

MEMO

TO	Oxfordshire County Council (OCC)	FROM	Gareth Nurse, Principal Engineer, WSP
DATE	22 July 2019	CONFIDENTIALITY	Public
SUBJECT	Science Vale Cycle Network (SVCN) Route 1 – Icknield Way Byway		

Introduction

This memo has been written to document discussions and assessments that have been carried by WSP and OCC regarding Icknield Way, a public byway, at its location where the SVCN Route 1 is proposed. Please refer to attached drawing “Route 1 Road Type” (Drawing SVCN-WSP-GEN-000-DR-CH-0005 Rev A) to see the existing byway location and existing allowable byway users and restrictions. The drawing also shows the proposed location of SVCN Route 1 Sections 1B to 1K2 for reference purposes.

Science Vale is the home to Enterprise Zones and the focus for significant growth and infrastructure investment both in recent times and proposed over the coming years. The government has announced hundreds of millions of pounds of investment in science-based industries in Science Vale, which is attracting multi-national businesses to consider locating to the area. The SVCN project aims to provide easier and greater connectivity between three nationally and internationally recognised science and research centres at Harwell Campus, Milton Park and Culham Science Centre and key urban settlement areas: Didcot, Abingdon and Wantage & Grove, within the Science Vale area. SVCN Route 1 is a cycle route proposed to connect Wantage to Harwell Campus.

To ensure cycling infrastructure meets the expectations of these businesses and to facilitate government investment and transport objectives, the cycling network in Science Vale requires upgrading and strengthening.

This memo documents the byway assessment for SVCN Route 1 as sections 1F2 to 1K2, where WSP have been commissioned to carry out feasibility study and preliminary design on behalf of Oxfordshire County Council. With regards to assessing the existing byway and whether any changes are necessary to it to accommodate SVCN Route 1, this memo will consider the following factors: amenity of the proposed cycle route, environmental issues, visual impacts, costs, revenue / maintenance requirements and safety.

Existing Byway Users

Two Surveys have been carried out along Icknield Way byway, in March 2019. One survey was carried at Section 1G2 which is unrestricted byway just to the west of Ginge Road, and the second survey was carried out at Section 1K2, where it meets Newbury Road, which is restricted byway. Note that during the time of the surveys, there may have been physical barriers on Sections 1D, 1G2 and 1H2. It is expected that due to the physical barriers, any vehicle larger than motorcycles was not able to enter the areas, but OCC reports that no complaints had been received. OCC is currently looking to conduct further surveys to verify the level of usage of Icknield Way byway. The March survey results are shown in the following three tables:

	Eastbound on Icknield Way (Section 1G2)							Westbound on Icknield Way (Section 1G2)						
	PEDESTRIAN	MOBILITY IMPAIRED	EQUESTRIAN	QUAD	M/CYCLE	P/CYCLE	TOTAL	PEDESTRIAN	MOBILITY IMPAIRED	EQUESTRIAN	QUAD	M/CYCLE	P/CYCLE	TOTAL
Wednesday 20.3.2019	9	0	0	0	0	1	10	10	0	2	0	0	3	15
Thursday 21.3.2019	12	0	1	0	0	4	17	3	0	1	0	0	2	6
Friday 22.3.2019	9	0	0	0	0	5	14	17	0	1	0	0	2	20
Saturday 23.3.19	25	0	0	0	0	12	37	28	0	2	0	0	2	32
Sunday 24.3.2019	76	0	2	0	0	18	96	62	0	1	0	5	8	76
Monday 25.3.2019	5	1	0	0	0	5	11	9	0	0	0	0	2	11
Tuesday 26.3.2019	11	0	0	0	0	6	17	10	0	0	0	0	2	12
7 Day Total	147	1	3	0	0	51	202	139	0	7	0	5	21	172
Weekday Average	9	0	0	0	0	4	14	10	0	1	0	0	2	13
Weekend Average	51	0	1	0	0	15	67	45	0	2	0	3	5	54

Table 1: Icknield Way Byway Survey Results – Section 1G2 March 2019

	Eastbound on Icknield Way (Section 1K2)										
	PEDESTRIAN	P/CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	EQUESTRIAN	MOBILITY IMPAIRED	TOTAL
Wednesday 20.3.2019	15	3	0	4	0	0	0	0	1	0	23
Thursday 21.3.2019	9	3	1	5	0	4	0	0	0	0	22
Friday 22.3.2019	16	2	1	3	0	1	0	0	1	0	24
Saturday 23.3.19	32	7	1	2	0	1	0	0	3	0	46
Sunday 24.3.2019	27	12	3	3	0	0	0	0	1	0	46
Monday 25.3.2019	14	2	0	2	0	0	0	0	0	0	18
Tuesday 26.3.2019	30	2	0	4	0	0	0	0	0	0	36
7 Day Total	143	31	6	23	0	6	0	0	6	0	215
Weekday Average	17	2	0	4	0	1	0	0	0	0	25
Weekend Average	30	10	2	3	0	1	0	0	2	0	46

Table 2: Icknield Way Restricted Byway Survey Results – Section 1K2 Eastbound March 2019

	Westbound on Icknield Way (Section 1K2)										
	PEDESTRIAN	P/CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	EQUESTRIAN	MOBILITY IMPAIRED	TOTAL
Wednesday 20.3.2019	12	1	0	4	0	0	0	0	0	0	17
Thursday 21.3.2019	6	5	1	5	0	4	0	0	0	0	21
Friday 22.3.2019	17	5	1	3	0	0	1	0	1	0	28
Saturday 23.3.19	25	12	0	2	0	1	0	0	1	0	41
Sunday 24.3.2019	30	17	0	3	0	0	0	0	2	0	52
Monday 25.3.2019	17	5	0	3	0	0	0	0	0	0	25
Tuesday 26.3.2019	25	6	0	5	0	0	0	0	0	0	36
7 Day Total	132	51	2	25	0	5	1	0	4	0	220
Weekday Average	15	4	0	4	0	1	0	0	0	0	25
Weekend Average	28	15	0	3	0	1	0	0	2	0	47

Table 3: Icknield Way Restricted Byway Survey Results – Section 1K2 Westbound March 2019

From the above tables the following conclusions about existing usage of the byway can be made:

- Overall numbers of existing users on both routes are shown in the tables above. The average weekday flow is approximately 14 users in a day in each direction at Section 1G2 and 25 users in a day in each direction at 1K2. Flows are slightly higher at the weekend, with a maximum weekend average day flow of 67 users in a day being recorded (1G2 eastbound). With no standard to

compare against and this route not being part of a promoted route, these figures are considered reasonable.

- The predominant user groups of these sections of the byway are pedestrians and cyclists. At Section 1G2 pedestrians and cyclists account for 96% of the total users recorded over the 7 days. The remaining 4% is made up from equestrians 3% and motorcycles 1%.
- Limited motor propelled vehicles were recorded at Section 1G2 over the whole of the 7-day period due to the presence of physical barriers, except for 5 motorcycles heading westbound on Sunday 24 March 2019. These are likely to have been leisure users, being recorded on a Sunday. OCC is currently looking to conduct further surveys to confirm the low usage of motor propelled vehicles at Section 1G2. The car use of Section 1K2 is comprised of cars parking close to the Newbury Road end for dog walking rather than illegally using the track for access.
- The survey data provided suggests that horse and carriages no longer use the byway at any time but this may have been impacted if barriers were. Again, the new survey will confirm the level of usage by horse and carriages.
- The survey results have confirmed site observations made during numerous site walk over visits during 2018 and 2019, when there have been no observations of any motor propelled vehicles, other than motorcycles and no observations of horse and carriages along Icknield Way, other than by those vehicles used in connection with the site meetings. Examination of tracks only shows evidence of motorcycle motor propelled vehicle use of section 1G2 and no evidence of carriage driving on any section.

In summary the survey of Icknield Way, Section 1G2 and Section 1K2, indicates reasonable numbers of users and the users are predominantly pedestrians and cyclists. In addition, a small number of equestrians and motorcyclists use Icknield Way at Section 1G2. Limited motor propelled vehicles used the byway over the 7-day survey period at Section 1G2 potentially due to the possible presence of physical barriers, except for 5 motor cycles on Sunday 24th March.

It is fair to expect approximately the same low numbers of mechanically propelled users on the byway on sections 1F2 to 1J2 there are no significant junctions with other routes along these sections of byway to significantly change user flows. Horse riding numbers are expected to increase as they use the connecting bridleways and permissive tracks on Lockinge Estate and avoid the steep slope at Ginge Brook.

Amenity of the Proposed Cycle Route and Area (AONB)

Cycling is recognised as an important mode of travel at both the national level and locally by OCC and other local bodies and groups. In April 2017 the government published its £1.2 billion long term plan to make cycling and walking the natural choice for shorter journeys. The UK government website says that 'the government wants cycling and walking to become the norm by 2040 and will target funding at innovative ways to encourage people onto a bike or to use their own two feet for shorter journeys'. At Government level it has been acknowledged that cycling can improve people's health, reduce travel costs, provide social benefits, cut congestion and help reduce environmental pollution.

At a local level, cycle user groups, including the Harwell Bicycle User Group, have worked with OCC to identify that a high quality cycle route between Wantage and Harwell Campus will have considerable benefits for people living in Wantage and nearby villages who travel to Harwell Campus for work.

Currently the A417 or the National Cycle Network Route (NCN) 544 provide a cycle route between Wantage and Harwell Campus. However, the A417 is a busy, fast road and cyclists have to share carriageway space with all motor vehicles, including HGVs. It is an unpleasant route to cycle on, without any existing provision of cycle lanes. As an alternative to the A417, the NCN 544 provides a cycle route on a mix of off road and country lanes, but this route is not particularly direct being 10.8km in length between Wantage and Harwell Campus compared with 9.6km length for SVCN Route 1, and in part running along a private road with permissive cycle rights that could be withdrawn at any time

To achieve the government and local authority ambitions for provision of high quality cycle route infrastructure, a better route than currently exists is necessary and the new routes will need to be provided in a way that provide high amenity to cyclists. The amenity quality of the route will be crucial in order to attract cyclists to use the route and to achieve the objectives of the SVCN programme of works.

Use of the byway along sections 1F2 to 1K2 will achieve a high quality amenity for cyclists, but only if the route is free from use by mechanically propelled vehicles to enable use by people with varying levels of confidence. The byway is narrow in places due to farming uses, trees, hedgerows and topography. Trying to share this narrow space between cyclists and motor vehicles such as 4x4s and motorcycles will significantly detract from the cycling, walking and horse-riding experience and is likely to create safety issues for the narrow and steep locations. Traffic noise and pollution from motor vehicles in very close proximity would further detract from the cycling, walking and horse-riding experience and designing a route to accommodate a high quality cycle route along with maintaining use by motor vehicles, pedestrians and equestrians would result in an engineered solution akin to a new road and cycle lanes through the AONB. This is not desirable, detracting from the special qualities that the AONB designation protects and the cycling, walking and horse-riding environment that SVCN Route 1 seeks to create.

Sharing space between cyclists and horse carriages along the narrow sections of the Icknield Way will also result in a poor quality cycle route as users will have insufficient room to pass each other at pinch points.

Given that the amenity and safety of the proposed cycle, horse and walking route will be significantly improved by restricting mechanically propelled vehicles, it is recommended that all mechanically propelled vehicles are restricted from using the proposed SVCN Route 1. As well as benefitting safety of cyclists, walkers and horse-riders using this route through the AONB, it will also increase the amenity of the route for use by non motorised users and improve conditions for local farming where the use of motor vehicles by members of the public can damage existing field areas and exacerbate drainage and water ponding problems. Horse carriage use should be restricted along the byway from Ardington to Ginge Road due to the narrow and steep nature at points along the route.

Environmental Issues

One of the objectives for SVCN Route 1 is to minimise environmental impacts of proposed works both during its construction and during its operation. To achieve this objective mechanically propelled vehicles and horse carriages should be restricted from the route otherwise it will have to be widened to safely accommodate cyclists passing vehicles such as 4x4s and horse carriages. Such widening would have to

include the removal of some existing large trees and hedgerows currently growing along narrow sections in the steep slopes down to Ginge Brook as well as soil, stone and root excavations

The cycle route has been designed as 2.5m wide at its narrowest location on Ginge Brook Bridge and its tree lined approaches. At its widest locations the route has been designed at 3.6m wide, where environmental conditions allow and where the route will be used on occasions by slow-moving farm vehicles. The following table shows these design widths and comments on what the environmental impacts there would be to widen the route to allow for two-way traffic including mechanically propelled vehicles such as 4x4s, i.e. a design width of 4.5m (3m for one-way traffic and 1.5m for cyclists, pedestrians or equestrians in opposite direction):

Section	Proposed Design	Environmental Considerations if Route Width Was Increased to 4.5m Wide.
1F2, through Ginge Brook wooded valley,	2.5m wide	Removal of large, high quality trees would be required (the 2.5m proposal only requires removal of 2 number small self-seeded low value trees). As well as visual loss and amenity loss through the removal of trees this would also cause loss of habitats to bird wildlife and potential for bat roosts.
1F2, Ginge Brook Bridge	2.5m wide	<p>If a wider bridge was designed to take vehicle and carriage loading, there would be significant impacts from temporary works and impacts from needing a much larger structure and foundations. The current design is for a light weight structure that can carry 5kN/m². This is sufficient for pedestrians, equestrians, cyclists (and motorcycles at low speeds), but is insufficient for other mechanically propelled vehicles and horse and carriages. A light weight bridge structure allows construction in Ginge Brook wooded area with environmental impacts kept to a minimum. Larger bridge structures will require substantial construction plant such as piling rigs and large cranes and to allow access to working areas would require removal of trees and construction of temporary stone construction accesses cut deeply into the top of steep banks of the valley.</p> <p>Larger structures would require more substantial foundations, likely in the form of concrete piles, which would be confirmed by Site Investigation. Setting up piling rigs would require substantial areas of the ground to be cleared of trees and made relatively level through significant earthwork cuttings and fill. The area could be reinstated back to original levels after the works are complete but it would take several years for tree growth to re-establish and for habitats to recover.</p>

Section	Proposed Design	Environmental Considerations if Route Width Was Increased to 4.5m Wide.
		<p>The additional materials required for a larger bridge structure, such as concrete and steel, are also an environmental consideration. These materials have CO2 footprints and in accordance with zero carbon targets, excessive use of these materials should be avoided, unless clear benefits are evident or unless it is absolutely necessary to use them.</p>
1F2, top of proposed slope east side of Ginge Brook	2.5m wide	<p>The current design at up to 2.5m wide route minimises the extents of earthwork excavation required. At its deepest the cutting is 2.1m deep. Widening this dig from 2.5m to 4.0m plus side slopes will increase the visual impact of the cutting, increase loss of habitats in the grassed sides to the existing byway and increase the loss of farmland given over to the byway. It will also increase the effects on the connecting footpath running north and south of the byway</p>
1G2	3.6m wide	<p>If this section of byway was widened to 4.5m then there would be loss of tree habitats along the edges of the existing byway and/or a loss of strip of land currently used for growing crops by the farmer. It is unlikely that OCC have the right to widen this section of byway to 4.5m wide, without land purchase from the owner and tenants, as currently the byway operates at a width in the order of 3.6m wide in this section.</p>
1H2	3.6m wide	<p>This section of byway is currently bound by wire fencing providing a 4.0m maximum width, including narrow grass strips along the edges. It is reported that this section has had temporary width restrictions (large stone blocks) placed at its start to prevent any large vehicles trying to use it at times; it leads to the restricted byway section at 1K2 which mechanically propelled vehicles are not able to legally use, so is not part of any through route for vehicles. Widening the route to 4.5m would require land take from the adjacent field and due to the higher levels that the byway is at in this location some new side slopes would be required into the farmers' fields. As well as loss of land, these side slopes would have to be constructed from imported earthworks materials, possibly requiring off-site lorry movements.</p>

Section	Proposed Design	Environmental Considerations if Route Width Was Increased to 4.5m Wide.
Sections 1I2 to 1K2	3.6m wide	<p>Whilst these sections may be able to be widened to 4.5m , with the agreement of landowners, a loss of farming land would be suffered along section 1I2. As Section 1K2 is restricted byway there is no through route possible meaning less justification.</p> <p>Whilst there is little evidence of Horse carriages use of this section of byway there seems little need to widen these sections to 4.5m into the farmers' fields to accommodate increased numbers of cyclists and to allow for potential use of horse and carriages as this could be regarded as unnecessary and damaging.</p>

Table 4 Environmental Considerations and Impacts

Visual Impacts

If the route was widened to 4.5m wide in order to accommodate most mechanically propelled vehicles and horse carriages the main visual impacts would be experienced at Ginge Brook valley where additional tree clearance would be required and at the top of the steep Ginge Brook side slope where additional earthworks cutting would be required. The bridge at Ginge Brook would also have a considerable 'engineered' look to it should motor vehicles need to be accommodated. Minimising visual impacts from the scheme proposals is essential in this Area of Outstanding Natural Beauty.

Costs

Considerable additional scheme costs will be required if the cycle route was constructed to accommodate mechanically propelled vehicles and horse carriages. The additional bridge costs would be of the order of at least £200k to allow for the additional loading and safety requirements, and the route track would be expected to cost at least an additional £150k to allow for additional stone construction work and earthworks (sections 1F2 to 1K2). This is considerable additional cost to be met by public funding and could not be recommended.

As well as these additional construction costs, a heavier bridge designed to take motor vehicle loading will require additional inspection and maintenance costs. Again, this is an unnecessary demand on public funding and could not be recommended.

Safety

This assessment is based on the aspiration to create a high quality and well promoted cycle, walking and horse riding route linking Wantage to Harwell campus and an increase in the use of the route by cyclists and other non-motorised vulnerable users for commuting, social/recreation and tourism journeys. As usage increases there is a higher risk that a user would encounter 4x4 or other mechanically propelled vehicle or horse carriage in a head on type situation from opposite directions and at higher speeds unless such vehicles were restricted from the route. The text above (Environmental Issues) discusses the environmental implications of widening the route to 4.5m so that an increased number of cyclists can safely pass a mechanically propelled vehicle such as a 4x4 or can pass a horse carriage. However, the impacts of widening the route are considered too great, meaning that permanently restricting mechanically propelled vehicles is needed to safely allow an increase in the numbers of cyclists and other vulnerable non-motorised users using the route.

Motorcycles could use the proposed stone track surface and route geometry, particularly if suitable tyres and bike sizes for handling purposes were chosen but the width of the byway would need to be appropriate in order for pedestrians, cyclists, motorcyclists and equestrians to pass each other safely and for appropriate design sign-off. The Sustrans Information Sheet FF27 "*Ways Through The Countryside*" recommends that the minimum width of an unsegregated shared-use footway / cycleway / bridleway should be 3m. At bridges the Sustrans minimum recommended unsegregated width for cyclists and pedestrians is 3.5m (Sustrans Design Manual chapter 8 "*Bridges and other structures (draft)*" Feb 2015). This width would need to be increased if motorcyclists used the route, in order to reduce the potential for a horse being startled by a passing motorcycle, resulting in the rider being dismounted or for other proximity and noise/speed conflicts .

Currently some motorcyclists use the byway and will encounter cyclists, equestrians and pedestrians – and conflicts are unknown or low because the topography, terrain, visibility and surface all challenge the ability for motorcyclists to travel at speeds and also limit the number of users -reducing potential for conflict. However, given that the new stone track construction and bridge will reduce some of these challenges, it is expected that user numbers will increase substantially – as will user speeds, especially if motorcycles are able to continue using the route, meaning the potential for conflict will increase. Furthermore, cyclists and other non-motorised users may be deterred from using the route if they are aware that motorcycles or other mechanically propelled vehicles are using the route. Therefore, unless the route can be provided with a suitable width for the shared usage, with the provision of appropriate speed reduction measures along the route to mitigate the potential for motorcycles travelling along it at inappropriate speeds, the most appropriate solution is considered to be restrictions on all mechanically propelled vehicles including motorcycles.

The width of the proposed route is 2.5m to 3.6m wide, with the 3.6m width being selected as to require no more land take than the present byway. From the recommendations noted above, it would seem the 3.6m width is sub-optimal for motorcycles to safely pass cyclists, equestrians and pedestrians and this is on the basis that motorcyclists travelled at appropriate speeds for a shared promoted route on a stone surfaced byway within an AONB.

Thus, the engineering, safety and environmental considerations require a restriction on all mechanically propelled vehicles.



Conclusions

Designing the proposed Science Vale Cycle Route 1 to accommodate increased non-motorised vehicle users alongside mechanically propelled vehicles and horse carriages would require the route to be widened from existing widths to 4.5m minimum. This would cause excessive environmental impacts, loss of strips of farm land, visual impacts in the AONB, cost impacts and cause additional maintenance requirements and maintenance costs.

Continued use by motorcycles would lose amenity value to pedestrians, cyclists and equestrians, with the speed and noise differential a contributor to safety issues and potential conflicts, which are likely to affect these slower and more sensitive users. The route would have to be widened to safely accommodate shared use and meet standards. Therefore, the engineering and safety considerations require a restriction on all mechanically propelled vehicles so the route is only available as a whole to pedestrians, cyclists and equestrian

It is therefore recommended that all mechanically propelled vehicles, and horse carriages are restricted from the byway along sections 1F2 to 1K2 at the Parish Boundary where it would meet the existing restricted byway where mechanically propelled vehicle use is illegal.

Enforcement of restrictions are proposed by the use of locked gates or removable bollards that enable farm vehicle access at Ginge Road access points and at the end of Section 1K2. A 1.5m gap, in accordance with British Horse Society recommendations for bridleway gateposts, is proposed next to these locked gates to allow access onto the route by equestrians, pedestrians and cyclists.

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