A360 PROW ROUTE OPTIONS REVIEW

Project	Stonehenge
Report Title	A360 PRoW Options Review – Longbarrow Airman's Corner
Date	01/05/2019
Prepared by	Momentum Transport Consultancy
Prepared for	English Heritage

1. Introduction

A303 SCHEME

1.1 Highways England proposes to upgrade a section of the A303 past Stonehenge, covering an 8 mile (13 kilometre) stretch of highway from Amesbury in the east, through the Stonehenge World Heritage Site (WHS) and the village of Winterbourne Stoke, to Berwick Down in the west.

1.2 The proposed alignment included a 1.8 mile (2.9 kilometre) tunnel with an approach road inside the WHS, a new bypass for Winterbourne Stoke (passing either north south of the village) and improvements to existing junctions with the A345 and A360. Following consultation, the proposed alignment through the western half of the WHS and the location of the western tunnel portal have been modified.

1.3 Highways England has submitted a Development Consent Order (DCO) application to the Planning Inspectorate for the A303 scheme. Before the DCO application was submitted to the Planning Inspectorate, consultations were required to be undertaken as part of the stakeholder engagement activity.

1.4 As part of the route selection process, the following three public consultations were undertaken for the A303 Amesbury to Berwick (Stonehenge) scheme:

- Non-statutory consultation - February to March 2017
- Statutory consultation - February to April 2018
- Supplementary consultation - July to August 2018

PROW OPTIONS

1.5 As part of the A303 scheme, Highways England proposes a restricted byway Public Right of Way (PRoW, between Longbarrow roundabout and the Stonehenge Visitor Centre) to improve connectivity for non-motorised users (NMUs) to access and explore the World Heritage site. A restricted byway allows a right of way on foot, cycling, on horseback, on a horse drawn vehicle and for any other non-motorised vehicle.

1.6 Highways England has developed nine indicative alignment options for the proposed restricted byway, which have been presented in the "Highways England, A360_VC-RB_presentation" (March 2019) document. Each of the nine options are defined below. Option 1 represents the proposed Development Consent Order (DCO) route.

- **Option 1 (Core option):** byway alignment on the eastern side of the A360 connecting to the local network at the proposed Longbarrow roundabout to the south-west of the WHS and at

the A360 / B3086 / old A344 (now downgraded to and reclassified as the C506 but referred to herein as the old A344, Airman's Corner roundabout. This option represents the Core Option put forward by Highways England. It involves a Compulsory Purchase Order (CPO) for land within the Stonehenge Visitor Centre boundary of 4m width.

- **Option 2:** iteration of the core option, with the byway alignment closer to the A360 and restricted to avoid the existing dew pond to the west of the visitor car park. This option involves reduction in curve radii in order for the PRoW to run closer to the A360 and has therefore been discounted on operational (traffic disruption) and cost (significant additional costs) grounds.

- **Option 3:** alternative to the core option, with alignment routed to the east of the A360 on a section of the southern alignment, intersecting the A360 and then routed on the western side of the A360 to intersect and cross at the A360 / B3086 / old A344, Airman's Corner roundabout. This route has been discounted on safety (increasing potential NMU vehicle conflict points) and operational (traffic disruption) grounds.

- **Option 4**: alternative to the core option that was proposed by English Heritage, with alignment around the eastern edge of the English Heritage boundary. A compromise option of this PRoW, which would see the alignment run partially outside the English Heritage boundary and partially within the boundary, is also under consideration by Highways England. Both Option 4 (supported by English Heritage) and the compromise option (not support by English Heritage) are shown in Figure 1.

Figure 1: Option 4 (and alternative compromise option)

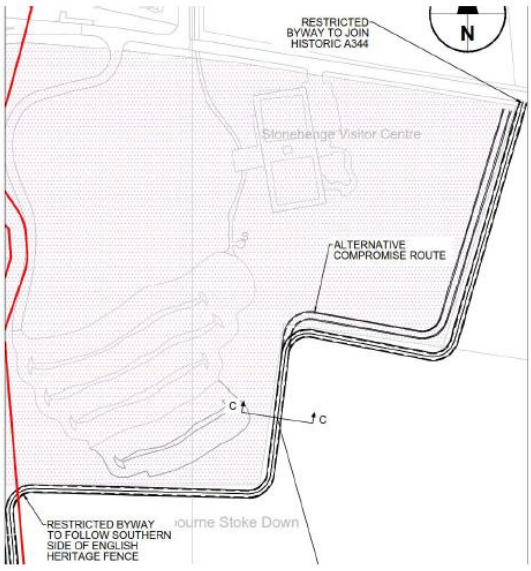
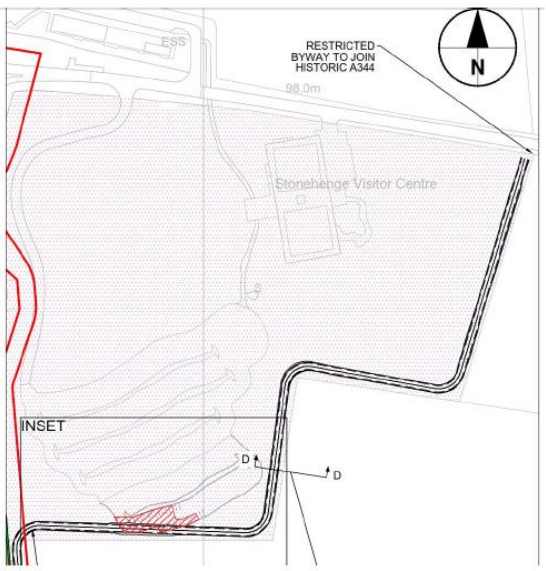


Figure 2: Option 5



- **Option 5:** alternative to the core option, with alignment routed within the English Heritage boundary, as shown in Figure 2. This option is not supported by English Heritage due to the impact of land loss.

- **Option 7**: iteration of the core option providing a 3m shared footway / cycleway with a 2m grass verge between the A360 and the proposed byway. Alignment routed to the west of the dew pond and then eastwards upon reaching the Old A344 outside of the English Heritage

boundary, between the Airman's Corner roundabout and to the east of the car park access road, forcing visitors to cross the car park access road in order to provide a continuous connection to the World Heritage Site.

- **Option 8**: iteration of core option providing a 2.8 metre shared footway / cycleway without a grass verge between the A360 and the proposed byway. Alignment routed to the west of the dew pond and then eastwards upon reaching the Old A344 outside of the English Heritage boundary, between the Airman's Corner roundabout and to the east of the car park access road, forcing visitors to cross the car park access road in order to provide a continuous connection to the World Heritage Site.

- **Option 9**: iteration of core option providing a 1.8 metre footway adjacent to the A360. The footway width would be reduced to 1.5 metres between the dew pond and the A360 carriageway.

1.7 For the purpose of undertaking this review, the route options assessed are labelled as follows:

- **Option A:** Core DCO route alignment (Option 1) and associated iterations still under consideration (i.e. Options 7, 8 and 9)
- **Option B:** Alternative to the DCO route alignment (i.e. Options 4 and 5)
- **Option C:** New, alternative alignment, not currently included in Highways England option drawings or documentation. It is understood that Option C has been discussed between Highways England and English Heritage. The southern section of the PRoW alignment would be adjacent to the A360 and would terminate at the south-western boundary of the Visitor Centre car park. The PRoW would be connected to the Visitor Centre via a smaller footpath only suitable for pedestrians and dismounted cyclists at the rear of the Visitor Centre car park. Access to the footpath would be via a gated access at that point, which would be locked outside of visitor hours. There would be no provision for equestrian carriages beyond that point.

1.8 Figure 3 illustrates the option alignments considered in this review.

PURPOSE OF THIS NOTE

1.9 The proposed byway potentially has a significant impact on the operations of the Stonehenge World Heritage Site being managed by English Heritage. English Heritage has instructed Momentum to undertake an appraisal of three potential alignments (and various iterations) to understand the implications of each on the visitors using the routes and on the operations of the Stonehenge World Heritage Site. This note presents our findings of the review.

Figure 3 Route Alignments Considered in the PRoW Options Review

2. Methodology

2.1 The following documents were reviewed to inform this note:

- English Heritage, Response to A303 Public Supplementary Consultation (13th August 2018)
- Key Transport Consultants Ltd, Stonehenge Visitor Centre, Report of Travel Surveys (December 2018)
- PCC Traffic Information Consultancy Ltd, ATC and MTC traffic count data (August 2018), appended to KTP report
- Highways England, A360_VC-RB_presentation (March 2019)
- Highways England / AmW, NMU Option A A360 to Stonehenge Visitor Centre Overview (Draft Drawing HE551506-ENM-SK-CH-0013 (November 2018)

2.2 A site visit was undertaken on Wednesday 10th April 2019 to gain an understanding of potential impacts of each PRoW alignment option. We also met with English Heritage on the same date to understand their views in relation to the alignment options under consideration.

2.3 The National Policy Statement for National Networks (NPS, December 2014) and other relevant spatial planning policies and design guidelines were reviewed to identify relevant policies and standards in relation to PRoWs and pedestrian / cycle routes.

2.4 Traffic data, collected in August and September 2018, to inform the Stonehenge Visitor Centre Report of Travel Surveys (KTC, December 2018) was analysed to establish the existing traffic situation on the old A344 and at the car and coach park entrances.

2.5 The route options were assessed against a set of pre-defined criteria to allow an accurate comparison of the alternative options with the Core Option (Option A).

2.6 The route options have been compared under each of the following appraisal criteria:

- Safety
- Operations
- Journey Experience
- Stakeholders
- Security
- Investment
- Design Standards

2.7 We have not assessed the PRoW heritage impacts as this expertise is held within English Heritage who will comment separately.

3. Principles for English Heritage

3.1 As noted in the English Heritage submission to Highways England (letter dated 13th August 2018), English Heritage is supportive of the scheme's objective to improve access for NMU's (walkers, cyclists and horse riders) to access the Stonehenge World Heritage site. English Heritage also commits to working with Highways England to ensure safe access to the Stonehenge visitor centre for walkers and cyclists.

3.2 Whilst English Heritage is supportive of the A303 Amesbury to Berwick Down scheme's objective to improve connectivity for walkers, cyclists and horse riders across the Stonehenge World Heritage Site, the proposed introduction of a PRoW along the A360, which would require the acquisition of land leased and utilised by English Heritage, is something that the charity objects to.

3.3 The key reasons for the English Heritage objection to the PRoW are as follows:

- Potential negative impact on English Heritage visitor operation
- Potential conflict between non-motorised byway users and motorised vehicles
- Potential negative knock-on impacts for A360/B3086 road users
- Potential safety risks
- Negative impact on recent investment
- Potential security risks

4. Policy Context

4.1 The need for enhancing connectivity for pedestrians and cyclists and ensuring safety for all road users as been identified in and is consistent with spatial planning policies at national, regional and local levels.

NATIONAL PLANNING POLICY

National Planning Policy Statement for National Networks (NPS) (December 2014)

4.2 The NPS sets out the need for, and Government's policies to deliver, development of nationally significant infrastructure projects (NSIPs) on the national road and rail networks in England. It provides planning guidance for promoters of nationally significant infrastructure projects on the road and rail networks, and the basis for the examination by the Examining Authority and decisions by the Secretary of State.

4.3 Paragraph 1.2 of the NPS states:

"The Secretary of State will use this NPS as the primary basis for making decisions on development consent applications for national networks nationally significant infrastructure projects in England. Other NPSs may also be relevant to decisions on national networks nationally significant infrastructure projects. Under section 104 of the Planning Act the Secretary of State must decide an application for a national networks nationally significant infrastructure project in accordance with this NPS unless he/she is satisfied that to do so would:

- *lead to the UK being in breach of its international obligations;*
- *be unlawful;*
- *lead to the Secretary of State being in breach of any duty imposed by or under any legislation;*
- *result in adverse impacts of the development outweighing its benefits;*
- *be contrary to legislation about how the decisions are to be taken."*

4.4 The following statements of the NPS are of particular relevance to this review of the A360 PRoW options:

- *Para 3.16 – As part of the Government's commitment to sustainable travel it is investing in developing a high-quality cycling and walking environment to bring about a step change in cycling and walking across the country.*
- *Para 3.17 – There is a direct role for the national road network to play in helping pedestrians and cyclists. The Government expects applicants to use reasonable endeavours to address the needs of cyclists and pedestrians in the design of new schemes. The Government also expects applicants to identify opportunities to invest in infrastructure in locations where the national road network severs communities and acts as a barrier to cycling and walking, by correcting historic problems, retrofitting the latest solutions and ensuring that it is easy and safe for cyclists to use junctions.*

- *Para 4.60 – New highways developments provide an opportunity to make significant safety improvements. Some developments may have safety as a key objective, but even where safety is not the main driver of a development the opportunity should be taken to improve safety, including introducing the most modern and effective safety measures where proportionate. Highway developments can potentially generate significant accident reduction benefits when they are well designed.*
- *Para 4.61 – The applicant should undertake an objective assessment of the impact of the proposed development on safety including the impact of any mitigation measures. This should use the methodology outlined in the guidance from DfT (WebTAG) and from the Highways Agency.*
- *Para 4.64 – The applicant should be able to demonstrate that their scheme is consistent with the Highways Agency's Safety Framework for the Strategic Road Network and with the national Strategic Framework for Road Safety. Applicants will wish to show that they have taken all steps that are reasonably required to:*
    - *minimise the risk of death and injury arising from their development;*
    - *contribute to an overall reduction in road casualties;*
    - *contribute to an overall reduction in the number of unplanned incidents; and*
    - *contribute to improvements in road safety for walkers and cyclists.*
- *Para 4.65 – They will also wish to demonstrate that:*
    - *they have considered the safety implications of their project from the outset; and*
    - *they are putting in place rigorous processes for monitoring and evaluating safety.*
- *Para 4.66 – The Secretary of State should not grant development consent unless satisfied that all reasonable steps have been taken and will be taken to:*
    - *minimise the risk of road casualties arising from the scheme; and*
    - *contribute to an overall improvement in the safety of the Strategic Road Network.*
- Paras 4.79 to 4.81 – statements relating to the potential impact of national road projects on health, well-being and quality of life of the population.
- *Para 4.82 – The applicant should identify measures to avoid, reduce or compensate for adverse health impacts as appropriate. These impacts may affect people simultaneously, so the applicant, and the Secretary of State (in determining an application for development consent) should consider the cumulative impact on health.*
- *Para 5.211 – The Examining Authority and the Secretary of State should give due consideration to impacts on local transport networks and policies set out in local plans, for example, policies on demand management being undertaken at the local level.*
- *Para 5.212 – Schemes should be developed and options considered in the light of relevant local policies and local plans, taking into account local models where appropriate, however the scheme must be decided in accordance with the NPS except to the extent that one or more of sub-sections 104(4) to 104(8) of the Planning Act 2008 applies.*

National Planning Policy Framework (February 2019)

4.5 The National Planning Policy Framework provides a high level strategic plan for shaping future growth and development in England. It is a framework to guide public and private investment, to create opportunities for people, and to protect and enhance the environment – from rural areas to our cities, and everything around and in between.

4.6 The framework sets out a process which more detailed planning documents must follow, including infrastructure planning (and, in particular, nationally significant infrastructure projects, but only to the extent relevant to the project (see paragraphs 1.17 to 1.21 of the NPS)), spatial planning, social and economic planning.

4.7 The outlined policies and actions which are of relevance to the proposed byway include:

- Improving accessibility
- Promoting healthy and safe communities, including well-designed and safe built environments
- Promoting sustainable transport
- Conserving and enhancing the historic environment

LOCAL POLICY CONTEXT

Wiltshire Core Strategy (WCC, 2015)

4.8 The Wiltshire Core Strategy sets out an overall strategy for the proper planning and sustainable development of the administrative area of Wiltshire Council, with the exception of the New Forest National Park, up to 2026. The Strategy incorporates other policies and strategies relating to the area, thereby providing a spatial and integrated dimension at local levels.

4.9 One of the key principles which underpins the strategy is

> "Protecting and planning for the enhancement of the natural, historic and built environments, including maintaining, enhancing and expanding Wiltshire's network of green infrastructure to support the health and wellbeing of communities".

4.10 Safety for all road users and sustainable transport are key themes within the strategy and infrastructure is identified as one of the six key challenges for Wiltshire:

> "Appropriate and sustainable modes of transport, highway improvements, water management, green spaces, power supply … are all essential components of daily life and therefore critical to delivering our strategic goal of building more resilient communities".

4.11 The Strategy identifies congestion and delays on the A303 corridor running through the area as the main arterial route from London to the south-west. The Strategy states that WCC will work collaboratively with agencies, such as the Highways Agency, the Department of Transport and English Heritage to try to achieve an acceptable solution that does not adversely affect the Stonehenge World Heritage site and its setting.

4.12 Relevant policies include:

> **CP60 – Sustainable Transport**:
>
> "The council will use its planning and transport powers to help reduce the need to travel particularly by private car, and support and encourage the sustainable, safe and efficient movement of people and goods within and through Wiltshire".
>
> **CP 61 - Transport and new development**
>
> Paragraph 6.157 notes that a key consideration is to ensure that development proposals achieve a suitable connection to the highway that is safe for all road users.

4.13 Core policy 61 notes that consideration has been given to the needs of all transport users, according to the following hierarchy:

- Visually impaired and other disabled people
- Pedestrians
- Cyclists
- Public transport
- Goods vehicles
- Powered two-wheelers
- Private cars

Wiltshire Local Transport Plan 2011 – 2026 and Supporting Strategies (WCC, 2011)

4.14 Road safety for all users is highlighted as a priority in the Wiltshire Local Transport Plan. WCC is committed to making Wiltshire's highways safer for all users and to reduce casualties from road traffic accidents. Relevant policies include:

SO8: To improve safety for all road users and to reduce the number of casualties on Wiltshire's roads.

SO14: To promote travel modes that are beneficial to health.

4.15 Improved road safety is promoted through a combination of education, enforcement and engineering measures to achieve the above objectives.

SO17: To improve sustainable access to Wiltshire's countryside and provide a more useable public right of way network.

4.16 In relation to road safety, paragraph 6.59 states "With its partners, the council will review road safety issues and identify trends to develop targeted solutions to reduce the risk of collisions".

4.17 The Road Safety Strategy forms part of the LTP and sets out WCC's objectives to improve road safety in Wiltshire and reduce the number of casualties in accordance with national targets.

4.18 A restricted byway, as defined in the Cycling Strategy of the LTP is a highway where you have a right of way:

- On horse drawn vehicle
- On foot
- On any pedal cycle
- On horseback

4.19 Policy 1b sets out the council's aim to follow design guidance and prioritise improvements to links based on potential demand, safety and feasibility.

5. Design Guidance

5.1 In the absence of detailed design guidance for PRoWs, cycleway design criteria have been considered for all three options. From a design perspective, the three alignment options being considered would be considered in two categories, as follows:

- Option A follows the alignment of the A360 and would therefore be considered an on-road route
- Options B and C would be considered off-road routes

5.2 There are several design criteria that need to be met (and avoided) for a cycle route to be successful. A summary of relevant design guidelines and recommendations is provided below, with a key theme of safety across all of them.

Cycle Infrastructure Design - LTN 2/08 Cycle Infrastructure Design (DfT, 2008)

5.3 This design guidance highlights that individual site specific solutions are required when planning and designing high quality infrastructure, however there are some common requirements that need to be satisfied. The main principle, as noted in the design guidance is that the design for pedestrians and cyclists should offer positive provision that reduces delay or diversion and improves safety.

5.4 Table 1 represents Table 1.1 of LTN 2/08, which shows when on-road or off-road provision is most suitable.

Table 1 Type of Cycle Facility (Table 1.1 of LTN 2/08)

Factor	On-road or off-road?
High traffic volumes/speed routes	Off-road generally preferred, but see next item
Large number of side road junctions or property accesses along route	Makes on-road more attractive, as it reduces the potential for conflict at these locations
Busy pedestrian traffic along the route	On-road preferred, as it reduces the potential for conflict
High levels of on-street parking	Makes on-road less attractive, but needs careful consideration in view of the potential for increased conflict using off-road provision
High levels of HGV parking	

5.5 The guidelines note the following 5 core principles which summarise the desirable design requirements for pedestrians and cyclists:

- **Convenience:** Networks should serve all the main destinations, and new facilities should offer an advantage in terms of directness and/or reduced delay compared to the existing provision.

- **Accessibility:** Cycling networks should link trip origins and key destinations. The routes should be continuous and coherent.

- **Safety:** Not only must infrastructure be safe, but it should be perceived as safe. Traffic volumes and speeds should be reduced where possible to create safer conditions for cycling and walking. The needs of pedestrians, cyclists and equestrians should be considered where their routes cross busy roads, especially in rural areas.

- **Comfort:** Infrastructure should meet design standards for width, gradient and surface quality, and cater for all types of user, including children and disabled people.

- **Attractiveness:** Aesthetics, noise reduction and integration with surrounding areas are important. Issues of light pollution should be considered, in addition to personal security in rural and semi-rural routes.

5.6 Paragraph 10.4.1 of the guidance refers to the common European practice to reintroduce cyclists to the main road in advance of a junction, as a result of concerns over the safety of parallel cycle tracks crossing side roads. This enables cyclists to pass the junction on the carriageway and then re-join the cycle track.

National Cycle Network Design Principles (SUSTRANS)[1]

5.7 SUSTRANS recommends the following nine principles for routes:

- ***Principle 1: Be traffic-free or quiet-way***
- Principle 2: Be wide enough to comfortable accommodate all users
- Principle 3: Be designed to minimise maintenance
- Principle 4: Be signed clearly and consistently
- Principle 5: Have a smooth surface that is well drained
- ***Principle 6: Be fully accessible to all legitimate users***
- ***Principle 7: Feel like a safe place to be***
- ***Principle 8: Enable all users to cross roads safely and step-free***
- ***Principle 9: Be attractive and interesting***

5.8 Each of the above principles are relevant to the proposed PRoW, however the principles of particular relevance to the appraisal of the three route options are highlighted in bold.

5.9 Principle 1 states "Where the network is not traffic-free it should either be on a quiet-way section of road or be fully separated from the adjacent carriageway. For a National Cycle Network route on a quiet-way section of road the traffic speed and flows should be sufficiently low with good visibility to comply with design guidance for comfortable sharing of the carriageway".

5.10 Principle 9 states that "Road crossings should be in accordance with current best practice guidance. Approaches to road crossings should be designed to facilitate slow approach speeds to a crossing. All grade separated crossings should provide step-free access".

Design Manual Chapter: Principles and Processes for Cycle Friendly Design, Draft (SUSTRANS, 2014)

5.11 SUSTRANS provides recommendations for user-focused design for cycling. Relevant recommendations include the requirement for design to plan for cyclists to show that those users are at least as important users of the highway network as motor traffic, with cyclists being given priority in terms of directness and priority where possible.

5.12 Consistent high quality provision along a route at both ends of the trip is essential, with route design following the 5 core principles of coherence, directness, safety, comfort and attractiveness.

Cycle Safety: Make it Simple (Cycling UK)[2]

5.13 Cycling UK sets out 5 recommendations for a safe systems approach to tackle dangerous road conditions, as follows:

- Safe roads and junctions

[1] https://www.sustrans.org.uk/pathsforeveryone/national-cycle-network-design-principles

[2] https://www.cyclinguk.org/sites/default/files/document/2018/04/1804_cyclinguk_cycle-safety-make-it-simple.pdf

- Safe road users
- Safe speeds
- Safe vehicles
- Safe systems management

6. Existing Traffic Flows

6.1 As part of the Stonehenge Visitor Centre Report of Travel Surveys (KTC, December 2018), surveys were undertaken to gain an understanding of existing traffic flows at the WHS. 24-hour Automatic Traffic Counts (ATCs) were undertaken over a two week period (Wednesday 22nd August 2018 to Tuesday 4th September 2018) at the following locations:

- Old A344 access road to the WHS Visitor Centre
- Old A344 car park entrance
- Old A344 coach park entrance
- B3086 coach park exit

6.2 Manual turning counts (MTCs) were also completed over a 12-hour period (08:00-12:00) on a weekday (Wednesday, 22nd August 2018) and a weekend (Saturday, 25th August 2018) to record vehicle turning movements at the following junctions:

- Old A344 / car park entrance
- Old A344 / coach park entrance

CAR PARK

6.3 Access to the car and coach parks is from the Airman's corner roundabout at the A360 / B3086 / old A344 junction. Figure 4 shows the car park entrance.

6.4 The car park provides a total of 494 formally demarcated spaces for cars, campervans and other light vehicles. Vehicles parking in the main car park access and egress via the car park access road, which is approximately 222m long and it connects the main car park to the old A344.

6.5 A landscaped area of car parking is occasionally used to accommodate car parking on normal operational days and is located directly to the east, south and west of the main visitor car park. It is understood that the equivalent of 130 spaces can be provided across these landscaped car parking areas, although this is dependent on the efficiency of visitor parking.

Figure 4 Car Park Entrance and Old A344

COACH PARK

6.6 The coach park is accessed via the coach park entrance, north-west of the visitor centre, off the old A344 access road. Coaches exit the car park via the coach park access at the junction with the B3086, although the traffic surveys did record some vehicles egressing the coach park via the designated coach park entrance on the old A344.

6.7 The coach park provides 53 coach parking spaces and is used as the official coach park for normal operational days along with Solstice / major event days. The coach park also provides a drop-off lay by of eight spaces for passenger loading / waiting.

EXISTING TRAFFIC FLOWS

6.8 Table 2 below summarises the combined (inbound and outbound) traffic flows on the old A344 on the busiest day, to provide an indication of traffic flows that NMUs would potentially have to negotiate if crossing the old A344 from south to north.

Table 2 Combined old A344 flows by vehicle classification (based on MTC data analysis)

MTC Survey Date	Combined Flows	12-hour count				Peak Hour (16:00-17:00)*			
		Car	Coach	Other	Total	Car	Coach	Other	Total
Saturday, 25/8/2018	No. of vehicles	4,082	127	184	4,393	497	9	17	523
	%	93%	3%	4%	100%	95%	2%	3%	100%

* The peak hour was derived from the combined flows and is 16:00-17:00 for the total two-way flows

6.9 The potential disruption of a PRoW option that a crossing across the A344 and/or car parking access would have on these flows (i.e. Option A) is discussed in the following section.

7. Route Options Assessment

7.1 This section provides an assessment of Options A (core option), B and C. As noted previously, the assessment criteria are:

- Safety
- Operations
- Journey experience
- Stakeholders
- Security
- Investment
- Design standards
- Planning policy

7.2 We have not assessed the PRoW heritage impacts as this expertise is held within English Heritage who will comment separately.

OPTION A ASSESSMENT

Safety

Safety – Crossings

7.3 As shown earlier in Figure 3, the Option A route would be adjacent to the alignment of the existing A360 (southbound traffic lane). Figure 5 shows the potential location of the alignment. The route option currently terminates at the old A344 to the north.

Figure 5 Potential Alignment Location of Option A on English Heritage Land

7.4 In order to provide NMU users with a continuous connection to the stones, Option A would either:

- Intersect and cross the old A344, to the east of the A360 / B3086 Airman's roundabout
- Continue eastbound, adjacent to the old A344 westbound lane, intersecting and crossing the entrance to the car park access road (as shown in Highways England Drawing: NMU Options

7 to 9 A360 to Stonehenge Visitor Centre, HE551506-AMW-ENM-SW_GN_000_Z-SK-CH-0016).

7.5 For pedestrian, cycle and equestrian movements across the old A344, those users would have to cross two lanes of traffic:

- outbound traffic departing the site in the old A344 westbound lane
- inbound traffic arriving at the site in the old A344 eastbound lane

7.6 Total inbound traffic flows on the old A344 were recorded at 2,394 vehicles per day and 344 vehicles during the peak hour (11:00-12:00) on the busiest day (Saturday, 25/8/2018).

7.7 As shown previously in Table 2, the old A344 is heavily trafficked during busy visitor periods at the Visitor Centre. The combined flows of 523 during the peak hour in the eastbound and westbound lanes would present a significant potential NMU vehicle conflict point. Figure 6 shows the potential location of the PRoW across the existing two lanes of the old A344, at the A360 / B3086 / old A344 junction.

Figure 6 ROUTE A - Potential PRoW Crossing Location (view northwards to the existing coach park)

7.8 It is understood that some overseas visitors or visitors who are not familiar with the traffic management arrangements, would sometimes drive on the wrong side of the road when entering or leaving the main car park. Human driving error could therefore also pose a further risk to NMUs trying to cross the old A344 or the car park entrance.

7.9 The alignment ends at the old A344 and users can then cross and go north on the B3086 road way or continue eastwards towards the stones and the wider World Heritage Site.

7.10 We believe PRoW Option A ends when it meets the old A344 along the English Heritage northern boundary in an eastward direction (as per Options 7, 8 and 9). This presents significant potential NMU vehicle conflicts due to NMU routing across the car park entrance.

7.11 Based on the MTC survey data, Table 3 below provides a summary of the combined total vehicle flows accessing and egressing the car park from the old A344.

Table 3 Combined car park entrance flows (based on MTC data analysis)

MTC Survey Date	12-hour count	Peak Hour (12:00-13:00)*
Number of vehicles (combined flows)	4,050	496

* The peak hour was derived from the combined car park entrance flows and is 12:00-13:00 for the total two-way flows

7.12 During the busiest hour, the combined flows at the car park entrance were recorded at 496 vehicles.

7.13 Those vehicle movements pose a potential risk to NMU arrivals and departures attempting to cross the car park entrance if the PRoW Option A continued along the northern English Heritage boundary in an eastbound direction. This is also likely to cause a impact on the Airman's Corner roundabout with regards to traffic congestion.

Safety – Proximity to the A360 and the Visitor Car Park

7.14 Option A is located adjacent to the A360 carriageway, leading to an increased interface between southbound vehicles and NMUs. Some sections of the PRoW route are located in close proximity to the car park access road (where the alignment would be east of the dew pond), which poses a further potential risk to NMUs in terms of proximity to vehicles entering and exiting the car park. Option 7 alignment runs west of the dew pond rather than east, as in the core option.

7.15 Option 8 iteration of Option A would provide a 2.8 metre route without a grass verge between the alignment and the A360, which would increase the interface between southbound vehicles and NMUs.

7.16 Furthermore, the existing fence line that is aligned perpendicular to the old A344 would require PROW users to enter the westbound carriageway of the Old A344 just to the west of the car park access if they are looking to continue towards the Visitor Centre or enter the WHS. This creates obvious conflict risk and subsequent safety issues between NMU's and vehicles exiting the visitor centre car park.

7.17 Also, those PRoW users wanting to get the Stone Circle do not have a safe route to do so until they cross back on to the westbound carriageway of the Old A344 to the east of the Visitor Centre where there is a walker's lane.

Operations

7.18 The opening hours of Stonehenge World Heritage site are 09:00 to 20:00 during the peak summer period. As previously highlighted, the old A344 access road to the site already experiences high traffic volumes throughout the day during the busiest period.

7.19 PRoW users crossing the old A344, immediately east of the A360 / B3086 / old A344 roundabout or on the car park entrance / old A344 junction, would have the potential to cause traffic disruption on the local highway network, due to increased driver delay and queuing to allow for NMUs to cross the network at those points. This would also have a negative impact on visitor experience as visitors would have to queue for longer to get into the Visitor Centre car park.

7.20 Furthermore, the existing fence line that is aligned perpendicular to the old A344 just to the west of the car park access would require PROW users to enter the westbound carriageway of the Old A344 if they are looking to continue towards the Visitor Centre or explore the WHS. This is likely to exert a negative impact on the egress of vehicular traffic from the car park, which will

have a subsequent impact on visitor centre operations, especially during particularly busy days at Stonehenge.

Journey Experience

7.21 This route option does not have any significant turns in it, which would be beneficial to all PRoW users. However, iteration Options 7, 8 and 9 would turn eastbound towards the Visitor Centre, the stones and the wider World Heritage Area.

7.22 However, the alignment of Option A adjacent to the A360 on the western side and in close proximity to the car park access road on the eastern side would impact on the user's journey experience, due to increased exposure to air and noise pollution from passing traffic.

7.23 The width of Option 8 would reduce to 2.8 metres without a grass verge and the width of Option 9 would be a 1.8 metre footway, reducing to 1.5 metres around the dew pond. The reduced capacities provided by iteration options 8 and 9 would therefore impact negatively on the user experience.

7.24 This route is not a direct route for NMUs to the Visitor Centre and therefore would not serve the desire lines for NMUs accessing the Visitor Centre and World Heritage Site from nearby settlements, including Amesbury, to the south-west, and Winterbourne Stoke to the south-west of Stonehenge. Therefore Option A is considered to be an excessively long route that does not serve the desire lines of PRoW users looking to explore the World Heritage Site.

Stakeholders

7.25 This route requires land-take from landowners currently under CPO.

Security

7.26 This route would be partially located within the English Heritage boundary, which would present potential security risks to the site, enabling unmanaged 24/7 access to the site.

7.27 It is also noted any PRoW that provides access for carriages could be used by motorbikes and 4x4 vehicles, creating an additional security risk.

Investment

7.28 This option would result in the loss of a 4m wide strip of land managed by English Heritage and loss of overspill parking on the landscaped areas. It could also adversely affect existing car park operations, due to potential congestion and delays caused by the alignment across the old A344 or the car park entrance. English Heritage currently manages vehicular access to the car and coach parking facilities during peak periods to minimise local impacts and pay a specialist contractor to oversee this operation.

Design Standards

7.29 This option has a number of conflict points, as shown in Figure 8 below, including the crossing point at the roundabout between the A360 and old A344. DfT LTN 2/08 recommends that "As a result of concerns over the safety of parallel cycle tracks crossing side roads, it is becoming common European practice to reintroduce cyclists to the main road in advance of a junction. Cyclists pass the junction on the carriageway and then re-join the cycle track." The LTN 2/08 also suggests that where possible, conflict between motorised vehicles and cyclists is to be kept to an absolute minimum and the general safety approach suggests is best maintained as removal of conflict, as oppose to resolving conflicted areas, but where junctions are necessary,

the priority is to be in favour of the NMU. This route does not comply with LTN 2/08 design principles of convenience and safety.

7.30 This layout is located adjacent to the carriageway, leading to an increased interface between vehicles and NMUs. It is recommended by DfT that *"The needs of pedestrians, cyclists and equestrians should be considered where their routes cross busy roads, especially in rural areas"*. Sustrans highlights in their key principles that "where the Network is not traffic-free it should either be on a quiet-way section of road or be fully separated from the adjacent carriageway".

Option B Assessment

Safety

Safety – Crossings

7.31 As shown previously in Figure 1, the Option B alignment would provide a connection for NMUs from the A360 PRoW to the old A344, to the east of the Visitor Centre. Design iteration Option 4 of Option B would involve four turns for users and the alignment would be outside of the English Heritage site boundary. A compromise option was suggested by Highways England whereby, on the third turn, the alignment would continue to follow the English Heritage boundary, but would run within the boundary, with a further turn to connect to the old A344. Design iteration Option 5 would follow a similar alignment to design iteration Option 4 and the compromise option, but would be entirely within English Heritage land. English Heritage do not support design iteration Option 5 or the compromise option.

7.32 This route would not involve any highway crossings for NMUs, thereby reducing potential NMU vehicle conflict points. This would benefit all users of the PRoW.

7.33 Figure 7 shows the potential alignment location outside of the southern English Heritage site boundary (design iteration Option 4).

Figure 7 ROUTE B – Potential Alignment External to the Southern Boundary (view eastwards)

Safety – Proximity to the A360 and the Visitor Car Park

7.34 Due to the off-road alignment of Option B, the proximity of the route to the A360 would only be relevant to the southern section of the route. Approximately 25 metres of the alignment along the southern boundary would be located within 10 to 15 metres of the existing car park, however the route would be segregated from vehicles manoeuvring within the car park.

7.35 It is noted that Option B design iteration Option 4 is considered to be a far safer alignment than design iteration Option 5 due to the physical segregation between future NMUs and vehicles manoeuvring in the Visitor Centre car park that currently exists in the form of a fenced boundary separating the land managed by English Heritage and land directly to the south. English Heritage therefore does not support design iteration Option 5 due to negative impacts to visitor and NMU safety.

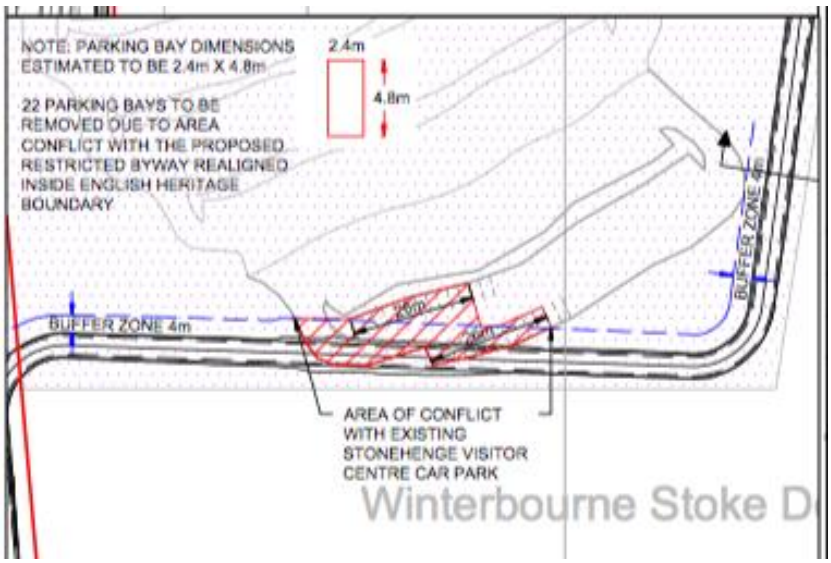
Operations

7.36 Option B design iteration Option 4 is aligned completely outside of the English Heritage boundary and would not therefore exhibit negative impact to the operations of English Heritage.

7.37 The alternative compromise route considered under Option B in this note is shown in Figure 2 of this note and was suggested by Highways England. The compromise route would be partially located within the English Heritage boundary (to the south and east of the Visitor Centre). This would present potential security risks to the site, enabling unmanaged 24/7 access to the site.

7.38 Option B design iteration Option 5 (restricted byway realigned inside of EH boundary) would result in the loss of 22 parking bays, as shown in Figure 8. Further, and as inferred by the latest Report of Travel Surveys (Dec 2018), the peak number of vehicles parked in a single hour across in the visitor car park between 22nd August 2018 and 4th September 2018 was recorded as 722 vehicles in the peak hour (25th August 2018 between 13:00 and 14:00). With an average dwell time of approximately 2 hours recorded for visitors in these surveys, it is reasonable to expect repeated usage of these spaces (up to four times in line with the Visitor Centre summer opening hours (09:30 – 17:00)), resulting in a possible capacity loss of 88 spaces for cars during peak visitation periods. This design iteration is therefore unacceptable to English Heritage due to the significant negative financial and operational impacts it represents.

Figure 8 Potential loss of car parking in Option B (Design Iteration Option 5, restricted byway realigned inside of EH boundary)



Journey Experience

7.39 This route would have four turns and would bring NMUs away from the A360, providing a safer and more attractive route. Option B design iteration Option 5 (restricted byway realigned inside of EH boundary) would have a four metre buffer zone between the route and car park to reduce any potential NMU vehicle conflict.

7.40 Option B also provides a better connection to the stones and the wider World Heritage Site for NMUs, from key points of origin, including Amesbury, to the south-west, and Winterbourne Stoke to the south-west of Stonehenge.

Stakeholders

7.41 The alignment outside of the English Heritage boundary (design iteration Option 4) would be located on land owned by a private landowner. Design iteration Option 5 and the compromise route put forward by Highways England would impact upon land leased by English Heritage.

7.42 All design iterations of Option B would not negatively impact upon local road users.

Security

7.43 All design iterations of Option B would provide 24/7 access to the WHS.

Investment

7.44 Option B design iteration Option 4 would not result in any loss of existing car parking supply for English Heritage, nor would the compromise option suggested by Highways England.

7.45 Option B design iteration Option 5 (restricted byway realigned inside of EH boundary) would result in the loss of approximately 22 parking bays, as shown previously in Figure 6. Further, and as detailed above, this could equate to the loss of up to 88 spaces over the course of the day during busy visitation periods due to repeated usage of these spaces by different visitors. This design iteration is therefore unacceptable to English Heritage due to the significant negative financial and operational impacts it represents.

Design Standards

7.46 This route would be classified as off-road option from a design perspective. As highlighted previously, off-road options are favoured, from a safety and accessibility perspective.

7.47 LTN 2/08 highlights in its core principles that the design “not only must infrastructure be safe, but it should be perceived to be safe”, thereby creating safer conditions for cycling and walking. Sustrans also promotes the safety ‘feel’ of routes, where it promotes routes to be “traffic free” and “feel like a safe place to be”.

7.48 Design guidance also notes that for the purposes of accessibility, the routes should be continuous and coherent have a positive advantage over private motor traffic, in terms of directness and priority where possible. This route provides a more direct route and meets the desire lines of people visiting the World Heritage Site more efficiently.

7.49 This option provides NMU’s with a much closer proximity to the World Heritage Site and would provide a more pleasant approach, away from motor traffic on the A360 and would meet all five principles of LTN 2/08 (convenience, accessibility, safety, comfort, attractiveness).

Option C Assessment

Safety - Crossings

7.50 As shown previously in Figure 1, the PRoW in this option would terminate where the three potential routes meet. The remainder of the route for NMUs would be via a smaller footpath only suitable for pedestrians and dismounted cyclists. Access to the footpath would be via a gated access at that point, which would be locked outside of visitor hours. There would be no provision for equestrian carriages beyond that point.

7.51 This route would not involve any highway crossings for NMUs, thereby reducing potential NMU vehicle conflict points. This would benefit all users of the PRoW.

Safety – Proximity to the A360 and the Visitor Car Park

7.52 This route would bring pedestrians and cyclists away from traffic on the A360, however the footpath alignment would be along the southern section of the main car park and through the landscaped areas of parking, resulting in potential NMU vehicle conflict points due to vehicles manoeuvring in the main car park. However, this could be mitigated with the establishment of a new narrow footpath aligned along the back of the car parking area to join the rest of the pathway network managed by English Heritage.

Operations

7.53 This route may result in the loss of a small amount of landscaped overspill car parking supply to accommodate the walking route, though this loss is not expected to exert a material impact existing car park operations.

7.54 A suitable gate on the south western boundary of the English Heritage boundary could allow PRoW users with gated access to the Route C footpath connecting the PRoW to the World Heritage Site.

Journey Experience

7.55 This route would have four turns. It would serve the route desire lines well, providing people visiting the World Heritage Site with a link to the Visitor Centre, including the café and toilet facilities and an onward connection to the stones and wider World Heritage site.

7.56 As noted previously, Option C would bring pedestrians and cyclists away from traffic on the A360, however the footpath alignment through the car park would potentially have an adverse effect on the journey experience for people using the route due to proximity to manoeuvring vehicles in the car park.

Stakeholders

7.57 This PRoW would cease at the south-western boundary of English Heritage land and would therefore be aligned on land under local ownership. The connecting footpath from the PRoW endpoint to the existing Visitor Centre pathway network would be on English Heritage leased land.

Security

7.58 English Heritage would manage this route and the gated access to the footpath would only be open during visitor hours, providing a security benefit to the Visitor Centre and World Heritage Site.

Investment

7.59 This route would result in some loss of some of the landscaped area used for car parking. As noted previously, this would significantly impact on the site's ability to operate effectively at peak times. It would also have a negative impact on English Heritage investment (design time and cost) already invested in the main car park.

Design Standards

7.60 This route represents an off-road option and would have two potential NMU vehicle conflict points, due to the footpath alignment within the existing car park. This route would not comply with LTN 2/08 comfort principle to cater for all types of user because this route would not provide access for equestrian carriages. Use of the route would be limited to pedestrians and dismounted cyclists.

Potential NMU Vehicle Conflict Points

7.61 Figure 9 illustrates potential NMU vehicle conflict points associated with each option.

Figure 9 Route Option Potential NMU Vehicle Conflict Points

COMPARISON OF ROUTE OPTIONS

7.62 Table 4 provides a summary of the route options assessment. The benefits associated with each option are highlighted.

Table 4 Summary of Options Appraisal (route benefits highlighted)

Assessment Criteria	Sub-criteria	Route Option A	Route Option B	Route Option C
Safety	Crossings	A360 or car park entrance	None	None
	Proximity to A360 and car park	Adjacent to A360	Away from A360	Away from A360
Operations	Loss of car parking supply	Yes	No[2]	Yes – required footpath may require small loss of some landscaped parking
	Traffic disruption	523 inbound and outbound vehicles on the old A344 during the peak hour	N/A	Traffic disruption within the car park, due to loss of some parking supply
	Access	Unmanaged 24/7 access	Unmanaged 24/7 access	Gated access managed by English Heritage and closed outside of visitor hours
Journey Experience	Number of turns	1[1]	4	4
	Route type	On-road	Off-road	Off-road
	Cycle dismount required	No	No	Yes
	Air and noise pollution	Increased exposure	Reduced exposure	Reduced exposure
	All NMU's accommodated?	Yes	Yes	No – pedestrians and dismounted cyclists only
Stakeholders	Land-take	Yes – 4m width of English Heritage land and other land take	Yes	Yes
Security	Access	Unmanaged 24/7 access to WHS and Visitor Centre	Unmanaged 24/7 access to WHS only	Gated access managed by English Heritage and closed outside of visitor hours
Investment	Loss of car parking supply	Yes	No[3]	Yes - possible loss of small area of landscaped parking
Design Standards	Route type	On-road	Off-road	Off-road
	Number of potential conflict points	3	0	2

[1] Iteration Options 7, 8 and 9

[2] Iteration Option 4 only. Iteration Option 5 would result in the loss of 22 parking bays

[3] Iteration Option 4 only. Iteration Option 5 and compromise option would result in loss of educational / visitor space

CONCLUSIONS

7.63 From the options comparison above it can be seen that all three routes have particular advantages and disadvantages. The most important criteria to English Heritage to ensure that the alignment selected to be progressed would not adversely affect their operation are:

- the safety of English Heritage visitors and people using the route
- the operations of the Stonehenge Visitor Centre, particularly car parking capacity and visitor experience
- cause traffic disruption on the local highway network
- heritage impacts

7.64 The conclusions that can be drawn from the options appraisal are described below.

Option A (Core Route)

7.65 Option A would provide the following user benefits:

- This route would have the least number of turns.
- All NMU's could be accommodated.

7.66 Option A would be sub-optimal, due to the following disadvantages:

- Loss of existing car parking supply and land take from landowners
- This option currently terminates at the old A344, so users would potentially have to cross the main access road or the car park entrance to continue eastbound towards the Visitor Centre and stones. The high traffic volumes (4,393 vehicles per day or 523 vehicles in the peak hour) during peak periods, together with the potential crossing points (the old A344 or the car park entrance) would create potential NMU vehicle conflict points.
- Potential PRoW crossing points would also cause traffic disruption both on the local highway network and within the car park, which are currently managed by English Heritage during peak periods.
- This option would provide 24/7 access to the Visitor Centre creating a potential security risk.
- This option is adjacent to the A360 and is considered on-road from a design perspective, leading to an increased interface between vehicles and NMUs and would increase users exposure to air and noise pollution.

Option B

7.67 Option B would provide the following user benefits:

- Design iteration option 4 of this option provides the best route in terms of user safety because it does not require any crossings or NMU movements through the main car park.
- No loss of parking supply would be required for design iteration option 4, which would provide operational benefits to the management and operations of the Visitor Centre.
- Option B would create the least amount of traffic disruption due to the continuous route to the old A344 to connect to the stones and the wider World Heritage site.
- This alignment would be away from the A360 (considered off-road from a design perspective), providing all NMUs (including equestrian carriages) with a more attractive route to the old A344 and onward connectivity to the stones and the wider World Heritage Site

7.68 Option B would have the following disadvantages:

- Design iteration option 4 would require land-take from an adjacent landowner to accommodate the PRoW on the southern and eastern boundary of the car park.

- Design iteration option 5 would require land-take from English Heritage resulting in the loss of 22 spaces of hardstanding car parking. This is unacceptable to English Heritage on financial and operational grounds.
- Design iteration option 5 would provide 24/7 access to the Visitor Centre creating a potential security risk, which is unacceptable to English Heritage.

Option C

7.69 Option C would provide the following user benefits:

- This option would provide a safer route compared to Option A, as users would not have to cross any highway or access road.
- This route would be off-road and away from the A360, providing users with a route that is better connected to the Visitor Centre and onward connection to the stones and the wider World Heritage Site.
- Option C would offer a security benefit over Options A and B, through a managed access, which would be closed outside of visitor hours

7.70 Option C would have the following disadvantages:

- This option would have potential to create traffic disruption within the car park, due to the loss of some car parking spaces, which could also affect traffic flows and delays on the local highway network. This would reduce operational efficiency of the site compared to Option B.
- Negative impact on investment (design time and cost), compared to Option B due to the loss of car parking supply in the south and south-west of the car park.
- Option C would not offer the same level of safety as Option B due to the alignment within the existing car park, which would create a potential NMU vehicle conflict.
- There would be no provision for equestrian vehicles and cyclists would have to dismount.

Recommendation

7.71 Table 4 shows that the alternative options (Options B and C) have more user benefits in terms of user safety and operational impact when compared with the core option (Option A).

7.72 Additionally, Option A is not considered to meet NPS paragraphs 4.64, 4.65, 4.65 and 4.82, as Options B and C both provide PRoW alignments that minimise NMUs interaction with fast moving vehicular traffic along the A360 and traffic within the Visitor Centre (car park, access roads etc.), creating safer alignment options that minimise risk of death, injury and other health impacts.

7.73 On balance, Option B would provide greater user benefits in terms of safety, operations and journey experience over Options A and C and should therefore be considered the preferred option. It is also the option considered to best satisfy the NPS paragraphs referred to above.

7.74 Design iteration option 4 of Option B is the option supported by English Heritage as it does not result in significant financial and operational impacts (car parking loss) or security issues (24/7 access to the Visitor Centre) which design iteration option 5 of Option B would lead to.

7.75 Design iteration option B would also minimise PRoW user interaction with vehicles in the car park, creating a safer, more pleasant journey experience for these users. It is also the design iteration option considered to best meet the desire lines of potential PRoW users, with direct connections to the permissive paths and World Heritage Site monuments managed by English Heritage and the National Trust.

7.76 As a result, English Heritage recommends that design iteration option 4 of Option B as the option that should be taken forward by Highways England.

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