
Grovesend to Pontarddulais Engineering Feasibility Report

December 2018



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1. Project Overview

Sustrans has been awarded RDP funding from the Welsh Government in order to deliver the “Development of the walking and cycling network in rural Wales project”. The project intends to support local authorities and local communities in filling in gaps in the National Cycle Network (NCN), to improve links between rural communities, local services and tourism destinations. The Pontarddlais to Grovesend project is one of eight identified gaps.

The Pontarddlais scheme has been identified and prioritised through feasibility and gaps analysis. The local authorities, tourism providers and community groups have been brought together to form a Stakeholder Group. Supported by BRO Partnership, Sustrans is working closely with this group to work through a detailed delivery plan taking the scheme forward to construction.

2. Scheme overview

As part of the delivery plan Sustrans has carried out an engineering feasibility study to develop a new multi-user route connecting Pontarddlais to Grovesend, using a traffic free route along a former railway alignment. Two options are then considered, the first continues along a former railway spur to link into the road network at a bridge over the live railway then utilising a proposed shared use alignment alongside a busy road. The second option links the former railway alignment to Pontarddlais via Allt-Y-Graban Road and a path through the former Colliery site. The study will also look at links through the built up area of Pontarddlais.

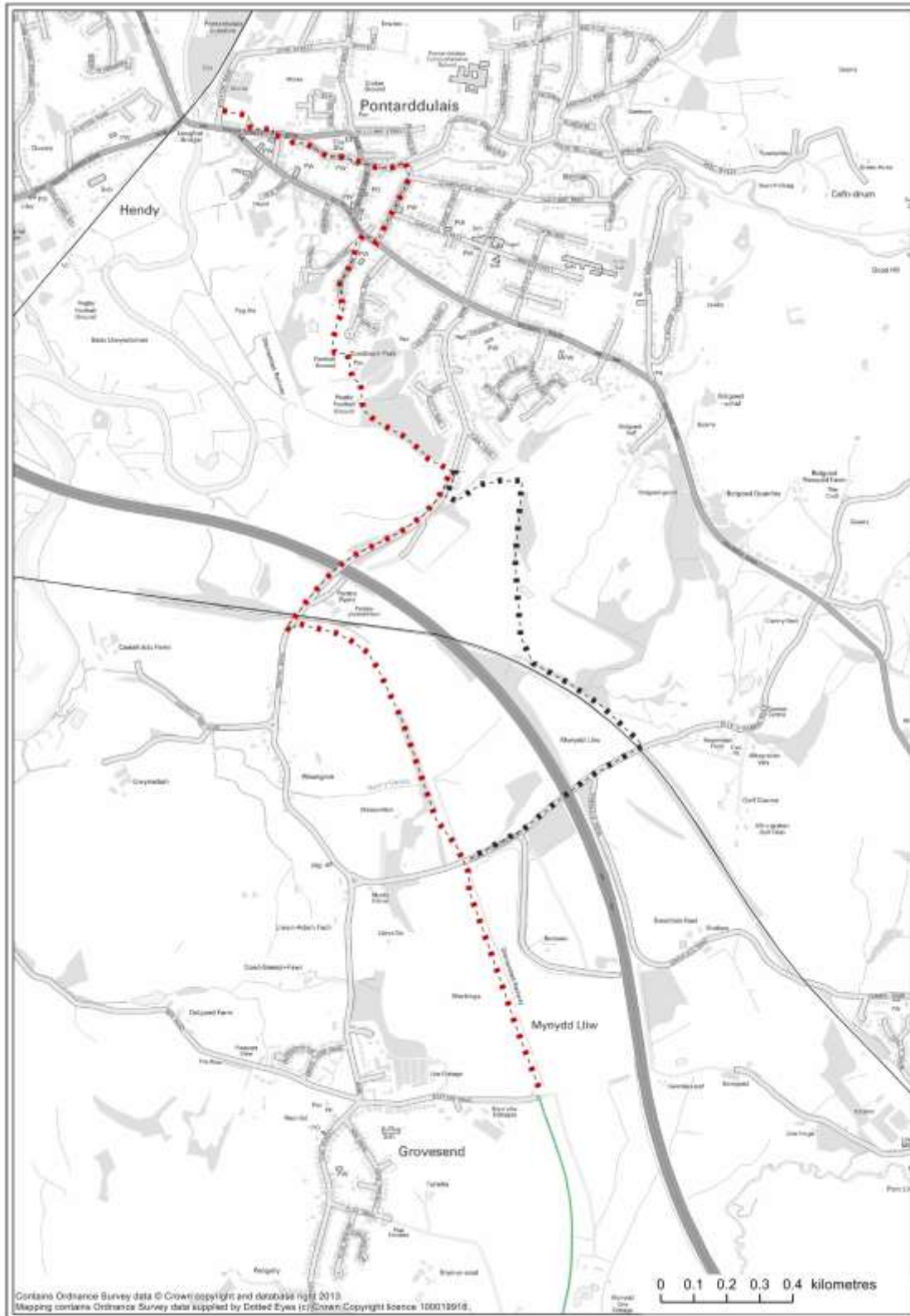
The project also links to the overall work that the City and County of Swansea is doing to develop a link from Gowerton and NCN 4 to Pontarddlais.

Stakeholder engagement identified a need for the following inputs:

- Provision of a surface suitable for all users (walking, cycling, horse riding)
- Path widening
- Reduced gradients
- Drainage solutions.

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Map 1 Proposed Grovesend to Pontarddulais alignment (Black dots indicate Option 2)

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The alignment has been divided into sections divided according to status, path surface and specific engineering challenges.

Former Railway Line Cutting

Option 1

Pentre Farm

Pentre Road Railway Bridge

Pentre Road Shared Use Path

Option 2

Allt-Y-Graban Road

Former Colliery Site

Short section of Pentre Road Shared Use Path

Coed Bach Park

Pontarddulais Town

Indicative costs

All indicative costs are from a Sustrans database of unit costs derived from schemes Sustrans has built. Design costs (15%), a contingency (20%) and a contractor's management (10%) have been added. Traffic Management, Land purchase costs and VAT are not included.

In carrying out this study the following core principles for ensuring cycle routes are of a high quality have been followed:

Coherence

Directness

Safety

Comfort

Attractiveness

Adaptability

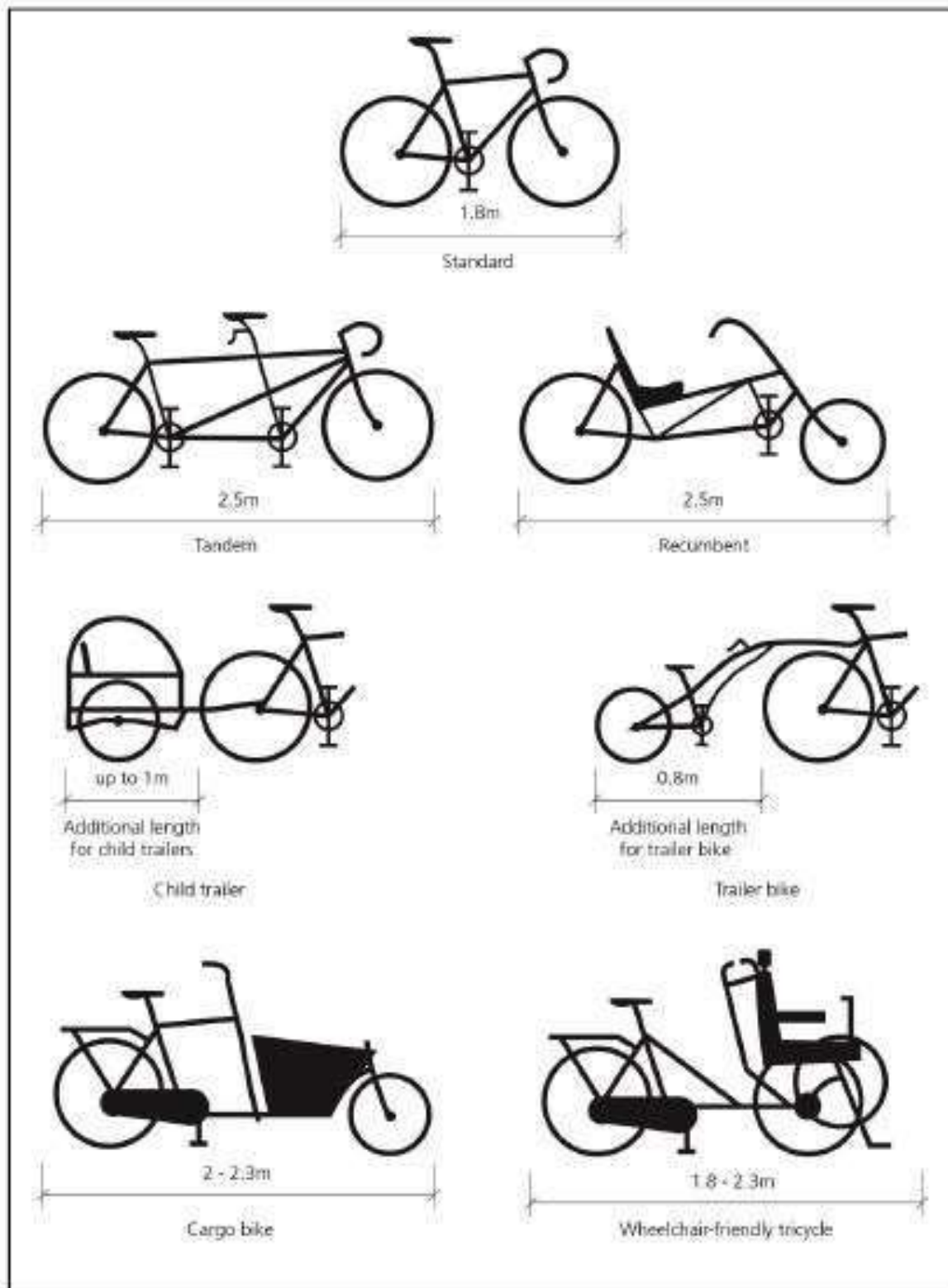
In line with current Highways England guidance, Interim Advice Note 195, the designs should take into consideration the variety of bicycle styles available. The longer term objectives of the route are to provide a high quality walking and cycling corridor between Pontarddulais and Grovesend.

Designers should therefore recognise that the style of bicycles may change during the course of the week. The diagram overleaf is taken from HE 195 and provides basic design sizes for a number of bicycle styles. Any control barriers installed along the route should reflect the dimensions indicate, however this report suggests that barrier controls are not installed from the outset, and that other options should be considered before installing them.

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Figure 2.1 Highways England IAN 195 Bicycle dimensions



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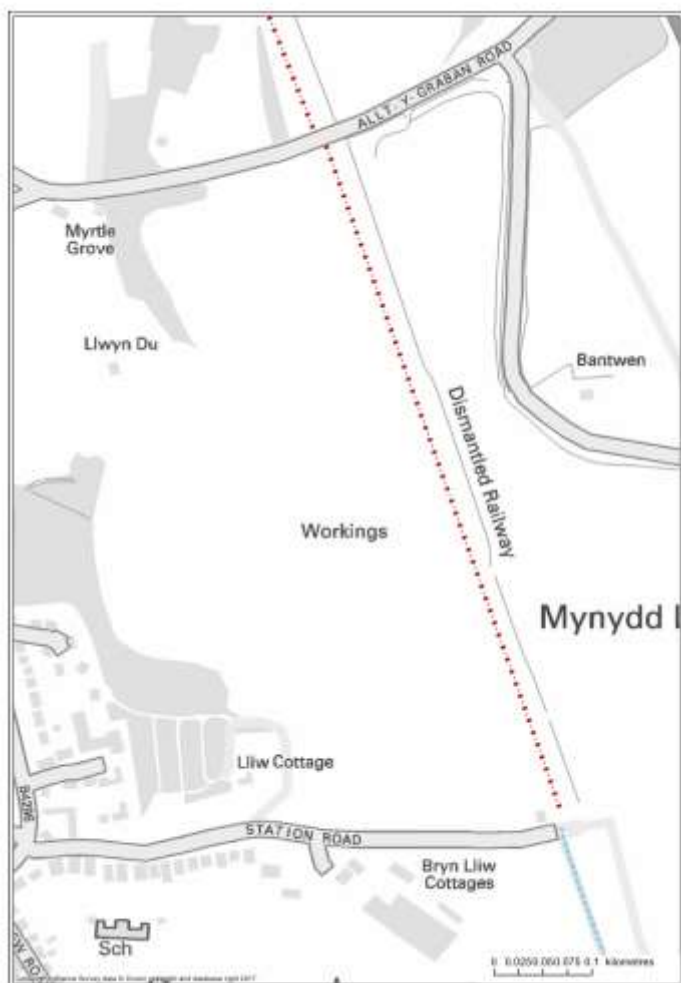
3. Alignment

3.1 Former Railway Line Cutting (750metres)

The railway cutting from Station Road, where the existing multi user path ends stretches north for 750m to a bridge over Allt-Y-Grabau Road. The former track bed in the base of the cutting is heavily overgrown and standing water forms for most of the year. Parallel with and to the west of the cutting a rough track marked as a bridleway (on British Horse Society maps) is clearly used by pedestrians and possibly cyclists. This land is designated common land and therefore any formal route through it would be classed as a reduction in common grazing land.

Therefore from Station Road there are two options for continuing the route. A path in the cutting following the former track bed or a path following the existing rough track parallel to the railway cutting.

Map 3.1 - Former Railway Line Cutting



Use of this rough track as a base for the multi user path would have advantages. The raised nature of the existing track in comparison to the track bed means that it is dryer and would therefore require less drainage provision, a reduced thickness of sub base and no need for timber edging. Savings would also be made in vegetation clearance. Ecological disruption would also be reduced as the cutting is home to ecologically sensitive plant and animal species (See separate ecology study for further details). However, the importance of common land status and the difficulties in building a path across it are a considerable hurdle to overcome.

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On the approach to Allt-Y-Graban Road the rough track heads west to link into the road. The multi user path alignment dips down onto the track bed to pass under the road bridge and continue north towards Pentre Farm.

Photo's 3.1 and 3.2 – Former railway line.



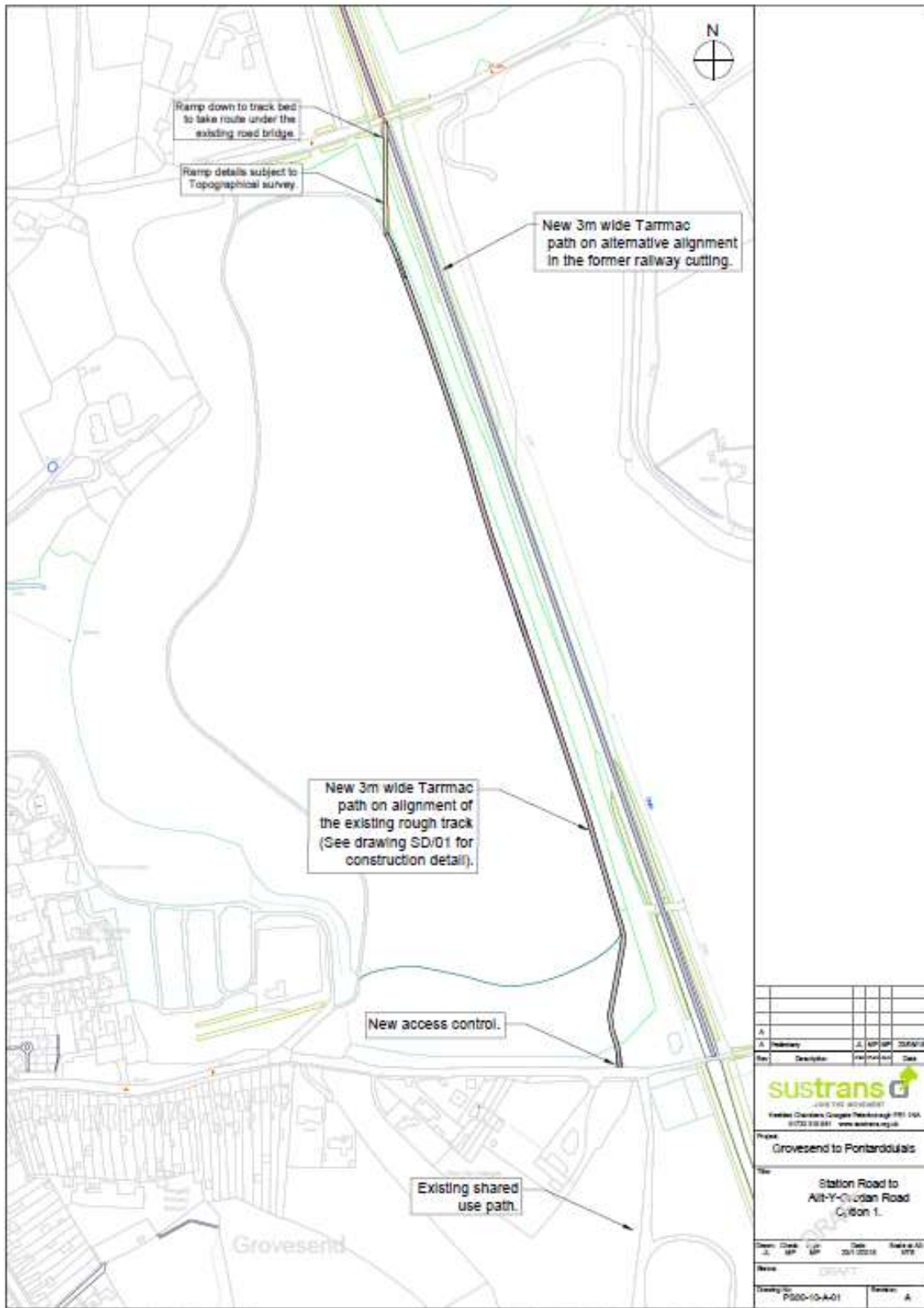
Cost Estimate

Location	Description	Estimate
A. Former railway alignment (Bridleway)	Vegetation clearance and new path construction	£160,900
B. Former railway alignment (path in cutting)	Vegetation clearance and new path construction (including an extra thickness of sub base and timber edging).	£255,000
Station Road and Allt-Y-Graban Road	Access points	£2,900
Station Road and Allt-Y-Graban Road	Direction signing	£2,200
Total (A)		£166,000
Total (B)		£260,000

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Drawing 3.1 – Former Railway Line Cutting



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3.2 Option One - Pentre Farm (950 metres)

From Allt-Y Graban Road the former railway alignment continues north to Pentre Farm rising to a heavily overgrown embankment. For this route section there is no possible parallel route with farm land bordering the railway. At Pentre Farm the railway alignment would previously have linked into the existing operational railway. The farm is provided with a cattle Creep under the live railway and a route would need to pass on top of this structure at the same time being far enough away from the live railway to satisfy Network Rail safety considerations.

Between the Cattle Creep and Pentre Road the land rises then falls away to leave a steep bank up to the road. A narrow rough track used by Network Rail staff provides access between the road and railway.

Map 3.2 - Pentre Farm



Subject to checks on the ecology present along this section of the former railway construction of a multi user path on the former track bed embankment should be more straight forward than the previous section due to better existing drainage. However, the costs included below use the same additional sub base costs and include timber fencing to ensure a robust estimate. On-going discussions with Network Rail indicate that it will be possible to agree a licence allowing a path to be constructed within their land, subject to the offset from the live rail being acceptable. The offset is critical in two points, the Cattle Creep and where the railway land narrows for a short distance.

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Access onto railway land was not possible during the site visit and therefore the distance between the live rail and the end of the Cattle Creep could not be measured. Should this distance not be sufficient to accommodate both the required offset and a multi user path (A minimum of 10 metres), then a new structure would be needed in front of the Cattle Creep potentially adding considerable cost to the project.

In order to address the level change from Pentre Road a corner of Pentre Farm land would be required to allow the construction of an access ramp. It is understood that the Council are considering the purchase of this land along with a further small section before the present owner retires in 18 months' time (The present owner has indicated support for the scheme and is prepared to sell the land).

Photo 3.1, 3.2, 3.3 and 3.4 – Path down from Pentre Road, Cattle Creep and views across the field from Pentre Road.



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Cost Estimate

Location	Description	Estimate
Former railway alignment around Pentre Farm	Path construction (including an extra thickness of sub base and timber edging), vegetation clearance and a ramp	£287,000
Pentre Road	Access control	£1,500
Pentre Road and Allt-Y-Graban Road	Signing	£1,500
Total		£290,000

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Drawing 3.2 – Pentre Farm Path.



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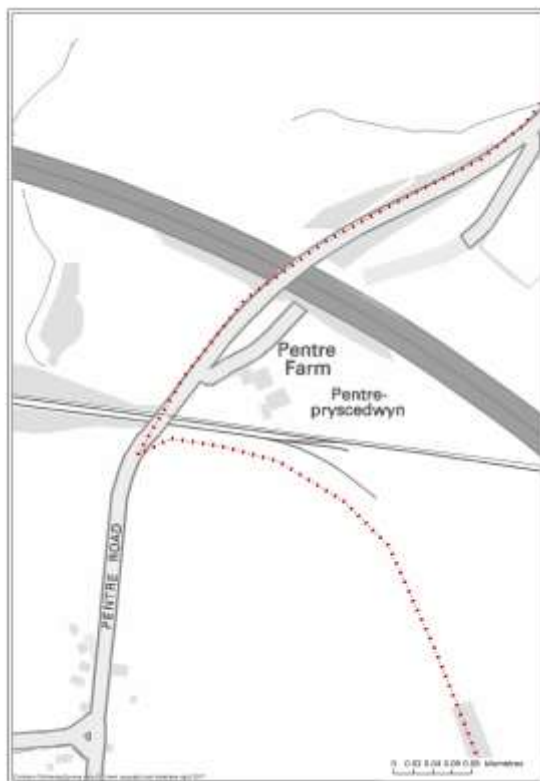
3.3 Option One - Railway Bridge (60 metres)

The existing bridge is approximately six metres wide without footways although footways are present on the west side of Pentre Road as far as the bridge parapets. Safety barriers are present on all four approaches to the bridge. There are three options to link the route from Pentre Farm to a shared use path alongside Pentre Road on the west side of the bridge:

1. The existing bridge is due to be replaced by Network Rail. A new bridge could be designed with a wider deck allowing the inclusion of facilities for pedestrians and cyclists. This is the best solution for the project although the timescales are not ideal, five years would be an optimistic estimate for the opening of a new bridge. This does not fit into the timescale for when the present owner of Pentre Farm will be moving on and therefore the required land would need to be purchased in advance of the new bridge being completed.
2. Build a new pedestrian and cycle bridge alongside the existing railway bridge. Technically this would be possible but would be expensive. Negotiating the required agreements with Network Rail would also be time consuming.
3. Introduce traffic signals and one way working on the bridge allowing a shared use path to be constructed in one of the former traffic lanes. Technically this should be achievable although the signals would need to be set back to avoid the existing safety barriers. However, Swansea City Council Officers expressed concern regarding this option during a site visit based on the delay that would be caused to traffic for low cycle flows.

The replacement bridge paid for by Network Rail is the cheapest option in terms of the project, if not ideal in terms of timescales. In the short term the traffic signals option on the existing bridge would be considerably cheaper than a new pedestrian cycle bridge should it be possible to change the Council's opinion.

Map 3.3 - Railway Bridge



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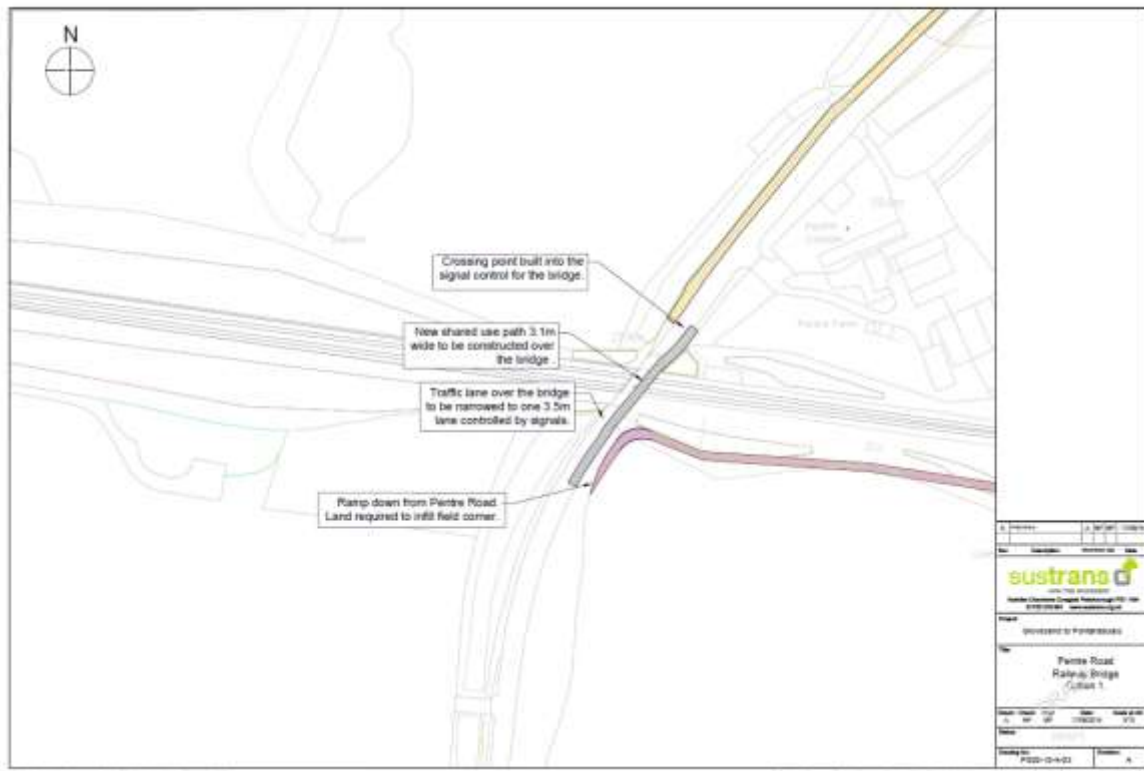
Photo's 3.5 and 3.6 – Railway Bridge Public Highway



Cost Estimate

Location	Description	Estimate
Pentre Road Railway Bridge	New Network Rail Bridge	No cost to the project?
Pentre Road Railway Bridge	New pedestrian and cycle bridge	£2,000,000
Pentre Road Railway Bridge	Signals and carriageway narrowing over the existing bridge.	£60,000

Drawing 3.3 – Pentre Road Bridge.



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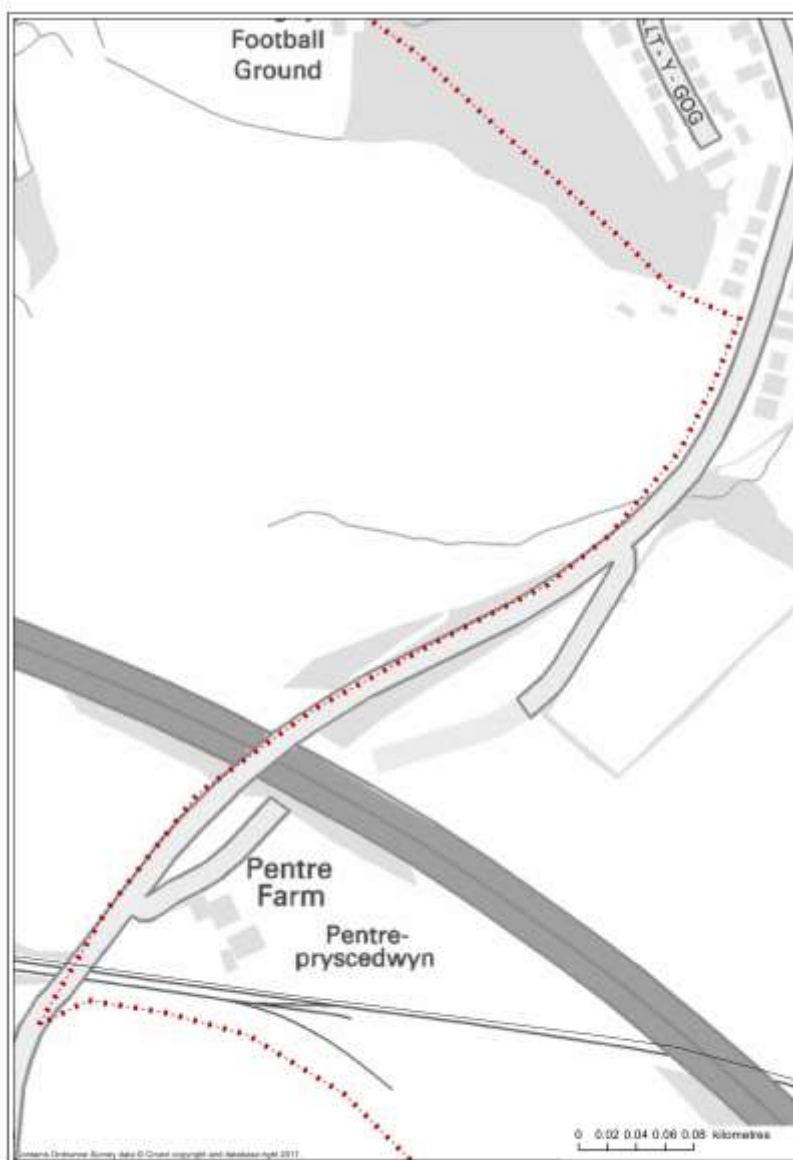


3.3 Option One - Pentre Road Shared Use Space (690 metres)

There is an existing narrow footway (approx. 1.2m) in the verge on the north western side of Pentre Road. At the bridge end this footway is in front of a safety barrier to protect vehicles from a steep bank. Between the railway and motorway bridge the path is for the most part set back from the edge of carriageway. Again, on the approach to the motorway bridge a safety barrier runs behind the footway limiting the available width to widen. The footways across the Motorway itself are a little over 2 metres in width with parapets below the required 1.4 metres. The south eastern verge has no footway but is wider in places than the northern verge.

There is a medium pressure gas main that crosses Pentre Road between the Railway and Motorway bridges. A high pressure gas main crosses the road further north within the built up area. Therefore, any works taking place within three metres of mains will need to be carried out with the permission and supervision of Wales and Western Utilities.

Map 3.4 - Pentre Road Shared Use Space



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Provision of a shared use path on the western verge could be achieved by widening the existing footway. However, a new path on the eastern side of Pentre Road would tie in with the appropriate side of the motorway bridge to widen the footway at the expense of the carriageway at this point. Further down Pentre Road this verge widens out and links into existing old road sections past the cemetery. A crossing of Pentre Road would be required to link the route into Coed Bach Park.

Photo's 3.7 and 3.8 – Pentre Road northbound views



Photo's 3.9 and 3.10 – Motorway bridge footway and high pressure gas main

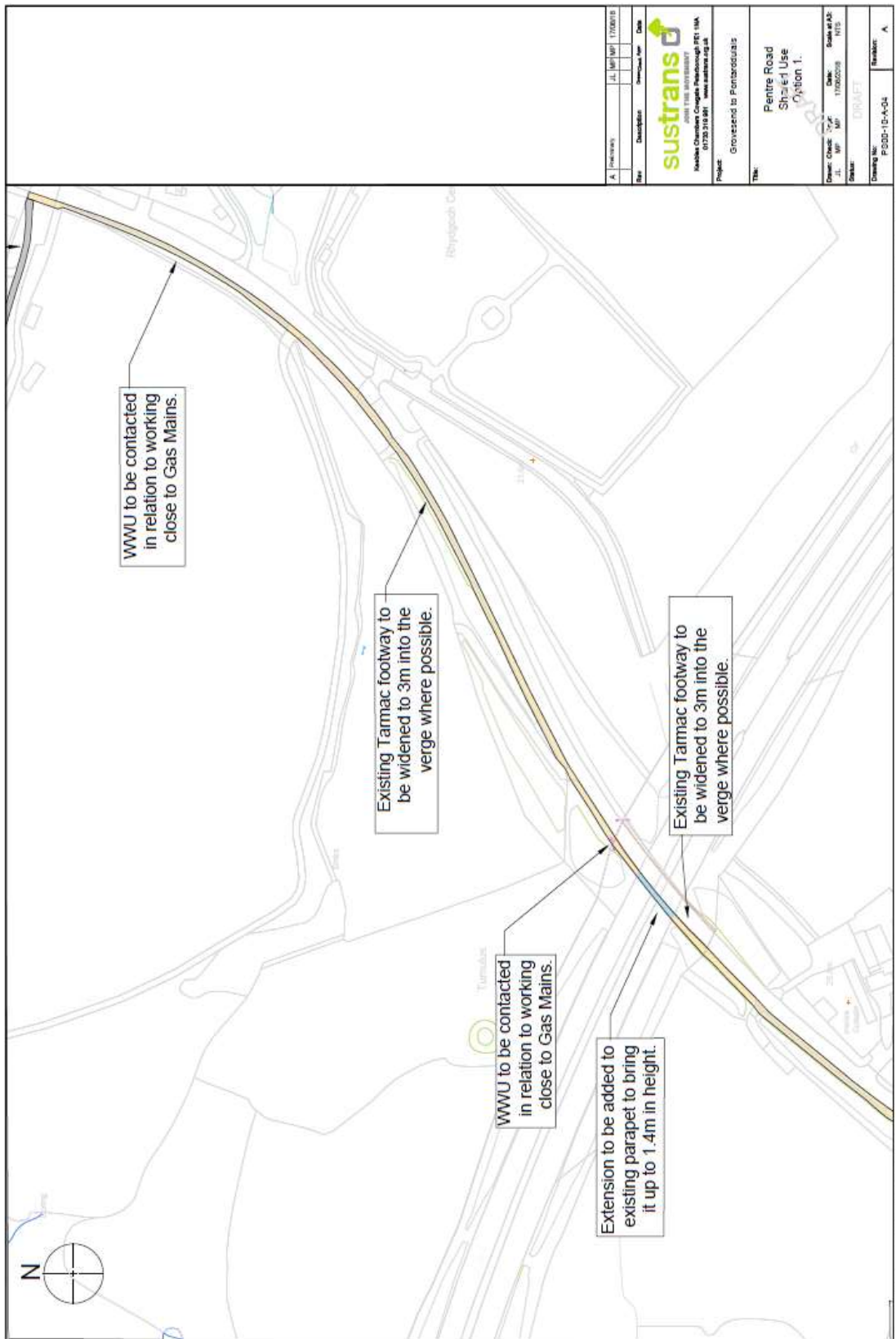


Cost Estimate

Location	Description	Estimate
Motorway Bridge	Widen footway into the carriageway. Add parapet extension.	£62,400
Pentre Road	Widen footway / new path construction	£34,800
Pentre Road	Access control and signing (direction and regulatory).	£4,000
Total		£101,200

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Drawing 3.4 – Pentre Road Shared Use.



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3.4 Option Two – Allt-Y-Graban Road (670 metres)

To link the path from the former railway alignment to the former Colliery site a connection along Allt-Y-Graban Road would be necessary. This road is subject to the national speed limit with narrow pinch points at the railway bridge and where the road goes under a motorway bridge. Allt-Y-Graban Road gives access between the A48 and B4296 Pentre Road. There are very few properties accessed from the road but significantly there is a Garden centre signed from both major roads.

Map 3.5 - Allt-Y-Graban Road



Given relatively low traffic flows it is considered that the existing carriageway, with some changes would be suitable as a route section. A reduction in the speed limit with appropriate gateways and traffic calming features should be installed.

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Photo's 3.11 and 3.12 – Allt-Y-Graban Road - National speed limit and Motorway Bridge



Cost Estimate

Location	Description	Estimate
Allt-Y-Graban Road	Gateway features and traffic calming	£26,100
Allt-Y-Graban Road	Cycle activated warning signs	£21,750
Allt-Y-Graban Road	Signing	£2,900
Total		£50,750

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3.5 Option Two – Former Colliery Site (1350 metres)

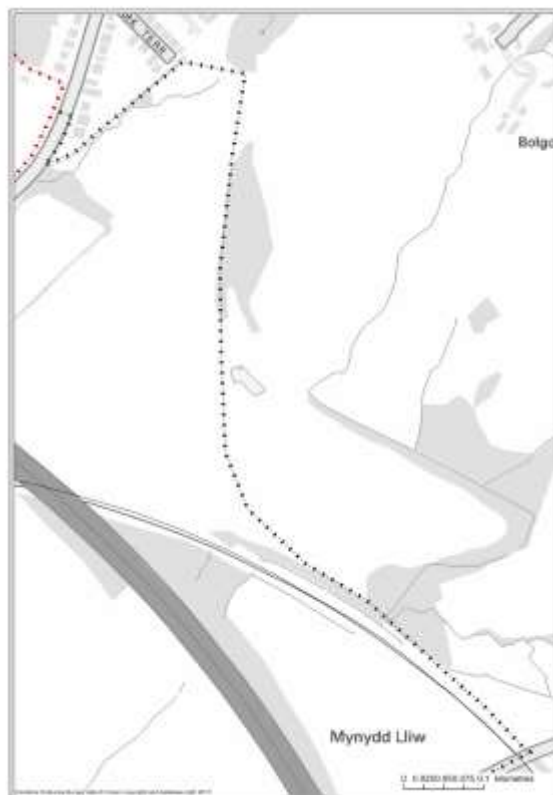
An existing rough track runs through the former colliery site between Pentre Road and Allt-Y-Graban Road. There appear to be no structures to negotiate along this track although there are significant level changes across the site identified during the Ecological study. The measures required to overcome the changes in level have not been identified due to problems with gaining access to the site. Early attempts to contact the landowner have not met with a positive response and therefore, whilst remaining an option, a route through the former colliery site has not been examined in any further detail.

Historic mapping indicates that the existing track used to be a railway spur onto the main line (see below).

Historic mapping - Ordnance Survey 1:25,000 1937 – 61.



Map 3.6 - Former Colliery Site



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New path construction would be required through the site with access controls at both ends. Fencing may also be required to the specification of the landowner (once identified).

Photo's 3.13 and 3.14 – Former Colliery Site from Allt-Y-Graban Road



Cost Estimate

Location	Description	Estimate
Former Colliery site	New path construction	£280,500
Pentre Road and Allt-Y-Graban Road	Signing	£1,500
Total		£282,000*
*Subject to topographical survey to identify level changes.		

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3.3 Option Two - Pentre Road Shared Use Space (100 metres)

The short section of Pentre Road between the Show Ground entrance and the track leading to the former Colliery site has wide verges with an existing narrow footway on the west side. Little parking occurs on this stretch of the road and the large properties fronting onto the east side have off street parking. A high pressure gas main crosses Pentre Road within this section (See Appendix A). The road is subject to a 30mph speed limit with good visibility possible for a crossing point.

Map 3.7 - Pentre Road Shared Use Space



The eastern verge has sufficient width to provide a three metre wide shared use path the only complication being the restrictions imposed by the need to pass over the HP gas main. Consultation with Wales and Western Utilities will provide information on the required working practises. These are likely to involve no dig and low vibration build in the area three metres either side of the main. A cycle pedestrian Zebra or Toucan crossing would provide a safe crossing facility located between private access points. This takes the route onto the west side of the road where a widened existing tarmac bath links into the show ground entrance.

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Photo's 3.15 and 3.16 – Pentre Road and the existing footway.



Cost Estimate

Location	Description	Estimate
Motorway Bridge	Widen footway into the carriageway. Add parapet extension.	£9,000
Pentre Road	New crossing point	£21,800
Pentre Road	Access control and signing (direction and regulatory).	£3,600
Total		£34,400

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3.4 Coed Bach Park (680 metres)

A gate provides access from Coed Bach to the park. Narrow Tarmac pedestrian paths are provided through the park around the edge of playing fields with a Bark path provided through the area of Ancient Woodland. Within the wood there is a timber bridge over a stream. The Ancient Woodland severely restricts the surface type and construction methods that can be used in the area. It also puts into doubt the option of providing any type of lighting through the woodland. As a minimum surveys over a year timeframe would be required to identify the possible presence of light sensitive species such as bats. After this time it would still not be possible to guarantee that even low level lighting would be allowed.

Map 3.8 - Coed Bach Park



The existing Tarmac paths should be widened to three metres (400m in total) where required as they negotiate the playing fields, with a wider access control to replace the existing gate. Through the woodland the protected nature of the site makes Tarmac an inappropriate surface choice. An alternative would be to provide wooden edging for the existing surface (200m) which could then be levelled. This would reduce the current spread of Bark into the surrounding woodland and could be carried out using the minimum of machinery. A small replacement bridge with parapets would be required, to fit in with the setting this could be constructed from Green Oak.

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Low level lighting for the park paths and at the Pentre Road end of the route section has been included in the below estimate. Lighting has not been included through the Ancient Woodland.

Photo's 3.17 and 3.18 – Tarmac paths through Coed Bach Park.



Photo's 3.19 and 3.20 – Bark path through the wood and timber bridge.



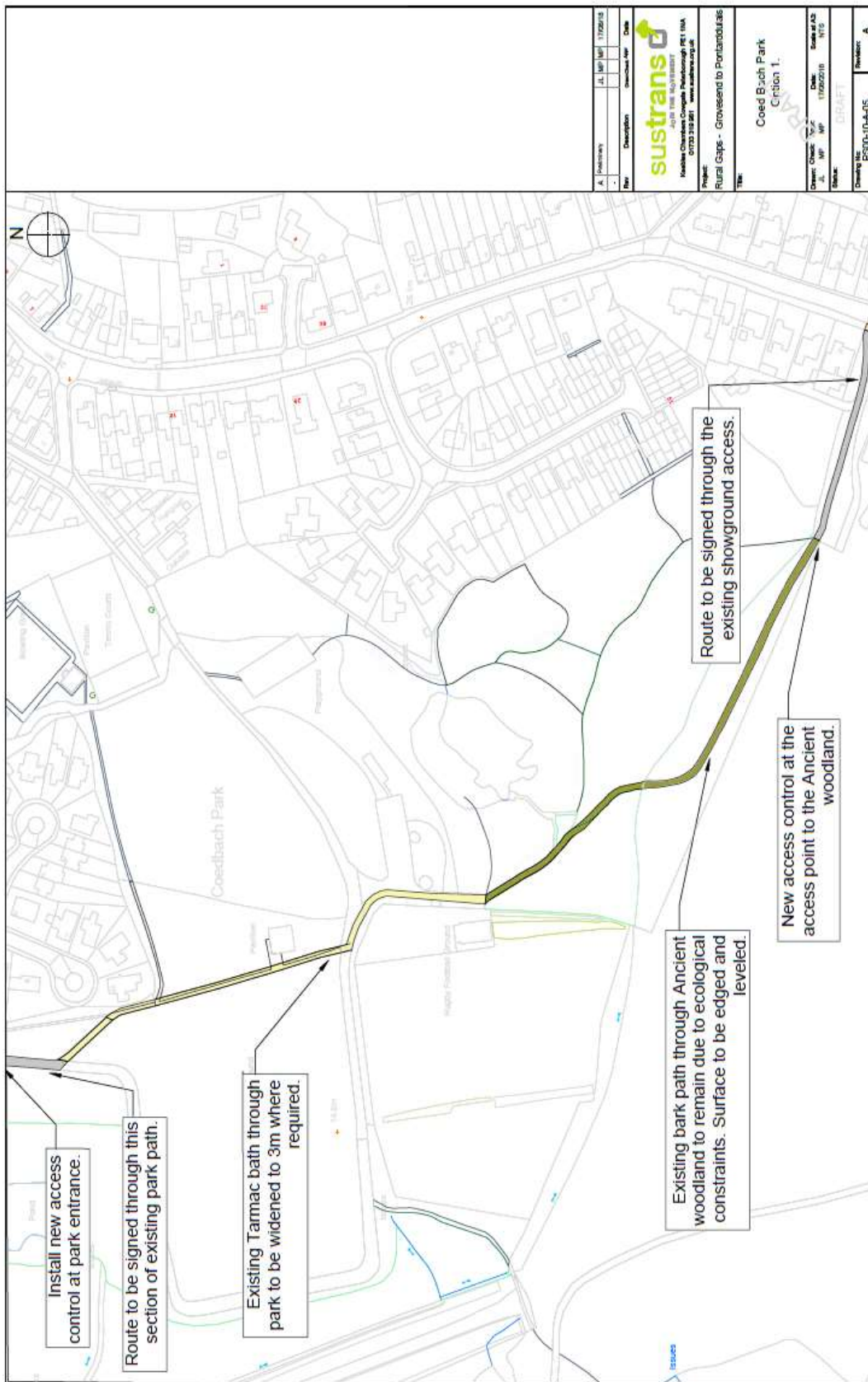
Cost Estimate

Location	Description	Estimate
Existing narrow tarmac paths	Widen existing tarmac paths	£24,900
Existing Bridge	New Green Oak bridge	£26,100
Existing access controls	Remove existing and install bollards. Direction signing	£4,300
Bark paths through wood	Edge and level existing	£55,700
All paths (except through Ancient Woodland)	Install low level lighting	£23,200
Total		£134,200

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Drawing 3.5 – Path through Coed Bach Park



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3.6 Pontarddulais Town (1.25 km)

Notes taken during the scheme site visit have been included below. Any works to take place within the town are to be subject to further consultation. Due to the preliminary nature of this aspect of the route no cost estimates have been determined.

A48 St Teilo Street. Judged to be unsuitable for contra flow cycling. There is parking on both sides of the road with a narrow single traffic lane to take all vehicles including HGV's. To make contra flow work one lane of parking would need to be removed. This would be unacceptable to the local community and to Swansea City Council.

St Teilo Street / Tidal Reach junction. Analysis shows that the key pedestrian desire line is across Station Road. There are no crossing facilities on this arm of the signal controlled junction. Swansea City Council will look at introducing a raised table across the arm and providing a crossing facility.

Dulais Road. Also considered for contra flow. This could probably be done by shifting the carriageway and parking bays across into the footway on the western side. This would be expensive and likely to meet with opposition from residents.

Alternatives

Quiet roads approach. Linking the Park to the Station. The route would begin on Coed Bach where the existing access control into the park would be changed. Coed Bach only gives access to the park for cycles and pedestrians along with residents of the road, it is therefore quiet and suitable with little change to be part of the route.

Trinity Place / St Teilo Street junction / Glyn-iiwchwr Road. Push the 20mph zone out to include the Trinity Place junction. Introduce raised tables across the junction (or entire area. Provide a crossing point of St Teilo Street.

Glyn Ilwchhwr Road is one way at the bottom end from Oakfield Street. 'Except Cycles' would need to be put in place. As a residential access road the remainder of this road should be O.K for use as part of the route.

Dulais Road (Glyn Ilwchwr Road junction to Tyn Y Bonau Road junction. Standard width footways. Road provides access to a large housing estate, a school and a small amount of industry. Road is too busy as it is to be part of the route. A possibility would be to remove the centre lines and widen a footway to provide shared use.

Dulais Road / Water Street junction. Southbound one way system, two very sharp bends. Introduce raised area with a pedestrian and cycle crossing point.

Water Street. A dead end road but with access to a pedestrian bridge over the river to Water Street (again). The dead end is fine as part of a route, the bridge has the width but would need higher parapets.

Water Street (One way system section). There is sufficient width in the southern footways once the vegetation is removed to provide a shared use facility through the small carpark and as far as the zebra crossing next to St Michael's Avenue. A raised table could be installed across St Michaels Avenue and the Zebra crossing could be converted to a cycle Pedestrian Zebra. Benches and a bin would also need to be moved from Water Street. A route would continue on the north side of Water Street either on widened footway or through the small car park. Once at the end of the car park access is provided to a new housing estate and there is the potential to link through a development site to Station Road. A new crossing point and short section of verge path would link the route into the Station.

Tidal Reach. There is an existing shared use path 3m wide from the Water Street junction past the Tesco access into the new housing estate. There is a link around the Tesco building to the car park which in turn links back to St Teilo Street. The Tidal Reach path could provide another link into the park and potentially part of a circular route around the town.

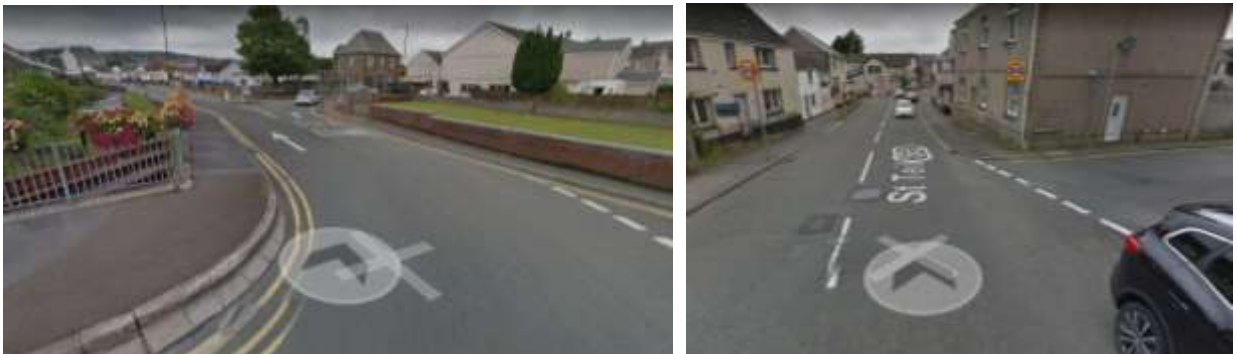
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Photo's 3.21 and 3.22 – A48 St Teilo Street and Dulais Road.



Photo's 3.23 and 3.24 – Water Street junction and



Photo's 3.25 and 3.26 – Water Street bridge and Glyn Ilwchwr Road



Photo's 3.27 and 3.28 – Coed Bach and park access.



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4. Conclusions and Recommendations

The findings of the report are as follows:

That construction of an improved walking and cycling corridor between Grovesend and Pontarddulais is a viable proposition, however it will need to address various concerns in order to ensure that a high quality provision is delivered.

An ecological assessment has been carried out and has influenced the route design in key areas.

Network signing should consider links to key destinations. As this corridor is intended to form a part of a wider link a variety of destinations should also be considered.

An overview of likely costs is included below for reference. Costs may vary, and will require detailed design drawings to enable a further breakdown.

5. Estimates Summary Table

Route Section	Description	Estimated Cost
Former Railway alignment (Bridleway route)	Vegetation clearance, new path construction (Tarmac).	£166,000
Former Railway alignment (in the railway cutting)	Vegetation clearance, new path construction (Tarmac).	£260,000
Option One	Pentre Farm former railway alignment	£290,000
	Railway Bridge (Signals installation)	£62,400
	Pentre Road	£38,800
Option Two	Allt-Y-Graban Road - traffic calming and signing.	£50,750
	Former Colliery Site - Vegetation clearance, new path construction and access points (subject to topo survey and land agreement).	£282,000
	Pentre Road – Widen existing short length of existing footway and provide a new crossing point.	£34,400
Coed Bach Park	Widening of existing Tarmac paths, edging and levelling of path through ancient woodland.	£134,200
Overall Total	Option One (based on a path following the bridleway and signal control at the Pentre Road Bridge).	£691,400
	Option One (based on a path in the railway cutting and signal control at the Pentre Road Bridge).	£785,400
	Option Two (based on a path following the bridleway).	£667,350
	Option Two (based on a path following the railway cutting).	£761,350

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Appendix A



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