway alignment (around 3 miles of 9¼ miles). It is understood that South West Water has strong legal rights over the alignment of this pipe and that it has also confirmed in writing that it would object to restoration of the railway.	Not assessed.	Exclusion: Utility interfaces have not been assessed and are not included in the capital costs.
The former East Yelland power station site	Currently used as a light industrial site, with an access track across the former railway alignment. There are controversial plans to develop the site as a luxury housing development.	Assume an at-grade User Worked Crossing is required if the site is developed .	1 User Worked Crossing Exclusion: Housing development at East Yelland power station site.

Scope Item	Assumption (From SOBC Lite)	Review	Cost
Route section - Instow cutting and overbridges	The Tarka Trail Active Travel route is to be relocated to the Marine Parade to resolve spatial constraints at the Tunnel and cutting. The following structure are to be retained and require no works: • Marine Parade Overbridge • Kiln Close Lane Overbridge • Bridge Lane Overbridge • Marine Parade Level Crossing	Overall the space provision and reuse of the existing cutting and structure appears to be a suitable assumption with the diversion of the Tarka Trail. These structures are maintained and used as part of the Tarka Trail. This is also backed by the consideration that these structures were originally built to the Great Western Railway broad gauge. This does not equate to structural clearance being suitable for a modern passenger train. There will need to be works to stabilise and clear the cutting and structures of vegetation. The Active Travel improvement along Marine Parade look to be significantly challenging this is a very constrained road with parking provided along the route. This also moves from a segregated safe route to a shared route which is likely to be heavily used during peak seasons along with the Tarka Trail. This type of approach is not aligned with Active Travel guidance – LTN 1/20. The on-street parking could be relocated with an expansion of Sandhills car park and a one way system could be considered. It may be challenging to gain stakeholder support and would clash with the proposed closure of Marine Parade Level Crossing. The above items constrain the track alignment horizontally and vertically. This will clash with potential flood risk and could require active flood defence measures to manage the level through the cutting and overbridges. The horizontal geometry will constrain the line speed and potentially increase the noise and vibration impact to local communities.	1km of works to the cutting to ensure stability, clearance of vegetation and stabilisation. 1km of Active Travel improvement along Marine Parade. Assumption: A one-way system along Marine Parade with white lining is a suitable solution and supports space for a segregated contraflow bike line. Exclusion: Work to the existing overbridges at Instow. Exclusion: Any active flood defence measures or hydrology considerations.

Scope Item	Assumption (From SOBC Lite)	Review	Cost
Quay Lane Tunnel -100m long	The tunnel is to be retained and requires no works	The tunnel is a significant civils constraint specifically with the consideration for structural clearance, fire and venting. The use by diesel locomotives further increases the safety consideration. This is excluded from the current assessment and requires specialist input. The Tunnel is also a significant constraint on the alignment and may require derogation from modern track standards that could increase the maintenance liabilities.	Exclusion: Work to the existing tunnel at Instow. The tunnel will require specialist assessment, this a key project risk.
Instow – Legacy Level Crossing	Marine Parade Level Crossing to be closed with alternative routes provided.	A grade separate overbridge structure is likely to be cost-prohibitive due to the requirement to build over the estuary and recover land. It is also likely to be a significant visual intrusion to the local character. The assumption of closure appears to be suitable with alternative routes available. All these routes are overbridges and access to Marine Parade may be a challenge due to loading constraints. An alternative option could be to retain the level crossing for as a User Worked Crossing where access is managed by the signaller via a telephone box. This would be for limited access only.	Allowance for Equality Act 2010-compliant footbridge with lifts. There is an opportunity to replace the lifts with ramps. Assumption: The legacy level crossing can be closed and the road diverted along existing routes.
Instow – Legacy Station	Assume to reuse the existing platform.	For the purpose of this review, a new platform has been excluded. However, the existing 90m platform will further constrain the alignment and potentially increase impact on third party land. Compliance of the historic platform and infrastructure to current standards will also need to be reviewed and is likely to lead to rectification works being required to the existing platform. Costs for these works have not been included as part of this review.	Exclusion: The station at Instow is excluded from the cost estimate.

Scope Item	Assumption (From SOBC Lite)	Review	Cost
Royal Marines Facilities	The Royal Marines have private access to the River Torridge across the former railway formation at two locations: 1) from the Royal Marines Instow Arromanches Camp to the north of the village and 2) to a jetty opposite Appledore shipyard to the south of the village.	Assume one User Worked Crossing is required to access the facilities at Zeta Berth. The Jetty is assumed to be accessed via sandhills car park.	1 User Worked Crossing
Torridge Bridge A39	Not covered.	Limited interface is expected as the span and height of the A39 overbridge should minimise any impacts with the structure. However, any works must consider potential interaction with the bridge foundations, particularly regarding any ground stabilisation measures.	Assumption: No works or interface with the Torridge Bridge A39.
Route section - Instow to Bideford – South West Coast Path	Former rail alignment as a river wall. The former railway line is mostly constructed on a low embankment across low-lying farmland. This raises separate points about engineering integrity and about resilience to rising sea levels.	1.8 km of constrained coastal retained structure against the Marine Parade at Instow to Westleigh village. 2km on of constrained coastal mudflats and embankment between Westleigh Village and Bideford Both these constraints lead to significant civils works to support the space for the alignment and enable a resilient solution. It is assumed that the alignment will be constrained to the coastal geometry and that any loss in line speed will be mitigated with additional passing loops. There is an additional pedestrian overbridge just south of the location which is overgrown and also appears to have limited vertical clearance.	1.8 km of retained structure to be extended to support a single track line and retain the SW Coast Path. 2km of retained embankment to be extended to support a single track line and retain the SW Coast Path. 3.8km of formation and surfacing for a re-laid Tarka Trail. Assumption: Due to constraints the Tarka Trail will need to be realigned along this section. Exclusion: Work to the existing overbridges. Exclusion: Ground stabilisation.

Scope Item	Assumption (From SOBC Lite)	Review	Cost
Route Section – Bideford Cutting and Embankment	The following structure is to be retained and require no works: B3233 Barnstaple Street Overbridge	There is an initial 300m shallow cutting to enable the interface with the B3233, Barnstaple Street overbridge, which then raises sharply for another 300m for the Station Hill underbridge. This is a very constrained geometry with the sharp rise over a short distance being a significant constraint. The alignment is constrained prior to the overbridge with the retained embankment to the B3233 and the residential access along Ethelwynne Brown Close limiting the space available for the track corridor. The B3233 looks to have been extended from the legacy infrastructure but maintains the original envelope with the legacy being a masonry arch structure and extended with concrete beams. The clearance appears low, with the Active Travel route potentially having been built up. The route overall becomes very constrained with houses built against the Tarka Trail, which will need to be diverted. There are no obvious alternative routes and this is likely to be a significant social impact by rerouting along busy streets. The reconnection to the Tarka Trail is also significantly constrained with the current route to the south of Bideford at the Tidal and trail bike hire could be improved.	600m active travel improvements including cycle priority junction.

Scope Item	Assumption (From SOBC Lite)	Review	Cost
Bideford Station	The key consideration as part of the sensitivity analysis would be for the second platform at Bideford to be reinstated to allow two trains to be in the station at the same time.	The closest existing passing loop is at Eggesford. The consideration for a second platform at Bideford is a sensible approach and will provide a level of flexibility for services. However, this does not look to be feasible due to spatial constraints, as the historic platform appears to have straddled the Station Hill underbridge with limited space available on the north of the bridge. There is also the interface with the heritage railway and the rising gradient of the track. There is clear risk that the heritage railway will no longer have access to the track due to the above site constraints. The Bideford platform will need to take priority to ensure safe operation. The alignment will also need to prioritise the delivery of the platform and manage any impacts the heritage assets. There are also significant challenges and operational safety considerations in using the siding for both passenger service and heritage rolling stock. As a result of the above consideration, and the baseline requirement for 1tph only one platform at Bideford has been assessed and costed. Station Hill underbridge looks to have been raised to provide a route for HGVs. This will likely need to be lowered and diversionary routes for HGVs proposed.	150m single facing platform including suitable CCTV and lighting. 10m single track underbridge – existing abutments to be modified. 10m single track underbridge and platform – existing abutments to be modified. Secure cycle shelter for 100no cycles. Assumption: No on-site parking to be provided. Exclusion: No provision for a station car park.

5 Recommendation

It is evident that the capital costs are likely to be substantially higher compared to the baseline assumption in the SOBC-L. It is recommended that the core scheme aim and objective is reviewed holistically, and alternative solutions and opportunities which may support a reduction in the capital costs are explored, as, outlined in Section 6 below.

Should a heavy rail solution following the coastal route along the Tarka Trail still be found to be the preferred and most viable solution, the proposals should be reviewed to develop a better understanding of the key risks as documented in Section 3 and associated scope elements and exclusions summarised in Table 2 above. This includes both the main risks driving the cost estimate and the exclusions. The overall cost is driven by the civils and structural works including the interface with flood defence infrastructure. The exclusions cover the rail system and operation, including the interface with the North Devon line and proposed Barnstaple modernisation. The interface with existing structures and proposed alignment is also excluded. A better understanding of these elements will support a more accurate estimate and de-risk the engineering feasibility of the scheme.

6 Opportunities

Several opportunities could be explored. These would need to be reviewed against the strategic objectives of providing both local and regional connectivity to Exeter. Some of the opportunities below would support either local or regional connectivity. However, it is noted that a reduction in the scope may limit some of the benefits of the scheme. SLC understands that this has been assessed as part of the SOBC-L, which has excluded a number of these opportunities on the basis that they do not meet the strategic objectives set out by the project.

The following opportunities could be reviewed:

- **Inland routes**, as shown in Figure 5, have been excluded by the client from the scope of this review, based on a high per km cost of between £71m and £87m outlined in the SOBC-L. These could be reviewed to the same extent as a coastal route as they may offer multiple opportunities including the use of Land Value Capture and improved resilience. The operational restriction discussed in the SOBC-L should be reviewed as part of a systems wide approach. For example, the route from Chapelton could provide a simpler rail system solution or a combined coastal to inland route could also be explored.
- **Redevelopment in the Barnstaple area** with the delivery of a park and ride station directly connected to the A39. This could be combined with improved bus services and the use of bus filter lanes and priority arrangements.
- **Light rail or guided bus-way** alternatives to heavy rail could be explored to reduce the complexity of the interfaces along the route and the cost of civil and structural interventions. Several traction power options can be explored. The interchange at Barnstaple could be aligned to reduce journey time disbenefit. Guided bus ways or segregated track could be used to improve reliability and journey times on cheaper section of route with complex interface area using street running arrangements.
- **Innovative operation** could be used such as a tram train system or heritage railway running. The operation of a heritage railway is bound by the safety case and a speed limit of 25mph, which limits the complexity of the system.
- **Funding agreements** could be identified for flood defence infrastructure, which could offer protection to existing and future infrastructure and development, as well as the railway. The requirements on the infrastructure resulting from the operational railway will be a significant proportion of the flood defence cost. The topography will also limit the opportunity within several locations with the coastal defence being of benefit to the operational railway only.

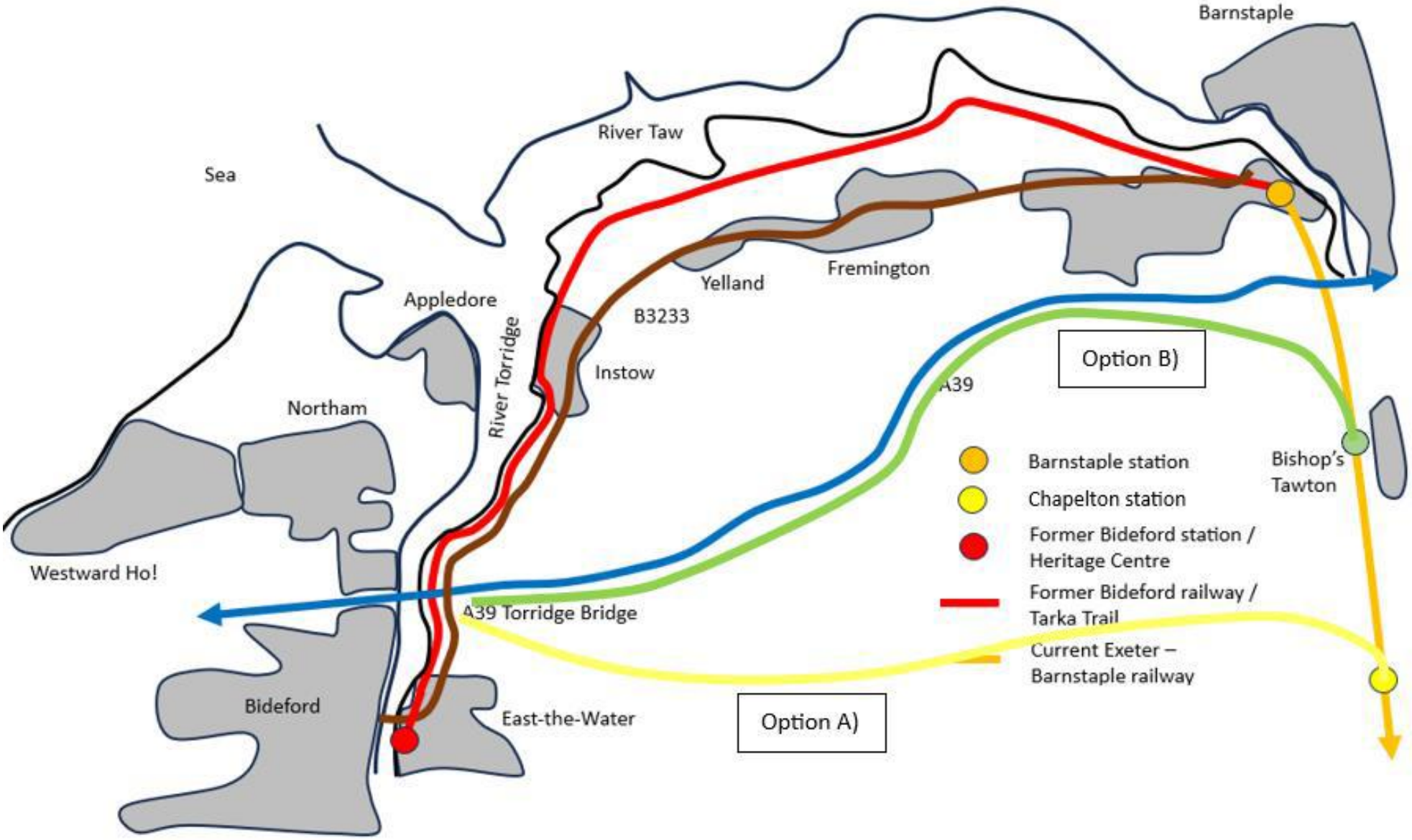
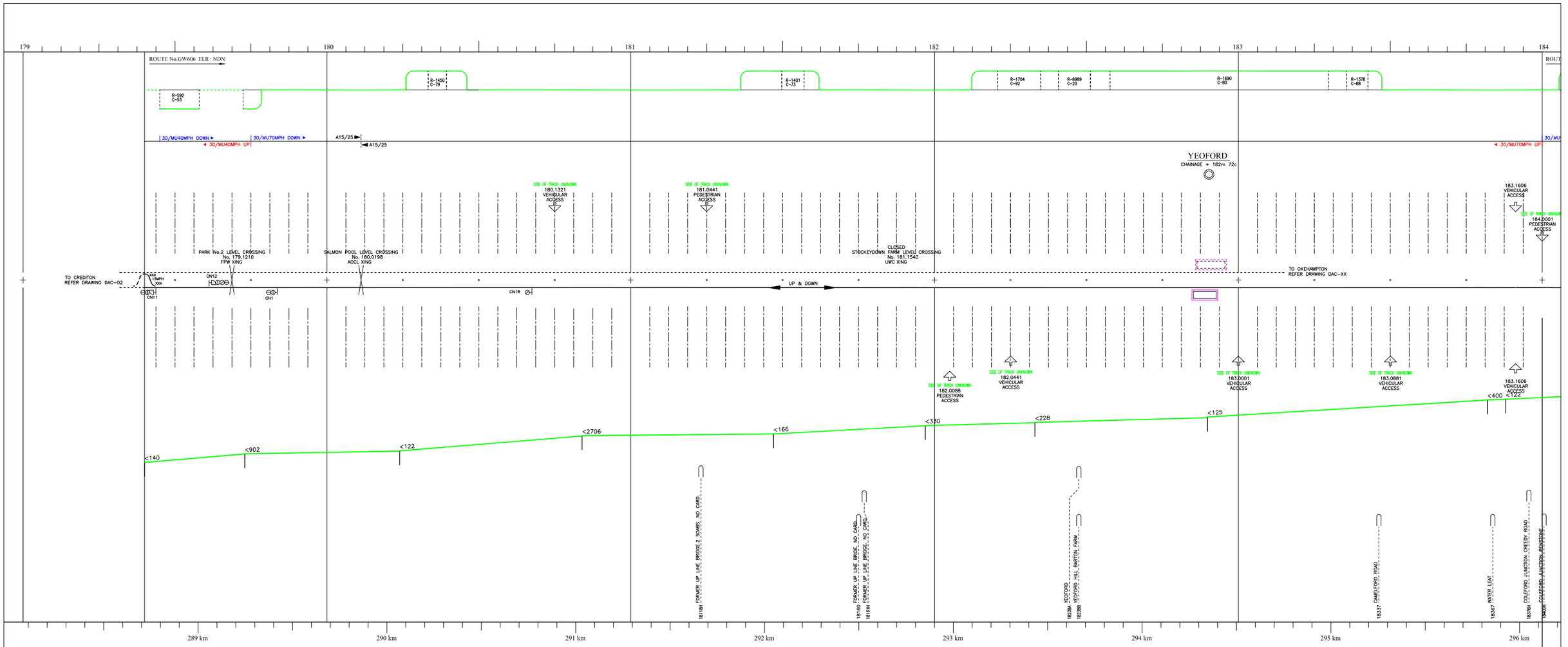


Figure 5 - Bideford to Barnstaple alternative routes (SOBC Lite, 2024)

Appendix A - 5 Mile Diagrams



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QA CHECK	WC	CLIENT
QUAIL	✓	
SIGNAL DIAGRAM	✓	
SECTIONAL APP.	✓	
GEOGIS – STRUCTURES	✓	
GEOGIS – S&C	✓	
LEVEL CROSSINGS	✓	
ACCESS POINTS	✓	
CURVES	✓	
GRADIENTS	✓	

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DATE	REVISION	SOURCE	DRN	CHK
23-12-09	LINESPEEDS UPDATED (3666)	NR WEST WON 41	MAC	NB
11-03-10	STOCKEYDOWN FARM LEVEL CROSSING MARKED AS CLOSED (3786)	NR WEST WON 51	MAC	NB
07-04-10	LINE SPEEDS AMENDED (3686)	NR WEST WON 43	MAC	NB
20-05-10	LINE SPEEDS AMENDED (3873)	NR WEST WON 06	MAC	NB

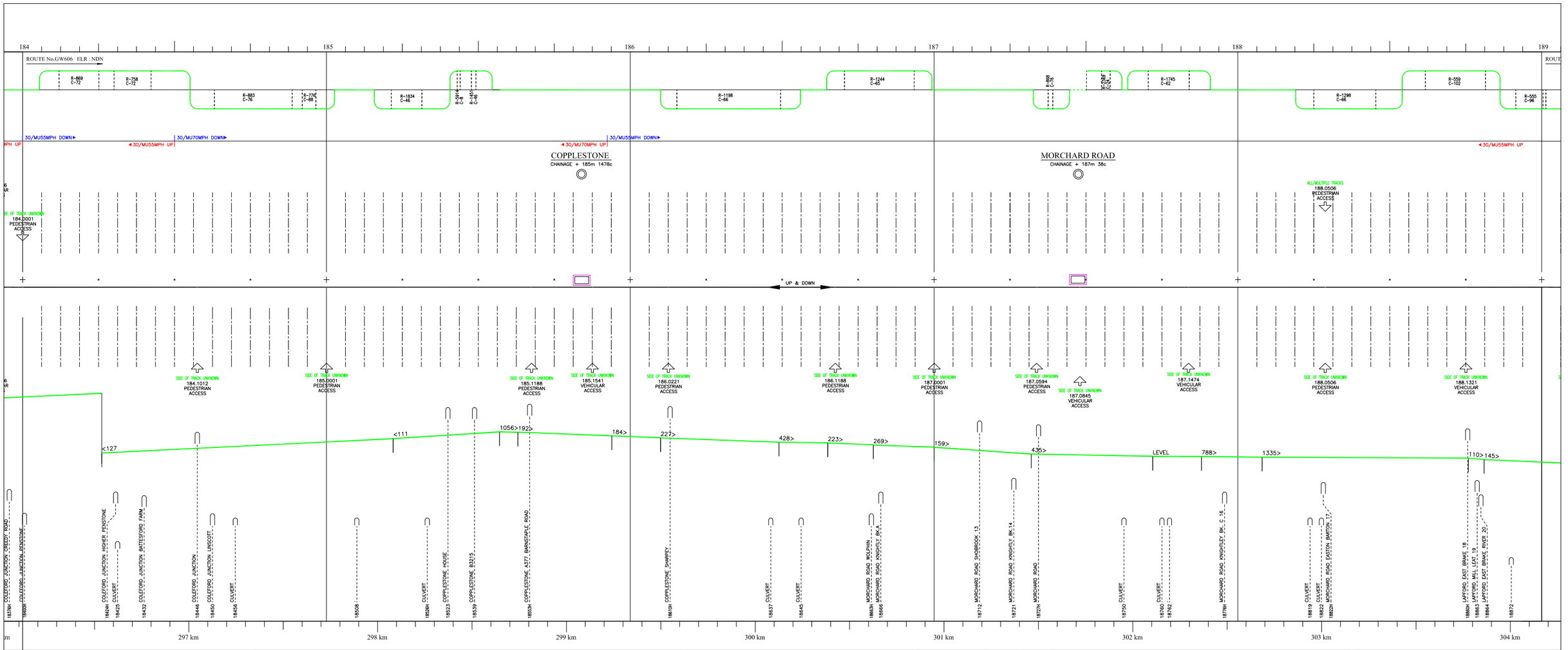
CLIENT: Network Rail

Territory: Great Western
Area: West Country

TITLE: **CREDITON - YEOFORD**

CIVIL ENGINEERING PLAN

PROJECT No.	36822235		
DIAGRAM No.	NDN-01		
ROUTE	GW606	ELR	NDN
MILEAGE	179 MILE 32c TO 184 MILE		
VALIDATED/DRAWN			



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GEOGIS – S&C	✓	
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ACCESS POINTS	✓	
CURVES	✓	
GRADIENTS	✓	

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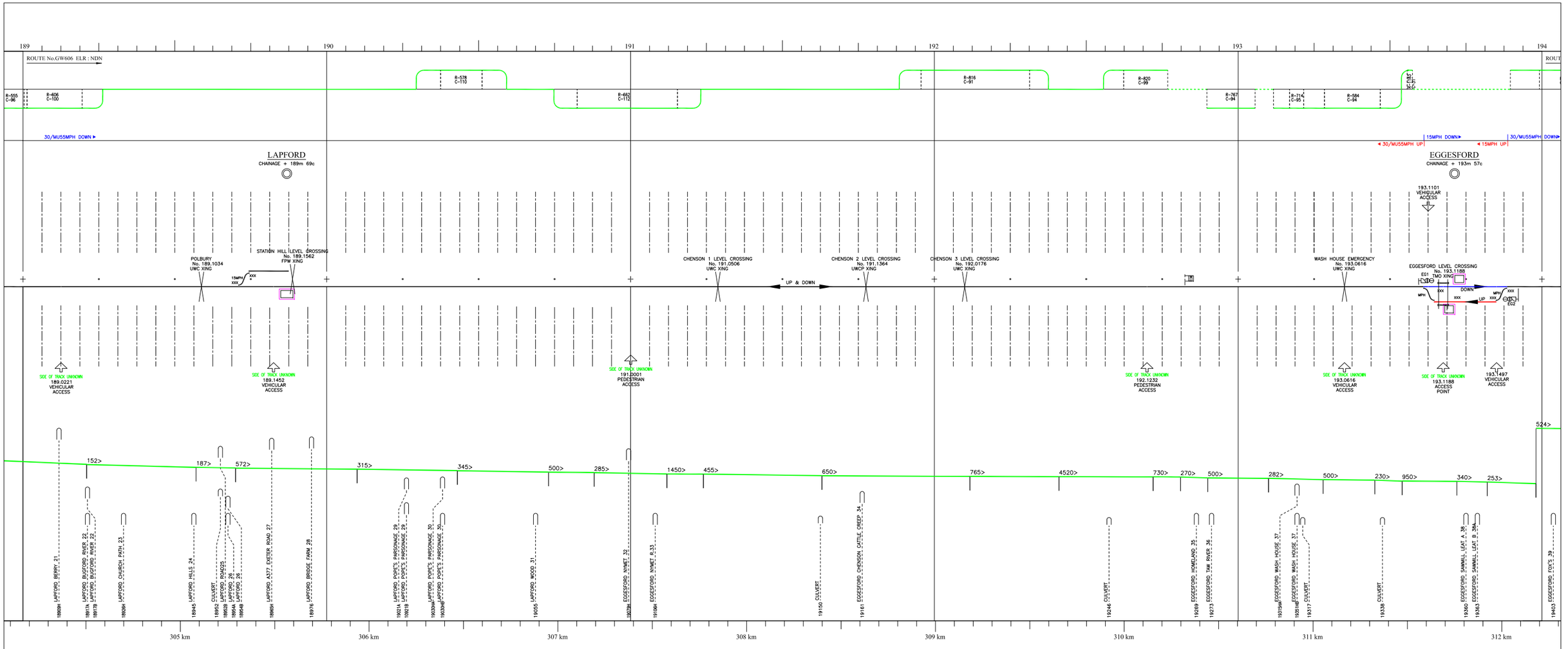
DATE	REVISION	SOURCE	DRN	CHK
23-12-09	LINESPEEDS UPDATED (3666)	NR WEST WON 41	MAC	NB
07-04-10	LINESPEEDS AMENDED (3686)	NR WEST WON 43	MAC	NB
20-05-10	LINE SPEEDS AMENDED, COPPLESTONE PLATFORM CORRECTED (3873)	NR WEST WON 06	MAC	NB

CLIENT: Network Rail
Territory: Great Western
Area: West Country

TITLE
COPPLESTONE - MORCHARD ROAD

CIVIL ENGINEERING PLAN

PROJECT No.	36822236		
DIAGRAM No.	NDN-02		
ROUTE	GW606	ELR	NDN
MILEAGE	184 MILE TO 189 MILE		
VALIDATED/DRAWN			



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SECTIONAL APP.	✓	
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GEOGIS – S&C	✓	
LEVEL CROSSINGS	✓	
ACCESS POINTS	✓	
CURVES	✓	
GRADIENTS	✓	

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DATE	REVISION	SOURCE	DRN	CHK
23-12-09	LINESPEEDS UPDATED (3666)	NR WEST WON 41	MAC	NB
07-04-10	LINESPEEDS AMENDED AS SHOWN (3686)	NR WEST WON 43	MAC	NB
20-05-10	LINESPEEDS AMENDED, EGGLESTONE LEVEL CROSSING CORRECTED (3873)	NR WEST WON 06	MAC	NB
17-12-10	TRACK DETAILS AMENDED AT LAPFORD (4227)	NR WEST WON 37	MAC	NB

CLIENT: Network Rail

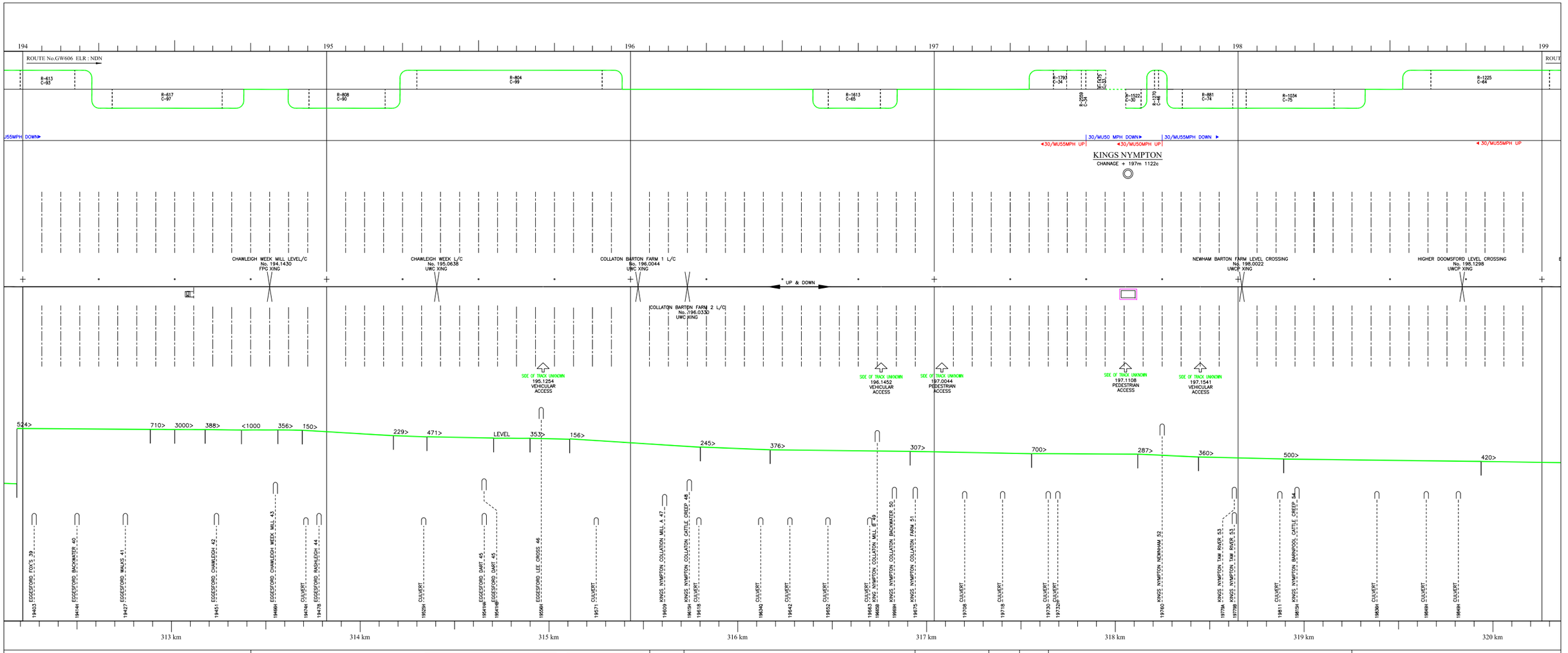
Territory: Great Western
Area: West Country

TITLE

LAPFORD - EGGESFORD

CIVIL ENGINEERING PLAN

PROJECT No.	36822237		
DIAGRAM No.	NDN-03		
ROUTE	GW606	ELR	NDN
MILEAGE	189 MILE TO 194 MILE		
VALIDATED/DRAWN			



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SECTIONAL APP.	✓	
GEOGIS – STRUCTURES	✓	
GEOGIS – S&C	✓	
LEVEL CROSSINGS	✓	
ACCESS POINTS	✓	
CURVES	✓	
GRADIENTS	✓	

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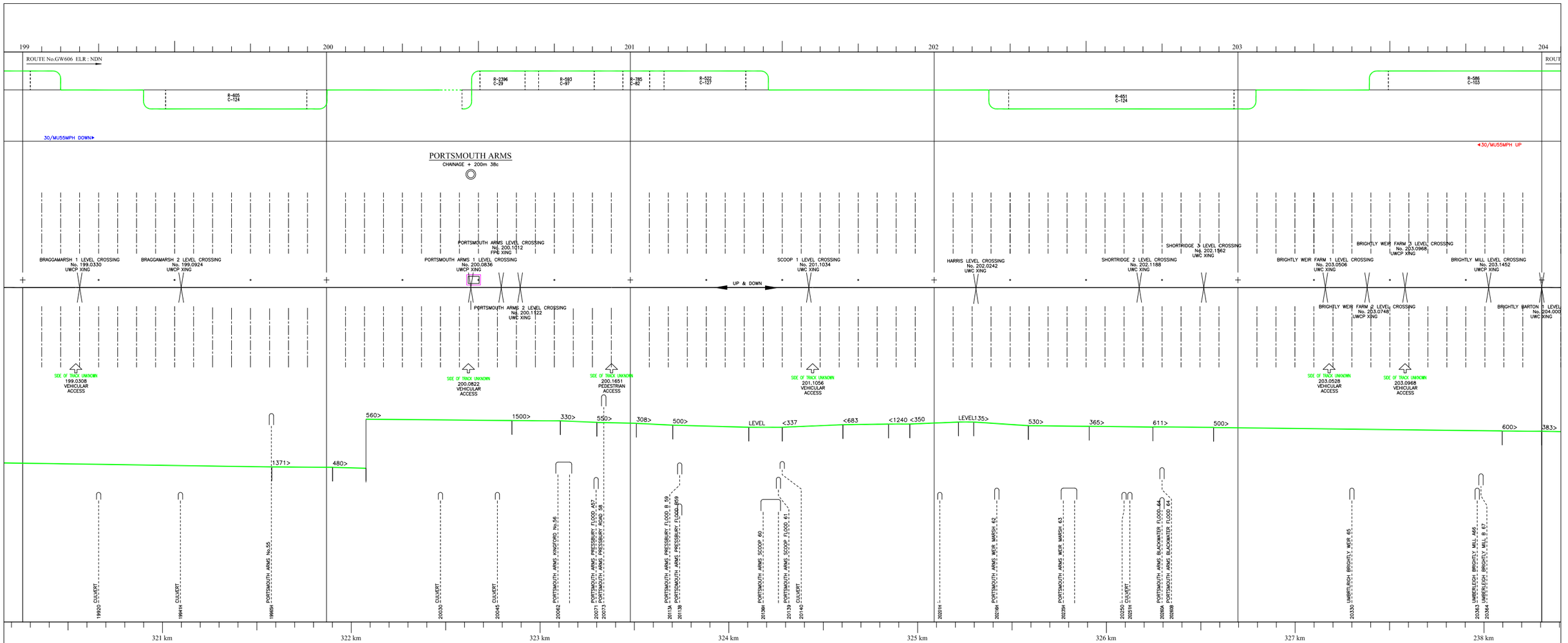
DATE	REVISION	SOURCE	DRN	CHK
23-12-09	LINESPEEDS UPDATED (3666)	NR WEST WON 41	MAC	NB
07-04-10	LINESPEEDS AMENDED (3686)	NR WEST WON 43	MAC	NB
20-05-10	LINESPEEDS AMENDED (3873)	NR WEST WON 06	MAC	NB

CLIENT: Network Rail — Territory: Great Western — Area: West Country

TITLE: **KINGS NYMPTON**

CIVIL ENGINEERING PLAN

PROJECT No.	36822238		
DIAGRAM No.	NDN-04		
ROUTE	GW606	ELR	NDN
MILEAGE	194 MILE TO 199 MILE		
VALIDATED/DRAWN			



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GEOGIS – S&C	✓	
LEVEL CROSSINGS	✓	
ACCESS POINTS	✓	
CURVES	✓	
GRADIENTS	✓	

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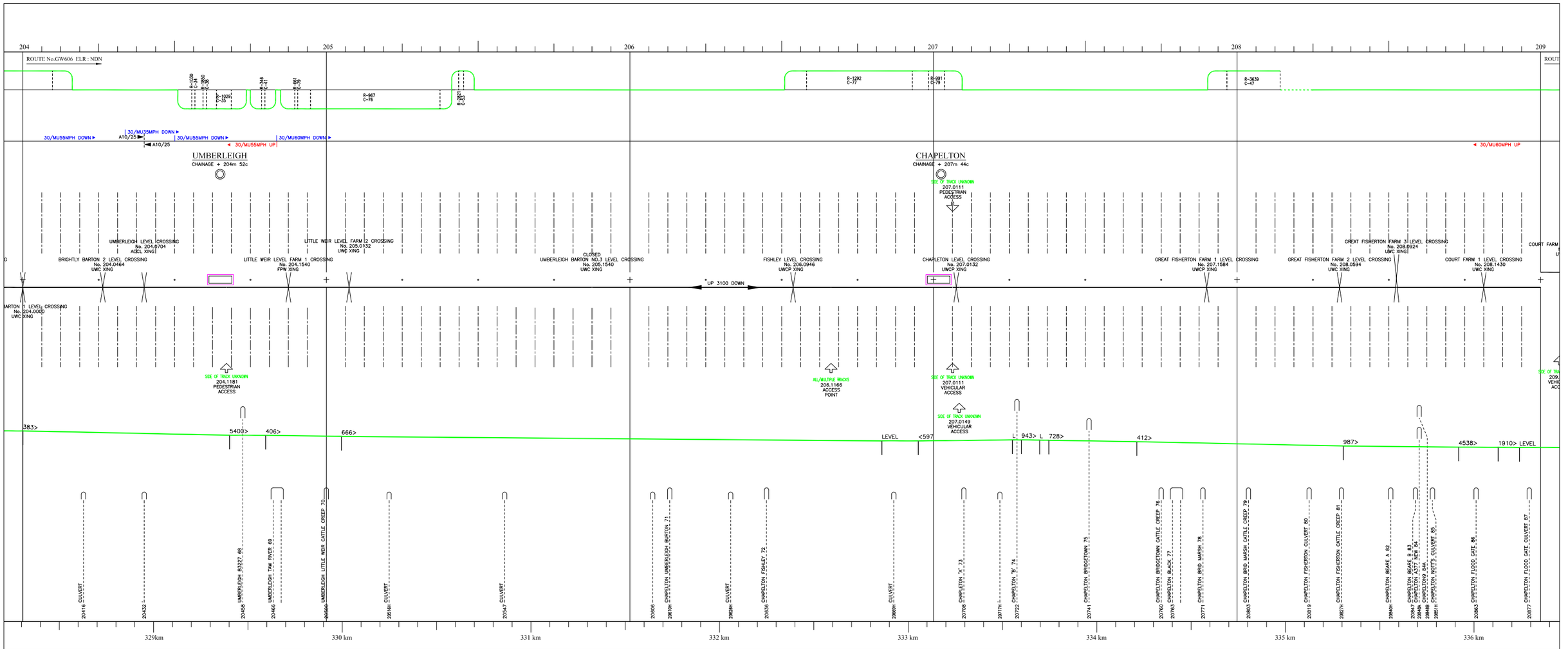
DATE	REVISION	SOURCE	DRN	CHK
23-12-09	LINESPEEDS UPDATED (3666)	NR WEST WON 41	MAC	NB
07-04-10	LINESPEEDS AMENDED (3686)	NR WEST WON 43	MAC	NB
20-05-10	LINESPEEDS AMENDED (3873)	NR WEST WON 06	MAC	NB

CLIENT: Network Rail
Territory: Great Western
Area: West Country

TITLE: **PORTSMOUTH ARMS**

CIVIL ENGINEERING PLAN			
PROJECT No.	36822239		
DIAGRAM No.	NDN-05		
ROUTE	GW606	ELR	NDN
MILEAGE	199 MILE TO 204 MILE		
VALIDATED/DRAWN			



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SIGNAL DIAGRAM	✓	
SECTIONAL APP.	✓	
GEOGIS – STRUCTURES	✓	
GEOGIS – S&C	✓	
LEVEL CROSSINGS	✓	
ACCESS POINTS	✓	
CURVES	✓	
GRADIENTS	✓	

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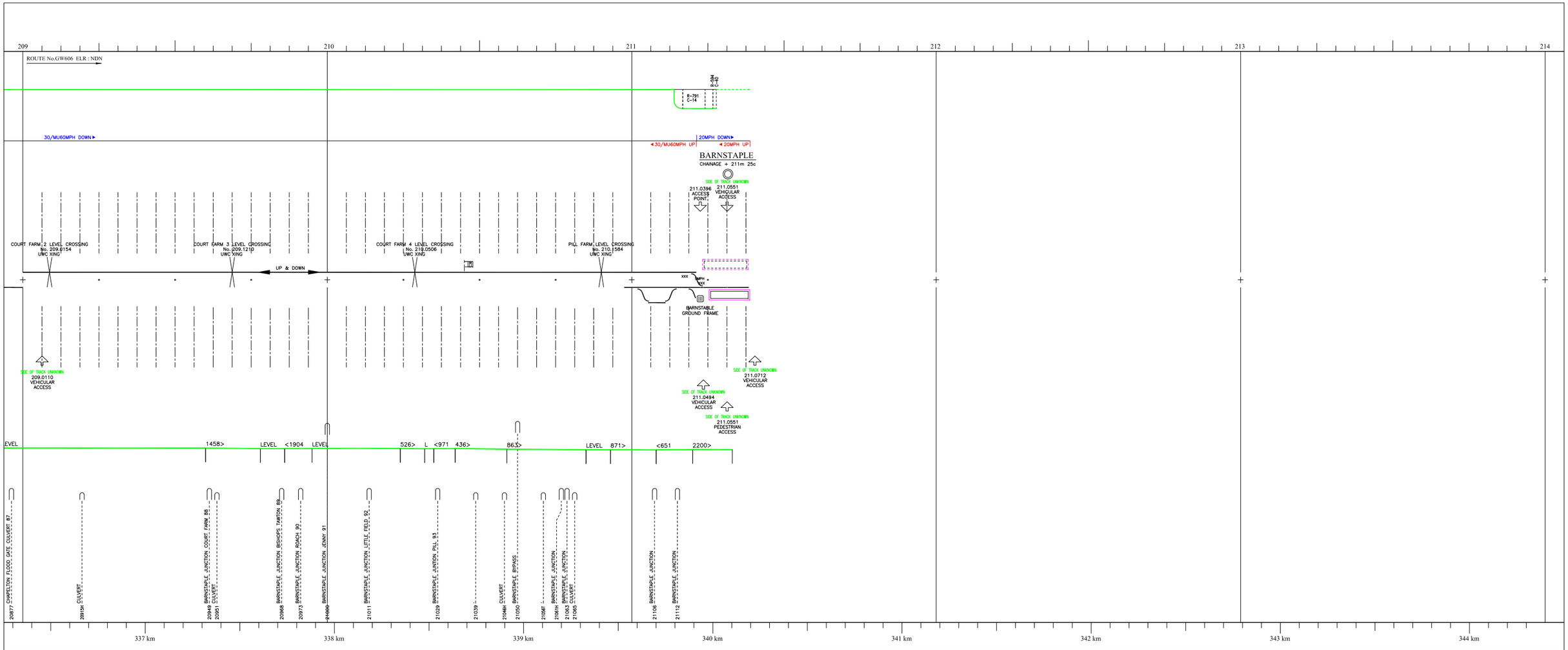
DATE	REVISION	SOURCE	DRN	CHK
23-12-09	LINESPEEDS UPDATED (3666)	NR WEST WON 41	MAC	NB
11-03-10	UMBERLEIGH BARTON No.3 LEVEL CROSSING CLOSED (3787)	NR WEST WON 51	MAC	NB
07-04-10	LINESPEEDS AMENDED (3686)	NR WEST WON 43	MAC	NB
20-05-10	LINESPEEDS AMENDED (3873)	NR WEST WON 06	MAC	NB

CLIENT: Network Rail
Territory: Great Western
Area: West Country

TITLE: **UMBERLEIGH - CHAPELTON**

CIVIL ENGINEERING PLAN

PROJECT No.	36822240		
DIAGRAM No.	NDN-06		
ROUTE	GW606	ELR	NDN
MILEAGE	204 MILE TO 209 MILE		
VALIDATED/DRAWN			



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SECTIONAL APP.	✓	
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GEOGIS – S&C	✓	
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CURVES	✓	
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DATE	REVISION	SOURCE	DRN	CHK
23-12-09	LINESPEEDS UPDATED (3666)	NR WEST WON 41	MAC	NB
07-04-10	LINESPEEDS AMENDED (3686)	NR WEST WON 43	MAC	NB
20-05-10	LINESPEEDS AMENDED (3873)	NR WEST WON 06	MAC	NB

CLIENT Network Rail

Territory Great Western
Area West Country

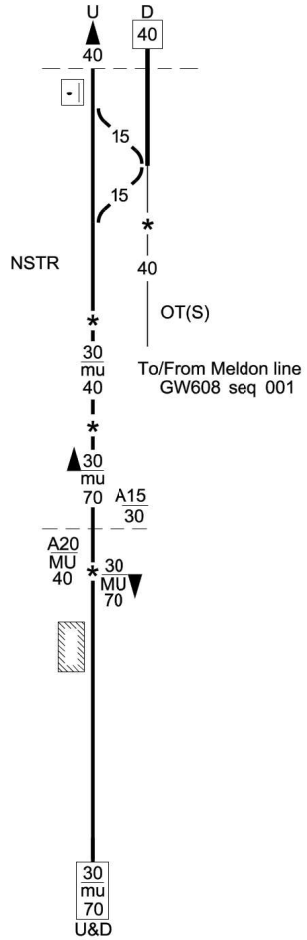
TITLE **BARNSTAPLE**

CIVIL ENGINEERING PLAN			
PROJECT No.	36822241		
DIAGRAM No.	NDN-07		
ROUTE	GW606	ELR	NDN
MILEAGE	209 MILE TO 214 MILE		
VALIDATED/DRAWN			

Appendix B - Sectional Appendix

Western Route Sectional Appendix Module WR2

LOR	Seq.	Line of Route Description	ELR	Route	Last Updated
GW606	002	Cowley Bridge Jn to Barnstaple	DAC NDN	Western	11/03/2023

Location	Mileage M Ch	Running lines & speed restrictions	Signalling & Remarks
Crediton LC (MCB)	179 26		GSM-R NSTR/OT(S) Crediton SB (CN) RA5
Crediton (CN) SB (change of ELR)	179 26		ELR : DAC ELR : NDN
	179 32 *		
	179 36 *		
	179 60 *		
Salmon Pool LC (ABCL)	180 09		See Local instructions
	180 12 *		* Down Trains only
	182 70	T	
YEOFORD	182 72		Platform - 136m (149 yards)
	185 67		

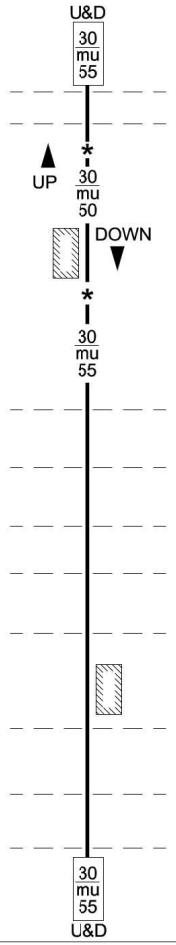
Western Route Sectional Appendix Module WR2

LOR	Seq.	Line of Route Description	ELR	Route	Last Updated
GW606	003	Cowley Bridge Jn to Barnstaple	NDN	Western	16/05/2022

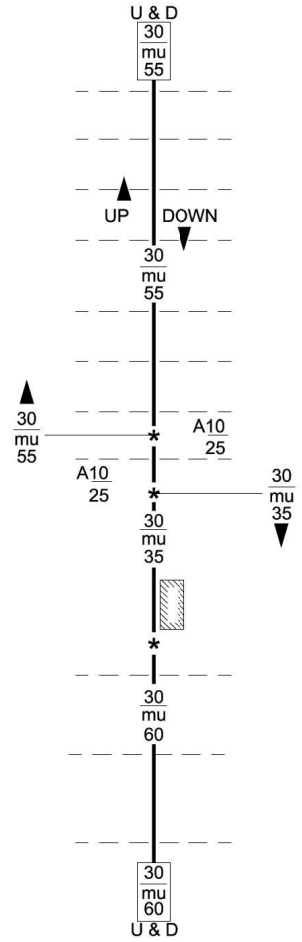
Location	Mileage M	Mileage Ch		Running lines & speed restrictions	Signalling & Remarks
				U&D 30 mu 70	GSM-R NSTR Crediton SB (CN) RA5
COPPLESTONE	185	67	T		Platform - 87m, 95yds
	185	74	*	*	SATWS provided between 185m 69ch and 187m 56ch - see General Instructions
MORCHARD ROAD	187	38			Platform - 90m, 98yds
				30 mu 55	Location of known low rail adhesion Single 189mp to 193mp
LAPFORD	189	65		①	Platform - 81m, 89yds ① Out of use
Chenson No 1 (UWC)	191	24	T		
Chenson No 2 (UWC) (MSL)	191	62	T		
Chenson No 3 (UWC)	192	08	T		
Single line Jn	193	49	*	*	
				UP	Barriers operated by Driver (Down Trains) Barriers operated by Guard (Up Trains)
Eggesford LC (TMO)	193	54		15 15	
EGGESFORD (TEP)	193	57		DOWN	Down platform - 85m, 93yds Up platform - 92m, 101yds
					CL 263m, 861ft (Down) CL 186m, 609ft (Up)
Single line Jn	193	71	*	*	
Chawleigh Week (UWC)	195	29	T		Location of known low rail adhesion Single 193m 57ch to 211m 25ch
				30 mu 55 U&D	

Western Route Sectional Appendix Module WR2

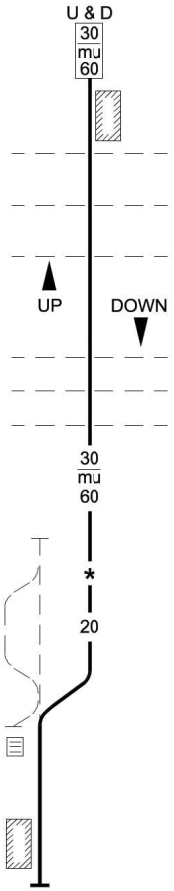
LOR	Seq.	Line of Route Description	ELR	Route	Last Updated
GW606	004	Cowley Bridge Jn to Barnstaple	NDN	Western	11/03/2023

Location	Mileage M Ch	Running lines & speed restrictions	Signalling & Remarks
			GSM-R NSTR Crediton SB (CN) RA5
	195 29		
Collaton Barton Farm 1 LC (UWC) (R/G)	196 02	T	
Collaton Barton Farm 2 LC (UWC) (R/G)	196 15		Location of known low rail adhesion 193m 57ch to 211m 25ch
	197 40 *		
KINGS NYMPTON	197 51		Platform - 90m, 98yds
	197 60 *		
Newnham Barton Farm LC (UWC)	198 01	T	
Higher Doomsford LC (UWC)	198 59	T	
Braggamarsh 1 LC (UWC) (R/G)	199 15	T	
Braggamarsh 2 LC (UWC) (R/G)	199 42	T	
Portsmouth Arms 1 LC (UWC)	200 38	T	
PORTSMOUTH ARMS	200 38	T	Platform - 74m, 81yds
Portsmouth Arms 2 LC (UWC)	200 51	T	
Scoop 1 LC (UWC) (R/G)	201 47	T	
Harris LC (UWC)	202 11	T	

LOR	Seq.	Line of Route Description	ELR	Route	Last Updated
GW606	005	Cowley Bridge Jn to Barnstaple	NDN	Western	08/12/2022

Location	Mileage M	Ch		Running lines & speed restrictions	Signalling & Remarks
					GSM-R NSTR Crediton SB (CN) RA5
Shortridge Farm 2 LC (UWC) (R/G)	202	54	T		Location of known low rail adhesion 193m 57ch to 211m 25ch
Shortridge Farm 3 LC (UWC) (R/G)	202	71	T		
Brightly Weir Farm 1 LC (UWC)	203	23	T		
Brightly Weir Farm 2 LC (UWC)	203	34	T		
Brightly Weir Farm 3 LC (UWC)	203	44	T		
Brightly Mill LC (UWC) (R/G)	203	66	T		
Brightly Barton 1 LC (UWC)	204	00	T		
	204	27	*		
Umberleigh LC (AOCL)	204	32			
	204	40	*		
UMBERLEIGH	204	52	T		Platform - 139m, 152yds
	204	67	*		
Little Weir Farm 2 LC (UWC)	205	06	T		
Umberleigh Barton 2 LC (UWC) (R/G)	205	48			
Fishley LC (UWC)	206	43	T		

LOR	Seq.	Line of Route Description	ELR	Route	Last Updated
GW606	006	Cowley Bridge Jn to Barnstaple	NDN	Western	04/11/2023

Location	Mileage M Ch	Running lines & speed restrictions	Signalling & Remarks
			GSM-R NSTR Crediton SB (CN) RA5
	206 43		
CHAPELTON	207 02	T	Platform - 100m, 109yds
Chapelton Station LC (UWC)	207 06	T	Location of known low rail adhesion 193m 57ch to 211m 25ch
Great Fisherton Farm 1 LC (UWC)	207 72	T	SATWS provided between 207m 6ch and End of Line - see General Instructions
Great Fisherton Farm 2 LC (UWC) (R/G)	208 27	T	
Court Farm 2 (UWC) (R/G)	209 07		
Court Farm 3 (UWC) (R/G)	209 55		
Court Farm 4 (UWC) (R/G)	210 23		
	210 78		
	211 14 *		
Barnstaple GF	211 18		
BARNSTAPLE	211 25	T	Platform - 142m, 155yds
End of line	211 31		

Appendix C - Cost Estimate - Mid-Range Scenario

		Category	Quantity	UoM	Rate	Total		Prelims	OH&P	Design	PM	Other costs	Total (Excluding Risk)	Risk	Total
Route Wide - Track Alignment								25%	8%	10%	10%	5%		60%	
	Trackwork	Track System	14,900.00	m	1,089.05	16,226,845.00		3,245,369.00	1,557,777.12	1,622,684.50	1,622,684.50	811,342.25	25,086,702.37	15,052,021.42	40,138,723.79
	Passing loop	Track System	-	m	1,089.05	-	Excluded (1tph)	-	-	-	-	-	-	-	-
	S&C to loop	Track System	-	nr	420,900.00	-	Excluded (1tph)	-	-	-	-	-	-	-	-
	Signalling	Track System	14,900.00	m	471.50	7,025,350.00		2,810,140.00	786,839.20	702,535.00	702,535.00	351,267.50	12,378,666.70	7,427,200.02	19,805,866.72
	Embankment to passing loop	Track System	-	m	1,500.00	-		-	-	-	-	-	-	-	-
	Cabling	Track System	33,000.00	m	80.00	2,640,000.00		660,000.00	264,000.00	264,000.00	264,000.00	132,000.00	4,224,000.00	2,534,400.00	6,758,400.00
Route Wide - Social								-	-	-	-	-	-	-	-
	Underpass to Tarka trail	Route Infrastructure	4.00	nr	2,000,000.00	8,000,000.00		2,000,000.00	800,000.00	800,000.00	800,000.00	400,000.00	12,800,000.00	7,680,000.00	20,480,000.00
	Fencing to Railway (Quality dictated by Tarka Trail)	Track System	29,800.00	m	180.00	5,364,000.00		1,341,000.00	536,400.00	536,400.00	536,400.00	268,200.00	8,582,400.00	5,149,440.00	13,731,840.00
Route Wide – Environment								-	-	-	-	-	-	-	-
	Excluded							-	-	-	-	-	-	-	-
Barnstaple Station – Rail System and NR connection								-	-	-	-	-	-	-	-
	S&C	Track System	1.00	nr	420,900.00	420,900.00		105,225.00	42,090.00	42,090.00	42,090.00	21,045.00	673,440.00	404,064.00	1,077,504.00
	Trackwork	Track System	-	m	1,089.05	-	Excluded	-	-	-	-	-	-	-	-
	AFA Footbridge	Station Infrastructure	1.00	nr	2,500,000.00	2,500,000.00		625,000.00	250,000.00	250,000.00	250,000.00	125,000.00	4,000,000.00	2,400,000.00	6,400,000.00
	Platform re-surfacing	Station Infrastructure	450.00	m2	150.00	67,500.00		16,875.00	6,750.00	6,750.00	6,750.00	3,375.00	108,000.00	64,800.00	172,800.00
Barnstaple Station -Barnstaple Car Park and bus interchange								-	-	-	-	-	-	-	-
	Bus turning circle	Station Infrastructure	1.00	Sum	50,000.00	50,000.00		12,500.00	5,000.00	5,000.00	5,000.00	2,500.00	80,000.00	48,000.00	128,000.00
	Car park, 100 spaces	Station Infrastructure	100.00	Space	10,000.00	1,000,000.00		250,000.00	100,000.00	100,000.00	100,000.00	50,000.00	1,600,000.00	960,000.00	2,560,000.00
A361 and A3125								-	-	-	-	-	-	-	-
	Replace A361 overbridge	Route Infrastructure	1.00	Sum	10,000,000.00	10,000,000.00		2,500,000.00	1,000,000.00	1,000,000.00	1,000,000.00	500,000.00	16,000,000.00	9,600,000.00	25,600,000.00
	Replace A3125 overbridge	Route Infrastructure	1.00	Sum	3,500,000.00	3,500,000.00		875,000.00	350,000.00	350,000.00	350,000.00	175,000.00	5,600,000.00	3,360,000.00	8,960,000.00
Penhill Farm Cottages								-	-	-	-	-	-	-	-
	Overbridge	Route Infrastructure	1.00	Sum	1,500,000.00	1,500,000.00		375,000.00	150,000.00	150,000.00	150,000.00	75,000.00	2,400,000.00	1,440,000.00	3,840,000.00
Muddlebridge Cottage								-	-	-	-	-	-	-	-
	Not covered	Route Infrastructure						-	-	-	-	-	-	-	-
Fremington Quay								-	-	-	-	-	-	-	-
	Viaduct crossing	Route Infrastructure	1.00	Sum	50,000,000.00	50,000,000.00		12,500,000.00	5,000,000.00	5,000,000.00	5,000,000.00	2,500,000.00	80,000,000.00	48,000,000.00	128,000,000.00
	Cutting	Route Infrastructure	25,000.00	m3	15.00	375,000.00	500m long, both sides	93,750.00	37,500.00	37,500.00	37,500.00	18,750.00	600,000.00	360,000.00	960,000.00
	Disposal	Route Infrastructure	20,000.00	m3	35.00	700,000.00		175,000.00	70,000.00	70,000.00	70,000.00	35,000.00	1,120,000.00	672,000.00	1,792,000.00
	Disposal	Route Infrastructure	5,000.00	m3	200.00	1,000,000.00		250,000.00	100,000.00	100,000.00	100,000.00	50,000.00	1,600,000.00	960,000.00	2,560,000.00
	Retention works	Route Infrastructure	1,000.00	m	25.00	25,000.00	Both sides	6,250.00	2,500.00	2,500.00	2,500.00	1,250.00	40,000.00	24,000.00	64,000.00
Route section - Barnstaple to Instow								-	-	-	-	-	-	-	-
	Embankment (Includes 15no culverts)	Flood Defence Interface	7,500.00	m	2,500.00	18,750,000.00		4,687,500.00	1,875,000.00	1,875,000.00	1,875,000.00	937,500.00	30,000,000.00	18,000,000.00	48,000,000.00
Lower Yelland Farm to Home Farm Marsh								-	-	-	-	-	-	-	-
	User worked level crossing	Route Infrastructure	1.00	nr	250,000.00	250,000.00		62,500.00	25,000.00	25,000.00	25,000.00	12,500.00	400,000.00	240,000.00	640,000.00
The former East Yelland power station site								-	-	-	-	-	-	-	-
	User worked level crossing	Route Infrastructure	1.00	nr	250,000.00	250,000.00		62,500.00	25,000.00	25,000.00	25,000.00	12,500.00	400,000.00	240,000.00	640,000.00
Route section - Instow cutting and Overbridges								-	-	-	-	-	-	-	-
	Works to the cutting	Route Infrastructure	2,000.00	m	50.00	100,000.00	1000m long, both sides	25,000.00	10,000.00	10,000.00	10,000.00	5,000.00	160,000.00	96,000.00	256,000.00
	Active travel	Route Infrastructure	1.00	Sum	300,000.00	300,000.00	Allowance	75,000.00	30,000.00	30,000.00	30,000.00	15,000.00	480,000.00	288,000.00	768,000.00
	Marine Parade Overbridge	Route Infrastructure	1.00	Sum	50,000.00	50,000.00	Allowance	12,500.00	5,000.00	5,000.00	5,000.00	2,500.00	80,000.00	48,000.00	128,000.00
Instow – Legacy Level Crossing								-	-	-	-	-	-	-	-
	Marine Parade Legacy Level Crossing (AFA Footbridge)	Route Infrastructure	1.00	Sum	2,500,000.00	2,500,000.00	Allowance	625,000.00	250,000.00	250,000.00	250,000.00	125,000.00	4,000,000.00	2,400,000.00	6,400,000.00
Instow – Legacy Station								-	-	-	-	-	-	-	-
	New station	Station Infrastructure	-	Sum	5,000,000.00	-	Excluded	-	-	-	-	-	-	-	-
Royal Marines Facilities								-	-	-	-	-	-	-	-
	User worked level crossing	Route Infrastructure	1.00	nr	250,000.00	250,000.00		62,500.00	25,000.00	25,000.00	25,000.00	12,500.00	400,000.00	240,000.00	640,000.00
Torridge Bridge A39								-	-	-	-	-	-	-	-
	Not covered	Route Infrastructure						-	-	-	-	-	-	-	-
Route section - Instow to Bideford – South West Coast Path								-	-	-	-	-	-	-	-
	Retained structure	Flood Defence Interface	1,800.00	m	5,000.00	9,000,000.00		2,250,000.00	900,000.00	900,000.00	900,000.00	450,000.00	14,400,000.00	8,640,000.00	23,040,000.00
	Retained structure	Flood Defence Interface	2,000.00	m	5,000.00	10,000,000.00		2,500,000.00	1,000,000.00	1,000,000.00	1,000,000.00	500,000.00	16,000,000.00	9,600,000.00	25,600,000.00
	Formation and surfacing for a re-laid Tarka Trail	Route Infrastructure	7,600.00	m2	55.00	418,000.00		104,500.00	41,800.00	41,800.00	41,800.00	20,900.00	668,800.00	401,280.00	1,070,080.00
Route Section – Bideford Cutting and Embankment								-	-	-	-	-	-	-	-
	Active travel	Route Infrastructure	1.00	Sum	200,000.00	200,000.00		50,000.00	20,000.00	20,000.00	20,000.00	10,000.00	320,000.00	192,000.00	512,000.00
	Cycle priority junction	Route Infrastructure	1.00	Sum	25,000.00	25,000.00		6,250.00	2,500.00	2,500.00	2,500.00	1,250.00	40,000.00	24,000.00	64,000.00
Bideford Station								-	-	-	-	-	-	-	-
	New station	Station Infrastructure	1.00	Sum	5,000,000.00	5,000,000.00		1,250,000.00	500,000.00	500,000.00	500,000.00	250,000.00	8,000,000.00	4,800,000.00	12,800,000.00
	10m single track underbridge	Station Infrastructure	1.00	Sum	2,000,000.00	2,000,000.00		500,000.00	200,000.00	200,000.00	200,000.00	100,000.00	3,200,000.00	1,920,000.00	5,120,000.00
	10m single track underbridge	Station Infrastructure	1.00	Sum	2,000,000.00	2,000,000.00		500,000.00	200,000.00	200,000.00	200,000.00	100,000.00	3,200,000.00	1,920,000.00	5,120,000.00
	Cycle shelter	Station Infrastructure	1.00	Sum	50,000.00	50,000.00		12,500.00	5,000.00	5,000.00	5,000.00	2,500.00	80,000.00	48,000.00	128,000.00
Additional Items													-	-	-
	Possession for Rail systems work	Track System	1.00	Sum	2,000,000.00	2,000,000.00		500,000.00	200,000.00	200,000.00	200,000.00	100,000.00	3,200,000.00	1,920,000.00	5,120,000.00
	Possession for Barnstaple station	Track System	1.00	Sum	500,000.00	500,000.00		125,000.00	50,000.00	50,000.00	50,000.00	25,000.00	800,000.00	480,000.00	1,280,000.00
	Temporary diversions of Tarka Trail	Route Infrastructure	1.00	Sum	1,000,000.00	1,000,000.00		-	-	-	-	-	1,000,000.00	600,000.00	1,600,000.00