

A417 Missing Link
TR010056

6.4 Environmental Statement
Appendix 12.2 Walking, cycling
and horse riding review at
preliminary design

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**The Infrastructure Planning
(Applications: Prescribed Forms
and Procedure) Regulations 2009**

A417 Missing Link

Development Consent Order 202[x]

**6.4 Environmental Statement
ES Appendix 12.2 Walking, cycling and horse riding review
at preliminary design**

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1 Introduction

1.1 Purpose of this document

- 1.1.1 The A417 Missing Link (the scheme) would have a permanent impact on the trunk road network. Walking, cycling and horse riding assessment and review (WCHAR) must be undertaken in line with GG 142 *Walking, cycling & horse-riding assessment and review* (Highways England, 2019).
- 1.1.2 The first stage of the WCHAR is an assessment to enable an understanding of existing facilities for pedestrians, cyclists and equestrians (users) in the local area. The *Walking, Cycling and Horse-Riding Assessment Report, PCF Stage 1* (November 2017) describes the current situation and identifies opportunity for improvement. .
- 1.1.3 This review is the second stage of the WCHAR process that is set out in GG 142 and aims to:
1. help ensure that previously identified opportunities at the assessment phase have been taken into account and implemented where achievable; and
 2. identify opportunities for improvements for pedestrians, cyclists and equestrians as a result of the developing highway scheme design.
- 1.1.4 WCHAR are not limited to public rights of way (PRoW) but include any route that is or could be popular with pedestrians, cyclists and equestrians (including disabled users). Networks may include off-road paths, footways, on-carriageway cycle lanes, the national cycle network and shared space along unclassified roads. The assessment and review process enables opportunities for new or improved facilities to be integrated into the scheme design.
- 1.1.5 Minor changes to PRoW are not opportunities insofar as they are not a new facility or an improvement. For example, a footpath diversion may retain a right of way without any discernible impact on the walking route. Such minor changes are outside the scope of WCHAR but are addressed in Annex F Public Rights of Way Management Plan of ES Appendix 2.1 Environmental Management Plan (Document Reference 6.4).

1.2 Scheme overview

- 1.2.1 The A417/A419 is a strategic route between Gloucester and Swindon that provides an important link between the Midlands/North and South of England. The route is an alternative to the M5/M4 route via Bristol. The section of the A417 near Birdlip, known as the 'Missing Link', forms the only section of single carriageway along the route and is located in the Cotswolds Area of Outstanding Natural Beauty (AONB).
- 1.2.2 In 2014, the Department for Transport (DfT) announced its five-year investment programme for making improvements to the strategic road network (SRN) across England. This scheme is one of more than 100 schemes identified as part of the first Road Investment Strategy (RIS1) 2015-2020^[1]. Funding for delivery of the scheme has been confirmed within the second Road Investment Strategy

^[1] Department for Transport (March 2015), Road investment strategy: 2015 to 2020, accessed 29 January 2020, <https://www.gov.uk/government/publications/road-investment-strategy-for-the-2015-to-2020-road-period>

(RIS2)^[ii], which covers the period between 2020 and 2025 and was published on 11 March 2020.

- 1.2.3 This scheme to upgrade this section of the A417 to dual carriageway, in a way that is sensitive to the surrounding AONB, would help unlock Gloucestershire's potential for growth, support regional plans for more homes and jobs, and improve life in local communities.

1.3 Scheme vision and objectives

- 1.3.1 The scheme vision is for a landscape-led highways improvement scheme that will deliver a safe and resilient free-flowing road whilst conserving and enhancing the special character of the Cotswolds AONB; reconnecting landscape and ecology; bringing about landscape, wildlife and heritage benefits, including enhanced visitors' enjoyment of the area; improving local communities' quality of life; and contributing to the health of the economy and local businesses.

- 1.3.2 In order to deliver this vision, the following scheme objectives have been set:

- **Safe, resilient and efficient network:** to create a high-quality resilient route that helps to resolve traffic problems and achieves reliable journey times between the Thames Valley and West Midlands as well as providing appropriate connections to the local road network.
- **Improving the natural environment and heritage:** to maximise opportunities for landscape, historic and natural environment enhancement within the Cotswolds AONB and to reduce negative impacts of the proposed scheme on the surrounding environment.
- **Community & access:** to enhance the quality of life for local residents and visitors by reducing traffic intrusion and pollution, discouraging rat-running through villages and substantially improving public access for the enjoyment of the countryside.
- **Supporting economic growth:** to facilitate economic growth, benefit local businesses and improve prosperity by the provision of a free-flowing road giving people more reliable local and strategic journeys.

1.4 Scheme description

- 1.4.1 The scheme would provide 3.4 miles (5.5km) of new, rural all-purpose dual carriageway for the A417. The new dual carriageway would connect the existing A417 Brockworth bypass with the existing dual carriageway A417 south of Cowley. The new dual carriageway would be completed in-line with current trunk road design standards. The section to the west of the existing Air Balloon roundabout would follow the existing A417 corridor, but to the south and east of the Air Balloon roundabout, the corridor would be offline, away from the existing road corridor.

- 1.4.2 The project would include a new crossing near Emma's Grove for walkers, cyclists and horse riders including disabled users, which would accommodate the Cotswold Way National Trail. A new junction would be incorporated at Shab Hill, providing a link from the A417 to the A436 (towards the A40 and Oxford), and to the B4070 (for Birdlip and other local destinations).

^[ii] Department for Transport (March 2020), Road investment strategy: 2020 to 2025, accessed 11 March 2020, <https://www.gov.uk/government/publications/road-investment-strategy-2-ris2-2020-to-2025>

- 1.4.3 A new 37m wide multi-purpose crossing would provide essential mitigation for bats and enhancement opportunity of ecology and landscape integration. The public would also further benefit as the crossing would accommodate the Gloucestershire Way and provide an improved visitor experience.
- 1.4.4 A new junction would be included near Cowley, replacing the existing Cowley roundabout, making use of an existing underbridge to provide access to local destinations. The use of the existing underbridge would allow for all directions of travel to be made.
- 1.4.5 The current A417 between the existing 'Air Balloon roundabout' and 'Cowley roundabout' would be detrunked for its entire length. Some lengths of the existing road would be converted into a route for walkers, cyclists and horse riders including disabled users. Other sections would be retained as lower-class public roads, maintaining local access for residents. Some of the route would provide Common Land.

2 Background

2.1 Previous reports

2.1.1 Two walking, cycling and horse riding reports precede this report, both of which formed part of the early stages of the scheme design and are appended to this report for ease of reference:

- *Walking, Cycling and Horse-Riding Assessment Report, PCF Stage 1* (November 2017), and
- *Walking, cycling and horse-riding strategy, PCF Stage 2* (March 2019).

2.2 WCH review team

2.2.1 The walking, cycling and horse riding (WCH) review team comprises Tansin Brown as Lead Assessor and Val Ismaili as Assessor, and this is a different team to the one that undertook the previous WCH assessment. Tansin has the competencies expected of a Lead Assessor as set out in GG 142.

2.2.2 In assuming responsibility for the role, the Lead Assessor confirms the following:

1. The review phase started in May 2019, which is more than 12 months since completion of the assessment phase. However, the assessment report is not revisited and re-issued because the strategy report was done in the interim period.
2. The highway scheme size is not stated in the assessment and strategy reports but the process used applies to a large scheme. The Lead Assessor is satisfied that this is still relevant.
3. The assessment report was signed by the Lead Assessor and design team leader.

2.3 WCH study area

2.3.1 The Lead Assessor determined that the scheme size is large based on criteria in GG 142. Figure 2-1 shows the 5km study area, which extends from the M5/A417 junction in the north-west to the village of Winstone in the south-east.

2.3.2 In addition to the wider study area, a narrower scheme boundary provides a more focussed review of the A417 corridor. This boundary can be found on the *Walking, cycling and horse riding strategy overall layout plan* as shown at the end of this document, and is consistent with that used in the assessment and strategy reports.

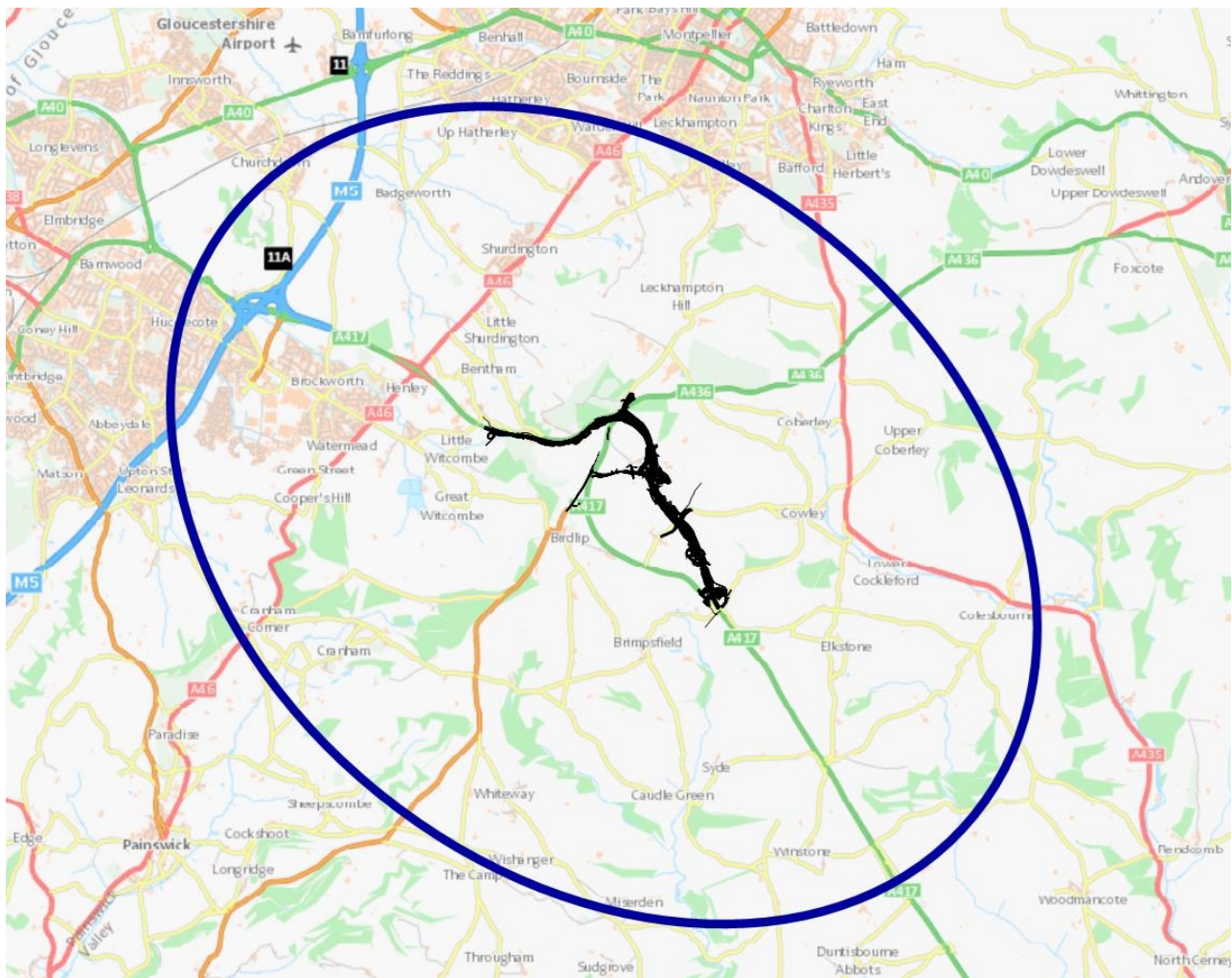


Figure 2-1 WCH review study area

2.4 Definitions of users

2.4.1 The three modes of travel, WCH, cover a broad range of different users including vulnerable and mobility-impaired people. Table 2-1 sets out the users included, but not limited to, in the WCHAR.

Table 2-1 Definitions of users

Walkers	Able-bodied pedestrians Mobility impaired including users of manual and powered wheelchairs Visually impaired Vulnerable pedestrians Joggers
Cyclists	Commuters, leisure and utility cyclists Road cyclists and mountain bikers Mobility impaired, inexperienced, vulnerable Cyclists with electrically assisted pedal cycles Scooter riders (non-motorised) Single riders and groups
Horse riders	Hacking either as single riders or in groups Mobility impaired, inexperienced, vulnerable Carriage drivers

3 Survey Data

3.1 Assessment

3.1.1 WCH surveys were undertaken on Saturday, 2 September and Sunday, 10 September 2017 at locations across the study area and these can be seen in the appended assessment report. As noted in para 2.2.2, the Lead Assessor is satisfied that the WCH assessment remains current. However, although the surveys commissioned for the assessment are comprehensive across the PRoW network, some additional surveys were undertaken during the preliminary review.

3.2 Shab Hill

3.2.1 Some of the unclassified roads are popular for WCH and promoted for cycling on local maps. An additional survey was undertaken on 31 August 2019 at Shab Hill to complete and complement the 2017 data. This recorded all WCH and road traffic movements at the crossroads shown on Figure 3-1, between the roads from Four Winds to Shab Hill Barn (north-south) and from Barrow Wake to Birdlip Radio Station (west-east).



Source: based on Bing Maps

Figure 3-1 Location of traffic survey at Shab Hill

3.2.2 The survey date of 31 August 2019 is consistent with the dates of the earlier surveys in year 2017, i.e. the last weekend of schools' summer holiday period. Motorised traffic is recorded as motorbikes, car/light goods vehicles and heavy goods/agricultural vehicles. The non-motorised users are:

- pedestrian,
- pedestrian with dog,
- pedestrian pushing pram/pushchair,
- wheelchair user,
- jogger/runner,
- cyclists, and

- horse riders.

3.2.3 Table 3-1 summarises the survey results. Shab Hill crossroads is one of the busier sites in terms of WCH across the survey area.

Table 3-1 WCH flows at Shab Hill

Highway Link		Count Results 6am-7pm
A	East from/to South Hill and the A436	24 pedestrians 31 cyclists 0 horse riders
B	South from/to Shab Hill Barn and Cowley Lane	24 pedestrians 4 cyclists 0 horse riders
C	West from/to Barrow Wake	24 pedestrians (all categories) 31 cyclists 0 horse riders
D	North from/to the existing A417	0 pedestrians 2 cyclists 0 horse riders

3.3 Crickley Hill

- 3.3.1 Engagement with stakeholders has been ongoing in year 2020 and early 2021 through the WCH Technical Working Group. It is clear that some participants consider PRow between Witcombe Court underbridge and Air Balloon roundabout provide for crossings of the A417 carriageway. It is not the case that the PRow continue across the carriageway, but some users may choose to try and cross where the PRow adjoin or come close to the highway.
- 3.3.2 Surveys undertaken on Saturday, 2 September 2017 include Dog Lane, the PRow along the southern side of the A417, and the footway/cycleway along the northern side of the A417. An additional survey on Saturday, 20 March 2021 supplements the 2017 data and records users crossing the A417 at Dog Lane, and users further along Dog Lane where there is a choice of road or PRow. The 2017 surveys record WCH users only but the 2021 survey records WCH and vehicles. Motorised vehicles are recorded as motorbikes, car/light goods vehicles and heavy goods/agricultural vehicles.
- 3.3.3 Figure 3-2 shows the observed users at Dog Lane. Movements to/from arm A refer to a small number of cars/light goods vehicles using the lay-by. Movements to/from arms B and C were predominantly walkers, the second main user being cars/light goods vehicles, third cyclists and finally horse riders were the least observed user. No movements to/from arm D were counted, i.e. walkers crossing the road.

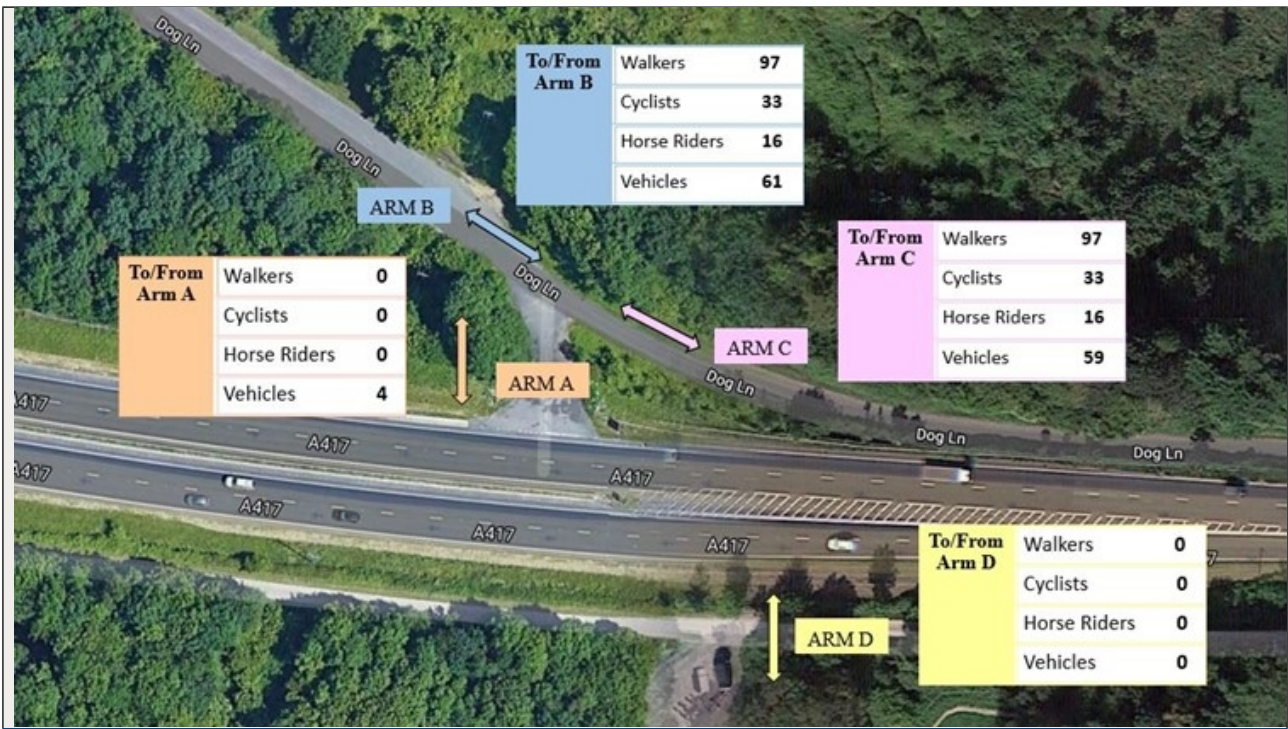


Figure 3-2 Survey data at Dog Lane (2021)

3.3.4 Figure 3-3 shows the observed users on the southern side of the A417 along the PRoW. The predominant user is cyclists, which could be because the track caters for Flyup 417 Bike Park and its visitors. The number of walkers on the southern side of the A417 is much fewer than along Dog Lane on the northern side.



Figure 3-3 Survey data at the southern side of the A417 (2017)

3.3.5 Figure 3-4 shows the data recorded further along Dog Lane and most users stay on Dog Lane (arms A and B) with a few using the footpath to/from Cold Slad Lane (arm D) or A417 footway/cycleway (arm E). Vehicular access is restricted at arm E and the observed vehicle, which was a car/light goods vehicle, is assumed to have used the recess in the lane to make a U-turn.

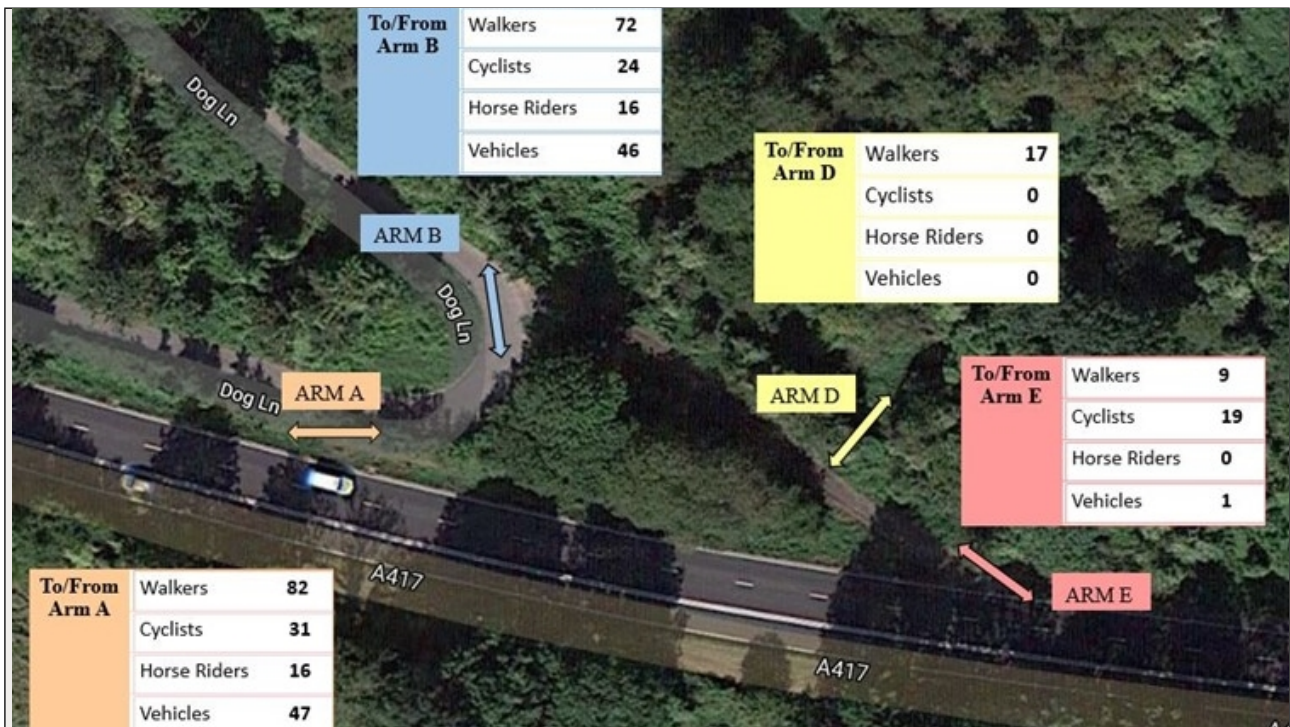


Figure 3-4 Survey data further along Dog Lane (2021)

3.3.6 Figure 3-5 shows users on the northern side of the A417 between Dog Lane and Cold Slad Lane. Walkers and cyclists use the footway/cycleway, which is a continuation of arm E in Figure 3-4, and no-one crosses the road.



Figure 3-5 Survey data between Dog Lane and Cold Slad Lane (2017)

- 3.3.7 Comparing arm E in Figure 3-4 with movements 1 & 2 in Figure 3-5 indicates a noticeable uplift in the numbers of users between years 2017 and 2021. This supports anecdotal evidence that walking and cycling in the countryside has increased as a consequence of the current covid-19 (coronavirus) pandemic.
- 3.3.8 To summarise, the survey data show a high walking demand along Dog Lane but less demand on the eastern part of this stretch of A417 to Air Balloon roundabout. No users are recorded crossing the road, but this could reflect a lack of safe facilities rather than a lack of desire. The data show a noticeable uplift in user numbers between years 2017 and 2021, which is assumed to be as consequence of the current pandemic. The surveys confirm the linear demand to walk and cycle along the A417 corridor.

4 Review of Assessment Opportunities

4.1.1 Table 4-1 summarises the opportunities identified in the assessment and the actions taken or outcomes during preliminary design of the scheme. Opportunities are provided verbatim from Appendix A of the strategy report issued at the end of Project Control Framework (PCF) stage 2 and the actions taken/outcomes are updates for the end of the preliminary design.

Table 4-1 Review of assessment opportunities

Opportunity	Action Taken/Outcome
General Opportunities	
Opportunity 1 - There is a general opportunity to provide a design which includes facilities for walkers, cyclists and horse riders which exceeds the design standards.	Design standards are exceeded where opportunities arise, taking into account environmental and topographical constraints. This would be ongoing during detailed design.
Opportunity 2 - There is a general opportunity to reduce the existing severance of PRoWs caused by the existing A417 and thereby enhance the wider network of PRoWs in the area.	Existing severance is reduced by means of a new underpass, a new overbridge and new linear connections.
Strategic Opportunities	
Opportunity 3 - Where sections of the current A417 are bypassed by a new highway alignment there would be a reduction in traffic flows on the existing A417. This provides an opportunity to 'down-grade' the geometry of the existing A417, once the new scheme is in place, and this could create a much more attractive environment improving facilities for walkers, cyclists and horse riders on the existing A417 without impacting traffic. This could include a reduced speed zone in the area of the Air Balloon Roundabout and on its approaches.	Air Balloon Way would be a new restricted byway along the current A417 from and including the Cotswold Way crossing to the junction with Stockwell Lane. The width of the byway would be 3m asphalt and 2m compacted gravel to cater for all users including carriages. Car parks at Barrow Wake and the Golden Heart Inn would cater for visitors.
Pedestrian Specific Opportunities	
Opportunity 4 - Improved pedestrian facilities on the Air Balloon Roundabout.	Ullenwood junction replaces Air Balloon roundabout. A new section of bridleway between Cold Slad Lane and Leckhampton Hill would allow users to avoid the junction. A large splitter island on the A436 link would cater for walkers.
Opportunity 5 - At-grade bridleway crossing facility (potentially signalised) on the A417 in the vicinity of Grove Farm to connect existing Bridleways. This would reduce severance and improve this route currently used by pedestrians and cyclists.	Walkers would be able to use a segregated bridleway at Grove Farm underpass. See also opportunities 10 and 15.
Opportunity 6 - Use environmental design elements, such as land bridges, for the benefit of pedestrians providing better connectivity across the A417. This would also provide an opportunity to realign the Cotswold Way away from the Air Balloon roundabout and its associated conflicts.	The Cotswold Way crossing provides an off-road connection for walkers. See also opportunities 12, 16 and 21.
Opportunity 7 - Provide a grade-separated crossing of the A417 at Hawcote Hill, east of Birdlip, to reduce severance and improve connectivity of existing footpaths for the benefit of walkers.	Problem is removed with proposed scheme because the existing A417 at Hawcote Hill would be either free of motorised traffic (Air Balloon Way) or lightly trafficked (Stockwell Lane to Cowley junction).

Opportunity	Action Taken/Outcome
Opportunity 8 - Provide low-level lighting on pedestrian routes away from the carriageway, such as the footway/footpath connections between Air Balloon roundabout and Barrow Wake and between Birdlip and the A417 (directly east of Birdlip).	The scheme aims for dark skies because it is in the AONB and no street lighting on pedestrian routes is proposed.
Opportunity 9 - Improve the existing pedestrian footway/footpath route between Barrow Wake and Birdlip through widening of the footway and footpath, vegetation clearance, and provision of pedestrian signing. This would encourage walking between these two closely located attractors.	A new 1.5m width footway is proposed alongside the new B4070 alignment from Birdlip to Barrow Wake. Gloucestershire County Council has agreed to look at connectivity to Birdlip outside the scheme's red line boundary.
Cyclist Specific Opportunities	
Opportunity 10 - At-grade bridleway crossing facility (potentially signalised) on the A417 in the vicinity of Grove Farm to connect existing Bridleways. This would reduce severance and improve this route currently used by pedestrians and cyclists.	Off-road cyclists would be able to use a segregated bridleway at Grove Farm underpass. Bridleway gradients on the southern side of the underpass would be too steep for road cyclists. See also opportunities 5 and 15.
Opportunity 11 - Provide an at-grade crossing for cyclists (potentially signalised) on the A417 connecting the roads leading to Birdlip and Stockwell to improve connectivity on this existing cyclist desire line.	Problem is removed with proposed scheme because the existing A417 between Birdlip and Stockwell would be free of motorised traffic (Air Balloon Way)
Opportunity 12 - Use environmental design elements, such as green land bridges, for the benefit of cyclists providing better connectivity across the A417.	The Cotswold Way crossing provides an off-road connection for cyclists. See also opportunities 6, 16 and 21.
Opportunity 13 - Provide better connectivity for cyclists along the A46 at Shurdington Junction, through provision of stepped or kerb-separated cycleways in both directions and improved crossings at the slip roads.	This opportunity is outside the scheme area. Improvements to rights of way where they are not directly affected by the scheme are the prerogative of Gloucestershire County Council as local highway authority.
Opportunity 14 - Provide cycle tool stations or repair stations at Crickley Hill County Park and Barrow Wake for cyclists to use to service their bikes and encourage the use of these two locations as hubs for cycling.	This opportunity would be considered at the detailed design stage.
Equestrian Specific Opportunities	
Opportunity 15 - At-grade bridleway crossing facility (potentially signalised) on the A417 in the vicinity of Grove Farm to connect existing Bridleways. This would reduce severance and provide an opportunity for equestrians to use this link on an existing desire line.	Horse riders would be able to use a segregated bridleway at Grove Farm underpass. See also opportunities 5 and 10.
Opportunity 16 - Use environmental design elements, such as green land bridges, for the benefit of equestrians providing better connectivity across the A417.	The Cotswold Way crossing provides an off-road connection for horse riders. See also opportunities 6, 12 and 21.

5 New Opportunities at Preliminary Design Stage

5.1 Preamble

5.1.1 This chapter documents user-related opportunities identified during the preliminary design phase (after the assessment report was issued) and builds upon opportunities identified in the *Walking, cycling and horse-riding strategy PCF Stage 2* report. They have been developed through discussions between the Lead Assessor and the wider design team and recorded here. Actions taken and outcomes are summarised in the next chapter.

5.2 Crickley Hill

5.2.1 On Crickley Hill, the scheme would worsen existing fragmentation between the northern and the southern sides of the trunk road. There is limited opportunity to provide grade separated crossings due to the topography and environmental impacts.

5.2.2 On the northern side of the scheme and adjoining Crickley Hill, an access track between Dog Lane and Cold Slad Lane is required for maintenance. An access road is required from Cold Slad Lane to Ullenwood junction, to be created by modifying the existing A417. On the southern side of the scheme, three PRoW terminate at the edge of the road and are effectively dead ends:

- Badgeworth Footpath 84 at Flyup 417 Bike Park;
- Badgeworth Footpath 86 between Flyup 417 Bike Park and Grove Farm; and
- Badgeworth Bridleway 87 at Grove Farm.

5.2.3 Walkers, cyclists and horse riders using these three routes must either turn back, walk in the A417 verge or try to cross the road. Whichever way, the A417 is a hazardous and intimidating environment for people and horses. Initial proposals were to connect the three paths with a new path to Grove Farm. However, Flyup 416 Bike Park reports security concerns over their equipment and public access through their property on Badgeworth Footpath 84.

5.2.4 **Opportunity 17** - Provide parallel WCH routes at Crickley Hill running adjacent to the dual carriageway to overcome the need to cross the A417.

5.2.5 **Opportunity 18** - Remove or divert Badgeworth Footpath 84, Footpath 86 and Bridleway 87 to overcome the existing severance.

5.3 Cotswold Way

5.3.1 Currently, there is severance at the Air Balloon roundabout due to traffic volumes and poor crossing facilities and the scheme would worsen the severance. A new crossing needs to cater for all user groups to reconnect north with south. This crossing would include diversions of the Cotswold Way and Gloucestershire Way.

5.3.2 **Opportunity 19** - Provide a crossing for the Cotswold Way and accommodate all WCH users.

5.4 Birdlip to Crickley Hill and Leckhampton Hill

5.4.1 A WCH route between Birdlip, Crickley Hill (north of A417) and Leckhampton Hill would offer opportunities to develop wider WCH routes whilst also enhancing the local PRoW network.

- 5.4.2 **Opportunity 20** - Provide a WCH route from Birdlip to Crickley Hill and Leckhampton Hill.

5.5 Gloucestershire Way and South Hill

- 5.5.1 The scheme severs the Gloucestershire Way (footpaths) to the north of Birdlip Radio Station. At this location, it also severs the unclassified road that runs via South Hill to the A436. Options identified to overcome the severance are:
- Footbridge over the A417 and at-grade crossing of the A436. Due to expected high volume of traffic on the A436, this option is not considered suitable.
 - Footbridge spanning both the A417 and A436. This footbridge would be an additional significant structure.
 - Divert to Shab Hill junction. From Emma's Grove, divert the Gloucestershire Way past the radio station, through Shab Hill and along the unclassified road.
- 5.5.2 **Opportunity 21** - Provide a crossing for the Gloucestershire Way and the unclassified road that runs from the radio station to the A436, and accommodate all WCH users.

5.6 Birdlip to Nettleton

- 5.6.1 Air Balloon Way should attract walkers, cyclists and horse riders. A WCH route between Birdlip and Nettleton, in particular the Golden Heart Inn, could also become an important WCH route. There is no direct vehicular access from Cirencester Road to Air Balloon Way and traffic flows from Stockwell Lane to Nettleton would be very low.
- 5.6.2 **Opportunity 22** - Review requirements on Cirencester Road. Modify the existing A417 from Stockwell Lane to Cowley junction for shared use between WCH and vehicles.

5.7 Stockwell to Cowley

- 5.7.1 From Stockwell to Cowley, there are three WCH routes that would be severed by the proposed scheme:
- Cowley Lane;
 - Cowley Restricted Byway 36; and
 - Cowley Footpath 22.
- 5.7.2 For two of these routes, Cowley Lane and footpath 22, overbridges would be provided at Cowley and Stockwell respectively. The restricted byway is near to Cowley Lane and would be diverted onto the overbridge.
- 5.7.3 **Opportunity 23** - Enhance Cowley and Stockwell overbridges to accommodate all users.

5.8 Cowley junction

- 5.8.1 Following public consultation, Cowley Wood Lane would be closed to through traffic but remain open to residents at Keepers Cottages. The lane is a popular WCH route and particularly for cyclists.
- 5.8.2 **Opportunity 24** - Retain Cowley Wood Lane between Cowley junction and Cowley for WCH users.

6 Review of Preliminary Design Stage Opportunities

6.1.1 This chapter records the user-related opportunities identified during the preliminary design stage along with actions taken/outcomes.

Table 6-1 Review of preliminary design opportunities

Opportunity	Action Taken/Outcome
Crickley Hill	
Opportunity 17 - Provide parallel WCH routes at Crickley Hill running adjacent to the dual carriageway to overcome the need to cross the A417.	Dog Lane and Cold Slad Lane would continue to be lightly trafficked and shared between all users including motorised traffic. A new bridleway would connect Dog Lane and Cold Slad Lane to provide a through route for walkers, cyclists and horse riders.
Opportunity 18 - Remove or divert Badgeworth Footpath 84, Footpath 86 and Bridleway 87 to overcome the existing severance.	<ul style="list-style-type: none"> The new access to Flyup 417 Bike Park would be designated as a public footpath and connect to Badgeworth Footpath 84. The severed dead end of Footpath 84 through Flyup 417 Bike Park would be obsolete and stopped up. Badgeworth Footpath 86 would be reclassified as bridleway and a new bridleway adjacent to Grove Farm (Crickley Hill Tractors) would connect to Bridleway 87, creating a circular route for horse riders. The severed dead ends of Badgeworth Footpath 86 and Bridleway 87 would be obsolete and stopped up.
Cotswold Way	
Opportunity 19 - Provide a crossing for the Cotswold Way and accommodate all WCH users.	A new bridge over the scheme would be provided near to where the Cotswold Way currently crosses the A417 at the Air Balloon roundabout. The overbridge would be designated as a restricted byway and provide crossing for walkers, cyclists, horse riders and carriages. Both the Cotswold Way and Gloucestershire Way would be diverted over the crossing.
Birdlip to Crickley Hill and Leckhampton Hill	
Opportunity 20 - Provide a WCH route from Birdlip to Crickley Hill and Leckhampton Hill.	The cycling route from Birdlip would remain on the B4070 north of the village. Cyclists could join Air Balloon Way either shortly after leaving Birdlip or at Barrow Wake. Air Balloon Way would provide a cycling route, free of motorised traffic, over the Cotswold Way crossing to Crickley Hill and Leckhampton Hill.
Gloucestershire Way and South Hill	
Opportunity 21 - Provide a crossing for the Gloucestershire Way and the unclassified road that runs from the radio station to the A436, and accommodate all WCH users.	A new overbridge would be designated as a bridleway and provide a crossing for walkers, cyclists and horse riders. The new bridleway would connect to the unclassified road on both sides of the crossing.
Birdlip to Nettleton	
Opportunity 22 - Review the requirements on Cirencester Road. Modify the existing A417 from Stockwell Lane to Cowley junction for shared use between WCH and vehicles.	The existing footpath that links Cirencester Road and Air Balloon Way would be improved. A car park for disabled users is proposed at the end of Cirencester Road/Air Balloon Way. The road from Stockwell Lane to Cowley junction would be lightly trafficked and shared between all users. A footway would be provided from Cowley junction to Cowley Wood Lane to cater for pedestrians where the road is busier and includes a roundabout.

Opportunity	Action Taken/Outcome
Stockwell to Cowley	
<p>Opportunity 23 - Enhance Cowley and Stockwell overbridges to accommodate all users.</p>	<p>Cowley and Stockwell overbridges would be lightly trafficked and shared space between all users. If required, 3m verges on both sides would allow users to move out of the way of road traffic. Cowley overbridge includes a hardened verge for WCH users. Stockwell overbridge would be a private means of access and designated as bridleway.</p>
Cowley junction	
<p>Opportunity 24 - Retain Cowley Wood Lane between Cowley junction and Cowley for WCH users</p>	<p>A new bridleway is proposed on Cowley Wood Lane. Access would be required for residents of Keepers Cottages but through traffic would be prohibited.</p>

7 Design Decisions

7.1 Review process

- 7.1.1 The WCH review is ongoing during design of the highway scheme up to construction and the review team records the design decisions relating to provision of facilities. Key decisions made during this preliminary stage of design are documented below.
- 7.1.2 The Design Manual for Roads and Bridges provides the design requirements for WCH routes relating to all-purpose trunk roads.
- *CD 143 Designing for walking, cycling and horse-riding* (Highways England, March 2020) including England National Application Annex.
 - *CD 195 Designing for cycle traffic* (Highways England, March 2020) including England National Application Annex.
- 7.1.3 Other design documents may be referred to by the Lead Assessor in the course of the review. Typical examples are *Inclusive mobility* (DfT, December 2005) and a range of British Horse Society leaflets.
- 7.1.4 The WCH strategy is shown on drawing no HE5515055ARP-HKF-X_XX_XXXX_X-DR-D-000007 *Walking, cycling and horse riding strategy overall layout plan*.

7.2 Scheme crossings

Bentham Lane to Air Balloon roundabout

- 7.2.1 Reducing the existing severance of PRoW caused by the A417 is a general opportunity for the proposed scheme. At present, there are no formal road crossings along the 2.2km length of carriageway from Bentham Lane to the Air Balloon roundabout. Whilst there are a number of locations where people may wish to cross the road, there are no facilities to help them to do so. Even where the Cotswold Way National Trail and Gloucestershire Way long distance path cross the road at the Air Balloon roundabout, the crossing is uncontrolled and limited to dropped kerbs only.
- 7.2.2 Figure 7-1 shows the two proposed crossings between Bentham Lane and the Air Balloon, both of which would be grade-separated:
- shared private means of access for walking, mountain biking and horse riding at Grove Farm underpass; and
 - all users at the Cotswold Way crossing.
- 7.2.3 The length of dual carriageway from Bentham Lane to Grove Farm underpass would be 1.8km between WCH crossings. Severance due to a lack of formal road crossings would be an improvement compared to the current situation. An additional crossing of the carriageway between Bentham Lane and Grove Farm, including allowing walkers to use a bat underpass east of Flyup 417 Bike Park, would not be feasible. Topographical, technical and ecological constraints mean that the only option would be another underpass located fewer than 300m from the Grove Farm underpass. Two underpasses in close proximity to one another would not appease users' concerns and be at significant cost with poor value for money.

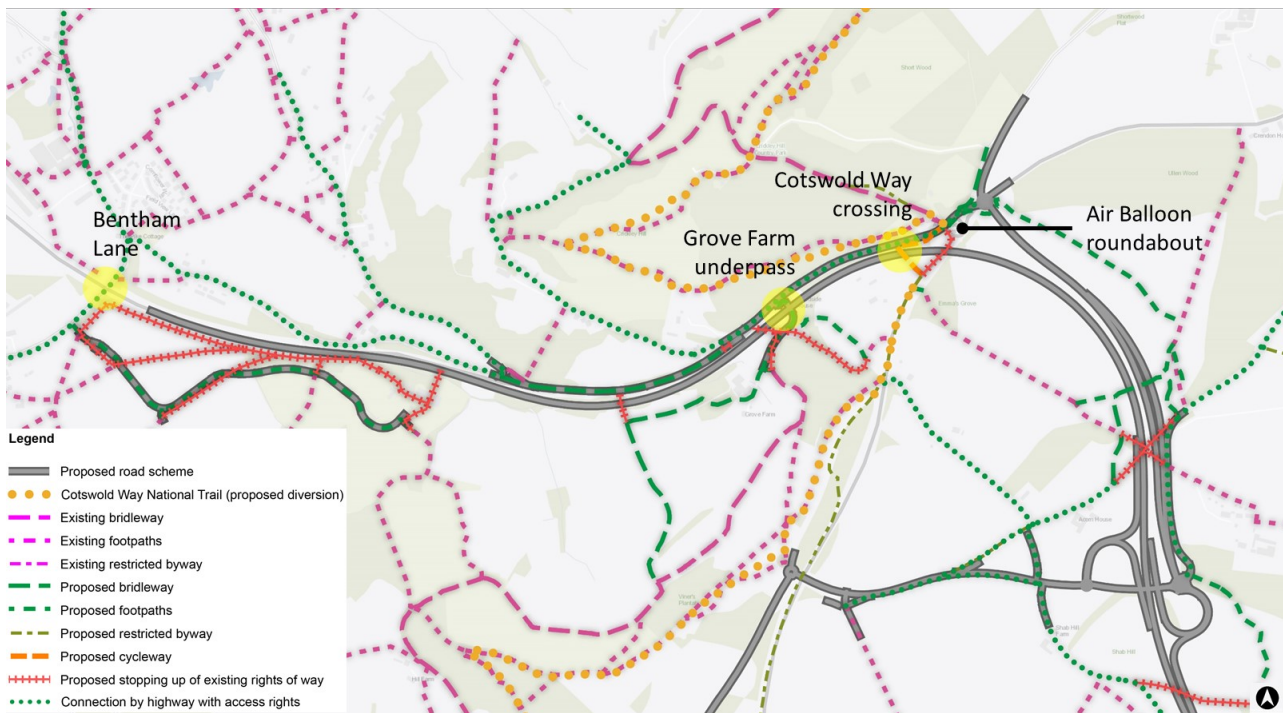


Figure 7-1 Crossings between Bentham Lane and Air Balloon

Air Balloon roundabout to Cowley junction

7.2.4 South and east of the existing Air Balloon roundabout, the scheme would be offline. The aim is to avoid severance of existing WCH routes and Figure 7-2 shows the proposed crossings:

- Gloucestershire Way crossing;
- shared carriageway at Cowley overbridge;
- shared private means of access at Stockwell overbridge;
- shared carriageway at the extant Cowley Wood Lane.

7.2.5 The four crossings allow for short diversions of existing WCH routes, the longest diversion being of the unclassified road that runs from Shab Hill Barn to Cowley Lane. A potential crossing of the scheme between Shab Hill junction and Cowley crossing is not feasible because it would be either visually intrusive (overbridge) or have long approach ramps (underpass). Similarly, allowing walkers to use a nearby mammal crossing would not be feasible because it is designed for use by badgers, at only 700mm diameter.

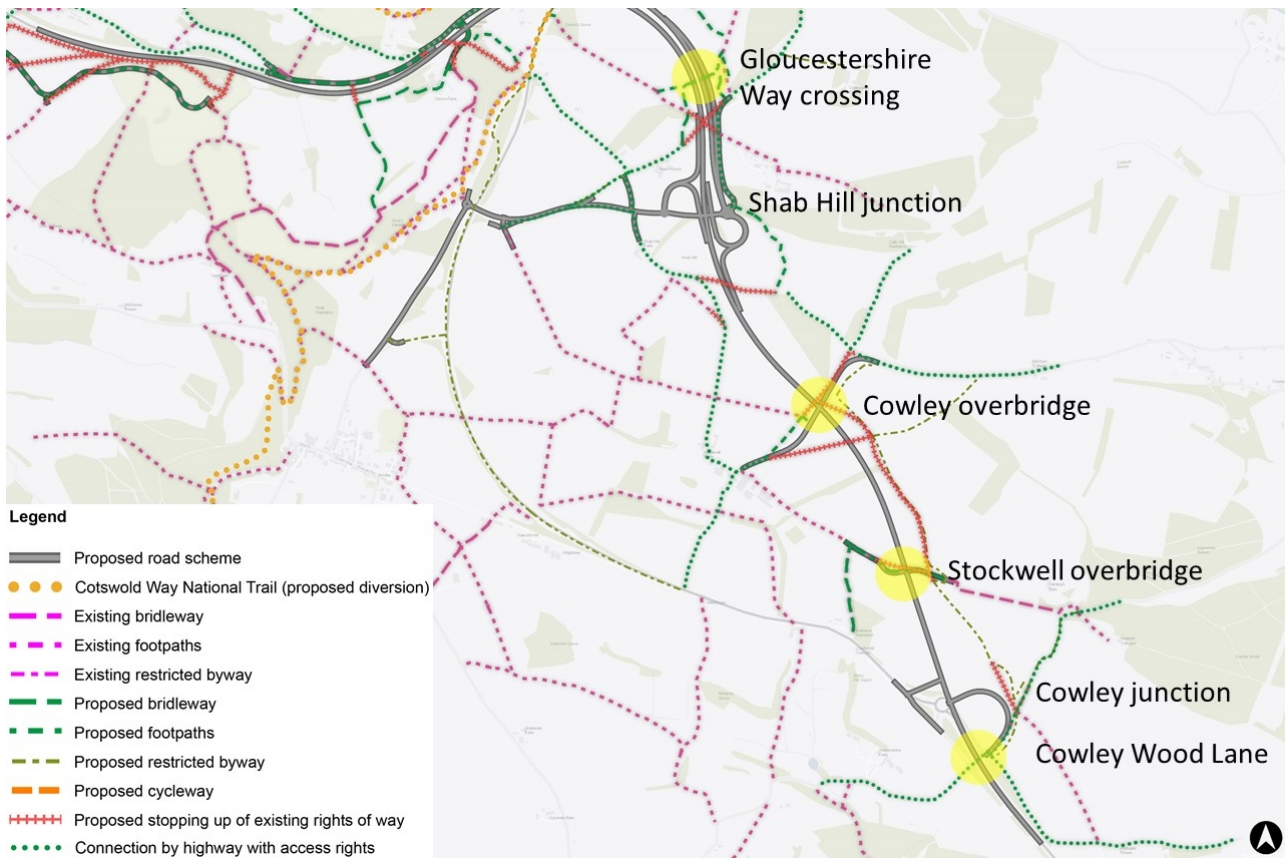


Figure 7-2 Crossings between Air Balloon and Cowley junction

7.2.6 Table 7-1 summarises the proposed crossings including usage and key dimensions.

Table 7-1 Summary of proposed WCH crossings

Name	Chainage (m)	Users	Width	Height/Parapets
Grove Farm underpass	1+725	WCH and private means of access	3.5m carriageway with 4.0m to accommodate WH	4.0m headroom
Cotswold Way crossing	2+100	WCH including carriages and occasional cattle crossing	At least 5m between parapets	1.8m with 1.0m solid infill
Gloucestershire Way crossing	2+690	WCH and wildlife	3.5m path	2.5m with 2.5m solid infill
Cowley overbridge	4+040	Public highway	4.0m carriageway with 3.0m hard verge on one side and 3.0m soft verge on the other	2.0m parapets with 2.0m solid infill
Stockwell overbridge	4+725	WCH shared with private means of access	4.0m carriageway with 3.0m soft verges on both sides	2.0m parapets with 2.0m solid infill

7.3 Walking network

- 7.3.1 Linear connections are proposed on both sides of the scheme from Bentham Lane. Along the northern side, Dog Lane and Cold Slad Lane would be lightly trafficked and the road space would be shared between all users. A new bridleway would connect the two lanes to provide a continuous walking route to the Cotswold Way crossing. The connecting link is a bridleway rather than a restricted byway to minimise the risk of illicit vehicular access. Along the southern side of the scheme, a new public footpath would be shared with the new access at Flyup 417 Bike Park and connect into the existing footpath network.
- 7.3.2 South of Grove Farm underpass, a new public footpath would replace the current path that is contiguous with the hillside rill and often too wet to be passable; the current path would still be accessible to walkers because it is common land. Steps would be provided alongside the proposed cascade and the new path would connect with the existing network near to Air Balloon Way.
- 7.3.3 At Ullenwood junction, a new bridleway would run north to Crickley Hill Country Park, offset from the western side of Leckhampton Hill. This would take walkers away from the edge of the carriageway on a safer and more pleasant route. East of Ullenwood junction, a new footpath would pass through the meadow on the north-eastern side of the scheme to the Gloucestershire Way crossing.
- 7.3.4 New byways open to all traffic (BOATs) are proposed from Shab Hill junction to Cowley Lane that would create linear routes on both sides of the scheme and overcome the severance of the unclassified road. On the western side, a short length of BOAT would retain a through route between Shab Hill Barn and Stockwell Farm; on the eastern side, a new BOAT would connect Shab Hill junction to the existing unclassified roads towards Cowley.
- 7.3.5 At Cowley crossing, steps on both sides of the overbridge allow walkers a direct route instead of using the indirect PRow. Steps reduce the risk of injury if walkers try and take a short-cut across the embankment.

7.4 Cycling network

- 7.4.1 The Dog Lane/Cold Slad Lane linear connection on the northern side of the scheme would cater for cyclists as well as walkers. At Ullenwood junction, cyclists could continue on the new bridleway to Crickley Hill Country Park, parallel to Leckhampton Hill, before rejoining the carriageway. The new bridleway allows cyclists to/from Leckhampton Hill to avoid navigating the roundabout at Ullenwood junction. (Roundabouts can be hazardous for cyclists.) Cyclists travelling south from Cold Slad Lane could use the Cotswold Way crossing and Air Balloon Way to Cowley junction.
- 7.4.2 Air Balloon Way would be free of motorised traffic as far as Stockwell Lane and lightly trafficked to Cowley junction. From Air Balloon Way at Barrow Wake, a shared WCH path would run alongside the B4070 link. Cyclists could either continue north-east to the Gloucestershire Way crossing and onwards to the A436, or continue south-east to Stockwell.
- 7.4.3 At Cowley junction, Cowley Wood Lane would be designated as a bridleway and shared with residents of Keepers Cottages. The lane is a bridleway rather than a byway to minimise the risk of illicit vehicular access.

7.5 Horse riding network

Hacking

- 7.5.1 The Dog Lane/Cold Slad Lane linear connection on the northern side of the scheme would cater for horse riders as well as walkers and cyclists. At Grove Farm underpass, an existing footpath from Barrow Wake would be reclassified as a bridleway and connect to the underpass with a new bridleway alongside the tributary of Norman's Brook. The new bridleway would create a circular horse riding path from Barrow Wake and overcome the current dead-end at the A417. The gradient of the reclassified path would be approximately 25% at its steepest point over a short distance and manageable by horse riders albeit at the maximum.
- 7.5.2 From Cold Slad Lane, horse riders could continue north on the new bridleway to Crickley Hill Country Park, parallel to Leckhampton Hill, and rejoin the bridleway network after about 300m on-road. In a southerly direction, horse riders could use the Cotswold Way crossing and Air Balloon Way
- 7.5.3 From Air Balloon Way at Barrow Wake, a shared WCH path would run alongside but offset from the B4070 link. Horse riders could either continue north-east to the Gloucestershire Way crossing and onwards to the A436, or continue south-east to Stockwell.
- 7.5.4 At Cowley junction, Cowley Wood Lane would be designated as a bridleway and shared with residents of Keepers Cottages. The lane is a bridleway rather than a byway to minimise the risk of illicit vehicular access.

Carriages

- 7.5.5 Carriage drivers would be able to use Cold Slad Lane, the Cotswold Way crossing and Air Balloon Way. East of the scheme, an existing footpath would be reclassified as restricted byway to prevent severance and allow carriages to use a traffic-free route from Cowley crossing to Cowley junction.

7.6 Disabled users

- 7.6.1 Disabled users are catered for as much as possible in the scheme and the nearby Star College is a consideration in this respect. However, the topography is challenging and, in some locations, the accessible routes are longer than more direct but steeper routes.
- The Cotswold Way and Gloucestershire Way crossings have maximum gradients of 5% with rest areas at appropriate intervals.
 - Air Balloon Way would be accessible from and between both car parks, i.e. at Barrow Wake and Cirencester Road.
 - At the Cowley crossing, stopped-up highway on the eastern side and diverted restricted byway on the western side provide step-free access.

7.7 Lighting

- 7.7.1 Dark skies within the AONB contribute to its special character. It is acknowledged that inappropriate lighting associated with new development can negatively affect an area's dark skies. The scheme layout and design would enhance the tranquillity and dark skies of the AONB (one of the special qualities) as the road

carriageway would be sunk into the landscape, reducing noise pollution, light spill and skyglow.

- 7.7.2 Lighting requirements at Grove Farm underpass would be confirmed at the detailed design stage after undertaking an appropriate lighting assessment. At this stage, it is expected that lighting would be required because the structure would be located in an enclosed valley and below the A417 scheme. If lighting is required, it would be low lux, directional and demand-sensitive. It would be available between half an hour after dawn and until half an hour before sunset between 1 April and 31 October; and 24 hours a day between 1 November and 31 March.

8 Review Team Statement

8.1.1 As Lead Assessor, I confirm that this walking, cycling and horse riding review report was compiled in accordance with DMRB GG 142 and thus records all design team deliberations and decisions relating to walking, cycling and horse riding issues and opportunities.

8.1.2 The walking, cycling and horse riding review was undertaken by the following team:

Lead Assessor

Name	Tansin Brown
Position	Senior Engineer
Organisation	Ove Arup & Partners
Signed	

Date	19 April 2021
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Assessor

Name	Val Ismaili
Position	Transport Planner
Organisation	Ove Arup & Partners

8.1.3 As design team leader, I confirm that the assessment has been undertaken at the appropriate stage of the highway scheme development.

8.1.4 I confirm that in my professional opinion the appointed Lead Assessor has the appropriate experience for the role, making reference to the expected competencies contained in DMRB GG 142.

Design Team Leader

Name	Jason Prosser
Position	Design Co-ordinator
Organisation	Ove Arup & Partners
Signed	

Date	19 April 2021
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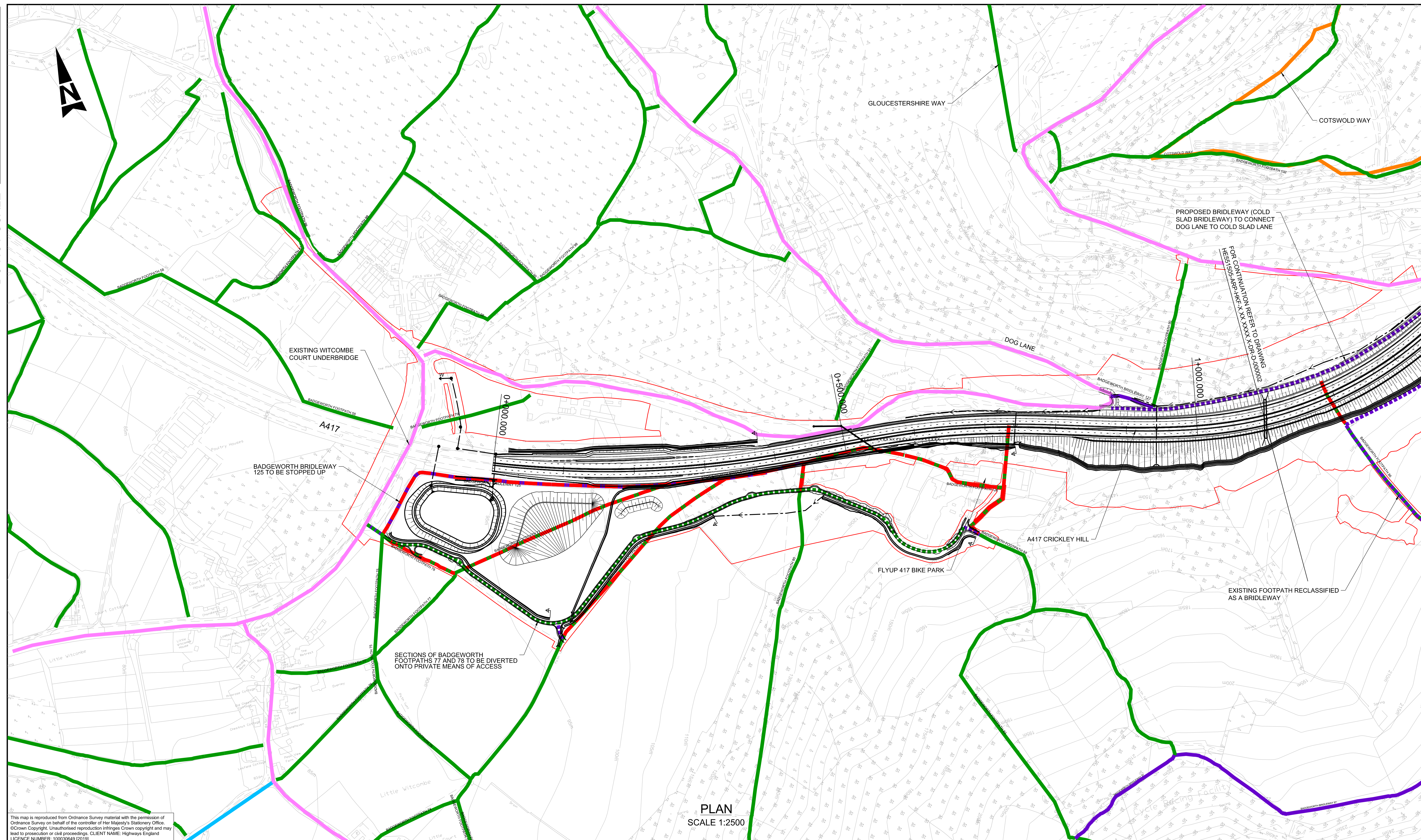
Abbreviations List

AONB	Area of Outstanding Natural Beauty
DfT	Department for Transport
PRoW	Public right(s) of way
RIS	Road Investment Strategy
WCH	Walking, cycling and horse riding
WCHAR	Walking, cycling and horse riding assessment and review

Drawings

Walking, cycling and horse riding strategy sheet 1 of 6	HE5515055ARP-HKF-X_XX_XXXX_X-DR-D-000001
Walking, cycling and horse riding strategy sheet 2 of 6	HE5515055ARP-HKF-X_XX_XXXX_X-DR-D-000002
Walking, cycling and horse riding strategy sheet 3 of 6	HE5515055ARP-HKF-X_XX_XXXX_X-DR-D-000003
Walking, cycling and horse riding strategy sheet 4 of 6	HE5515055ARP-HKF-X_XX_XXXX_X-DR-D-000004
Walking, cycling and horse riding strategy sheet 5 of 6	HE5515055ARP-HKF-X_XX_XXXX_X-DR-D-000005
Walking, cycling and horse riding strategy sheet 6 of 6	HE5515055ARP-HKF-X_XX_XXXX_X-DR-D-000006
Walking, cycling and horse riding strategy overall layout plan	HE5515055ARP-HKF-X_XX_XXXX_X-DR-D-000007
Badgeworth Footpath 86 Reclassification Plan and Profile	HE5515055ARP-HGN-X_XX_XXXX_X-DR-D-000021
Cowley Footpath 21 Reclassification Plan and Profile	HE5515055ARP-HGN-X_XX_XXXX_X-DR-D-000031

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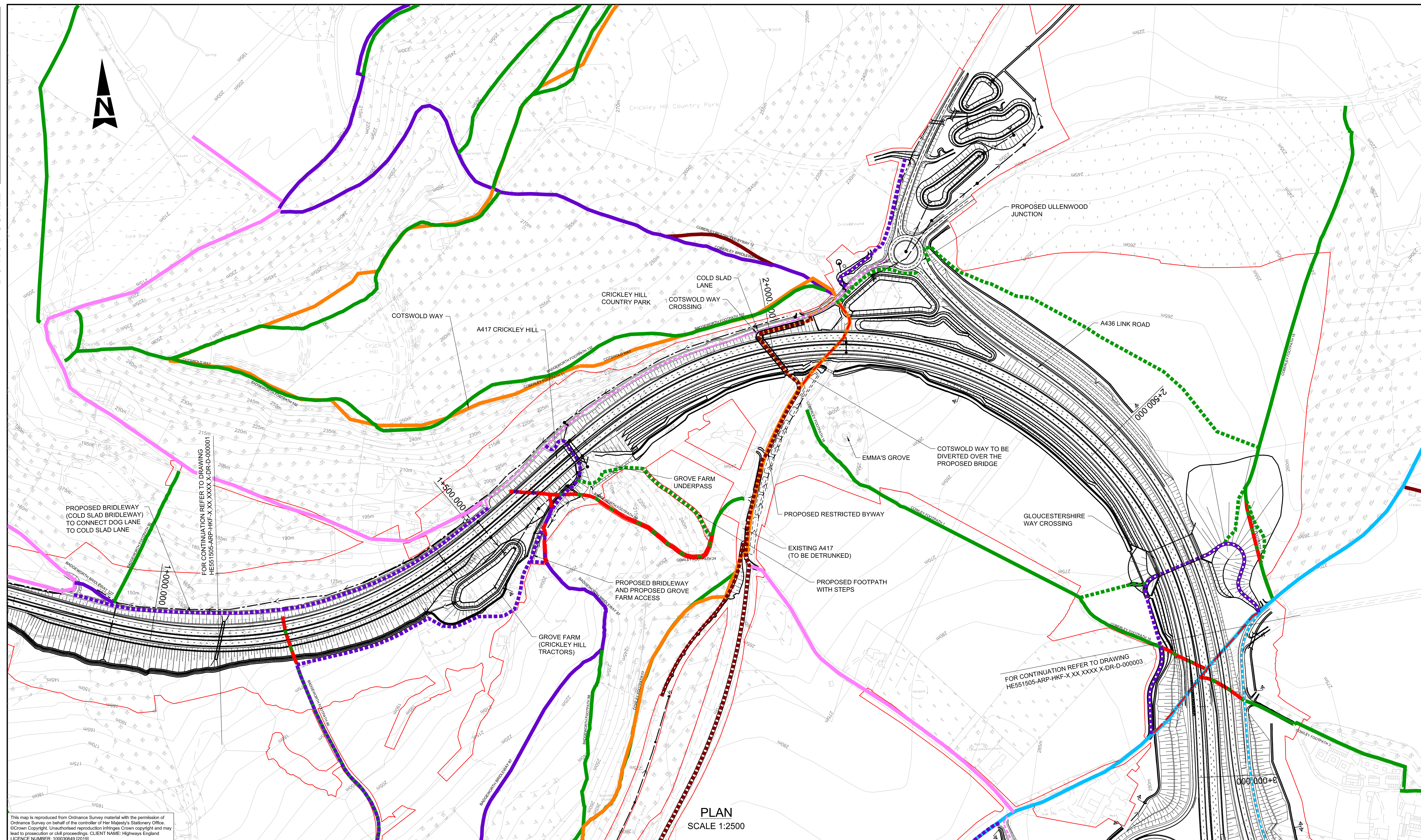
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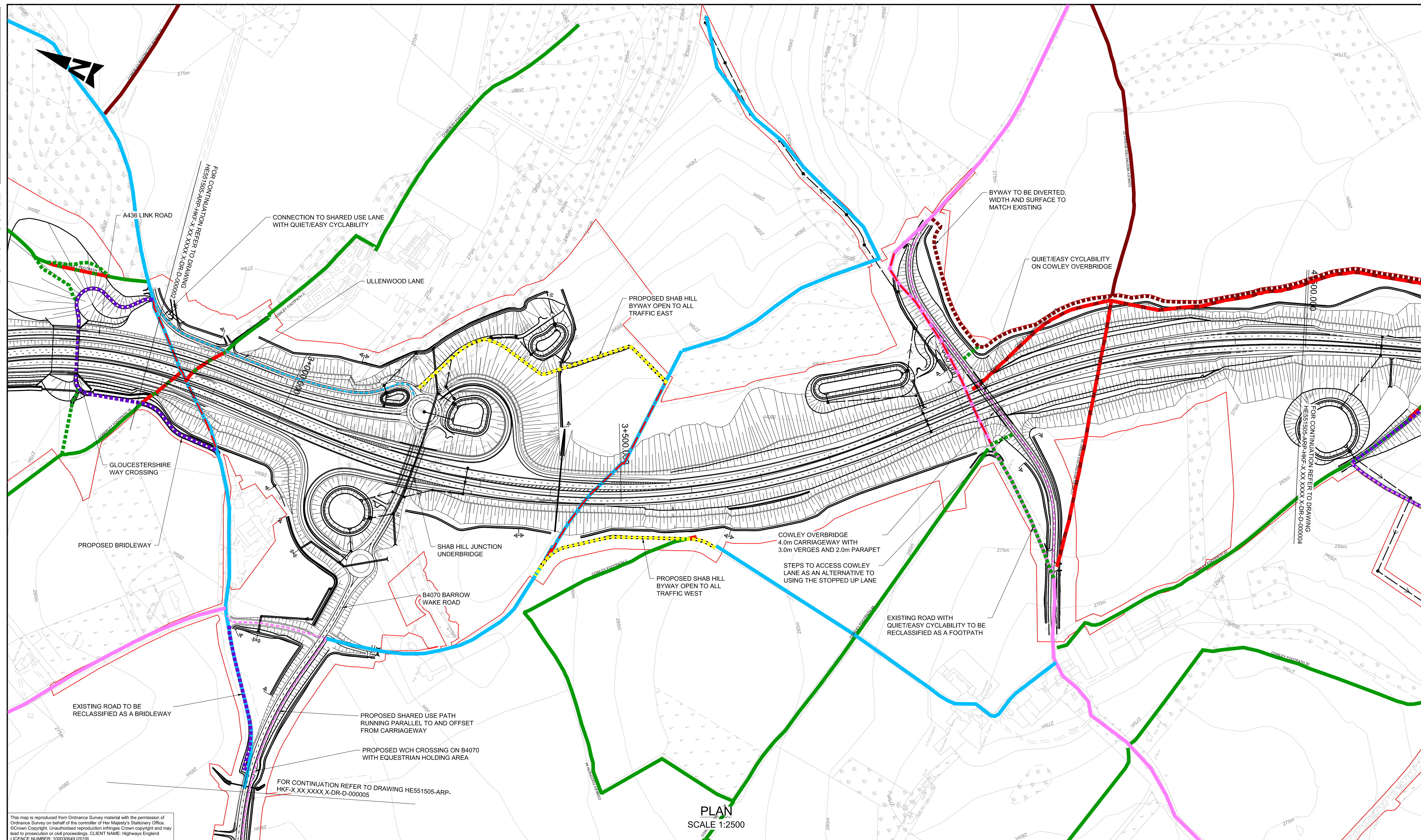
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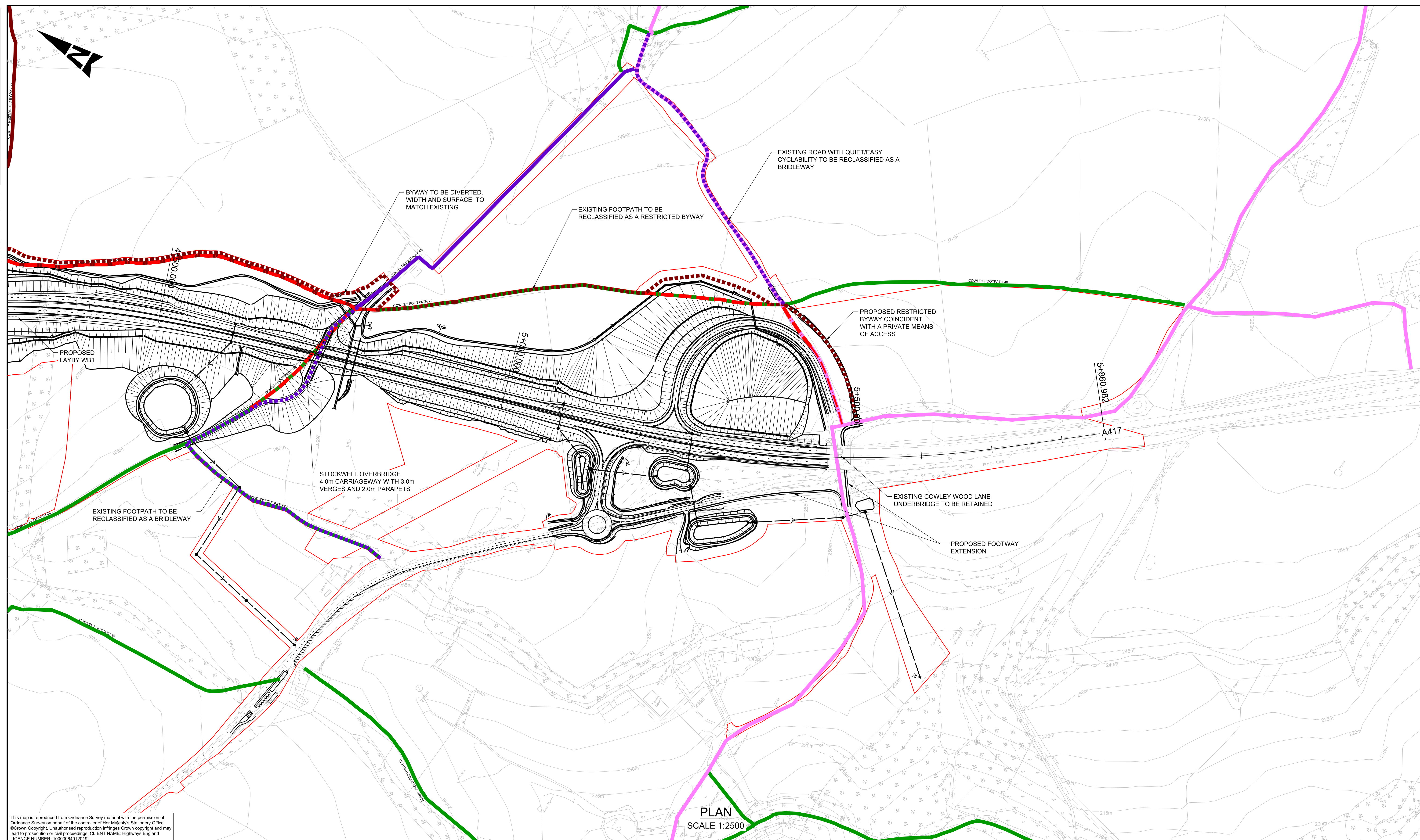
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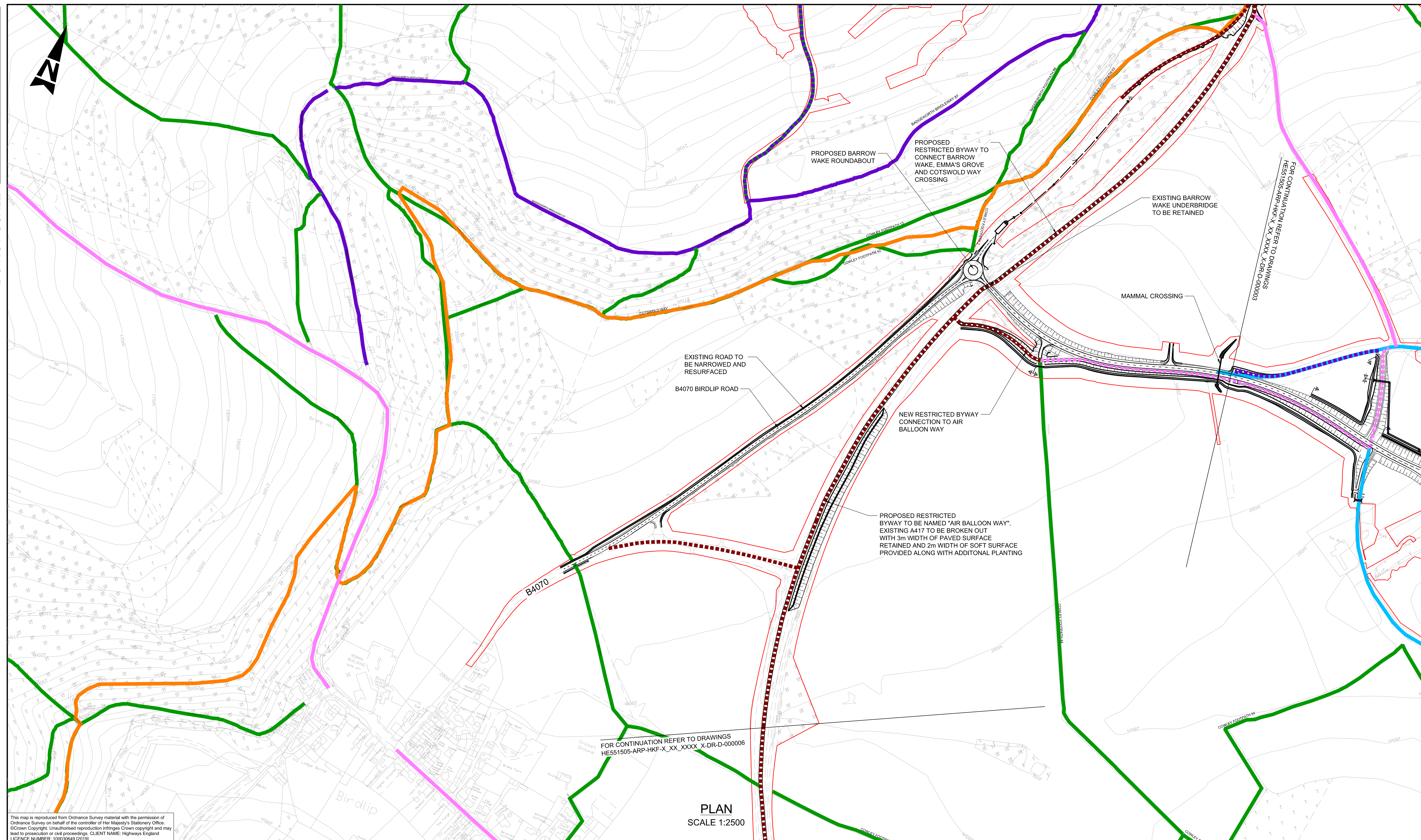
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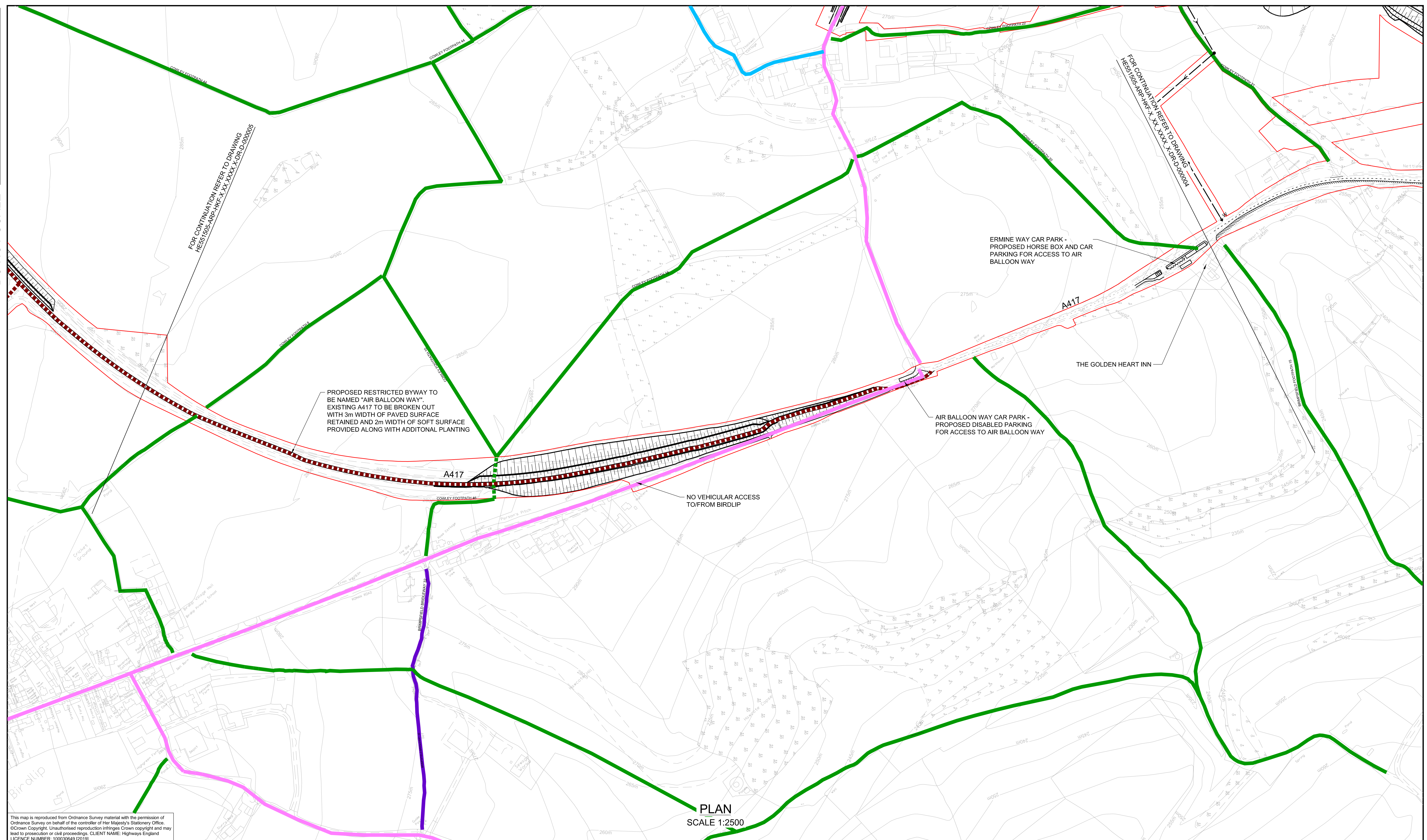
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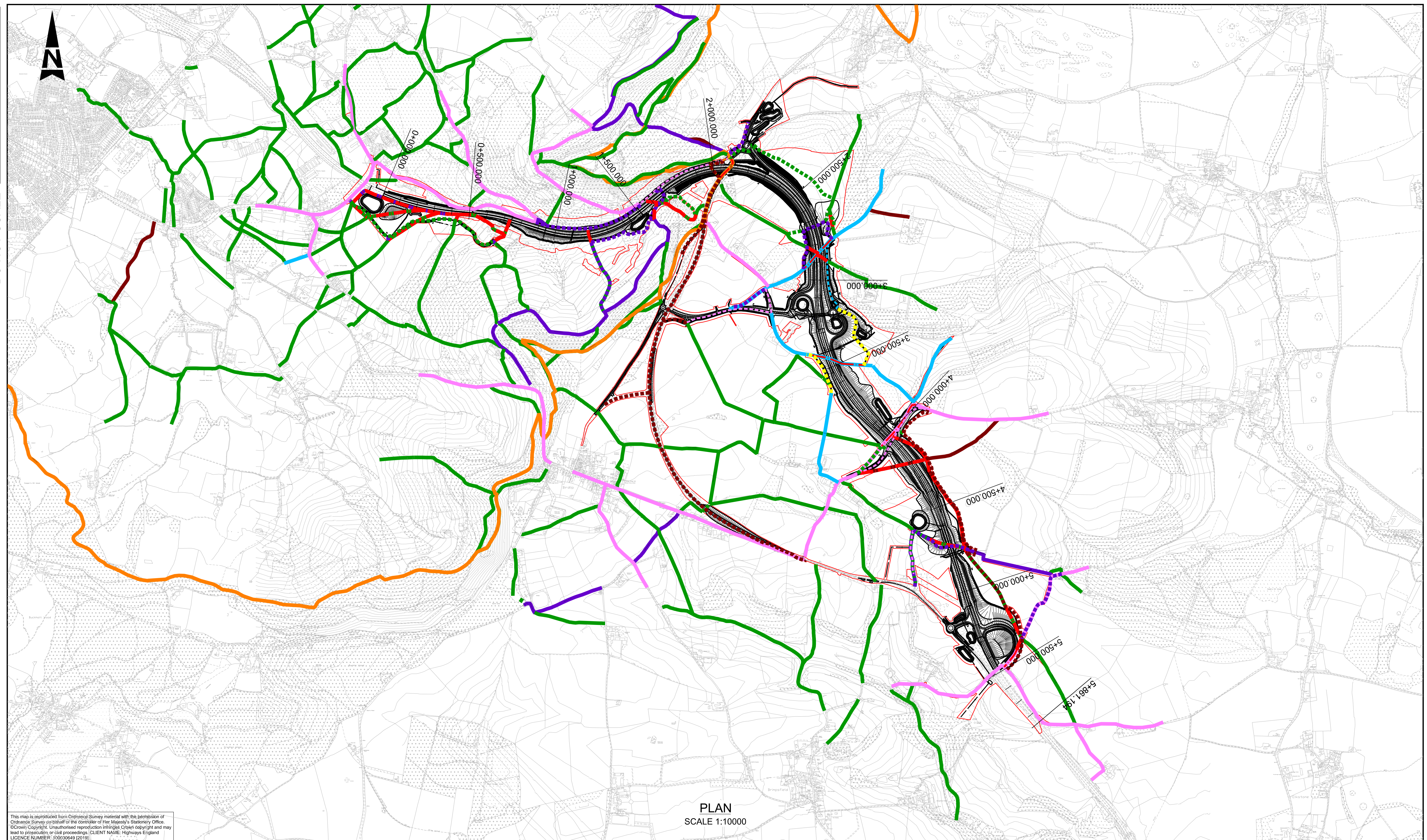
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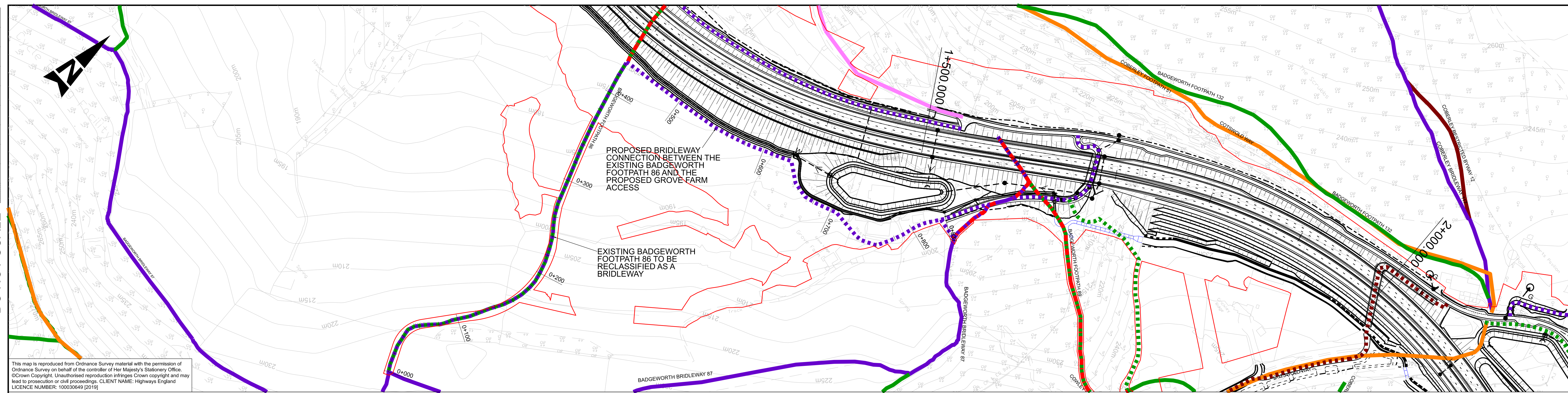
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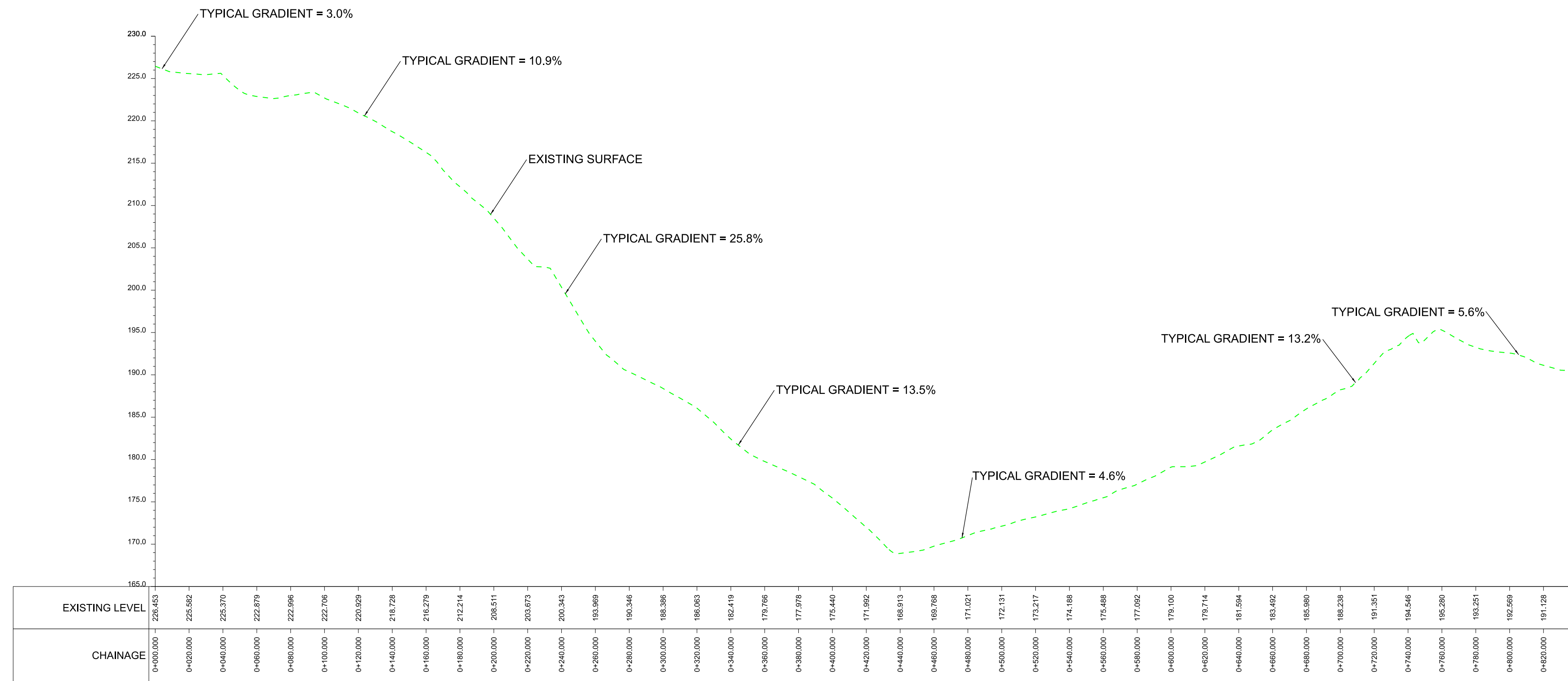
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INDICATIVE PROFILE OF PROPOSED BRIDLEWAY
FOLLOWING EXISTING TOPOGRAPHY
SCALE 1:2000H, 1:400V

LEGEND

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- FOOTPATH
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STOPPING-UP

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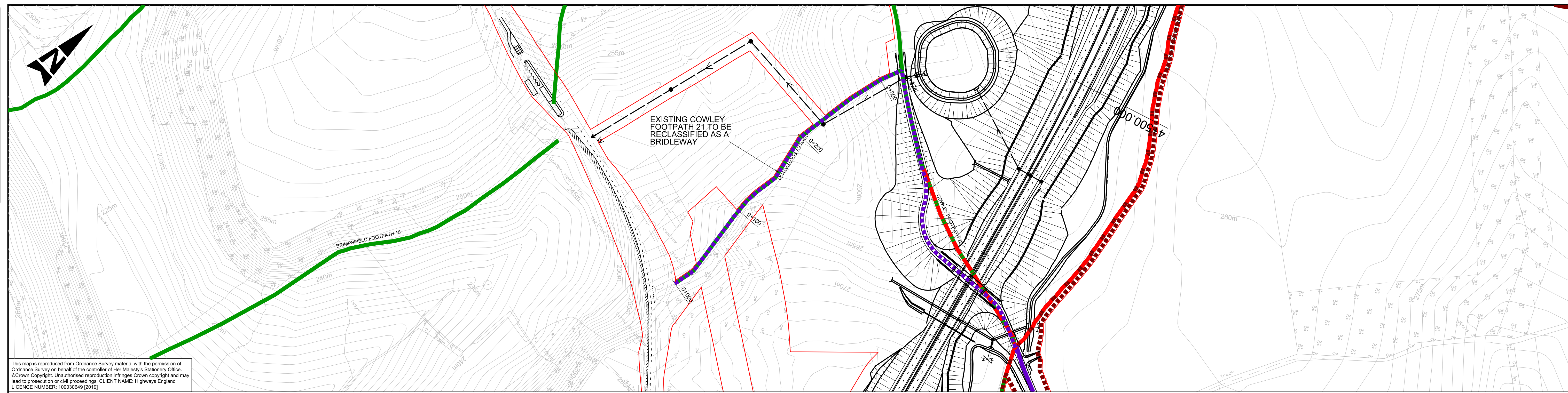
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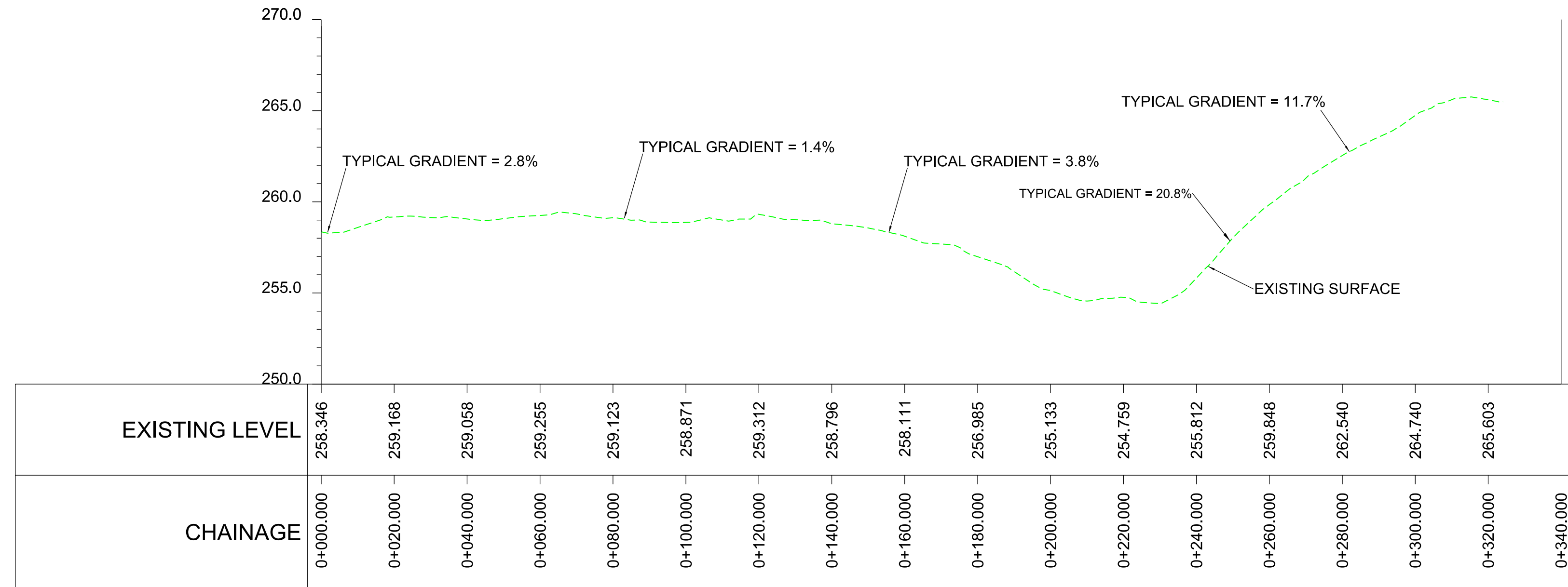
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PLAN
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INDICATIVE PROFILE OF PROPOSED BRIDLEWAY
FOLLOWING EXISTING TOPOGRAPHY

SCALE 1:1000H, 1:400V

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Appendix A

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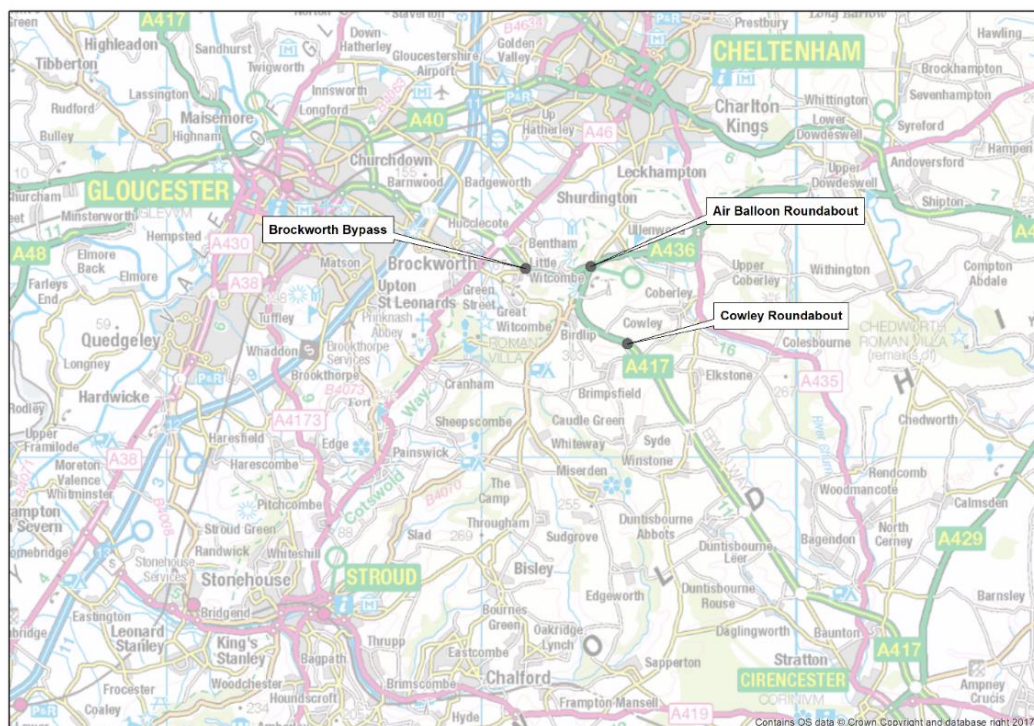
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1. Introduction

1.1 Scheme Description

- 1.1.1 The A417/A419 provides an important link between the Midlands and the South of England; between Gloucester and Swindon; and as an alternative to the M5/M4 route via Bristol. Its performance is hindered by the capacity limitations on the one single carriageway section of the A417 that has two at-grade roundabouts restricting traffic flow between Brockworth bypass and Cowley roundabout, as well as a priority junction with the B4070 on Birdlip Bypass.
- 1.1.2 This section of road, known as the A417 Missing Link at Air Balloon, suffers from inadequate capacity and a challenging alignment (limited forward visibility and steep gradients) resulting in poor safety performance, significant congestion and unreliable journey times. These problems contribute to a lack of resilience. The existing road is at capacity and will not accommodate increased traffic associated with local and regional housing and employment growth aspirations.
- 1.1.3 In December 2014, as part of the Road Investment Strategy, proposals were announced to develop a free flowing dual carriageway link between the Brockworth Bypass and the Cowley Roundabout, taking account of both the environmental sensitivity of the site and the importance of the route to the local economy.

Figure 1.1: A417 Missing Link at Air Balloon scheme location plan



1.2 Scope of this Report

- 1.2.1 This Walking, Cycling and Horse-Riding (WCHAR) Assessment has been prepared at PCF Stage 1, Option Identification in relation to the proposed A417 Missing Link at Air Balloon highway improvement. The aim of the report is to provide a summary of the current situation for pedestrians, cyclists and horse-riders – previously referred to as non-motorised users (NMU's) and now referred to as Walkers, Cyclists and Horse-Riders (WCHs). It also sets out specific opportunities to assist the project team as the design progresses.

1.3 Previous WCH studies

- 1.3.1 This report compliments previous pedestrian, cyclist and equestrian work carried out by WSP and summarised in their reports 'Provision for Non Motorised Users' dated August 2004 and 'Pedestrians, Cyclists, Equestrians and Community Effects' report dated March 2006.
- 1.3.2 The 'Provision for Non Motorised Users' report noted that the study area contains a number of tourist attractions, national and regional trails, footpaths, bridleways and marked walks. It identifies the high levels of traffic on the A417 as presenting a problem for WCHs trying to cross the road using at-grade crossing points and notes that some of the crossing points have additional issues such as a lack of visibility and increased crossing distances due to climbing lanes and ghost islands.

2. Walking, Cycling & Horse-Riding Assessment

2.1 Background

2.1.1 This Chapter summarises the findings of the assessment as set out in Chapter 4 of HD 42/17. The findings under each topic area are summarised in the sections below and any potential opportunities for improvements are noted in each section and then summarised in Chapter 3.

2.2 Review of Policies and Strategies

- Gloucestershire’s Local Transport Plan (2015 – 2031)
- Local Transport Plan Policy Document 2 – Cycle
- DfT Cycling and Walking Investment Strategy (CWIS)

2.3 Review of Personal Injury Collision Data

Motor vehicle collisions

2.3.1 The Mott MacDonald Sweco Joint Venture (MMSJV) has interrogated the CrashMap personal injury collision (PIC) information for the latest full 5 year period available, which was 1st January 2011 to 31st December 2015. This indicated that during the period, within the scheme area there were a total of:

- 5 Fatalities (4 of which are on the A417)
- 23 Serious which are predominantly along the length of the A417 with a small cluster of 4 accidents on the A46 Cirencester Road junction.
- 91 slight PICs – the majority of the incidents occur in the vicinity of the A417 / A436 Air Balloon Roundabout.

2.3.2 The figures above give a Fatality Weighted Index value of 8.210 for the five year period, an annual rate of 1.642.

2.3.3 The collision rate for the A417 within the scheme area has been calculated and is presented in the table below. The table suggests that, when all accidents are considered, the rate for the scheme is lower than the national rate for all ‘A’ trunk roads.

Table 2.1 Collision rate 2011-2015

Location	Collision rate per billion vehicle km travelled	National rate for all ‘A’ trunk roads – collision rate per billion vehicle km travelled
A417 between Shurdington Road junction and Air Balloon Roundabout	92	113

2.3.4 When severity is considered, then the safety record for the A417 study area shows a Killed or Seriously Injured (KSI) value of 19.2%, which is marginally (0.1%) less than the national average for single carriageway roads. However this KSI value is greater than the value for the dual carriageway sections of the A417 either side of the study area.

2.4 Pedestrian, cyclist and equestrian collisions

2.4.1 In terms of collisions involving pedestrians, cyclists and equestrians over the same period:

- Six PICs involved a pedal cyclist, resulting in a slight injury
- Two PICs involved a pedestrian, resulting in a serious injury.
- One PIC involved a pedestrian, resulting in a fatal injury.

2.4.2 The locations of the above collisions are shown in Appendix A.

2.4.3 Detailed data on these collisions was obtained from the Gloucestershire Road Safety Partnership in order to better understand the circumstances of each accident.

2.4.4 Four of the collisions involving a cyclist occurred in the vicinity of the A417 / A46 Shurdington Road junction. Three of these collisions occurred at the top of the eastbound diverge where facilities are restricted to an uncontrolled pedestrian crossing. The traffic at this approach accesses the gyratory by using a standard give way junction. The fourth collision occurred on the A417 westbound merge slip road. Based on the detailed accident report information, all four accidents were caused due to lack of driver awareness and accidentally colliding with cyclists.

2.4.5 One of the collisions involving a cyclist occurred, on 4th March 2012, on the A46 / Mill Lane junction south of the A417 / A46 Shurdington Road junction. The A46 provides a cycle lane in the northbound direction but there are no facilities in the southbound direction. The incident occurred when the cyclist attempted to leave the cycle path and turn onto the pavement, whilst doing so the cyclist swerved into the live traffic lane and was hit by a passing vehicle.

2.4.6 One of the collisions involving a cyclist occurred on 10th February 2012 at the A417 / A436 junction on the Cotswold Way approach. The accident information identifies the collision occurred on the roundabout circulatory but does not identify the cause.

2.4.7 All of the collisions involving a pedestrian occurred on the A417 in the vicinity of Grove Farm. Two of the incidents occurred after their vehicles broke down and were stranded on the road and the other one occurred in the centre of the carriageway while a pedestrian was crossing from the driver's offside.

2.5 Public Transport Services

- 2.5.1 There is one bus stop along the A417 located southwest of the Air Balloon Public House and close to the Barrow Wake viewpoint. The bus stop serves buses in the northbound direction only. Two bus routes use the stop; the 852 between Gloucester and Cirencester and the 23 between Stroud and Cheltenham.
- 2.5.2 There are also bus stops on the A46, either side of the Shurdington Road junction, served by several bus routes.

2.6 Trip Generators

Key trip generators and local amenities

- 2.6.1 The following trip generators are located within the vicinity of the scheme (also shown graphically in Appendix B);
- 2.6.2 Schools;
- Birdlip Primary School
- 2.6.3 Community Facilities;
- Saint John Chrysostom Greek Orthodox Church
 - Crickley Hill Country Park
 - Barrow Wake viewpoint
- 2.6.4 Other Facilities;
- Bentham Country Club
 - Cotswold Hills Golf Club
 - The Air Balloon Public House
 - The Golden Heart Inn
 - Flyup 417 Bike Park
- 2.6.5 Residential Areas;
- Bentham
 - Little Witcombe
 - Birdlip
 - Ullenwood
 - Stockwell
 - Brimpsfield
 - Brockworth
- 2.6.6 Crickley Hill Park's importance as a trip generator was emphasised in WSP's '*Provision for Non-Motorised Users*' report, which stated that the park was the fifth highest visited attraction in the county (in 2003). The report further notes that the country park and Barrow Wake viewpoint both have car parks and therefore are ideal locations for visitors to commence outdoor activities.

Future trip generators

2.6.7 There are no known future trip generators at this stage. Consultations with National trust over interested bodies will identify potential trip generators as the scheme develops.

2.7 Site Visit

2.7.1 A site visit was undertaken on Thursday 17th and Friday 18th August 2017 by Martin Magyar (Lead Assessor) and Andrew Russ (Assessor). The site visit was undertaken during both daylight and darkness hours. The daylight visits occurred between 15:00 and 18:00 on 17th August and 09:00 and 11:00 on 18th August. The darkness hours visit occurred between 20:30 and 22:00 on 17th August. The summer school holiday period was chosen for the site visit to capture the expected peak walking, cycling and equestrian activity. The weather during the visits was mainly dry with clear skies.

2.7.2 During the visits the majority of the roads were driven and some of the key trip attractors were visited, including Crickley Hill Country Park, Barrow Wake viewpoint, Birdlip village, Flyup 417 bike park, and the Air Balloon Public House. Parts of the footpath and bridleway network were walked and observed for evidence of activity, e.g. footprints or horse droppings. The locations included:

- Old Coach Road and overbridge
- Dog Lane and connecting footpath to the A417
- Footpaths including the Cotswold Way adjacent to Barrow Wake
- Footpaths within Crickley Hill Country Park

2.7.3 The following observations were made during the daylight hours site visits:

- A46 Shurdington Road junction: 3 cyclists observed passing through the junction (one westbound; two eastbound)
- A46 Shurdington Road: 4 pedestrians and 1 passenger waiting at a bus stop observed in the vicinity of the Cirencester Road roundabout
- Road between Birdlip and Little Witcombe: 2 cyclists observed while on site (see Photograph 1)
- Little Witcombe: 1 pedestrian and 1 cyclist observed
- Birdlip: 2 cyclists observed
- Cycleway between Birdlip and Stockwell: the route was restricted at one location by an informal chicane (see Photograph 2). The route is also gated near the A417 and was observed to be overgrown, all of which would hinder the progress of cyclists.
- Bentham Lane: 1 pedestrian walking a dog, a group of walkers, and 2 horse-riders observed (see Photograph 3). 1 cyclist and evidence of equestrian activity observed where Bentham Lane beneath the A417.

- Dog Lane: Evidence of equestrian activity.
- Cotswold Way: 2 ramblers observed on the Cotswold Way, immediately north-west of Birdlip
- Air Balloon Roundabout: 2 x 2 ramblers (see Photograph 4), 1 cyclist, and 2 joggers observed. While there was evidence that the footways and crossing points around the roundabout had recently been resurfaced and new kerbing installed, the volume of traffic in close proximity to the footways made for an uninviting environment. The bus stop shelter close to roundabout was observed to be full of rubbish.
- Crickley Hill Country Park: the country park was seen to be well maintained and well used by ramblers, dog-walkers, and families with children. The main car park and café was a particular focal point for activity, with significant activity also observed on the footpaths on the escarpment north of the car park and on the footpaths near the vehicular entrance to the park (see Photograph 5 for evidence of ramblers).
- Barrow Wake viewpoint: Only limited activity was observed at the viewpoint - 2 x 2 ramblers and 1 dog-walker (see Photograph 6). The car park was not observed to be well-used and the footpath adjacent to the car park was in poor condition and overgrown.
- Cowley underpass: no evidence of walker, cyclist or horse-rider activity observed.

Photograph 1: Cyclist on road between Birdlip and Little Witcombe



Photograph 2: Cycleway east of Birdlip



Photograph 3: Horse-riders on Bentham Lane



Photograph 4: Ramblers at the Air Balloon Roundabout



Photograph 5: Ramblers in Crickley Hill Country Park



Photograph 6: Dog-walker at Barrow Waker



- 2.7.4 The following observations were made during the hours of darkness site visit:
- The majority of the roads within the study area were unlit and there was no evidence of lighting provision on footpaths or bridleways meaning the area was very dark during the hours of darkness. Very little activity was observed.
 - The only pedestrian activity observed was 2 pedestrians walking on the A46 footway, in the vicinity of the Cirencester Road roundabout, and two pedestrians walking their dogs on the footway adjacent to Leckhampton Hill
 - No cycling or horse-riding activity was observed
- 2.7.5 Additionally, some infrastructure for cyclists, which had not been picked up through desktop study was found:
- Closure of an unnamed side road with the A417, just south of the Air Balloon roundabout, with signed access to Birdlip for cyclists (see Photograph 7).
 - Signed cycleway from the A417 to the Flyup 417 bike park access road and bridleway (see Photograph 8)
 - The existing eastbound advisory cycle lane on the A46 has been extended up to the give way line at the Shurdington Road junction (see Photograph 9). However, the footway at this location is still signed as a cycle route and an approaching cyclist would be unsure whether they should proceed on the footway or the carriageway.

Photograph 7: Cycleway between A417 and unnamed road, south of Air Balloon roundabout



Photograph 8: Cycleway between A417 and Flyup 417 access road



Photograph 9: Advisory cycle lane on A46, just west of the Shurdington Road junction



2.8 Existing Facilities within the Local Area

2.8.1 Existing WCH facilities are shown in Appendix C.

Pedestrian Facilities

2.8.2 The area under consideration is overwhelmingly rural in nature. It therefore has correspondingly low levels of dedicated pedestrian provision associated with the road network. This is limited to the following:

- A section of footway adjacent to the northern side of the A417 between Dog Lane and Leckhampton Hill, including Air Balloon roundabout.
- A section of footway on the eastern side of Leckhampton Hill, from the A436 (near Air Balloon roundabout) to beyond the study area.
- A section of footway on the western side of the A417 between the Air Balloon roundabout and the Cotswold Way.
- A section of footway adjacent to the Barrow Wake viewpoint.
- Footway on the southern side of the A46, in the vicinity of the Shurdington Road junction.
- Footways within the villages of Birdlip, Witcombe and Little Witcombe

2.8.3 The first three sections of footway described above are connected together and provide a limited network of footways that allows pedestrians to carry out journeys on foot in the vicinity of the Air Balloon roundabout, to and from the Air

Balloon Public House, nearby footpaths, the entrance to the Crickley Hill Country Park, and Ullenwood. Away from the Air Balloon roundabout the A417 has no footway provision.

- 2.8.4 The study area is criss-crossed by a significant number of footpaths and bridleways, as to be expected in an Area of Outstanding Natural Beauty (AONB). Where the footpaths cross the A417 no crossing facilities or grade-separation is provided.
- 2.8.5 The study area is also dissected by two long distance walks. The Gloucestershire Way is a 94 mile long distance footpath from Chepstow to Tewksbury which uses existing rights of way. The route passes through the study area in an east / west orientation. Elsewhere on the route it passes through the Forest of Dean, Severn Plain and Cotswolds linking to other national walking routes.
- 2.8.6 The Cotswold Way is a 102-mile National Trail which runs through the scheme in a north-south orientation, connecting Bath to Chipping Campden. These long-distance routes will need to be carefully considered as they pass through the scheme study area and in particular the Air Balloon Roundabout.

Cyclist Facilities

- 2.8.7 Currently, there are only two dedicated cycle facilities within the study area.
- 2.8.8 The first is a short section of off-carriageway cycleway on the north-west side of the A417 / A46 Shurdington Road junction. Cyclists are guided off the carriageway west of the junction and a sign indicates that the route is for cyclists only. However no further signing is provided, other than a cyclists dismount sign adjacent to the slip road and it is unclear whether this is meant to be one or two-way provision. The circulatory carriageway of the junction is not conducive to cycling having uncontrolled merging traffic lanes carrying high traffic flows. It is therefore likely that a number of cyclists use the footway or off-road cycleway to negotiate the roundabout and indeed the previous chapter has identified three personal injury collision involving a cyclist crossing the top of the diverge slip road using the uncontrolled crossing.
- 2.8.9 The second is a short section of off-road cycle route connecting the A417 with the road through Birdlip village. Cyclists are signed from the A417 onto the facility. Again, like the provision described above, the facility and associated signing is very basic providing an opportunity for improvement.
- 2.8.10 The A417 route is a mixture of single and dual, high speed carriageway and is not conducive to cycling.
- 2.8.11 Both the Air Balloon and Cowley roundabouts have relatively tight geometry which reduces traffic speeds and likely makes them more conducive to cycling, though there remains a lack of cycling facilities.

Equestrian Facilities

- 2.8.12 There are several bridleways within the study area as shown on the existing WCH facilities drawing in Appendix C. There are currently no dedicated crossings (e.g. Pegasus crossings or corrals) for equestrians

2.9 Existing Facilities beyond the scheme extents

- 2.9.1 Either side of the scheme extents, the A417 is high-speed dual carriageway with little in the way of facilities for pedestrians, cyclists or equestrians, other than grade-separated crossing points.
- 2.9.2 The Public Rights of Way (PROW) network is generally less dense further away from the study area, though still with a significant network in parts.
- 2.9.3 Within a couple of kilometres of the western extent of the scheme area the conurbation of Gloucester begins, with its associated network of footways and cycle provision, this includes Sustrans National Cycle Network, route 41.
- 2.9.4 There is a Pegasus crossing for equestrians on the A435 at Seven Springs, to the east of the study area.

2.10 Survey data

Traffic data

- 2.10.1 The Department for Transport's Traffic Counts website indicates that the A417 currently carries an Annual Average Daily Traffic (AADT) flow of around 32,000 vehicles.
- 2.10.2 No traffic speed surveys have been carried out as yet. However, the following speed limits are in place:
- A417 – Predominantly National Speed Limit with a short 40mph section in the vicinity of the Golden Heart Inn to the East.
 - A46 - 60mph with a 40mph section in the vicinity of the A417.
 - A436 - 50mph
 - Ermin Way, and Cirencester Road - 40mph
 - All other roads - 60mph (National speed limit)

Pedestrian, cyclist and equestrian survey data

- 2.10.3 MMSJV commissioned the traffic survey company Intelligent Data to carry out a series of pedestrian, cyclist and equestrian counts at 31 locations identified at the assessment stage. These locations were a mixture of public rights of way and side roads. The survey locations identified are given in the Table 2.2 below and shown graphically in Appendix D.

Table 2.2 WCH Surveys Locations

Survey Location	Grid Reference	Closest Settlement	Survey Location Description
1	90673, 16948	Brockworth	Footpath on south side of A46 on the approach to the A417 grade separated junction
2	90401, 16667	Brockworth	Cycleway on north side of A46 on the approach to the A417 grade separated junction
3	91404, 15929	Witcombe	Bridleway / access road to Leisure Lakes Bikes Flyup 417
4	91897, 15867	Witcombe	Dog Lane
5	91417, 15286	Witcombe	Green lane, near Witcombe
6	93439, 16114	Ullenwood	Footway on north side of A417, west of Air Balloon roundabout
7	93453, 16157	Ullenwood	Cotswold Way, north of the Air Balloon roundabout
8	93010, 16306	Ullenwood	Cotswold Way, near Shurdington
9	93541, 16179	Ullenwood	Footway on north side of A436 east of the Air Balloon roundabout
10	93488, 16110	Ullenwood	Footway on west side of A417, outside Air Balloon public house
11	93424, 15983	Stockwell	Gloucestershire Way , east of the A417
12	93335, 15817	Witcombe	Footway on west side of A417 adjacent to bus stop
13	93977, 15576	Stockwell	Gloucestershire Way , east of the A417, where it crosses access road
14	93145, 15401	Witcombe	Footway adjacent to Barrow Wake look out car park
15	93218, 15219	Stockwell	Underpass beneath A417 (access to Barrow Wake look out)
16	92669, 15135	Witcombe	Known Bridleway which runs parallel to the Cotswold way, at the bottom of the valley

Survey Location	Grid Reference	Closest Settlement	Survey Location Description
17	92431, 14542	Witcombe	The Point where the Cotswold Way crosses Ermin Way to the West of Birdlip
18	92178, 14105	Great Witcombe	Cotswold Way to the South West of Birdlip
19	94517, 14731	Stockwell	Unnamed road, north of Stockwell
20	94813, 13915	Stockwell	Unnamed road, east of Stockwell
21	93531, 13460	Brimpsfield	Footpath, south of the A417
22	94252, 13536	Brimpsfield	Footpath, south of the A417
23	94954, 13198	Cockleford	Underpass beneath the A417
24	94303, 13742	Brimpsfield	Uncontrolled crossing point of the A417 connecting footpaths adj The Golden Heart Inn
25	933141	Birdlip	Uncontrolled crossing point of the A417 connecting footpaths
26	93680, 14629	Stockwell	Junction of footpaths, near Stockwell
27	93091, 14492	Birdlip	Uncontrolled crossing point of the A417 connecting footpaths
28	92997, 15860	Witcombe	Uncontrolled crossing point of the A417 connecting footpaths
29	92662, 15705	Witcombe	Uncontrolled crossing point of the A417 connecting footpaths
30	90918, 16436	Bentham	Footbridge over A417
31	93312, 14076	Birdlip	Gated road / cycleway connecting Birdlip with A417

2.10.4 Due to the rural nature of the area within which the A417 scheme lies and the associated potential for tourism and leisure trips in the area, surveys were commissioned for one weekend day in the school summer holidays. As such 14-hour (6am to 8pm) video surveys were conducted on Saturday 2nd September to capture summer holiday flows. Due to difficulties in accessing sites 8, 11 and 14, these sites were subsequently surveyed on Sunday 10 September. The Intelligent Data surveys identified flows for the following user groups:

- Pedestrian
- Pedestrian with dog
- Pedestrian pushing pram/pushchair
- Wheelchair user
- Jogger/runner
- Cyclist on footpath or on road
- Equestrian

2.10.5 In general, a high number of pedestrians, cyclists and equestrians were observed throughout the sites, with a total of 1472 pedestrians, cyclists and equestrians counted, though numbers varied significantly from site to site.

2.10.6 The observed flows on the survey day is shown in the Table 2.3. below.

Table 2.3 WCH Flows (Saturday 2nd September 2017)

Survey Location	Survey Location	Count results	Comment
1	Footpath on south side of A46 on the approach to the A417 grade separated junction	- 14 pedestrians - 1 pedestrian with pushchair - 1 pedestrian with a dog - 24 joggers - 14 cyclists on footpath - 161 cyclists on road	
2	Cycleway on north side of A46 on the approach to the A417 grade separated junction	- 99 cyclists on road	
3	Bridleway / access road to Leisure Lakes Bikes Flyup 417	- 16 pedestrians - 1 jogger - 78 cyclists on road	This includes cyclists travelling between Flyup 417 and its outdoor track facility.

Survey Location	Survey Location	Count results	Comment
4	Dog Lane	- 4 pedestrians - 2 pedestrians with dogs - 1 wheelchair user - 6 joggers - 18 cyclists - 5 equestrians	
5	Green lane, near Witcombe	- 9 pedestrians - 1 pedestrian with a dog	
6	Footway on north side of A417, west of Air Balloon roundabout	- 5 pedestrians - 3 joggers - 6 cyclists on footpath - 1 cyclist on road	
7	Cotswold Way, north of the Air Balloon roundabout	- 30 pedestrians - 6 pedestrians with dogs - 12 joggers - 4 cyclists	
8	Cotswold Way, near Shurdington	- 178 pedestrians - 2 pedestrians with pushchair - 157 pedestrians with dogs - 2 wheelchair users - 3 joggers - 1 equestrian	Surveyed on Sunday 10 September 2017
9	Footway on north side of A436 east of the Air Balloon roundabout	- 4 pedestrians - 1 jogger - 2 cyclists on footpath - 27 cyclists on road	
10	Footway on west side of A417, outside Air Balloon public house	- 27 pedestrians - 4 pedestrians with dogs - 13 joggers - 10 cyclists	
11	Gloucestershire Way , east of the A417	- 14 pedestrians	Surveyed on Sunday 10 September 2017

Survey Location	Survey Location	Count results	Comment
12	Footway on west side of A417 adjacent to bus stop	- 29 pedestrians - 2 pedestrians with dogs - 7 joggers - 14 cyclists on footpath - 26 cyclists on road	
13	Gloucestershire Way , east of the A417, where it crosses access road	- 6 pedestrians - 8 pedestrians with dogs - 1 jogger	
14	Footway adjacent to Barrow Wake look out car park	- 15 pedestrians - 3 pedestrians with dogs - 14 joggers - 16 cyclists	Surveyed on Sunday 10 September 2017
15	Underpass beneath A417 (access to Barrow Wake look out)	- 12 pedestrians - 7 pedestrians with dogs - 5 joggers - 35 cyclists	
16	Known Bridleway which runs parallel to the Cotswold way, at the bottom of the valley	- 8 pedestrians - 1 cyclist	
17	The Point where the Cotswold Way crosses Ermin Way to the West of Birdlip	- 26 pedestrians - 10 pedestrians with dogs - 4 joggers - 1 cyclist	
18	Cotswold Way to the South West of Birdlip	- 30 pedestrians - 3 pedestrians with dogs - 10 joggers - 8 cyclists	
19	Unnamed road, north of Stockwell	- 2 pedestrians - 1 pedestrian with a dog - 2 joggers - 21 cyclists - 2 equestrians	

Survey Location	Survey Location	Count results	Comment
20	Unnamed road, east of Stockwell	- 12 pedestrians - 1 pedestrian with a dog - 1 jogger - 29 cyclists	This includes WCHs on bridleway and on the local road east of Stockwell.
21	Footpath, south of the A417	- 0	
22	Footpath, south of the A417	- 10 pedestrians	
23	Underpass beneath the A417	- 8 pedestrians - 1 jogger - 28 cyclists	
24	Uncontrolled crossing point of the A417 connecting footpaths adj The Golden Heart Inn	- 0	
25	Uncontrolled crossing point of the A417 connecting footpaths	- 2 pedestrians	
26	Junction of footpaths, near Stockwell	- 7 pedestrians - 4 pedestrians with dogs - 1 jogger - 2 cyclists	
27	Uncontrolled crossing point of the A417 connecting footpaths	- 2 pedestrians	
28	Uncontrolled crossing point of the A417 connecting footpaths	- 6 pedestrians - 2 joggers - 6 cyclists on footpath	Of the 6 total pedestrians, 2 were crossing the A417 and 4 were travelling parallel to the A417. All 6 cyclists were travelling parallel to the A417
29	Uncontrolled crossing point of the A417 connecting footpaths	- 2 pedestrians - 2 joggers - 8 cyclists on footpath	

Survey Location	Survey Location	Count results	Comment
30	Footbridge over A417	- 3 pedestrians - 1 pedestrian with a dog - 2 joggers - 10 cyclists - 7 equestrians	
31	Gated road / cycleway connecting Birdlip with A417	- 1 pedestrian with a dog - 15 cyclists on footpath - 3 cyclists on road	

2.10.7 In summary, there were 16 sites where total flows of higher than 28 users per day (i.e. an average of 2 per hour) were recorded.

2.10.8 The five sites with the highest WCH flows were:

- Site 8: Cotswold Way, near Shurdington
- Site 1: Footpath on south side of A46 on the approach to the A417 grade separated junction
- Site 2: Cycleway on north side of A46 on the approach to the A417 grade separated junction
- Site 3: Bridleway / access road to Leisure Lakes Bikes Flyup 417
- Site 12: Footway on west side of A417 adjacent to bus stop

Origin Destination Surveys

2.10.9 Origin destination surveys will be carried during PCF Stage 2, Option Selection once the number of route options has been reduced and the non-statutory Public Consultation has been carried out. These surveys are anticipated to be conducted during the summer of 2018.

The National Propensity to Cycle Tool

2.10.10 The Department for Transport has sponsored the development of a web-based program, the National Propensity to Cycle Tool¹ (PCT) in order to assist the planning of, and hence investment in, cycle routes in England. The PCT uses origin-destination travel to work data taken from the 2011 census and route information from the Cyclestreets² website to allow transport planners and engineers to identify, quote; *“where is cycling currently common and where does cycling have the greatest potential to grow?”*

¹ <http://pct.bike/gloucestershire/>

² <https://www.cyclestreets.net/>

- 2.10.11 Within the West Midlands region as a whole the PCT states that “the proportion of people who cycled as their main mode of travel to work baseline (2011 Census) data in Gloucestershire was 4.2%, compared to the national average of 3.2%. The percentage of cycling expected, based on the distance and hilliness of commutes in the region using the baseline model for England, was 3.2%”. The government’s target for cycling mode share is 4.7%. Based on these figures there would therefore appear to be some suppression of demand within the Gloucestershire region.
- 2.10.12 Looking at the PCT model output for the immediate area around the Air Balloon Junction and Birdlip only 30 of 2285 commuters are cyclists which is approximately (1%). Whereas, in the neighbouring areas of Witcombe and Brockworth the number of commuters who are cyclists is increased to between 3 and 4%.
- 2.10.13 Based on the information in the PCT, the cycle routes which are predominantly used in the study area are close to Brockworth and Shurdington.
- 2.10.14 There are only 2 other routes being used to commute in the entire study area. Based on the census data, these 2 routes are only used by 2 cyclists each and they cover a rather long distance.
- Coberley to Coney Hill - 8.5 miles (55 minutes)
 - Coulesbourne to Brockworth - 8.5 miles (1 Hour 2 minutes)
- 2.10.15 This combined evidence suggests that the area is not well utilised by commuter cyclists, probably due to the hilly topography and the high speed roads.

Desire Lines

- 2.10.16 As discussed above there are existing desire lines across the A417 at Grove Farm / Cold Slad Way, at the Air Balloon roundabout, and between Birdlip and Stockwell.
- 2.10.17 Additional desire lines may come to light as the scheme develops.

Conflict Points

- 2.10.18 There are a number of conflict points between the existing A417 and WCH routes. These include
- Foot and cycle routes through the Shurdington Road junction
 - Footpaths and bridleways currently terminating at the A417, including at Grove Farm
 - Cyclists trying to cross the A417 between Birdlip and Stockwell
- 2.10.19 At the time of writing a number of route options are being considered and the route choices that will be shortlisted from the sifting exercise are as yet

unknown. The future conflict points between WCH routes and the proposed scheme cannot therefore be identified with accuracy at this stage. However, the following potential new conflict points will need to be considered:

- Where the new scheme crosses the long distance Cotswold Way and Gloucestershire Way
- Where the new scheme crosses existing footways and bridleways
- Where the new scheme ties into the existing A417
- At any new junctions proposed along the new alignment

Consultation with Key Stakeholders

- 2.10.20 A meeting was held with officers from Gloucestershire County Council on 3 February 2017. The meeting was attended by the Transport Planning Team Manager, the Public Rights of Way Lead Officer, and a Road Safety Partnership Officer. The intention of the meeting was to commence discussions regarding WCHs, in particular the current situation for WCHs in the study area and the problems they face. The salient points from the meeting were:
- There is known to be significant WCH activity in the study area by all modes of WCH's. This includes both locally and nationally-recognised cycle races.
 - WCHs currently face the following problems:
 - Difficulties crossing the A436
- 2.10.21 There is a cycle desire line across the A417 between Birdlip high street and the road to Stockwell, but with no safe crossing of the A417 provided for WCHs
- 2.10.22 Walkers using the Cotswold Way and Gloucestershire Way face problems crossing the A417 in the vicinity of Air Balloon roundabout.
- 2.10.23 Equestrians face difficulties crossing the A417 at Grove Farm / Cold Slad Way
- A417 / B4070 Birdlip junction is an accident hotspot and WCHs may be reluctant to use the junction
 - The County Council has no specific objectives for the study area, other than to see the A417 Missing Link completed
- 2.10.24 Regarding the issues crossing of the A417 at Grove Farm / Cold Slad Way, this was also noted in WSP's '*Pedestrians, Cyclists, Equestrians and Community Effects*' report.

Consultation with Local User Groups

- 2.10.25 The User Groups shown in Table 2.4 below were contacted by letter on 28 February 2017 to seek their views on the existing situation for WCHs in the study area. 6 responses were received and the salient points of those responses are shown below:

Table 2.4 Walking, Cycling and Horse-Riding User Groups contacted

Stakeholder	Response received
Sustrans	No
Cheltenham & Tewkesbury Cycle Campaign	Yes
Cheltenham & County Cycling Club	No
Cheltenham Cycle Touring Group (part of Cyclist Touring Club - CTC)	No
Gloucester City Cycling Club	Yes
Gloucestershire Ramblers (Ramblers Association)	Yes
Byways and Bridleways Trust	No
Cotswold Conservation Board	No
British Horse Society	Yes
Mid Cotswold Tracks & Trails Group	Yes
British Carriage Driving Association	No
Gloucestershire Local Access Forum	Yes
Open Spaces Society	No

2.10.26 All the responses from the User Groups can be found in Appendix E. Responses have not been summarised in this report in case the context of the comments is misinterpreted.

2.10.27 All respondents stated that the study area currently presented difficulties for WCHs. To give a flavour of the responses, Richard Holmes, secretary for the Gloucestershire Ramblers summarised the Main Points from his user group as, *“Difficulty in crossing the A417. The Cotswold Way crossing at the Air Balloon is a significant challenge for walkers. This road crossing is the most difficult and potentially dangerous on the 102 mile length of the Way and is thought to be the most challenging road crossing on the network of sixteen National Trails. There are also several other points where public rights of way cross the A417, between Brockworth and Cowley, apart from the Cotswold Way and other footpaths. The Gloucestershire Way crosses the A417 just south west of the Air Balloon. Most of these are rarely used because of difficulty in crossing a busy road. There are no pedestrian lights or central reservation. It is noted that the map attached with the letter does not include “other routes with public access”. These are public rights of way and along with footpaths and bridle ways are regularly walked by Ramblers members”*.

3. User Opportunities

3.1 General Opportunities

- 3.1.1 **Opportunity 1:** There is a general opportunity to provide a design which includes facilities for walkers, cyclists and horse-riders which exceeds the design standards.
- 3.1.2 **Opportunity 2:** There is a general opportunity to reduce the existing severance of PROWs caused by the existing A417 and thereby enhance the wider network of PROWs in the area.

3.2 Strategic Opportunities

- 3.2.1 **Opportunity 3:** Where sections of the current A417 are bypassed by a new highway alignment there will be a reduction in traffic flows on the existing A417. This provides an opportunity to 'down-grade' the geometry of the existing A417, once the new scheme is in place, and this could create a much more attractive environment improving facilities for walkers, cyclists and horse-riders on the existing A417 without impacting traffic. This could include a reduced speed zone in the area of the Air Balloon Roundabout and on its approaches.

3.3 Pedestrian Specific Opportunities

- 3.3.1 **Opportunity 4:** Improved pedestrian facilities on the Air Balloon Roundabout.
- 3.3.2 **Opportunity 5:** At-grade bridleway crossing facility (potentially signalised) on the A417 in the vicinity of Grove Farm to connect existing Bridleways. This would reduce severance and improve this route currently used by pedestrians and cyclists (see also Opportunities 8 and 11).
- 3.3.3 **Opportunity 6:** Use environmental design elements, such as land bridges, for the benefit of pedestrians providing better connectivity across the A417. This would also provide an opportunity to realign the Cotswold Way away from the Air Balloon roundabout and its associated conflicts (see also Opportunities 12 and 16).
- 3.3.4 **Opportunity 7:** Provide a grade-separated crossing of the A417 at Hawcote Hill, east of Birdlip, to reduce severance and improve connectivity of existing footpaths for the benefit of walkers.
- 3.3.5 **Opportunity 8:** Provide low-level lighting on pedestrian routes away from the carriageway, such as the footway/footpath connections between Air Balloon roundabout and Barrow Wake and between Birdlip and the A417 (directly east of Birdlip).
- 3.3.6 **Opportunity 9:** Improve the existing pedestrian footway / footpath route between Barrow Wake and Birdlip through widening of the footway and footpath,

vegetation clearance, and provision of pedestrian signing. This would encourage walking between these two closely-located attractors.

3.4 Cyclist Specific Opportunities

- 3.4.1 **Opportunity 10:** At-grade bridleway crossing facility (potentially signalised) on the A417 in the vicinity of Grove Farm to connect existing Bridleways. This would reduce severance and improve this route currently used by pedestrians and cyclists (see also Opportunities 5 and 15).
- 3.4.2 **Opportunity 11:** Provide an at-grade crossing for cyclists (potentially signalised) on the A417 connecting the roads leading to Birdlip and Stockwell to improve connectivity on this existing cyclist desire line.
- 3.4.3 **Opportunity 12:** Use environmental design elements, such as green land bridges, for the benefit of cyclists providing better connectivity across the A417 (see also Opportunities 6 and 16).
- 3.4.4 **Opportunity 13:** Provide better connectivity for cyclists along the A46 at Shurdington Junction, through provision of stepped or kerb-separated cycleways in both directions and improved crossings at the slip roads.
- 3.4.5 **Opportunity 14:** Provide cycle tool stations or repair stations at Crickley Hill County Park and Barrow Wake for cyclists to use to service their bikes and encourage the use of these two locations as hubs for cycling. An example of a typical tool or repair station taken from Ealing Council is shown in Appendix F.

3.5 Equestrian Specific Opportunities

- 3.5.1 **Opportunity 15:** At-grade bridleway crossing facility (potentially signalised) on the A417 in the vicinity of Grove Farm to connect existing Bridleways. This would reduce severance and provide an opportunity for equestrians to use this link on an existing desire line (see also Opportunities 5 and 10).
- 3.5.2 **Opportunity 16:** Use environmental design elements, such as green land bridges, for the benefit of equestrians providing better connectivity across the A417 (see also Opportunities 6 and 12).

4. Team Statement

- 4.1.1 As Lead Assessor, I confirm that this Walking, Cycling & Horse-Riding Assessment Report has been compiled in accordance with DMRB HD 42/17 and thus contains the appropriate information for the wider design team.
- 4.1.2 The Walking, Cycling & Horse-Riding Assessment was undertaken by the following Assessment and Review Team.

Walking, Cycling & Horse-Riding Lead Assessor

Senior Engineer

Mott MacDonald Sweco

Signed:

Date: 10/10/2017

Walking, Cycling & Horse-Riding Assessor

Engineer

Mott MacDonald Sweco

Signed:

Date: 10/10/2017

Design Team Leader

Principal Engineer

Mott MacDonald Sweco

Graeme Smith

Signed:

Date: 11/10/2017

Appendix A – WCH Accident Location Plan

Appendix B – Trip Generators

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Notes

Key to symbols

 TRIP GENERATORS

P01.1	08/05/17	FIRST ISSUE		MM	MM	GS
P01.2	26/10/17	FIRST ISSUE		LG	MM	GS
Rev	Date	Amendment Details		Drawn	Chk'd	App'd

Mott MacDonald Sweco

Client 

Drawing Status For Review and Comment Suitability S3

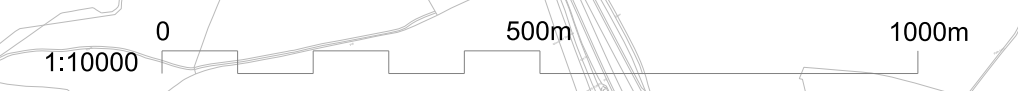
Project Title A417 MISSING LINK AT AIR BALLOON

Drawing Title APPENDIX B TRIP GENERATORS

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Original Size	A1	Date 13/03/17	Date 13/03/17	Date 17/03/17	Date 17/03/17

Drawing Number	HE PIN	Originator	Volume	Project Ref. No.
HE551506	-	MMSJV	-	HGN -
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				Revision P01.2

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Appendix C – Scheme Boundary and Existing WCH Facilities

Appendix D – WCH Survey Locations

APPENDIX E User Group Responses
REDACTED TO PROTECT PERSONAL DATA

Appendix F – Example of a typical bicycle tool or repair station



Ealing Council has installed pumps and tool stands at seven locations around the borough. The tools include allen keys, screwdrivers, spanners and tyre levers. Some of these have since been stolen. The pump fits both Schrader and Presta valves.

Source: <http://www.ealingcycling.org.uk/2015/04/new-bicycle-repair-stations.html>

Appendix B

B.1 Walking, cycling and horse-riding strategy

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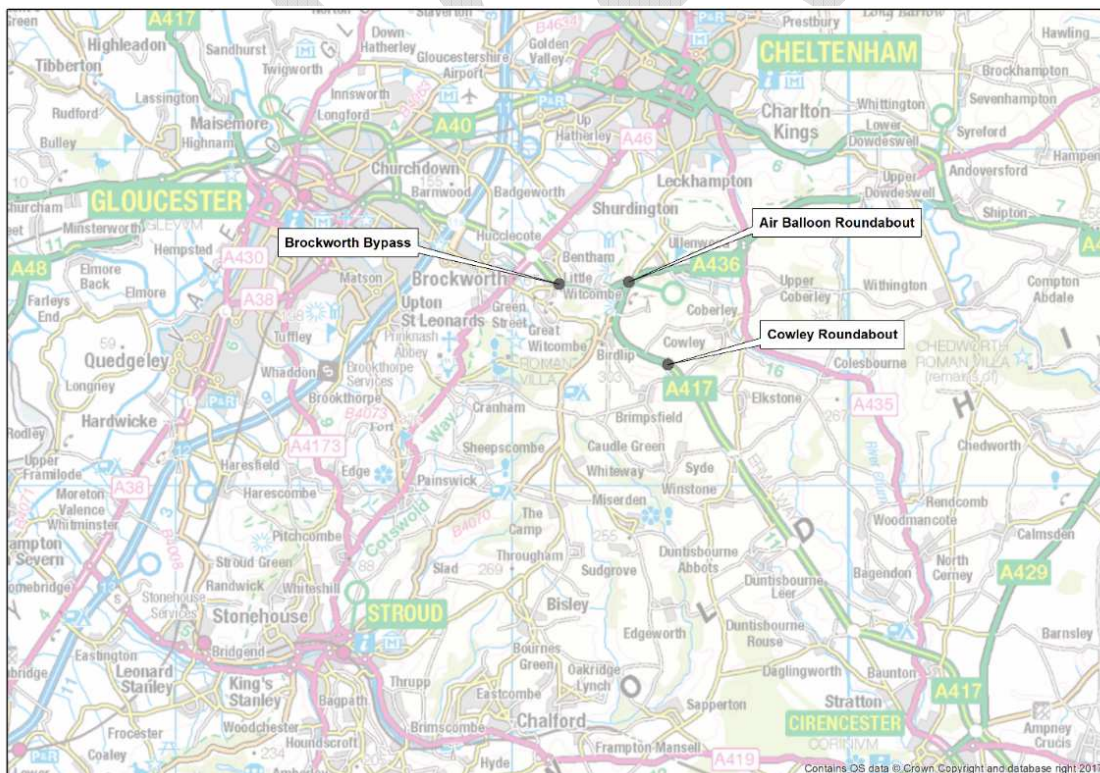
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1. Introduction

1.1. Scheme introduction

- 1.1.1. The A417/A419 forms a vital link between the M5 at Gloucester (J11a) and the M4 at Swindon (J15). The 50km route is a high-quality dual carriageway for most of its length, except for a single carriageway section between the Brockworth bypass and Cowley roundabout, near Birdlip, in Gloucestershire (refer to Figure 1.1 below).
- 1.1.2. Known as the 'Missing Link', this 5.5km section passes through the nationally important Cotswolds Area of Outstanding Natural Beauty (AONB). The scheme seeks to provide a high-quality dual carriageway in keeping with the remainder of the route and has a study area which encompasses a number of designated sites of historical, landscape and nature conservation interest.
- 1.1.3. The A417 Missing Link is currently in Stage 2 – Option Selection within the Project Control Framework (PCF). Further information on the scheme background can be found in the Client Scheme Requirements (CSR) and the Stage 1 Technical Appraisal Report (TAR).

Figure 1.1 A417 Missing Link scheme location plan



Source: GiGi GIS Portal. Crown Copyright 2016 100030649

1.2. Scope of this report

- 1.2.1. The aim of this report is to provide an initial strategy and assessment for the diversion of the existing public rights of way affected by the scheme and considering the opportunities identified in the walking, cycling and horse-riding assessment carried out at PCF Stage 1. Therefore, this document is to be read in conjunction with the Walking, cycling and horse-riding assessment report prepared at Stage 1.
- 1.2.2. This report has been prepared for the Option 30 route option, for the proposed A417.

1.3. Public consultation responses

- 1.3.1. In the public consultation held during February and March 2018, several concerns and proposals were raised regarding the public rights of way and non-motorised user routes within the scheme area. The key concerns and proposals received were:
- Concerns
 - Severance of existing national and regional ways
 - Severance of existing cycle routes and bridleways
 - Safety of NMUs crossing the route and safety of cyclists along the route.
 - Proposals
 - A417 between B4070 and Stockwell junction to be converted into a dedicated walking / cycling area
 - Link footpaths and cycle routes currently interrupted by the A417
 - Improve provisions for non-motorised users
 - Safety in crossings and along the route must be improved. Provide safe crossings for pedestrians, cyclists and horse riders by building bridges or underpasses.
- 1.3.2. A key part of this scheme is preventing the severance of existing rights of way. This will be achieved by maintaining and improving the connectivity to and between existing non-motorised user routes and safety along these routes.
- 1.3.3. Although opportunities for improvements will be noted and considered, changes to and the provision of additional rights of way is the prerogative of Gloucestershire County Council (GCC). Public rights of way will also remain in the jurisdiction of GCC and there needs to be close liaison with GCC to assess and agree how these can be best maintained and improved for all users.

2. Proposed WCHR strategy

2.1. General assumptions

- 2.1.1. General, strategic and walking, cycling and horse-riding specific opportunities associated with the scheme are fully listed and described in the *Walking, cycling and horse-riding (WCHR) assessment* report prepared for stage 1 and are listed in Appendix A.
- 2.1.2. Based on the identified opportunities and considering the responses received from the public consultation, an initial strategy has been developed to maintain and improve the existing public rights of way affected by the scheme. There is the potential for further enhancement under the “designated funds” workstream; this is outside the scope of this report.
- 2.1.3. This strategy assumes:
- A436 Alternative 2 (parallel route via Leckhampton Junction) is selected
 - A Green bridge is provided between the top of the escarpment and Air Balloon and that provision will allow NMU access across the structure. If the Green Bridge is not constructed in this location, a separate NMU structure will need to be provided.
- 2.1.4. Predominantly the affected public right of way network is for general leisure activities, with the following key destinations identified:
- Crickley Hill Country Park
 - Barrow Wake Viewpoint
 - Birdlip Village
 - Golden Heart Public House
 - Emma’s Grove (Scheduled Monument)
- 2.1.5. In addition, the following trails run through the scheme:
- Cotswold Way (national trail)
 - Gloucestershire Way (regional trail)
 - Gustav Holst Way (regional trail).
- 2.1.6. Potential routes for commuting and non-leisure trips identified include:
- Birdlip to National Star college
 - Birdlip to Cheltenham
 - Birdlip to Cowley (Stockwell included in this corridor).

2.2. Crickley Hill

- 2.2.1. On Crickley Hill, the proposed A417 will be an increased barrier between the northern and the southern sides of the trunk road. There is limited opportunity to provide grade separated crossings due to the topography and environmental impacts. Therefore, it is proposed to provide parallel NMU routes running adjacent to the dual carriageway.
- 2.2.2. On the northern side, an access track between Dog Lane and Cold Slad Lane is required for maintenance. Therefore, it is proposed that this is designed as a 6m wide NMU route (3m wide track with 1m and 2m verges) that can also be used for maintenance.
- 2.2.3. An access road is required from Cold Slad Lane to Air Balloon, however, this is expected to be very low flow as it only serves a dozen properties. This access road will be created by modifying the existing A417 to be shared use between NMU's and vehicles.
- 2.2.4. On the southern side, initial proposals were to connect the bridleway at Crickley Hill Farm (FlyUp 417) with the bridleway at Grove Farm. This would also pick up the footpath half way between the two properties. However, further consideration is needed due to the nature of land use on FlyUp 417 (high speed downhill mountain biking) and privacy concerns raised by residents of FlyUp 417.

2.3. Green Bridge

- 2.3.1. The proposed A417 severs the existing A417 south of the existing Air Balloon roundabout, and this affects NMUs as they all use the existing A417 at this point. Currently, there is severe severance due to traffic volumes and poor crossing facilities and therefore it is assumed that any new provision needs to cater for all user groups to reconnect north with south. This diversion route would also include diversions of the Cotswold Way and Gloucestershire Way.
- 2.3.2. To accommodate all NMUs it is suggested that a minimum 7m wide NMU route corridor is provided and should comprise of 1m wide verge, 3m wide paved shared use footway / cycleway and 3m wide verge for equestrians. At this stage, it has been assumed that segregation between pedestrians and cyclists is not necessary but anticipated demand and requirements need to be reviewed with all stakeholders. If a segregated cycle track is to be provided, then an extra 2m would need to be added to the route corridor.
- 2.3.3. With the A436 Alternative 2 parallel route option, the only option to cross the proposed A417 is via the proposed Green Bridge. The location and function of the Green bridge is currently being determined. Therefore, the diversion route is

to be determined when the location of the Green Bridge is known; currently it is assumed that the route would start / end at connections to the existing A417.

2.4. Birdlip to Crickley Hill and Leckhampton Hill Road

2.4.1. Providing an NMU route between Birdlip, Crickley Hill (to the north of the proposed A417) and Leckhampton Hill road is considered to offer opportunities to develop wider strategic NMU routes whilst also enhancing the local public right of way network. Two routes corridors have been identified:

- Via Barrow Wake

From Birdlip, this route initially follows adjacent to the B4070 but turns onto and uses the Barrow Wake access road and car park. From the car park, the route uses the existing track to the current A417 and then utilises the Green Bridge diversion.

A 7m wide route corridor (1m wide verge, 3m wide paved shared use footway / cycleway and 3m wide verge for equestrians) is suggested and is generally considered achievable.

This route is the most direct route and would be more scenic and tranquil. However, security issues would need to be addressed given the current anti-social behaviour at Barrow Wake.

- Via Shab Hill Junction

From Birdlip, this NMU route would follow adjacent to the B4070 Birdlip Link (existing and proposed sections) to and through the Shab Hill junction, and then follow adjacent to the A436 (western side).

Along the B4070, a 7m wide route corridor (1m wide verge, 3m wide paved shared use footway / cycleway and 3m wide verge for equestrians) is suggested as this section would also connect to the restricted byway at Shab Hill and the existing A417 south of the Birdlip junction (to be converted to an NMU route).

Adjacent to the A436, it is suggested that a 3m wide shared use footway / cycleway is provided. The relatively high traffic flows for a single carriageway road are likely to discourage on road cycling and equestrian users.

2.5. Gloucestershire Way

2.5.1. The proposed A417 severs the Gloucestershire way (footpath) to the north of Birdlip Radio station. At this location, the scheme also severs a restricted byway

that runs from Birdlip Radio station to the A436 near its junction with Ullenwood Manor Road.

2.5.2. The options identified are:

- At grade crossing of A436 and footbridge over A417
Due to anticipated traffic flows on A436, this option is not considered suitable.
- Provision of footbridge over the A436 and A417
With this option, it is suggested that the Gloucestershire Way is diverted to the north to utilise the proposed A417 and A436 cutting to avoid a raised structure in the landscape. This footbridge would be an additional significant structure and is not the preferred option.
- Divert to Shab Hill junction
Rather than diverting the Gloucestershire Way to follow adjacent to the A436, it is suggested that the Gloucestershire Way is diverted at Coldwell Bottom to follow the route of the existing restricted byway and reconnect to the Gloucestershire Way near Emma's Grove. This route is considered to provide a more tranquil experience for users. There is also an opportunity to improve this route to make it accessible for all walkers (currently the Gloucestershire Way between Emma's Grove and Rushwood kennels crosses fields and may discourage some users).

2.6. Restricted byway through South Hill

2.6.1. The NMU usage needs to be determined so the appropriate route can be determined.

2.7. Redundant sections of the existing A417

2.7.1. There are two distinct sections of the existing A417 that would become redundant:

- Northern section: from Emma's Grove to Barrow Wake underbridge
- Southern section: from B4070 Junction to Stockwell Lane Junction

2.7.2. Where required, the northern section is to be utilised for the Green Bridge diversion and also as an access road to Crickley Ridge. Otherwise, this section is to be removed to allow for ecological and landscape enhancement.

- 2.7.3. On the southern section, a new NMU route for all users is to be provided. This route would connect the NMU route adjacent to the B4070 link with Stockwell Lane and also the existing A417 (to be de-trunked) to Nettleton. In addition, it would allow additional connectivity with the footpaths that are currently severed by the existing A417.

2.8. Birdlip to Nettleton

- 2.8.1. An NMU route between Birdlip and Nettleton, in particular the Golden Heart Public House, may become an important route as no direct vehicular access is being provided.
- 2.8.2. Discussions with Gloucestershire County Council are required to review requirements on the old Cirencester Road.
- 2.8.3. The traffic flows on the detrunked A417 are anticipated to be very low as it is only providing access to Nettleton and Stockwell. Therefore, the existing A417 from Stockwell Lane to the Cowley Roundabout is to be modified to be shared use between NMUs and vehicles. The opportunity is available to extend this approach onto Climperwell Road.

2.9. Stockwell to Cowley

- 2.9.1. From Stockwell there are three NMU routes heading towards Cowley and these are all severed by the proposed scheme. For two of these routes, Stockwell Lane and Cowley Footpath, overbridges are to be provided with sufficient width for NMUs. It is currently anticipated that green verges are to be provided on the overbridges to provide ecological connectivity and this should also enhance NMU experience over the bridges.
- 2.9.2. The third NMU route affected by the scheme is a restricted byway. It is close to Stockwell Lane and therefore it is proposed to divert it to use the Stockwell Lane Overbridge.
- 2.9.3. The opportunity is available to enhance these routes for all NMUs in discussion with NMU groups and other stakeholders.

Appendix A

The table below shows how the opportunities identified in the WCHR assessment report have been considered. For a full description of each opportunity, refer to the Walking, cycling and horse-riding assessment report.

Table 2.1: Relation between opportunities and proposals

General opportunities	Comments
Opportunity 1 - There is a general opportunity to provide a design which includes facilities for walkers, cyclists and horse-riders which exceeds the design standards.	In the continuing development of the scheme design, maintaining and improving connectivity to and between rights-of-way is being considered. Design for the accommodation of existing routes and walking, cycling and horse-riding users will continue as the scheme progresses.
Opportunity 2 - There is a general opportunity to reduce the existing severance of PROWs caused by the existing A417 and thereby enhance the wider network of PROWs in the area.	Preventing severance of existing rights of way by the scheme proposals is a key consideration in its ongoing development. A number of bridges and underpasses for use by non-motorised users are proposed as mentioned in the proposals above and this strategy will continue to be developed as the scheme progresses.
Strategic opportunities	Comments
Opportunity 3 - Where sections of the current A417 are bypassed by a new highway alignment there will be a reduction in traffic flows on the existing A417. This provides an opportunity to 'down-grade' the geometry of the existing A417, once the new scheme is in place, and this could create a much more attractive environment improving facilities for walkers, cyclists and horse-riders on the existing A417 without impacting traffic. This could include a reduced speed zone in the area of the Air Balloon Roundabout and on its approaches.	All the options described in the previous section of this report are developing this opportunity, maintaining and improving existing facilities where they are impacted by the proposed A417 alignment
Pedestrian specific opportunities	Comments
Opportunity 4 - Improved pedestrian facilities on the Air Balloon Roundabout.	Problem is removed with proposed scheme
Opportunity 5 - At-grade bridleway crossing facility (potentially signalised) on the A417 in the vicinity of Grove Farm to connect existing Bridleways. This would reduce severance and improve this route currently used by pedestrians and cyclists.	An at grade crossing (including controlled crossings) is not considered appropriate at this location due to mainline alignment, traffic speeds and traffic volume. Grade separated crossing difficult to provide due to topography and available space within Grove Farm. Examining proposals to connect to Green Bridge.
Opportunity 6 - Use environmental design elements, such as land bridges, for the benefit of pedestrians providing better connectivity across the A417. This would also provide an opportunity to realign the Cotswold Way away from the Air Balloon roundabout and its associated conflicts.	Being considered as part of the strategy
Opportunity 7 - Provide a grade-separated crossing of the A417 at Hawcote Hill, east of Birdlip, to reduce severance and improve connectivity of existing footpaths for the benefit of walkers.	Grade separated crossings are proposed for the A417 due to high traffic flows

Opportunity 8 - Provide low-level lighting on pedestrian routes away from the carriageway, such as the footway/footpath connections between Air Balloon roundabout and Barrow Wake and between Birdlip and the A417 (directly east of Birdlip).	This opportunity will be considered and further developed at the detailed design stage. Note: scheme aiming for no lighting for “dark skies”
Opportunity 9 - Improve the existing pedestrian footway / footpath route between Barrow Wake and Birdlip through widening of the footway and footpath, vegetation clearance, and provision of pedestrian signing. This would encourage walking between these two closely-located attractors.	Being considered as part of strategy
Cyclist specific opportunities	Comments
Opportunity 10 - At-grade bridleway crossing facility (potentially signalised) on the A417 in the vicinity of Grove Farm to connect existing Bridleways. This would reduce severance and improve this route currently used by pedestrians and cyclists.	An at grade crossing (including controlled crossings) is not considered appropriate at this location due to mainline alignment, traffic speeds and traffic volume. Grade separated crossing difficult to provide due to topography and available space within Grove Farm. Examining proposals to connect to Green Bridge.
Opportunity 11 - Provide an at-grade crossing for cyclists (potentially signalised) on the A417 connecting the roads leading to Birdlip and Stockwell to improve connectivity on this existing cyclist desire line.	Being considered as part of strategy
Opportunity 12 - Use environmental design elements, such as green land bridges, for the benefit of cyclists providing better connectivity across the A417.	Being considered as part of strategy
Opportunity 13 - Provide better connectivity for cyclists along the A46 at Shurdington Junction, through provision of stepped or kerb-separated cycleways in both directions and improved crossings at the slip roads.	This opportunity references to a junction outside the scheme area. The improvement of the rights-of-way where they are not directly impacted by the scheme, is the prerogative of GCC. There will be close liaison with the Council to assess and agree how footpaths, cycle paths and bridleways can be best maintained and improved for all users.
Opportunity 14 - Provide cycle tool stations or repair stations at Crickley Hill County Park and Barrow Wake for cyclists to use to service their bikes and encourage the use of these two locations as hubs for cycling.	This opportunity will be considered and further developed at the detailed design stage
Equestrian specific opportunities	
Opportunity 15 - At-grade bridleway crossing facility (potentially signalised) on the A417 in the vicinity of Grove Farm to connect existing Bridleways. This would reduce severance and provide an opportunity for equestrians to use this link on an existing desire line.	An at grade crossing (including controlled crossings) is not considered appropriate at this location due to mainline alignment, traffic speeds and traffic volume. Grade separated crossing difficult to provide due to topography and available space within Grove Farm. Examining proposals to connect to Green Bridge.
Opportunity 16 - Use environmental design elements, such as green land bridges, for the benefit of equestrians providing better connectivity across the A417.	Being considered as part of strategy