

Cheddar Gorge

Technical Briefing Note

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Executive summary

Report Background

This technical briefing note was commissioned by Sedgemoor District Council and is equivalent to RIBA Stage 0 “Shaping the Brief”. The aim of the briefing note was to refresh understanding of the potential of Cheddar Gorge and re-assess current road safety issues in light of wider economic regeneration and tourism strategies. Equally, this assessment was informed by new guidance “*Cycling Infrastructure Design LTN 1/20*” issued by the Department for Transport (2020), and recent transport strategies “*Gear Change: A bold vision for walking and cycling*” (DfT, 2020) and “*Decarbonising Transport: a better, greener Britain*” (DfT, 2021). The briefing note was developed through desktop assessment and a “Cheddar Gorge Inspiration Workshop” and feedback meeting with 15 local stakeholders.

Re-Envisioning Cheddar Gorge a Unique Nature Experience

The main finding of this report is that the Cheddar Gorge has potential to become a nature-based economic regeneration corridor to better preserve and benefit from the timeless natural assets of the Gorge. To achieve this value offering means reclaiming the Gorge Road itself as a core asset and reprioritising it to better deliver on economic regeneration and tourism, as well as transport, health and climate targets. **Despite the awe of the Gorge landscape, the Gorge is fundamentally human scale with a distance of less than 2 miles from the lower Gorge to the top Black Rock car park – walking distance.** The option scoping exercise explored 6 options to upgrade walking and cycling access to the Gorge to an experience level which is an attraction in itself. This integrated approach recognises the importance of Cheddar Gorge to Somerset as a key international visitor destination with potential to attract higher value new “staycation” visitors, more regional day trippers as well as serving the local community as an economic, recreational, and social resource at the heart of the Cheddar community.

Current motorised vehicle numbers driving to and through the Gorge are relatively low but have a disproportionately negative impact due to the tight physical constraints and sensitivity of the site. Overall road safety is unsatisfactory, with sub-functional provision for pedestrians and a level of cycle comfort suitable only for elite riders. The Gorge Road presents an opportunity to address road safety and potentially drainage issues while increasing the value and volume of visitors. **Fundamental to achieving this is the need to reduce motorised vehicle journeys through the Gorge by providing attractive and viable alternatives.** The option scoping demonstrates the high potential of the Gorge Road for an exceptional walking and cycling experience with a number of viable approaches to how to deliver this. This would result in an overall higher capacity of people traffic on the road, and unlock potential for more diverse programmes and activities to take place.

The desktop analysis and stakeholder engagement revealed the importance of addressing wider connectivity issues as part of re-envisioning Cheddar Gorge. As such, **upgrading walking and cycling should be balanced by improving public transport services options to and from Cheddar, within the Gorge itself, and also for surrounding villages** on the top of the Gorge such as Priddy, Shipham and Charterhouse. As part of this, alternative motorised access routes should be considered and necessary improvements identified. While there is an immediate and urgent need to address road danger and anti-social behaviour issues occurring within the Gorge, ideally selected approaches would contribute as “quick wins” towards a wider vision for Cheddar Gorge as a nature-based economic corridor.



Figure 1 A “hopper” service can be an experience in itself as well as a convenience – the electric tractor ride up the hill at the Eden Project in Cornwall. © Hufton + Crow and Visit Cornwall



Figure 2 Inspiration for a regionally sensitive “mobility hub” which could be upgraded with secure parking, ecycle/escooter rentals, and service or micro-enterprise opportunities. © Hello Sandwich.

Mobility Hubs & “Active” Interfaces with Public Transport

National data and engagement with the stakeholder group revealed demand for a higher service level for public transport, with more dynamic “active travel” interfaces with buses and trains. Mobility hubs are a concept that acknowledge that in a rural setting like Somerset many people will be dependent on a car for part of their journey. A main mobility hub could be sited at the edge of Cheddar as a place to securely park a car, (e)cycle or scooter, or to pick up a rental cycle, ecycle or scooter to access Cheddar Gorge. The main mobility hub could also be an access point to the existing Strawberry Line and future Wells extension, and connect to “active” public transport services. Equally, a mobility hub at the top of the Gorge could provide a public transport interface for local top of Gorge residents, and an attractive offering for tourists who may want to walk or cycle up or around the Gorge and then jump on a cycle or hopper services to get back into Cheddar. The mobility hubs could operate on a zero-carbon financing model with economic activities such as services, start-up hubs, local produce stalls and other micro-enterprise opportunities.

“Active” interfaces with public transport includes the introduction of active flexi carriages on buses and trains which supports being able to take bikes, wheelchairs, pushchairs, shopping, luggage and all the everyday chattel needed to be able to leave the car at home. “Bikes on buses” is an approach widely used in Alpine regions to vitalise green tourism. As such, there is an opportunity to understand better public transport service level as improved affordability, frequency, and evening services, but also improved choices and options for integrating walking and cycling as part of everyday and tourism journeys.

Wider Project Impacts

In May 2019, UK government declared a climate and biodiversity emergency, and currently has committed to law to the world’s most ambitious targets for carbon reduction¹. As **passenger cars are the single largest contributor to the UK’s carbon footprint**², investment in rural transport networks which deliver walking and cycling as the first choice for local and tourism journeys is key to delivering climate targets. An integrated understanding of this is important to a rural economy like Somerset with an ageing population and low health resilience across generations. **Delivering world class walking and cycling has potential to revitalise the Cheddar economy, improve connectivity for residents and visitors alike, and contribute to a healthier, greener and more attractive Somerset to live in, work and visit.**

Local Policy Context

Improvements to and extension to pedestrian links across Axbridge, Cheddar and Draycott (Yeo Valley) are identified as specific schemes to be prioritised in Policy C5 Transport in the Sedgemoor Local Plan 2011-2032 Adopted Version, p.74³. Improvements to and extension of the Strawberry Line are also safeguarded in this same item.

¹ <https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035>

² Department for Transport (2020) Decarbonising Transport: Setting the Challenge.

³ <https://www.sedgemoor.gov.uk/LocalPlan>

Key Recommendations for Progression

1. Re-envision Cheddar Gorge as a nature-based economic regeneration corridor to preserve and benefit from the timeless natural assets of the Gorge.
 - a. Engage with local community, businesses and delivery stakeholders - as well as separately with top of Gorge villages - to shape this vision.
 - b. Explore wider transport connectivity needs and potential to provide alternatives to motorised traffic routes through the Gorge.
 - c. Improve walking and cycling connectivity within Cheddar to the Gorge.
 - d. Adopt gold standard design principle for high capacity walking and cycling which future-proof for uptake of e-cycling and inclusive cycles as the best way to increase the value and volume of visitors.
 - e. Consider a phased delivery approach with an initial 18-month pop-up trial before progressing to high quality capital investment in keeping with the natural and cultural heritage character of the Gorge.
2. Develop “active” public transport interfaces which enable walking and cycling.
 - a. Explore the concept of mobility hubs with a main hub in Cheddar to serve visitors to the Gorge as well as local residents, and orbital hubs which could serve surrounding parishes including top of Gorge villages.
 - b. “Activate” public transport to better integrate walking and cycling, such as bike on buses, and active flexi carriages on buses and trains.
 - c. Consider a “hooper” service within the Gorge, which could connect from a mobility hub at the edge of Cheddar, and add mobility choice within the Gorge while offering an attractive visitor experience in itself.
3. Improve connectivity to the Strawberry Line and future extensions.
 - a. Locate the main mobility hub so that it serves access to the Strawberry Line and public transport on the A371 as well as access to Cheddar Gorge.
 - b. Consider future extensions of the Strawberry Line eastwards towards Wells, Shepton Mallet, Radstock and beyond to the train station in Frome.
 - c. Consider future extensions of the Strawberry Line westwards from Yatton to Clevedon.

1 Background

1.1 Context

Cheddar Gorge is a site of international repute that sits within the Mendip Hills Area of Outstanding Natural Beauty (AONB) in Somerset. Cheddar Gorge is a site of special scientific interest (SSSI), linked with 3 other SSSI sites together known as the Cheddar Complex. In addition to the spectacular landscapes both above and below ground, Cheddar is renowned for its eponymous cheese, and as the place of discovery of the “Cheddar Man” - the oldest complete human skeleton in Britain. The Gorge is both a tourist destination and a recreational resource for locals, attracting over 500,000 visitors per year. In addition to coach tours, the site is also a stopping point for people driving to/from Cornwall and Devon as it is 11 miles from the M5 via the A371. The Gorge has multiple stakeholder interests including residents and business owners in the village. The National Trust owns land on the north side of the Gorge, while the Longleat Estate runs several attractions in the Gorge, including Gough’s Cave, Dreamhunters, The Museum of Prehistory, Rocksport activities and Escape Room Games. The Cheddar Vision Group has been formed to coordinate these diverse interests into a shared vision for Cheddar which is currently being developed.

Cheddar Gorge sits at the heart of sustainable tourism potential across the Axe and Brue catchments, connecting the Somerset Coast (Burnham on Sea and Highbridge, Brean and Burnham-on-Sea), the Levels and Moors and the Mendip Hills. An outline tourism strategy looks to seize the opportunity of growth in ‘staycations’ and looks to develop new and improved visitor products and experiences as tourists seek out new year-round destinations. Sustainability lies at the heart of the project. The strategy aims to increase the volume and value derived from tourism and visitor activity in the Axe and Brue catchments whilst reducing its environmental impact. A key element of the project will be the development of a transport strategy which supports the sustainable movement of visitors through partnerships with public transport operators and the promotion of active travel as a component of the visitor offer. Cheddar Gorge is a high priority project within this strategy.

Cheddar Gorge currently attracts a wide diversity of outdoor users including:

- Walkers
- Cyclists
- Climbers
- Horseriders
- Disabled visitors

Cheddar Gorge could attract a wide range of potential visitor profiles:

- International tourists
- Stop-over tourists on their way to Devon and Cornwall
- New “Staycation” tourists
- Repeat regional tourists from Bristol, Bath etc.
- Local residents

Section 3 of this report, “Best Practice Case References”, shares case studies of sites and places which have approached increasing visitor value and volumes while still safeguarding the core natural or heritage asset which draws those visitors in the first place.

1.2 Stakeholder Engagement

A “Cheddar Gorge Inspiration Workshop” was held with Cheddar Vision Group stakeholders in May 2021 to explore the potential of the Gorge and some of its current limitations. A total of 15 people attended, with representation from Cheddar, Axbridge, and Mendip.

The stakeholders related a number of key traffic-related issues are currently negatively impacting the Gorge:

- Road safety (speeding and subfunctional provision for pedestrians).
- Anti-social behaviour including donutting and large-scale car meet-ups.
- Traffic noise.
- Decreasing visitor numbers and decreasing visitor value.

Stakeholders expressed deep connection and care for the unique assets of the Gorge:

- Spectacular natural beauty.
- Drama in transition between flat of the Somerset Levels and Mendip Hills.
- Biodiversity – trees, grassland, cliffs, endemic plants.
- Diversity of users – opportunities for people to walk, cycle, climb and more.
- It’s free!
- It’s a place for local use, and a place to take visitors.
- Feelings of timelessness, awe, and wonder.

Stakeholders outlined Blue Sky Visions including:

- a. Rewild the Gorge, “national park” approach, pedestrian priority, no access for motorised vehicles
- b. Motorised vehicle access could be done on a timed basis (e.g. historic medieval town Lucca, or “Keep Sunday Special” or PlayingOut approaches)
- c. Redirect commercial traffic
- d. Potential alternative routes (e.g. Longbottom Lane, Draycocks New Road)
- e. Segregation for different users
- f. Locate parking away from Gorge (e.g. Stonehenge car park is located 2.3km from Stonehenge visitor viewpoint), Park&Ride, or Park&Stride
- g. Offer mobility options such as eycles, open top bus, tractor ride, and cycle compatible buses like in NW Scotland
- h. Disabled access to the top of the Gorge
- i. Programme offering: e.g. Cheddar artists trail, street dining
- j. Interest for local residents as much as for visitors
- k. Manage car or motorised vehicle access on an event basis

The stakeholder group provided more detail and granularity about issues affecting the Gorge including: how the experience is currently disappointing and intimidating; the importance of connectivity for top of Gorge villages e.g. Priddy, Charterhouse, and Shipham; that the Gorge will always be attractive for serious cyclists; past experience with Cheddar GreenFlyer bus service proved challenging as all visitors want to return at same time 5pm evening; there is an open question of flood and drainage issues affecting the Gorge; a risk of any intervention is that it will displace the same traffic challenges outwards; the Gorge has already had numerous road closures over the past few years effectively trialling this; and finally the importance of bringing the local community and public up to speed with this conversation.

1.3 Traffic-related issues

The B3135 runs through Cheddar Gorge from Cheddar Village as a two-lane road. A pre-covid traffic survey from 2019 shows relatively low overall vehicle numbers using the road, with a drop-off in vehicle numbers in the lower Gorge indicating about 40% of vehicles have the lower Gorge as their destination. The survey captured 1864 vehicles per day accessing the upper Gorge. As the Black Road parking is limited (<30 spaces), it could be presumed that most of these are through-traffic. A quick test with a sat nav found that the B3135 was listed as the recommended route from Cheddar to e.g. Frome, likely to avoid traffic on the A371. This is consistent with national trends which have seen a dispersal of road traffic on to B roads due to the widespread use of sat navs. Historical data from 2009 for a survey point east of Black Rock parking recorded 1807 vehicles per day, of which 53 were cycles⁴. As this is a similar number of vehicles, this may indicate habitual travel patterns.

Location	7 day average	7 day average 7am to 7pm	7 day average, non day	Day time %
Lower Gorge	3156	2672	484	85%
Mid point lower Gorge	2912	2535	377	87%
Upper Gorge beginning nr Priest Rock Car Park	1864	1601	263	86%

Table 3 **Traffic Volume Survey 17-28 October, 2019 (Radar)**

Overall, these are low traffic volume numbers, comparable with a busy residential road. By Dutch design standards, these motorised vehicle numbers are low enough to contemplate use of a cycle priority approach. For comparison the A371 in Cheddar had an annual average daily flow of 10,302 vehicles in 2019⁵. However, of note is that these **relatively low vehicle numbers are having a disproportionately negative impact on the Gorge**. This may be partially due to the unique physical constraints of the Gorge, combined with speeding, anti-social behaviour and sub-functional provision for safe walking and cycling.

The same pre-Covid traffic survey found average speeds in the lower Gorge of 22 mph (85% daytime) which increase up the Gorge to 29 mph (85% daytime). Both of these speeds could be considered high given the high level of footfall and activity in the lower Gorge, and the lack of sightlines in the upper Gorge. The survey recorded speeding incidents with very high peak speeds from 45 to 60 mph, and high frequency at the mid-point of the lower Gorge which has high levels of visitor activity. Data shows that speeding is more likely at night after 7pm, but vehicle speeds above 30 mph occur regularly in the lower Gorge during the day. Fundamentally given that **pedestrian provision is sub-functional along the entirety of the Gorge, and that the likelihood of pedestrians, grazing animals and cyclists in the carriageway at any point is high, there is a high concern around road safety in the Gorge**.

⁴ Department for Transport (2020) Manual count points, Site number: 996453. Available at: <https://roadtraffic.dft.gov.uk/manualcountpoints/996453>

⁵ Department for Transport (2020) Manual count points, Site number: 18417. Available at: <https://roadtraffic.dft.gov.uk/manualcountpoints/18417>

Location	85% 7am to 7pm	85% 24 hr	No. Vehicles > 40 mph/day	Peak speed
Lower Gorge	22 mph	23 mph	5	45-50 mph
Mid point lower Gorge	26 mph	28 mph	33	60-65 mph
Upper Gorge beginning nr Priest Rock Car Park	29 mph	30 mph	30	55-60mph

Table 4 **Traffic Speed Survey 17-28 October, 2019 (Radar)**

In addition to speeding, the Gorge is regularly subject to anti-social driving behaviour which includes burn-outs, donutting and drifting as well as large-scale meetups. An Anti-Social Driving Review group has been formed to address this, including undertaking immediate measure such as placing rock gabions on the car parks, but also to identify and coordinate how this can become self-enforcing on the carriageway itself.

1.4 Walking and cycling distance potential of the Gorge

Despite the experience of awe and timelessness, the Gorge is human scale and intimate in transport terms. The distance from the Tweentown roundabout to the Black Rock car park is under 3 km. **The distance from the roundabout to the Horseshoe Bend is 1500m, or a mile – a comfortable walking distance.**

Start	To	Distance
Tweentown Roundabout	Gough's Caves Entrance	690 m
Tweentown Roundabout	Horseshoe Bend	1500 m
Tweentown Roundabout	Cliff Top Gorge Walk Entrance	2600 m
Tweentown Roundabout	Black Rock Car Park	2800 m
Tweentown Roundabout	Totty Pot	4260 m
Tweentown Roundabout	Jct w/ B3371 / Plummer's Lane	5420 m

Table 5 **Distance range to key points along the Cheddar Gorge.**

1.5 Transport Potential & Wider Connectivity

Somerset is highly car dependent with 73% of journeys made by car⁶. Walking and cycling levels are similar to the national average at 21% and 1% respectively, with public transport use at 4% notably lower than the national average of 11%. **Most car journeys in Somerset are short with 24% of car journeys less than two miles (walking distance), and 57% of car journeys less than 5 miles (cycling distance)⁷ showing high potential for modal shift.** This trend is robust in a rural/urban sensitivity analysis which shows that for rural residents in Somerset 18% of car journeys are < 2miles and 55% of car journeys are < 5miles, while for urban residents 34% of car journeys are < 2miles and 66 % of car journeys are < 5miles⁸. Overall, 91% of car journeys in Somerset fall within core bus travel range of 25 miles. This indicates that **the interface with public transport is an important complimentary measure to walking and cycling, particularly in a rural setting like Somerset.**

⁶ Department for Transport (2021) National Travel Survey, Table NTS0308b_EDIT for Somerset, 2019 data.

⁷ Ibid.

⁸ Ibid, Rural/Urban split.

Somerset car journeys are short,
with 24% within walking distance
and 57% within cycling distance.



Figure 6 *The modal shift potential for walking and cycling in Somerset is high.*

In addition to carbon, cars have a large, harmful environmental impact. Tyre-based microplastics are the largest source of microplastics in the world's oceans⁹. The wear and tear on car tyres results in large amounts of microplastics being dispersed directly into the soil, air, and water, ending up in human and animal ingestion pathways. Across Great Britain, passenger cars disperse the equivalent of one billion rubber ducks of tyre-based microplastics each year (47,785,900 kg/year)¹⁰. A high level mileage based calculation for the Gorge up to Black Rock car park estimates that **vehicles in the Gorge disperse 189 kg of tyre-based microplastics into the Gorge environment, equivalent to 3774 rubber ducks each year.**

Cheddar village is poorly served by public transport. Cheddar can be reached via the 126 bus from Weston-super-Mare which is the closest mainline train station. Journey time is approximately 55 mins on an hourly service. This same bus continues on to/from Wells with a journey time approx. 30 mins, and the last service runs at 6pm westbound from Wells and at about 8pm eastbound from Axbridge. There is no operational train station at Wells. A different bus the 376 operates between Wells to Glastonbury with a further journey time approx. 20 mins, and 25 minute wait time between the connection. As such the overall public transport connectivity is poor for residents and visitors, and unsatisfactory given the international importance of Cheddar, Wells Cathedral and Glastonbury which lie in remarkable proximity to one another.

⁹ Eunomia (2018) Investigating options for reducing releases in the aquatic environment of microplastics emitted by (but not intentionally added in) products.

¹⁰ Calculated using mileage-based values published by the Dutch Ministry of Health Welfare and Sport, National Institute for Public Health and the Environment (2016)

There are likewise no Park&Ride services from the M5. By car it is 10.5 miles via the A371 from Jct 21 on the M5, with an alternative route on the A368 over Shipham. From Jct 22 on the M5 is 10.6 miles via the A38, with an alternative route via the B3139 over Wedmore. Open top bus tours are run from the Gorge, and numerous bus and coach tours are on offer.

Start	To	Via	Distance
Cheddar	Axbridge	A371	2.7 miles
Cheddar	M5 Jct 22	A371 / A38	9.6 miles
Cheddar	Wells	A371	9 miles
Cheddar	Shepton Mallet	A371	13.7 miles
Cheddar	Glastonbury	A371 / A39	13.4 miles
Cheddar	Frome	A371 / A361	26.2 miles

Figure 7 **Distance to surrounding destinations.** Data source: GoogleMaps

1.6 Mobility hubs

What is a mobility hub? A jazzed up name for a bus stop?! Or the next generation train station?! The mobility hub concept recognises that in a rural setting many people will need to use a car to access either the Strawberry Line and/or a public transport services. The mobility hub could “activate” this interface – providing safe, secure parking for cars, cycles and scooters. It could offer connectivity to an improved public transport service, and also connectivity to the Strawberry Line with options for ecycling or escooter rental. This is fundamental to unlocking appealing choices such as being able to cycling in one way, and taking public transport back - e.g. with heavy shopping, or with a change in the weather. The mobility hubs could operate on a zero-carbon finance model, and provide better rural access to services such as health, tourism, or council services, as well as micro-enterprise opportunities such as fruit ‘n veg stall or start-up hubs.

- Ecycle / escooter hire
- Safe and secure parking for cycles, scooters and cars
- Public transport connections with Real Time Information
- Services and/or micro-enterprise opportunities
- Attractive for tourists and local users alike

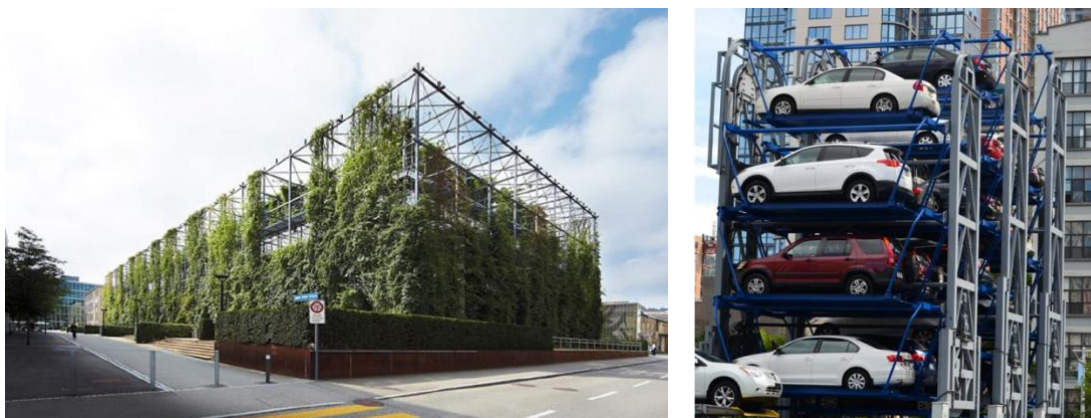


Figure 8 **Nature-based car parking using green facading, or vertical stacking system to limit required footprint.** Left © Jakob Green Facades. Right © Parkmatic



Figures 9 Nature Regionally sensitive “mobility hubs”, which could be enhanced with ecycling/ scooter parking, and active public transport, and micro-enterprise opportunities. © Hello Sandwich.

1.7 Active, Flexi Carriages on Buses and Trains

The engagement workshop held with local stakeholders confirmed the need for a higher public transport service level, which is strongly supported by national data. A Somerset-specific analysis of the National Travel Survey data shows that current public transport uptake in Somerset of 4% is well below the national average of 11%. This is also well below the potential for public transport in Somerset based on distance potential which is 30% modal share¹¹.

Inspiration from rural settings which place economic value on enabling an active walking and cycling interfaces with public transport as a **green tourism** approach include Bike-Buses operated by Border Buses¹², the UK’s first active travel carriages on the Highland Explorer¹³ in Scotland, wide-spread use of active flexi-carriages on trains in Switzerland¹⁴ and Alpine southern Germany¹⁵, as well as bikes-on-buses services in the Alps¹⁶. To enable someone to choose to leave their car at home, active flexi carriages are designed to accommodate wheelchairs, pushchairs, cycles, adapted cycles, luggage, dogs and all the other sundry needed to leave the car at home.

¹¹ Frome LCWIP (2021) Modal share model based on distance potential. Internal working draft at present.

¹² <https://ecf.com/news-and-events/news/buses-combining-cycling-and-public-transport-scotland>

¹³ <https://www.scotrail.co.uk/scotrail-highland-explorer>

¹⁴ <https://www.sbb.ch/en/timetable/travel-advice/bicycles/take-your-bike-with-you.html>

¹⁵ <https://www.bwegt.de/ihr-nahverkehr/service/fahrrad-services/fahrradmitnahme-in-zuegen>

¹⁶ <https://www.bregenzerwald.at/radbus-und-bahntransport/>



Figures 10 **Bikes on buses in the Borders Scotland, and bike trailers on buses in the Austrian Alps.** Left © Alexander Dennis. Right © REGIO Bregenzerwald/ VMOBILE.



Figures 11 **Active flexi train carriages are good for wheelchairs, pushchairs, cycles and all the things you need for an everyday adventure** Left © Chris Roberts SBB. Right © SBB.

1.8 Designing for Ecycling and Inclusive Cycling as Standard

A suite of recent studies conducted by the University of Bristol has found that **ecycling has clinical health benefits for both vulnerable people with health conditions as well as for the general population**¹⁷. A pilot study in Bristol conducted with participants with type 2 diabetes reported mean journey of 7.5 km (SD 4.2km) or 26.6 minutes (SD = 12.6 minute)¹⁸. This distance range is in line with the national average in England with 82% of cycling trips under 8 km (5 miles)¹⁹, indicating that ecycling enables more vulnerable users to cycle transport distances. This finding was reflected in an international scoping review of ecycling for transport where most studies reported mean daily distances between 3 km and 11.5 km²⁰. This same scoping study identified uptake across different age groups. This is reflected in detailed transport statistics from the Netherlands that show that while ecycles are most popular with older people, there is increasing uptake in ages 12 to 49 and ages 50 to 64²¹.

Given that Somerset has an ageing population with 24% of the population aged 65 or older, ecycling is a gamechanger to enable older and more vulnerable people to cycle. E-cycling can also enable more diverse cycle-types such family e-bikes to transport multiple

¹⁷ Bourne et al. (2018) Health benefits of electrically-assisted cycling: a systematic review.

¹⁸ Cooper et al.(2018) Potential of electric bicycles to improve health of people with Type 2 diabetes: a feasibility study.

¹⁹ Department for Transport (2021) National Travel Survey 2019, Table NTS0308b.

²⁰ Bourne et al. (2020) The impact of e-cycling on travel behaviour: A scoping review.

²¹ Netherlands Institute for Transport Policy Analysis (KiM) (2018) Cycling Facts.

children, e-trikes which add stability and space for shopping or a dog, or e-cargo bike micro-freight services such as the “Parcels not Pollution” programme launched by Hammersmith & Fulham with currently 1000 deliveries per day²². Ecycling also increases the importance of segregation between walking and cycling, as an ecyclist poses both perceived and absolute danger to pedestrians.



Figures 12 **Ecycling can open up everyday cycling for a wider range of people, and support distance ranges relevant in a rural setting.** Right © WhatIf Architects

- Ecycling has clinical health benefits
- Ecycling supports cycling for more vulnerable and older people
- Ecycling supports distance ranges relevant to Somerset
- Ecycling impacts design standards increasing the importance of segregation

1.9 Hooper Services

A “hopper” services adds an extra dimension of fun to improving connectivity within the Gorge. A “hopper” could run back and from a main mobility hub to a mobility hub at the top of the Gorge. This gives visitors an option to jump on, but equally offers a public transport connection for top of the Gorge residents.



Figures 13 **A “hopper” services adds a desirable experience to the convenience of comfortable option for getting back to a mobility hub or public transport connection.** Left © City of Ljubiana. Right © SP Smiler

²² <https://www.lbhf.gov.uk/articles/news/2020/03/hf-s-eco-cargo-bike-delivery-service-hits-1000-parcels>

2 Option Scoping

2.1 Gamechangers

The following runs through six options for Cheddar Gorge, as a minimum seeking to improve critical road safety issues but also further exploring high value approaches to walking and cycling as experience-based attractors as well as a means of transport. All of these options would benefit from wider connectivity improvements. The concept of mobility hubs as described in Section 1.6 is particularly important for Cheddar Gorge with for example a main hub located at the edge of Cheddar so that visitors can park here and walk, cycle or scoot to the Gorge. Equally, a mobility hub at the top of the Gorge for example at Black Rock Parking could provide a public transport connectivity for villages at the top of the Gorge, and an attractive interface for tourists. Note: the location of mobility hubs shown in the figure below are indicative only to aid discussion.

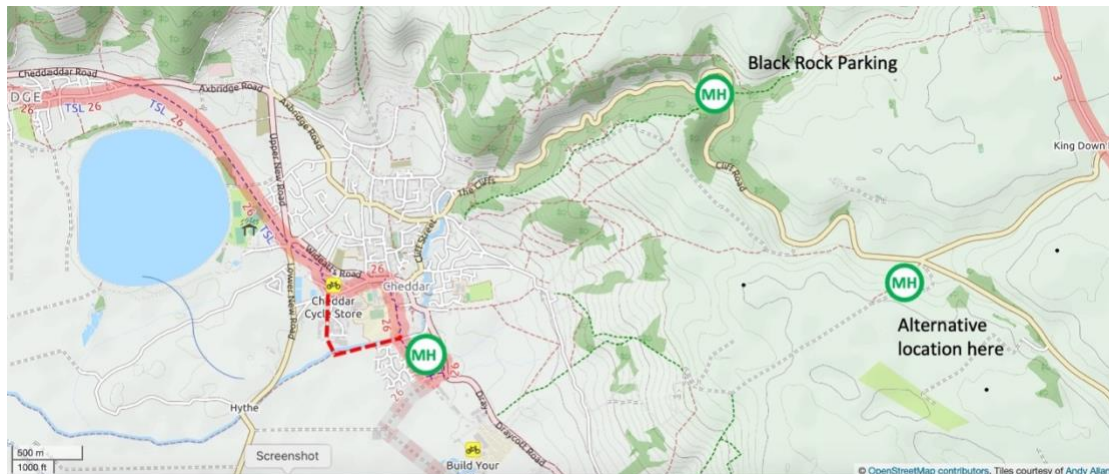


Figure 14 **Mobility hubs as key gamechangers for accessing and experiencing the Gorge and Cheddar.** Note: locations shown are indicative only. Basemap © OpenStreetMap

Overall, the key game changers are:

- mobility hubs
- active flexi carriages on buses and trains
- hopper services
- cycling and inclusive cycling as standard

A number of traffic management approaches are also equally important and can be considered to refine the functionality of a preferred options. These include:

- Access only approaches
- Time-based applications
- Enforcement approaches such as Automatic Number Plate Recognition
- Redirection of traffic using SatNav updates

2.2 Option A – Basic Road Safety Improvements



Figures 15 **Option A – Basic Road Safety Improvements.** Basemap © OpenStreetMap

Description: Road remains two way for motorised vehicles with punctual traffic calming such as zebra crossings, one-way chicanes (can be nature-based e.g. Croyd), reclaiming of overly wide carriageway for pedestrian pockets, more clear safety warnings for pedestrians in-carriageway, and drainage improvements. A full capital maintenance approach could include resurfacing the road in a quieter, heritage asphalt.

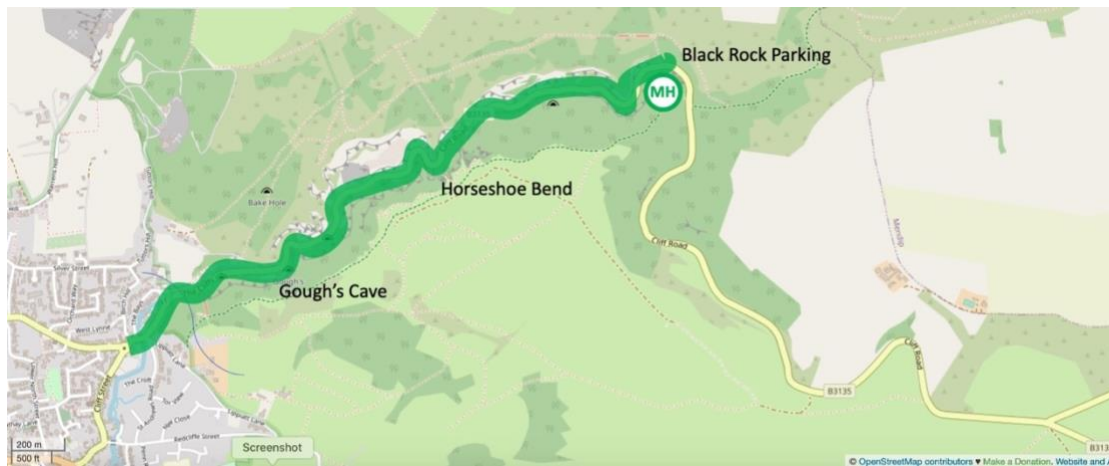
Advantages:

- Little impact for top of Gorge village residents to modify access routes.
- Little impact on motorized vehicle routes overall.

Disadvantages:

- Underachieving visitor experience.
- Limits the overall increase in “traffic” to the Gorge, considering a max vehicle capacity has already been reached.
- Difficult to achieve a road safety standard that enables safe cycling for all user abilities.
- No climate or health impact.

2.3 Option B – Full Pedestrian Zone



Figures 16 **Option B – Full pedestrianisation of the Gorge.** Basemap © OpenStreetMap

Description: Pedestrian priority from Tweentown roundabout with resurfacing treatment in quieter, heritage asphalt and drainage improvements. Main mobility hub Cheddar Village, Gorge “hopper” mobility service (or active flexi bus) with a second mobility hub at Black Rock Parking so that this also functions as public transport link for top of Gorge villages. See Figure 11 for alternative locations, which also do not preclude mobility hubs in the top of Gorge villages themselves.

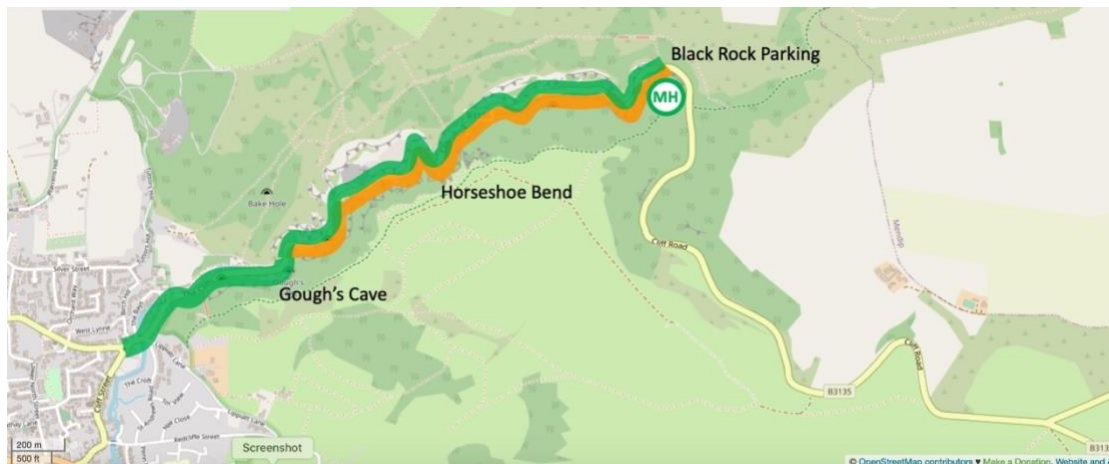
Advantages:

- Exceptional visitor experience.
- Frees up high value parking for other uses e.g. picnic areas, nature-based play, art, programmes and activities etc.
- Recreational resource for local residents as well as international/national visitor destination.
- Can accommodate Disabled parking & loading/delivery needs.

Disadvantages:

- Removes cycling access.
- Requires top of Gorge village residents in Priddy and Charterhouse to access Cheddar via alternative routes such as Draycock New Road or Broad Road and Longbottom respectively.
- Leaves an undervalued “tail” from Black Rock Parking east to 3371 jct.

2.4 Option C – Lower Gorge Pedestrian Zone then Cycle Segregation



Figures 17 **Option C – Lower Gorge Pedestrian Zone the Segregation with Bi-Directional Cycle Lane.**
Basemap © OpenStreetMap

Description: Pedestrian priority zone from Tweentown roundabout with resurfacing treatment in quieter, heritage asphalt and drainage improvement. Permitted cycling access for cycling, and access for Disabled parking and loading/delivery. Then from e.g. Sundowner Car Park segregation with one lane pedestrian, one lane bi-directional cycle track. Main mobility hub at edge of Cheddar Village, Gorge “hopper” mobility service (or active flexi bus) with mobility hub at Black Rock Parking so that this also functions as public transport link for top of Gorge villages.

Option C.1 – Pedestrian Zone to Horseshoe Bend then Bi-Directional Cycle Lane

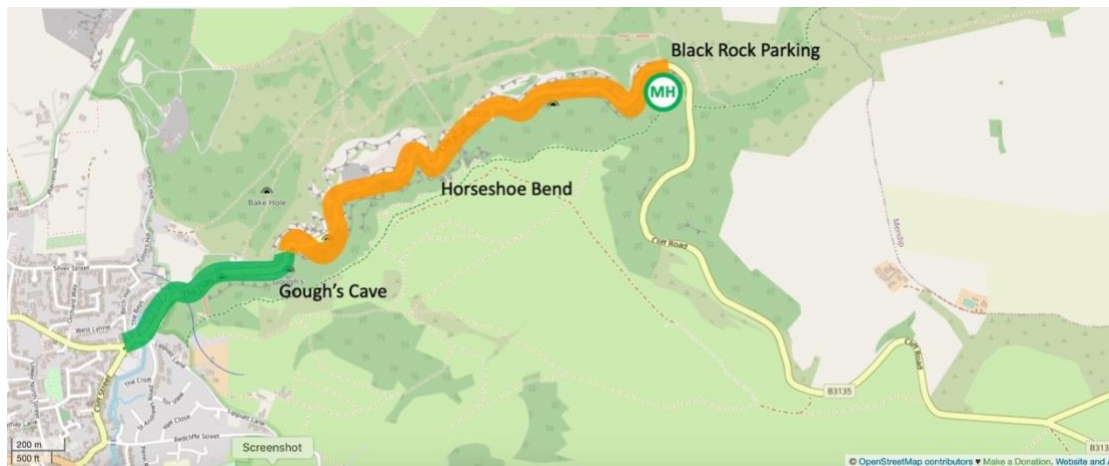
Advantages:

- Exceptional visitor experience.
- Frees up high value parking for other uses e.g. picnic areas, nature-based play, art, programmes and activities etc.
- Recreational resource for local residents as well as international/national visitor destination.
- Supports a high level of inclusive cycling access, as well as high potential for e-cycling & e-scooters.
- Can accommodate Disabled parking & loading/delivery needs.

Disadvantages:

- Requires top of Gorge village residents in Priddy and Charterhouse to access Cheddar via alternative routes such as Draycock New Road or Broad Road and Longbottom respectively.
- Leaves an undervalued “tail” from Black Rock Parking east to 3371 jct

2.5 Option D – Lower Gorge Pedestrian Zone then Cycle Priority Corridor



Figures 18 **Option D – Lower Gorge Pedestrian Zone then Cycle Priority Corridor.** Basemap © OpenStreetMap

Description: Pedestrian priority from roundabout to e.g. Gough's Cave with permitted cycling. Then cycle priority corridor on both lanes with surface treatment in quieter, heritage asphalt and drainage improvements. Main mobility hub at edge of Cheddar Village, Gorge “hopper” mobility service (or active flexi bus) with mobility hub at Black Rock Parking so that this also functions as public transport link for top of Gorge villages.

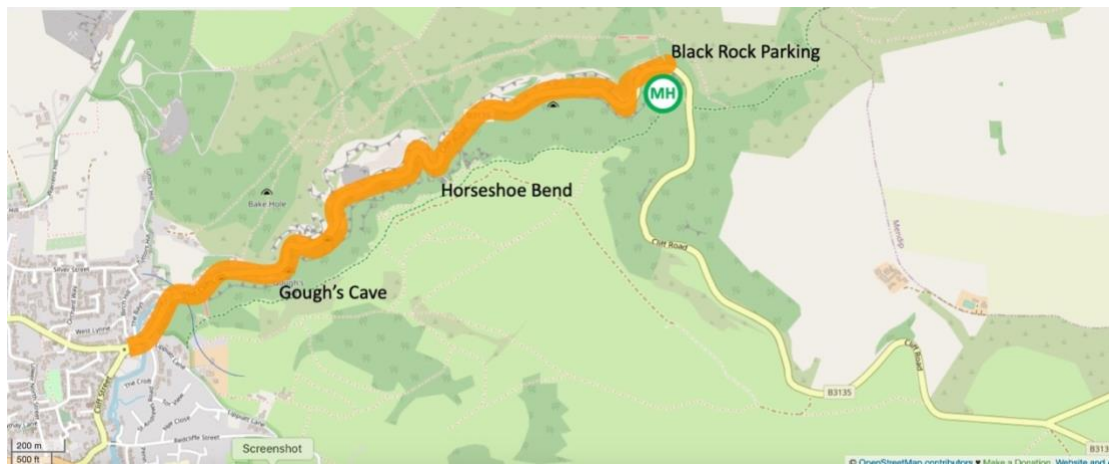
Advantages:

- Exceptional visitor experience.
- Frees up high value parking for other uses e.g. picnic areas, nature-based play, art, programmes and activities etc.
- Recreational resource for local residents as well as international/national visitor destination.
- Supports a high level of inclusive cycling access, as well as high potential for cycling & escooters
- Can accommodate Disabled parking & loading/delivery needs.

Disadvantages:

- Limits pedestrian experiences to lower Gorge focus
- Requires top of Gorge village residents in Priddy and Charterhouse to access Cheddar via alternative routes such as Draycock New Road or Broad Road and Longbottom respectively.
- Leaves an undervalued “tail” from Black Rock Parking east to 3371 jct

2.6 Option E – Cycle Priority Corridor



Figures 19 **Option E – Cycle Priority Corridor.** Basemap © OpenStreetMap

Description: Cycle priority from roundabout with resurface treatment in quieter, heritage asphalt and drainage improvements. Mobility hub at edge of Cheddar Village, Gorge “hopper” mobility services also as public transport link for top of Gorge villages with mobility hub at Black Rock Parking.

Advantages:

- Exceptional visitor experience
- Frees up high value parking for other uses e.g. picnic areas, nature-based play, art, activities etc.
- Recreational resource for local residents as well as international/national visitor destination
- Supports a high level of inclusive cycling access, as well as high potential for e-cycling & e-scooters
- Can accommodate Disabled parking & loading/delivery

Disadvantages:

- Reduces comfort and access of pedestrian experience of the Gorge
- Requires top of Gorge village residents in Priddy and Charterhouse to access Cheddar via alternative routes such as Draycock New Road or Broad Road and Longbottom respectively.
- Leaves an undervalued “tail” from Black Rock Parking east to 3371 jct

2.7 Option F – One Way Motorised Traffic with Segregated Cycling



Figures 20 **Option F – Cycle Priority Corridor.** Basemap © OpenStreetMap

Description: One way motorized lane, with other lane converted to segregated bi-directional cycle lane. Resurface treatment in quieter, heritage asphalt and drainage improvements. Mobility at edge of Cheddar Village, Gorge “hopper” mobility services could run in a one-way loop and also act as public transport link for top of Gorge villages with mobility hub at Black Rock Parking.

Advantages:

- Good visitor experience.
- Some improvements in recreational quality for local residents as well as international destination
- Can accommodate Disabled parking & loading/delivery needs.

Disadvantages:

- Reduces comfort of pedestrian experience and tranquility of the Gorge.
- Requires top of Gorge village residents to access Cheddar via alternative routes in one direction.
- Leaves an undervalued “tail” from Black Rock Parking east to 3371 jct

3 Best Practice Case References

To provide reference for what is possible and what the wider socio-economic benefits linked to alternative transport approaches, the following international case studies provide points of reference and inspiration:

3.1 Island of Juist



Figure 21 *The local bus services is horse drawn on the Island of Juist.*

The Island of Juist in East Friesland is car free. The Island is 17km long and 2 km wide, and part of the East Friesland National Park. Bus, taxi, deliveries, and the rubbish/recycling truck are all horse drawn. Only emergency services have cars or ecars. The Island markets itself as a paradise for walking, cycling and horse riding, and on the attractive sounds quality of being car free with the “clippity cloppity of hooves”.

3.2 The High Line

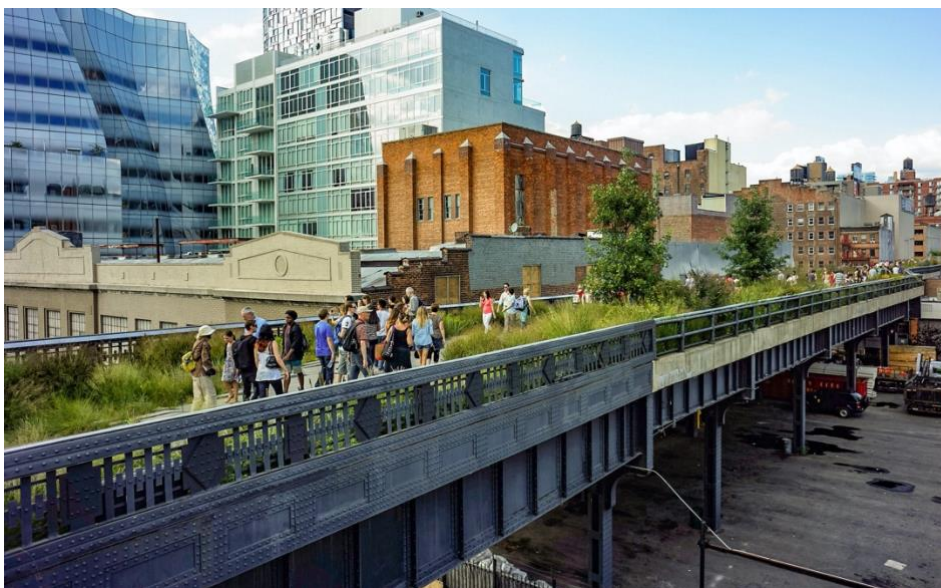


Figure 22 *The High Line in New York receives over 8 million visitors per year.*

The Highline in New York City is a former raised freight railway track which has been repurposed as a linear green public park. It is 1.5 miles (2.4 km) long and receives 8 million visitors per year. The park is free to enter and runs a diverse programme of activities. Opening hours are 7am to 9pm Monday – Friday, and 9am – 9pm Saturday & Sunday. Saved from demolition by neighborhood residents and the City of New York, the High Line opened in 2009 as a hybrid public space where visitors experience nature, art, and design. It's success is unparalleled and shows how a transport corridor can be re-purposed to great effect.

3.3 Lucca

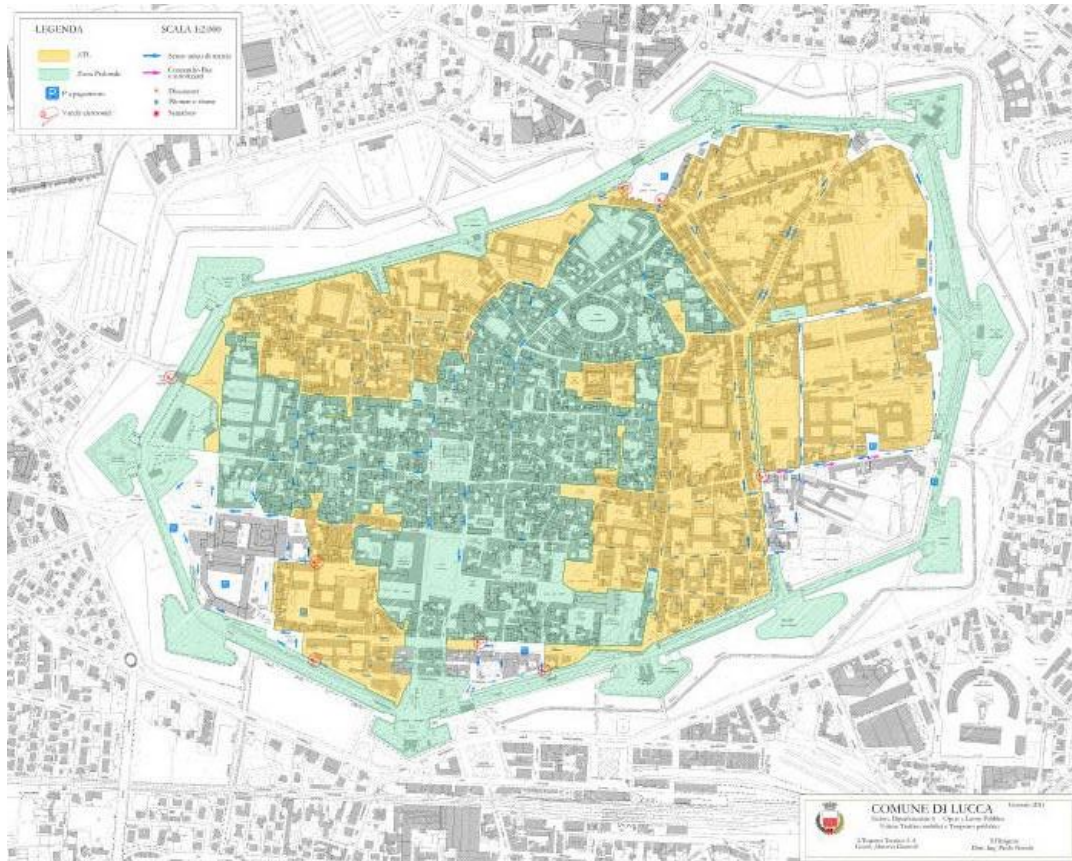


Figure 23 *The historic medieval centre of Lucca is access only for residents (yellow) with a large pedestrian area (green)²³.*

The medieval city of Lucca in Italy has a local access only area which covers most of the historic town centre within the walls, which have an east-west diameter of 1.7 km or 1 mile. There is an additional large pedestrian area within this with no vehicle access. Access is for residents, municipal and emergency vehicles only. Loading and unloading is allowed from Monday to Saturday from 06:30 - 10:45 and from 15:30 - 16:00. The zone normally operates 24/7 but can be suspended using signals.

²³ Image source: Urban Access Regulations in Europe. Available at: <https://urbanaccessregulations.eu/countries-mainmenu-147/italy-mainmenu-81/toscana-tuscany/lucca-ar>

3.4 Sonogno, Switzerland



Figure 24 *The Village of Sonogno is pedestrian priority and a designated Swiss Heritage Site.*

Sonogno is a stunningly beautiful Swiss alpine village which is a designated Swiss Heritage Site. The village is pedestrian priority with a bus and car park edge of village. The village has a small permanent population of 82, and the material harmony between the village and it's natural environment is stunning.

3.5 Stonehenge

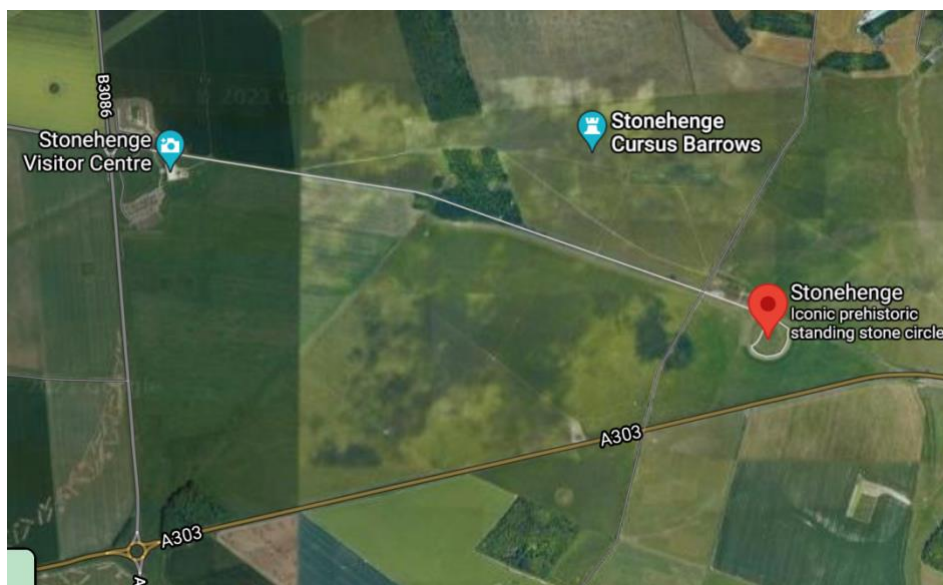


Figure 25 *The Stonehenge parking is 2.3 km from the main site with options to walk or take a shuttle. Image: Google Maps/Google Earth*

Stonehenge is World Heritage Site and one of Europe’s best known prehistoric monuments. The site is managed by English Heritage and receives 1.6 million visitors per year²⁴. As a landscape sensitive site, the visitor centre and parking are located 2.3km from the iconic standing stone circle. Visitors have the option of walking there or taking a shuttle bus. Access is by paid ticket costing £21.10 for an adult and £12.70 for a child. The site is open every day of the year, apart from Christmas Day. Opening hours are from 9.30 am to 7pm.

3.6 Bregenzerwald Rural Economic Regeneration

The Bregenzerwald is an alpine region in western Austria which has pioneered innovative ways of working with its main local resource of wood to drive economic regeneration. This has extended from leading in wood-to-energy technologies, and architectural and structural innovations in wood. In a creative leap, this was extended to a competition to design rural bus stops in wood, which have become visitor destinations in themselves and accessible with the attractive bikes on buses service offering a fun green tourism experience.



Figure 26 *A regionally sensitive bus stop which has become a visitor destination* © A. Bereuter



Figure 27 *Bikes on buses in the Bregenzerwald* © REGIO Bregenzerwald

²⁴ Data from Statista available at: <https://www.statista.com/statistics/586843/stonehenge-visitor-numbers-united-kingdom-uk/>

4 Supporting Information

4.1 Historic Railway Alignment

The current gap in east-west train connectivity across Somerset is illustrated in the map below showing current mainline trainlines in 2021. This east-west connection was filled by the historic trainlines Witham to Wells and Wells to Yatton, the last of which has partially been converted to the Strawberry Line.

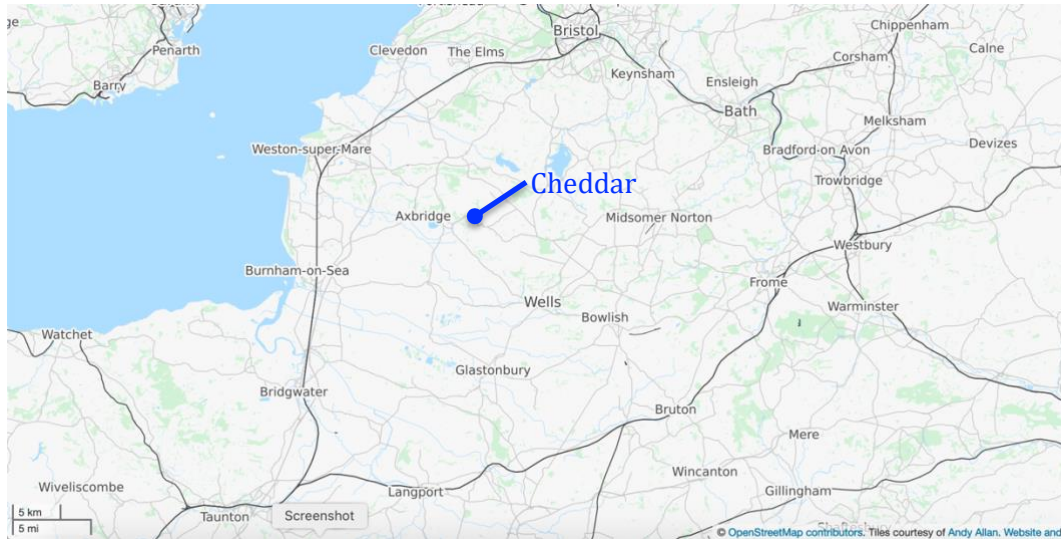


Figure 28 *Map of current mainline trainlines showing lack of East -West connectivity.* ©OpenStreetMaps

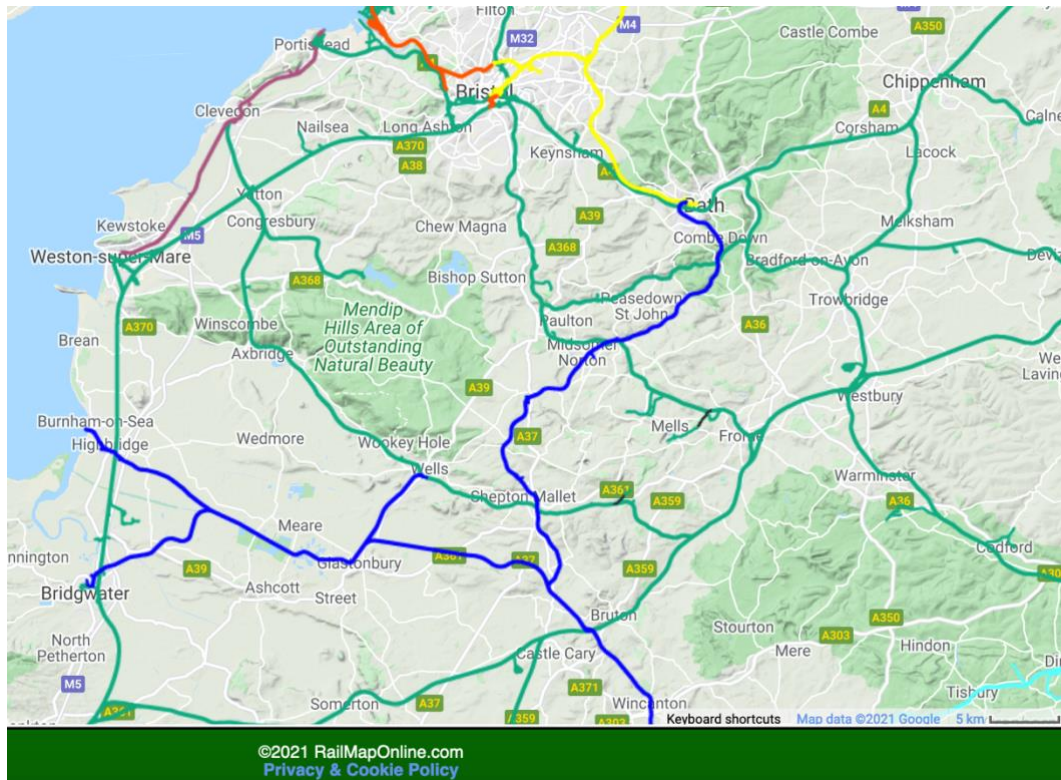


Figure 29 *Map of historic railway lines across Somerset showing east -west connectivity which the Strawberry Line provided up to its discontinuation in 1963.* ©RailMapOnline.com

4.2 Flood Risk

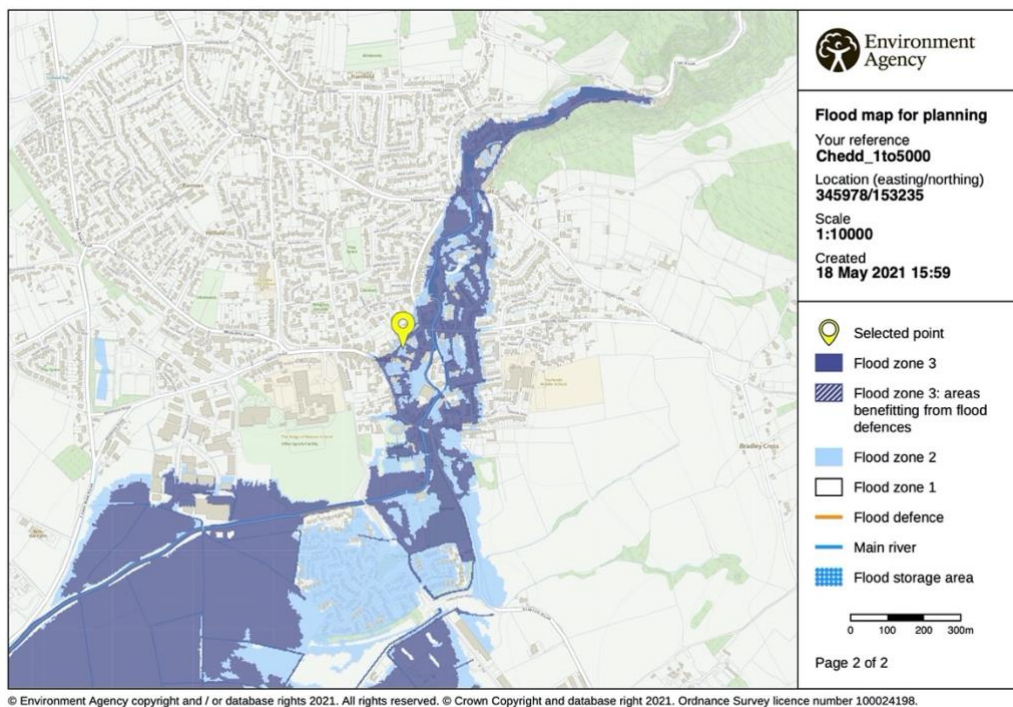


Figure 30 **Flood risk map indicating the lower Gorge and areas of Cheddar around the Cheddar Yeo in Flood Zone 3** ©Environment Agency

The map above shows that the lower Gorge and parts of Cheddar adjacent to the Cheddar Yeo lie in Flood Zone 3. The indicative route of the Strawberry Line extension which on the historic trackbed alignment runs along the eastern boundary of Kings of Wessex School. This also touches on Flood Zone 3 areas. However, the bridge here over the Cheddar Yeo is above the Old Bridge Lane level. Overall, improved drainage in the Gorge itself could offer improved flood resilience to the lower Gorge and Cheddar. Siting of a mobility hub and extending the Strawberry Line could equally create an opportunity to upgrade flood resilience.

4.3 Physical Activity is an Intergenerational Priority

Somerset's population is ageing, with 24% of the population aged 65 or older²⁵. Only 38% of older people meet the Chief Medical Officers' recommendation for being active²⁶, with about half of older people (48%) "inactive"²⁷, defined moving less than 30 minutes per week – that's less than 5 minutes per day. This lack of movement in daily life is recognised as being as dangerous as smoking. This vulnerability is mirrored in young people, with **half of children in Somerset (51%) not meeting national recommendations for being active**²⁸. Walking and cycling for local transports journeys is well established as the best way to integrate physical activity into daily life. Active, everyday living is an urgent priority for the health and wellbeing of older people in Somerset now, and for younger people who are the older people of the future.

²⁵ Somerset Intelligence (2021) Population Estimates Age Breakdowns, Data for Mendip 2019.

²⁶ Public Health England (2021) Public Health Outcomes Framework. C10 percentage of physically active children and young people data for 2019/2020. 49.4% meeting guidelines.

²⁷ Public Health England (2021) Physical activity levels among adults in England 2015

²⁸ Public Health England (2021) Public Health Outcomes Framework. C10 percentage of physically active children and young people data for 2019/2020. 49.4% meeting guidelines.

4.4 Map of the Gorge with Key Reference Points

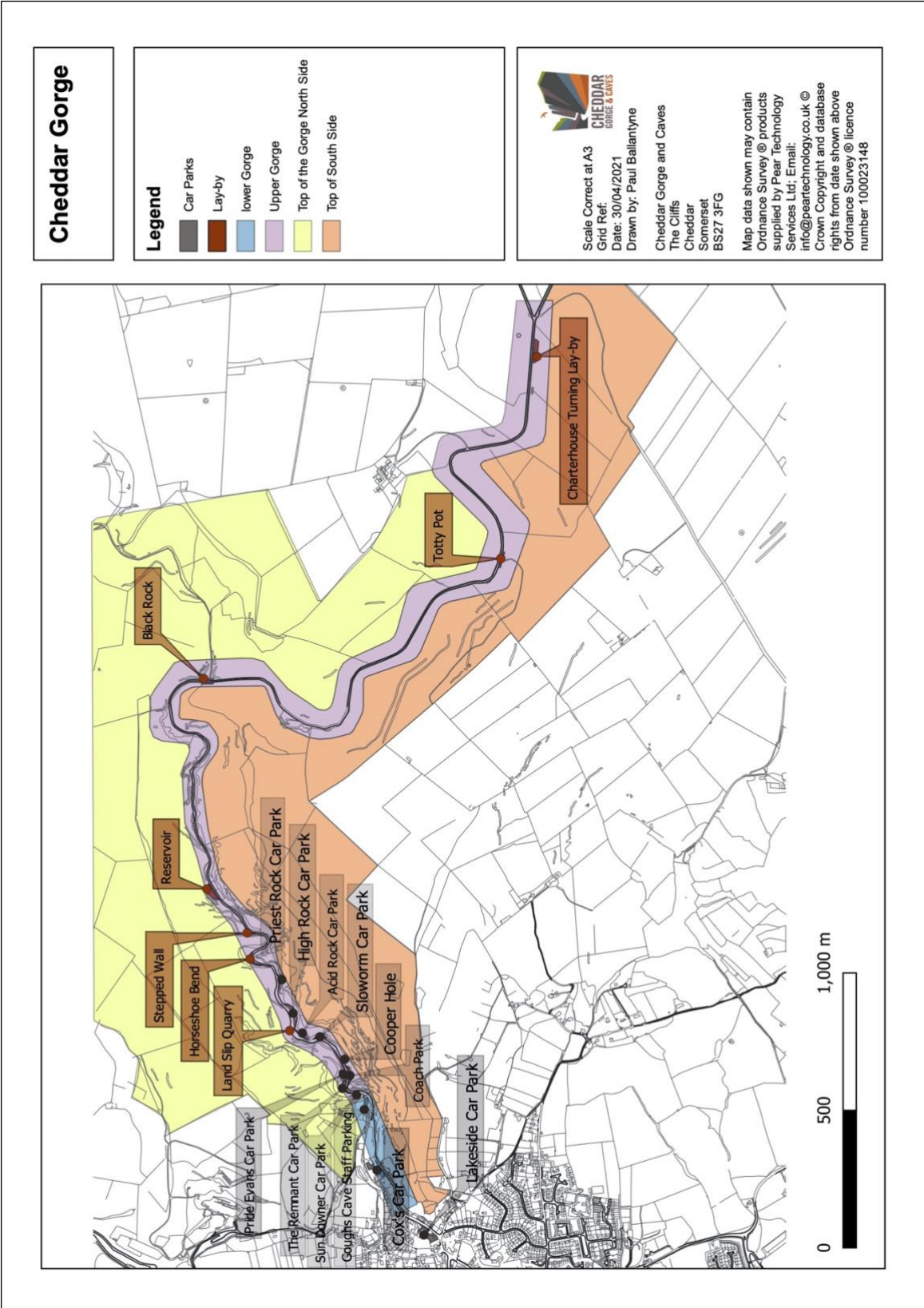


Figure 31 Map of Cheddar Gorge with Key Reference Points