

Cardi Bach

Feasibility Study for a Traffic Free Walking and Cycling Route from Cardigan to Whitland



09 June 2020

To find out more, please contact: Eni Hansen-Magnusson
Email: eni.hansen-magnusson@sustrans.org.uk

Sustrans yw'r elusen sy'n ei gwneud yn haws i bobl gerdded a beicio. Rydym yn cysylltu pobl a llefydd, yn creu cymunedau byw, yn trawsnewid y daith i'r ysgol ac yn hwyluso taith hapusach ac iachach i'r gwaith.

Ymunwch â ni ar ein siwrne.

Sustrans is the charity making it easier for people to walk and cycle. We connect people and places, create liveable neighbourhoods, transform the school run and deliver a happier, healthier commute.

Join us on our journey.

www.sustrans.org.uk

Registered Charity No. 326550 (England and Wales) SC039263 (Scotland).

Photo: Symbolic image of Multi user path

Document Control Sheet

Report Title:	Cardi Bach Initial Feasibility Study
Client:	Carmarthenshire County Council & Pembrokeshire County Council
Issue Date:	9 June 2020
Author(s):	Eni Hansen-Magnusson, Peter Taylor, Gregor Boltic
Reviewed by:	Gwyn Smith/ Ryland Jones
Signed off by:	Ryland Jones

Document Version

Issue	Date	Status	Checked
2	April 2020	Final Draft	Ryland Jones
3	June 2020	Final Version	Dave McCullough, Patrick Williams

Sustrans has prepared this report in accordance with the instructions of their clients, Carmarthenshire County Council and Pembrokeshire County Council, for their sole and specific use. Any other persons who use any information contained herein do so at their own risk.

National Office:

Sustrans
123 Bute Street
Cardiff
CF10 5AE

Head Office:

Sustrans
2 Cathedral Square
College Green
Bristol
BS1 5DD

Contents

General Information about the Scheme	5
1 Context	5
2 The Route	5
3 Historical Background	6
Detailed Proposal	7
1 Suggested Alignment	7
2 Land Ownership	27
3 Attractiveness	30
4 Ecology	40
5 SWOT Analysis	42
6 Policy Context	43
7 Design Principles	47
8 Future Maintenance	48
9 Costs and Funding	48
10 Summary	51

Executive Summary

This Cardi Bach initial feasibility study was commissioned by Carmarthenshire County Council (CCC) and Pembrokeshire County Council (PCC) to set out options and recommendations for the development of a traffic free walking and cycling path following the disused railway and connecting the towns of Cardigan and Whitland.

An initial desktop study was conducted of the area to establish existing problems, opportunities and potential alignment options for the route. Part of this process was a virtual route audit, using satellite images of the study area and analysing access points to the route mainly through Google street view. Crucial for this study was the use of local knowledge and the contact with local stakeholders, namely Francis Johns (former PCC officer), Sustrans volunteers, former Sustrans staff residing in the area and Sustrans staff originating from the area.

A comprehensive set of maps are included within the report that detail suggestions for a possible route alignment and alternative routes, as well as the wider connections of the route with surrounding settlements and links into the National Cycle Network.

The report provides an overview map on land ownership based on information provided by CCC and PCC and on a supplementary search through land registry. The land on and adjacent to the old railway consists of 133 different parcels of land and is owned by 96 different land owners, which makes a new traffic free route potentially difficult.

For the assessment of the attractiveness of the new route the Sustrans Research and Monitoring unit have compiled evidence on how this could be measured and demonstrated as a benefit to the landowners to support the development of the route. A series of indicators of route attractiveness have been summarised and a recommended method of monitoring.

The report provides an analysis of strengths, weaknesses, opportunities and threats of a new traffic free route.

The Propensity to Cycle Tool (PCT) applied to the Cardi Bach scheme allowed further conclusions on the potential use of the route, showing that an increase of user numbers is to be expected – especially when taking future increase for ebike usage into account. But it also shows that the overall number of people that can be expected to use the route is likely to remain small.

The study gives an overview of policy context and discusses the options on Active Travel which are not very obvious for Cardi Bach, given the remoteness of the study area, low population density and very few links into Active Travel Designated Localities (as outlined by Welsh Government). However, they are not out of the question either and still might be argued when looking into funding options which form part of this report as well. Some arguments could be made for effective strategic links between settlements that may cater for local utility journeys or facilitate journeys to key destinations such as schools. The elements may, in turn, allow for greater opportunities for funding from sources such as the Active Travel Fund and Safe Routes in Communities programmes.

However, the considerable attractiveness of this potential route and the opportunities it affords for sustainable travel through areas of considerable natural beauty shows that as a tourism resource, the route could contribute considerably to the local economy and reduce potential car-based journeys in the region. For this reason, further work to enable development of the route should be considered a part of Regional development strategies for Economic Development, Tourism and Sustainable Transport.

Thanks must go to the stakeholders for all their local knowledge and input, namely Francis Johns and Sustrans volunteers in the study area, whose suggestions have been very valuable in producing this report.

General Information about the Scheme

1 Context

Sustrans Cymru has been commissioned by Carmarthenshire County Council (CCC) and Pembrokeshire County Council (PCC) to prepare an initial feasibility study for a traffic free route between Cardigan and Whitland following the line of the former railway, commonly referred to as “Cardi Bach”.

This report is addressed to Carmarthenshire County Council and Pembrokeshire County Council and is aimed at helping to determine the feasibility of developing the Cardi Bach route. Ceredigion County Council was present at an initial meeting of the stakeholders of Cardi Bach and is supporting the initiative, even though they are not officially part of this contract.

The study will include an overview of the existing area, the preferred alignment and alternative routes, existing links to the route (Public Rights of Way, bridleways, surrounding highway and National Cycle Network, etc.), and provide an overview of land ownership, issues and constraints. In addition, it highlights the benefits the route can have on the local economy, health and environment.

This report is mainly based on a desktop study, a virtual route audit, and on local knowledge. Due to travel restrictions relating to Covid-19 a route survey via existing public access had to be postponed and will take place once it is safe for Sustrans staff to do fieldwork again. We will then be able to give more detailed information on design principles and, depending on these, what the overall estimated cost of development of the route could be.

2 The Route

The proposed route will run for 37.5km between Whitland and Cardigan, and wherever possible, follow the alignment of a disused railway line.

This new route will complement the existing National Cycle Network (NCN) in the area, by connecting in the North to NCN route 82 and to the South coast with NCN route 4. It will also intersect with route 47 at Crymych, linking the North and South coasts, and provide a good cycling and walking network around the Southwest Wales area connecting rural towns and communities with larger urban areas.

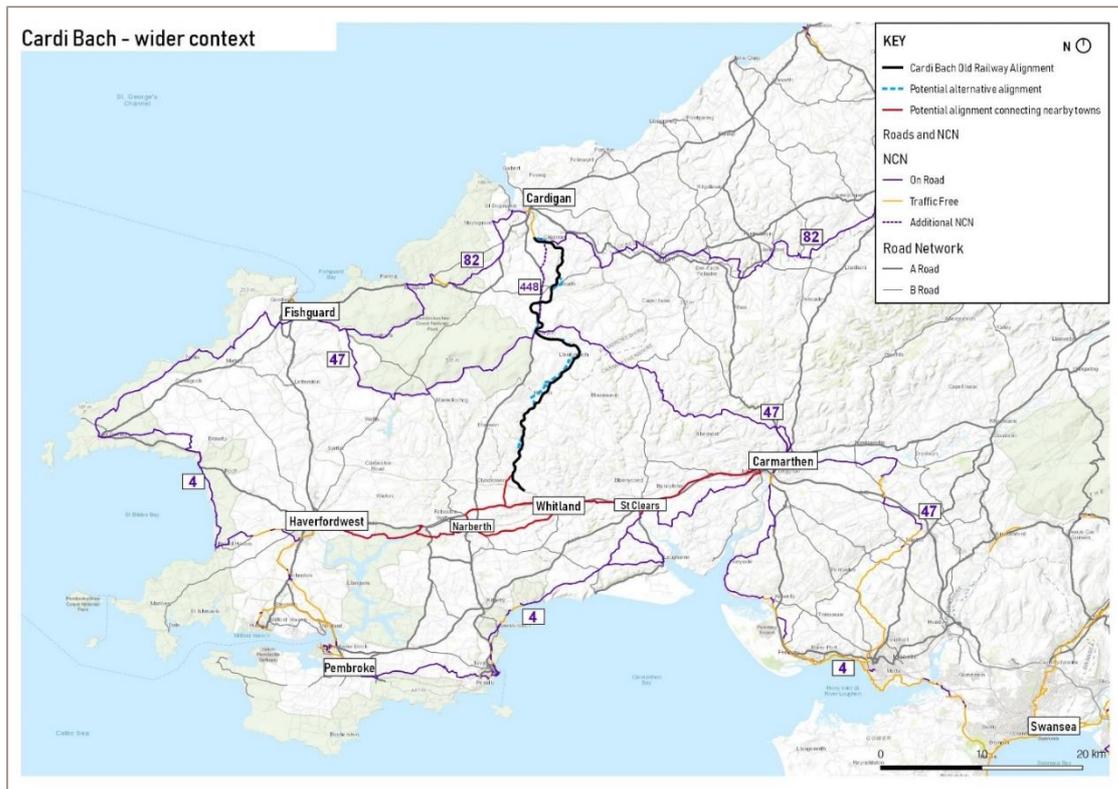


Figure 1: Cardi Bach Route and NCN Routes across Pembrokeshire, Carmarthenshire and Ceredigion

The route will encourage walking and cycling in the area and should, wherever possible, be planned as a multi-user path and be accessible for all – pedestrians, cyclists, people with disabilities and equestrians.

3 Historical Background

The original railway from Whitland to Cardigan was 44.3km long and was built in two stages: The first section opened in 1873 and connected the quarries in Glogue with Whitland, carrying goods and minerals before opening up for passengers later on. The extension of the railway to the North and all the way to Cardigan was completed in 1886.

From 1886 the railway line was owned and run by Great Western Railway but the line never managed to attract enough passengers and goods transport to run cost efficiently, so it was closed to passengers in 1962 and shut down completely in 1963.

Mineral extraction took place around two centres in the Taf Valley since the 18th Century, starting with lead and silver mines near Llanfyrnach and continuing with slate quarries at Glogue into the 19th Century. For both of these industrial locations the railway line was crucial to connect them directly with the shipping ports in Carmarthen Bay, Cardigan and Newport.

The old railway represents an important piece of industrial history in Carmarthenshire and Pembrokeshire and a new traffic free route along the line could help to preserve its history and revitalize the route as a key link for local residents and tourists. History around the old railway stations along the way (i.e. Cardigan, Cilgerran, Boncath, Crymych Arms, Glogue, Llanfyrnach, Rhydowen, Llanglydwen, Login and Llanfallteg) is well documented and could be interesting for route promotion purposes.

Detailed Proposal

1 Suggested Alignment

Outline of Disused Railway and Alternative Routes

In this preliminary study, local knowledge from secondary sources familiar with the disused railway line and surrounding area have identified possible alternative routes.* These alternatives could reduce the need to negotiate with landowners and potentially mitigate potential land ownership issues, or avoid structures built along the original route alignment. On-road routes may also be more appropriate by making better use of existing infrastructure if they have suitable gradients, traffic flows and speeds. An initial route on the highway (if appropriate) could be promoted very easily. This would create interest to develop the traffic free route further.

In some cases, it may make more sense to instate the route on public roads to better connect residential properties and settlements and take in local attractions such as pubs and shops. These alternatives may help to boost the local economy by bringing foot and cycle traffic through these areas rather than bypassing the centre of these communities following the old railway corridor.

One good example of this is to align the route through Cilgerran coming down from NCN 82, along Church Street onto Castle Square and onto High Street with some traffic calming measures. This alignment includes an interesting church (St Llawddog's Church), the entrance to Cilgerran Castle, a village store and a couple of pubs, whereas using the railway alignment would pass through fields at the back of several houses. Alternatively if good links and signage are provided this could steer people into the villages.

The map below shows the alignment of the disused railway line, with a few proposed alternatives, mainly making use of existing parallel roads. There may be some scope to either link this route with the proposed NCN 448 alignment, or, if needs be make use of it to circumvent some of the land ownership issues in the most northerly sections of the route.

*Special thanks go to Francis Johns who contributed detailed local information to this study.

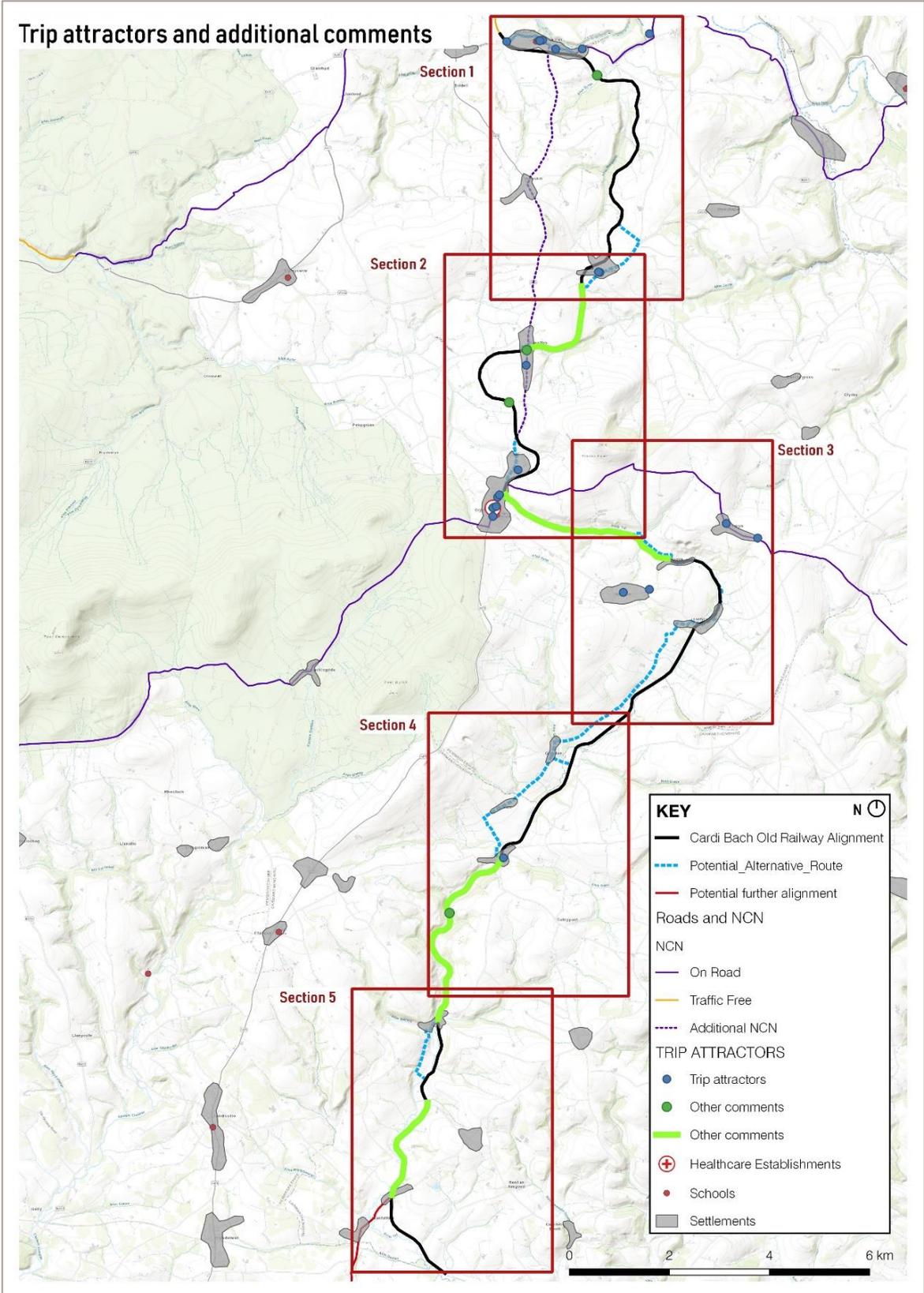


Figure 2: Overview Route Alignment, Alternative Routes and Trip Attractors

Trip Attractors

A close look at trip attractors adjacent to the route is key when exploring the potential use of a route – and, not least, when looking into the provision of opportunities to creating an Active Travel route. The Welsh Government Active Travel Delivery Guidance² document states a number of types of local amenities that may be likely to be key trip attractors:

- Employment areas of large individual employers
- Educational establishments
- Healthcare establishments
- Retail facilities
- Community facilities
- Venues
- Transport Interchange Facilities

The total population of the study area (indicated in yellow on the map below) is about 16,100 including Cardigan and Whitland, and ca. 9,700 excluding Cardigan and Whitland.

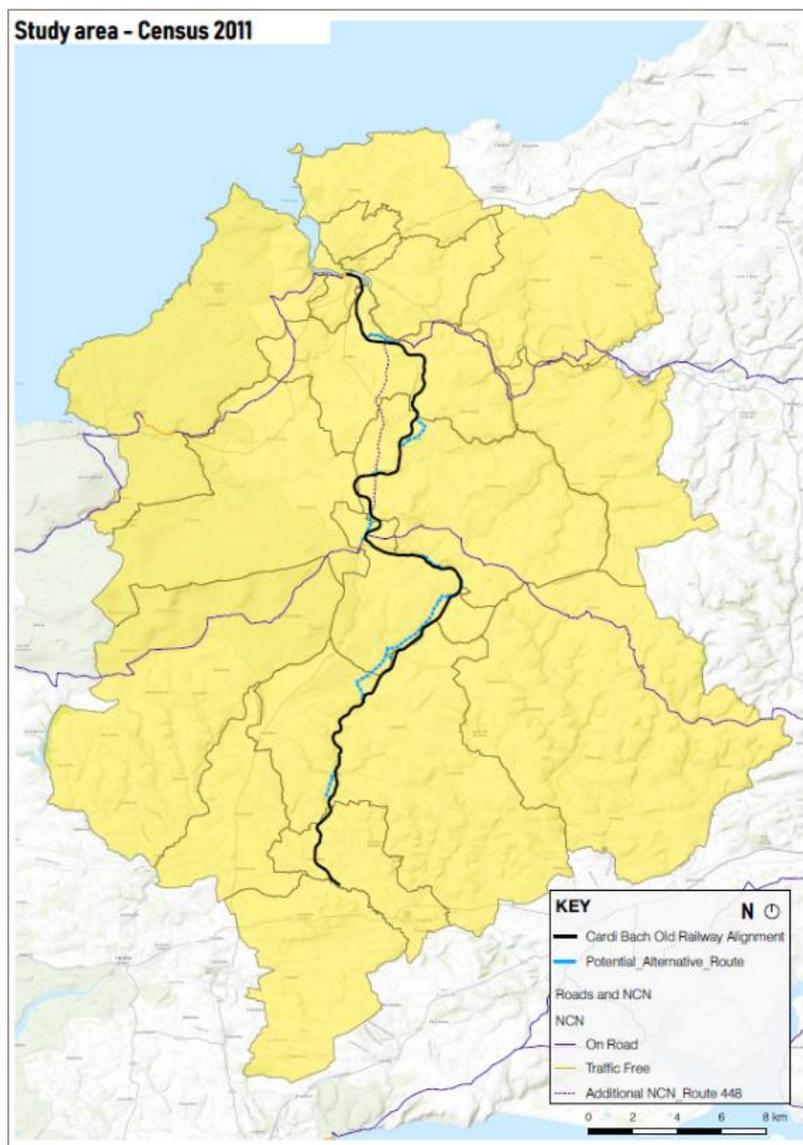


Figure 3: Study Area, 2011 Census

² <https://gov.wales/sites/default/files/publications/2017-09/statutory-guidance-for-the-delivery-of-the-active-travel-wales-act-2013.pdf>

Population density is 142 p/km² when including Cardigan and Whitland but drops to 30 when excluding the largest towns.

Crymych is, with a population of about 1700 (community) and with about 800 in the village itself, one of the larger **settlements** in the study area – next to Cardigan, Whitland, Cilgerran, Llechryd and St Dogmeals. With a post office, fire and police stations, health services (doctor's surgery and pharmacy), a livestock market, a petrol station and other businesses, shops and trade premises, it is one of the major pull factors for people along the Cardi Bach route.

There are 12 different **schools** along the Cardi Bach route from Cardigan to Whitland, including Ysgol y Preseli in Crymych, with about 900 pupils being a large Comprehensive school in the centre of the route and attracting students from a wide catchment area. In line with the Home to School Transport Guidance, the schools indicated on the map assume a one-way commute distance of up to 3 miles for Secondary Schools and 2 miles for Primary Schools.

When looking at centres of **employment** a major trip attractor to be found in Llanfyrnach is Mansel Davies, which is, with over 300 employees, one of the largest employers in Pembrokeshire.

Furthermore, there are two major **transport hubs** in the study area, the central bus station at Cardigan and the rail station at Whitland, and developing the new route would contribute to improving access to these.

It is reasonable to consider that the proximity of the route to these locations would provide provision for walking and cycling to and from schools, employment sites and transport hubs identified. Particularly those in proximity to Crymych, Whitland and Cardigan.

The distances willing to be travelled by different modes vary considerably from person to person and by journey purpose. Whilst walkers completing utility journeys are more likely to stay within a locality, there is potential for cyclists to travel further afield (e.g. to use the route for the commute to work). According to Cycling UK, the average distance cycled reaches from 3.3 miles (England) to 4.7 miles (Northern Ireland).³ Given the distance between settlements exceeding 3 miles in most cases, and also the relatively small population of the settlements a question would be raised as to the actual number of AT journeys. But average cycling distances are likely to change due to the increasing use of ebikes (see chapter 3, PCT).

More trip attractors are indicated on the following overview map and detailed maps sections 1-5. To explore the potential for Active Travel trips along this route we have used the established Propensity to Cycle Tool (see chapter 3, Attractiveness: PCT). For more detail on alternative routes please see end of this chapter "Links to Local and Surrounding Area" (p. 19).

³ <https://www.cyclinguk.org/statistics>: There are no numbers for Wales available but it is assumed that numbers for Wales would not deviate very much.

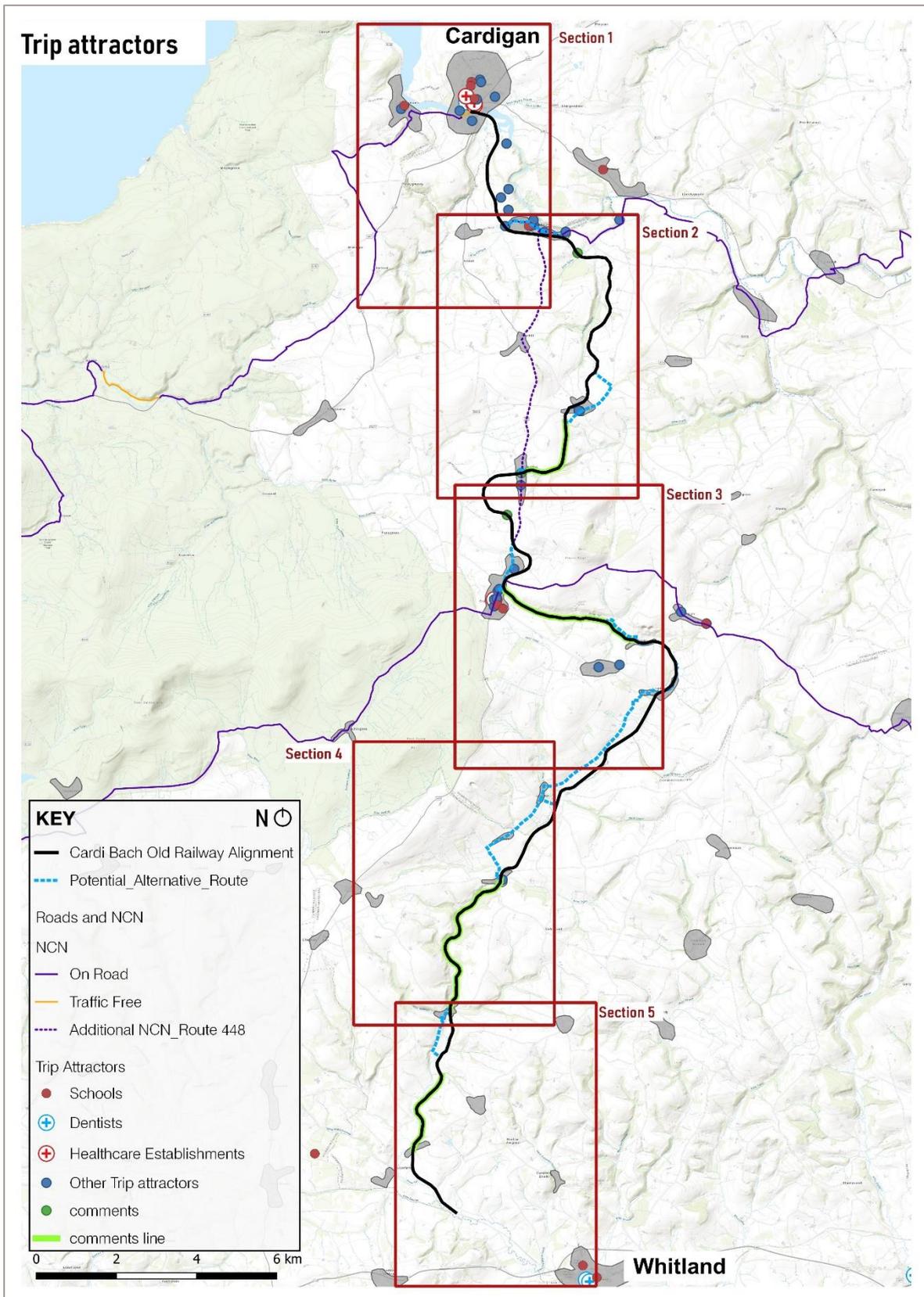


Figure 4: Overview Trip Attractors and Potential Alternative Routes, Cardigan to Whitland

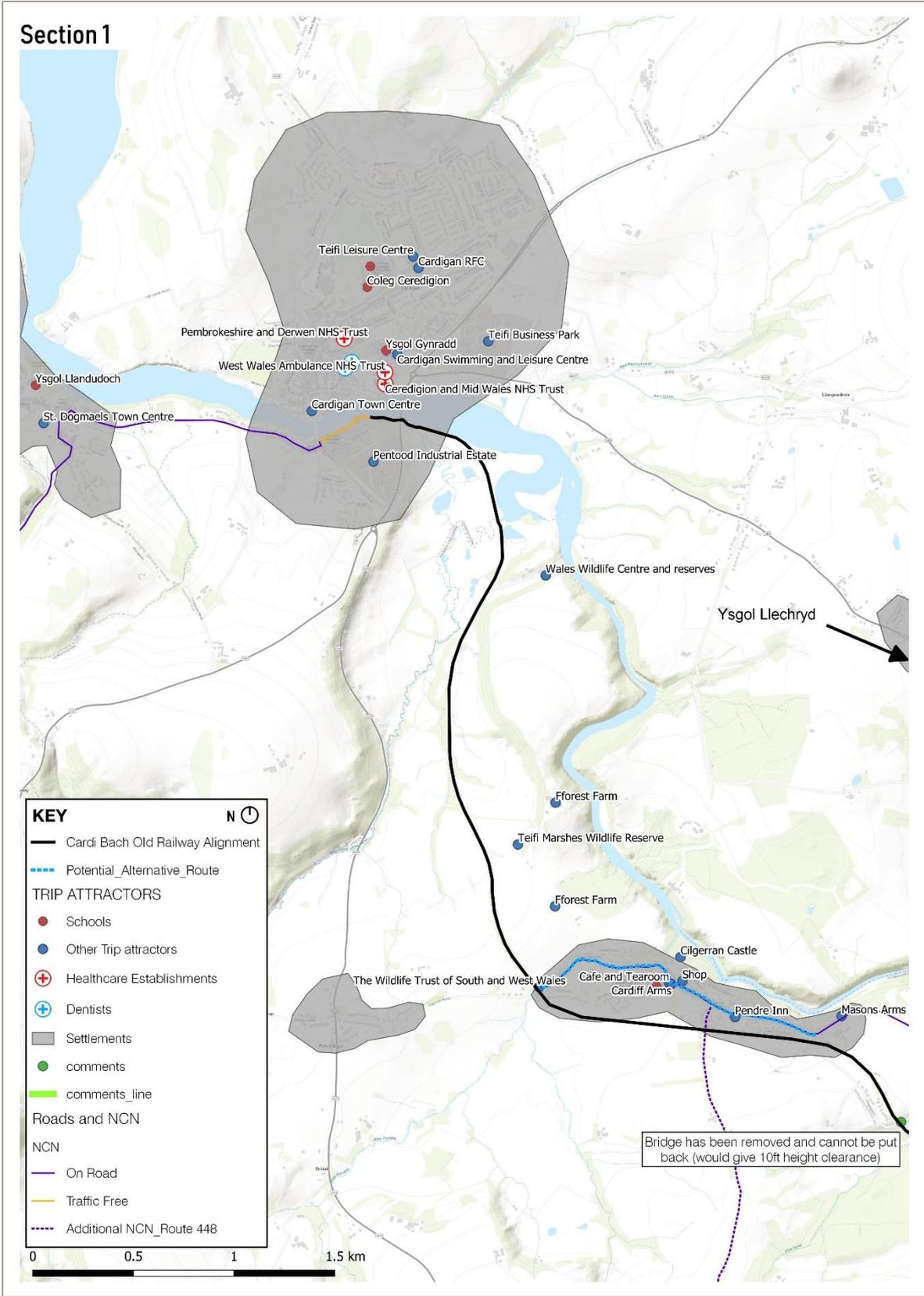


Figure 5: Trip Attractors and Comments, Cardigan to Cilgerran

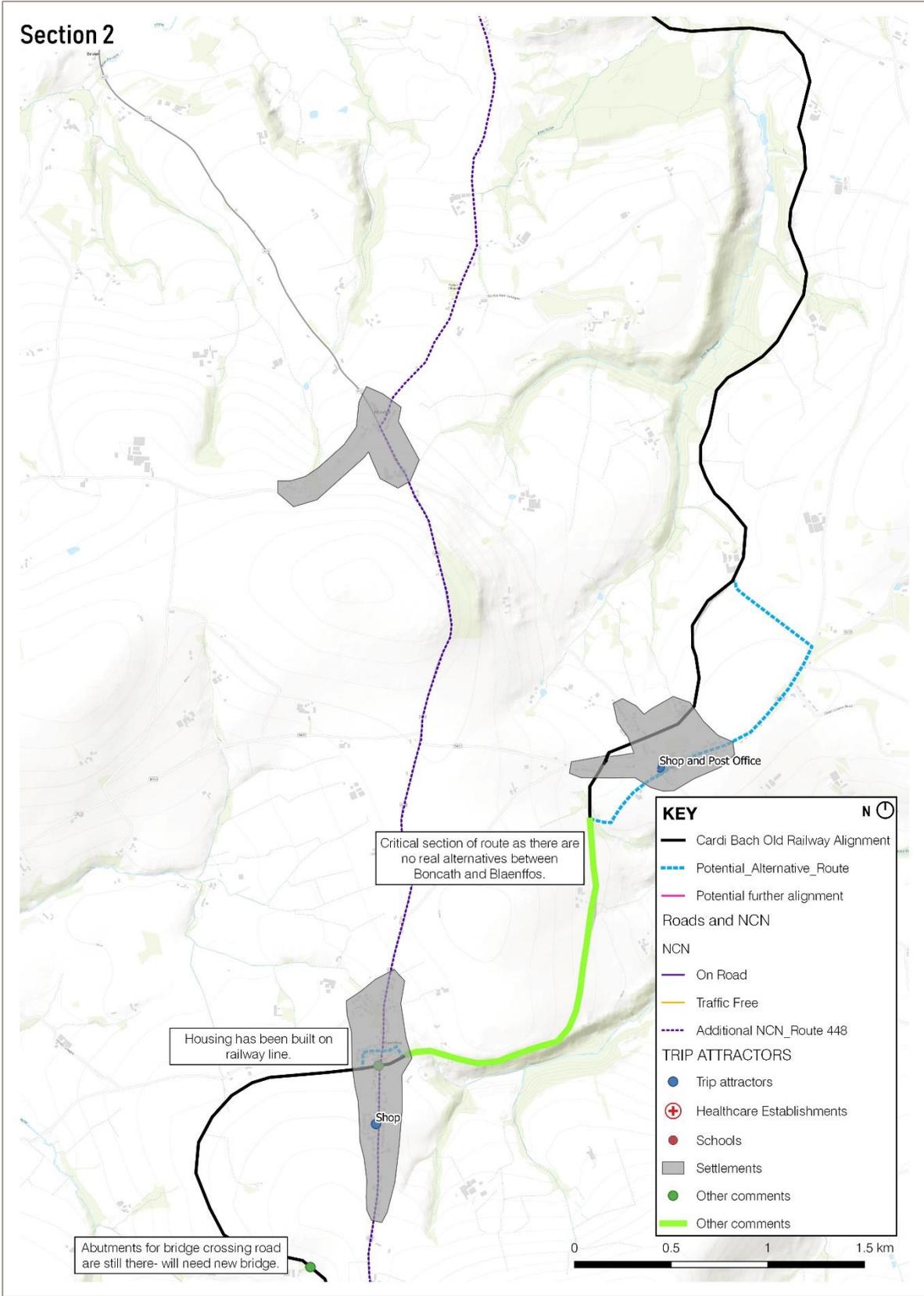


Figure 6: Trip Attractors and Comments, Boncath to Blaenffos

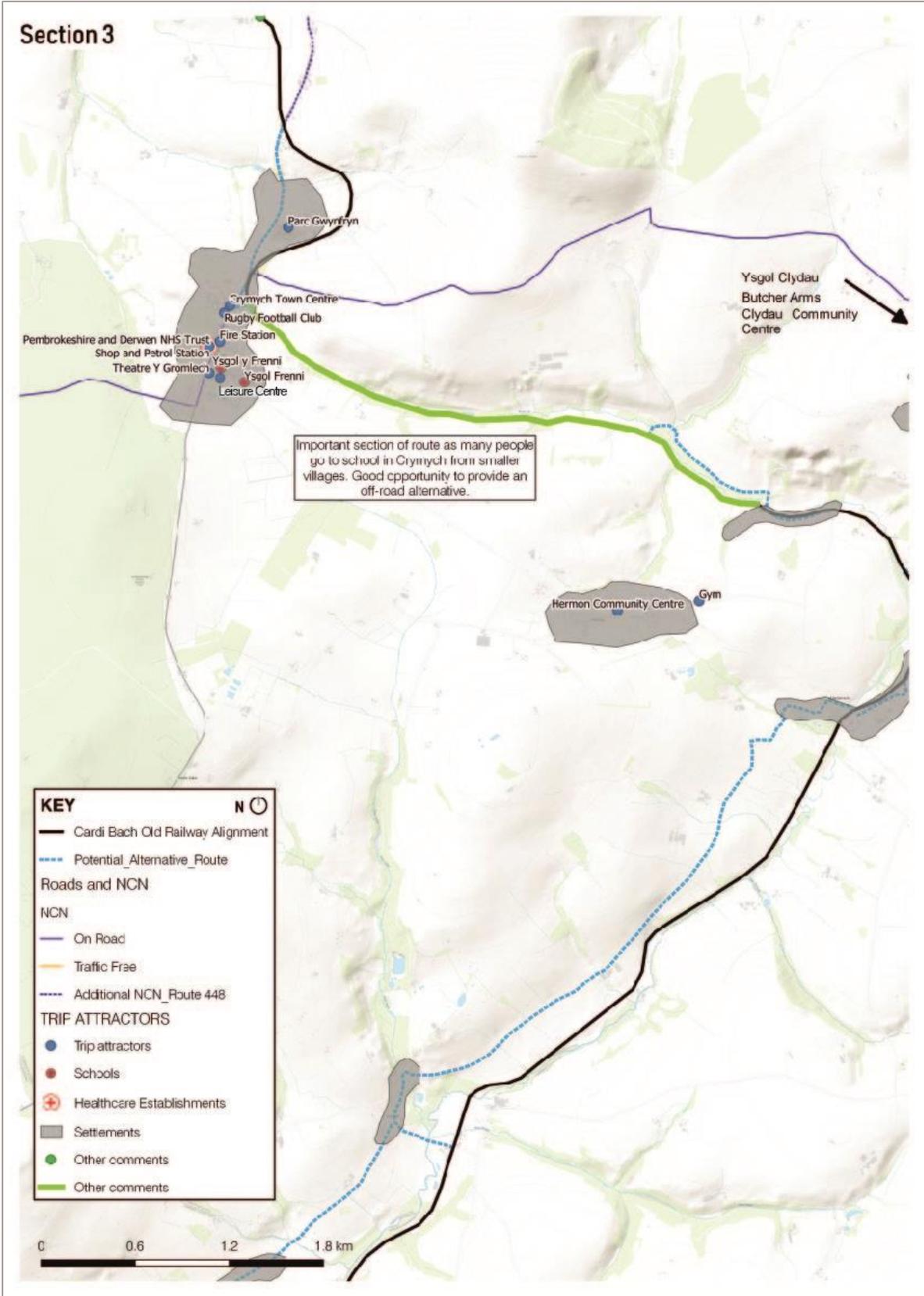


Figure 7: Trip Attractors and Comments, Crymych, Glogue and Llanfyrnach

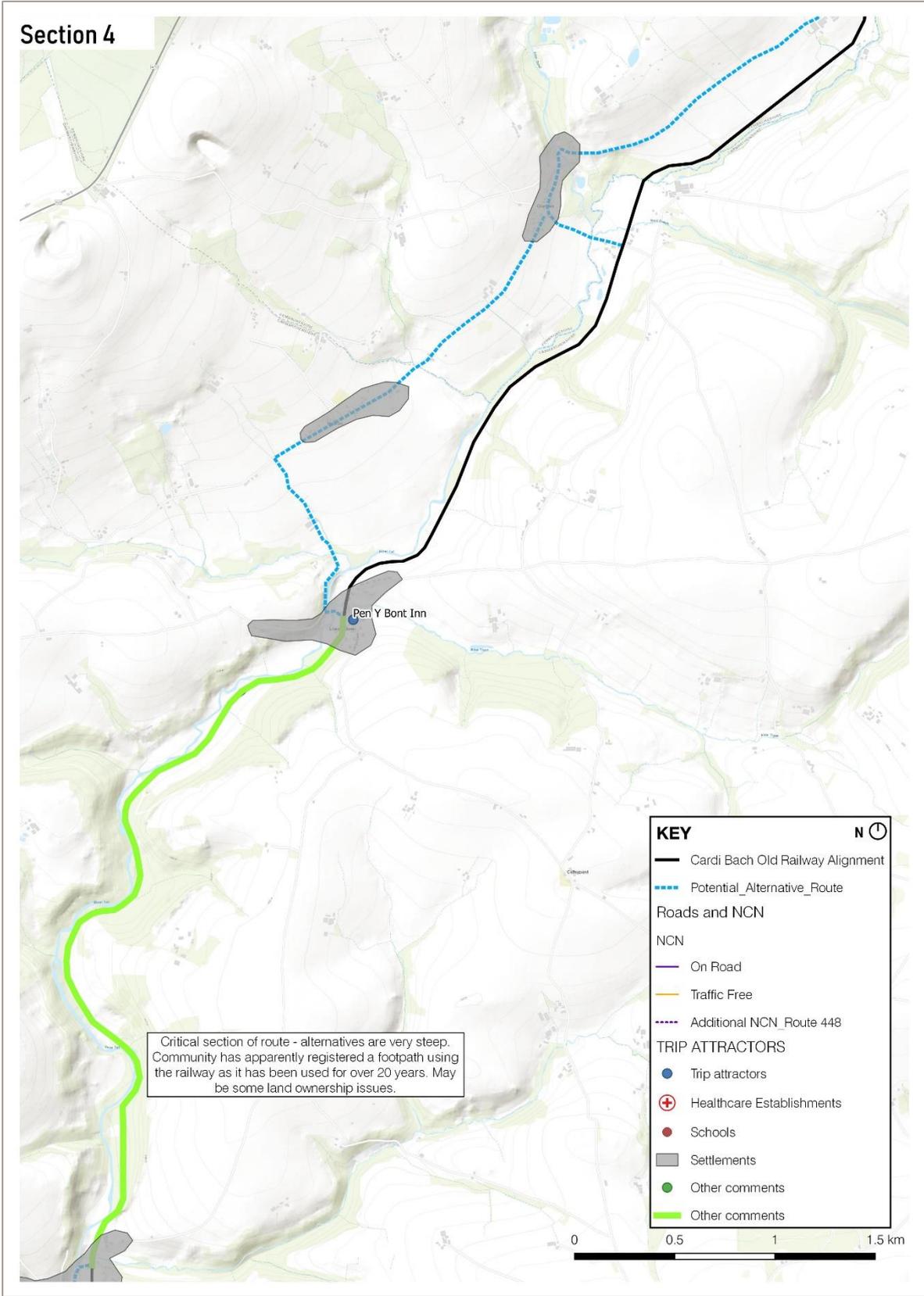


Figure 8: Trip Attractors and Comments, Glandwr to Llanglydwen and Login

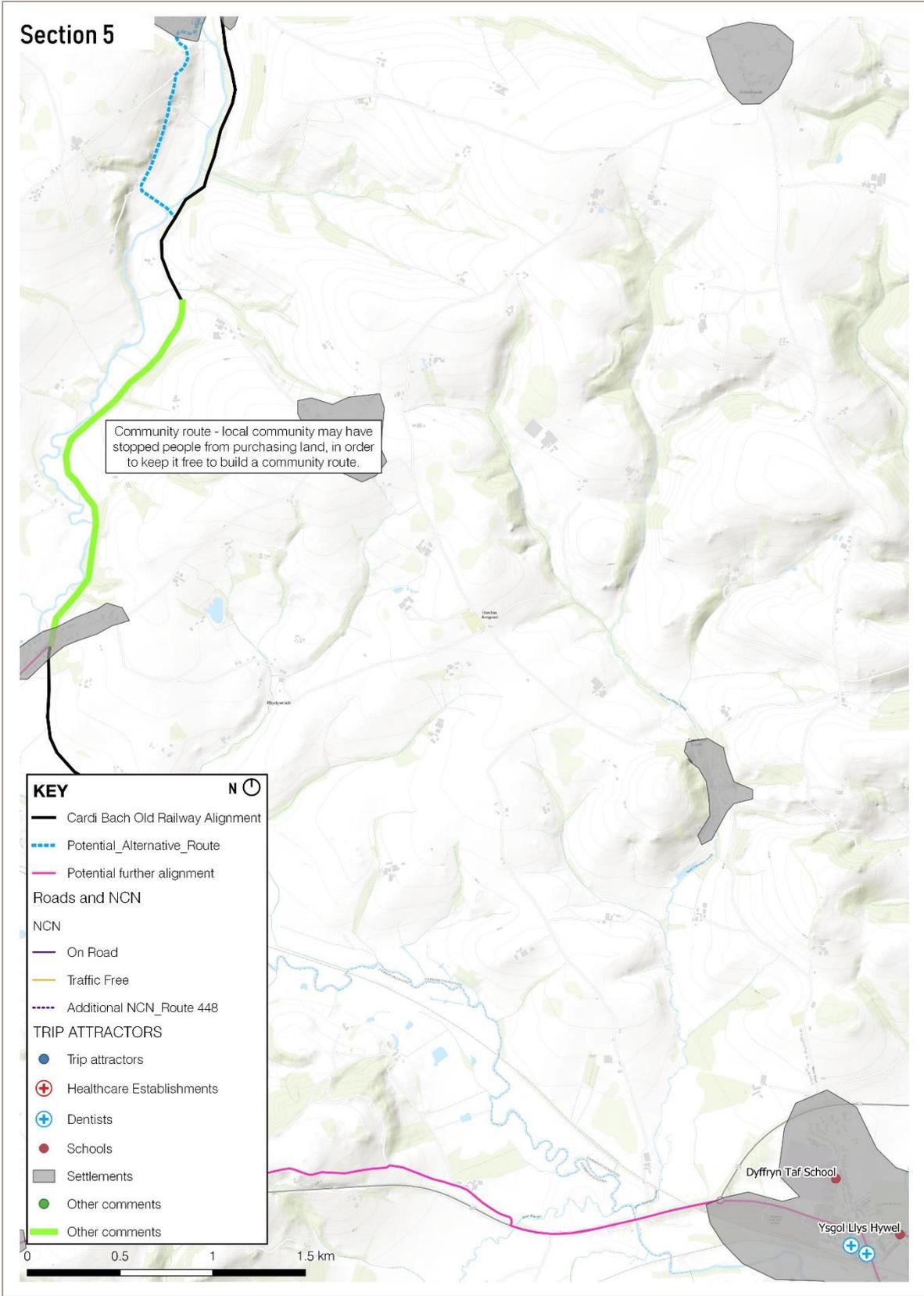


Figure 9: Trip Attractors and Comments, Login and Llanfallteg to Whitland

For more detailed maps on alternative routes please see set of maps in annex: “Alternative Alignments”, Overview map and sections 1 to 5.

Topography

Gradient is a key consideration for the new route and might become an issue if alternative routes must be looked into due to restricted land access. As the topographical map below shows the original alignment along the disused railway shows the fewest gradients and would be ideal to increase propensity to walk and cycle in the area.

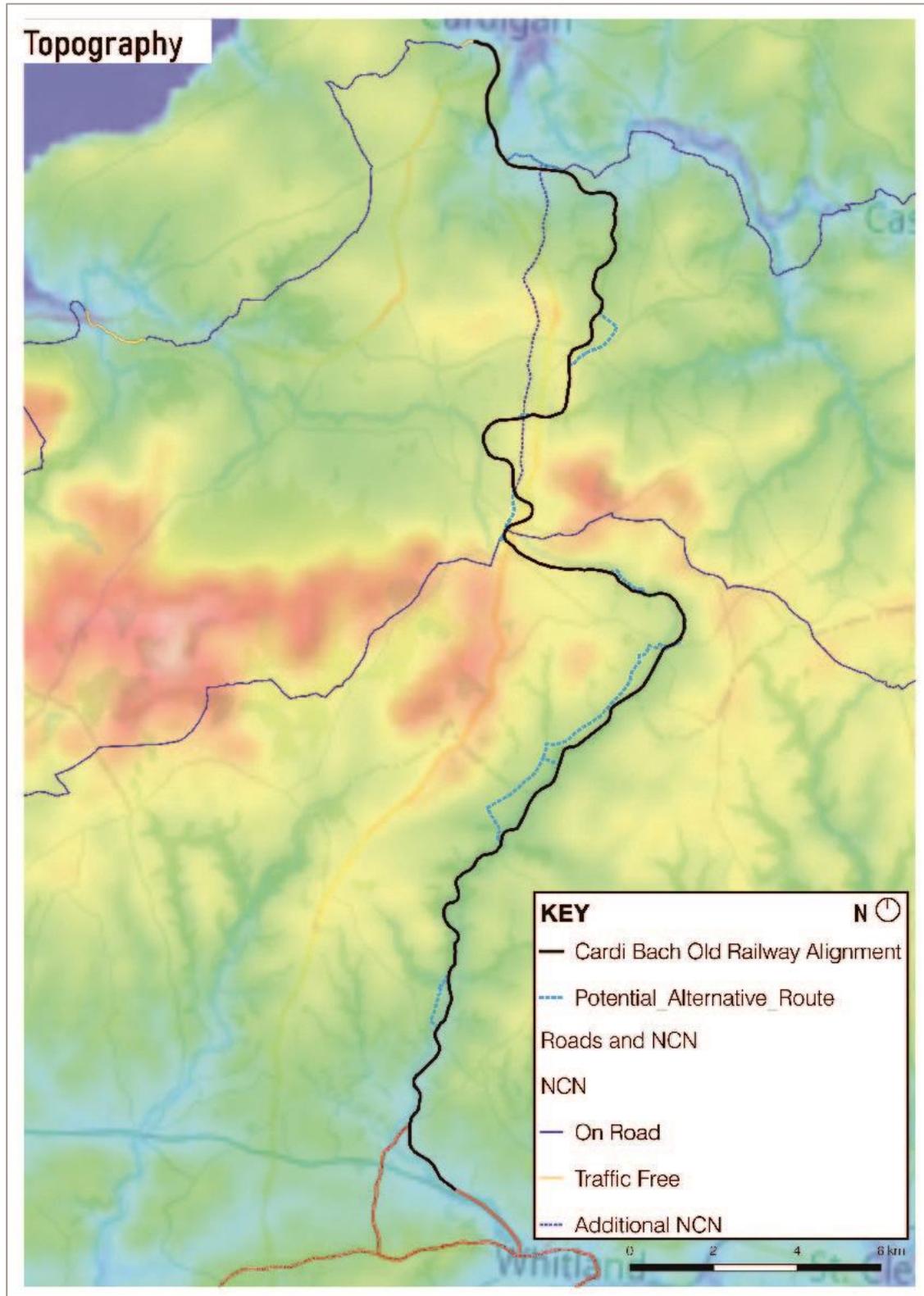


Figure 10: Topographical Map of the Study Area, Cardigan to Whitland

Public Access and Links with Bridleways and PROW

At the moment the alignment of the disused railway can be accessed at 20 access points through public roads (blue dots on the map below). Furthermore, the route shows a number of links with bridleways and PROWs that could be used especially when surveying the route sections that could be suitable for opening up to wider group of users including equestrians. The map shows 11 access points through PROW and 4 crossing points with bridleways.

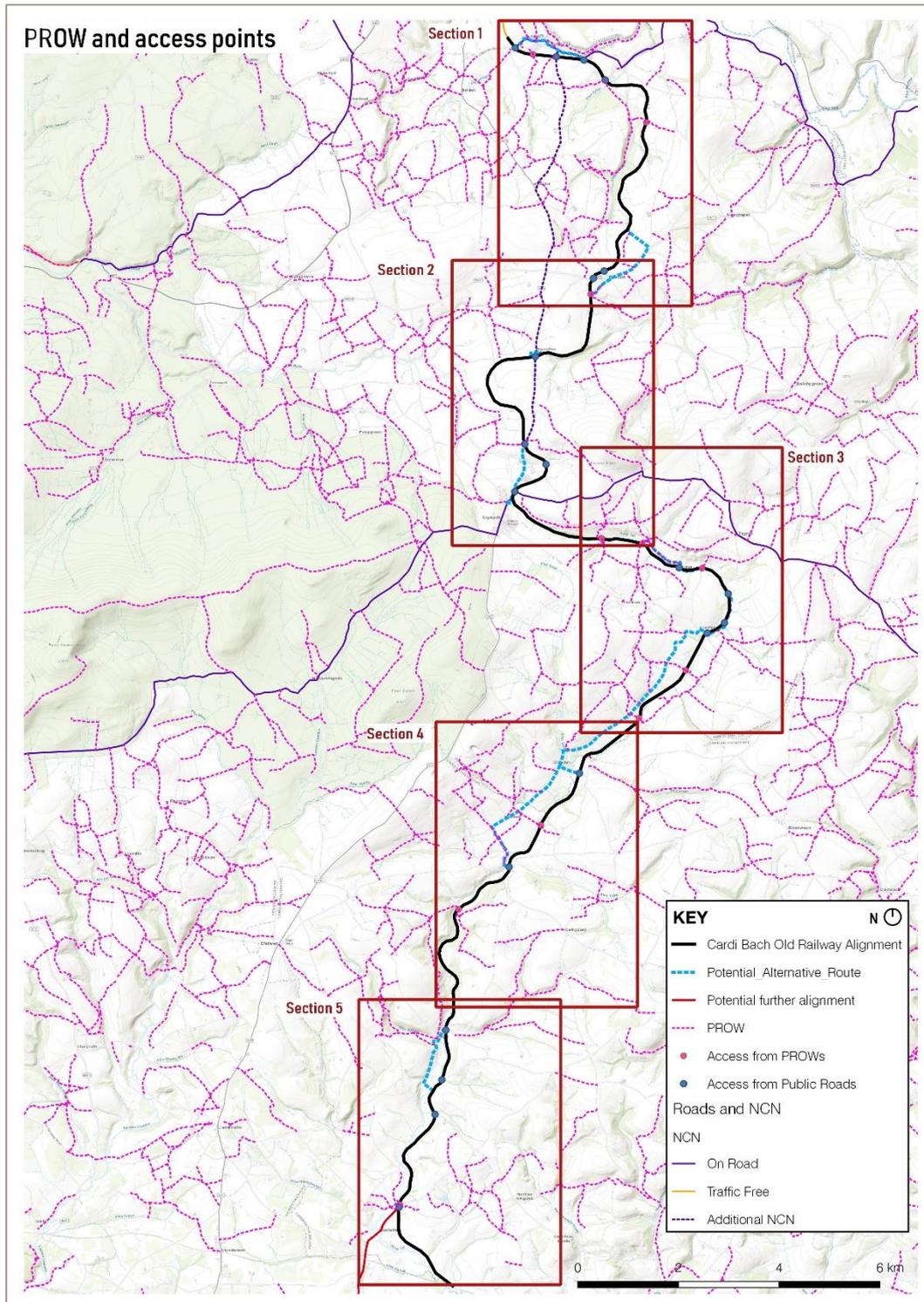


Figure 11: Public Rights of Way and Access Points to Cardi Bach Route (close up maps in annex) *

* Information on PROW were accessed through ArcGIS/ Rowmaps.com. The details of the PROW network are an interpretation of the Definitive Map, not the Definitive Map itself.

Links to Local and Surrounding Area

The disused railway is a great opportunity to provide a central axis to the National Cycle Network in Pembrokeshire, Carmarthenshire and surrounding area. It will link up numerous rural and isolated settlements through existing and proposed cycling and walking routes. In the North it can lead naturally to NCN 82 and into Cardigan, in the South it can follow onto NCN route 4 with a central intersect around Crymych with NCN 47. Indeed, in the future it could be a possible alternative (and much flatter) alignment for NCN route 47.

These connections to the existing NCN and to new routes to nearby towns such as Carmarthen, Narberth, Haverfordwest and further afield such as Neyland and Broad Haven are outlined in greater detail below.

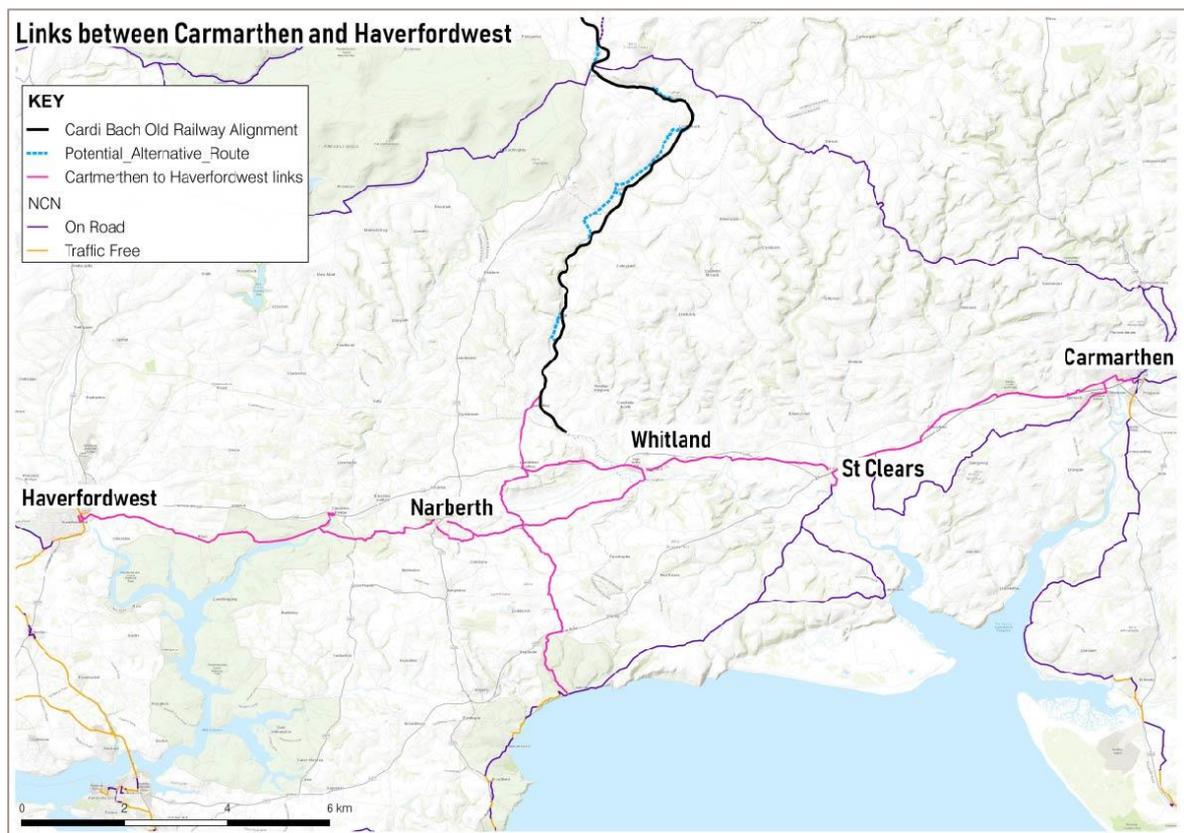


Figure 12: Links to between Carmarthen and Haverfordwest

Connections to Carmarthen

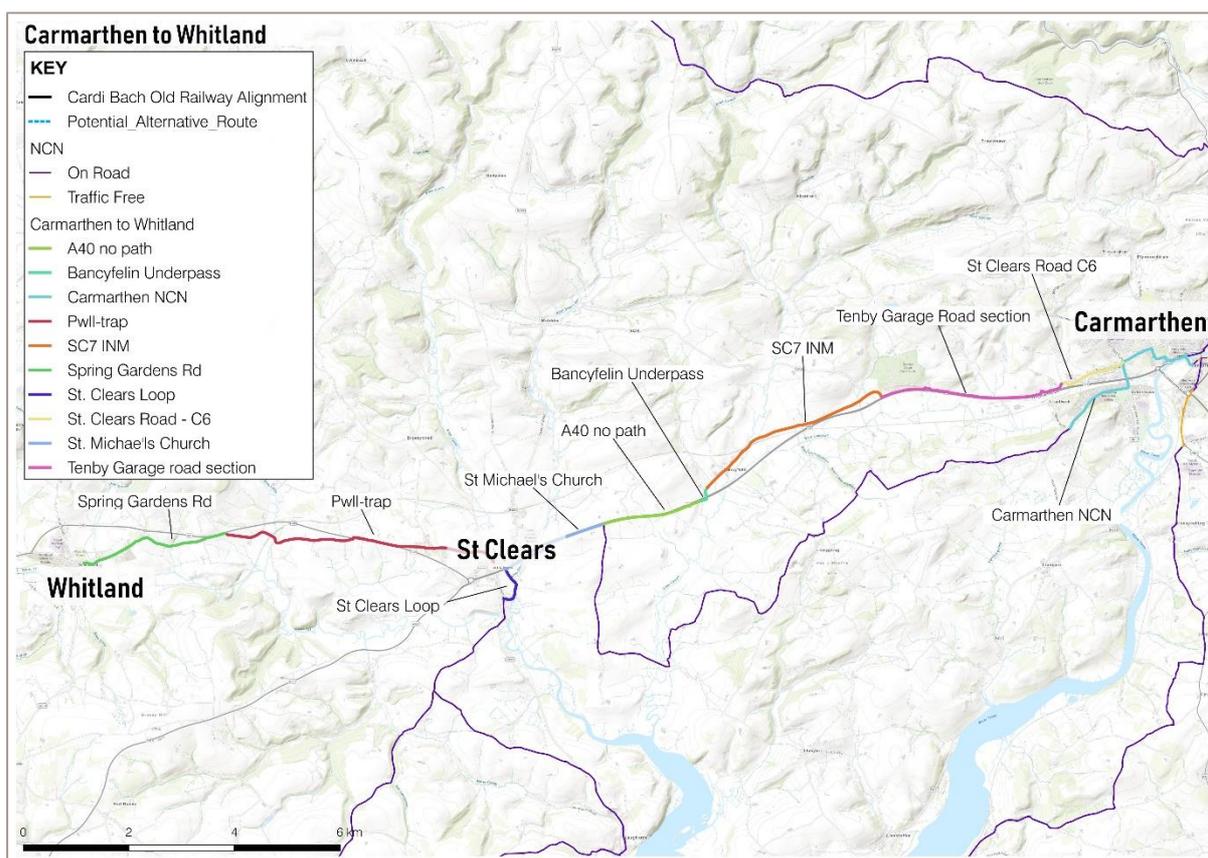


Figure 13: Connections Whitland to Carmarthen (with INM references)

Llanfallteg to Whitland

To connect to Whitland, the route could take two main alignments – to follow the disused railway line to the junction with the live railway line and continue alongside it, into Whitland or to make use of existing roads and go via Llanddewi Velfrey.

Alignment 1 – Alongside live railway

There are examples of the NCN alongside railways, such as NCN 47 at Nelson, Caerphilly where a 1.4m high palisade fence separates the path from the railway. In recent Sustrans works near railways Network Rail have insisted on 1.8m palisade fences.

Assuming there is enough space in the railway envelope to construct a suitable path, there would be a number of obstacles to overcome if a route was to be provided from the end of the Cardi Bach into Whitland. These obstacles would include:

- Palisade fencing along 3.8km. Just fencing material would be in excess of £100,000. Considering installation and Network Rail cost this could easily double the cost, just for the fence.
- There would be two river crossings requiring work within flood zones.
- Passing under the A40. This doesn't appear to be possible within the railway envelope because the bridge (underpass) is too narrow. Whatever solution is employed here it's going to be very expensive (New underpass, ramps to road level and light controlled crossing, bridge).

The easier way to construct this route would be to construct on private land and if possible avoid the river crossings. This would still require some way of crossing the A40 to get into Whitland.

Whatever option is taken will be relatively expensive. One other consideration for this section would be the isolation for users being unable to access or leave the route for 3km, which could be off putting for some users. However, this is likely to be a common issue along this route.

Alignment 2 – via Henllan Amgoed/Cwmfelin Boeth

The second, more attractive option is to continue the route on-road from Llanfallteg, along the unclassified road to Rhydywrach, onto Clun Cottages to Henllan Amgoed and turning onto North Road, following it through Cwmfelin Boeth into Whitland. This route connects three more settlements to the central route that would otherwise be missed. Further, it would negate the need to build a new path alongside a live railway line, which, in addition to reducing costs and mitigating landownership issues, also has major health and safety benefits.

However, this option includes a 60mph section on North Road which may require some sort of traffic calming, e.g. reduction of the speed limit or additional warning signs alerting cars.

Whitland to Carmarthen

The route can continue from Whitland and into Carmarthen using quiet and older roads. Once St Clears is reached NCN route 4 can lead riders (not that directly) into Carmarthen. Proposed INMs and existing shared use paths along the A40 as shown in the map above are a potential future route and described below.

The potential route from Whitland through to Carmarthen could head east following Spring Gardens and take the old alignment of the A40 off the B4328. This leads to a shared-use path that runs along the south side of the A40 for 400m and then joins a quiet road that passes through Pont-y-Fenni. The route then crosses the A40 at an existing crossing point (see photo below) where a shared use path leads to an unclassified road that passes through Pwll-Trap and on to St Clears. There is a long term (INM) aspiration to construct a shared-use path along this road (Ref SC9). In the short term, measures to reduce traffic speed and volume could be investigated.



Figure 14: Screenshot Googlemaps, NCN route 4 crossing A40

Currently, in St Clears, there are no INM proposals that have been set out on the roads leading south to the cross roads with the A4066 and B4299 Pentre Road. In the short term, measures to reduce traffic speed and volume could be investigated. Passing through the carpark off the south side of Pentre Road, the route passes under the A40 trunk road and then ramps up the side of the A40 onto an existing shared-use path (NCN 4). At this point, NCN 4 can then be followed into Carmarthen.

Alternatively, there is potential for a more direct route into Carmarthen that follows parallel to the A40 to Bancyfelin where it joins an existing shared use path along the north side of the A40 to Carmarthen. These proposed routes are described in Carmarthen's INM⁴ (as set out in the table below). The current design suggestion is that a shared-use path will run along the south side of the A40 until it reaches the western A40 junction to Bancyfelin. It will then cross underneath the A40 passing through an existing cattle creep, before joining the existing county road into Bancyfelin.

Table 1: Proposed routes as part of the Integrated Network Map of Carmarthen

Ref	Description
SC2	Existing cycleway. Better visibility leading up to path under the underpass and surface of path into St Clears Car Park. Better surface on path between St Clears and Church leading down to the river. Details for this scheme to be confirmed subject to discussion with Welsh Government.
SC4	A40 to St Michael's Church - Existing cycleway. Details for this scheme to be confirmed subject to discussions with Welsh Government.
SC5	Aspirational cycleway to link to SC4 and east to Carmarthen Details for this scheme to be confirmed subject to discussions with Welsh Government.
SC7	Aspirational cycleway to link to SC4 and east to Carmarthen

Crymych to Carmarthen

It may be worth mentioning at this point, that the proposed Cardi Bach route could also connect to Carmarthen from Crymych by following the current alignment of NCN 47. In the future, the Cardi Bach could even form part of a new, more accessible alignment of NCN 47 which, currently has some very steep and unsuitable sections.

Connections to Narberth and Haverfordwest

Whitland to Narberth

There are two possible options of existing routes to connect the Cardi Bach route with Narberth, and one future option based on the proposed Llanddewi Velfrey bypass as shown in the map below (Fig. 15).

⁴ <https://www.carmarthenshire.gov.wales/media/1213262/carmarthen-inm.pdf>

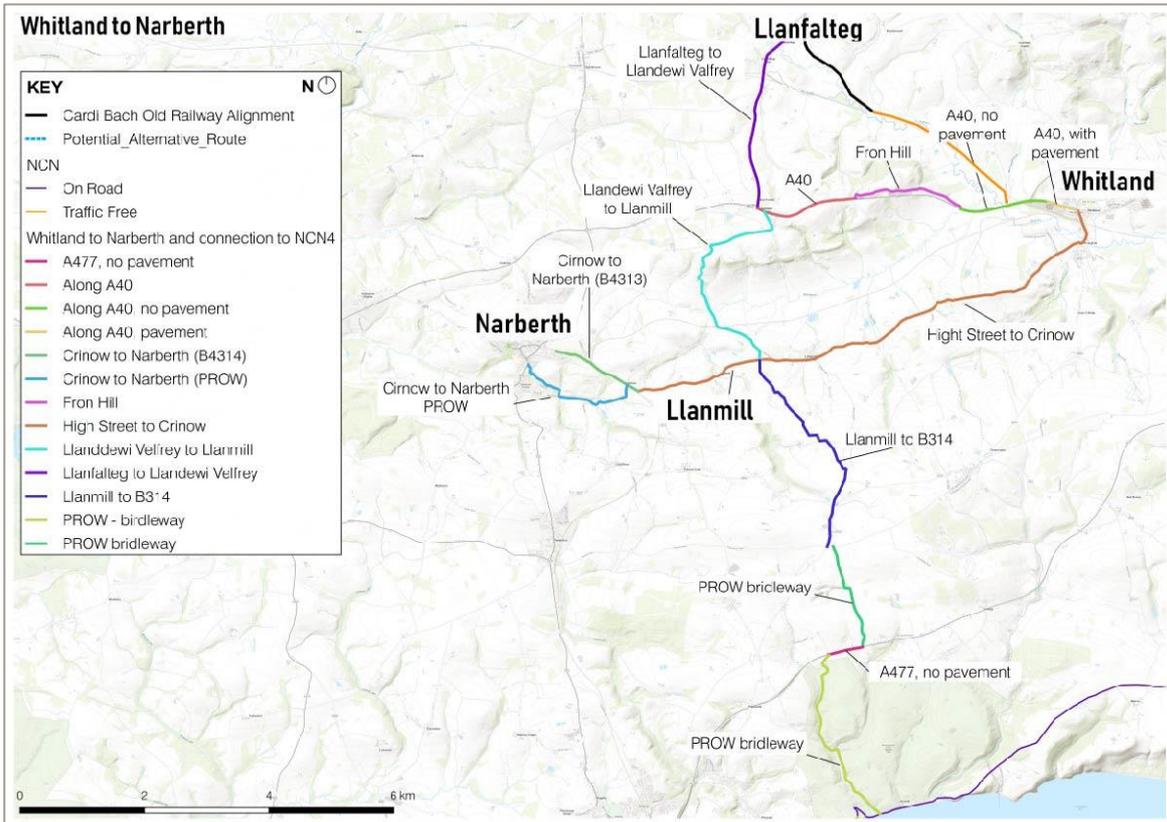


Figure 15: Connections from Whitland and Llanfallteg to Narberth

Option 1 – Via Llandaff Row and Llanmill

The first option would be to leave the Cardi Bach disused railway line at Llanfallteg and travel south on the unclassified road to Llanddewi Velfrey, passing through Llanfallteg West. (See Fig.16)

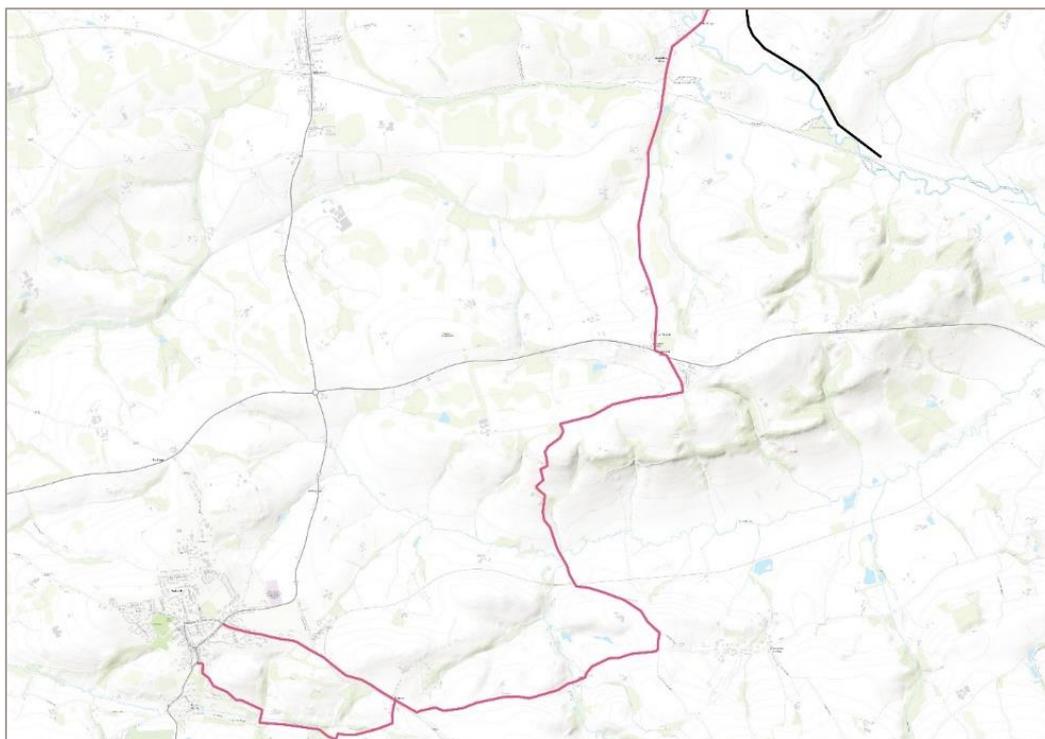


Figure 16: Connecting to Narberth, Option 1, via Llandaff Row and Llanmill

On reaching the A40, travel east along it for 150m and turn south onto Llandaff Row. This would not be a pleasant manoeuvre for cyclists on a busy road, so a temporary alternative would be to use the uncontrolled crossing near the cenotaph and footway on the south side of the A40 (see Fig. 17).



Figure 17: Screenshot Googlemaps, Llanddewi Velfrey, Crossing at South Side of A40

The route would then follow the unclassified road south via Droslyn, to the crossroads west of Lampeter Velfrey, passing Brynbanc Cottages, through Llanmill, past the Parc Gwyn Crematorium to join the B4314 into Narberth (see Fig. 16). The length of the route along the B4314 could be shortened by following the bridleway (along Twll Lane and Brook Lane according to OpenStreet Map) to Narberth Bridge. However, this bridleway is very steep, narrow and passes through a ford. So although traffic free, may present more hazards to a cyclist than B4314. Measures for reducing volumes and speeds on this section of the B4314 should be considered as part of the Narberth Town Sustainable Transport WeITAG process. The route into Narberth is partially covered by the INM route PEM-INM-NA010 but is for walking only.

Option 2 – Via Live Railway

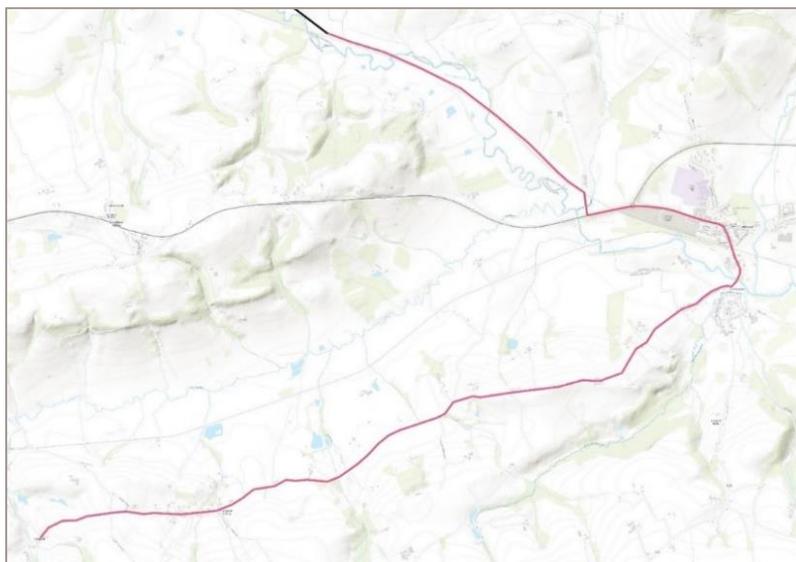


Figure 18: Connecting to Narberth, Option 2, via Live Railway

The second option would be to leave the Cardi Bach, travelling south east to Whitland along the live railway. Once in Whitland, pass through the town and after crossing the railway line (and station) follow the unclassified Velfrey Road and High Street onto Llanmill and then follow option 1 as above.

Future option – Llanddewi Velfrey quiet lanes

The future route is to use the proposed routes and quiet roads created by the Llanddewi Velfrey bypass⁵. As with option 1 above, leave the Cardi Bach at Llanfallteg and travel south on the unclassified road to Llanddewi Velfrey. This will pass over the A40 on Llanfallteg Road Overbridge. The existing roads of Llanddewi Velfrey should now be very quiet (traffic moved to the bypass) making them suitable for walking and cycling. Following quiet roads and bridleways, the route goes west to Penblewin Roundabout. From here a shared use path (long-term) is planned going south to the centre of Narberth, INM reference PEM-INM-NA013. More details on the proposed bypass scheme can be found here: <https://gov.wales/a40-llanddewi-velfrey-penblewin>. The proposed A40 Redstone Cross realignment should provide an opportunity for safer cycling from Penblewin to the B4313 Redstone Road into Narberth.

Narberth and Haverfordwest

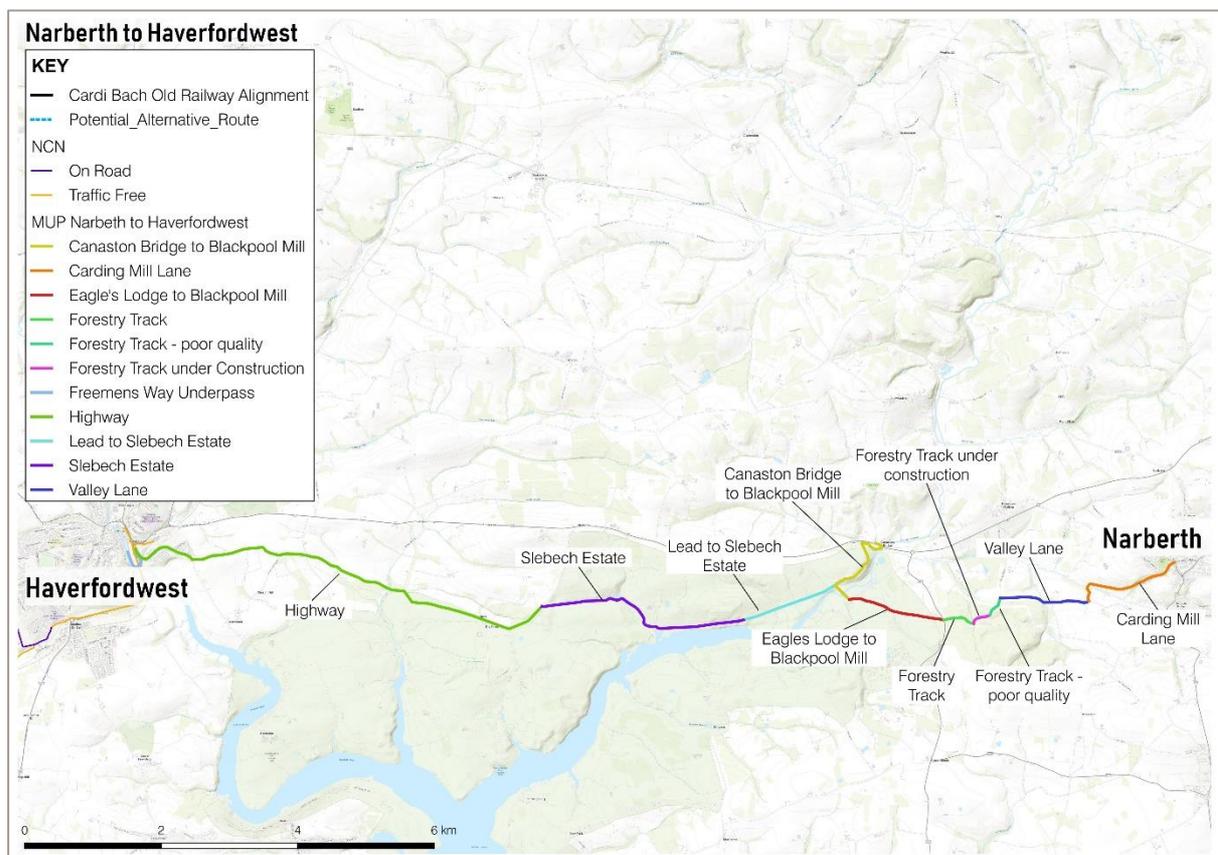


Figure 19: Linking up to Narberth and Haverfordwest

Following on from Narberth, people can utilise the Multi-User Path (MUP) which is currently under construction and negotiation between Narberth and Haverfordwest. Connecting the Cardi Bach route through to Narberth will provide even more value and weighting to this MUP and vice versa for further development.

Once in Haverfordwest, there are opportunities to connect south to Neyland via the off-road Brunel Trail and west to the coast at Broad Haven along NCN 4.

⁵ <https://gov.wales/sites/default/files/publications/2019-08/a40-llanddewi-velfrey-to-penblew-in-stage-3-scheme-assessment-report.pdf>.

Whitland to South Coast to NCN 4

The map below shows a potential alignment to connect Whitland to the South coast and NCN 4, at three locations; Amroth Arms pub, Amroth Castle Holiday Centre and Wiseman's Bridge, identified through GIS and local knowledge.

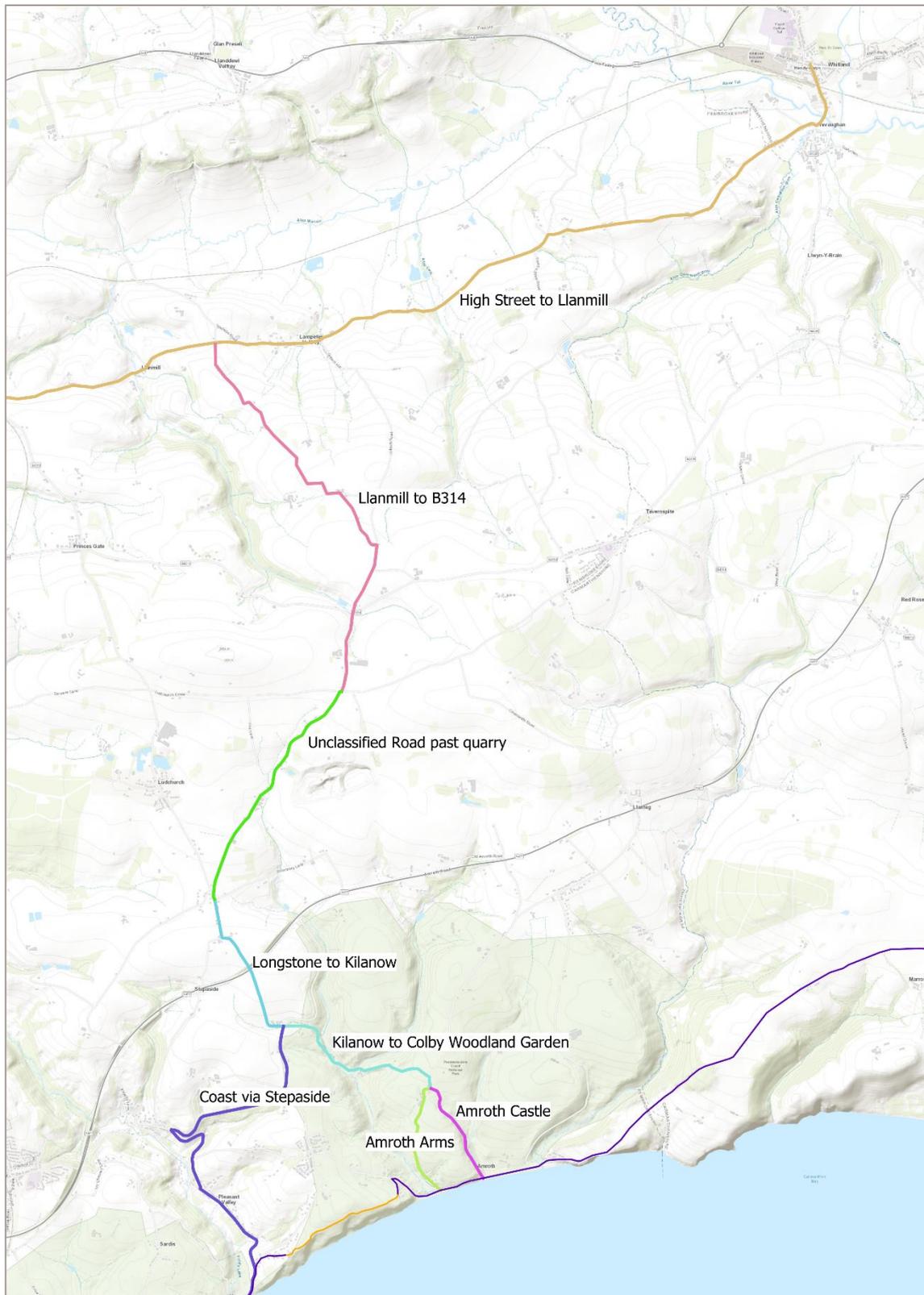


Figure 20: Linking up Whitland to the South Coast

2 Land Ownership

The Cardi Bach disused railway line now runs in or adjacent to a large number of land parcels, owned by many different land owners. The route on the Carmarthenshire County Council side runs along/through 28 registered parcels of land which belong to 23 different owners, whilst in the Pembrokeshire County Council section there are 105 different parcels and 73 different land owners. As land negotiations might become difficult it is recommended that the relevant landowners/tenants are approached as early as possible once a preferred route is forwarded for further design. Land ownership records for the disused railway and adjacent land are provided in the annex, with an overview map below.

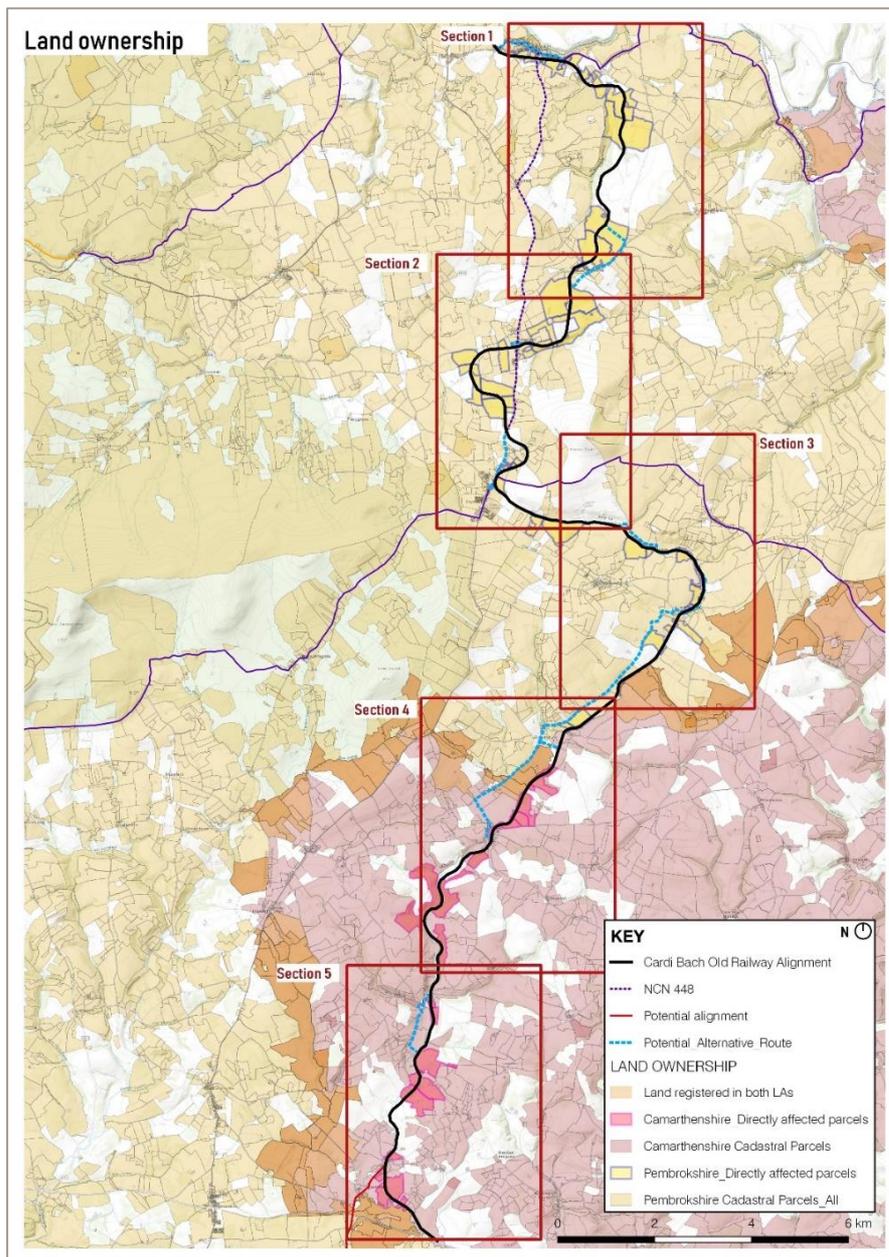


Figure 21: Land and Owner Identification via Land Registry⁶

⁶ This map was created using the information on land registry provided through PCC and CCC and through our own search Sustrans did through land registry. For a detailed view on each of the 5 sections please see zoomed in maps in annex.

Land Acquisition Delivery Mechanisms

There are number of delivery mechanisms to secure land for the Cardi Bach route, including the instigation of a Public Right of Way, land negotiations and purchase or, in some cases, compulsory purchase orders.

Public Rights of Way

A guidance document is provided by Welsh Government for Local Authorities on Public Rights of Way⁷ (PROW). The document states that:

“Authorities are permitted to create an Order to create a route where it appears to them that a path or way is needed and that it is expedient for a way to be created.” (p50).

Where this applies, the authority must consider under Section 28 of the Highways Act (1980), compensation to the effect that a creation of PROW would have upon the “rights of persons interested in the land”, as well as agricultural needs, forestry needs and conservation of flora, fauna, geological and/or physiographical features.

(Many of the routes proposed are on-highway. For on-highway improvements the local authority have a power under Section 62 of the Highways Act (1980) to make improvements).

Section 26 – Highways Act 1980

An alternative to purchase would be to create a restricted bridleway. Section 26 of the HA 1980 gives an authority the power to create footpaths, bridleways, or restricted byways. A restricted bridleway may be the preferred option as it will give all users the same status, with no single user-group determining the standards. A restricted byway has to have a minimum width of 3 metres. More details can be found in the public rights of way guidance for local authorities which can be found here: <https://gov.wales/sites/default/files/publications/2019-04/public-rights-of-way-guidance-for-local-authorities.pdf>.

Compulsory Purchase Orders

The use of compulsory purchase orders (CPO) could be explored as an option to acquire land in some critical sections that may have some land ownership issues. There are a couple of different delivery mechanisms to enact a CPO, most commonly through the Highways Act 1980s and Town and Country Planning Act (1990). Another possible experimental avenue using the Future Generations Act (2015) has been explored and outlined below.

Town and Country Planning Act (1990)

In section 226 of the Town and Country Planning Act (1990), a compulsory purchase may be authorised under the following circumstances:

- (1) A local authority to whom this section applies shall, on being authorised to do so by the Secretary of State, have power to acquire compulsorily any land in their area –
 - a) if the authority think that the acquisition will facilitate the carrying out of development, re-development or improvement on or in relation to the land;
 - b) which is required for a purpose which it is necessary to achieve in the interests of the proper planning of an area in which the land is situated.

⁷ <https://gov.wales/sites/default/files/publications/2019-04/public-rights-of-way-guidance-for-local-authorities.pdf>

(1A) But a local authority must not exercise the power under paragraph (a) of subsection (1) unless they think that the development, re-development or improvement is likely to contribute to the achievement of any one or more of the following objects –

- a) the promotion or improvement of the economic well-being of their area;
- b) the promotion or improvement of the social well-being of their area;
- c) the promotion or improvement of the environmental well-being of their area.

Compulsory Purchase (Vesting Declarations) Act 1981

Under section 1 of the Compulsory Purchase (Vesting Declarations) Act 1981 a local authority or other public body ('the authority') can acquire land by means of a general vesting declaration. The detailed provisions governing this procedure are set out in Parts II and IV and Schedule 1 of the Compulsory Purchase (Vesting Declarations) Act 1981, and, subject to the transitional provisions where previous regulations might be relevant, the Compulsory Purchase of Land (Vesting Declarations) (England) Regulations 2017 and the Compulsory Purchase of Land (Vesting Declarations) (Wales) Regulations 2017. These provisions apply equally to registered and unregistered land.⁸ The General Vesting Declaration (GVD) procedure is an often preferred route under CPO when compared to 'notice to treat' as it means 'acquiring authority can obtain title more quickly and in particular without having to settle the amount of compensation prior to the transfer of title'⁹. It is also useful 'where there is some uncertainty over the ownership of all the land interests because, provided the correct service of notice procedure is followed, the GVD vests all interests in the land'¹⁰

Future Generations Act (2015) and Well-being Plans

Another possible route to CPOs which could be explored is through the local authority's Well-being Plans, produced as a requirement under the Future Generations Act (2015). The Future Generations Act, sets a legally binding common purpose of seven Well-being Goals and five 'Ways of Working' which the Public Service Boards have a collective 'well-being duty' to carry out. The Act amends the Planning and Compulsory Purchase Act (2004) to legislate for local Well-being Plans.

The provision of a shared-use path in the Cardi Bach area can be linked both directly and indirectly to the National Well-being goals, but also to a number of the aims and objectives of the Carmarthenshire, Pembrokeshire and Ceredigion well-being plans. At a national level, it aligns with improving physical health, celebrating heritage, and creating attractive, viable, safe and well-connected communities.

In the Well-being Plan for Pembrokeshire¹¹, the Cardi Bach shared-use path could align well with the two 'Where we live' priorities – 'Tackling Rurality' and 'Protecting the Environment' by linking up very rural and remote communities. In the case of Carmarthenshire¹² it links to objectives of building strong connections and prosperous people and places, amongst others. Relatedly, Ceredigion¹³ has community and individual aims linked to enabling communities to be more prosperous, sustainable and connected by improving physical infrastructure and people to live active, happy and healthy lives.

Efforts could be made to explore the feasibility of using this progressive legislation to achieve the legally binding well-being plans and their goals through the use of compulsory purchase orders to provide communities with relevant infrastructures such as multi-user paths.

⁸ <https://www.gov.uk/government/publications/acquisition-of-land-by-general-vesting-declaration/practice-guide-54-acquisition-of-land-by-general-vesting-declaration-under-the-compulsory-purchase-vesting-declarations-act-1981>
⁹ <https://hsfnotes.com/realestatedevelopment/2019/05/31/back-to-basics-acquiring-land-compulsorily-by-way-of-a-gvd/#page=1>
¹⁰ <https://hsfnotes.com/realestatedevelopment/2019/05/31/back-to-basics-acquiring-land-compulsorily-by-way-of-a-gvd/#page=1>
¹¹ <http://www.wales.nhs.uk/sitesplus/documents/862/Pembrokeshire%20Well-being%20Plan%20Final%20draft%20Feb%202018.pdf>
¹² <http://www.wales.nhs.uk/sitesplus/documents/862/Carmarthenshire%20Well-being%20Plan%20final%20290118.pdf>
¹³ <https://www.ceredigion.gov.uk/media/3956/local-well-being-plan-2018-2023.pdf>

3 Attractiveness

Historical and Cultural Heritage around Cardi Bach

The area all along the Cardi Bach route is rich in history, has a strong cultural and industrial heritage and is also within an area of considerable natural beauty. There is a long list of points of interest along the route and finding attractive and interesting sites to promote the route to a wide audience should not prove to be a difficult task.

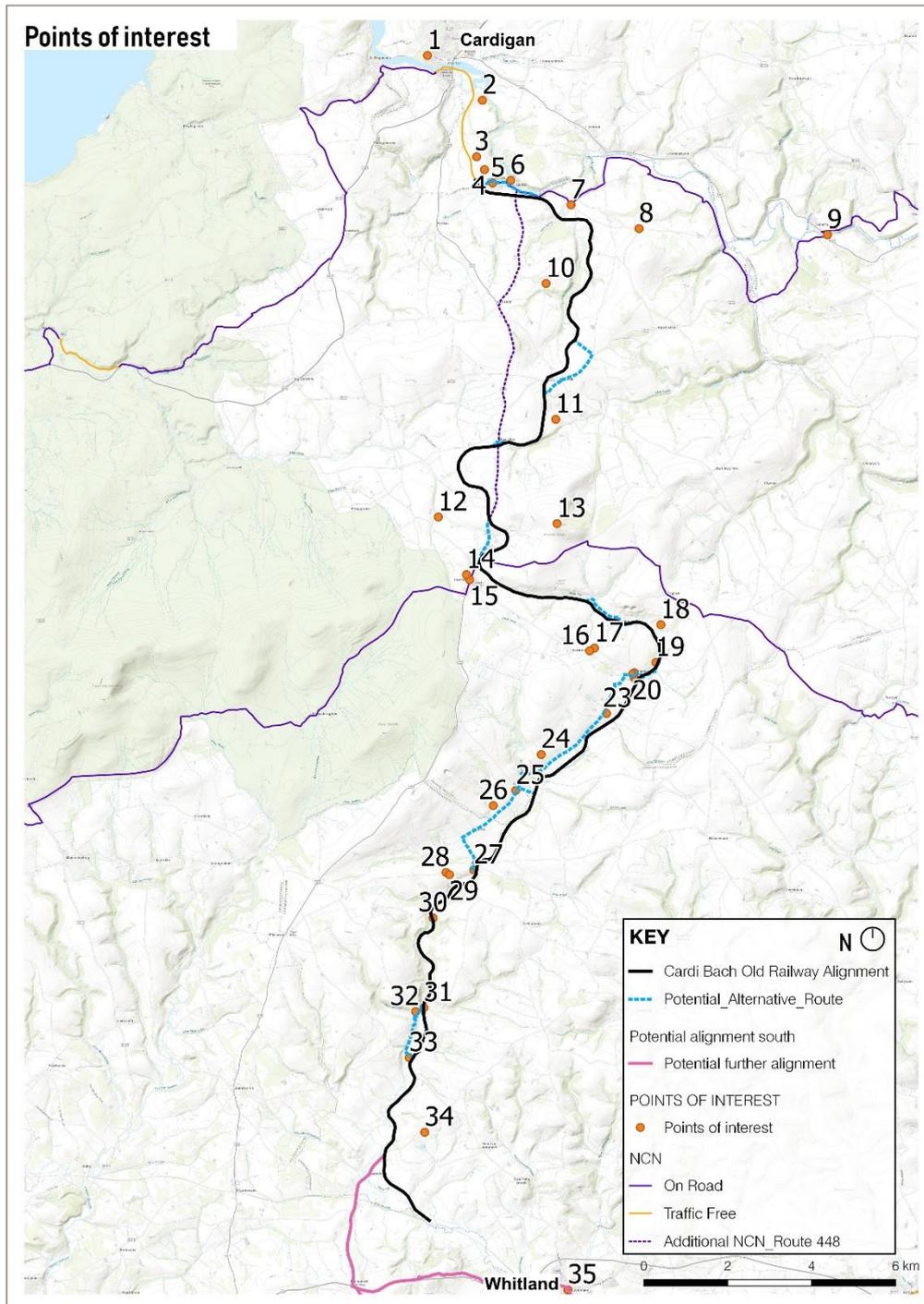


Figure 22: Historical, Cultural and other Points of Interest in the Study Area

Historical and Cultural Points of Interest

(5) St. Llawddog's Church, Cilgerran. Early medieval on site of C6th Celtic church. Famous for its megalithic standing stone in the churchyard on which the ancient Ogham script can still be seen. Unfortunately the church itself is sometimes locked

(6) Cilgerran Castle is a 13th-century ruined castle located in Cilgerran. After passing through successive families, it was left to ruin and eventually abandoned by 1400. It passed into the hands of the National Trust in 1938, who opened it to the public.

(7) Red Kiosk, near Cilgerran. Home to a phone box museum dedicated to local photographer and resident Tom Mathias, said to be the smallest museum.

(8) St. David's Church, near Cilgerran, a late Gothic church made of Cilgerran slate which dates back to 1898. The building consists of a nave with an octagonal West belfry and South porch, a chancel and vestry to the North.

(9) Coracle Centre. Famous for the annual coracle race in August and access to lovely walks along the river through the Teifi Gorge

(12) Castell Dyffryn Mawr Motte (NW of Crymych) comprises the remains of a motte and ditch, dating to the medieval period (c. 1066 -1540 AD). A motte is a large conical or pyramidal mound of soil and/or stone, usually surrounded by either a wet or dry ditch, and originally surmounted by a tower constructed of timber or stone.

(13) Frenni Fawr. Originally called Cadair Facsen (the Chair of Maxen) and is the hill where Roman Emperor Magnus Maximus (335 – 388AD) allegedly came to hunt. It is also associated with stories of the Tylwyth Teg (fairies). The footpath up and across the mountain passes various Early Bronze Age barrows, one of which may hold the mythical Frenni Fawr treasure said to be guarded by a less than friendly ghostly spirit.

(14) Round Barrow, Crymych comprises the remains of an earthen built round barrow, which probably date to the Bronze Age (c. 2300 - 800 BC). The barrow is circular in shape on plan and has a rounded profile, measuring 20m in diameter and standing to a maximum height of 1.75m. The monument is of national importance for its potential to enhance our knowledge of prehistoric burial and ritual practices.

(15) Crymych. The name of the village has existed since the dark Ages but as a community it only really developed from about 1874 onwards following the construction of the Cardi Bach. It resembled somewhere in the Wild West and this gave it its nickname 'Cowboy Town'. Welsh culture here is strong and Welsh is the first language of most residents. Crymych is the source of both the Taf and the Eastern Cleddau rivers.

(17) Hebron Chapel. Hebron Methodist Sunday School was founded first in 1812 and then a chapel built in 1852, in the Vernacular style of the gable entry type.

(18) Coed r Hwrdd is another of The Woodland Trust's 'Woods on Your Doorstep' woodlands. It lies within Cwm-yr-Aur (Golden Valley) a tributary of the Afon Taf. It was planted with a mixture of native broadleaf trees including the nationally rare black poplar by the residents of Tegryn village in 2000.

(19) Chimney at Llanfyrnach Mine is a listed building associated with an important lead-mining site going back to the C18. It is attached to an altered roofless single-storey narrow building, the former boiler-house of No 2 shaft, and is difficult to date, probably earlier to mid C19. There may have been mining on the site in the 16th century. In 1542 the right to mine silver-bearing ores in Wales and the Marches was granted by the Crown.¹⁴

¹⁴ <https://people.exeter.ac.uk/pfclaugh/mhinf/llanfyr.htm>

(20) Castle Mound is a designated historic asset in Llanfyrnach. The monument comprises the remains of a motte and ditch, dating to the medieval period (c. 1066 -1540 AD). The motte stands to about 6m high and has a summit 18 metres in diameter. A depression in the centre lined with stone foundations is problematic. There is a road around the east and south side and a modern house to the North, so that any bailey that once may have existed is probably now unrecognisable.¹⁵

(21) Llanfyrnach. Famous for its Victorian silver-lead mines on the north side of the village, although minerals could have been mined here as far back as the 16th Century. The mines were greatly extended in the 1840s as a result of the high demand for lead. By the time that mining ceased in 1890, working levels had reached well over 500 metres below ground. The old miners' cottages are still inhabited and there is still some evidence of the original workings although most of them are now hidden away under dense vegetation. The outline of a small Norman motte can be seen directly opposite the church.

(22) St. Brynach's Church, Llanfyrnach, a Victorian/Gothic church built in 1842 and a listed grade II building. The inside consists of a sanctuary, chancel and nave with central aisle. The whole layout is on one level enabling good disability access. The church provides a venue for weddings and art exhibits.

(23) Chapel and Burial Ground near Tre-Henry (south of Llanfyrnach) comprises the remains of a small chapel presumed to date from the medieval period. The site, thought to be a chapelry to Llanfyrnach, has no recorded history. An earthwork of about 33m by 23m indicates the position of a narrow oval or polygonal dry-stone walled enclosure, the south west side of which lies under a boundary hedge. In the interior are the grass-covered footings of a rectangular building measuring 10m north east to south west by 6m with an entrance on the south west side. The monument is of national importance for its potential to enhance our knowledge of the organisation and practice of medieval Christianity. The site forms an important element within the wider medieval landscape.¹⁶

(24) Lammas Ecovillage. A thriving example of low-impact rural development. The 74-acre plot is completely independent of all mains services, and all the homes at Lammas have been designed and built by the residents using local, natural and recycled materials. None cost more than £14,000 to complete. The ecovillage, at Tir y Gafel near Glandwr, runs guided tours every Saturday from April to October – see website for further information - www.lammas.org.uk

(25) The Ogham Stone, Glandwr. In the grounds of the Glandwr chapel, this 5 feet high stone has an engraved cross on one face and an Ogham inscription on one edge. It was brought here from a local farm where it served as a gate post but its original site was said to be on Mynydd Stambar near Llanfyrnach. Unfortunately it is difficult to translate the markings as they were damaged by the impact of cartwheel hubs when it was used as a gate post.

(26) Gaer (270m W of Glan-Dwr Farm) comprises the remains of an earthwork enclosure. The date or precise nature of the enclosure is unknown, but it is likely to be later prehistoric or medieval. It lies on a south facing slope, is sub-rectangular and measures c 67m north west to south east by c 48m although the circuit is only fully visible on aerial photographs as it has been plough-reduced. An entrance has been recorded in south east and a there is possible outer defence 65m to the north. A sword is reported to have been found at the base of slope to the south.

(27) Pont Llanglydwen (partly in Llanboidy Community) is a listed Georgian road bridge.

¹⁵ <https://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=&id=3711>;
<https://coflein.gov.uk/en/site/304112/details/llanfyrnach-motte>

¹⁶ <https://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=&id=994>

(28) Dolwilym Archway (west of Llanglydwen, visible from route, grade 2 listed) was a castellated country house built 1842-5 for the Protheroe family, but abandoned after 1908. It was demolished in 1984. The gateway is in similar style to the house, and therefore is probably also of the 1840s.¹⁷

(29) Llanglydwen Churchyard Cross consists of a free standing cross-shaped slab probably dating to the early medieval or medieval period, set against a yew tree in the churchyard. The cross is 1m high, 0.6m (max) wide x 0.2m in breadth. The cross remained from St Clydwen's Church, a parish church of the Deanery of Carmarthen during the medieval period. The monument is of national importance for its potential to enhance our knowledge of the organisation and practice of Christianity.¹⁸

(30) Gwal y Filiast / Dol-Wilym Burial Chamber also goes by the name Arthur's Table. The monument comprises the remains of a chambered tomb, dating to the Neolithic period (c. 4,400 BC - 2,900 BC). The monument is of national importance for its potential to enhance our knowledge of prehistoric burial and ritual.¹⁹

(31) Login Station. The former Station Master's House stands on the original railway station platform and both have recently been restored. The building now houses a heritage railway display with a number of Cardi Bach artefacts. Afternoon teas are also served.

(32) Calfaria Baptist Chapel (Login) was built in 1827 and rebuilt in 1877 by architect George Morgan of Carmarthen. The chapel is Romanesque in style with a gable-entry plan and is grade 2 listed.²⁰

(33) Pont Cwm-miles is a well-preserved C19 road bridge of definite quality and character, in the regional vernacular tradition.²¹

(34) Lwyngarreg Garden, Llanfallteg, a three and a half acre garden open to public and part of the National Gardens Scheme: Wildlife ponds, numerous living willow structures, a woodland garden, willow tunnel and water springs, swing for children. Tea served upon request.

(35) Whitland. A small town lying on the river Taf and at the junction of the rail network leading to and from Pembrokeshire. It was to Whitland that King Hywel Dda assembled lawyers and leaders from all over his kingdom to study the laws and customs of the various provinces and to devise a legal system suitable for the whole country. In effect this was the first parliament in Wales. The laws of Hywel are described as one of the wonders of Welsh history and remained in force until the Act of Union with England in 1536. The Hywel Dda Garden and Heritage Centre in the centre of the town celebrates this achievement, and is the only Garden in Europe dedicated to the Law. Whitland is also the site of a ruined Cistercian abbey founded in 1140

Ecological Sites of Interest

(1) Coed y Mwldan is one of The Woodland Trust's 'Woods on Your Doorstep' woodlands created to commemorate the Millennium. Right in the centre of the town of Aberteifi (Cardigan) it is used every day by many people. The land slopes down from the Netpool Road to the Afon Mwldan.

(2) Wales Wildlife Centre: Award winning Visitor Centre nestled in lush countryside along the banks of River Teifi. Includes the magnificent Glasshouse Cafe and shop.

(3) Teifi Marshes Wildlife Reserve is one of the best wetland reserves in Wales.

¹⁷ <https://cadwpublic-api.azurewebsites.net/reports/listedbuilding/FullReport?lang=&id=21455>

¹⁸ <https://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=&id=2795>

¹⁹ <https://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=&id=3082>

²⁰ <https://cadwpublic-api.azurewebsites.net/reports/listedbuilding/FullReport?lang=&id=22502>

²¹ <https://cadwpublic-api.azurewebsites.net/reports/listedbuilding/FullReport?lang=&id=82459>

Touristic Attractions, Venues and Accommodation

(4) Fforest Farm. Tourist attraction/ accommodation and home to the yearly Gran Fondo, a festival for cyclists with many big tours all over Southwest Wales.

(10) Rhosygilwen Victorian estate, Cilgerran, a grade II listed Victorian Gothic Mansion and country house, and a venue for weddings, business conferences and social events.

(11) Rhydowen Farm, Rhydowen, Alpacas of Wales, is a privately owned Alpaca Farm since 2003.

Measuring and Monitoring Attractiveness of Route

The new route would be developed on privately owned land, which makes the potential construction difficult. There are different tool sets on how the potential attractiveness of the new route could be measured and demonstrated as a benefit to the landowners to support its development.

Sustrans' Research and Monitoring Unit (RMU) provides evidence on how the potential attractiveness of the new route could be measured and demonstrated as a benefit to the landowners to support its development. An evidence/literature review was produced to provide an overview of approaches that can be used to assess the attractiveness of a new route, and which could be applied to the route between Cardigan and Whitland.

A combination of both a route user survey and an audit of the route by a surveyor would provide a reliable assessment of the route's attractiveness, by incorporating both subjective and objective data collection. The time of year of the assessment and the weather conditions would have to be taken into consideration, as the attractiveness of a rural route surrounded by nature and the number of route users would vary according to the conditions experienced and the season. It would be best to conduct the survey and the audit as close to the same time as possible, so the conditions experienced by the survey respondents and the route auditor are similar.

For the route user survey a surveyor would station themselves on the route and intercept users with a survey and ask them a series of questions based on the indicators outlined below. They would conduct this over 3 or 4 days for 12 hours at a time, surveying as many users as possible and feed the data back to the project team. As the route does not currently exist, a pre-construction RUIS could be conducted on the short section between Cardigan and Cilgerran.

For the audit of the route a scale or score would be applied to precisely defined indicators (table below. For a complete list please see full RMU report). A surveyor would then visit the route and cycle/walk along it and provide a score for each indicator accordingly. These could then be averaged and totalled to provide an overall attractiveness score for the route and for each indicator.

Measuring of Attractiveness: Summary of Indicators and Methodologies

Indicator	What is it?	Relevance to Attractiveness	Ease of Data Collection	Indicative Cost	Accuracy	Applicable to Cardi Bach Route
Sustrans indicators/methodologies						
Route User Intercept Survey (RUIS) Statement	A question on the survey asking if the respondent "likes the surroundings on the route" - strongly agree to strongly disagree	Directly relevant and gathers user's opinions but doesn't go into much detail about why attractive or not.	Requires a sample population and surveyors to gather responses.	Potentially expensive, requiring a surveyor to be on the route for a period of time and survey all users.	Feedback would be linked directly to the path rather than a personal judgement of attractiveness by the surveyor.	Could be applied to any route as it is a broad question applicable to any area. Can only be used on an existing route, but could be conducted on an adjoining path.
NCN Audit (Paths for Everyone)	Sustrans audit of the National Cycle Network (NCN) in 2018 includes a measure of 'place' assessing whether a route was attractive and interesting	Includes factors that influence attractiveness of a route as used in the NCN Audit	N/A	N/A	N/A	Provides some indication of factors that could be included in an assessment of route attractiveness in Cardi Bach, but this would need to be operationalised into a scale or list of indicators first.
Sustrans core criteria for routes used by cyclists	The Sustrans design guidance provides criteria that affect the attractiveness of a route and are important design considerations	Doesn't directly measure attractiveness, but has been taken into account when developing indicators.	Doesn't operationalise the concepts, would need a scale or specific parameters to be devised for each criteria.	N/A	N/A	Provides a guide and things to consider when developing a methodology for assessing attractiveness of Cardi Bach

Indicator	What is it?	Relevance to Attractiveness	Ease of Data Collection	Indicative Cost	Accuracy	Applicable to Cardi Bach Route
Indicator tools developed outside of Sustrans						
Eurovelo	Provide specific guidance for assessing route attractiveness. Amongst other things, they assess sections of the route as highly attractive, attractive or unattractive.	Provides criteria for attractiveness that considers natural and cultural elements, safety, environmental challenges	Evaluation is conducted by experts travelling by bicycle along the route	Would have costs associated with the "expert" visiting the route and applying the criteria.	Considers various different aspects but doesn't provide specific scale for what "experts" consider attractive, seems to be personal judgement.	Some criteria more relevant to long-distance routes, useful for assessing attractiveness of rural routes and method of data collection.
TfL Healthy Streets Indicators	TfL indicators for assessing "healthiness" of street, attractiveness is key to this.	Doesn't directly measure attractiveness, but has been taken into account when developing indicators.	2 levels of collection which are clear to use: a survey similar to a RUIS and a design spreadsheet which would involve a surveyor visiting the route and scoring it according to their guidance	Only the survey would have any significant cost, the designer's spreadsheet would have some in terms of staffing.	A combination of the two methods would consider user experience and a score for attractiveness	Some indicators not relevant to rural route, but the monitoring tools could be useful by providing a methodology
Design Guidance from Active Travel Wales	Similar to the Sustrans core criteria, Welsh Government guidance for cycle route design provides 5 criteria to consider	Doesn't directly measure attractiveness, but has been taken into account when developing indicators.	Provides a matrix for auditing both walking and cycling routes that provides a score for each indicator	Would have costs associated with surveyor visiting route and applying the matrix.	Considers various different criteria and a resulting score for attractiveness	Directly applicable to Wales, though some criteria more relevant to urban routes. Minimising street clutter useful indicator.

Propensity to Cycle Tool

The Propensity to Cycle Tool (PCT) is a tool designed to assist transport planners to focus investment into promotion of cycling and was initially funded by the English Department for Transport and partly by the Welsh Government which funded the extension to Wales in 2018. In modelling route-based baseline propensity to cycle, the tool focuses on two characteristics, distance and hilliness, as both are strong predictors of the probability of cycling a trip. In doing so the PCT offers a good indication of where cycling is happening currently as well as where it is likely to grow in demand.

While data for the study area is based on the 2011 UK Census and for this rural area is not very strong, the tool is particularly beneficial for this study when looking at future scenarios for cycling e.g. the potential impact of electric cycles (ebikes).

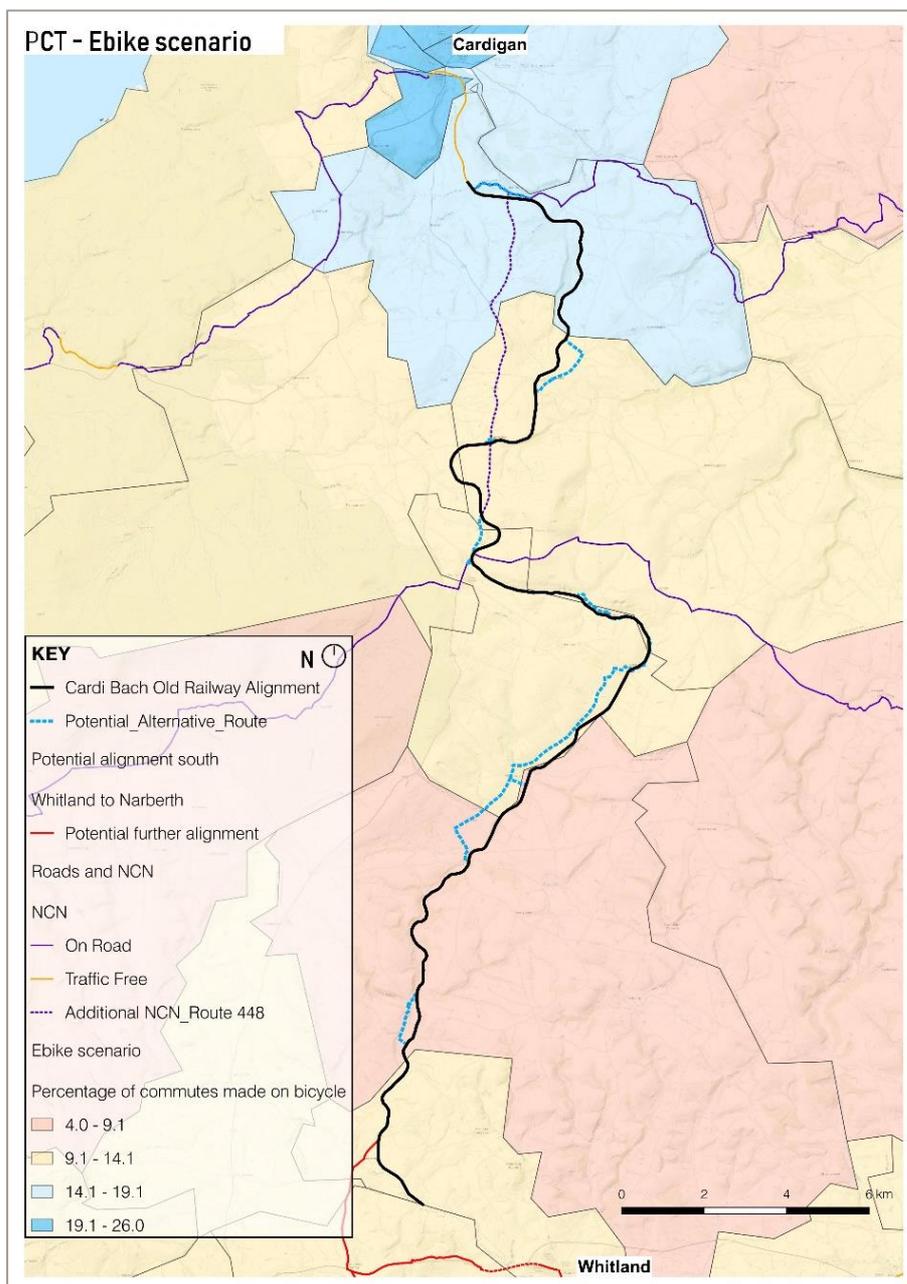


Figure 23: Propensity to Cycle Tool, Ebike Scenario for Study Area

With the study area we are looking at a very hilly landscape which is one of the main reasons why cycling is not the first choice of travel. The ebikes scenario models the additional increase in cycling that would be achieved through the widespread uptake of ebikes, adapted to the census 2011 numbers on English and Welsh commuters.

The PCT allows a closer look at different sections of the Cardi Bach route as shown in the table below. Especially around the more urban ends of the Cardi Bach route to the North and South there is a potential that cyclists could make up to 15% of commuters.

Table 2: PCT Cyclists along Cardi Bach Route: Ebike Scenario

Route section	Cyclists 2011 baseline	Percentage of all commuters in area	Cyclists ebike scenario	Potential percentage of all commuters in area
Cardigan to north of Boncath	7	1%	112	15%
Boncath to south of Blaenffos	1	0,2%	46	10%
Crymych to Glandwr	3	1%	62	13%
Llanglydwen to Login	2	0,3%	50	7%
Llanfallteg to Whitland	10	1%	128	14%

Source: <https://www.pct.bike/> Ebike scenario, commuting layer, LSOA

The tool's creators acknowledge certain limitations associated with the tool and state that it should be used as a support tool in conjunction with local knowledge/conditions. The PCT tool can therefore be used in assisting justification of specific routes, in combination with feedback from future stakeholder/public engagement sessions, site visits and additional desktop study findings.²²

Signage

The route needs to be sufficiently well signed so that it is easy to follow in both directions. A balance should be struck between providing clear and reliable information, avoiding visual clutter and unnecessary maintenance liability that excessive signing can cause.

Care is needed when considering their design and placement. Cycle specific route signing raises awareness of cyclists amongst other road users and helps to promote the route. Depending on the extent of equestrians having access to the route and on whether the route will be designed as a multi user path (MUP), signs encouraging shared use and mutual respect within users can be particularly useful.

The Welsh Governments Active Travel Design Guidance document on Signage (Section 8.10) design gives a good overview on the key principles that should be considered for cycle signing and wayfinding (and are just as valid for routes that are not active travel routes):

²² More info on the Propensity to Cycle Tool through the website: www.pct.bike
PCT User Manual: <https://npct.github.io/pct-shiny/regions> www/www/static/03a_manual/pct-bike-eng-user-manual-a.pdf

- **Minimising signing:** The potential to improve the clarity and safety of a route through improved design rather than extra signs;
- **Minimising clutter:** The use of signing which minimizes street clutter through appropriate scale, good location and integration with existing street furniture;
- **Signing coherence:** The importance of coherent and consistent signing over a whole network and along a particular route;
- **Maintenance:** Minimise the need and cost of future maintenance to ensure that safety and wayfinding remain of a high quality in the long term; and
- **Value of signing:** Good signing should enable cyclists to locate themselves and the intended destination through use of strategic and local destination signing to include key facilities.

Besides wayfinding, a good signage strategy is also crucial for the promotion of the route for tourism and leisure (i.e. promoted trail signs, information boards on history and environment) and should be consistent throughout.

Route Promotion

To increase levels of use new routes must be promoted from the outset so as to maximise the benefits of the route from an early stage. Consideration should be made to develop a map for the new traffic-free multi-user route. This map could then be used throughout the scheme and be included in a route leaflet and on any associated information boards.



Figure 24: Example Lon Las Cefni. Route leaflet/ map and information board.

In addition routes can be promoted through Council websites and via tracking phone app such as Viewranger for very little cost and they are very easy to change as the route develops. Here is an example of something that could be easily produced for the Cardi Bach with very limited information: <https://my.viewranger.com/route/details/Mjk5Nzc2NA==>

This is an example of a more developed site from the Brecon Beacons National Park, for their across the Beacons route: <https://my.viewranger.com/route/details/ODYxNDE=>

4 Ecology

Ecology should be considered early in the design process especially with regards to European protected species. As the route develops a detailed desktop survey should be carried out to ensure that the proposed route does not pass through or near a designated area.

The map below shows the alignment of the railway in relation to designated sites such as Sites of Special Scientific Interest (SSSI), showing two areas of spatial constraints:

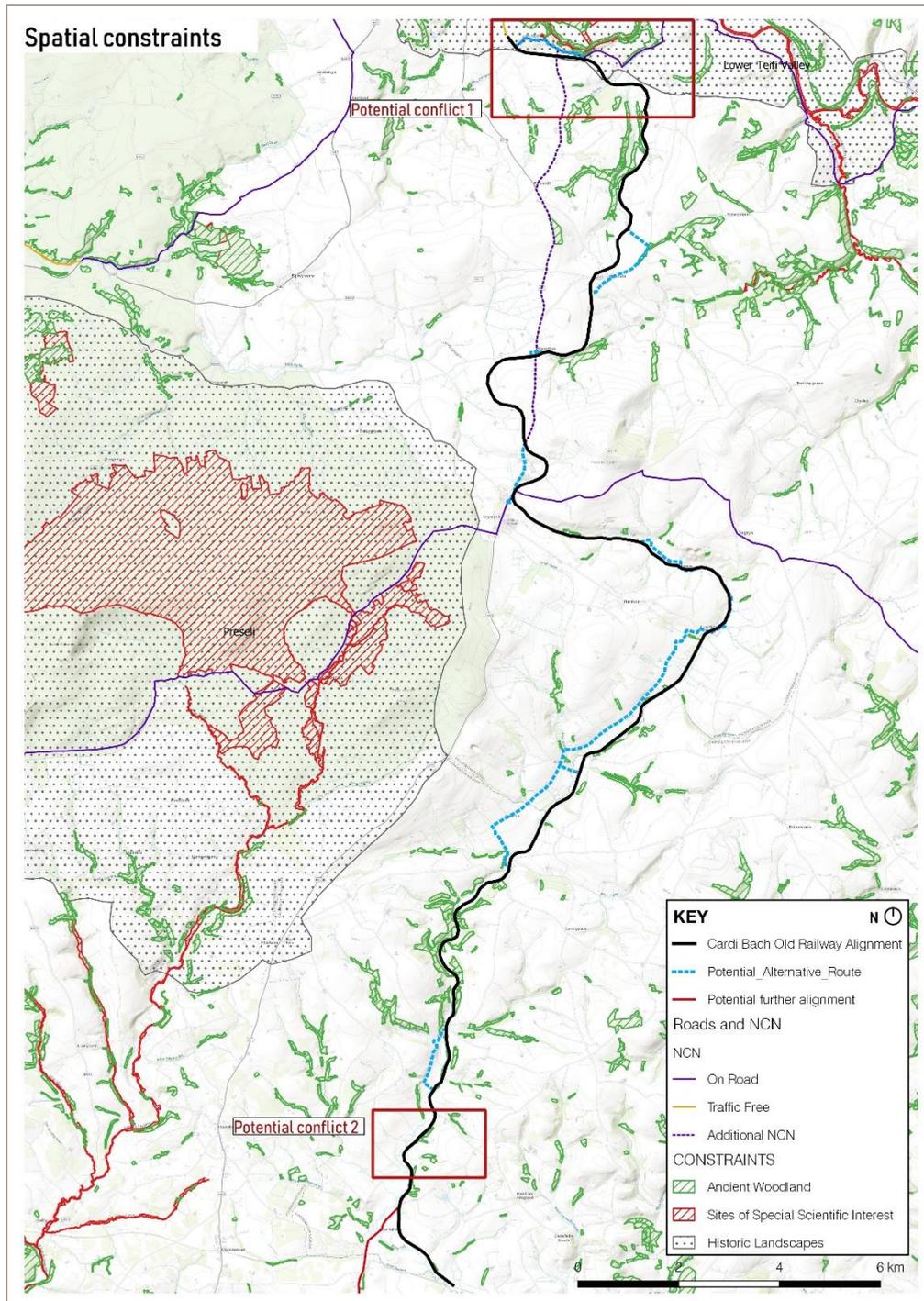


Figure 25: Overview map of spatial constraints/ SSSI

The northern section of the route enters into Lower Teifi Valley, which is part of a vast historic landscape. The cycle path through the Lower Teifi Valley has already been built and therefore may not be an issue. But it should be kept in mind when developing the route further and when especially when developing a signage strategy.²³

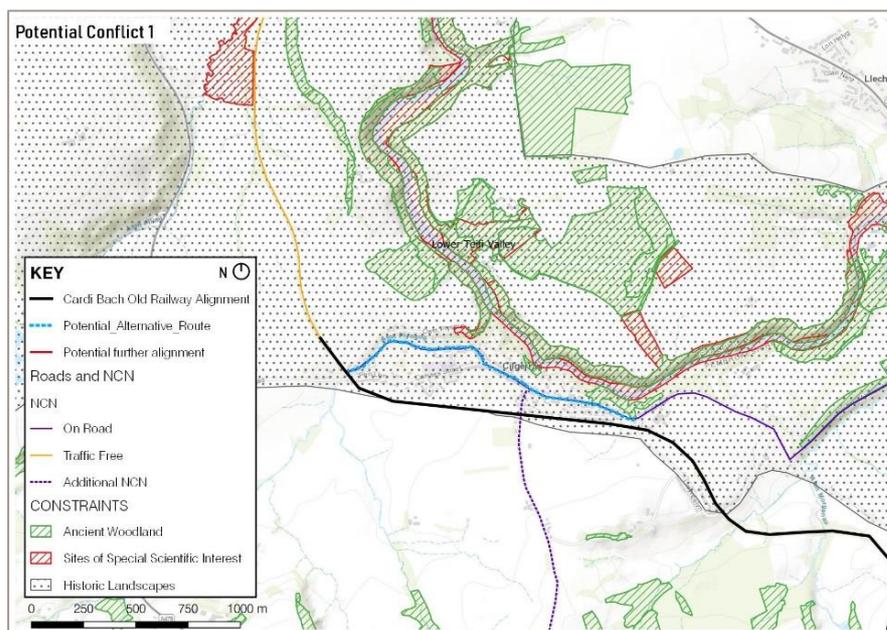


Figure 26: Spatial Constraints Northern Section of Route, Lower Teifi Valley

On the southern section of the route we are looking at a relatively small piece of land, Llanfallteg Track Section, which is listed as a Site of Special Scientific Interest (SSSI) (Code 32WFV, Type: Geological).

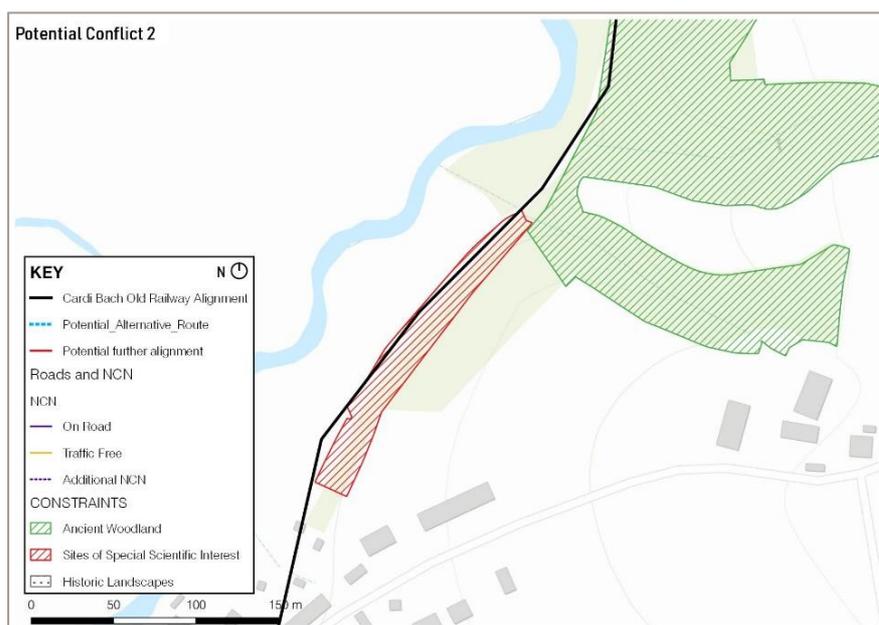


Figure 27: Spatial Constraints Southern Section of Route, Llanfallteg Track Section

²³ Useful links on the Lower Teifi Valley:

- 1 <http://www.dyfedarchaeology.org.uk/HLC/lowerteifivalley/lowerteifivalleyarea.htm>
- 2 <https://naturalresources.wales/media/682631/nlca40-teifi-valley-description.pdf>

5 SWOT Analysis

A SWOT analysis, using data gained via the combination of desktop study and local knowledge was completed to understand the strengths, weaknesses, opportunities and threats of the study area.

Strengths

- Attractive landscape
- Rich history and heritage along the route
- Existing alignment prerequisite for traffic free route
- Safe environment for users of all abilities
- Good links to existing PROW and bridleways
- Manageable gradients in an otherwise very hilly, remote area
- Links with 3 existing NCN routes
- Connecting isolated rural communities and providing linkages and access to public transport.
- Opportunities for sustainable transport
- Active local community from Llanfallteg north
- Number of attractions along the way – villages, churches, pub, castle, standing stones and a burial chamber

Weaknesses

- Many landowners and not much land owned by LAs
- Low population density (route would be used mostly by seasonal visitors)
- Old track beds make good agricultural access roads so owner potentially reluctant to give them up or share
- Difficult to connect to Whitland (and rail station) and beyond to Carmarthen
- Route hidden in trees/ not much variety

Opportunities

- Improving local economy through tourism
- Promoting healthy and sustainable transport
- Improving links and connectivity between quite isolated local communities
- Attractive addition to NCN network, connecting north and south coasts of Pembrokeshire
- Bridges and embankments are largely still in place
- Reduced costs in surfacing/making it flat due to pre-existing ballast underneath old tracks
- Good off-road alternative for children, especially from Llanfyrnach going to school in Crymych
- Boost foot/cycle traffic to Pen Y Bont Inn
- Potential to connect Whitland through to Carmarthen
- Alternative route to Coastal Path

Threats

- Difficult landownership: In a few cases alignment splits parcels through the middle (difficult negotiations to be expected)
- Key section (Login to Llanglydwen) may have strong opposition from landowner > no real alternatives as they are all too steep
- High cost project, with seasonal use (i.e. predominantly during summer)
- Proximity to watercourses in some areas may lead to drainage issues
- Long process due to high cost
- Ecology constraints

6 Policy Context

Welsh Policy

Wales has positioned decarbonisation at the forefront of its devolved legislative and policy commitments and plan for economic growth. Through numerous pieces of policy, it highlights the impact of active transport infrastructure and benefits of walking and cycling, particularly over shorter journeys.

Welsh Government predominantly puts weight on Active Travel, as shorter utility trips, typically to work or school, and has required local authorities to map out routes within Designated Localities. These Designated Localities represent locations, principally urban in character, where greatest impact will be made through a shift to walking and cycling.

Although Active Travel as prescribed by Welsh policy broadly excludes rural routes, growth for rural Wales is a key commitment for Welsh Government. The context of the *Cardi Bach* providing links between communities, and communities to educational and workplace locations, provide the potential for funding opportunities that should be explored.

Within the context of rural Wales, the tourism economy may also provide a number of funding opportunities.

Some key pieces of Welsh policy include:

Active Travel (Wales) Act 2013

The Active Travel (Wales) Act 2013 requires Welsh ministers and local authorities, in the performance of certain functions under the Highways Act 1980, to take reasonable steps to enhance the provision made for walkers and cyclists.

The Active Travel Act focuses on walking and cycling as a mode of transport, i.e. for purposeful journeys. Purely recreational walking and cycling were not covered by the Act. It gave the Welsh Ministers the powers to issue guidance on the location, nature and condition of active travel routes and facilities to ensure they are suitable to use.

The Act requires local authorities in Wales to produce active travel maps and deliver year on year improvements in active travel routes and facilities.

For the purposes of this Act, a route in a local authority's area is an active travel route if it is situated in a designated locality, and the local authority considers that it is appropriate for it to be regarded as an active travel route.

The emerging guidance states the following with regards to routes that fall outside of designated localities:

*“This mechanism is not intended to be an obstacle to the creation of integrated networks of active travel routes that would connect people to destinations in **adjacent areas** beyond the boundary of the designated area. If the local authority's assessment of demand for active travel journeys indicates that a route to places outside of designated localities will attract users, the routes should be included in the authority's Active Travel Network Map and assessed for prioritisation. These routes have the same eligibility for funding as routes entirely within a designated settlement.”*

Routes that fall outside, but are adjacent to designated localities, are eligible for Active Travel Funding. However, they would need to be assessed in the way that all other Active Travel routes are assessed in terms of Case for Change, Impact etc.

Although Cardi Bach serves a number of settlements with schools and various employment sites along its length, only the final northern segment (National Cycle Network Route 82), entering Cardigan, is situated either directly in or serving a designated locality (Cardigan).

To the South, Whitland is located between Narberth and St Clears, 8 and 6 miles respectively, both of which are designated localities, with Crymych approximately 10 miles north of Whitland. With reasonable infrastructure provision, it could be expected that a number of utility trips would be generated between these settlements and the various employment sites relating to them. This report has considered the propensity for this route to generate Active Travel trips considering the location of settlements and using the Propensity to Cycle Tool. Although it is clear that there are a number of opportunities, volumes of trips generated are likely to be low. Opportunities for funding purely as an Active Travel route may therefore be limited under current guidance and alternative sources of funding may need to be explored to develop the active tourism aspect of the project.

Learner Travel Measure (Wales) 2008

This sets out that local authorities have a duty to risk assess routes to school, including walked routes. The Learner Travel Measure (2008) sets out criteria for assessing whether a walking route from a pupil's home to their school is "available". The criteria used are specific to the Measure and are employed solely for determining the effective length of the shortest available route. They are not a factor in the assessment of active travel routes. Routes to school assessed under the Learner Travel Measure that do not meet the Design Guidance standards, should be considered for inclusion in the Active Travel Network Map as future routes with a view to their improvement.

Given that Cardi Bach is not in a designated settlement, it is unlikely that any of the available routes between settlements and schools will be put forward for inclusion within the Active Travel Network Map. However, there may be a reasonable case for acquiring funding for specific links through Safe Routes in Communities.

Well-being of Future Generations Act 2015

In 2015 Wales passed the Well-being of Future Generations Act to enshrine Wales' commitment to sustainable development in law. The Act applies to all devolved public bodies in Wales including Welsh Government and all local authorities.

The Act puts in place 7 well-being goals:

- A prosperous Wales;
- A resilient Wales;
- A healthier Wales;
- A more equal Wales;
- A Wales of cohesive communities;
- A Wales of vibrant culture and thriving Welsh Language; and
- A globally responsible Wales.

In order to demonstrate they have met the principle of sustainable development, the Act requires the public body to show they have embedded 5 specific ways of working:

- Long term;
- Prevention;
- Integration;
- Collaboration; and
- Involvement.

Active Travel can contribute to all the goals of the Well-being of Future Generations Act. This scheme could be considered to do so by: contributing to prosperity, through positive impacts on health and reduction of vehicle flows. Resilience through the reduction of carbon emissions. Health through an increase in activity. Equality through more affordable and accessible forms of transport. Walking and cycling are likely to increase levels of social activity within our urban environment, allowing more people access to cultural activities, and reducing the impact of climate change.

[An Active Travel Action Plan for Wales, 2017](#)

The Active Travel Action Plan for Wales sets out the actions Welsh Government will take to meet its aspirations for walking and cycling in Wales.

The action plan introduces a vision that aims to achieve “For people in Wales, we want walking and cycling to become the preferred ways of getting around over shorter distances.” The plan acknowledges that opportunities for travelling via foot or by cycle vary greatly between rural and urban areas. The plan emphasises the weight that compliance with Active Travel Design Guidance has, listing a number of funding mechanisms available through the Welsh Government, dependent on achieving compliance with design standards. These include Safe Routes in Communities, the Local Transport Fund and Road Safety Grant. The plan also puts weight on the opportunity for developer contributions to funding.

[Prosperity for All: A Low Carbon Wales, 2019](#)

This Plan sets out the Welsh Government’s approach to cut emissions and increase efficiency in a way that maximises wider benefits for Wales, ensuring a fairer and healthier society. It establishes Wales statutory duty under the Environment (Wales) Act 2016, to reduce greenhouse gas emissions in Wales by at least 80% by 2050, and positions this in the context of other key pieces of policy such as Well-being of Future Generations Act 2015. It sets out 100 policies and proposals that directly reduce emissions and support the growth of the low carbon economy.

Policy 46 aims to increase Active Travel. It states that Active Travel should become the preferred ways of getting around over shorter distances, highlighting Welsh Government commitment through existing funding mechanisms such as Safe Routes in Communities, the Local Transport Fund, and the Active Journeys and Eco-schools programmes.

[Prosperity for All: Economic Action Plan \(2017\)](#)

The Plan sets out a vision for inclusive growth, built on strong foundations, supercharged industries of the future and productive regions. The Plan drives the twin goals of growing the economy and reducing inequality. Setting out a reciprocal 'Economic Contract' between business and the Welsh Government to drive economic investment with a social purpose.

The Economic Contract will require businesses seeking investment from us to demonstrate all of the following as a minimum requirement:

- Growth potential (measured for example, by contribution to employment, productivity, or multiplier effects through the supply chain).
- Fair Work (as defined by the Fair Work Board).

Growth potential related to the Cardi Bach route and its potential to better connect settlements to employment and educational facilities may provide opportunities for funding.

The Wales Transport Strategy (2008)

This report will demonstrate how the proposed schemes will contribute towards the goals outlined in One Wales: Connecting the Nation, The Wales Transport Strategy, describing a number of long-term outcomes and strategic priorities:

Social

- a. Improve access to healthcare
- b. Improve access to education, training and lifelong learning
- c. Encourage healthy lifestyles
- d. Improve the actual and perceived safety of travel

Economic

- e. Improve access to employment opportunities
- f. Improve connectivity within Wales and internationally
- g. Improve the efficient, reliable and sustainable movement of people
- h. Improve the efficient, reliable and sustainable movement of freight
- i. Improve access to visitor attractions

Environmental

- j. Increase the use of more sustainable materials
- k. Reduce the contributing of transport to greenhouse gas emissions
- l. Adapt to the impacts of climate change
- m. Reduce the contribution of transport to air pollution and other harmful emissions
- n. Improve the impact of transport on the local environment
- o. Improve the impact of transport on our heritage
- p. Improve the impact of transport on biodiversity

Strategic Priorities to focus work

- q. Reducing greenhouse gas emissions and other environmental impacts;
- r. Integrating local transport;
- s. Improving access between key settlements and sites;
- t. Enhancing international connectivity; and
- u. Increasing safety and security.

The Welsh Government Strategy for Tourism 2013 to 2020: Partnership for Growth

In 2013 the Welsh Government published a national strategy for tourism. The strategy outlines the following vision, goal and ambition:

- **Vision:** “Wales will provide the warmest of welcomes, outstanding quality, excellent value for money and memorable, authentic experiences to every visitor.”
- **Goal:** “Tourism to grow in a sustainable way and to make an increasing contribution to the economic, social and environmental well-being of Wales.”
- **Ambition:** “Grow tourism earnings in Wales by 10% or more by 2020.”

7 Design Principles

The Welsh Government outline a number of principles to adhere to when applying for route funding to ensure that impacts are realised across Wales, these include:

- Develop your proposals using the five ways of working, collaborating with key stakeholders and involving communities.
- Facilitate independent walking, cycling and wheeling for everyone, including an unaccompanied child of secondary school age or a less-experienced cyclist;
- Design infrastructure that seeks to exceed, rather than just meet, minimum design standards;
- Ensure access for all and equality of opportunity in public space;
- Ensure all proposals are developed in a way that is evidence-led;
- Schemes should prioritise people walking, cycling and wheeling over private motor vehicles by considering the following hierarchy during scheme design:
 - + Separation of pedestrians from cyclists and motor traffic through provision of segregated off-carriageway infrastructure; if necessary through reallocation of road space
 - + Separation of pedestrians and cyclists from motor traffic through the provision of shared-use off-carriageway infrastructure;
 - + Improve on-road conditions to encourage an increase in cycle use within existing highway, for example by reducing traffic volumes and speeds.

When looking at design principals a basic decision needs to be made on how inclusive the overall route will be and to what extent horses will be allowed on the route as well. Paths with no separation can function well with minimal conflict occurring. But this is dependent on users being provided with enough width. Providing enough width enables users to interact in a manner that does not detract from their quality of experience.

The British Horse society advocates wide paths, if narrow with passing places, and strongly advocates promotion of sharing and tolerance between all users, i.e. through good signage./ “Share with Care” signs. Potential conflict may be avoided by “educating all users and promoting understanding and tolerance by shared use on all routes”.²⁴

Details on design specific to the Cardi Bach route would have to be part of an additional and more extensive study.

²⁴ BHS leaflet: Advice on Non-motorised user routes in England and Wales, www.bhs.org.uk/~media/documents/access/access-leaflets

8 Future Maintenance

A route that is kept in good condition will be more useful, attractive and popular than one allowed to deteriorate. It will promote walking cycling and equestrian use. Maintenance can sometimes seem like an afterthought compared to designing and building new routes, but having invested time and money by building the route, it is important that it remains attractive to users.

Thinking about who will use the route – will horses ride along it, will tractors cross it, how will maintenance vehicles access the path and turn? Pedestrians and cyclists don't normally cause a great deal of wear and tear. It is often other vehicles and the weather that have more of an impact on the condition of the path.

Maintenance should be considered as part of the route development process long before construction starts. A thoughtful design will mean less maintenance in the future. For this route number of different surfaces may be required to cater for the various users.

A question often asked by funders is how will you maintain the investment they are making? Sometimes money can be put aside from the capital source into a separate fund for future maintenance. Irrespective of what the ultimate arrangement will be, it is essential that the project team has agreed the future maintenance arrangements early in the project's development.

An option for some aspects of maintenance could be led by local communities, such as checking signing, collecting litter and cutting back vegetation on traffic-free sections of the route. A remarkable number of route sections of the NCN are looked after by Sustrans volunteers. In Carmarthenshire we work with a very engaged Sustrans volunteer group and we do have volunteer contacts for Pembrokeshire and Ceredigion. A new project like Cardi Bach might be a good option to get more volunteers involved and we could look into recruiting more volunteers from local communities once funding is in place. Ideally volunteers should be brought on board as early as possible in delivery of a new route.

9 Costs and Funding

Costs

Costs are very hard to estimate at this stage. However on more detailed feasibility studies the start estimate for construction is £150,000 per km. This would cover a very basic tarmac path 2.5m wide on a base (such as an old railway line) that needed very little additional work. Added to this then would be significant other works such as replacing bridges, repairing existing bridges, access points and earth works. Many of these additional works are currently unknown and we will be able to give more information on detailed design and costs once the route audit has been done. Further it needs to be mentioned that the costs are for construction only and an allowance will need to be made for design, project management, and contingency.

As said, ideally the route should, wherever possible, be planned as a multiuser path and being accessible for all – walkers, cyclists, people with disabilities and equestrians. Even though it needs to be considered that a multiuser path comes with an increase of costs for construction and future maintenance and should be kept in mind when applying for funding.

Funding

As has been highlighted in the sections on trip attractors and on the Propensity to Cycle Tool it appears that the settlements along the route are relatively small and the number of potential users of the route is expected to remain relatively low. However there still may be potential for funding opportunities through the Active Travel Fund given that the route connects two larger towns in the area with Cardigan itself being a designated settlement.

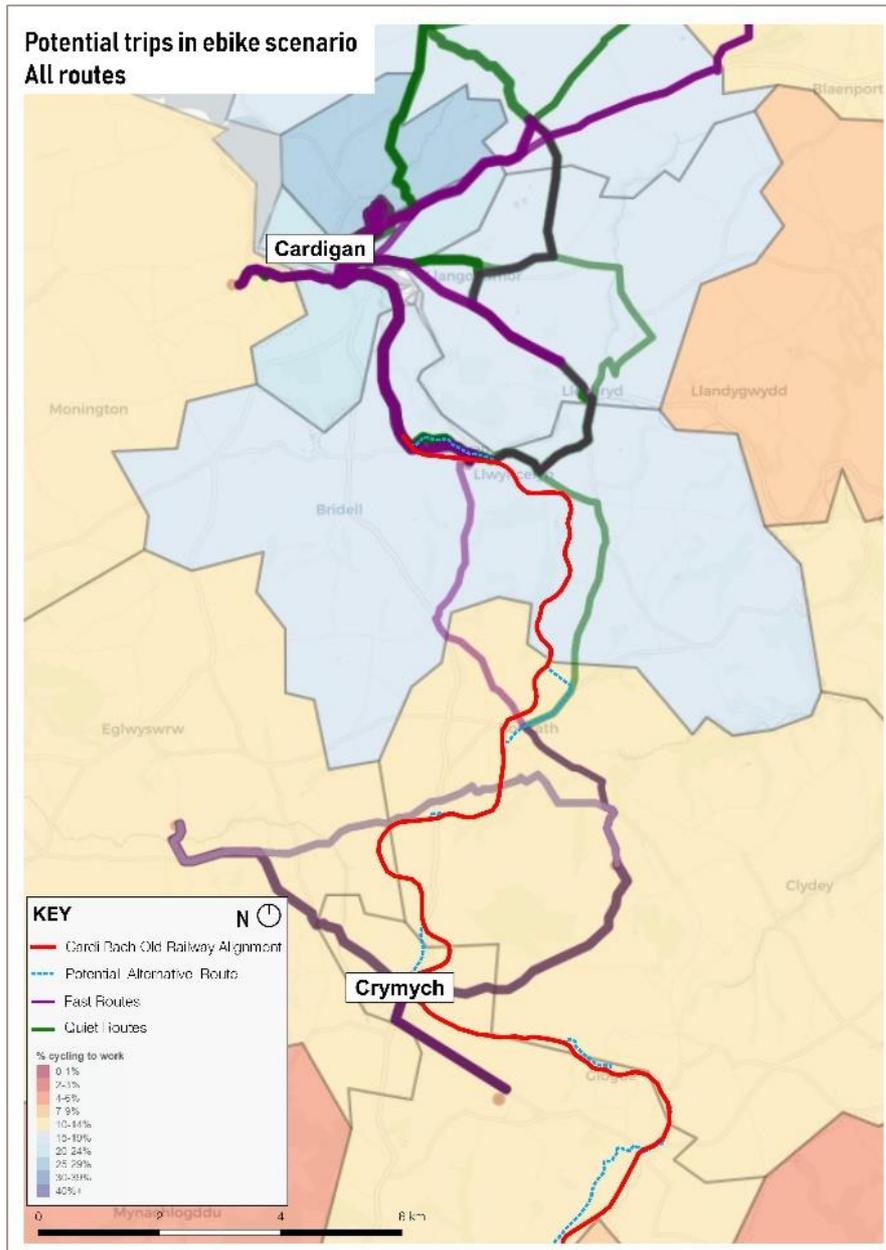


Figure 28: PCT, Ebike Scenario, Potential Trips on Fast and Quiet Routes

The distance between the two significant settlements Cardigan to Whitland is approx. 37.5 km and it could be considered that a number of people might cycle sections of the route as part of their commute. Exploring this scenario using the PCT though doesn't show any trips between the major settlements (Whitland, Crymych, Cardigan), simply because the overall distance between these settlements is too large. But when applying the ebike scenario tool it does show trips between smaller settlements which add up to a potential use of almost 400 trips daily. According to the PCT

the highest potential lies in the northern half of the route, connecting the settlements around Crymych with Cilgerran and further on to Cardigan.

However, given the route itself does not fall in designated settlements and given that we are looking at increasing but still low numbers of potential trips on the route, it would not provide a particularly strong case for AT funding.

It appears that we are looking at a leisure route and that funding applications for a leisure route will be more likely to be successful.

Welsh Government Regional Funding

WG Regional funding is going to replace EU funds with a new regional investment framework for Wales, fully integrated with Welsh legislation and policy, in particular the Well-being of Future Generations Act and the Economic Action Plan. This is still being consulted on at the moment but the framework is expected to become effective in 2023 and should be kept in mind, with Cardi Bach being rather a long term project.

National Lottery Heritage Fund

The National Lottery Heritage Fund can fund sizeable bids but it would need a strong link to either community heritage around Cardi Bach or a strong focus on the industrial heritage of the area and the importance to preserve the history of transport and rail of Cardi Bach for future generations.

NRW Enabling Natural Resources in Wales (ENRaW)

Funding through ENRaW has a strong emphasis on Greenways and wildlife corridors, supporting health outcomes through access to green space and nature. Whilst this funding might be too limited for extensive section of the Cardi Bach route, it may be suitable for specific sections.

Safe Routes in Communities

Given that Cardi Bach is not primarily an Active Travel route, there may a reasonable case for acquiring funding through Safe Routes in Communities funding. Crucial for this funding would be to demonstrate that Cardi Bach is a strong case for bringing positive change to the local residents, that it fit with well-being objectives and that it contributes to improving Active Travel in the long term.

Welsh Government Transport funding

Furthermore, it may be possible to apply to other transport funding pots such and Local Transport Fund (LTF). It is understood that Carmarthen CC have applied to this fund to support construction of the Carmarthen to Llandeilo route and this may set an example that the Cardi Bach will be able to follow.

Funding linked to Tourism

Within the context of rural Wales, the tourism economy may also provide a number of funding opportunities. This is best developed through local community groups, tourism businesses or Local Authorities who may be eligible as capital funding is usually very restricted.

10 Summary

Although development of the Cardi Bach would have an impact of encouraging utility trips along parts of the route, connecting a number of isolated communities, this report concludes that the greater impact is likely to be as a leisure route.

The current cycling provision in the area, mainly consisting of the highways network. This is perceived as dangerous and all but the most experienced cyclists would be uncomfortable using it.²⁵

The landscape around the Cardi Bach route is hilly and not very appealing to the inexperienced cyclist. This makes the relatively flat route along the Cardi Bach appealing, and strengthening its potential as a route that would encourage use.

Although rural character of the route is indicative of a leisure route that is likely see use patterns increase during summer months, when considered using the Propensity to Cycle Tool under an e-bike scenario, some potential for utility type trips are highlighted.

Land ownership is likely to be a challenge, with most of the route running through private land. This includes a key section (Login to Llanglydwen) which may have strong opposition from the landowner. There aren't really any alternatives to this section as the surrounding area is very steep. In a few cases the route alignment splits parcels of land through the middle which may result in difficult negotiations with land owners.

Although there is some potential, the route will probably prove difficult to make a strong case for Active Travel funding. Funding as a leisure route might also prove difficult due to the low number of people who would benefit and the potential high cost of route development.

Despite the challenges highlighted, the route if developed would provide access through an area of natural beauty that would undoubtedly be appealing, would contribute to the local economy and provide potential to reduce car based journeys.

For this reason further work to enable development of the route should be considered and the route might be considered for inclusion as part of the Regional development strategies within Economic Development, Tourism and Sustainable Transport.

Recommendations

To keep the project moving forward the following steps are recommended.

- Look at developing a route that uses existing highways and rights of way as a way of promoting the route. At this stage this would be for more experienced cyclists.
- Explore funding options and start applications for funding, e.g. LTF funding. Carmarthen to give advice.
- Identify the best sections of route that could stand alone and that could be developed first at relatively low cost and with relatively low hurdles, e.g. on road sections that link into already existing traffic free routes around Cilgerran, to gauge user numbers and help to promote and

²⁵ Feedback from local residents as well as Sustrans staff originating from the area.

gain support for the overall route. This could be a way to link parts of the route with active travel funding.

- Gain a deeper understanding about the potential attractiveness of the route, e.g. through a combination of both a route user survey and an audit of the route by a surveyor as indicated in chapter 3.
- Engage with key stakeholders and residents in public engagement sessions. Organise briefing sessions to all community councils. Consider an initial article in the community council newsletters and/or local papers.
- Liaise and start negotiations with landowners.
- Commission an ecological desktop study to see if a full preliminary ecological appraisal is necessary to bypass and preclude possible ecological constraints.