

Appendix B8: Transport Technical Note

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**Haweswater Aqueduct Resilience Programme - Proposed Marl Hill
Section**

Supplementary Environmental Information

Appendix B8: Transport Technical Note

January 2022



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1. Introduction

1.1 Preamble

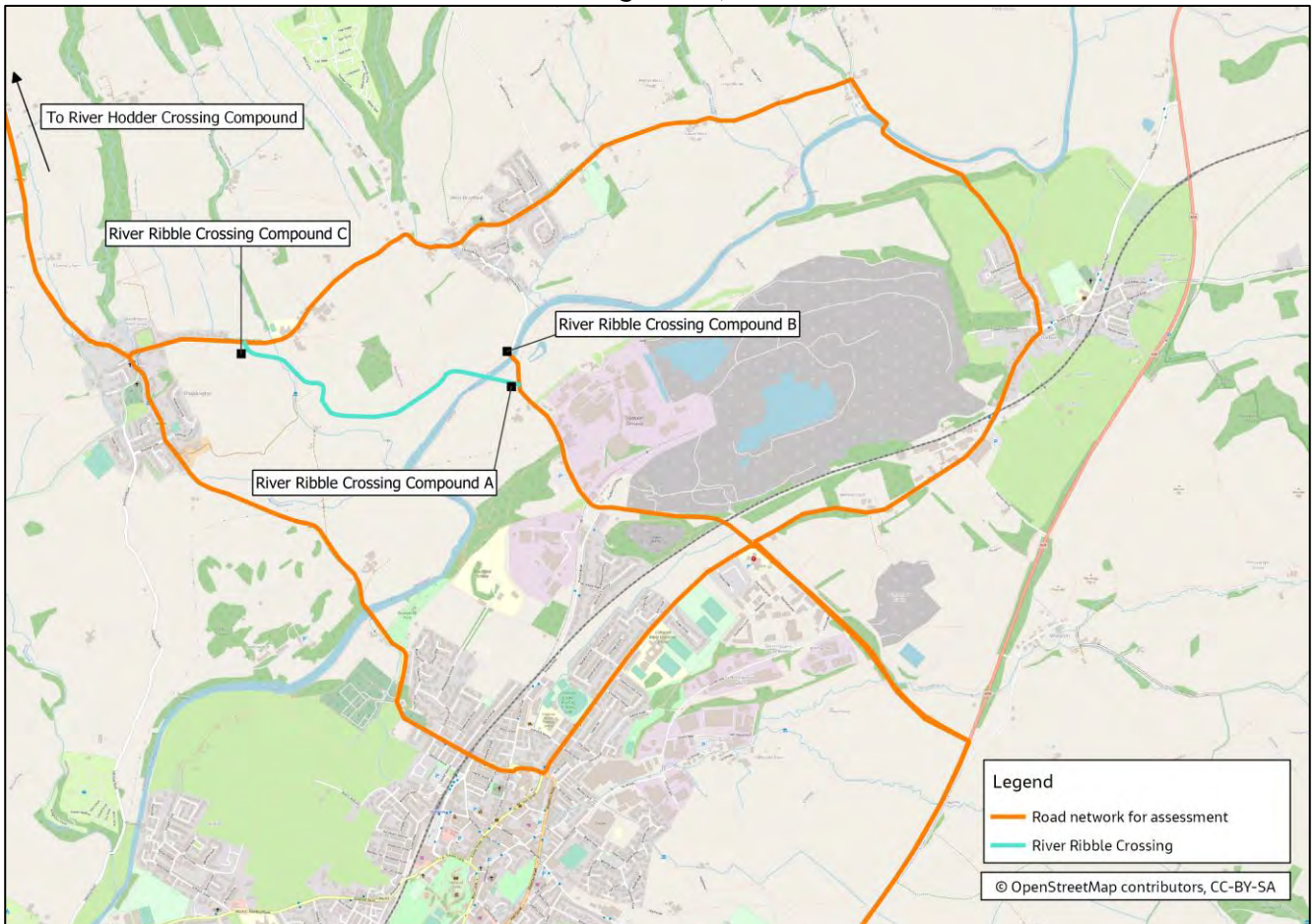
- 1) Two Construction Traffic Management Plans were submitted in support of the June 2021 planning application, covering two transport route options serving the main construction compounds on the Proposed Marl Hill Section. The first Construction Traffic Management Plan (CTMP) related to Route Option 1 (use of existing highways) and the second to Route Option 2 (the Ribble Crossing). It has since been confirmed in the SEI Report that Route Option 2, the Ribble Crossing, has been adopted in favour over Route Option 1, albeit with a need to use local roads for approximately nine months to enable construction of the Ribble Crossing and Hodder Crossing.¹
- 2) It is also noted that Transport Route 2 would be required for access to the proposed Newton-in-Bowland Compound associated with the Proposed Bowland Section (planning application 3/2021/0660). Although the Proposed Bowland Section does not form part of the scope of this report, it is referred to since there would be construction traffic associated with the Proposed Marl Hill Section and the proposed Newton-in-Bowland Compound using local roads concurrently.
- 3) The SEI Report confirms that to enable simultaneous and timely construction of the Ribble Crossing and Hodder Crossing, Transport Route 1 would need to be temporarily used for access to the Ribble Crossing and Hodder Crossing construction areas for an initial nine month period. All construction traffic would be routed along the Ribble Crossing as soon as it is constructed.
- 4) Given the confirmation of the preferred Route Option for the Proposed Marl Hill (and Bowland) Section, and updates to the management and flow of construction traffic during the initial nine month period, United Utilities has prepared an updated CTMP (the January 2022 CTMP). The January 2022 CTMP forms part of the January 2022 Supplementary Environmental Information submission and supersedes the CTMPs submitted in support of the June 2021 planning application.
- 5) Based on the above, Jacobs has undertaken a high-level assessment of the expected traffic generated during construction of the Ribble Crossing and Hodder Crossing over the initial nine month period. This is because it is a revised transport proposal which relates to traffic movements associated only with construction of the Ribble Crossing and Hodder Crossing, before enabling works and construction works begin at the main construction compounds. The June 2021 Environmental Statement described Route Option 1 or Route Option 2 being used by a different combination and number of construction vehicles, serving not only construction of the Ribble Crossing and the Hodder Crossing but also enabling works etc. at the main Braddup and Bonstone compounds.
- 6) The high level assessment is therefore required to examine the difference between the proposed construction traffic movements assessed in Volumes 2 and 3 of the June 2021 Environmental Statement, against the revised traffic movements arising from the amended construction approach described in Section 3.2.2 of the SEI Report.
- 7) This technical note explains the number of vehicles required to construct both the Ribble Crossing and the Hodder Crossing concurrently in the first nine months of the construction programme. Since this particular element of construction is new to the Proposed Marl Hill Section and therefore was not described in the June 2021 Planning Application, this technical note also examines how previously-reported traffic numbers might change during the initial stage of the construction programme.

¹ The proposed Hodder Crossing forms part of the Proposed Bowland Section, which falls under a separate HARP planning application. However, construction traffic serving the two Proposed Marl Hill Section compounds would share the same local roads in the Clitheroe and Waddington areas as construction vehicles accessing the Newton-in-Bowland Compound via the Hodder Crossing (part of the Proposed Bowland Section). The Proposed Ribble Crossing, once open, would be used concurrently by Marl Hill construction vehicles and also Newton-in-Bowland compound vehicles.

1.2 Ribble Crossing and Hodder Crossing Assessment Area (Months 1-9 of the Construction Programme)

- 8) The assessment area of the Ribble Crossing and Hodder Crossing is defined by the three routes discussed in Section 2.1. Illustration 1 highlights the immediate environs and affected local roads of the assessment area; the area is defined by Newton-in-Bowland and Waddington to the north-west, Clitheroe to the south-west, West Bradford to the north and Chatburn to the east.

Illustration 1: Ribble Crossing and Hodder Crossing Assessment Area (Months 1-9 of the Construction Programme)



2. Ribble and Hodder Crossing Construction Traffic

2.1 Proposed Traffic Routes Months 1-9 of the Construction Programme

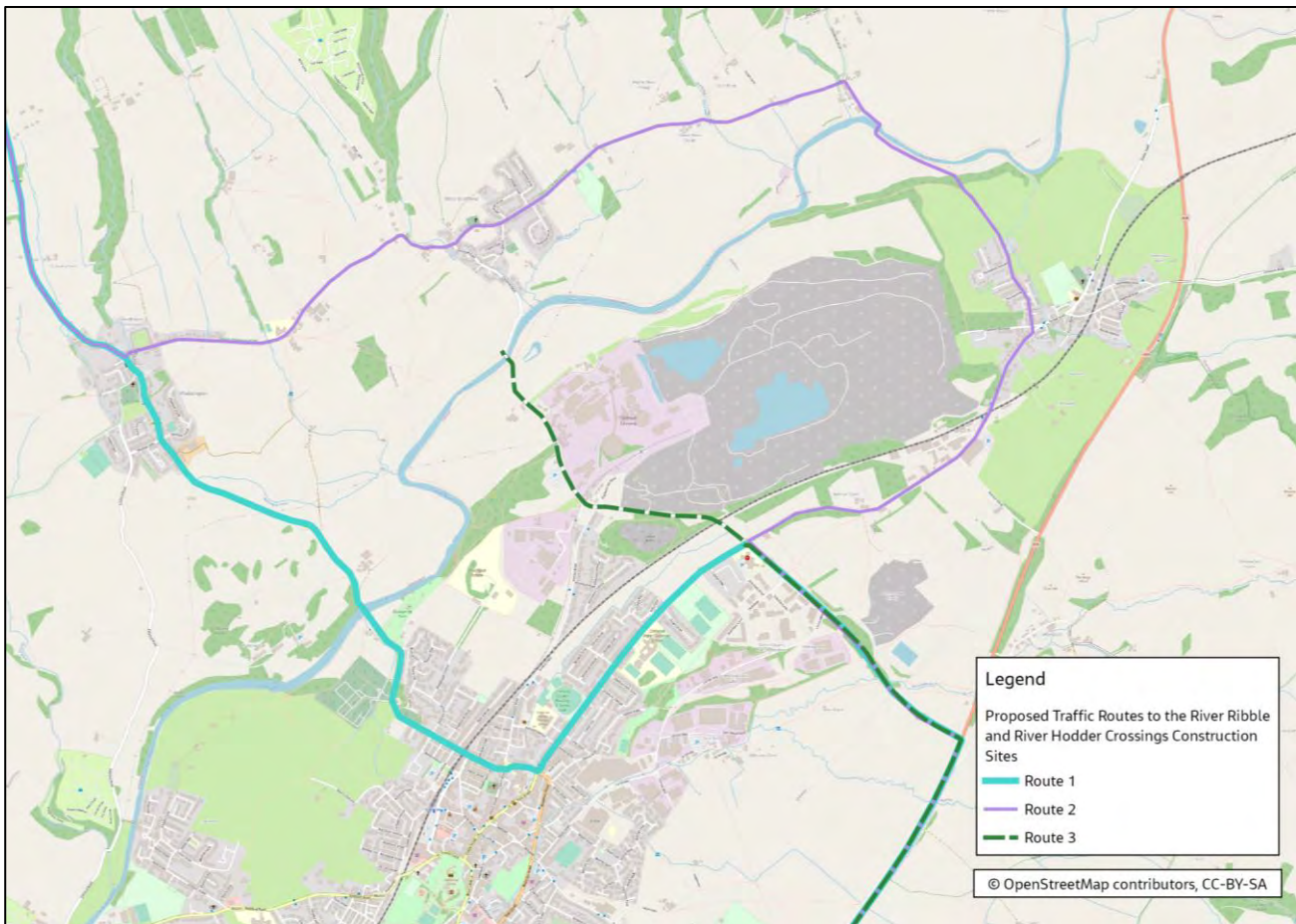
- 9) The selection of locations, drive strategy and route assumptions for HGVs has been developed to reduce the impact of the Ribble Crossing and Hodder Crossing on the local road network after consultation with Lancashire County Council. Further detail of the routing strategy is provided in the June 2021 CTMP RVBC-MH-APP-007_01.
- 10) The local and strategic network comprises a mixture of rural and urban roads. There are three proposed traffic routes from the M6 motorway network which would support concurrent construction of the Ribble and Hodder Crossings, depending on the type of construction vehicles:
- **Route 1** – General construction traffic (HGVs under 3.5 m in height and light vehicles) to the Hodder Crossing and Ribble Compound 'C' via the M6 Junction 31, along the A59, then Pimlico Link Road, Chatburn Road and through Clitheroe along the B6478 Well Terrace / Waddington Road / Clitheroe Road and West Bradford Road. For the Hodder Crossing, vehicles would continue along the B6478 Slaidburn Road from the junction with West Bradford Road. This route is approximately 38 km in length to the Hodder Crossing from the M6 junction and consists of A-roads and B-roads
 - **Route 2** – Abnormal loads and HGVs over 3.5 m in height to the Hodder Crossing and Ribble Compound 'C' via the M6 Junction 31, along the A59, then Pimlico Link Road, Clitheroe Road, Crow Trees Brow, Ribble Lane, Grindleton Road and West Bradford Road. For the Hodder Crossing, vehicles would continue along the B6478 Slaidburn Road from the junction with West Bradford Road. This route is approximately 41 km in length to the Hodder Crossing from the M6 junction and consists of A-roads and B-roads
 - **Route 3** – Carrying all construction vehicles travelling to and from the Ribble Compounds A and B via the M6, Junction 31, along the A59, then Pimlico Link Road and West Bradford Road. This route is approximately 28 km in length to the Ribble Crossing from the M6 junction and consists of A-roads and B-roads.
- 11) The proposed traffic routes for the Ribble and Hodder Crossings are further detailed in Table 1 and illustrated for the assessment area in Illustration 2.

Table 1: Existing Highway Network and Proposed Traffic Routes for the Ribble Crossing and Hodder Crossing Construction

Proposed Compounds	Delivery Routes
<p>Hodder Crossing Compound and Ribble Compound C</p> <p>Route 1 for general construction traffic (HGVs under 3.5 m in height and light vehicles)</p>	<p>Inbound – Hodder Crossing Compound M6 from north (40 %) and south (80 %) via Junction 31, A59, Pimlico Link Road, Chatburn Road, then the B6478</p> <p>Outbound – Hodder Crossing Compound B6478, Chatburn Road, Pimlico Link Road, A59 then M6 to north (40 %) and south (80 %) via Junction 31</p> <p>Inbound – Ribble Compound C M6 from north (40 %) and south (80 %) via Junction 31, A59, Pimlico Link Road, Chatburn Road, B6478 then West Bradford Road</p> <p>Outbound – Ribble Compound C West Bradford Road, B6478, Chatburn Road, Pimlico Link Road, A59 then M6 to north (40 %) and south (80 %) via Junction 31</p>

Proposed Compounds	Delivery Routes
<p>Hodder Crossing Compound and Ribble Compound C</p> <p>Route 2 for abnormal loads and HGVs over 3.5 m in height</p>	<p>Inbound – Hodder Crossing Compound M6 from north (40 %) and south (80 %) via Junction 31, A59, Pimlico Link Road, Clitheroe Road, Crow Trees Brow, Ribble Lane, Grindleton Road, then West Bradford Road and the B6478</p> <p>Outbound – Hodder Crossing Compound B6748, West Bradford Road, Grindleton Road, Ribble Lane, Crow Trees Brow, Clitheroe Road, Pimlico Link Road, A59 then M6 to north (40 %) and south (80 %) via Junction 31</p> <p>Inbound – Ribble Compound C M6 from north (40 %) and south (80 %) via Junction 31, A59, Pimlico Link Road, Clitheroe Road, Crow Trees Brow, Ribble Lane, Grindleton Road, then West Bradford Road</p> <p>Outbound – Ribble Compound C West Bradford Road, Grindleton Road, Ribble Lane, Crow Trees Brow, Clitheroe Road, Pimlico Link Road, A59 then M6 to north (40 %) and south (80 %) via Junction 31</p>
<p>Ribble Crossing Compounds A and B</p> <p>Route 3 for all vehicles</p>	<p>Inbound M6 from north (40 %) and south (80 %) via Junction 31, A59, Pimlico Link Road, then West Bradford Road</p> <p>Outbound West Bradford Road, Pimlico Link Road, A59 then M6 to north (40 %) and south (80 %) via Junction 31</p>

Illustration 2: Ribble Crossing and Hodder Crossing Proposed Traffic Routes (Months 1-9 of the Construction Programme)



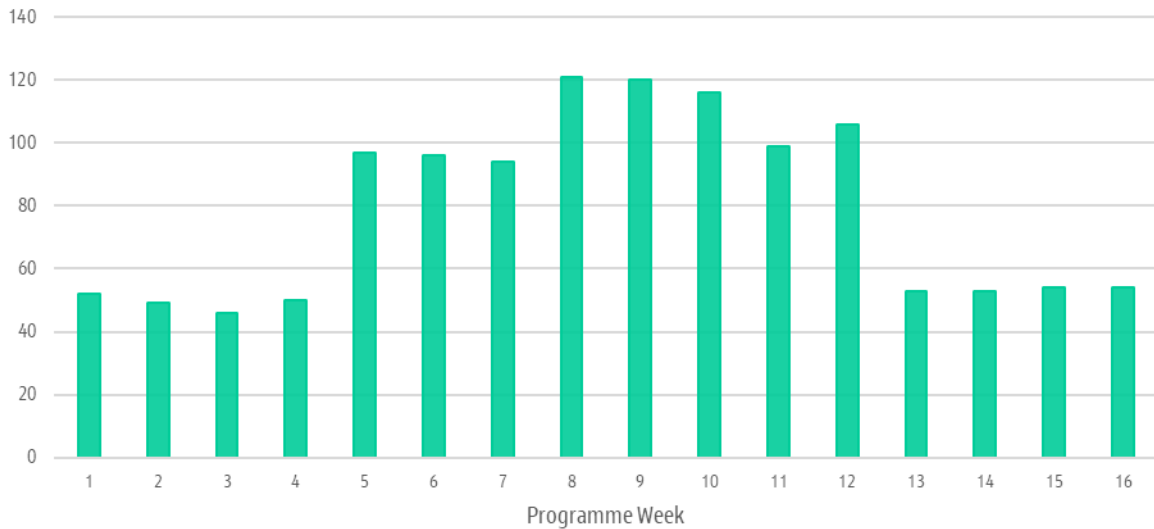
2.2 Traffic Generation Months 1-9

- 12) Traffic generation figures for the short (nine months) period of programme under consideration are derived from estimates developed by United Utilities, and are based on a detailed understanding of traffic data presented in the June 2021 Environmental Statement.
- 13) For the purpose of quantifying the effects of construction traffic and the number of HGVs per day during the construction period, a theoretical vehicle movements spreadsheet produced by United Utilities was used. These movements have been calculated based on construction rates applied to materials and spoil figures.
- 14) The application of construction rates against the high-level programme enabled an assessment of daily volumes (as HGV loads) associated with spoil excavated and removed, and material deliveries. The construction rates have also been used to identify where activity would be taking place on a typical day applying the assumptions described in the submitted June 2021 Transport Assessment (document reference: RVBC-MH-TA-016 in the June 2021 Planning Application).
- 15) For the purpose of this report, the assessment is focused on daily traffic movements expected across Route 1, Route 2 and Route 3 as shown in Illustration 2 above.
- 16) Anticipated vehicle movements along the proposed construction access routes vary significantly depending upon construction phase and location on the road network. The period of assessment covers the full construction period for the Ribble Crossing and Hodder Crossing which has been identified as 9 months. To allow for a conservative assessment of likely peak movements during the 9 month period, the theoretical vehicle movements used to inform the assessment assumed a 16-week construction period.

Route 1

- 17) Illustration 3 shows the range of anticipated daily two-way movements (i.e. total flows in both directions) generated for construction activities taking place at the Ribble Crossing and Hodder Crossing Compounds along Proposed Route 1.

Illustration 3: Range of anticipated daily two-way movements along Proposed Route 1

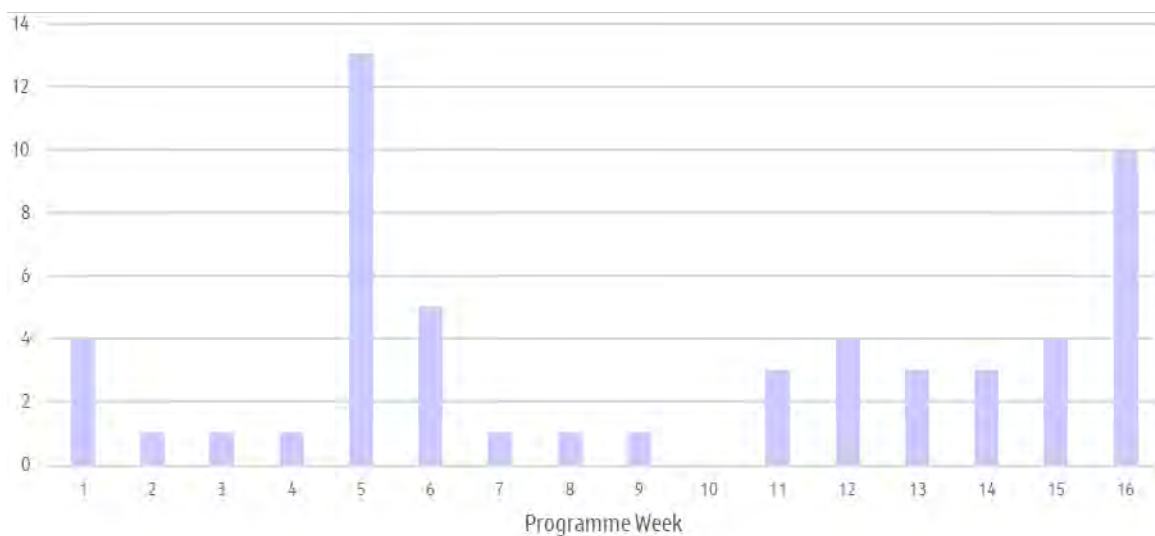


- 18) From Illustration 3 above, it can be seen that during week eight of the construction programme, it is anticipated that construction activity would achieve its peak period regarding workforce, plant and vehicle requirements with the highest vehicular two way flow of 122 vehicles per day.

Route 2

- 19) Illustration 4 below shows the range of the anticipated daily two-way movements generated for construction activities taking place at the Ribble Crossing and Hodder Crossing Compounds along Proposed Route 2. It can be seen that during week five of the construction programme, it is anticipated that construction activity would achieve its peak period regarding workforce, plant and vehicle requirements with the highest vehicular two-way flow of 13 vehicles per day.

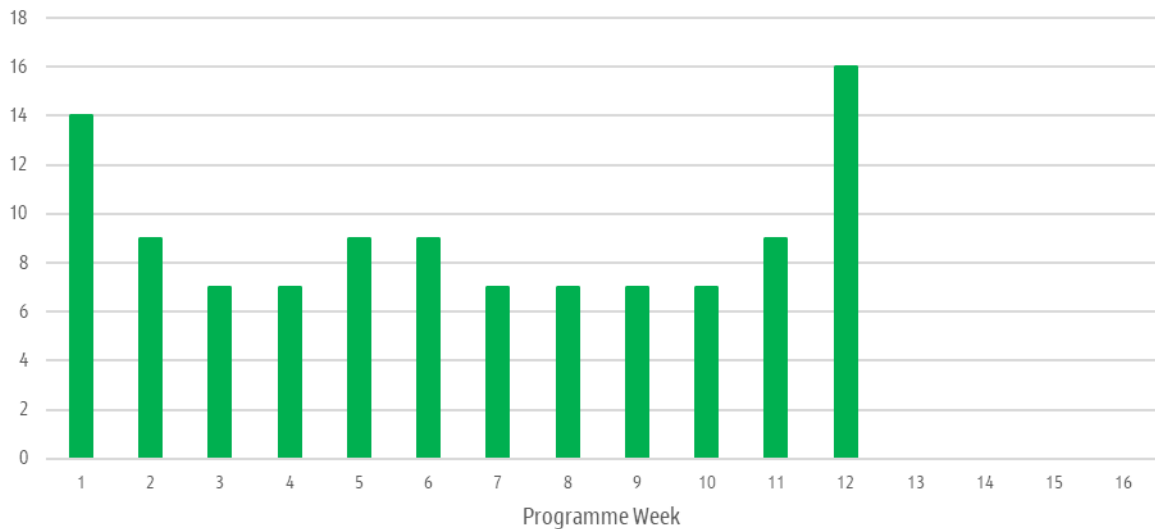
Illustration 4: Range of anticipated daily two-way movements along Proposed Route 2



Route 3

20) Illustration 5 below shows the range of the anticipated daily two-way movements generated for construction activities taking place at the Ribble Crossing and Hodder Crossing Compounds along Proposed Route 3. It can be seen that during week 12 of the construction programme, it is anticipated that construction activity would achieve its peak period regarding workforce, plant and vehicle requirements with the highest vehicular two-way flow of 16 vehicles per day. Illustration 5 also demonstrates that the construction activities using this route would occur only during weeks 1 – 12 of the 16-week programme.

Illustration 5: Range of anticipated daily two-way movements along Proposed Route 3



3. HARP Main Construction Works Traffic

21) As described in Section 1.1 above, the June 2021 Environmental Statement introduced two transport route options, applicable over the full duration of the construction programme, to provide access to the Bonstone and Braddup compounds. This section of the report summarises the scope of construction traffic access routes and vehicle numbers as presented in the June 2021 Environmental Statement. This enables a comparison of the estimated traffic levels in months 1-9 of the construction programme, as described in Section 2, against the main works traffic levels that are anticipated from month 10 of the programme going forward.

3.1 Transport Route Option 1 Public Highways – June 2021 CTMP²

22) The selection of locations, drive strategy and route assumptions for HGVs was developed in consultation with Lancashire County Council to reduce the impact of the proposed developments on the local road network. Additionally, the potential for road closures and local diversions necessitated by such activity in the short-term were discussed and further details of the routing strategy, road closures and diversions are provided in the June 2021 CTMP.

23) For the Bonstone Compound three routes were proposed:

- Route 1 – General construction traffic (HGVs under 3.5 m in height and light vehicles) via the M6 Junction 31, along the A59, then Pimlico Link Road, Chatburn Road and through Clitheroe along the B6478 Well Terrace / Waddington Road / Clitheroe Road / Slaidburn Road. This route is approximately 37 km in length from the M6 junction and consists of A-roads and B-roads
- Route 2 – Abnormal loads and HGVs over 3.5 m in height via the M6 Junction 31, along the A59, then Pimlico Link Road, Clitheroe Road, Crow Trees Brow, Ribble Lane, Grindleton Road, West Bradford Road along the B6478 Slaidburn Road. This route is approximately 40 km in length from the M6 junction and consists of A-roads and B-roads
- Surplus material transfer to Waddington Fell Quarry – B6478 Slaidburn Road (approximately 3 km from the compound to the quarry).

24) For the Braddup Compound three routes were proposed:

- Route 1 – General construction traffic (HGVs under 3.5 m in height and light vehicles) via the M6 Junction 31, along the A59, then Pimlico Link Road, Chatburn Road and through Clitheroe along the B6478 Well Terrace / Waddington Road / Clitheroe Road / Slaidburn Road. This route is approximately 32 km in length from the M6 junction and consists of A-roads and B-roads
- Route 2 – Abnormal loads and HGVs over 3.5 m in height via the M6 Junction 31, along the A59, then Pimlico Link Road, Clitheroe Road, Crow Trees Brow, Ribble Lane, Grindleton Road, West Bradford Road along the B6478 Slaidburn Road. This route is approximately 35 km in length from the M6 junction and consists of A-roads and B-roads
- Surplus material transfer to Waddington Fell Quarry – B6478 Slaidburn Road (approximately 3 km from the compound to the quarry).

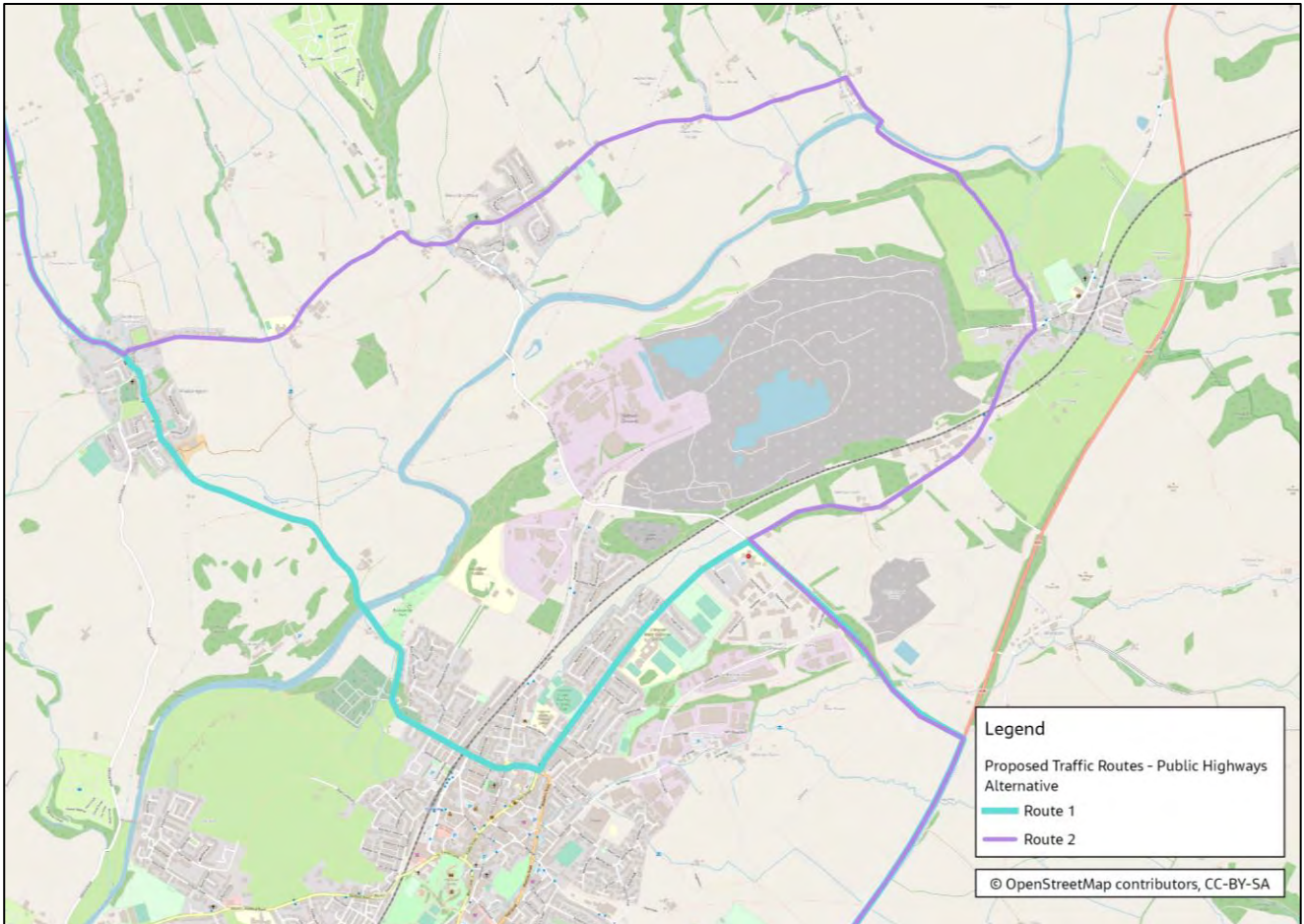
25) The proposed traffic routes for Bonstone and Braddup Compounds using existing public highways are further detailed in Table 2 and shown in Illustration 6.

² The proposed routes for the Newton-in-Bowland Compound as presented in the June 2021 Environmental Statement and CTMP were almost identical to the Proposed Marl Hill Section, with the exception being that construction traffic would continue north along the Slaidburn Road beyond the Marl Hill Bonstone Compound to enter the Newton-in-Bowland Compound via the Hodder Crossing.

Table 2: Traffic Routes for the Main Works Traffic via Existing Public Highways (June 2021 CTMP)

Proposed Compounds	Delivery Routes
<p>Bonstone Compound</p> <p>Route 1 for general construction traffic (HGVs under 3.5 m in height and light vehicles)</p>	<p>Inbound</p> <p>M6 from north (40 %) and south (80 %) via Junction 31, A59, Pimlico Link Road, Chatburn Road, then the B6478</p> <p>Outbound</p> <p>B6478, Chatburn Road, Pimlico Link Road, A59 then M6 to north (40 %) and south (80 %) via Junction 31</p>
<p>Bonstone Compound</p> <p>Route 2 for abnormal loads and HGVs over 3.5 m in height</p>	<p>Inbound</p> <p>M6 from north (40 %) and south (80 %) via Junction 31, A59, Pimlico Link Road, Clitheroe Road, Crow Trees Brow, Ribble Lane, Grindleton Road, West Bradford Road, then the B6478</p> <p>Outbound</p> <p>B6478, West Bradford Road, Grindleton Road, Ribble Lane, Crow Trees Brow, Clitheroe Road, Pimlico Link Road, A59 then M6 to north (40 %) and south (80 %) via Junction 31</p>
<p>Bonstone Compound</p> <p>Surplus material transfer to Waddington Fell Quarry</p>	<p>Inbound</p> <p>B6478 Slaidburn Road</p> <p>Outbound</p> <p>B6478 Slaidburn Road</p>
<p>Braddup Compound</p> <p>Route 1 for general construction traffic (HGVs under 3.5 m in height and light vehicles)</p>	<p>Inbound</p> <p>M6 from north (40 %) and south (80 %) via Junction 31, A59, Pimlico Link Road, Chatburn Road, then the B6478</p> <p>Outbound</p> <p>B6478, Chatburn Road, Pimlico Link Road, A59 then M6 to north (40 %) and south (80 %) via Junction 31</p>
<p>Braddup Compound</p> <p>Route 2 for abnormal loads and HGVs over 3.5 m in height</p>	<p>Inbound</p> <p>M6 from north (40 %) and south (80 %) via Junction 31, A59, Pimlico Link Road, Clitheroe Road, Crow Trees Brow, Ribble Lane, Grindleton Road, West Bradford Road, then the B6478</p> <p>Outbound</p> <p>B6478, West Bradford Road, Grindleton Road, Ribble Lane, Crow Trees Brow, Clitheroe Road, Pimlico Link Road, A59 then M6 to north (40 %) and south (80 %) via Junction 31</p>
<p>Braddup Compound</p> <p>Surplus material transfer to Waddington Fell Quarry</p>	<p>Inbound</p> <p>B6478 Slaidburn Road</p> <p>Outbound</p> <p>B6478 Slaidburn Road</p>

Illustration 6: Transport Route Option 1 – Public Highways³



3.2 Transport Route Option 2 Ribble Crossing – June 2021 CTMP

- 26) The selection of locations, drive strategy and route assumptions for HGVs were developed to reduce the impact of the Proposed Marl Hill Section on the local road network following consultation with Lancashire County Council. Additionally, the potential for road closures and local diversions necessitated by such activity in the short-term was discussed and further detail of the routeing strategy, road closures and diversions was provided in the June 2021 CTMP in (LCC-BO-APP-007, RVBC-BO-APP-007_01 and RVBC-BO-APP-007_02 within the Planning Documents). Traffic Management Proposals have been updated in the January 2022 CTMP. The January 2022 CTMP supersedes the CTMPs submitted in support of the June 2021 Planning Application.
- 27) The local and strategic network is a mixture of rural and urban and is characterised by three access routes from the M6 motorway network, with three additional surplus material transfer access route for each compound to the Waddington Fell quarry. For the Newton-in-Bowland Compound two routes were proposed:
- Route for all construction traffic (except surplus material transfer to Waddington Fell Quarry) via the M6 Junction 31, along the A59, then Pimlico Link Road and West Bradford Road to continue via dedicated haulage route / Ribble Crossing. To then continue along West Bradford Road and along the B6478 Slaidburn Road / Hallgate Hill then via the Hodder Crossing to the south of Newton-in-Bowland. This route is approximately 39 km and consists of A-roads and B-roads

³ Transport Route Option 1, as described in the June 2021 CTMP and Environmental Statement, comprises two public highway routes, 1 and 2.

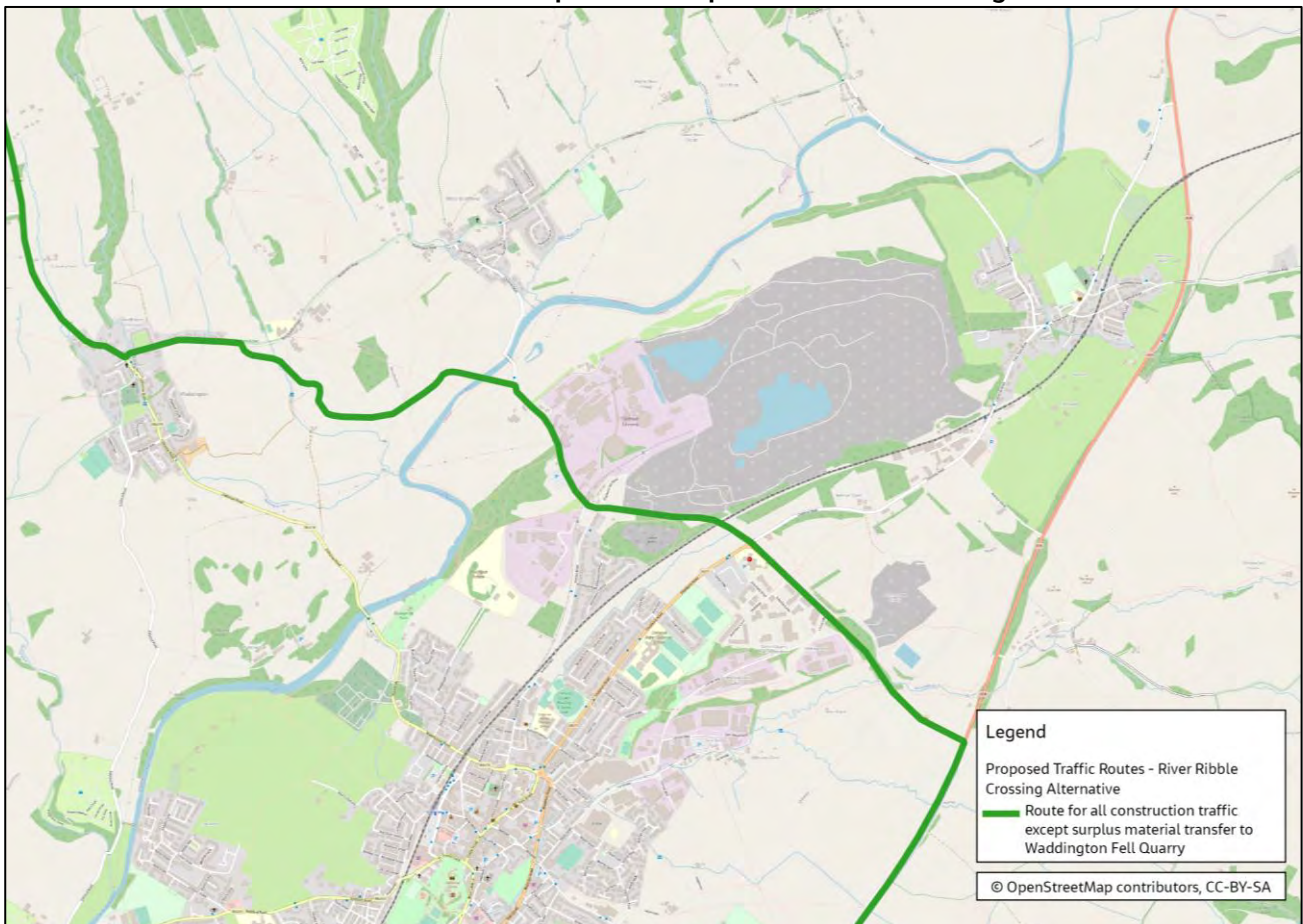
- Surplus material transfer to Waddington Fell Quarry – via the Hodder Crossing to the south of Newton-in-Bowland, then along the B6478 Hallgate Hill / Slaidburn Road (approximately 4 km from the compound to the quarry).
- 28) For the Bonstone Compound two routes have been proposed:
- Route for all construction traffic (except surplus material transfer to Waddington Fell Quarry) via the M6 Junction 31, along the A59, then Pimlico Link Road and West Bradford Road to continue via dedicated haulage route / Ribble Crossing. To then continue along West Bradford Road and along the B6478 Slaidburn Road. This route is approximately 36 km and consists of A-roads and B-roads
 - Surplus material transfer to Waddington Fell Quarry - B6478 Slaidburn Road (approximately 3 km from the compound to the quarry).
- 29) For the Braddup Compound two routes have been proposed:
- Route for all construction traffic (except surplus material transfer to Waddington Fell Quarry) via the M6 Junction 31, along the A59, then Pimlico Link Road and West Bradford Road to continue via dedicated haulage route / Ribble Crossing. To then continue along West Bradford Road and along the B6478 Slaidburn Road. This route is approximately 31 km and consists of A-roads and B-roads
 - Surplus material transfer to Waddington Fell Quarry - B6478 Slaidburn Road (approximately 3 km from the compound to the quarry).
- 30) The proposed traffic routes for Newton-in-Bowland, Bonstone and Braddup Compounds are further detailed in Table 3 and shown in Illustration 7.

Table 3: Proposed Traffic Routes for the Main Works Traffic via the Ribble Crossing

Proposed Compounds	Delivery Routes
<p>Newton-in-Bowland Compound</p> <p>Route for all construction traffic except surplus material transfer to Waddington Fell Quarry</p>	<p>Inbound</p> <p>M6 from north (40 %) and south (80 %) via Junction 31, A59, Pimlico Link Road, West Bradford Road, Ribble Crossing, West Bradford Road, B6478, then the Hodder Crossing to the south of Newton-in-Bowland</p> <p>Outbound</p> <p>Hodder Crossing to the south of Newton-in-Bowland, B6478, West Bradford Road, Ribble Crossing, West Bradford Road, Pimlico Link Road, A59 then M6 to north (40 %) and south (80 %) via Junction 31</p>
<p>Newton- in- Bowland Compound</p> <p>Surplus material transfer to Waddington Fell Quarry</p>	<p>Inbound</p> <p>Hodder Crossing to the south of Newton-in-Bowland, then B6478 Hallgate Hill / Slaidburn Road</p> <p>Outbound</p> <p>B6478 Slaidburn Road / Hallgate Hill then the Hodder Crossing to the south of Newton-in-Bowland</p>

Proposed Compounds	Delivery Routes
<p>Bonstone Compound</p> <p>Route for all construction traffic except surplus material transfer to Waddington Fell Quarry</p>	<p>Inbound M6 from north (40 %) and south (80 %) via Junction 31, A59, Pimlico Link Road, West Bradford Road, Ribble Crossing, West Bradford Road, then the B6478</p> <p>Outbound B6478, West Bradford Road, Ribble Crossing, West Bradford Road, Pimlico Link Road, A59 then M6 to north (40 %) and south (80 %) via Junction 31</p>
<p>Bonstone Compound</p> <p>Surplus material transfer to Waddington Fell Quarry</p>	<p>Inbound B6478 Slaidburn Road</p> <p>Outbound B6478 Slaidburn Road</p>
<p>Braddup Compound</p> <p>Route for all construction traffic except surplus material transfer to Waddington Fell Quarry</p>	<p>Inbound M6 from north (40 %) and south (80 %) via Junction 31, A59, Pimlico Link Road, West Bradford Road, Ribble Crossing, West Bradford Road, then the B6478</p> <p>Outbound B6478, West Bradford Road, Ribble Crossing, West Bradford Road, Pimlico Link Road, A59 then M6 to north (40 %) and south (80 %) via Junction 31</p>
<p>Braddup Compound</p> <p>Surplus material transfer to Waddington Fell Quarry</p>	<p>Inbound B6478 Slaidburn Road</p> <p>Outbound B6478 Slaidburn Road</p>

Illustration 7: Transport Route Option 2 – Ribble Crossing



3.3 Traffic Generation

3.3.1 Introduction

- 31) This section summarises the number of daily HGVs that were anticipated during the whole main works construction period, as described in the June 2021 Transport Assessment. These traffic forecasts were derived from construction rates applied to materials and surplus material movement figures. The purpose of outlining the traffic numbers associated with the entire main works construction programme has been to enable a comparison between the traffic peaks associated with the mains works contract, and those associated with the revised traffic management proposals during months 1-9 of the construction programme.
- 32) The application of construction rates against the high level programme enabled an assessment of daily volumes (as HGV loads) associated with surplus materials excavated and removed, and material deliveries. The construction rates were also used to identify where activity would be taking place on a typical day, applying the assumptions described in the June 2021 Transport Assessment (RVBC-MH-TA-016).
- 33) For the purpose of this technical note, the assessment is focused on daily traffic movement expected across the proposed routes in the assessment area, therefore only Transport Route 1 and Transport Route 2 have been considered, and the surplus material transfer to Waddington Fell Quarry has been descope.
- 34) Anticipated vehicle movements along the proposed construction access routes vary significantly depending upon construction phase and location on the road network.

3.3.2 Transport Route 1: Route 1 and Route 2

- 35) Illustration 8 and Illustration 9 below show the range of the anticipated daily two-way movements generated for construction activities taking place at Newton-in-Bowland, Bonstone and Braddup Compounds along Route 1 and Route 2.
- 36) The period of assessment covers the full construction period for the Proposed Bowland Section and Proposed Marl Hill Section (April 2023 to September 2030). It can be seen from Illustration 8 and Illustration 9 that during the summer months of 2024, it is anticipated that construction activity would achieve its peak period taking account of workforce, plant and vehicle requirements.
- 37) It is expected that Route 1 achieves its peak in August 2024 with the highest vehicular two-way flow of 128 vehicles per day. For Route 2, it is also expected to achieve its peak in August 2024 with the highest vehicular two way flow of 71vehicles per day.

Illustration 8: Transport Route 1 Daily Two-Way Movements Route 1

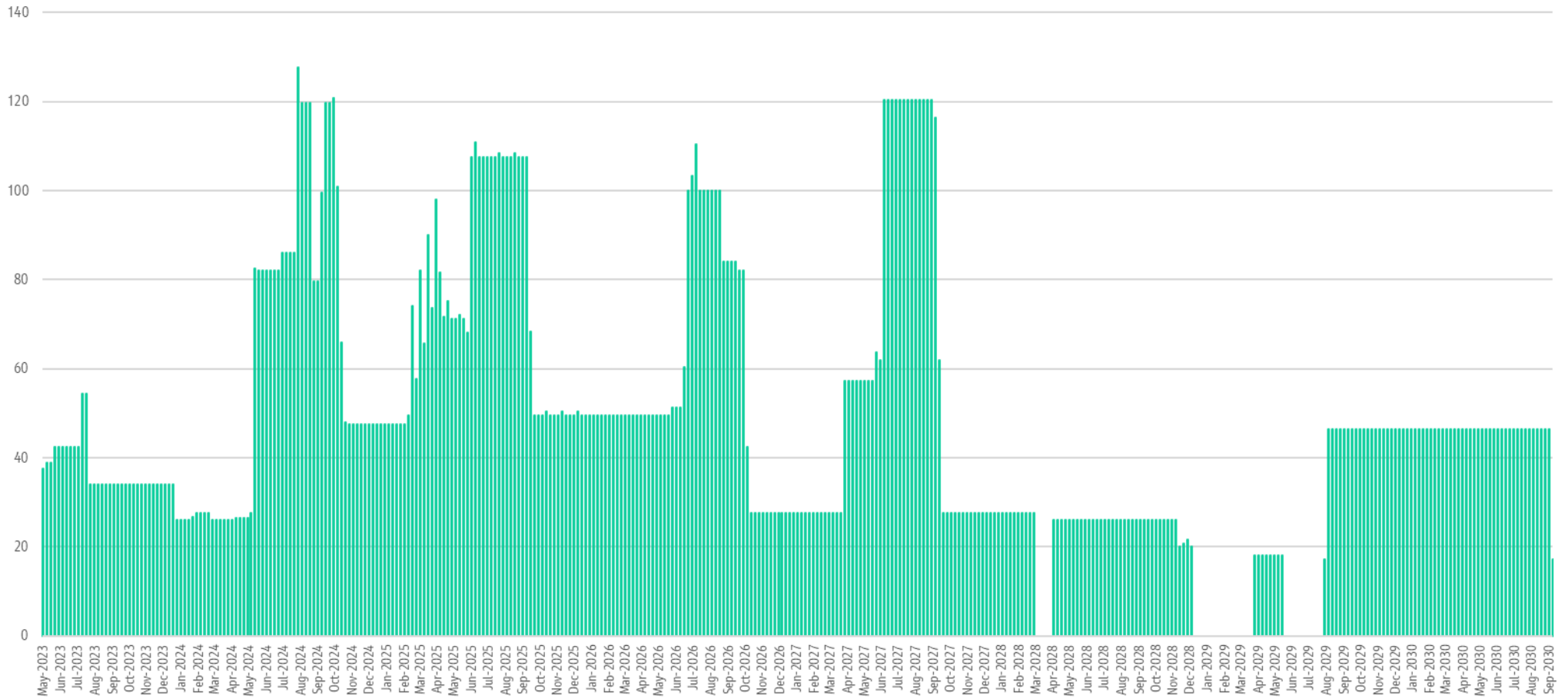
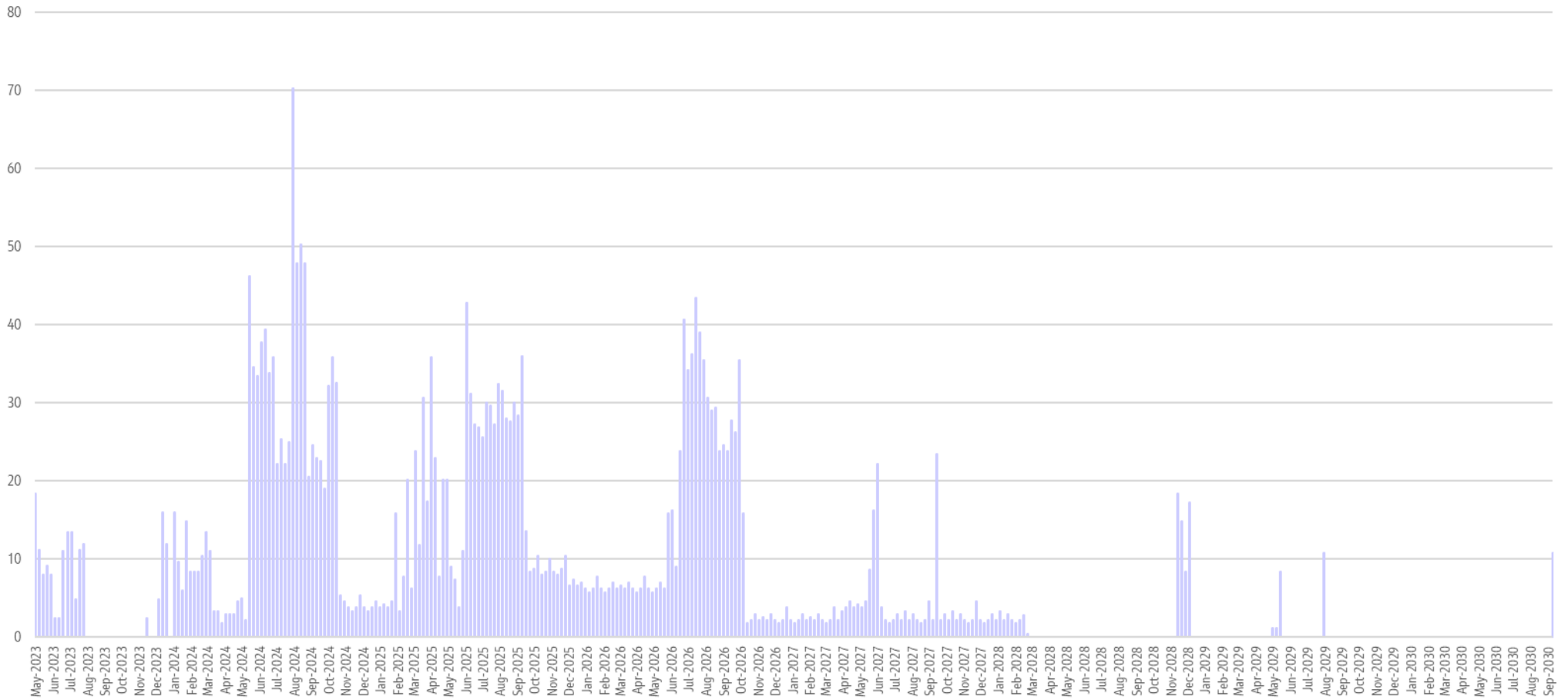


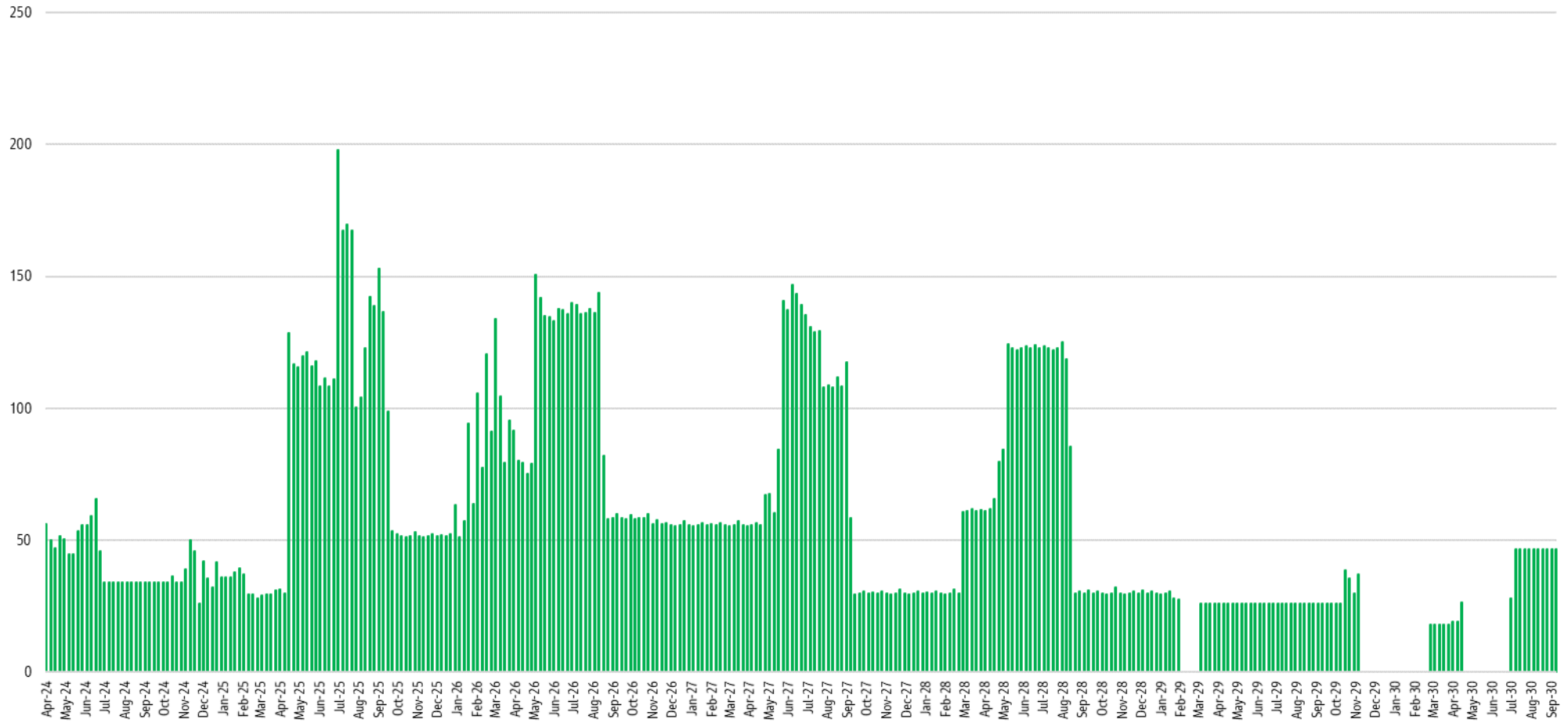
Illustration 9: Transport Route Option 1 Daily Two-Way Movements Route 2



3.3.3 Transport Route Option 2 - Ribble Crossing

- 38) For the purpose of this technical note, the assessment is focused on daily traffic movement expected across the proposed routes in the assessment area, therefore only the Ribble Crossing Route for all construction traffic has been considered, and the surplus material transfer to Waddington Fell Quarry was descope from this commentary.
- 39) Anticipated vehicle movements along the proposed construction access route vary significantly depending upon construction phase and location on the road network. Illustration 10 below shows the range of the anticipated daily two-way movements generated for construction activities taking place at Newton-in-Bowland, Bonstone and Braddup Compounds along the Ribble Crossing Route for all construction.
- 40) Again, the period of assessment covers the full construction period for the Proposed Bowland Section and Proposed Marl Hill Section (April 2023 to September 2030). It can be seen from Illustration 10 that during the summer months of 2024, it is anticipated that construction activity would achieve its peak period regarding workforce, plant and vehicle requirements.
- 41) It is expected that the Ribble Crossing Route for all construction traffic achieves its peak in July 2025 with the highest vehicular two-way flow of 199 vehicles per day.

Illustration 10: Ribble Crossing Transport Route Option 1 Daily Two-Way Movements



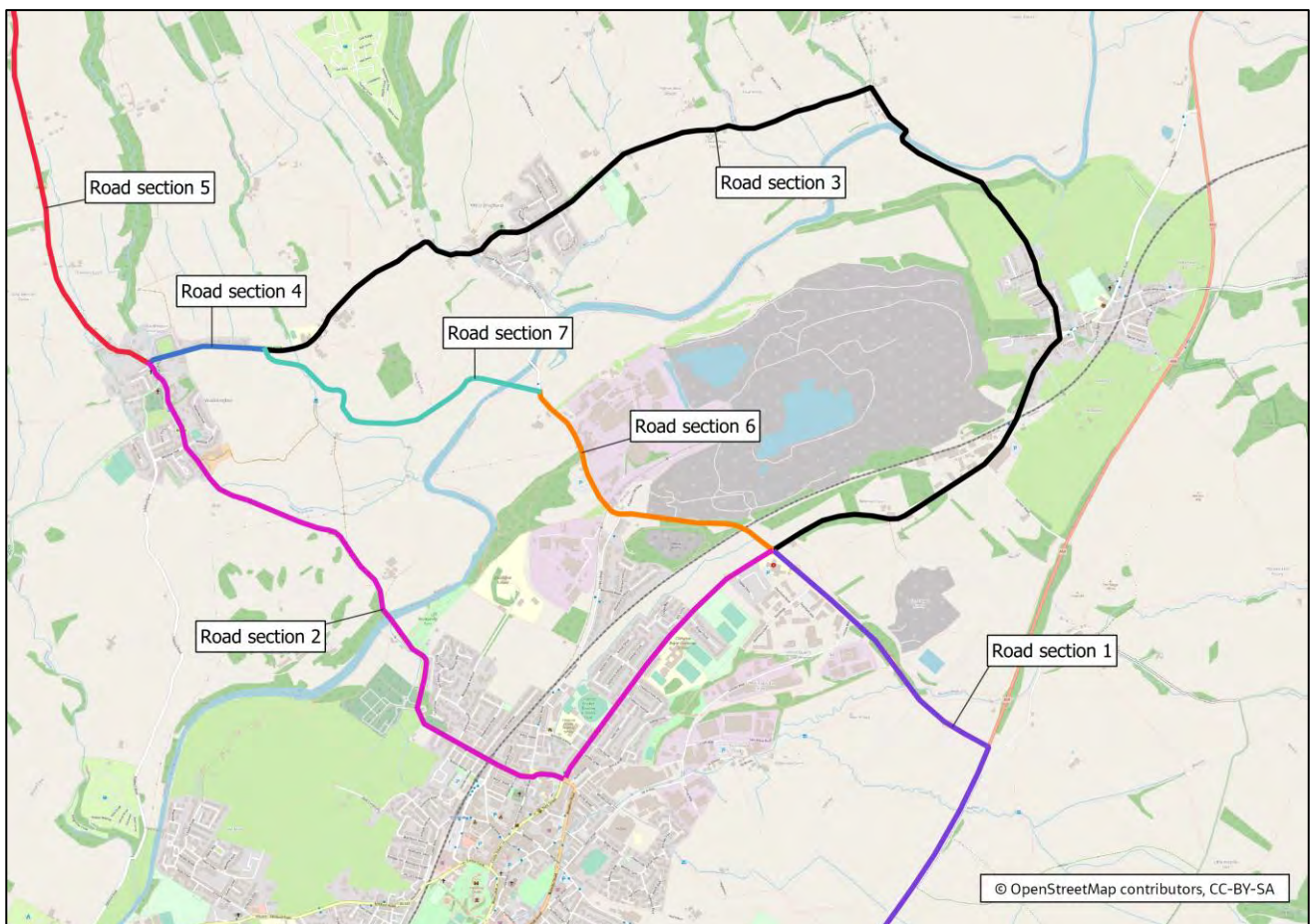
42)

4. Traffic Peak Comparison

43) In order to establish a comparison between the access strategies described above using their anticipated maximum vehicular peaks, the road network in the assessment area was divided into the following road sections and showed in Illustration 11 below.

- Road section 1- A59 / Pimlico Link Road
- Road section 2 - A671 Chatburn Road / Well Terrace / B6478 Waddington Road / B6478 Clitheroe Road
- Road section 3 - Chatburn Road / Clitheroe Road / Crow Trees Brow / Ribble Lane / Grindleton Road / Waddington Road / West Bradford Road
- Road section 4 - West Bradford Road
- Road section 5 - B6478 Slaidburn Road
- Road section 6 - Pimlico Link Road / West Bradford Road
- Road section 7 - Ribble Crossing.

Illustration 11: Road sections used for traffic peak comparison



- 44) Table 4 below shows the maximum predicted two-way daily construction traffic flows for each road section shown in Illustration 11 and their associated route strategy:
- Proposed Ribble Crossing and Proposed Hodder Crossing months 1-9 (the subject of this technical note)
 - Existing public highways as submitted in the June 2021 CTMP
 - The Ribble Crossing as submitted in the June 2021 CTMP).
- 45) Most of these flows have already been described in sections above for each specific access strategy. However, where more than one route coexists the maximum peak has been estimated based on the programme of works from relevant theoretical vehicle movements data.
- 46) According to the flows shown in this table, the highest anticipated traffic flows (shaded cells in Table 4) are expected to occur under either Transport Route Option 1 (public highways) or Transport Route Option 2 (Ribble Crossing). In other words, the access strategies described in the June 2021 Environmental Statement and the 2021 CTMP represent the worst case scenarios in relation to traffic flows, when compared against the newly-proposed initial access strategy that would occur during months one to nine of the construction programme.
- 47) It should be noted that the maximum expected two-way daily construction traffic figures per road section during the nine month period are conservative i.e. they are higher than the proposed cap on movements set out in the January 2022 CTMP. For example, a maximum two-way flow of 13 vehicles per day has been assumed for Road Section 3. However, the January 2022 CTMP confirms that Route 2 (via Chatburn and Grindleton) would be used by exception only, and that vehicle movements would be capped at a two-way flow of four vehicles per day.

Table 4: Maximum two-way daily construction traffic per road section

Road Section	Description	Transport Route		
		Proposed Ribble Crossing and Proposed Hodder Crossing Construction (initial 9 month period before Mains Works Traffic)	Transport Route 1 Public Highways (Mains Works Traffic)	Transport Route 2 Ribble Crossing (Mains Works Traffic)
1	A59 / Pimlico Link Road	129	199 (August 2024)	199 (August 2024)
2	A671 Chatburn Road / Well Terrace / B6478 Waddington Road / B6478 Clitheroe Road	121	128 (August 2024)	-
3	Chatburn Road / Clitheroe Road / Crow Trees Brow / Ribble Lane / Grindleton Road / Waddington Road / Wes Bradford Road	13	7 (August 2024)	-
4	West Bradford Road	56	70 (August 2024)	199 (August 2024)
5	B6478 Slaidburn Road	122	199 (August 2024)	199 (August 2024)
6	Pimlico Link Road / West Bradford Road	66	-	199 (August 2024)
7	Ribble Crossing	-	-	199 (August 2024)

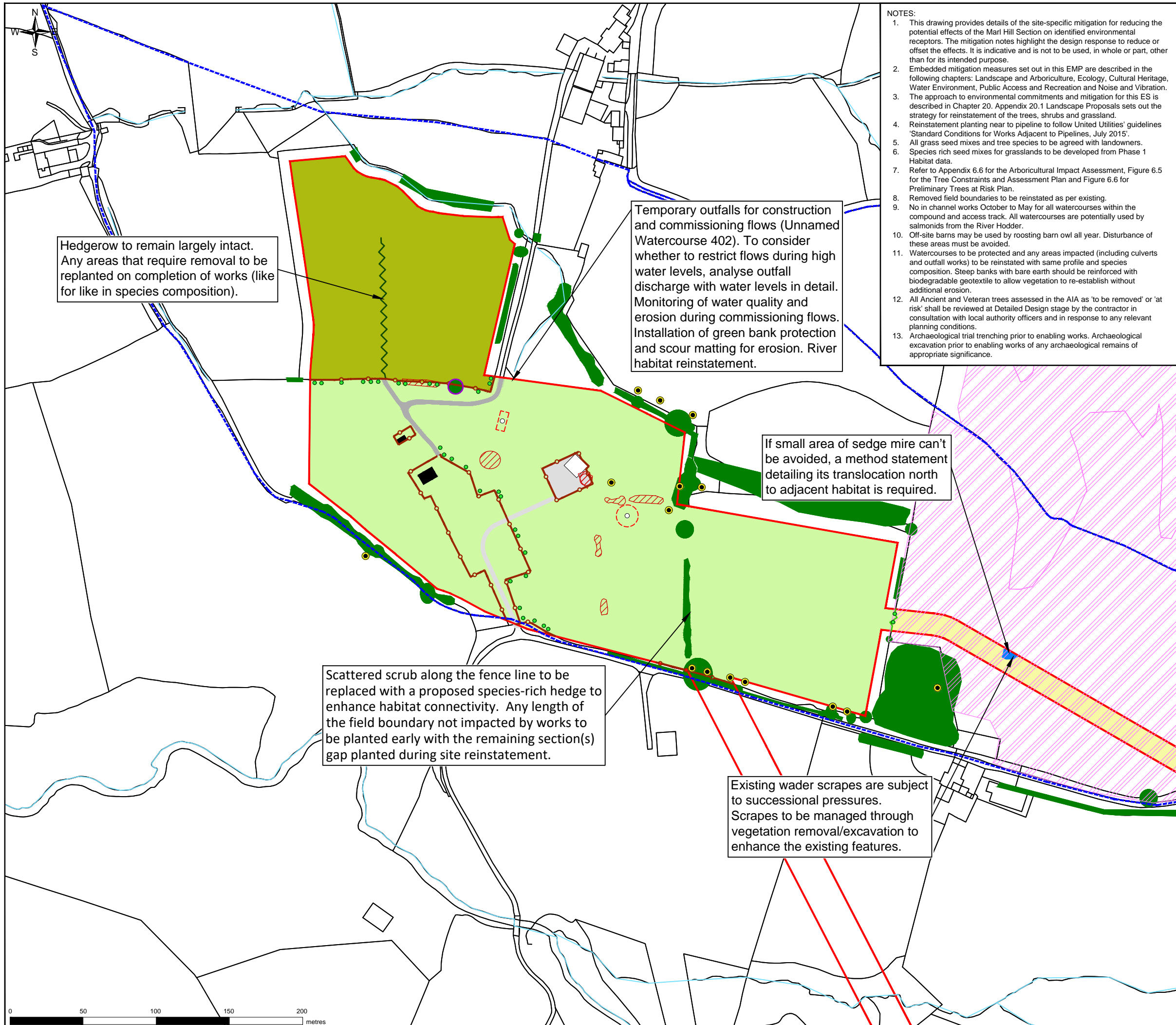
5. Conclusion

- 48) It has been confirmed in the January 2022 CTMP that Transport Route 2, the Ribble Crossing, has been selected as the preferred construction vehicle access strategy to gain access to the two Marl Hill compounds (and the Newton-in-Bowland Compound associated with the separate Proposed Bowland Section application). This will first require the construction of the Ribble Crossing, which would require some nine months to build. It is proposed the Hodder Crossing, associated with the Proposed Bowland Section) would be constructed at the same time as the Ribble Crossing.
- 49) This revised construction approach would require construction vehicles to use the local public highway to enable construction of both crossings. Following the opening of the Ribble Crossing to construction vehicles, there would be no further requirement to direct construction traffic through the centre Clitheroe or through the villages of Chatburn, Grindleton and West Bradford.
- 50) This Technical Note compares the predicted traffic levels associated with this initial nine month phase of construction activity against the vehicle volumes associated with both Transport Route 1 and Transport Route 2 presented in the June 2021 Environmental Statement and the June 2021 CTMP.
- 51) It is concluded that the construction traffic flows presented in the June 2021 Environmental Statement and June 2021 CTMP still represent the worst case scenario for the road sections considered in this report. The proposed revision to the early stages of the programme (months 1-9) would give rise to lower traffic flows on the local road network when compared with the flows associated with Transport Route 1 and 2.

Appendix B9: Environmental Masterplan

Document reference: RVBC-MH-FIG-020-001

FIGURE 20.1



- NOTES:
1. This drawing provides details of the site-specific mitigation for reducing the potential effects of the Marl Hill Section on identified environmental receptors. The mitigation notes highlight the design response to reduce or offset the effects. It is indicative and is not to be used, in whole or part, other than for its intended purpose.
 2. Embedded mitigation measures set out in this EMP are described in the following chapters: Landscape and Arboriculture, Ecology, Cultural Heritage, Water Environment, Public Access and Recreation and Noise and Vibration. The approach to environmental commitments and mitigation for this ES is described in Chapter 20. Appendix 20.1 Landscape Proposals sets out the strategy for reinstatement of the trees, shrubs and grassland.
 3. Reinstatement planting near to pipeline to follow United Utilities' guidelines 'Standard Conditions for Works Adjacent to Pipelines, July 2015'.
 4. All grass seed mixes and tree species to be agreed with landowners.
 5. Species rich seed mixes for grasslands to be developed from Phase 1 Habitat data.
 6. Refer to Appendix 6.6 for the Arboricultural Impact Assessment, Figure 6.5 for the Tree Constraints and Assessment Plan and Figure 6.6 for Preliminary Trees at Risk Plan.
 7. Removed field boundaries to be reinstated as per existing.
 8. No in channel works October to May for all watercourses within the compound and access track. All watercourses are potentially used by salmonids from the River Hodder.
 9. Off-site barns may be used by roosting barn owl all year. Disturbance of these areas must be avoided.
 10. Watercourses to be protected and any areas impacted (including culverts and outfall works) to be reinstated with same profile and species composition. Steep banks with bare earth should be reinforced with biodegradable geotextile to allow vegetation to re-establish without additional erosion.
 11. All Ancient and Veteran trees assessed in the AIA as 'to be removed' or 'at risk' shall be reviewed at Detailed Design stage by the contractor in consultation with local authority officers and in response to any relevant planning conditions.
 12. Archaeological trial trenching prior to enabling works. Archaeological excavation prior to enabling works of any archaeological remains of appropriate significance.

Legend

	Planning Application Boundary
	Existing watercourse (to be retained)
	Existing standing water (to be retained)
	Existing track / hardstanding (to be retained / reinstated)
	Existing PRoW (to be retained)
	Existing building (to be retained)
	Existing vegetation (to be removed)
	Existing vegetation (to be retained)
	Existing grassland (to be retained)
	Existing hedgerow (to be retained)
	Existing vegetation (at risk of removal)
	Existing GWDTE
	Existing veteran tree
	Bat roost potential tree
	Proposed tree
	Proposed reinstated grassland
	Proposed reinstated species rich grassland
	Proposed tunnel shafts / chambers
	Proposed above ground works
	Proposed reinstated track / hardstanding

Hedgerow to remain largely intact. Any areas that require removal to be replanted on completion of works (like for like in species composition).

Temporary outfalls for construction and commissioning flows (Unnamed Watercourse 402). To consider whether to restrict flows during high water levels, analyse outfall discharge with water levels in detail. Monitoring of water quality and erosion during commissioning flows. Installation of green bank protection and scour matting for erosion. River habitat reinstatement.

If small area of sedge mire can't be avoided, a method statement detailing its translocation north to adjacent habitat is required.

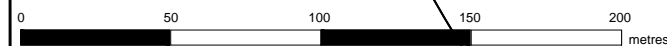
Scattered scrub along the fence line to be replaced with a proposed species-rich hedge to enhance habitat connectivity. Any length of the field boundary not impacted by works to be planted early with the remaining section(s) gap planted during site reinstatement.

Existing water scrapes are subject to successional pressures. Scrapes to be managed through vegetation removal/excavation to enhance the existing features.

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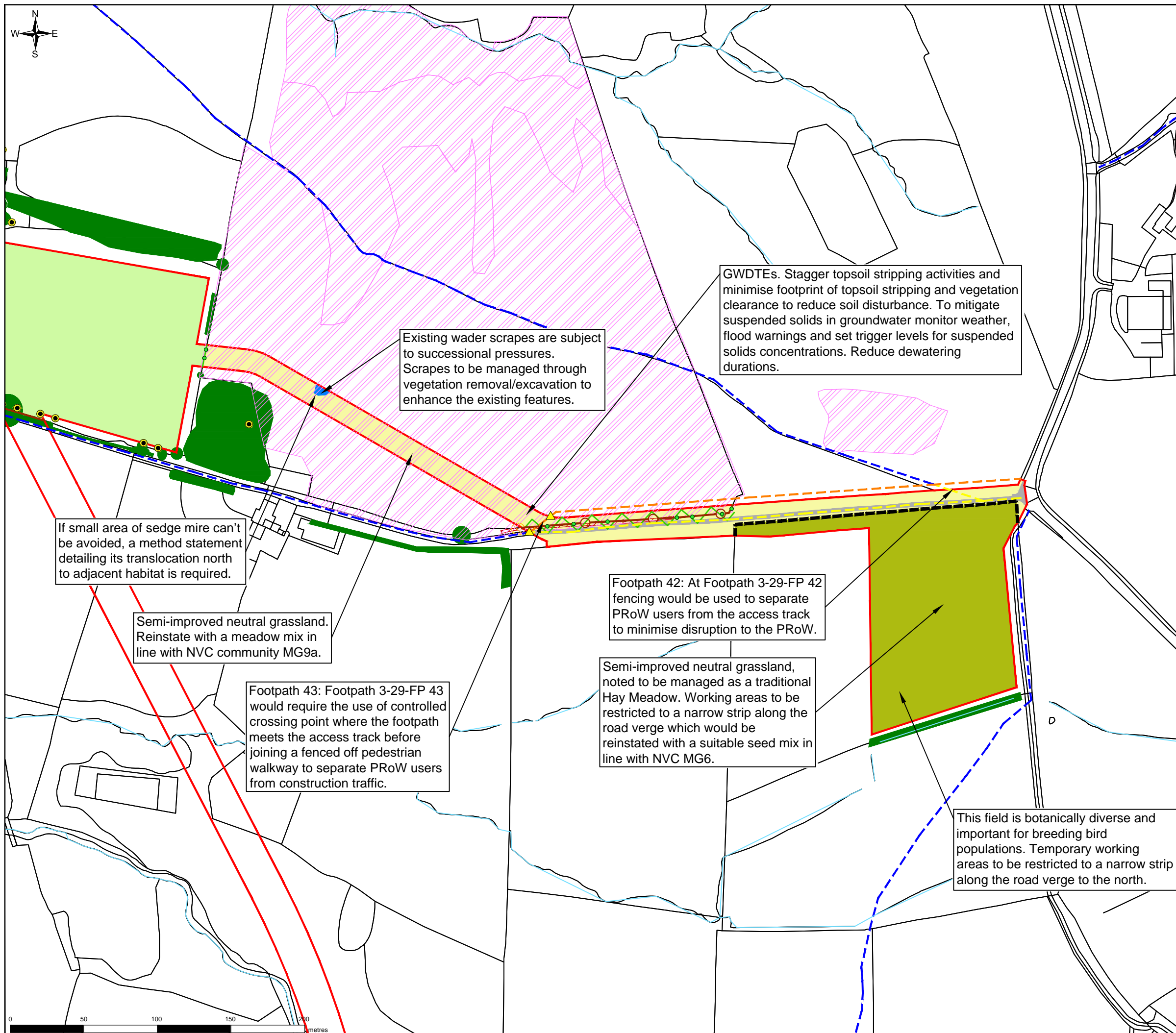
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SCALE 1: 2,500	SHEET SIZE A3
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FIGURE 20.1



- Legend**
- Planning Application Boundary
 - Existing watercourse (to be retained)
 - Existing standing water (to be retained)
 - Existing track / hardstanding (to be retained/reinstated)
 - Existing PRoW (to be retained)
 - Existing vegetation (to be removed)
 - Existing vegetation (to be retained)
 - Existing grassland (to be retained)
 - Existing vegetation (at risk of removal)
 - Existing wall (to be retained)
 - Existing GWLTE
 - Bat roost potential tree
 - Proposed tree
 - Proposed reinstated grassland
 - Proposed reinstated species rich grassland
 - Proposed temporary PRoW diversion
 - Proposed temporary PRoW closure
 - Proposed temporary PRoW access gate
 - Proposed reinstated fence
 - Proposed reinstated hedgerow

- NOTES:**
1. This drawing provides details of the site-specific mitigation for reducing the potential effects of the Marl Hill Section on identified environmental receptors. The mitigation notes highlight the design response to reduce or offset the effects. It is indicative and is not to be used, in whole or part, other than for its intended purpose.
 2. Embedded mitigation measures set out in this EMP are described in the following chapters: Landscape and Arboriculture, Ecology, Cultural Heritage, Water Environment, Public Access and Recreation and Noise and Vibration.
 3. The approach to environmental commitments and mitigation for this ES is described in Chapter 20. Appendix 20.2 Landscape Proposals sets out the strategy for reinstatement of the trees, shrubs and grassland.
 4. Reinstatement planting near to pipeline to follow United Utilities' guidelines 'Standard Conditions for Works Adjacent to Pipelines, July 2015'.
 5. All grass seed mixes and tree species to be agreed with landowners.
 6. Species rich seed mixes for grasslands to be developed from Phase 1 Habitat data.
 7. Refer to Appendix 6.6 for the Arboricultural Impact Assessment, Figure 6.5 for the Tree Constraints and Assessment Plan and Figure 6.6 for Preliminary Trees at Risk Plan.
 8. Removed field boundaries to be reinstated as per existing.
 9. No in channel works October to May for all watercourses within the compound and access track. All watercourses are potentially used by salmonids from the River Hodder.
 10. Archaeological trial trenching prior to enabling works. Archaeological excavation prior to enabling works of any archaeological remains of appropriate significance.

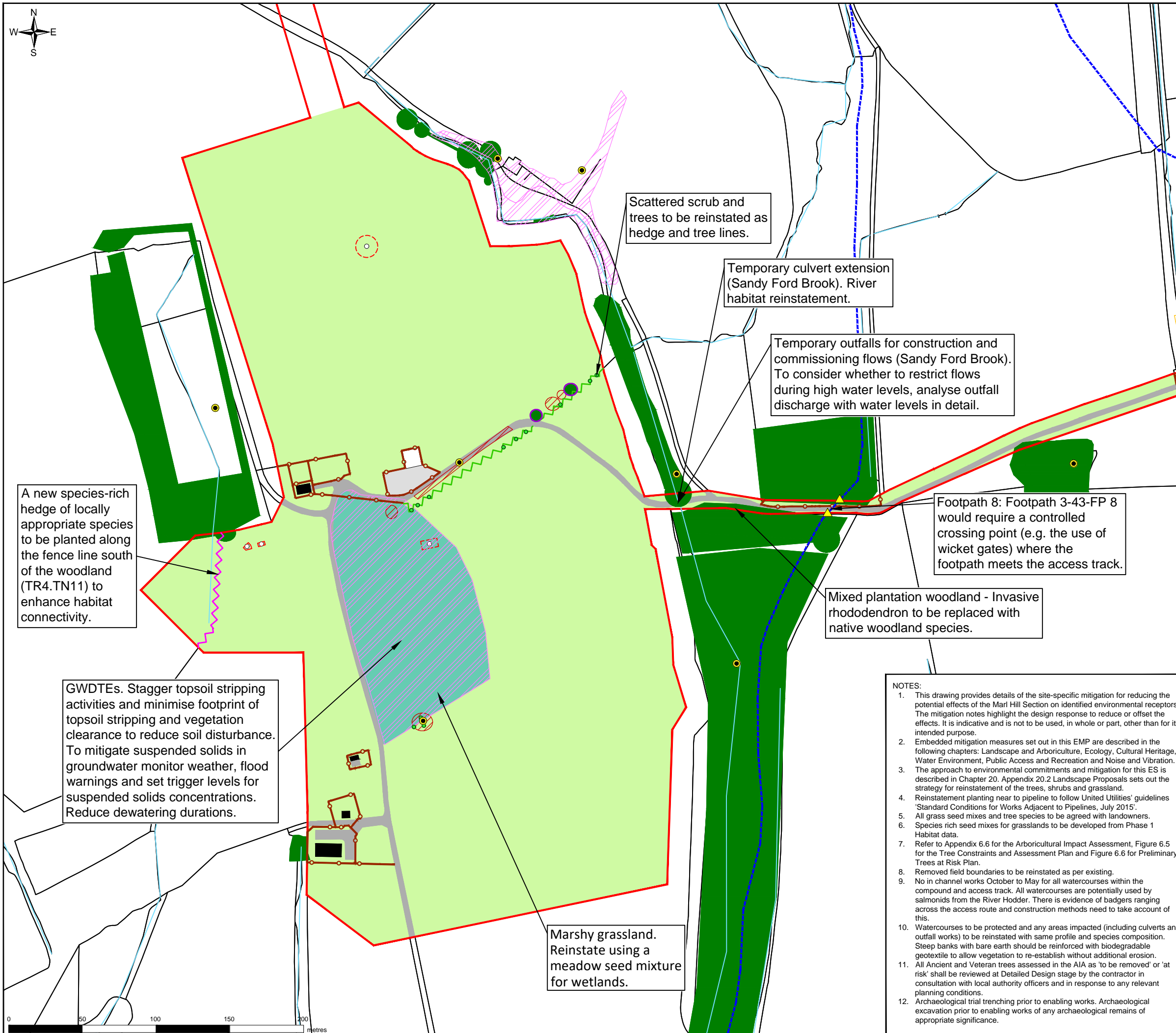
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FIGURE 20.1



Legend

- Planning Application Boundary
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- Existing vegetation (to be removed)
- Existing vegetation (to be retained)
- Existing vegetation (at risk of removal)
- Existing GWLTE
- Existing veteran tree
- Bat roost potential tree
- Proposed tree
- Proposed reinstated grassland
- Proposed reinstated marshy grassland
- Proposed temporary PRoW access gate
- Proposed reinstated fence
- Proposed reinstated hedgerow
- Proposed species rich hedgerow
- Proposed tunnel shafts / chambers
- Proposed above ground works
- Proposed reinstated track / hardstanding

A new species-rich hedge of locally appropriate species to be planted along the fence line south of the woodland (TR4.TN11) to enhance habitat connectivity.

Scattered scrub and trees to be reinstated as hedge and tree lines.

Temporary culvert extension (Sandy Ford Brook). River habitat reinstatement.

Temporary outfalls for construction and commissioning flows (Sandy Ford Brook). To consider whether to restrict flows during high water levels, analyse outfall discharge with water levels in detail.

Footpath 8: Footpath 3-43-FP 8 would require a controlled crossing point (e.g. the use of wicket gates) where the footpath meets the access track.

Mixed plantation woodland - Invasive rhododendron to be replaced with native woodland species.

GWLTes. Stagger topsoil stripping activities and minimise footprint of topsoil stripping and vegetation clearance to reduce soil disturbance. To mitigate suspended solids in groundwater monitor weather, flood warnings and set trigger levels for suspended solids concentrations. Reduce dewatering durations.

Marshy grassland. Reinstatement using a meadow seed mixture for wetlands.

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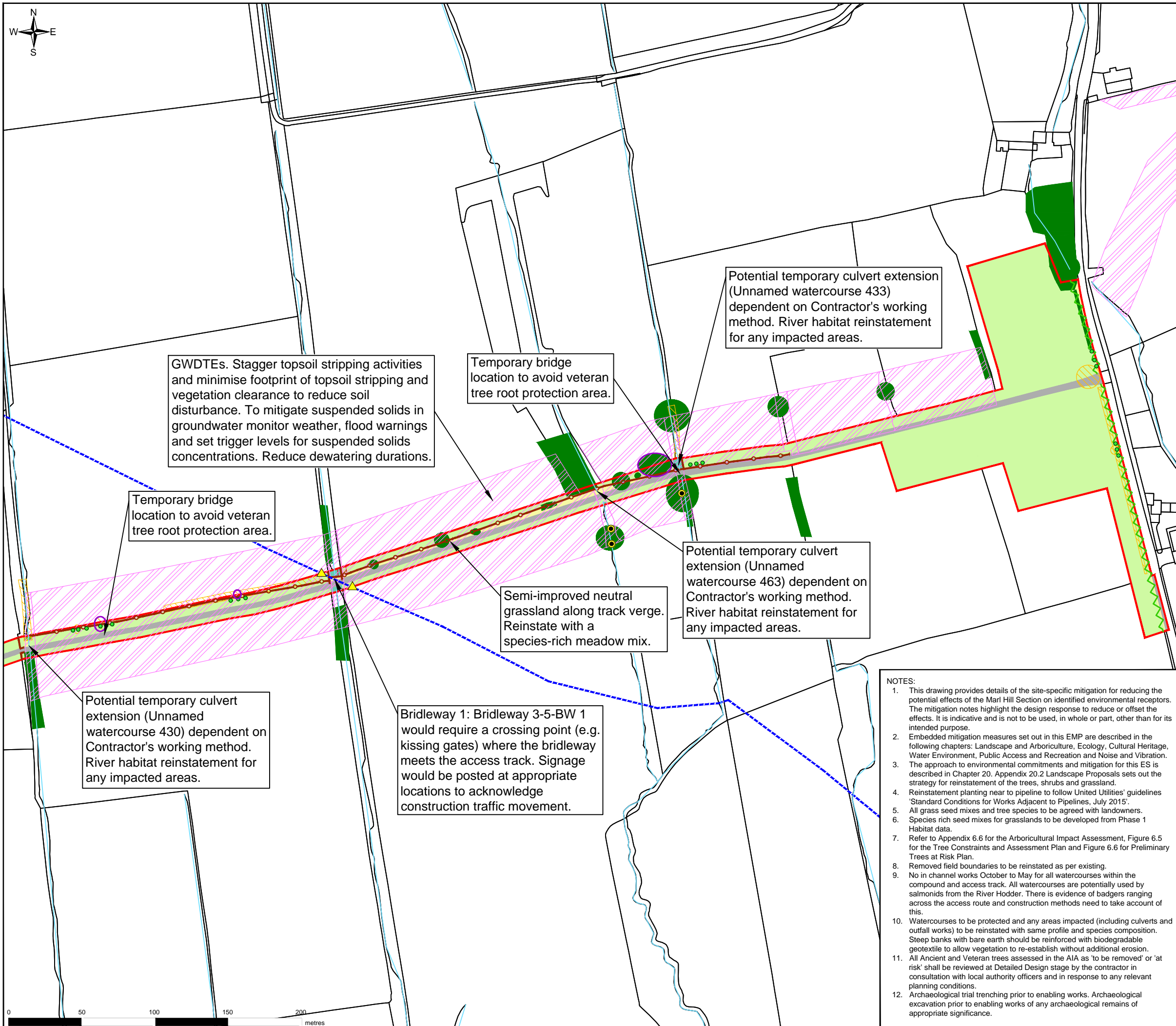
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FIGURE 20.1



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- Existing vegetation (at risk of removal)
- Existing GWDTE
- Existing veteran tree
- Bat roost potential tree
- Proposed tree
- Proposed woodland planting
- Proposed reinstated grassland
- Proposed reinstated species rich grassland
- Proposed reinstated marshy grassland
- Proposed temporary PRoW access gate
- Proposed reinstated hedgerow
- Proposed reinstated fence

GWDTEs. Stagger topsoil stripping activities and minimise footprint of topsoil stripping and vegetation clearance to reduce soil disturbance. To mitigate suspended solids in groundwater monitor weather, flood warnings and set trigger levels for suspended solids concentrations. Reduce dewatering durations.

Temporary bridge location to avoid veteran tree root protection area.

Potential temporary culvert extension (Unnamed watercourse 433) dependent on Contractor's working method. River habitat reinstatement for any impacted areas.

Temporary bridge location to avoid veteran tree root protection area.

Potential temporary culvert extension (Unnamed watercourse 463) dependent on Contractor's working method. River habitat reinstatement for any impacted areas.

Semi-improved neutral grassland along track verge. Reinstatement with a species-rich meadow mix.

Potential temporary culvert extension (Unnamed watercourse 430) dependent on Contractor's working method. River habitat reinstatement for any impacted areas.

Bridleway 1: Bridleway 3-5-BW 1 would require a crossing point (e.g. kissing gates) where the bridleway meets the access track. Signage would be posted at appropriate locations to acknowledge construction traffic movement.

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