Cyngor Castell-nedd Port Talbot
Neath Port Talbot Council

NEATH AND TENNANT CANAL FEASIBILITY STUDY

AtkinsRéalis

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1. Executive Summary

1.1 Purpose and Scope

Neath Port Talbot Council commissioned a feasibility study to assess the restoration potential of the Neath and Tennant Canals, which span approximately 22 miles across the region. The study, funded by the National Lottery Heritage Fund, explored restoration options, environmental and heritage opportunities, and the economic and social benefits of canal regeneration.

1.2 Background

Historically, the Neath and Tennant Canals were vital industrial transport routes. While parts of the Neath Canal were restored in the 1990s and 2000s, the canal has since deteriorated. The Tennant Canal remains largely intact and resembles a wildlife corridor. Ownership is split, the Neath Canal is owned by Revantage (formerly St Modwen), and the Tennant Canal owned by the Coombe Tennant Family.

1.3 Restoration Route Options

1. Briton Ferry To Neath – Navigation for small craft and kayaks.
2. Neath To Ynysbwllog – Full navigation for narrow boats and trip boat.
3. Ynysbwllog to Resolven – Create wildlife corridor.
4. Resolven to Rheola – Full navigation across both canals for narrowboats.
5. Rheola to Ysgwrfa - Navigation for small craft and kayaks.
6. Ysgwrfa to Glynneath – Create wildlife corridor.
7. Crymlyn Bog to Neath Abbey – Navigation for small craft and kayaks.
8. Neath Abbey to Aberdulais– Full navigation for narrow boats and trip boat.

1.4 Key Findings

- **Physical Viability**: Restoration is feasible, most canal sections retain water and require dredging, lock repairs, and bridge modifications.
- **Environmental Sensitivity**: The Tennant Canal borders Crymlyn Bog SAC, NNR, and SSSI, requiring careful biodiversity management.
- **Heritage Value**: The canals are rich in industrial heritage, linking sites such as Neath Abbey, Aberdulais Falls, and Briton Ferry Docks.
- **Ownership Challenges**: Restoration requires new governance. A not-for-profit canal Charitable Incorporated Organisation (CIO) is proposed to manage both canals, with ownership transfer or long-term leases from current owners.

1.5 Opportunities

- **Tourism & Leisure**: Trip boats, walking and cycling trails, and visitor hubs are proposed.
- **Wellbeing & Education**: Enhanced access for mobility-impaired users, outdoor learning, and community engagement.
- **Environmental Gains**: Restoration offers biodiversity improvements, invasive species control, and habitat creation.

- **Volunteering**: Canal restoration will be volunteer led, with training and leadership from a Community Engagement Officer.

1.6 Phasing and Costs

A 15-year phased programme is recommended:

- **Years 1–2**: Legal agreements, volunteer engagement, and quick wins (e.g. restoring Tonna Lock).
- **Years 3–5**: Restoration of key sections and Aberdulais Aqueduct consolidation.
- **Years 5–15**: Full restoration, biodiversity enhancements, and tourism infrastructure.

Costs for the phased partial navigation restoration based on using civil engineering contractors are around **£15.7m** for the Neath Canal and around **£9.2m** for the Tennant Canal, including Aberdulais Aqueduct.

The hubs proposed on both canals would cost around **£5.4m**, whilst full navigation of both canals are budgeted at around a further **£24.1m**.

In 2020, a canal condition survey by NPT, identified **£16.1m** of River Neath scour prevention works and flood walls at Resolven and Clyne.

Estimated annual economic benefits exceed **£3.77m**, including visitor spend, and local employment. Health savings will be in addition and typical estimates are a factor of 7 for every £1 spent on towpath access for all improvements.

1.7 Conclusion

Partial restoration of the Neath and Tennant Canals presents a transformative opportunity for Neath Port Talbot. It would enhance heritage, biodiversity, tourism, and community wellbeing. With phased investment, strong governance, and community involvement, the canals can become a nationally significant assets.

2. Introduction

2.1 General

Neath Port Talbot Council (NPTC) recognises the contribution that the Neath and Tennant Canals make to the character, living environment, biodiversity, economic vitality, and to the quality of life of the people who live and work in the Neath Port Talbot region. Whilst Neath Port Talbot Council is not the owner of the canals, the Council is looking to foster the working partnerships that need to be created to facilitate the regeneration of these key heritage and environmental assets for the benefit of the communities, wildlife ecosystems, economy, and future generations.

As part of the Council's commitment to these important blue (waterway) routes in the story, development, and history of Neath Port Talbot and the life of its residents, the Council secured funding from The National Lottery Heritage Fund's **Heritage Places** Strategic Initiative to undertake a feasibility study to look at ways to restore and regenerate the Neath and Tennant Canals for the benefit of people, places, and the environment.

Heritage Places is connecting people with the heritage on their doorstep in towns and cities across the UK/Wales. It is enabling communities to decide and plan for the long term, building capacity by increasing heritage skills and employment and having a real and lasting impact for everyone by building pride in the places people live, work and visit – now and for the future

The Council has been looking to develop and secure the future of the Neath and Tennant Canals, to provide high-quality walking and cycling routes with restoration of certain canal sections. Around half the mileage of the Neath Canal had been restored to a state of full navigation in the 1990s and 2000s, but it is now decaying again, whilst the Tennant Canal has been navigated until recently by a weed cutter.

This study considers the Neath and Tennant Canals from Briton Ferry to Glynneath and Port Tennant to Aberdulais. The Neath and Tennant Canals extend approximately 22 miles within the Council's area, with lengths in various degrees of navigability or decay.

Figure 2-1 below shows the extent of the Neath and Tennant Canals included within this study. It should be noted that the western limit of the Tennant Canal, at Port Tennant, falls within Swansea Council.

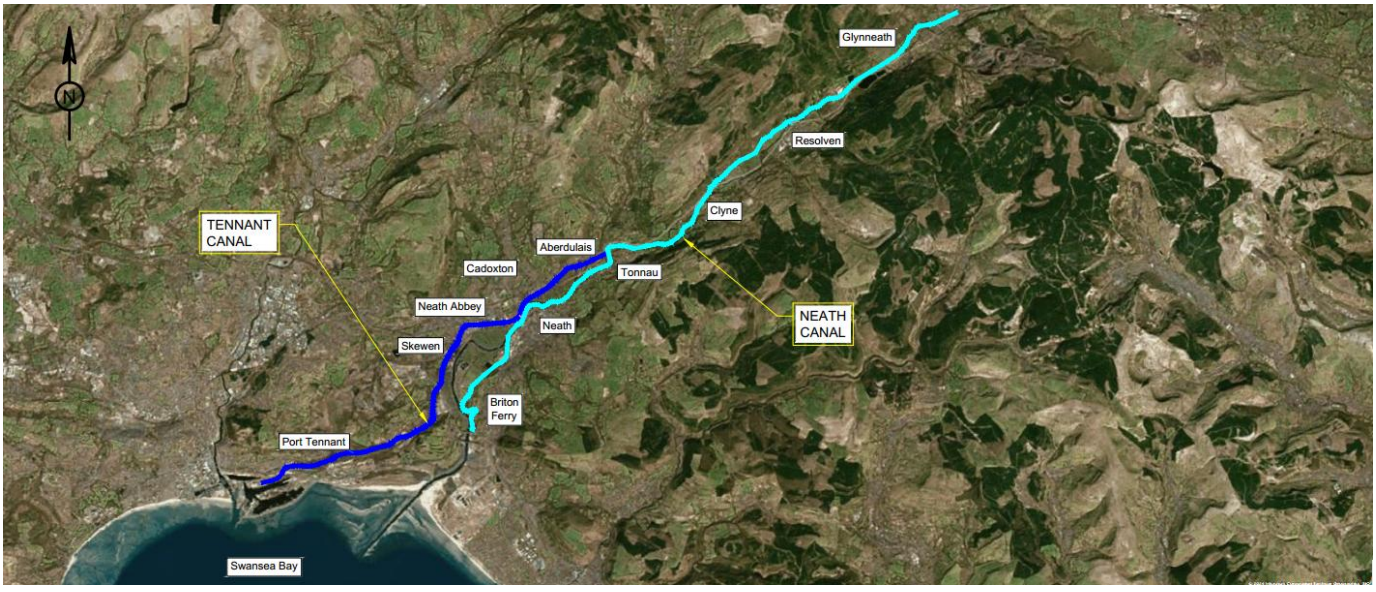

Figure 2-1 - Neath and Tennant Canals

2.2 Basis of this Report

This feasibility report assesses the physical remains of the canal and the viability of restoring navigation of the Neath and Tennant Canals. The condition of the navigation is examined in the context of 'what is preventing navigation?' This report has been prepared with site visits from staff in the AtkinsRéalis Swansea Office, as well as specialist navigation subconsultant Patrick Moss of Moss Naylor Young and Neil Wyatt of NW Environmental.

This report covers the navigation on the Neath Canal from Briton Ferry to The Lamb and Flag pub in Glynneath and the Tennant Canal from Fabian Way Swansea to Aberdulais. The navigation is sub-divided into lengths of the canal with different levels of restoration being suggested on each section. The condition of each section of canal is summarised along with potential constraints on restoration and issues.

2.3 Project Scope and Objectives

It should be noted that the Council does not own either canal, but is aware of an expectation from the residents of the council area, that the canals should be maintained in good order and be available as a leisure and environmental asset to the area. The Neath Canal is currently owned by property developers Revantage, which we understand is the new trading name of St Modwen's, whilst the Tennant Canal is privately owned by the Coombe Tennant Family, and managed by property consultants Leeder. The project brief requests that the proposed restoration strategy considers the following restoration principles following a basic range of scope from 'do minimum' to full navigation:

i. No major works, improve access, interpretation and active travel. This is maintained as it is, with towpath improvements – relatively cheap, but with limited benefits against present scenario.

ii. Partial restoration to navigation of some lengths. This is improved for formal leisure, including small unpowered boats/kayaks – opens up further leisure opportunities.

iii. Full restoration of some lengths and infill/elimination of other lengths. Elimination likely to be expensive, not always effective and is potentially environmentally destructive.

iv. Full restoration of both canals. Fully restored for narrow boats - opens up further commercial and leisure opportunities.

2.4 Consultation

A comprehensive stakeholder engagement process was undertaken to ensure local communities and interested parties were informed and involved in shaping the project's direction.

An "in person" consultation day was held at the Aberdulais Golf Driving Range on Wednesday 4th December 2024, which was open to stakeholders and public to gain their views on restoration of both canals and to validate the assumed benefits.

A public survey was created and published on the Neath and Tennant Canal website to collect feedback on proposed options for the canal's future. It was also featured on the Neath Port Talbot Council (NPTC) website and shared via their official social media channels.

The Facebook page alone achieved over 37,000 views, significantly boosting public awareness and participation.

One-to-one consultations with the canal owners: Revantage and Leeder (on behalf of the Coombe Tennant Family) were held in June and July 2025.

It is evident from the responses that the canals remain at the heart of the local community, with a clear desire from both individuals and community groups to contribute to their restoration and future use. This strong sense of local ownership and willingness to help, aligns closely with the proposals outlined in the study; many of which rely heavily on volunteer involvement to be successfully delivered.

3. The Historic Navigation

3.1 Neath Canal

Neath Canal was the third major canal undertaking in South Wales, the first being Kymers Canal in Kidwelly in 1766, and the second being the Glamorganshire Canal, which started construction in 1790.

The 13 mile long Neath Canal, was completed in 1795 and ran from Glynneath to Briton Ferry (see Figure 3-1) carrying 60ft x 9ft narrow boats. With water supplied from streams in the valley, the canal transported 25t payloads of: coal, iron ore, limestone, silica, and gun powder. Coal proved to be particularly prosperous for the canal, with 200,000 tons being transported annually by the late 1850's. However, by 1900, the Vale of the Neath Railway had captured much of the coal traffic, and by 1921 the canal was little used. Navigation ceased on the Neath Canal in 1934, although the lower half of the canal continued to be used to supply water to industry until the closure of BP Baglan Bay chemical works.

Historically, vessels have always been able to reach wharves in Neath from the sea, with Bridge Street being built above the highest known wharf. Coastal vessels still travel as far inland as Giants Grave passing under the A48 and M4 viaducts. Further upstream, a lock was built prior to 1700 at the lower end of what is now the Calor Gas site, where the river bends adjacent to the canal. This lock allowed barges of up to 100 tonnes into the former tinplate works. Between 1740 and 1751 a second lock was added allowing barges to regain access to the river upstream and the rolling works at Ynys-y-Gerwyn. The lower lock survived until at least 1791, but the river navigation was superseded when the Neath Canal opened.

Figure 3-1 - Neath Canal

3.2 Tennant Canal

The Tennant Canal was eight miles in length from its junction with the Neath Canal at Aberdulais to Port Tennant at the mouth of the River Tawe in Swansea (see Figure 3-2). The canal opened in 1824 and represented the second largest privately owned canal in the British Isles. Its main cargoes were: coal, timber, iron ore, and sand. Traffic peaked at 225,000 tons in 1866 and imports of copper ore from Chile kept the canal busy until the 1890's. By 1900, as with the Neath Canal, much of the traffic was lost to the Vale of Neath Railway, and by the 1930's, commercial traffic had ceased completely. Until recently, the canal supplied water to industry, such as the BP oil refinery at Llandarcy, but this has now ceased.

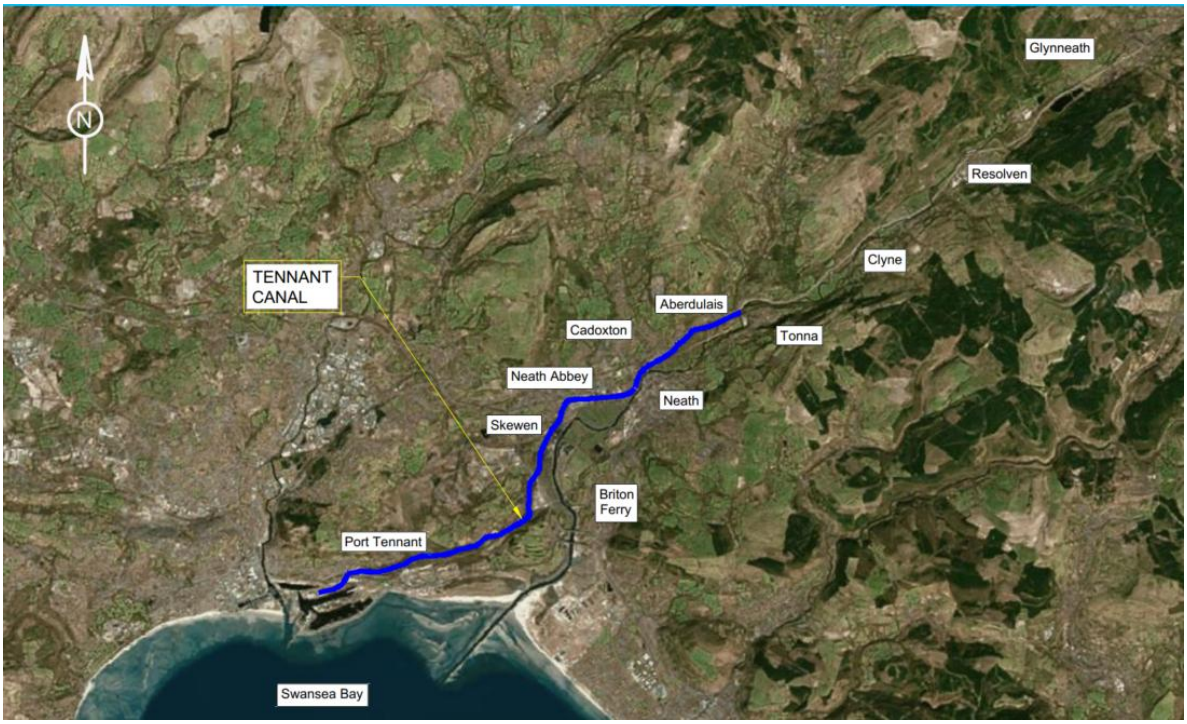

Figure 3-2 - Tennant Canal

4. Site Setting

4.1 Introduction

A detailed walkover survey of both canals was undertaken. The surveys provided a detailed overview of the key heritage and environmental features of the canals.

4.2 Heritage

4.2.1 Overview

The Council's Heritage Strategy identifies a strategic route to the preservation, enhancement, interpretation and promotion of the many heritage assets in the council area. Within this strategy, the canals are identified as a single asset, although in reality they are both a single asset and a collection of related assets. It should be noted that another canal is mentioned in this strategy: the Swansea Canal with particular reference to the aqueduct at Ystalyfera over the Afon Twrch. The heritage strategy has an action to commission a study for the Neath and Tennant Canals; this report is that study.

Around 90% of the route mileage survives in reasonable/recognisable condition along with 12 of the 20 locks (five more locks are buried at Glynneath, three are buried at Ynysarwed and Aberdulais is derelict). On the surviving mileage, all major structures remain since before the canal closed, except Ynysbwllog Aqueduct, which collapsed and has been replaced with a new structure. Most bridges over the canals survive, the notable exceptions being Bridge Street and Milland Street, Neath, and Diamond Bridge, Briton Ferry, which have very low headroom. Other new bridges over the canals have navigable headroom and carry infrastructure that post-dates the construction of the canal.

Thus, the canals between them represent a heritage asset with around 22 miles of canal channel, 20 locks, 3 aqueducts, and numerous bridges either built at the time the canal opened, or added for railway and road infrastructure at a later date – all of this can be regarded as authentic.

At the southern end of the Neath Canal (more correctly the Earl of Jersey's Canal) just south of the terminus, is Briton Ferry Dock. This has already seen some renovation and interpretation, and it makes a logical southern terminus for any canal-based heritage trail. At the moment the biggest obstacle to this, is the lack of any clear link between the southern end of the canal on the dock. It is perfectly possible on foot or by bike to reach one from the other, but it is not obvious how to do so.

The Neath and Tennant Canals can be regarded not just as a collection of heritage assets, but a single entity that is itself worthy of preservation and promotion, whereas damage to any part of this entity would undermine the integrity of the whole. Furthermore, the Tennant Canal is the second longest canal built privately without parliamentary authorisation. Even in its truncated form, it is much longer than any other privately built canal, while the original canal company still owns the Neath Canal.

The canals link sites of historic interest, for example Neath Abbey sits right by the canal. The Tennant Canal links with Aberdulais where, as well as the aqueduct, lock, and junction there is the National Trust site of Aberdulais Falls. Between these is a Roman site and access to Neath town centre with its castle and other historic features. A

circular walk starting and ending at Neath Abbey via Aberdulais and Neath encompass is a number of local and national historic sites.

The canals connect with the entire industrial heritage of the Neath Valleys. Walking up the canals towards Glynneath there are constant reminders of this industrial past often presently hidden in vegetation or just out of view, but waiting to be revealed and interpreted.

Key pre-industrial sites are:

- Aberdulais Falls*.
- Crymlyn Bog.
- Neath Abbey*.
- Neath Castle*.
- Neath Roman Site*.
- St Illtyds Church*.

Key sites of industrial interest are:

- Aberdulais Aqueduct*.
- Aberdulais Tin Plate Works*.
- Briton Ferry Dock.
- Canal Basin Giants Grave.
- Tonna Lock and Workshops*.
- Ty Banc Resolven.
- Ynysbwllog Aqueduct.

Also, of note are:

- Aqueduct carrying streams over the canal at Ysgwrfa and Maesgwyn.
- Bridge St Neath*.
- Glan-Y-Wern Canal (Tennant Canal).
- Kilns at Maesgwyn.
- Pont Gam Aberdulais*.
- Railway Viaduct Aberdulais*.
- Rheola Iron Aqueduct.
- Red Jacket Lock (Tennant Canal).

It is worth noting that all sites marked with an asterisk '*' are on a loop walk starting from Neath Abbey, proceeding into Neath, crossing the river to Neath town centre, continuing to Aberdulais, and then returning down the Tennant Canal.

Crymlyn Bog is not only a site of intense ecological interest, but also relates to pre-industrial heritage and the early days of the industrial revolution. The Glan-y-Wern canal crossing the bog served local industry long before the industrial revolution changed the local landscape forever. In crossing the bog, it is a remarkable piece of early canal engineering and has survived when many others have been lost, either because those bogs have themselves been drained, or the bog has reclaimed the course of the canal.

Aberdulais is not only at the pivot point of the circular walk from Neath, but hosts a collection of artefacts that if correctly presented could create a site that would take at least half a day for a visit to do it justice. On the canal in a short distance, is the lock and adjoining aqueduct (the only instance in the UK of a lock connecting to a significant aqueduct - this must have created some issues during the working life of the canal) the basin between the aqueduct and Pont Gam where the Tennant Canal joins the Neath Canal. In addition, the "ten arch" aqueduct has an 11th

arch, slightly separate from the rest, which crosses a small water course that was once the route of the River Neath Navigation and subsequently functioned as a water supply to the tin plate works. Furthermore, there is much evidence here of the historic water supply arrangements for the Tennant Canal and whilst the Dulais Rock Branch, which once headed north immediately below the lock, has been lost to the A465, there is scope to interpret this as it once linked to the site that is now in National Trust ownership at Aberdulais Falls.

4.2.2 Heritage Exploration

Thus, there are four distinct areas that could be developed for heritage exploration:

1) Briton Ferry.
2) Crymlyn Bog.
3) Neath and Neath Abbey.
4) Aberdulais.

Heading north on the Neath Canal from Aberdulais, there are fewer obvious major heritage sites. However, starting with Aberdulais the canal truly emerges as a heritage attraction in its own right. On this length, there are regular locks bridges and other navigational features that show the history of this canal and of canals generally. The new aqueduct at Ynysbwllog sits on the remains of its predecessor and tells us a story of the canal's original construction, decline and deterioration and subsequent restoration. A little further on, the canal is infilled at Ynysarwed, but even here the development that obstructs the line is actually on former railway sidings that served the canal. North of Resolven, the canal continues to tell the story of industrial transport along the valley and is followed by the original main road, which has itself been superseded.

Whilst the canal is badly degraded north of Ysgwrfa, there is still a story to tell here. It was in this final length that there was the most activity with tramways and railways bringing coal and other materials to the canal for onward transport. On the one hand this length is the most obscured and the length where the heritage is currently least obvious, on the other, over this length much could be done to reveal this heritage and to interpret it and make it accessible.

4.3 Environmental

4.3.1 Introduction

A detailed walkover survey of both canals was carried out by NPT ecologists, which AtkinsRéalis reviewed. The surveys provided a detailed overview of the environment and ecology setting.

4.3.2 Neath Canal Overview

There is significant variation in biodiversity along the route of the canal, ranging from very good sections to sections where management could be improved for biodiversity, and then essentially unmanaged sections, which could benefit greatly from active biodiversity management. Invasive species are present in various locations along the route. The extant sections of the canal are a Site of Importance for Nature Conservation (SINC). A number of protected species are known to use habitats along the canal, and they will need to be taken into account during restoration and habitat management works.

Access is generally good on the southern sections, but varies from good to difficult on the upper part of the canal. There are multiple opportunities to develop further community engagement through: walking, cycling, interpretation, educational activities, and involvement in volunteering. Angling is an activity on many parts of the canal, typically

happening informally and without authorisation, leading to potential problems, but this could be formalised, for example by working with angling clubs.

Some sections would benefit greatly from increased water levels. Introducing a moderate level of boat traffic (e.g. handful of boat movements a day on average) would help in keeping the channel clear and support habitat diversity.

For this section of the report, the Neath Canal has been divided into the following sections:

4.3.2.1 Briton Ferry to Penrhiwtyn

A peri-urban section, with a rural feel, along the canal corridor between estuary and Briton Ferry. A path well used; especially for cycling, with some of the section already set out as a nature trail. The canal here is generally quite open with lots of marginal vegetation and good stretches of open water with lots of visible wildlife, but in other parts the channel is nearly blocked by vegetation, partly as a consequence of eutrophication and invasive non-native species. There is potential to make some improvements for biodiversity and interpret the nature trail better.

Management should be focused primarily on maintaining existing habitats and species.

4.3.2.2 Penrhiwtyn to Bridge Street

Non-navigable section (due to low bridges at Bridge Street and Milland Road) through a southern, non-residential, part of Neath, but with good access for cyclists and pedestrians. Although parts of this section are less attractive for wildlife, there is the potential to make some improvements, such as controlling invasive species and managing waterside trees. It is a green corridor connecting the open landscape to the south with the centre of Neath.

4.3.2.3 Bridge Street to Church of St. Illtyd

This navigable section through a more residential northern part of Neath has good access for walkers and cyclists and has moderate value for wildlife, connecting into the countryside to the north. It has potential for better interpretation, and small changes in management could bring further wildlife gains.

Although this section is urban, it still has value for biodiversity that could be further improved, with the benefit of increasing local people's contact with wildlife and encouraging them to explore more of the canal. It is possible that species, such as otters, make occasional use of this section to move through the urban area. The section could also form part of a circular trail on to Aberdulais Aqueduct and returning via the Tennant Canal.

4.3.2.4 Church of St. Illtyd to Aberdulais Basin

This largely wooded section lies between the River Neath and a steep slope to the east. It has good access, but heavier tree shade means that much of the canal lacks marginal vegetation. Careful tree management in appropriate locations, should aim to bring in more light to encourage plants to colonise along the canal, making it more attractive to wildlife as well as walkers and cyclists, without damaging the value of adjacent wet woodland. Tree management should target where shading is caused by overgrown trees or trees are collapsing over the waterway; pollarding and coppicing would be preferred.

Generally, this section is in relatively good condition and invasive species are less of an issue. This section could be the most rural section of a circular trail as mentioned above.

4.3.2.5 Aberdulais Basin to Clyne Locks

A further rural section below a wooded slope to east, whilst past Tonna the canal carries on into the countryside. The access for walkers and cyclists is good, but the southern part is very heavily shaded by trees and could benefit

from sympathetic tree management in appropriate locations. Rhododendron is a problem in some areas and should be controlled. Closer to Clyne Locks, the canal is more open on its west side and this increases its wildlife value.

This section is broadly in good condition and offers potential for walking and cycling further into the countryside, with either Clyne Locks, or more distant Ynysbwllog Aqueduct.

4.3.2.6 Clyne Locks to Ynysbwllog

Another rural section through narrow strip of woods and fields between River Neath and B4434. This section is rather varied with some sections being more open than others and it is generally in good condition for wildlife and access.

This section is also broadly in good condition and also offers potential for walking and cycling; particularly to Ynysbwllog. It also provides a better location for angling, being more open.

4.3.2.7 Ynysbwllog to Missing Section at Ynysarwed

This section borders open fields to the east, where the canal is relatively open and has good biodiversity. However, there are some dense areas of channel vegetation and a risk that unmanaged growth of the trees bordering the canal could lead to excessive shade. There is access along the footpath, but the canal peters out before reaching Ynysarwed.

This section is unlikely to be heavily used, unless a better connection could be made to the canal at Resolven.

4.3.2.8 Missing Section at Ynysarwed

The section past Ynysarwed, runs through a scaffold storage yard. Restoring the canal through this section could reinstate its value as a wildlife corridor. This would require either a diversion around the scaffolding yard or negotiation of an access route through the yard or relocate the scaffolding business to open up the original canal route.

4.3.2.9 Missing Section at Ynysarwed to Resolven

In the narrow wooded strip below Glynneath Road, this area is managed by a community group. It has uneven access, and low water levels, but there is potential to further develop its wildlife and access potential in partnership with the community; with easy access to Resolven Basin canal car park and café.

Current management needs review in partnership with landowners and the local community. There needs to be a dialogue about the use of this section, and in particular whether there is potential for improving access, water levels, or even restoring navigation.

4.3.2.10 Resolven Basin to Resolven Uchaf Lock

This is a navigable section between Commercial Road and Ty Banc (formerly leased by NPT Council) north of Resolven. It is managed regularly and used for canoeing, but with no boats navigating it. There is good access and potential to improve its value for wildlife by encouraging marginal vegetation, and reviewing management of adjacent grassland and woodland areas.

This section is the part of the canal with the greatest potential for the development of a rural visitor hub, as most of the infrastructure needed is already present and the canal itself is in good condition. However, much of the section is managed formally and is not achieving its potential for biodiversity. Further development of the canal in this area will need to deliver net benefit for biodiversity.

4.3.2.11 Resolven Uchaf Lock to Rheola Aqueduct

This largely wooded section is in relatively good condition, but water levels are low. It could be improved for biodiversity by restoring water levels and looking at tree management. There is clear potential to improve the access for walkers and cyclists.

The chief problem along this section is that locks have fallen into poor condition resulting in reduced water levels and a heavy growth of marsh vegetation.

4.3.2.12 Rheola Aqueduct to Ysgwrfa

More heavily silted up section. There is very poor access at the northern end. It would be very beneficial for wildlife if the water levels could be raised on this section; ideally with dredging to increase the amount of open water. Better access to the layby at Ysgwrfa could encourage walkers and cyclists, but there may be a need to deter anti-social behaviour.

4.3.2.13 Ysgwrfa to Lamb and Flag

Very heavily overgrown section, much within a dense scrub/woodland strip running adjacent to the main road between Aberdulais and Glynneath.

Our assessment is that restoration of this section will be difficult and very expensive, and so works should instead focus on improving existing habitats and identifying the route of the canal. Currently access is difficult, without any access to the former towpath, with the road also encroaching on this length. Restoration of the section from Ynysarwed to Resolven is potentially more practical and would provide greater benefit in terms of improved ecological and navigational connectivity.

Unless a major restoration was carried out of this section, it is unlikely that major biodiversity works could be implement due to poor access over most of the section.

4.3.3 Tennant Canal Overview

The Tennant Canal mirrors the Neath Canal on the west bank of the River Neath opposite Briton Ferry, running east then north to meet the Neath Canal at Aberdulais Basin. The southern sections are of exceptional importance for biodiversity; being the southern boundary of the Crymlyn Bog SAC, NNR, Ramsar site and SSSI. The biodiversity value drops gradually towards Neath, and all sections would benefit from more active biodiversity management; although the whole canal is of significant importance, being a Site of Importance for Nature Conservation (SINC). Invasive species are a major issue in some sections.

Access is generally fair along the canal, although there are some low bridges that make access more difficult for cyclists or people with limited mobility. It is likely that community engagement on this section of the canal would be more focused on specific interests, such as walkers, educational use, or volunteering.

Due to the exceptional biodiversity importance of the southern end of the canal and the gradation in levels of sensitivity to disturbance, the opportunity exists for zoned interpretation of biodiversity and a range of educational activity.

In the past, there has been active angling; especially at the northern end where activity such as maintaining marks would be less likely to conflict with biodiversity objectives. Some angling still takes place, and it may be beneficial to formalise arrangements with a club, in particular to help avoid any unwanted fish introductions.

The canal has generally good water levels, but would benefit from greater water levels in dry periods, NRW has stated they would like to see the canal take more freshwater from Crymlyn Bog and the current Lifequake Project

includes work to facilitate this. There is also potential to restore water take from the River Neath into the canal in association with the restoration of Aberdulais Aqueduct. However, there are some potentially conflicting requirements for water level management in this area. Both reintroducing weed cutting or a low level of boat traffic would help in keeping the channel clear and support habitat.

There are complex issues around the restoration of the Aberdulais Aqueduct and the need to re-instate the water abstraction from the River Neath. If this can be achieved, along with improvement of the area at its northern end, there is the potential to attract significant numbers of visitors; particularly if a circular trail can be established.

4.3.3.1 Crymlyn Bog to Pant-y-Sais

This is an exceptionally important section for biodiversity. Wetland NNR, SSSI, SAC, Ramsar Site and LNR to north, similar habitat to south (wet scrub). Not only is there an array of important species using the canal, but it also provides a route for people to view the National Nature Reserve. The management plan for Crymlyn Bog SSSI states that the Tennant Canal requires regular sympathetic management to maintain open water habitat and marginal tussocky vegetation for fen raft spider. The current management, carried out by the Tennant Canal Company is ideal, however in recent years the frequency of weed cutting appears to have been reduced.

4.3.3.2 Pant-y-Sais to M4

A somewhat overgrown section with notable species (e.g. Fen Raft Spider, Otter, historically Water Vole). There is potential for biodiversity management to complement the nearby sites, including the Wildlife Trust for West and South Wales Wildlife Trust's Red Jacket Fen. Foot and cycle access is restricted by the low bridges.

This section should be managed with biodiversity as the main objective, to help protect the lower section from adverse impacts, while encouraging the expansion of populations of protected species. Again, management will be focused primarily on maintaining existing habitats and species.

4.3.3.3 M4 to Neath Abbey

A mostly wooded section, somewhat more overgrown in the channel than the section north of Neath Abbey, but with good value for wildlife and good access; especially on foot.

This section has the potential to be promoted for public access and highlighted as a nature trail with less risk of adverse impacts due to greater visitor numbers. There is potential for work to improve habitats.

4.3.3.4 Neath Abbey to Aberdulais Aqueduct

Mixture of wooded and open sections generally in good condition aside from some areas with invasive species dominant. Reducing the invasive species, especially Japanese knotweed, would benefit wildlife. Access for walkers and cyclists is fair, but could be improved.

4.3.3.5 Aberdulais Aqueduct and Basin

In this short section, Aberdulais Aqueduct is in very poor condition, but the basin appears in good condition. The greatest potential in this area is the possibility of controlling invasive species north of the River Neath at Pont Gam, possibly creating a picnic area, nature trail or other resource. If the Aqueduct could be restored, there is potential to help establish a circular trail between the Basin and the centre of Neath, using both canals and completing the loop at Bridge Street.

From a biodiversity perspective, the greatest gains could be achieved by providing a better ecological link across Aberdulais Aqueduct and improving the habitat quality around the junction of the two canals; particularly by controlling invasive species.

4.3.4 Invasive Non-Native Species (INSS)

A number of invasive plant species have been identified along the Neath and Tennant Canals. Invasive species can out-compete native plants and animals, leading to reduced biodiversity. Active management, such as manual removal, use of biological controls, or targeted herbicide application, can help control invasive species and allow native species to thrive. Monitoring for new invasions is also essential to prevent their spread.

The potential threat to local ecosystems from each of these species varies according to its growth and impact on other species and habitats, and its propensity to spread. Effective control of some of these species is likely to require the use of pesticides. In such cases, application must be carried out in full accordance with the applicable regulations.

Agreement from NRW is required if using herbicides in the following situations:

- Using herbicides adjacent (within 5m) to a waterbody or within a waterbody.
- Using herbicides within a designated site (i.e. Site of Special Scientific Interest, Special Area of Conservation, Special Protection Area, Ramsar).

In practice this means that most, if not all, chemical control of invasive species along the canals will require agreement with NRW.

Six types of plant with the potential to cause significant ecological harm are established in various locations on the Neath and Tennant Canals. The largest problem is Japanese knotweed, with Himalayan balsam the next most prevalent. Effective control of these species is likely to require ongoing effort and considerable investment.

A detailed survey to map the locations and extent of these various species is recommended, where information for an Invasive Non-Native Species (INNS) Control Plan should be drawn up for the canals, allowing decisions to be made on the most effective means of control for each species. Each location with an INNS can be assessed against risks and benefits to prioritise action.

4.3.4.1 Japanese knotweed

Japanese knotweed (*Fallopia japonica*) is a highly invasive plant species that poses significant challenges to landowners and environmental managers. The robust root system and rapid growth make it difficult to control, often leading to damage to infrastructure. Its dense canopy creates deep shade that can rapidly degrade habitats, harming local ecosystems.

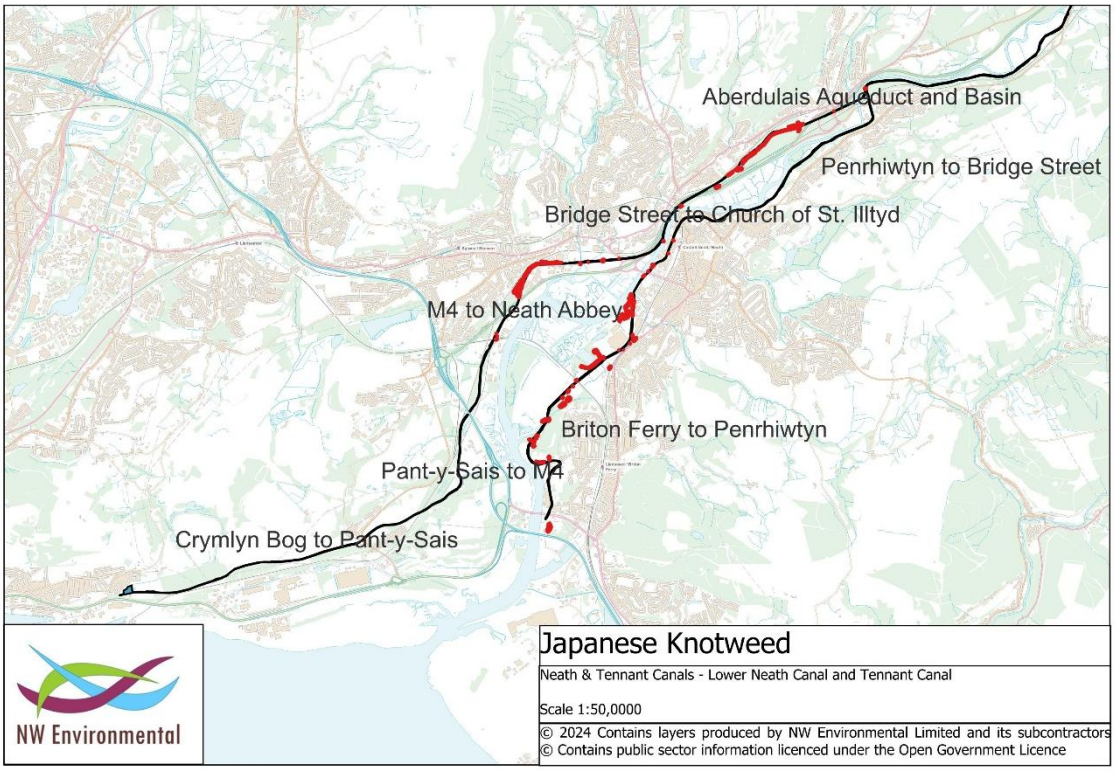

Figure 4-1 - Japanese knotweed mapping (lower canal)

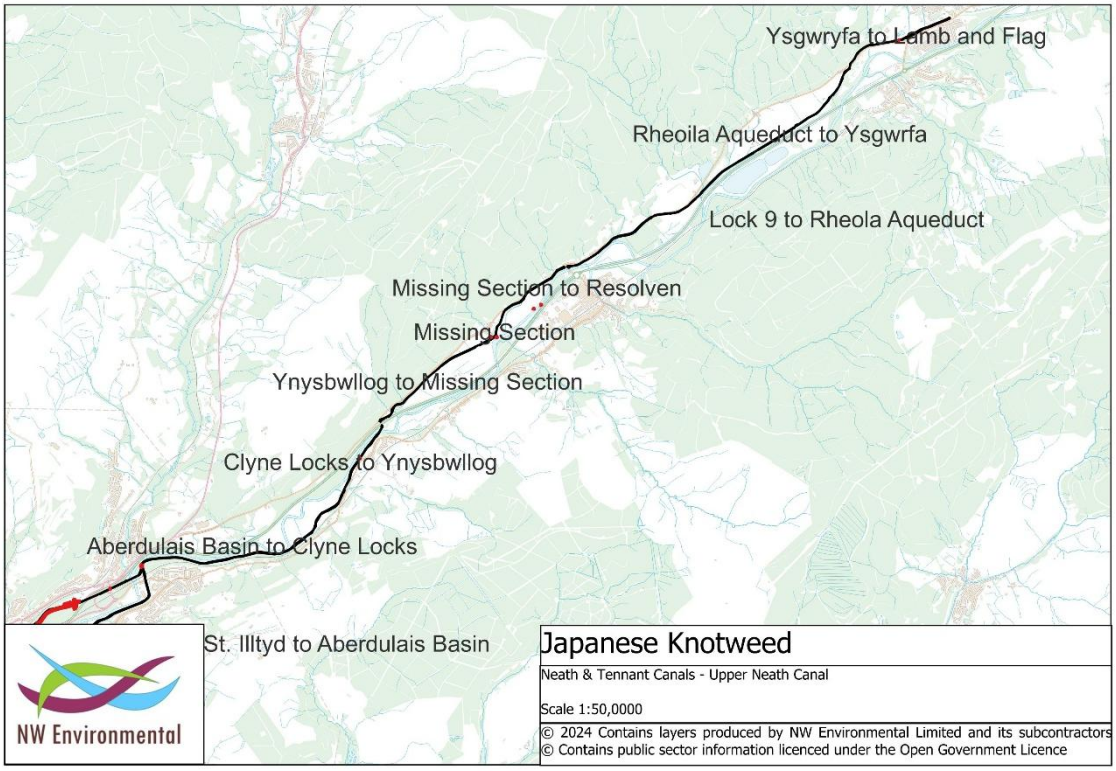

Figure 4-2 - Japanese knotweed mapping (upper canal)

Japanese knotweed is by far the most problematic invasive species on the Neath and Tennant Canals, forming large, dense stands adjacent to certain sections. As shown in Figure 4-1, it is particularly abundant between Neath Abbey and Aberdulais on the Tennant Canal, and between Briton Ferry and Bridge Street, Neath on the Neath Canal. It is particularly associated with canal sections near railway lines and industrial premises. Japanese knotweed is also established in places on the canal north of Neath, but as shown in Figure 4-2 it is less prevalent at the moment.

Figure 4-3 - Japanese knotweed and Buddleia

Figure 4-4 - Area with a major concentration of Japanese knotweed

Aside from possible issues if Japanese knotweed starts to affect infrastructure or adjacent land, control of Japanese knotweed is advisable for a number of ecological reasons:

- It poses a potential threat to the sensitive and important ecological sites at the western end of the Tennant Canal (although the very wet conditions will pose some limit on its potential to spread there).
- It can potentially spread to other sections of the canal and adjacent wildlife sites causing further habitat loss.
- Control or elimination of large stands of knotweed would allow the recovery of significant areas of semi-natural habitat.

4.3.4.2 Himalayan balsam

Himalayan balsam (*Impatiens glandulifera*), is a non-native plant in the British Isles, having been introduced from South Asia in the nineteenth century. Also known as 'Policeman's Helmets' due to its distinctive, showy pink (or sometimes white) flowers it is a tall annual that grows to two meters of higher, preferring damp conditions. The stems are stout, hollow and usually tinged deep purple-red and the leaves are long, pointed and serrated. The plants tend to grow in very dense stands, smothering other vegetation which means that it can degrade existing habitats.

The spread of Himalayan balsam is through the explosive dehiscence of its seed pods, which can project the seeds several metres. The seeds float in water which further enhances its ability to spread in the damp habitats it prefers, and it can rapidly colonise marshy areas and river corridors.

4.3.4.3 Yellow fringed water lily

Yellow fringed water lily is an emergent water plant that can form a dense layer clogging waterways and shading out native vegetation. The plants have much smaller leaves than the native yellow water lily. It is present in isolated some areas such as near Neath Abbey on the Tennant Canal.

It is a very aggressive plant that can form dense floating mats. It is capable of rapid spread and can displace native species, restrict light and interfere with activities, including fishing and boating. By shading out algae, it can have a negative impact on the aquatic food chain.

Figure 4-5 - Yellow-fringed water lily near Neath Abbey

4.3.4.4 Rhododendron

Rhododendron ponticum is a problem on some wooded sections of the canal, particularly immediately north of Neath. Native to parts of South-East Asia, it creates dense thickets with heavy shade, out-competing native wildlife and reducing biodiversity. It is particularly a problem in damp woodland.

Mature rhododendrons can be difficult and costly to remove due to their size and root systems. For smaller infestations, digging up the plants, including their roots, can be effective. For larger areas, cutting down the plant and then treating the regrowth with herbicide is a common method. Both approaches typically require follow-up treatments.

The use of herbicides may be problematic near the canal. One possibility is the use of herbicide plugs directly into cut stumps, an approach that minimises the possibility of the herbicide contaminating other areas.

Figure 4-6 - Rhododendron ponticum

4.3.4.5 Buddleia

Buddleia (*buddleia davidii*) is native to regions in Asia, Africa, and the Americas. It was introduced to other parts of the world as an ornamental plant due to its striking flowers and ease of cultivation. However, its ability to thrive in a wide range of conditions and its prolific seed production have led to its spread beyond gardens and into natural habitats.

Buddleia can outcompete native plants for resources, such as light, water, and nutrients. This displacement disrupts local ecosystems and reduces biodiversity. The dense thickets formed by buddleia can alter the structure of natural habitats, affecting the flora and fauna that rely on these environments. These issues are apparent where buddleia is established in significant stands on some parts of the Tennant Canal and is also present in places on the Neath Canal, particularly south of the town centre.

One of the primary challenges in controlling buddleia is its prolific seed production. A single plant can produce millions of seeds annually, which are easily dispersed by wind and water. These seeds can remain viable in the soil for several years, making eradication efforts difficult and prolonged.

Figure 4-7 - Buddleia overhanging the canal

4.3.4.6 Montbretia

Montbretia (*Crocosmia x crocosmiiflora*) is a flowering plant originating from South Africa that has become an invasive species in many parts of the world. Its proliferation in non-native environments can pose significant ecological challenges. It is a problem in some areas of the Neath and Tennant Canals.

Montbretia spreads rapidly through its bulb-like corms, forming dense mats that smother native vegetation. This aggressive growth habit displaces local plant species, reduces biodiversity, and disrupts natural ecosystems.

4.3.4.7 Elodea

Invasive non-native pondweeds (probably *Elodea canadensis* and/or *Elodea nuttalliil*) are present in places on the canals. Heavy growth of these species can reduce light penetration, affecting native aquatic plants; altering water chemistry - including oxygen levels, and change habitat structures, making it difficult for native fauna to thrive. They can also lead to issues such as increased siltation and altered water flow.

5. Ownership Issues Related to Restoration

5.1 Introduction

The Neath and Tennant Canals have a single connection at Aberdulais that historically allowed boats to navigate both canals; indeed the locks on the two canals are built to the same dimensions for this reason. However, the Neath Canal was proposed and constructed in isolation before the Tennant Canal, and the two canals have always been in separate ownership.

Not only are the canals in separate ownership, but their ownership and management models are completely different. The Neath Canal, opened in 1799, was built under the powers of an act of parliament that gave the Neath Canal Company powers to raise funds and acquire land. By contrast, the Tennant Canal was built by George Tennant from 1824 on land that he owned or controlled, with no enabling legislation – Tennant did not need to raise money nor did he need powers to acquire land (although in the end land was bought, as was the Glan-y-Wern Canal from Red Jacket, but this was negotiated and did not need powers to achieve).

This distinction survives to this day; the Neath Canal is still owned by the Neath Canal Company, which is itself owned by the majority shareholder - Revantage (the distinction is important, as the canal is owned by whoever owns the Neath Canal Company), meanwhile the Tennant Canal is still owned by the Coombe Tennant Family. Whilst there is undoubtedly an internal accounting structure for the canal in terms of expenditure and income, the Tennant Canal is owned by the family.

The family ownership of the Tennant Canal was unusual in the early 19th Century, it is surely unique in the 21st Century, that such a piece of infrastructure is still owned by the family that built it, and that they built it without the need for parliamentary authority.

5.2 Ownership Model

To develop the integrated canals project, a change in ownership model is needed, on the basis that there is no funding agency that will fund the proposed works unless the body promoting the works is:

i. Not for profit.

ii. Has control of the asset.

Also, that the existing owners are unlikely to want to be liable for maintenance of the improved asset as this will cost more than steady state maintenance of the asset as existing. However, with the existing ownership model for each canal being so different from the other, some thought is needed to how the new ownership model is shaped, and whether the same model is used for each canal.

5.2.1 Neath Canal

For the Neath Canal, the working assumption is that this is an asset that the present owners have no particular interest in owning the canal and in general will seek to minimise their liabilities. Revantage's core business is as a property developer rather than an operator of leisure infrastructure, and the canal will not yield a revenue for them

and thus it is maintained in a manner consistent with public safety, but there is no aspiration to enhance its amenity value.

Thus, for the Neath Canal the most likely outcome is that a new managing authority is set up and this body takes on the Neath Canal from Revantage, either freehold, or on a very long lease. Whether this is by transferring the asset or by transferring the Neath Canal Company to the new body is a matter that can be resolved at a later date. This action of bringing the canal into appropriate ownership reflects that used when the Rochdale Canal was restored, the canal being transferred from City Centre Securities to The Waterways Trust in 2000, with The Waterways Trust able to claim lottery funding for restoration.

It is important to note that the present owners will need to undertake due diligence on this transfer, as they will need to satisfy themselves that the new owner is capable of taking on the liability. Failure to do this can result in the liability for any failure reverting to the current owner. For this reason the body taking over the canal will need to be able to demonstrate competence. This will be greatly facilitated if the body is also backed by a successful funding bid to restore the canals and manage them in the future. In most large canal restorations of the last few decades, where a transfer of assets was required, this was agreed in advance but only completed once the funding for restoration was in place (for example: Rochdale Canal, Cotswolds Canals, and Droitwich Canals).

5.2.2 Tennant Canal

The Tennant Canal is a different matter, as it is the property of a family, not a limited company, and it is the property of the family that built the canal over 200 years ago. Our discussions with the owner's agent (Leeder) has confirmed that the family will be interested in being involved in the future of their canal and given a suitable management framework, this could be appropriate. The family would also want safeguards that the canal will be secure and well maintained – whilst they have no plans to restore it themselves, their current model is intended to maintain a steady state and they do not wish to see the canal deteriorate in the hands of others. Indeed, it might well be a condition of the transfer that if this occurs, that the canal is transferred back to them.

The Coombe Tennant Family have also communicated an interest in being involved and having a say in the future of the Tennant Canal, and recognise the potential for regeneration and leisure use whilst also hosting a valuable habitat. This can be reflected in the terms of any agreement reached, for example focusing on leisure and regeneration between Neath Abbey and Aberdulais, with a greater ecological focus south of Neath Abbey.

5.3 Way Forward

The recommendation is that a single body runs both canals: this does not mean that both canals should be subject to the same agreement; if the two owners have different aspirations. Whilst the Coombe Tennant Family have indicated a desire to remain involved, it is likely that Revantage will simply wish to dispose of the asset.

The model to follow could be similar to the Stroud Valleys Canal Company, a company limited by guarantee that operate and manage the restored Cotswold Canals. Again as the name suggests this is actually two canals, and whilst the Stroud Valleys Canal Company own the sections of the Thames and Severn Canal that are in their care, the sections of the Stroudwater Navigation in their care are leased from the Company of Proprietors, the original company that built the Stroudwater Canal in the 18th Century, with the Company of Proprietors having a place on the board of the Stroud Valley Canal Company.

The outcome of the above is expected to be that:

i. A new entity is established, a not-for-profit organisation (possibly a Charitable Incorporated Organisation 'CIO' or company limited by guarantee – referred to as the Canal CIO below) that will own and manage the two canals.

ii. That the new Canal CIO will own the Neath Canal, either freehold or on a very long lease.

iii. That the Tennant Canal will be leased to the new Canal CIO with the Coombe Tennant Family being represented on the board. It may be appropriate to limit the Coombe Tennant Family post to matters affecting only their canal.

iv. This arrangement could be offered to Revantage for the Neath Canal, but it is not expected that Revantage would wish to remain involved.

v. The new Canal CIO will be able to get funding from agencies that would not grant funding to private companies or families, as the canal would be run on a not-for-profit basis and the CIO would be a buffer between the funding agency and the original private owners.

6. Planning Policy

6.1 Introduction

Any works on the canals will need to conform with all the adopted LDP policies, whilst the overall context of the proposals will be supported by the wider planning context. The two main strategic policies that directly affect works on the canals in the Neath Port Talbot Local Development Plan (2011-2026) are:

- SP15 Biodiversity & Geodiversity.
- SP21 Built Environment and Historic Heritage.

These are supported with further relevant policies:

- Policy EN 6 Important Biodiversity and Geodiversity Sites.
- Policy EN 7 Important Natural Features.
- Policy BE 1 Design.
- Policy BE 2 Buildings of Local Importance.
- Policy BE 3 The Canal Network.

The above listed policies are detailed below:

6.1.1 Policy SP 15 Biodiversity and Geodiversity

Important habitats, species and sites of geological interest will be protected, conserved, enhanced and managed through the following measures:

1. The identification of the following Internationally and Nationally designated sites within the County Borough to enable their protection:

    a. Special Areas of Conservation (SACs) and Ramsar Sites.
    b. Sites of Special Scientific Interest (SSSIs).
    c. National Nature Reserves (NNRs).

2. The identification and protection of sites of regional and local importance.

3. The protection of important natural heritage features.

LDP Objective: OB 15

6.1.1.1 EN 6 Important Biodiversity and Geodiversity Sites

Development proposals that would affect Regionally Important Geodiversity Sites (RIGS), Local Nature Reserves (LNRs), Sites of Interest for Nature Conservation (SINCs), sites meeting SINC criteria or sites supporting Local Biodiversity Action Plan (LBAP) or S42 habitats or species will only be permitted where:

1. They conserve and where possible enhance the natural heritage importance of the site; or

2. The development could not reasonably be located elsewhere, and the benefits of the development outweigh the natural heritage importance of the site.

Mitigation and/or compensation measures will need to be agreed where adverse effects are unavoidable.

6.1.1.2 Policy EN 7 Important Natural Features

Development proposals that would adversely affect ecologically or visually important natural features such as trees, woodlands, hedgerows / field boundaries, watercourses or ponds will only be permitted where:

1. Full account has been taken of the relevant features in the design of the development, with measures put in place to ensure that they are retained and protected wherever possible; or

2. The biodiversity value and role of the relevant feature has been taken into account and where removal is unavoidable, mitigation measures are agreed.

6.1.2 Policy SP 21 Built Environment and Historic Heritage

The built environment and historic heritage will, where appropriate, be conserved and enhanced through the following measures:

1. Encouraging high quality design standards in all development proposals.

2. Protecting arterial gateways from intrusive and inappropriate development.

3. Safeguarding features of historic and cultural enhancement: importance.

4. The identification of the following designated sites to enable their protection and where appropriate enhancement:
    a) Landscapes of Historic Interest.
    b) Historic Parks and Gardens.
    c) Conservation Areas.
    d) Scheduled Ancient Monuments.
    e) Listed Buildings and their curtilage.

LDP Objectives: OB 2, OB 23 and OB 24

6.1.2.1 Policy BE 1 Design

All development proposals will be expected to demonstrate high quality design which fully takes into account the natural, historic and built environmental context and contributes to the creation of attractive, sustainable places.

Proposals will only be permitted where all of the following criteria, where relevant, are satisfied:

1. It complements and enhances the character and appearance of the site, building or area in terms of siting, appearance, scale, height, massing and elevation treatment.

2. It respects the context of the site and its place within the local landscape, including its impact on the important arterial gateways into the County Borough, its effects on townscape and the local historic and cultural heritage and it takes account of the site topography and prominent skylines or ridges.

3. It utilises materials appropriate to its surroundings and incorporates hard and soft landscaping and screening where appropriate.

4. It would not have a significant adverse impact on highway safety, the amenity of occupiers of adjacent land or the community.

5. Important local features (including buildings, amenity areas, green spaces and green infrastructure, biodiversity and ecological connectivity) are retained and enhanced as far as possible.

.

6. It achieves and creates attractive, safe places and public spaces, taking account of 'Secured by Design' principles (including where appropriate natural surveillance, visibility, well-lit environments and areas of public movement).

7. It plays a full role in achieving and enhancing an integrated transport and communications network promoting the interests of pedestrians, cyclists and public transport and ensures linkages with the existing surrounding community.

8. It uses resources, including land and energy, as efficiently as possible through:

    a) Making the best and most efficient use of the land available through being of appropriate density taking into account the character and appearance of the area, normally a minimum of 35 dwellings per hectare in the Coastal Corridor Strategy Area or a minimum of 30 dwellings per hectare in the Valleys Strategy Area.
    b) The layout and form of the development does not preclude the reasonable use of other adjacent land.
    c) Developing brownfield land in preference to greenfield land where possible.
    d) Minimising building exposure while maximising solar gain.

9. Its drainage systems are designed to limit surface water run-off and flood risk and prevent pollution;
10. The layout and design of the development achieves inclusive design by ensuring barrier free environments, allowing access by all and making full provision for people with disabilities.

6.1.2.2 Policy BE 2 Buildings of Local Importance

Development proposals that would affect buildings that are of local historic, architectural or cultural importance will only be permitted where:

1. They conserve and where appropriate enhance the building and its setting; or

2. It is demonstrated that the development could not reasonably be accommodated without affecting or replacing the building and the reasons for the development outweigh the heritage importance of the site.

6.1.2.3 Policy BE 3 The Canal Network

1. In order to protect and conserve the canal network, the following lengths of canal will be safeguarded:

    a) The Swansea Canal at Trebanos from the County Borough boundary to the southern edge of the playing fields.
    b) The Swansea Canal from Pontardawe Town Centre to Godre'r Graig.
    c) The Tennant Canal.
    d) The Neath Canal from Briton Ferry to Ysgwrfa Bridge, Aberpergwm.

Proposals, which would prejudice the conservation, restoration and operation of these safeguarded lengths of canal will be resisted. Proposals will need to demonstrate that they would not adversely affect the setting of the canals or prevent or discourage the use of the canals for recreation and water supply.

2. Developments affecting locations where lengths of canal have been drained, infilled, culverted, obstructed or cut off from the remainder of the network, but where there is the possibility of future reinstatement, will be expected to take into account the historic line of the canal and to avoid the introduction of buildings or structures that would prevent reinstatement.

In addition, the following Supplementary Planning Guidance (SPG) should be taken into consideration:

- SPG: The Historic Environment.
- SPG: Schedule of Buildings of Local Importance.
- SPG: Schedule of Designated Canal Structures.

6.1.3 Summary of LDP policies

These policies collectively protect the line of the canals, as they are now and guide their future development. As such, the restoration proposals must be in accordance with these policies. In as far as we have developed details for these proposals then this has been achieved, but as the proposals develop further it will be necessary to ensure that the details match the requirements of policies SP15 and SP21. In effect these policies call for the canals to be developed in a manner that is sensitive to both the natural and built heritage environments that they now host. This does not mean “do nothing”, indeed elsewhere we have discussed how intervention can help improve biodiversity and protect archaeology, but it does mean that interventions will have to be justified against these two criteria.

Many of the canal structures are also Listed Buildings and/or Scheduled Monuments protected by separate national legislation, while most of the other significant canal features and structures have local designations/protections e.g. Buildings of Local Importance, and the Conservation Area designation for the Tonna canal depot (which includes a section of canal and the canal lock etc.). These designations provide protections and requirements that will need to be complied with.

Local biodiversity and ecology planning policy includes local nature conservation designations (Sites of Interest for Nature Conservation (SINCs) and Local Nature Reserves (LNR)) in addition to the national designations (Special Areas of Conservation (SAC), Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR)), which affect parts of the canal network and also incorporate important safeguards and requirements.

6.1.4 Other policy

There are layers of national and regional policy above the Local Development Plan that guide the proposals: these are generally not canal specific, but set the context in which the proposals will take place. In this these higher-level policies will set objectives for the area and canal regeneration will find favour if the proposals assist towards these objectives. The policy hierarchy above the local development plan is given below:

Policy overview Summary

Table 6-1- Key national, regional and local policy aligned to Neath and Tennant Canal feasibility study

National Policy	1. Prosperity for all: Wales Economic Action Plan. 2. Our Economic Resilience & Reconstruction Mission – Prosperous, Green Equal (Welsh Government 2021). 3. Southwest Wales Regional Delivery Plan 2021. 4. Welcome to Wales Priorities for the Visitor Economy 2020 – 2025. 5. Llwybr Newydd: The Wales Transport Strategy 2021. 6. The Wales National Transport Delivery Plan 2022-2027. 7. Planning Policy Wales, Edition 12, February 2024. 8. Future Wales The National Plan 2040.
Regional Policy	9. Regional Economic Framework for South West Wales 2021. 10. Sustainable Transport in Rural Areas Guidance for Regional Transport Planning 2024.

	11. South West Wales Regional Transport Plan.
Local Policy	12. Neath Port Talbot Council Economic Recovery Plan 2022. 13. Neath Port Talbot Council Culture Strategy 2023. 14. Neath Port Talbot Council Destination Management Plan 2023-2028. 15. Neath Port Talbot Council Heritage Strategy 2024 – 2039: Restore, Regenerate, Repurpose. 16. Neath Port Talbot Council Corporate Plan 2024/2027. 17. Neath Port Talbot Council Active Delivery Plan 2024 – 2029.

Wales has a very strong commitment towards achieving sustainable growth and improving the wellbeing and health of its communities; as required under the Wellbeing and Future Generations Wales Act (2015). Planning is seen as a key tool to achieving this by ensuring development tales place in appropriate accessible locations and does not have a negative impact upon the natural environment and its ecosystems.

7. Summary of Restoration Proposals

7.1 Introduction

As there is no navigation at present and the canals are not connected to any other navigable waterways, there is the opportunity to control navigation, and in particular the craft allowed to navigate the canals. Given the environmental and ecological sensitivity of both canals, but especially parts of the Tennant Canal, this allows restrictions on the type of craft and the user/operator.

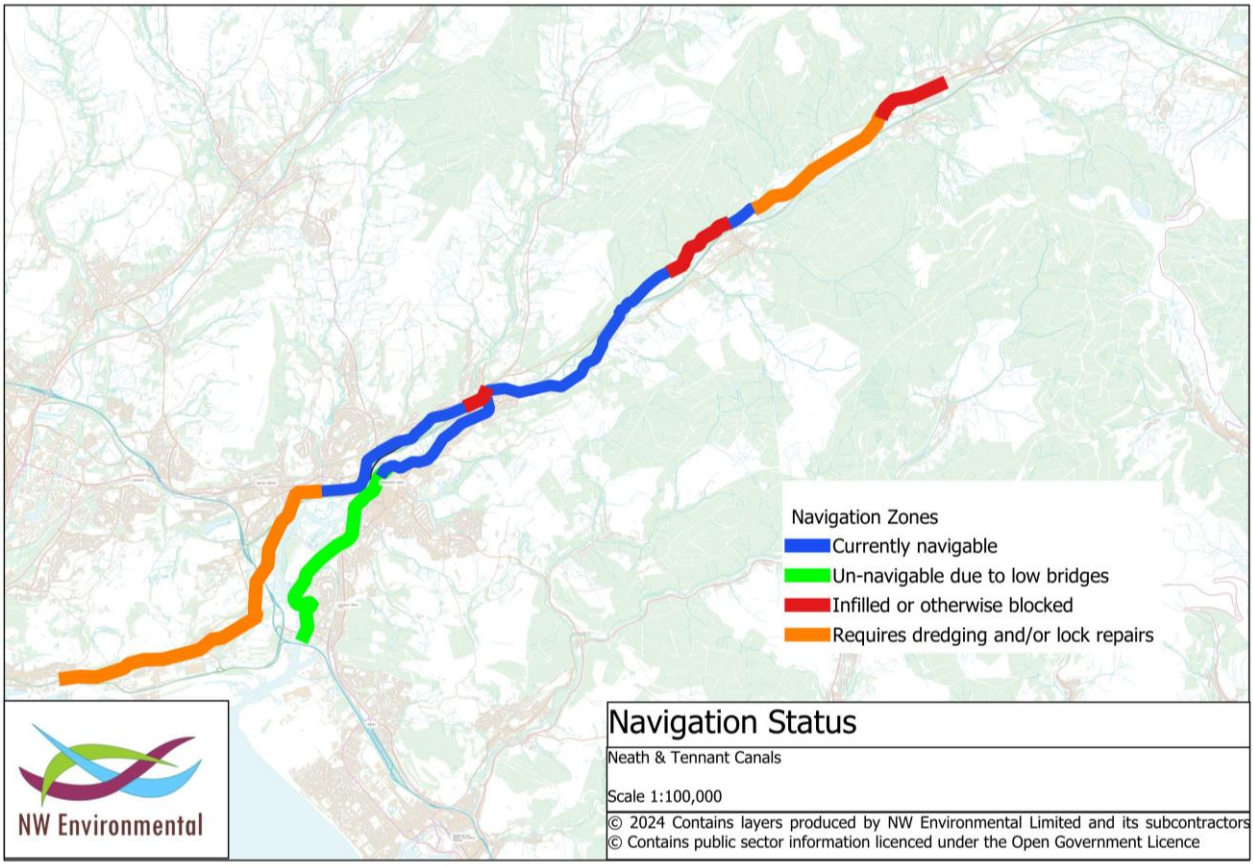

Figure 7-1 - Navigation Status mapping

The restoration of navigation is considered feasible, with the following key aspects to be addressed:

- Aberdulais Aqueduct – needs renovation and a new water abstraction from the River Neath.
- Ynysarwed – canal line infilled and used in part for scaffolding business.
- Commercial Road – has navigational headroom, if a bridge/box culvert was reinstated.

- Bridge Street, Milland Road in Neath, and Diamond Bridge in Briton Ferry - require swing or lift bridges to enable passage for light or unpowered vessels.

The whole of the existing Neath and Tennant Canals are holding water, so no major re-lining would be required, hence in principle a full restoration is possible, but will not be economically viable.

In practice, partial restoration will be needed, with the easiest to restore and most viable sections being prioritised. For sections where restoration is feasible, but there are access or demand issues, restoration to provide navigation for small craft or kayaks could be developed in some sections ahead of future full narrow boat navigation.

In this document 'full navigation' is a channel wide enough for two narrowboats to pass each other for most of the stretch, although sections wide enough for only one boat, such as under bridges, are acceptable. In contrast, 'partial navigation' would be the restoration of a narrower, continuous channel suitable for small boats or kayaks and paddle boards, there could be points, such as unrestored locks, where portage around obstacles would be required.

The preferred restoration options for each section of canal are set out in more detail below.

7.2 Restoration

7.2.1 Neath Canal

7.2.1.1 Glynneath to Ysgwrfa

Lost to navigation - Biodiversity and Heritage trail

The Glynneath to Ysgwrfa section is about 3km long, but is lost to navigation with only short sections of open water and many obstructions. About half the channel width remains and the ruins of the five locks could be seen if vegetation and overgrowth were cleared. A new canal channel would be needed to restore navigation.

Rather than full restoration, we suggest that the canal route is marked by a trail accompanied by biodiversity and heritage actions. Where possible, natural habitats can be managed or created to maximise its biodiversity value. Action could be taken to conserve and interpret the physical remains of the locks and any other structures.

Figure 7-2 - Glynneath to Ysgwrfa section - lost to navigation

7.2.1.2 Ysgwrfa to Commercial Road Resolven

In contrast, the 5.4 km Ysgwrfa to Commercial Road Resolven section, could readily be restored to navigation by undoing the neglect of the last few decades since the previous restoration works, chiefly restoring the seven locks and dredging the channel. However, the character of this length changes around Rheola Aqueduct, between this and Ysgwrfa the locks are more frequent than between the Aqueduct and Resolven. This was reflected in the use when the canal was navigable, with most boat trips turning at Rheola. We suggest two different approaches north and south of Rheola Aqueduct.

7.2.1.3 Ysqwrfa to Rheola Aqueduct

Restore to partial navigation for kayaks/paddleboards

Rheola Aqueduct to Ysgwrfa, a distance of 1.9km with four locks renovated in 1990, but now in poor repair, could be developed for nature conservation and heritage interpretation. This would basically be navigable condition, but using stop boards to raise water levels instead of fully restoring the locks. Unless the locks are repaired, nothing would navigate it save for canoeists willing to portage around the locks.

If the locks between Rheola and Ysgwrfa were restored in the future, the canal could, for example, be used for occasional navigation by eco-friendly craft for special events.

Figure 7-3 - Rheola Aqueduct to Ysgwrfa channel section

7.2.1.4 Rheola Aqueduct to Commercial Road / Ty Banc, Resolven

Restore to full navigation

The 3.5km section with three locks from Rheola Aqueduct to Commercial Road/Ty Banc Resolven, could be developed for navigation by larger passenger vessels. A trip from Ty Banc to Rheola would be attractive to the local market with two locks in each direction and a “sense of place” at each end. Resolven Uchaf lock would be needed to get access to the slipway and the road for boats, but would not be in everyday use for the trips.

If the Rheola House development is built, the large number of tourists would provide a large demand for canal usage by walkers, cyclists, paddle boarders/ kayakers, and a trip boat.

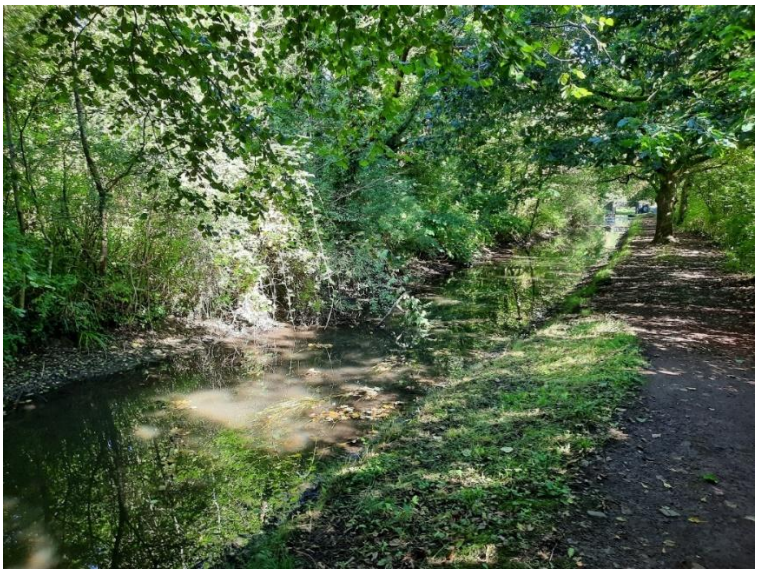

Figure 7-4 - Rheola Aqueduct to Commercial Road channel section

7.2.1.5 Commercial Road to Ynysbwllog

Lost to navigation - Create a trail to join the two extant sections of the canal

Commercial Road to Ynysbwllog has never been restored and is obstructed, first by the embankment carrying Commercial Road and second by an infilled length at Ynysarwed where a scaffolding yard (no buildings) occupies the canal bed. The embankment at Commercial Road has navigational headroom, if a bridge were reinstated. The most pressing need here is to connect the towpath either side of the obstruction so that walkers following the canal need not climb to the parallel road. In the long term, given the ease of restoring the canal above and below this section, there may be benefits in reinstatement to connect these lengths.

Figure 7-5 - Infilled section near Commercial Road

7.2.1.6 Ynysbwllog to Bridge Street Neath

Restore to full navigation

The section from Ynybwllog to Bridge Street Neath was renovated in the mid 2000's and so could readily be restored to navigation by undoing the neglect of the last few decades. This length of around 8.5km has only four locks and connects Ynysbwllog Aqueduct with Clyne, Aberdulais, and Neath Town Centre, making it very attractive for leisure operations, including trip boats, paddle hire and bike hire.

Figure 7-6 - Channel section near Tonna

Figure 7-7 - Channel section near Neath Town Centre

7.2.1.7 Neath Bridges

Potential full restoration and prime site for a 'Neath Hub'

This 0.5km section around Bridge Street and Milland Road has very low headroom at the two bridges. Navigation would require lift or swing bridges to retain vehicle access across the canal. This is a potential location for the

development of a hub or even a marina and maintenance depot on this section, subject to land purchase and any ecological constraints and the delivery of net benefit for biodiversity.

Figure 7-8 - Channel between Bridge Street and Milland Road Bridges

7.2.1.8 Bridge Street Neath to Diamond Bridge

Full/Light Navigation

Bridge Street Neath to Briton Ferry is 4.5km long and could be prioritised for biodiversity, while being suitable for light or unpowered vessels, although greater use could be achieved if the low headroom at Bridge Street and Milland Road is addressed by constructing a swing or lift bridge. This would also create a long, lock free level from Briton Ferry to Tonna, which would be very attractive for a trip boat and paddle craft.

Figure 7-9 - Channel Section near Metal Box

7.2.1.9 Diamond Bridge to Briton Ferry

Restore to partial navigation for canoes

The lowest section of the canal from Giant's Grave to Briton Ferry is a 0.83km section that has low headroom at Diamond Bridge. This section would benefit from a biodiversity led approach, but could be made navigable for canoes and paddleboards with limited interventions, including providing safe entry and exit points. It would be beneficial to signpost and mark Briton Ferry Docks and Brunel's Accumulator Tower to link the canal to the docks.

Figure 7-10 - Diamond Bridge Briton Ferry

Figure 7-11 - Channel section between Diamond Bridge and River Neath

7.2.2 Tennant Canal

The Tennant Canal is effectively navigable along most of its full 13.7km length.

A priority for restoration is the northern short section from its only lock at Aberdulais, close to the northern end, across Aberdulais Aqueduct to Aberdulais Basin and the junction with the Neath Canal.

The southern final section at Swansea Docks is probably lost to navigation, but there is potential for Swansea Council to create a new section to establish a link with the Swansea Canal, using the disused railway bridge under Fabian Way.

Works to restore navigation would be relatively simple, such as weed cutting and some minor dredging, although the low headroom on some bridges could limit the range of boats able to safely access the lower sections of the canal. In these instances, there may be the need to cantilever the towpath over the canal to provide more width and more headroom at arched bridges.

Given the biodiversity importance of the lower part of the canal, it is likely that only well-controlled navigation by approved vessels would be permitted beyond Neath Abbey.

The ongoing development and assessment of renovations in the future for the Tennant Canal should align with the developing renovation plans for the Swansea Canal. Whilst Swansea Canal is not part of this study, we are aware of potential proposals to link Swansea Docks with Port Tennant via a canal constructed through a disused railway line bridge under Fabian Way.

7.2.3 Aberdulais Aqueduct

Restoration of Aberdulais Aqueduct to full working order is fundamental to securing the full benefits of navigation on the Neath and Tennant Canals, by allowing boats to move freely between the two navigations. This would open up

a far wider range of options and activities, all focused on local population centres, plus raise the importance of the canals from local to UK levels.

In the short term, works to consolidate the Aqueduct are needed urgently to prevent further deterioration, but full restoration for navigation should be the medium-term aim.

Figure 7-12 - Aberdulais Aqueduct

7.2.4 Glan-y-Wern Canal

Although technically not part of this study, the short Glan-y-Wern canal across Crymlyn Bog NNR is currently being cleared to restore the channel. There is potential for light boat navigation of the Tennant Canal to include passage along this section by approved vessels.

Natural Resources Wales' management plan states:

"The Glan-y-Wern Canal has not been managed for many years and has become choked with encroaching vegetation. Reinstatement of management is required to provide open water habitat for fen raft spider."

It also highlights actions needed on adjacent land owned by the Tennant Canal Company:

"Key management issue is vegetation succession of fen vegetation to tall rank vegetation and woody scrub."

Part of the unit (including calcareous fen vegetation) is grazed by cattle belonging to neighbouring tenant farmer. There is the need to consider increased grazing; however, much of unit is extremely wet and unsuitable for grazing. Cutting of vegetation (and removal of arisings) using specialised machinery should also be considered. Burning is another possible management option. Scrub control is carried out to reduce scrub encroachment. Eutrophication linked to elevated nutrient levels in Crymlyn Brook has also been highlighted as a potential threat to the fen vegetation in this unit, as well as overtopping of Glan-y-Wern Canal.

Figure 7-13 - Glan-y-Wern Canal Entrance

8. Works Needed

8.1 Introduction

This section outlines the indicative works needed for canal restoration.

8.2 General Channel Works

The following examples illustrate typical canal channel conditions found along the canals. While there is no single 'ideal' ecological profile for the canal, these illustrate some of the issues impacting on biodiversity, as well as many of the features that benefit biodiversity; all of which have differing levels of deterioration and so require different levels of work to gain restoration.

8.2.1 Habitat 1

The habitat, as illustrated by Figure 8-1 below, is typical of the section of the Neath Canal between Crugau Lock and Rheola Aqueduct. Degradation of the lock gates has led to a significant drop in water levels, which has been compounded by the build-up of silt and organic material from overhanging vegetation. This creates a situation with little vegetation, and while it may benefit some insect species, its biodiversity value is generally poor.

Shade and fluctuating water levels have prevented the canal from becoming overgrown, but this is a long-term possibility.

Figure 8-1 - Habitat 1

A short-term solution would be to install simple stop logs on the locks to restore water levels, but the ideal medium-term solution would combine dredging as well as lock restoration, together followed by carefully targeted tree work to increase light levels.

8.2.2 Habitat 2

The habitat illustrated by Figure 8-2 below, is typical of the Neath Canal south of Ysgwrfa and the Tennant Canal around Crymlyn Bog, but there are other areas that are similar. Here, water levels are very low, with open water being restricted to isolated patches during dry conditions. The more open surroundings have allowed aggressive colonisation by reedy vegetation, with the build-up of silt and dead vegetation, and the canal has become, in effect, a marsh. There is a significant value to this wet, marshy habitat, however, scrubby species such as willow and alder are already colonising the canal and its long-term future would be to become damp scrub woodland.

Figure 8-2 - Habitat 2

These sections could be restored with raised water levels using stop logs, and the creation of a deeper central section; or ideally full restoration of the channel. While much excavation would be needed, there could be the potential to use some of the extracted material as a source of appropriate marginal vegetation for wetland creation elsewhere.

8.2.3 Habitat 3

Typical of the lower Neath Canal and parts of the Tennant Canal, is the habitat as illustrated in Figure 8-3 below, where the water level is good, but a lack of dredging, weed control or boat movements has led to vegetation and silt build up encroaching on the channel and becoming non-navigable.

Scrub and trees have partly collapsed over the channel creating shade and a barrier to boat movement along the canal. This section is good for biodiversity with a good range of habitats and vegetation, but the danger is that in the long term the channel will become ever-more obstructed and any open water will be lost.

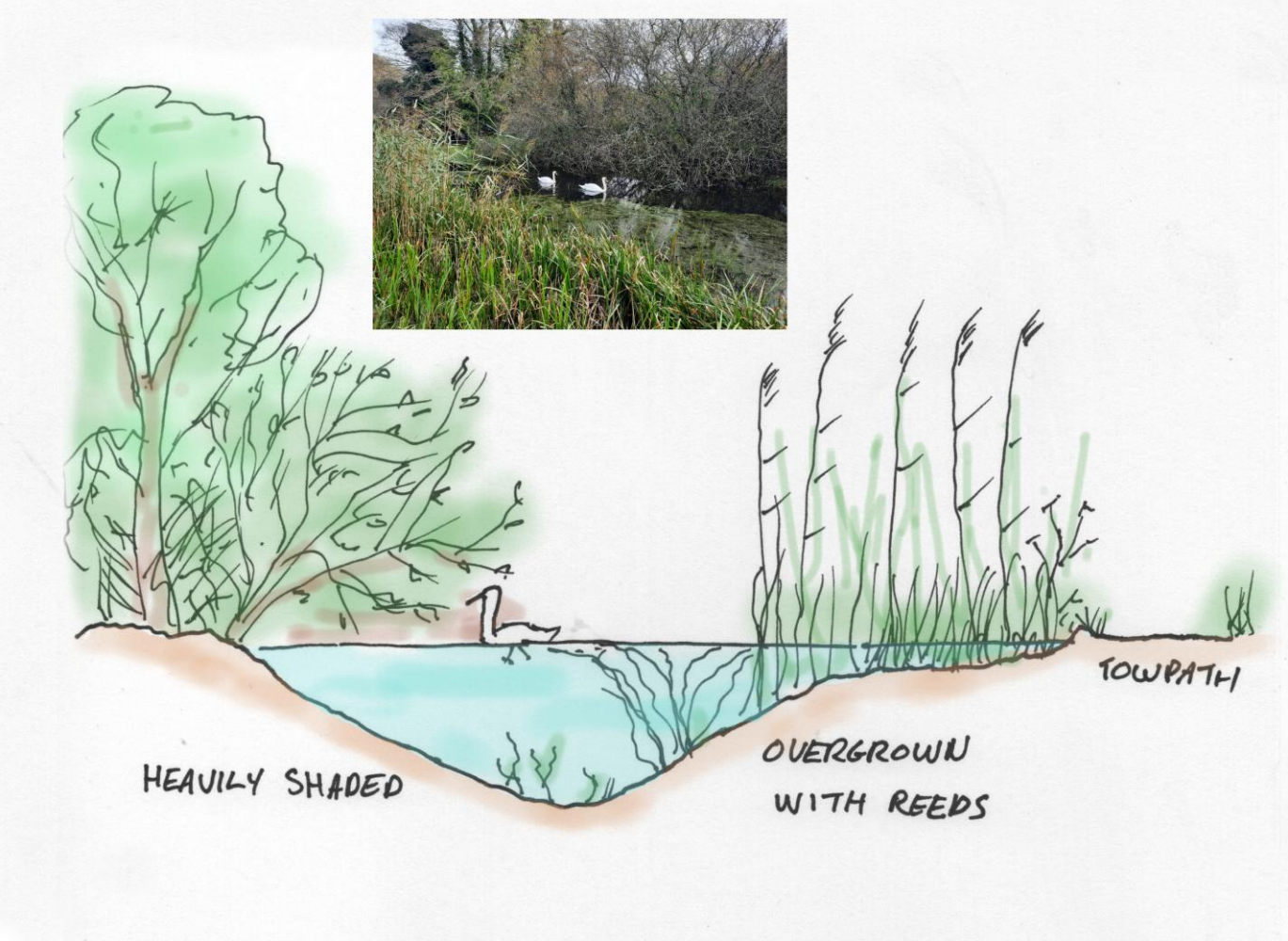

Figure 8-3 - Habitat 3

These are sections where relatively minor interventions, such as spot dredging and coppicing overhanging scrub could make a big difference.

8.2.4 Habitat 4

The habitat north of Resolven and some lengths near Neath town centre, are examples of where the canal and its environs are heavily managed. As shown in Figure 8-4 below, the hard edges and tall stone retaining walls create a hostile environment for marginal vegetation and there is minimal shade. The canal is relatively shallow, but there is

a good range of submerged vegetation. At Resolven, adjacent habitats, such as the towpath verge and the grassland, are close mown, whilst close to the town at Neath there is a real urban feel.

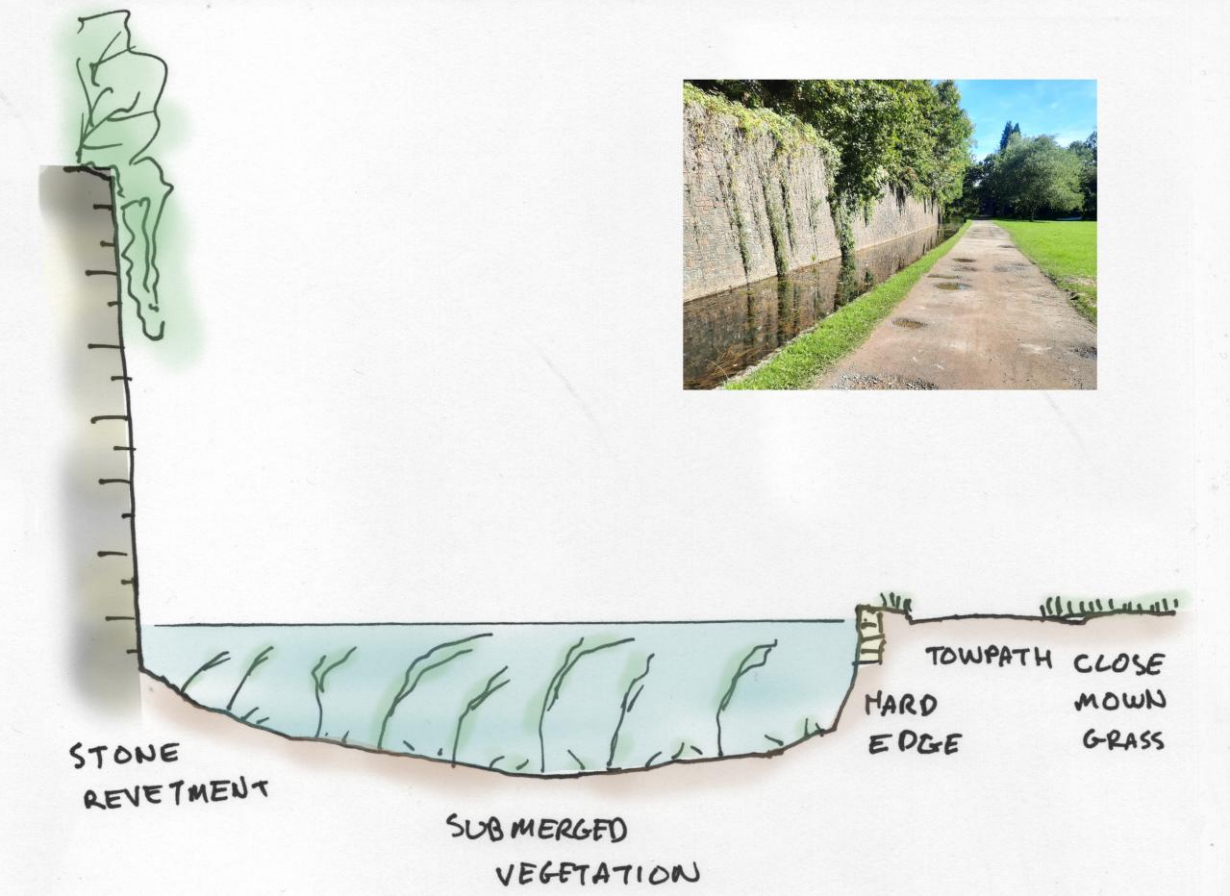

Figure 8-4 - Habitat 4

This is the sort of area where habitat creation would significantly benefit biodiversity. Coir rolls could be used to establish marginal vegetation below the revetment. Increased water depth could support a wider range of plants and aquatic species. Reduced mowing between the towpath and canal could also encourage a greater variety of marginal vegetation. There is the potential for meadow restoration on the grassland area, and positive management in nearby woodland.

8.2.5 Habitat 5

There is no ideal condition that should be imposed across all of the Canal, but in many places across the Neath Canal and Tennant Canal are sections that are typical of what a well maintained low-traffic canal could be like, as shown Figure 8-5.

In these locations, there is a wide range of vegetation types, with a clearly defined central channel of good depth. Adjacent woodland complements the canal habitat, without creating excessive shade. Areas like these are capable of supporting a very wide range of invertebrates, birds, mammals, amphibians and reptiles.

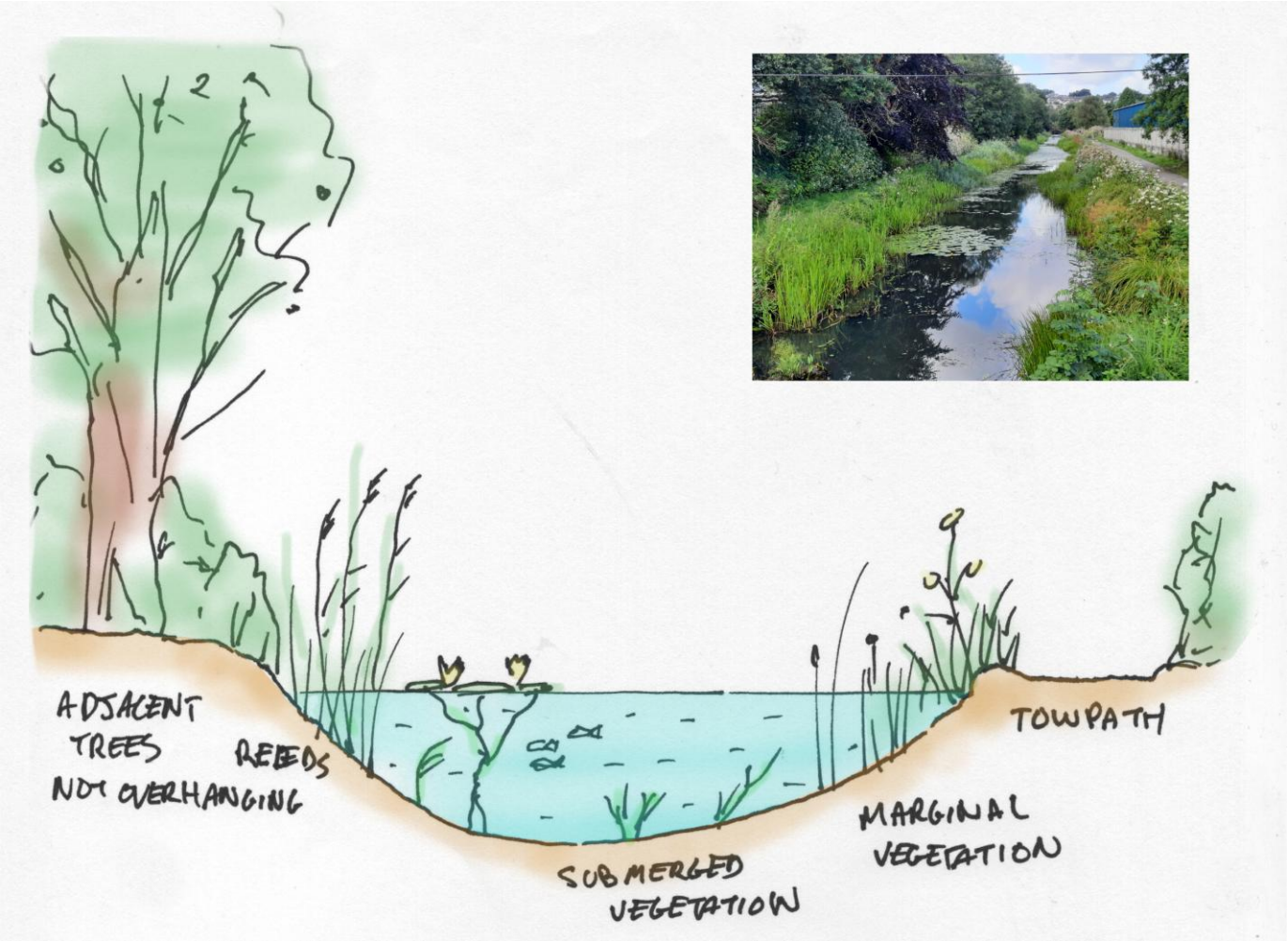

Figure 8-5 - Habitat 5

Some weed cutting and light dredging would be needed to establish a fully navigable channel, but the scene here is not far from many wildlife-rich canals elsewhere on the UK canal network.

As stipulated above, most of the canal sections require channel clearance to the former width and depth, and there are areas of bank repair to be undertaken, where the bank has eroded or subsided to leave little or no freeboard. There is not expected to be any major repair works to the lining of existing sections as the canal is holding water, however minor improvements are anticipated.

8.3 Key Canal Dimensions

The following basic restoration dimensions are assumed:

8.3.1 Craft – Maximum Size

- Length 18.29m/ 60 feet.
- Beam 2.74m/ 9 feet.
- Draft 0.9m/ 3 feet.

- Air draft 1.8m/ 6 feet.

8.3.2 Channel

- Original water width **7.6m**/ 25 feet.
- Minimum water depth 1.2m/ 4 feet.
- Freeboard 0.3m/ 1 foot.
- Minimum width at locks 2.9m/ 9.5 feet.
- Towpath width 1.8m / 6 feet (3.5m for multi-use trails where possible, less under or on structures).
- Minimum clearance under bridges – as historic, for any new structures 2.7m.

8.3.3 Partial Restoration Channel Width

The channel width stated above covers what would be needed for a channel of full navigation. As proposed in this report, the canal length currently lends itself to a number of different habitats with varying levels of navigation. The flowing addresses the requirements for refurbishing the ecological canal habitats that we have assigned to canal lengths:

- Minimum navigation width for paddle boards and kayaks of 3m.
- Minimum navigation for a small powered craft of 5m.
- Minimum navigation for a single narrow boat of 5m.
- All lengths of restored canal will need a turning area at both ends.

8.3.4 Full Restoration Channel Width

The canal channel will be restored into to varying widths of navigation. A further option of full restoration width is possible as well, which will be a 7.6m channel.

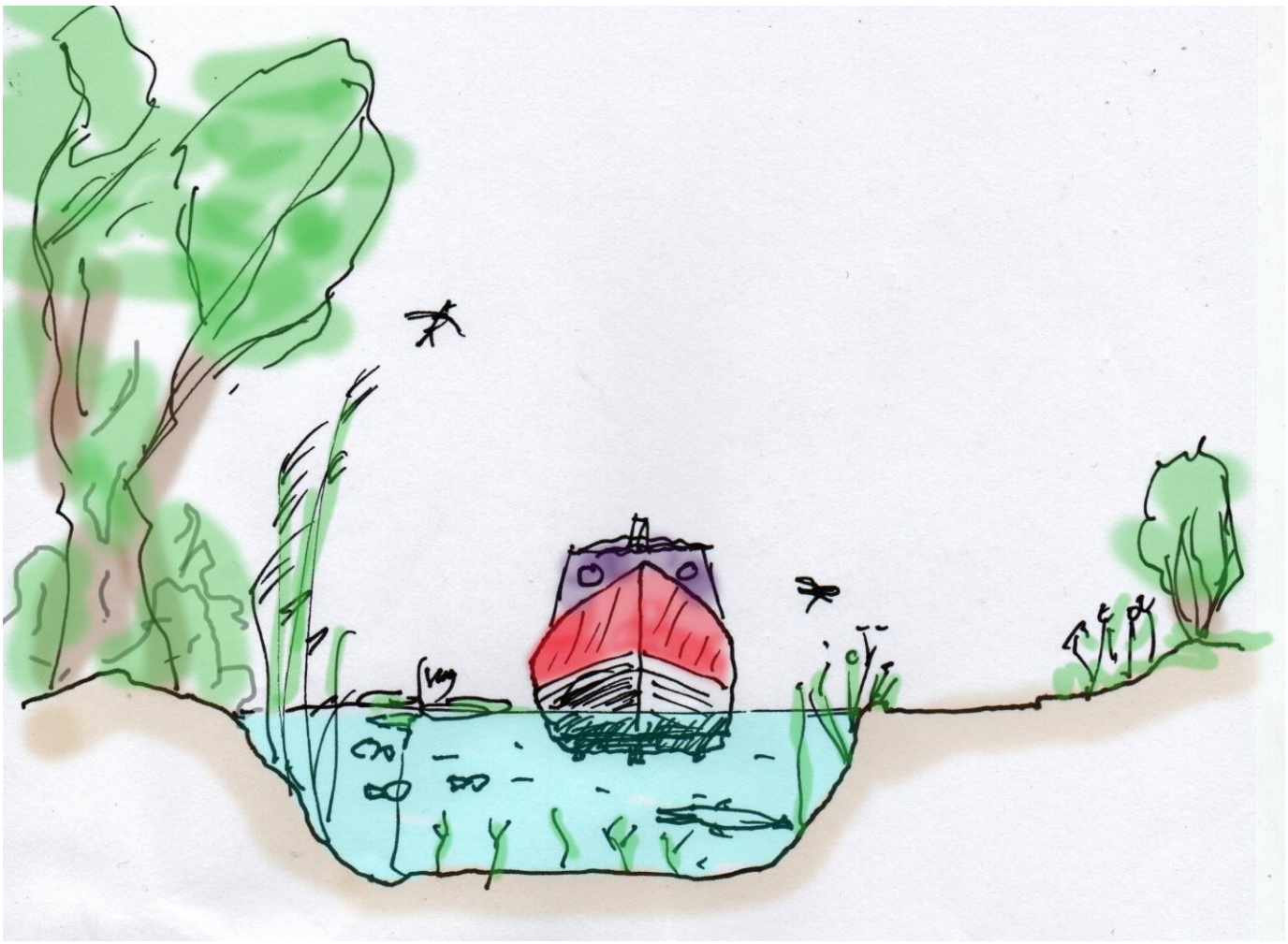

Figure 8-6 - Full Navigability

8.4 Dredging and Excavation

Dredging will be required across all canal sections, with the volume varying depending on the current condition and the intended use, whether for full navigation, kayaking, or biodiversity enhancement. Sections designated for trip boat operations must be restored to full navigational depth and width. Areas intended for use by kayakers or paddleboarders will only need minimal depth and width to remain navigable.

Several sections of the canal have become heavily silted and overgrown with vegetation, restricting water flow and navigation. The dredging process will likely involve excavating a narrow channel using long-reach equipment. The dredged material may either be left on the off-bank to dry, or transported to a nearby flat site for drying and potential reuse. Disposal to a licensed tip remains a last resort due to the high associated costs, but will be required where adjacent farmland is not available for disposal.

Suitable land for drying the dredged material will need to be identified. However, before any dredging takes place, Japanese knotweed must be fully isolated from the canal. If not addressed, any contaminated dredgings will need to be disposed of at a licensed waste facility, significantly increasing project costs.

Experience suggests that on average around 0.5m to 1m of silt or fill will need to be removed to achieve navigable depth.

8.4.1 Excavated Material

The material dredged or excavated can be categorised in four ways:

8.4.1.1 Wet/dry

Dredged material may be classified as wet or dry depending on the water content at the time of excavation, which affects both handling logistics and disposal options.

8.4.1.2 Organic silt or debris/imported fill

Excavated material often includes organic silt or natural debris, which is typically unsuitable for reuse on site as engineering fill.

8.4.1.3 Inert

Inert dredged material, such as clean sand, gravel, or clay, poses minimal environmental risk and may be suitable for reuse in landscaping, bank restoration, or other non-sensitive applications.

8.4.1.4 Contaminated

As the canals have been dredged in the past, it is unlikely that the dredgings will be classed as hazardous materials. However, the silts to be dredged must be tested, classified, and disposed of in accordance with environmental regulations to ensure safe handling and disposal. In this case, contamination is not limited to chemical pollutants, biological contamination is also of particular concern. Along the canals there is a large presence of INSS, in particular Japanese knotweed.

The dredged material containing Japanese knotweed must be handled with extreme care to prevent the spread. This includes avoiding movement of the contaminated soils to unlicensed sites and ensuring that all equipment is thoroughly cleaned after contact. It must be disposed off to a licensed landfill site that is permitted to accept invasive plant material as it is classified as controlled waste. There are also treatment options available for INSS.

8.4.1.5 Summary

All combinations are possible, imported fill may be wet if the canal retains water. Each infill requires a different treatment and wet excavations will required drying, not least to reduce the volume before disposal. All excavations will need disposal sites, and both transportation and tipping costs will be reduced if material can be reused beneficially alongside the canal sections. This leads to a need for treatment sites along the canal.

8.4.2 Treatment and Use of Excavated Material

In some locations, there may be potential to put the dredgings on top of the Japanese knotweed at the sides of the canal if there are large areas of it. This will not spread the Japanese knotweed and steps to control emerging plants can be put in place for future years.

Inert dry material is ready for re-use, inert wet material will need to be dried. Contaminated dry material can be treated on site or exported for treatment or fill elsewhere dependent upon the type of contamination.

The recommended drying option is to creating bays to tip material into mounds and then turn daily using a long reach excavator.

The sun and wind being used to evaporate the excess water. This solution is the cheapest, but it requires dry weather to remove the moisture and requires large take for the mounds.

8.5 Canal Channel Lining

From past restoration schemes, the original puddle clay was found to be intact. Where the canal has been infilled e.g. Ynysarwed, in the absence of ground investigation information, it would be prudent to allow for full re-lining over infilled canal sections.

The three main types of lining considered are:

1. Puddle clay.
2. Synthetic liner.
3. Bentonite liner.

8.5.1.1 Puddle Clay

Puddle clay was the traditional canal liner. The clay would have been laid typically to an 18” thick layer along the canal invert and sides. In embankments, the depth was generally increased to a 24” thickness. Today, puddle clay is: difficult to source, expensive to obtain, transport, and place.

8.5.1.2 Synthetic Liner

There are a number of synthetic liners available now used in construction, varying from low density polyethylene (LDPE) to high density polyethylene (HDPE) and ethylene propylene diene monomer rubber (EPDM). The installation requires specialist contractors and dry conditions to weld joints on site.

8.5.1.3 Bentonite Liner

Bentonite is a clay material, which swells considerably when hydrated. Bentonite liners comprise dry bentonite granules enclosed in two layers of thick geofabric. The liners are not mechanically bonded, but use simple lap joints with granules poured into the lapped sections of liner. The system works by confining the bentonite granules so that they form an impermeable layer when hydrated. The liner is then covered with a 300mm layer of fill material to confine the bentonite and stop it cracking if the canal was to dry out.

8.5.1.4 Recommended Canal Lining Option

Bentonite is the recommended option as it: can be installed by volunteers using hired plant, can be laid in the rain, and can be repaired easily, if it becomes punctured.

8.6 Locks

The Tennant Canal has one derelict lock at Aberdulais and the Neath Canal has the following locks:

- 12 surviving locks.

- 2 buried locks.
- 5 abandoned locks.

Surviving locks, which were renovated in the 1990s and 2000s, are generally in fair condition, being largely intact with some damage to stonework at the wall tops and have generally retained the shape and integrity of the chamber. These locks will need clearance of silt and vegetation, re-alignment, and replacement of loose and fallen stonework.

Most locks will require a new set of gates. Traditional timber gates have a lifespan of around 25 years. Richard Dommett (ex British Waterways Manager Wales and South West) has designed steel gates, which have a 100year life. The gates are a series of flat pack modules, which are bolted together and have been installed by volunteer in Newport. The locks at Tonna, Machin and Clune were built and installed by civil engineering contractors. On visual inspection these gates look in good order, with potential repairs being limited to the bottom of the gates in contact with water.

Locks in poor condition, have suffered far greater damage from either vegetation or water damage, the chamber has not retained its shape and walls are either leaning in or deformed. It is likely that the lower two thirds can remain standing with repointing and grouting of voids, whilst the top 1m to 2m will require rebuilding.

After vegetation removal, traditional masonry techniques using hydraulic lime mortars and lime grouts should be used to restore the historic structures. Replacement masonry will have to be carefully sourced and tooled to match the existing structures. Past lock repairs have used blue pennant sandstone from Gwrhyd Quarry in Pontardawe.

The coping stones can normally be retrieved from the invert of the locks and re-used. If not found, replacement copings should be sourced.

All repairs to the locks could be undertaken by volunteers, after receiving appropriate skills training and supervision.

8.7 Bridges

There are 28 historic bridges over the canal, of which 20 are road/ access bridges including 3 which are carrying watercourses. There are also 8 railway bridges crossing the canal, comprising a mix of active and disused structures, plus modern concrete bridges carrying the A465, M4 motorway, and other local roads.

All bridges along the Tennant Canal provide navigable headroom sufficient for the intended use of small craft, as evidenced by their recent use by maintenance vessels. However, some of these structures present limited clearance for pedestrians and, more notably, for cyclists. This is due to the typical design where the towpath side of the arch is lower than the central canal channel, resulting in a situation where a person walking or cycling on the towpath may be taller than the cabin height of a boat passing beneath the same bridge.

Between Diamond Bridge and the terminus at Briton Ferry, a few additional bridges also exhibit low clearance. These do not pose a significant navigational constraint unless modifications are made to raise Diamond Bridge. Under current conditions, passage by canoe remains feasible along this stretch.

In contrast, Bridge Street Bridge and Milland Road Bridge on the Neath Canal presents unique obstructions, offering low clearance that, even a canoe is unable to pass beneath it.

It is expected that all the bridges will require some minor refurbishment. For the majority of locations, where navigable headroom is available, the bridges can be restored after vegetation removal using traditional masonry techniques using hydraulic lime mortars and lime grouts. Replacement masonry will have to be sourced and tooled

to match the existing structures. The copings can normally be retrieved from the invert of the bridges and re-used. If missing, replacement copings can be sourced and tooled to match the original appearance.

All repairs to the bridges could be undertaken by volunteers, after receiving appropriate skills training and supervision, subject to bat surveys being undertaken by licenced specialists.

8.8 Aberdulais Aqueduct

The historically important structure has really suffered from flood damage over the last few decades, to the extent that the structure is at a critically weak state, a large winter storm could wash away part of the structure and the historic fabric will be lost.

In the short term, the aqueduct should be consolidated to stop deterioration and provide resistant to a flood. The works would likely comprise removal of vegetation, masonry repointing and grouting of large bulging voids, and laying a lime mortar coping layer.

In the medium term, the aqueduct will need to be made navigable with major structural masonry repairs to the aqueduct walls, arches and the foundations, river scour prevention works.

The aqueduct didn't have a cast iron trough, but relied upon hydraulic lime in the wall masonry and above the arches to stop leaks. It will be difficult to re-create an impermeable masonry canal trough without re-building the aqueduct above the arches. The aqueduct could be made watertight by installing an impermeable liner to the invert and walls. The stone invert paving slabs could be removed and re-laid on top of the liner to prevent mechanical damage. The vertical sides of the liner could be protected by timber rubbing strips.

Restoration of the aqueduct to full navigation will provide the vital link to join both canals and raise the importance of the canal to UK wide interest.

8.9 Water Management

8.9.1 Water Supply

Neath Canal is fed from streams, which should provide water for the proposed restored sections for trip boats between Neath and Ynysbwllog.

The Tennant Canal is in water, but has suffered with low water levels during dry periods of weather. Historically, water came from the River Neath via Aberdulais weir until the weir was damaged by the fish pass construction in 2021. Temporary pumps were used to supply water from the river and were funded by the sale of water to Calon Energy. Following the closure of the energy plant, pumping ceased, and the pumps were removed.

The Tennant Canal will require a water supply to keep water levels raised. When Aberdulais lock is restored, a water supply will be needed to account for lockage water loss, infiltration, and evapotranspiration. This would require a new water abstraction from the River Neath, which is likely to take some time to gain approval from NRW and will be costly to secure an annual abstraction licence, as highly published this year for the Monmouthshire and Brecon Canal. To avoid an abstraction licence, there may be opportunity to divert water from the Neath Canal via a restored Aberdulais Aqueduct.

8.9.2 Flood Water

Flood water is routed away from both canals via a number of small weirs and sluices. The correct operation of which is a specialist management regime that has built up over years of knowledge, passed down from one canal foreman to another. The routine raising and lowering of water levels tends to be actioned with stop logs on the weirs, with penstock being opened to remove flood water. A formal operating procedure should be documented to ensure that the canal can be managed without flooding in the future.

The sluice support frames tend to be nearing the end of life, so will need renewing. There is also likely to be the need for scour prevention works around the weirs.

There are locations where the River Neath flows very close to the Neath Canal. In such instances, there is the danger that the river could erode its banks and cause a canal breach or overtop the towpath; as happens above Aberdulais. The costings allow for the large sums of money to provide rock armour protection and flood walls at Resolven and Clyne.

At Aberdulais, the masonry arched aqueduct has been shown by computer modelling to restrict river flood flows and thus contribute to flooding at Canal Side. The restoration of Aberdulais Aqueduct and the lock will need to be developed with NRW to develop a solution to minimise flooding.

The proposed Skewen flood management scheme, routes flood water into the canal to the west of Neath Abbey and the flood water will then be discharged into the Clydach River via an improved overflow at Clydach Aqueduct. This is an example of how the canals can be used to help manage flooding to communities.

8.9.3 Drought

The summer of 2025 has seen drought conditions and a number of UK canals have been closed to traffic as water levels were too low. With climate change, the frequency and extended duration of canal closures is something that will need to be studied, and once again linked to a formal new operating system. It would be prudent to futureproof the water management of the canals by providing back-pumping at each lock or a series of locks, which are close together. A side effect of drought, is that low water levels may cause instability in the canal sides causing slumping.

8.9.4 Culverts

There are many culverts, which route watercourses under both canals. All culverts will need to be inspected to confirm their dimensions and condition. The survey will require: vegetation clearance, cleaning all culverts of debris and then carrying out a full topographical and CCTV surveys. The CCTV survey is important, as culvert collapse is a regular source of canal leaks on the UK canal network, which lead canal breaches with the resulting potential for flooding, disruption and major unplanned expenditure. Repair works are likely to comprise culvert re-lining, headwall improvements, and scour protection works to the downstream channels.

In addition, there are multiple watercourses, drains, and highway drainage networks that discharge into the canals, particularly along the B4242. These drains raise water levels within the canals throughout the year. The inflows will need to be considered when carrying out a flood risk assessment for both canals.

9. Vessels That Will Use The Navigation

9.1 Introduction

Locks on the Neath and Tennant Canals were constructed to take boats approximately 60 feet long by 9 feet beam (18.3m by 2.7m). Bradshaw (1904) gives the available headroom as 6 feet (1.8m) for navigation, where the towpath passes under the bridges, the height available for the towpath is often significantly lower, especially on the Tennant Canal, as the towpath is above water level and the arch of the bridge curves at the side. It is thought that ponies rather than horses were used to pull boats on these canals.

Some bridges on the Neath Canal have been lowered to benefit road traffic, particularly in central Neath and towards the Briton Ferry Terminus. The Tennant Canal was navigated until recently by weed cutters that needed most of the advertised 1.8m headroom, and thus all bridges on the Tennant Canal are high enough for any likely boat traffic.

9.2 Previous Canal Usage

In the past, trip boats operated on the Neath Canal at Resolven and from Neath to Tonna. From 1990s, the Thomas Dadford, a 20ft long steel narrow boat, operated public trips from Resolven along the canal. The boat named Enfys, was a much larger vessel that could carry disabled passengers and also operated along the Neath Canal. In the mid 90s, the Thomas Dadford was moved to operate from Neath Town Centre. Both boats were retired in the later 2000s due to corrosion and no trips have operated since. Enfys has since been restored and now operates from Goytre on the Brecon and Abergavenny Canal.

In addition to this, the Neath Canal hosted the National Trail Boat Festival in 2011.

9.3 Canoes, Rowing Boats, Stand Up Paddleboards

Canoes, rowing boats, and stand-up paddleboards, can already use sections of the Neath and Tenant Canal; although a through journey might be problematic for less experienced paddlers.

There is no reason why canoes and rowing boats should not use locks if care is taken; indeed rowing boats and canadian canoes with multiple occupants and camping gear, will find portage difficult unless rollers are provided. Solo canoeists will probably find it easier to carry their boat around the locks and stand-up paddleboards are not suitable for use in locks. It would be beneficial to provide launch and retrieval points at lock landings for canoes and paddleboards; subject to ecological constraints.

9.4 Small Cruiser

For the purposes of this study, a small cruiser is defined as one that can be towed on the road by a standard car rather than needing an HGV – this limits both dimensions and weight. Most boats of this type are 23 feet (7 metres) long by 7 feet (2.1metres) beam with a maximum weight of 2 tonnes. In practice the air draught on the canals would also restrict some cruisers of this type, if the windscreen cannot be lowered.

9.5 Narrow Boats

Narrow boats are a feature of the UK Canal Network where they were the mainstay of the UK canal fleet. Modern boats are all steel (hull and cabin), very robust, and very easy for novices to handle. A narrow boat, as distinct from any other type of canal boat, is 7 feet wide and varies in length from about 20 feet to 70 feet. Clearly on the Neath and Tennant Canals the limit would be 60 feet; although they could also be slightly wider than a typical narrow boat. Some thought needs to be given to turning vessels round, as the original Neath Canal Boats were double ended with a rudder mount at each end and thus did not need to turn round. The trip boat Enfys was also built with a rudder and motor at each end for this reason. As a result, a winding hole will be needed at both ends of trip boat sections to turn narrow boats around.

9.6 Residential Boats

The term “house boat” has a particular meaning in law so we are using the term residential boat in this report – all houseboats are residential, but not all residential boats are house boats. In particular “house boats” do not usually have “the accoutrements of propulsion” – they are not designed or equipped to move and thus must be serviced in-situ. This often means that boats like these are fastened to mains services.

A more common form of residential boat is a narrow boat or cruiser that is being used for residential purposes. Equipped with an engine and a generator these boats are more “off grid” but can be hooked up to shore power for convenience. The boat can be moved to a service pier and dry dock/slipway for maintenance, repair, and for services such as sewage pump out. For a residential mooring it would be desirable for there to be a power hookup and water tap next to every residential boat, and for communal facilities such as refuse disposal, shower block and laundry to be provided.

One big advantage of using narrow boats for residential purposes is a thriving after market, which means that boats are easy to acquire and easy to sell on. Due to the canals’ geographic location, there would be a slight disadvantage here as any boat would need to be moved with a truck and craned into the canal, but even on the connected canal network boats are often moved by truck rather than sailed to their new moorings.

Residential boats would give a small amount (perhaps 10 to 20 units at any one site) of low-cost housing on the tiny homes model, and would give purpose to the canals. Also, if the residents are allowed and encouraged to take trips along the canal then more of the canal is active. In addition, if the residential vessels are located with other facilities, such as maintenance and the base for a trip boat or hire boat, then overall viability is improved and security increased with a residential element.

9.7 Maintenance Vessels

These vessels, especially mud hoppers, are the closest vessels in scale to the original working vessels on the canal. They will often be heavy and cumbersome, but will be handled by operatives who are experienced, qualified and work on the canal for a living. The weight and size of these vessels means that they will need to be robust and the fendering on structures may be appropriate in some locations.

10. Opportunities

10.1 Introduction

This section of the report identifies considerable scope for creation of tourism and leisure, environmental, habitat, and heritage opportunities along the length of the canal. Restoring the canal and creating new landscape attractions will enhance the appeal of the area.

If the canals as a whole are 'packaged' with the River Neath, Crymlyn Bog and its associated wetlands, National Trust Aberdulais, Melincourt Falls, Neath Abbey, Aderdulais Aqueduct and the country parks, as well as other local attractions, the opportunity exists to promote the area as a varied and attractive area for heritage and outdoor recreation.

Recent grant opportunities to promote tourism in Wales, shows ways in which such initiatives could raise funds in the future. In addition to NLHF, the £5 million Brilliant Basics fund provides for improving basic visitor infrastructure, and the £50 million Wales Tourism Investment Fund is supporting broader capital investments. Should NPT council decide to implement a Visitor Levy from 2027, this could also provide a source of income for re-investing in tourism infrastructure.

10.2 Tourism and Leisure

Among the key objectives of the Neath Canal and Tennant Canal restoration, is the development of a vibrant tourism and leisure destination in surrounding communities. These historically significant waterways offer a unique blend of heritage and natural beauty with features, such as scheduled monuments, listed buildings and conservation areas.

The canal already provides popular opportunity for walking and cycling, forming part of the National Cycle Network and are also home to a mixture of lifestyle. The restoration of the Neath and Tennant Canals aims to enhance further these assets by transforming the canals into accessible green corridors for active recreation, wellbeing, and tourism.

10.2.1 Trip Boats

Further objectives include developing the canals as heritage destinations that connects communities along the canals and supports local economies. A particular area of tourism, which this study aims to revive, is trip boats. With the restoration of Aberdulais Aqueduct, a number of routes can be created that allow trip boats.

There are multiple options for trip boats and the exact specification of any boats would have to be decided through market testing. Boats can range from small open boats, through lager 'water bus' type vessels up to narrowboats. All types of boat can be electrically powered, reducing the risk of pollution, easing maintenance, and reducing running costs.

Passenger accommodation can be seated or standing, and in some areas narrowboats function as meeting and event venues or educational facilities. Trips can be two-way, but in some cases that would result in an over-long trip for some passengers and either a dedicated minibus or co-ordinated public transport could be used to make a relatively swift return. This may require the provision of new bus stops or reserved parking areas.

In order for canal trips to be attractive, they will ideally provide a range of experiences for passengers:

- The canals pass through a variety of situations from urban to rural areas, such as farmed land, woodland, grassland, and other habitats.
- Passing thorough a modest number of locks adds great interest for travellers, however, they should not be too numerous as this causes excessive delays.
- Features like bridges and aqueducts add further interest, especially where their context can be explained, crossing Aberdulais Aqueduct would be a great attraction.
- Wildlife, such as birds, insects, and potentially the opportunity to see scarce or rare species, add to the excitement.
- The canals also benefit from the distinct characters of the different sections, as well as changes with the seasons, providing incentives for the public to return and try new routes.
- Opportunity for schools to link to the local heritage, the Industrial Revolution, and the environment.

Table 10-1 - Aberdulais cruising options

Route	Length (km)	Time (hr)	Features
Neath to Tonna	6.4	2.0	1 lock
Neath to Ynysbwllog	8.5	4.0	4 locks Aqueduct
Neath Abbey to Aberdulais	4.3	1.5	1 lock Aqueduct
Neath to Neath Abbey	7.4	3	2 locks Aqueduct

The ongoing Lifequake Project at Crymlyn Bog NNR, includes clearance of the Glan-y-Wern canal. There is potential for a small electric boat to undertake short trips to and from the Nature Reserve.

10.2.1.1 Neath to Tonna

Restoring the canal to just past Tonna, would give around 6.4km of boating, approximately a 2.5hour round trip.

The route would pass through the Tyn-yr-Heol lock and the workshops below Tonna and then return through the same lock. The trip boat could start in the heart of Neath, possible from a new depot and marina near Bridge Street, pass through the attractive urban edge area, before going through a more densely wooded section.

The canal and its assets are in relatively good condition, so it is potentially a relatively straightforward restoration offering a ‘quick win’.

10.2.1.2 Neath to Ynysbwllog

After restoring the canal to Tonna, restoring around another 2.1km of navigation to Ynysbwllog would give 8.5km of boating, a roughly 4hour end to end trip. A full out and back trip would take a whole day, so provision of alternative transport to or from Ynysbwllog would be essential to making this route attractive to visitors for a half day or full day experience.

The route would pass through three more locks beyond Tonna. Near the end it crosses the very long single span Ynysbwllog Aqueduct, a modern structure that offers the attraction of travelling over the River Neath. The trip boat could start in the heart of Neath, possible from a new depot and marina near Bridge Street, pass through the attractive urban edge area, before going through a more densely wooded section, and then emerging into more open farmland.

10.2.1.3 Neath Abbey to Aberdulais

The Neath Abbey to Aberdulais route is 4.3km long and has only one derelict lock, adjacent to Aberdulais Aqueduct, and would therefore only take around 1.5 hours to navigate one-way. This would provide the option for both one-way and two-way trips, with relatively easy links through public transport for return journeys.

Despite being a largely urban route, the route has a fairly rural aspect towards Neath Abbey, but the route should stress its heritage aspects. There is potential for visitor hubs at both Neath Abbey and Aberdulais Aqueduct.

Neath Abbey is a significant visitor attraction in its own right. A canal side visitor hub at Neath Abbey would increase tourist interest into this fascinating and impressive structure, which survived being used as a copper smelting works in the industrial revolution. The combination with potential canal trips would further increase its appeal. Moorings could be provided near the aqueduct at the Abbey, where the canal currently widens.

An Aberdulais hub could link to the Aberdulais Waterfalls and other industrial heritage in the area. It offers easy access to the National Trust property at Aberdulais (currently with limited opening for visitors).

There is limited need for a café at Aberdulais as there is a local pub and it could be used to signpost people to the canal. The potential exists for a picnic/parking area near Aberdulais Basin with excellent views of Aberdulais Aqueduct, River Neath, and the rail bridge over the river. This would require efforts to control invasive species, and investment in suitable infrastructure, and security.

Ideally, this route would benefit from restoration of Aberdulais Aqueduct, however in the medium term, it could terminate at the lock. The canal channel is in relatively good condition with the main requirement being weed cutting and some tree work, so it could provide a short-term initiative. The link right through to Aberdulais Basin and the Neath Canal would require significant investment, but would greatly add to the appeal, viability of the route and prominence in the UK canal network.

Figure 10-1 - Aberdulais Falls

10.2.1.4 Neath to Neath Abbey

A fourth option for boat trips, is a two-way trip from Bridge Steet to Neath Abbey, across a restored Aberdulais Aqueduct, would create a 7.4km route, taking around 3 hours. Again, it would be feasible to do the round trip in a day, but many will choose only to do part of the journey.

Popular choices might be to opportunity to visit Neath Abbey and then be dropped off near Bridge Street for a short walk back into Neath. Another option would be to travel to Aberdulais from Neath and then have around 3 hours to visit attractions in the Aberdulais area before rejoining the trip boat at Aberdulais.

10.2.1.5 Crymlyn Bog and the Glan-y-Wern Canal

The Lifequake Project at Crymlyn Bog NNR is focused on recovering the bogs' internationally important habitats, but as part of the work, the old Glan-Wern Canal, which passes across the heart of Crymlyn Bog to the Tennant Canal, is being cleared to re-establish it as a drain to the Tennant Canal.

Subject to the agreement of Natural Resources Wales, this offers the potential for a small, low-impact electric trip boat to visit Crymlyn Bog NNR using the Tennant Canal and Glan-y-Wern Canal. Potentially the boat could start at Neath Abbey, but the relatively low bridges may prove too restrictive and instead one or both of Pant-y-Sais LNR near Jersey Marine or Port Tennant Ashlands Playing Fields in the Swansea Council area could provide a pickup and set-down point for passengers.

10.3 Well-being

The canals offer a major resource for wellbeing initiatives, being already used for walking and cycling. However, there is great variation in the levels of use, partly driven by location, but also limited by the ease of physical access to and along the canal towpath.

The canal towpaths, and their access points, could potentially be upgraded to create Active Travel Routes (as undertaken between Briton Ferry and Tonna), potentially with support from Welsh Government grants. However, this may not be desirable in some areas if the paths require to be widened and/or upgraded, as this may cause an unacceptable degree of ecological damage. Where paths upgrades are acceptable, tarmac should be avoided outside the urban areas, and more environmentally friendly permeable solutions should be used.

In addition to the existing slipways at Ynysbwllog, Resolven, and Aberdulais, more locations could be provided for kayakers and paddle boarders. The photograph illustrates a new facility provided on the Louth Navigation in Lincolnshire, which has resulted in a large increase in recreational use of the canal within a few months.

Figure 10-2 - Louth Navigation New Slipway

The potential exists to create, or upgrade existing, nature and heritage trails, in particular a robust opportunity exists to create a circular route encompassing the most urban sections of the Neath and Tennant Canals. Such routes can have a dual function of promoting understanding and appreciation of natural and historic heritage and of supporting active and low-carbon travel.

Longer distance walking routes could encompass the whole of the two canals. While relatively few walkers would wish to tackle the whole lengths in a single day, this would open up a host of potential 'point to point' and 'out and back' walks, supported by existing public transport links and encouraging local tourism and the use of local hubs. Linear trails could be created in a similar manner to the Swansea Canal.

Angling is considered to be the UK's most popular sport, and NRW estimate that there are around 100,000 anglers in Wales. There was support for angling at the consultation days. There is already use of the canals for angling, much of which is unregulated. A significant threat to biodiversity is the introduction of new fish stocks by third parties (such reintroductions were mentioned at the consultation event). The potential exists to better formalise and manage angling at appropriate locations in liaison with NRW and local fishing clubs. This could include the provision of angling pitches at appropriate locations.

Geocaching is a relatively new activity, that uses global positioning technology to help people find discretely hidden 'geocaches' that are typically a waterproof container with a logbook and other small items, discretely hidden for people to find. In the UK, geocaching guidelines focus on safety, environmental responsibility, and respect for land ownership. Caches should be hidden with permission, not buried, and should not harm the environment or disrupt wildlife. Land managers and local communities should be informed, and caches should be clearly marked with contact information.

There is the potential for several picnic areas to be located around the canals, to provide easy to reach locations for visiting the canals and bases for walks etc.

Whilst encouraging walking and cycling is a priority, the provision of better car parking, suitable for people with all levels of physical ability can help ensure the befits of the canal reach a wider audience.

10.4 Volunteering

A vital part of the restoration of the two canal systems, is the use and availability of volunteers. From public engagement and interaction with the local community it can be seen that there is real support for the restoration of the canals through individuals, as well as community groups.

Volunteers will play a crucial role in restoring the canal systems by contributing their time, skills and enthusiasm to various tasks. It is envisaged that volunteers will be able to assist with clearing vegetation along the canal banks and improvements to wildlife habitats. Additionally, they can help with repairs and maintenance works, such as fixing locks and clearing blockages, ensuring that the canal remains in a navigable state. Through these activities not only are the volunteers benefitting their local community, there is also the opportunity to upskill, learning new techniques in construction, environmental conservation etc. By engaging with the community, volunteer efforts foster a sense of ownership and pride in local waterways, encouraging ongoing stewardship and support for canal restoration projects.

Volunteers have undertaken every aspect of canal restoration on the many and varied schemes around the UK, including woodland management and tree felling, stone masonry, building reinforced concrete structures and hanging lock gates. The lock gates identified in this report and used on the Monmouthshire Canal at Ty Coch were specifically designed with volunteers in mind. However, whilst volunteers collectively can do almost any job in canal restoration it is unusual for them to do every job on a scheme. That said, as parts of the Neath Canal were navigable until recently, the restoration here has more in common with the restoration schemes of the 1960's and 1970's when parts of England's canal network were rescued by volunteers, than with the complex engineering schemes being pursued elsewhere. Thus, it is readily conceivable that volunteers working alone in an organised environment could restore significant lengths of the Neath Canal in particular; including locks.

Further to this, volunteers could deliver significant sized discreet sub-projects that make up part of a larger project and are beneficial in their own right. One obvious example here would be Tonna Lock, where the remedial works required are relatively light and the gates can be fitted by volunteers. This is the only lock for around 6.4km and would make a big contribution to restoration of the lower Neath Canal, and the lengths of canal around it are largely within the scope of volunteer labour too.

The most outstanding example of a canal largely restored with volunteer labour is the Wey and Arun, where much of the work, including restoration of locks, channel, and bridges has been done by volunteers, the main exception to this was the work to lower the canal and build a new bridge at Loxwood, as the works had to be done by a contractor licensed to work on the public highway. Elsewhere, other schemes have seen individual structures restored or rebuilt entirely by volunteers, including bridges on the Thames and Severn Canal, and locks on the Lichfield Canal.

Major works, such as the consolidation and restoration of Aberdulais Aqueduct, would need to be undertaken by a civil engineering contractor able to manage the high level of complexity required to gain access to the aqueduct and the health and safety risks associated with working in and around the fast-flowing River Neath.

Opportunities for volunteering along the canals fall into three categories:

- Regular activities focused on specific sites or areas, usually rooted in local communities.
- Activity programmes focused on skilled activities such as habitat creation and management, wildlife surveys, reporting wildlife crime, lock restoration etc.
- Occasional or one-off activities such as litter picks, bio-blitzes or habitat creation.

Site based activities lend themselves to developing groups based within local communities already engaged in managing the area south of Resolven. Such groups can develop high levels of local knowledge and the skills to undertake a wide range of activities.

Activity programmes often attract volunteers with specific interests and who may also get involved with related activities away from the canal. Existing active special interest groups could get involved, as well as there being potential for a new group or groups focused largely on the canals. There are a number of local and special interest groups that should become largely self-reliant.

One-off activities would usually, though not always, focus on attracting and engaging volunteers without specific skills, including families, school groups, corporate volunteers etc. Such events can aim to engage with new and wider audiences, and hopefully attract long term volunteers to get involved with other activities.

Some of these volunteer groups would benefit from the support of the Waterways Recovery Group (WRG), who carry out a wide range of large restoration projects throughout the UK and would relish the challenge of helping to restore the canals. The WRG have members who can drive JCB's and dumpers plus hold certificated for chainsaws and the like. They are a highly skilled body in conservation works and would provide a means of starting to train local groups. They would come to site for weekends or a week or two to really drive forward a particular part of the canal restoration e.g. lock restoration.

Much of the works involved in restoring the locks and bridges will involve masonry conservation skills. The local volunteers could be trained by the WRG and a formal local accreditation with Neath College, providing a skill that young volunteers can go on to create meaningful employment.

Figure 10-3 - Horse drawn barge by volunteers

Figure 10-4 - Volunteers shrub and tree maintenance on Great Western Canal

10.4.1 Canals Project Manager

The Charitable Incorporated Organisation's Canals Project Manager (CPM) will have ownership of the project to deliver restoration of both canals. This will be the first appointment, being responsible for the restoration of both canals.

The CPM will help publicise the canal restoration, employ the community engagement officer and then to plan the programme of projects, ranging from interpretation, to design, and overseeing the consolidation and restoration of key projects, such as Aberdulais Aqueduct.

The restoration of both canals will require considerable funding, which will have to come predominantly from grant funding. It is likely that a major part of the funding will come from NHLF; and Cadw in the instance of restoring Aberdulais Aqueduct. The CPM will be responsible for developing restoration projects, gaining funding, procuring designers and contractors for then major works, and the drawing down funds, providing regular progress reports, carrying out funding audits, and looking ahead for future grants.

10.4.2 Community Engagement Officer

To ensure communities, volunteering, and education play a large part in the restoration and management of the canal, a dedicated officer will be an essential role to plan the work of volunteers and organise the plant, machinery, small tools and materials.

The prime role of a Charitable Incorporated Organisation's Community Engagement Officer (CEO) would be to engage with a wide range of local organisations, such as residents' groups, clubs and societies, local businesses and provide a key point of contact between the canal managers and local people. For example, they could attend meetings to inform people of plans and progress, be a conduit for ongoing consultation, and act as a main contact for reporting issues requiring action.

The Officer would also take prime responsibility for facilitating the engagement of volunteers in many aspects of the other projects and in delivering educational activities.

Education plays a big part in the role, be it at primary school level or to informed audiences.

An aspect of the Officer's remit would be to raise understanding and awareness of the canals, and their heritage and biodiversity among local communities. The Officer would organise a programme of education activities, such as guided walks and illustrated talks or activities with schools and colleges. It would be anticipated that they would deliver some activities themselves and use external support for others.

The Officer should also play a role in the delivery of improved interpretation, by helping oversee works such as signage, social media, and the canal's web presence.

10.5 Environmental and Habitat Opportunities

The combination of habitats, post-restoration, means that a restored waterway often has greater biodiversity than was the case prior to restoration, and this improvement occurs even without deliberate intervention – there are many ways in which design can enhance this still further.

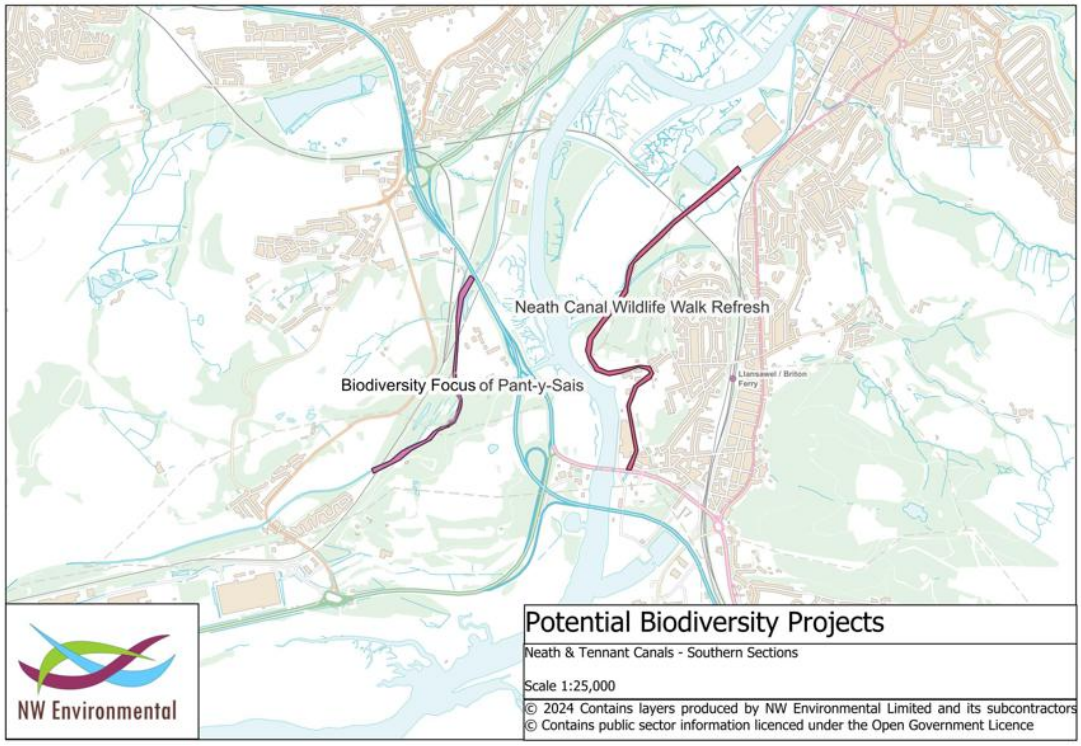

Figure 10-5 - Potential Biodiversity Projects – Southern Sections

10.5.1 Biodiversity Focus of Pant-y-Sais

There is the potential to create a focus for biodiversity management on the Tennant Canal from Pant-y-Sais LNR to the M4 motorway. The aim of the initiative would be to manage an area of canal as a buffer between the rest of the canal and the designated sites to the west. This has significant benefits:

- Co-ordinating control of invasive species here with such work on the designated sections.

- Creating opportunities for scarce species to colonise more of the canal, creating larger populations more robust to climate change and other threats.

- Providing an area where interpretation and access could be provided in high-quality habitat without impacting on the designated areas or needing special consent.

10.5.2 Neath Canal Wildlife Walk Refresh

This existing nature trail on the lower section of the Neath Canal needs upgrading of its aging signage and minor works to improve access. There are opportunities for habitat improvements, including some localised channel clearance and targeted provision of wildlife shelter, and breeding such as bird boxes or otter holts.

10.5.3 Aberdulais- Bridge Street Loop

There is an existing route that comprises a loop formed by the Upper Tennant Canal and the Neath Canal from Aberdulais to Bridge Street. There are two links alongside public roads – bypassing the Aberdulais Aqueduct and across the River Neath at Bridge Street. The total distance is approximately 7.5km (4.8 miles).

Due to the proximity to Neath town centre, Aberdulais and the abundance of entry points to the loop, it has the potential to be well used and allow walkers opportunities to use it to move between or access other local destinations. Although the length is slightly longer than ideal, regular buses between Aberdulais and Neath make walking approximately half the loop a practical consideration for those not wanting to walk so far. Sections of the loop are already used by pedestrians moving between local destinations and both longer walks linking to longer trails and shorter ‘out and back’ routes are practical. Investment in the loop could benefit a very wide range of users.

As the canal towpaths are already in reasonable condition for walking only minor improvements would be needed, such as making access points more obvious, together with waymarking an interpretation. Improvements would have to take account of local biodiversity constraints and use environmentally friendly solutions. This initiative could bring major returns for a relatively modest investment.

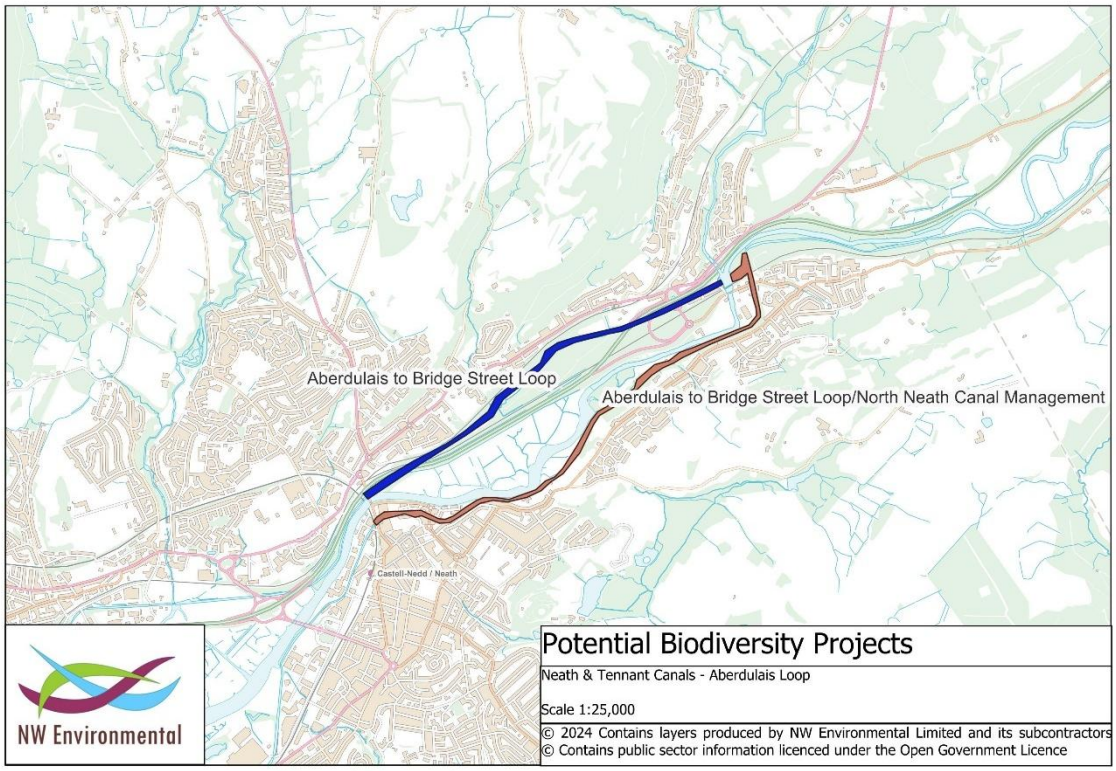

Figure 10-6 - Potential biodiversity projects - Aberdulais Loop

10.5.4 North Neath Canal Management

North of Neath town centre the edges of the canal are flail cut fairly early in the season. Further towards Aberdulais some of the sections of the canal are very heavily shaded. A biodiversity assessment review could be undertaken of existing flail cutting and looking at opportunities to make better use of it, perhaps by making it less intensive (e.g. bi- or tri-annual) but including more of the canal. There are also opportunities for management to cut back trees leaning into the canal or creating excessive shade. Potentially coir rolls to create reedy margins and the provision of bat and bird boxes, habitat piles and the like could also bring biodiversity gains.

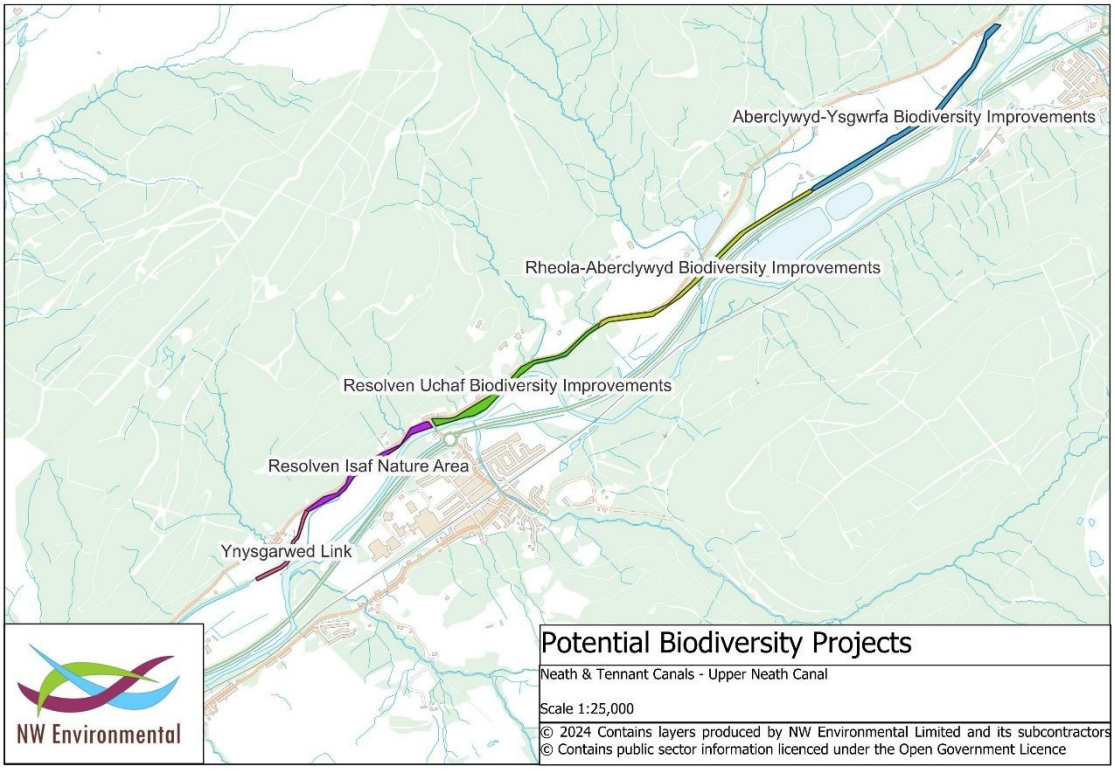

Figure 10-7 - Potential biodiversity projects - Upper Neath Canal

10.5.5 Ynysarwed Link

Consultees expressed a wish to see a safe link across the missing section at Ynysarwed. This could be delivered through a nature and heritage trail where the canal has been infilled at Ynysarwed. This would bring several benefits:

- Raising awareness of the former route of the canal.
- Helping safeguard the line of the canal, ensure it is identified and kept clear ahead of potential future restoration.
- It could provide a safe, accessible walking and cycling link between the northern and southern sections of the Neath Canal.

In long term, biodiversity improvements along this route could help strengthen the wildlife corridor along the Neath Canal.

10.5.6 Resolven Isaf Nature Area

The section of canal south of Resolven, to the point where the canal has been infilled at Ynysarwed, is managed as an informal nature area by the local community. An opportunity exists to formalise this situation and, in particular, to improve access along this section, including identifying a practical and safe route to the south. Improved access would be a major benefit due to the section's proximity to the car park and café at Resolven Basin. The section would also benefit from formal interpretation, and assistance with planning, and undertaking habitat management.

10.5.7 Resolven Uchaf Biodiversity Improvements

The section of the Neath Canal north of Resolven is well used for recreational purposes, but is one of the most heavily managed sections of the canal. It has hard edges and very little emergent vegetation. The adjacent areas include a large area of amenity-style grassland and areas of woodland. There appears to be a range of opportunities for habitat creation and improvement along this section, subject to balancing with the recreational use of this area. These could include using coir rolls to create attractive, vegetated margins and a wildflower meadow restoration, as well as woodland management and installing bat and bird boxes.

10.5.8 Rheola-Aberclywyd Biodiversity Improvements

The section of the Neath Canal above Rheola has been impacted by the poor condition of the locks, allowing the water levels to drop. Raising the water levels, ideally accompanied by dredging to ensure a permanent water channel, would bring major biodiversity benefits. Stop boards could be installed as an interim measure pending future repair of the locks. Minor access improvements including identifying any dangerous trees and making them safe, together with interpretation boards would improve this area for visitors.

10.5.9 Aberclywyd-Ysgwrfa Biodiversity Improvements

The next section of the Neath Canal is very similar, except that it is even more silted up with more colonisation of the channel by marshy vegetation and even some willow and alder. Raising the water levels, accompanied by dredging to ensure a permanent water channel would bring major biodiversity benefits. Again, stop boards could be installed as an interim measure pending future repair of the locks. Minor access improvements, tree works together with interpretation boards would also improve this area for visitors.

10.6 Hubs

A series of hubs are proposed to provide focal points across a number of communities on the network. We have suggested a series of hubs along the length of both canals, linking communities together. Whilst the hubs are not essential for restoration, they do provide value to the canal visitor experience.

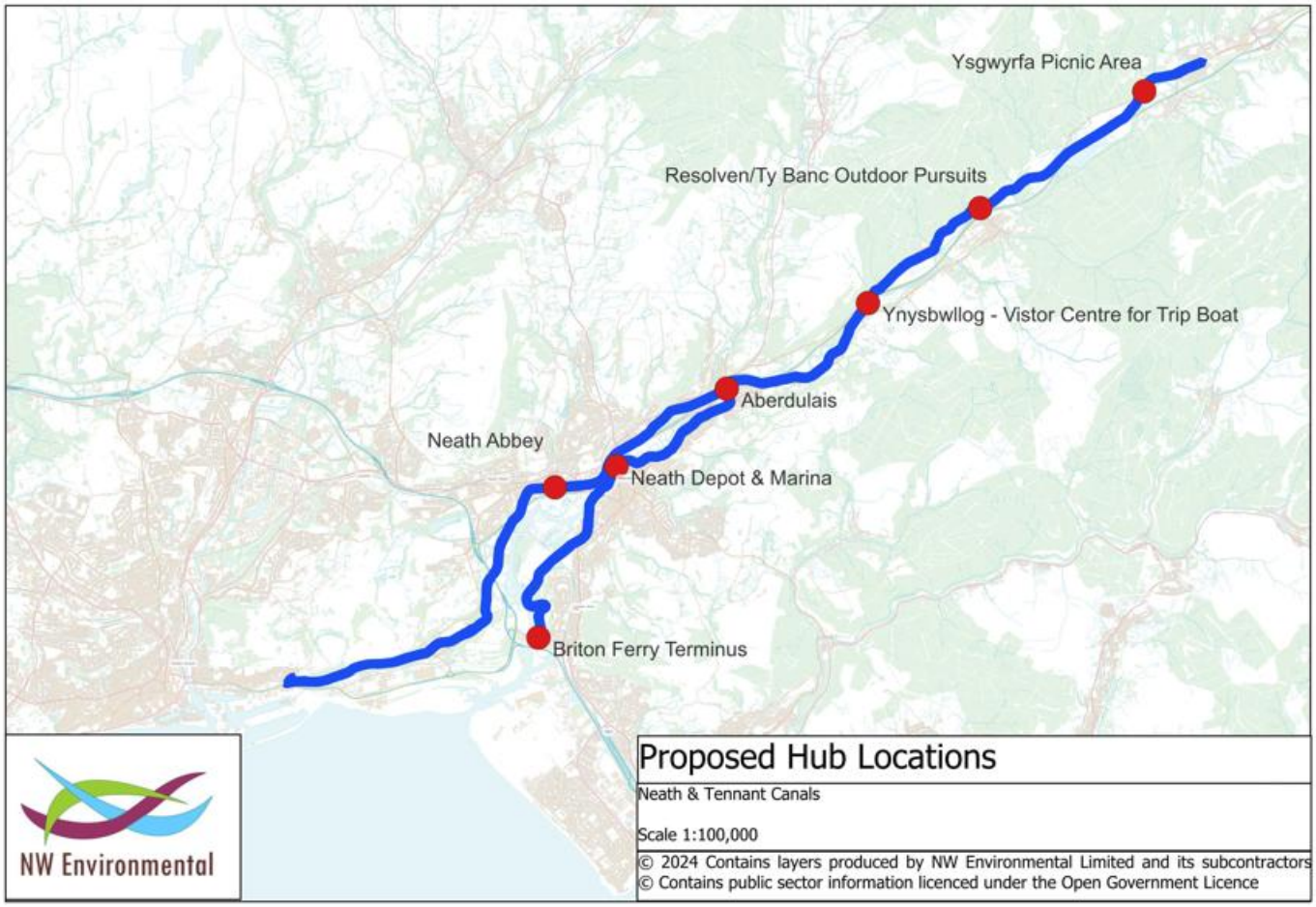

Figure 10-8 - Proposed hub locations

10.6.1 Ysgwrfa Picnic Area

Currently a cul-de-sac parking area close to the canal, there is potential to create a picnic and parking area as a departure point or destination for people walking, cycling or navigating the upper section of the Neath Canal. There are some existing anti-social behaviour issues on the site, that could be addressed by providing better security (e.g. locking gates at night, CCTV).

Ideally, ramped access to the canal would be provided, as the area is 2-3 metres above canal level. There is potential for a concession such as a mobile coffee and snack caravan, to create a modest income to cover maintenance and security costs.

Figure 10-9 - Example concession coffee van

Figure 10-10 - Ysgwrfa lay-by

10.6.2 Resolven Basin and Ty Banc

The existing car park and café at Resolven Basin and the nearby outdoor pursuit centre at Ty Banc are effectively already a visitor hub focused on the canal. The resumption of trip boats in this area would create the potential for further development and new investment (e.g. adding cycle and paddleboard hire or other concessions). There is also potential to link up with Melincourt Falls, the car park for which is about a mile away, however, the linking path needs remedial works.

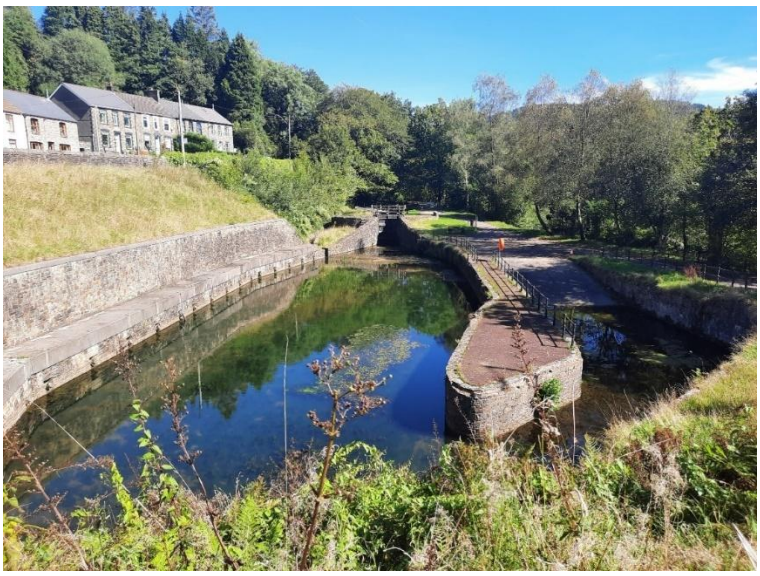

Figure 10-12 - Resolven Basin

10.6.3 Ynysbwllog Visitor Centre

The area adjacent to Ynysbwllog Aqueduct with views of the river could be enhanced with a multi-purpose visitor building, offering regularly changing exhibitions, local artists, café, perhaps cycle hire, tourist information and the like.

This route doesn't require restoration of the Aberdulais Aqueduct. The canal and its assets are in relatively good condition, so it is potentially a relatively straightforward restoration.

Figure 10-11 - Bath Brassknocker Visitor Centre

10.6.4 Aberdulais

Around Aberdulais Aqueduct, are a whole series of potential attractions, including the Aqueduct itself, both the Tennant and Neath Canals, the River Neath, a nearby pub, easy access to Craig Gwladys Country Park and the National Trust site at Aberdulais Falls. On the north bank of the River Neath is a large area with excellent views of the Aqueduct and good access to Aberdulais Basin with the potential for developing a picnic/visitor area. There are already existing facilities for canal maintenance boats below the lock at Aberdulais.

Figure 10-12 - Aberdulais Aqueduct

10.6.5 Neath Depot and Marina

It would clearly be very beneficial for the canal to have a major hub in Neath. To the south of Bridge Street there are a number of areas that could be developed as a marina, depot, and a boarding point for trip boats. This hub would require a lift or swing bridge on Bridge Street and the identification of a suitable secure area for the marina/depot, subject to addressing ecological constraints.

The exact facilities would depend on the exact location and its accessibility, but in the first instance the maintenance yard could use the current canal side yard at Bankside used by Revantage. Additional land could be bought or re-leased as it becomes available.

Due to small number of boats likely to be based on the Neath Canal, a small marina would be suitable. Crickhowell Marina with around 40 berths, is a small set up created after Covid and includes a slipway, boat repair workshop and a café. Entry is restricted by a security barrier. The marina area would need to be fenced and CCTV provided.

Figure 10-13 - Crickhowell Marina

10.6.6 Briton Ferry Terminus

There are several options for a hub at the southern end of the Neath Canal, with the most potential being on the stretch north of the Diamond Bridge at Giant's Grave Road alongside the existing quay side area. There is potential to create a picnic and parking area as a departure point or destination for people walking, cycling or navigating the lower section of the Neath Canal.

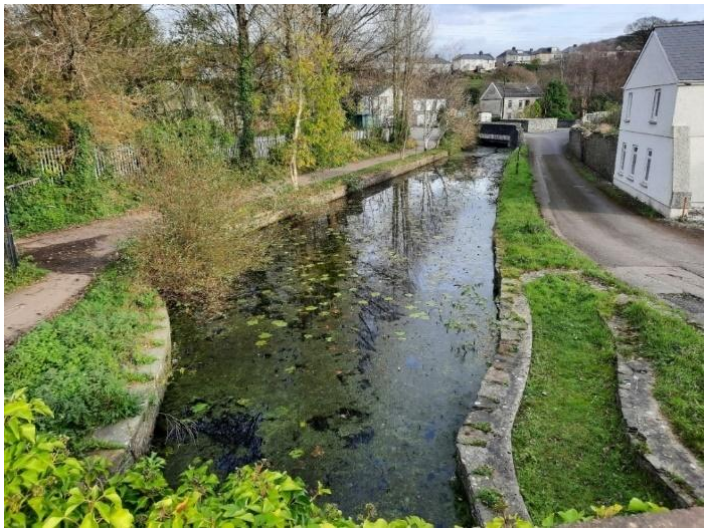

Figure 10-14 - Diamond Bridge Terminus

10.6.7 Neath Abbey

The area around Neath Abbey offers an obvious location for an interchange with the Tennant Canal, as it has great potential as a 'heritage hub'. Improved parking, picnic facilities, concessions and basic visitor facilities could help

increase visitor numbers and act as a main destination for trip boats and be a destination for a Neath Circular Heritage Trail.

Figure 10-15 - Neath Abbey

10.6.8 Jersey Marine

There is potential for a hub near the Tennant Canal at Jersey Marine, noting that there is already a visitor centre for Crymlyn Bog NNR, but this is only opened to members of the public by prior arrangement. Such a location close to Pant -y-Sais and Crymlyn Bog, could be a base for visitors to these important nature conservation sites, as well as the canal. It could potentially be a destination for a light trip boat. This destination would signpost people to the nearby Red Jacket Pill area and the Glan-y-Wern Canal.

10.7 Summary

There are numerous opportunities to bring greater benefits to the communities along the Neath and Tennant Canal beyond simply restoring it for navigation. Embracing these opportunities can enhance both the local environment and economy, while also creating mew experiences for visitors. The initiatives outlined in this report offer a chance to establish a distinctive and sustainable canal-based tourism model.

The canal is widely loved and its unique combination of natural beauty and rich industrial heritage presents a significant opportunity to attract tourism and generate revenue for the local economy. These possibilities are explored in greater detail later in the report.

11. Access for Mobility Impaired and Disabled Persons

11.1 Introduction

Restored canals provide flat terrain which is beneficial for wheelchair users, people with mobility loss and ambulant wheelchair users.

Disabled people may have both physical and non-immediately visible conditions. Physical disabilities may require the use of sticks or crutches, and the use of wheelchairs or mobility scooters or both as ambulant users. There are differing requirements, but the main objective is that wheelchairs should have access.

Non-wheelchair users, those that are ambulant and elderly people, tend to have slightly different needs, but the principle is often it can be difficult to walk for long distances. It is not possible to tackle the range problem entirely, but the regular placement of benches to rest will assist.

Access to locks is considered, but access to operate locks is not – the only way to make a lock operable for someone with a physical disability or mobility loss is to mechanise the lock for push button operation, which is not proposed for the Navigation. It should also be noted that for someone with mobility loss to get on and off a boat, it is necessary for someone who is not disabled, to secure the boat suitable for access.

Disabled people should be consulted on any proposed changes before and during the restoration process. Consulting with a specialist in accessible design is recommended.

11.2 Towpath

As described elsewhere, the term towpath describes a canal and riverside path that accompanies the navigation.

For much of the route, this will be alongside the canal and this route will, by default, be accessible for disabled people. There is a need to protect vulnerable pedestrians, and this is normally achieved simply by making the towpath wide enough for them to co-exist. It is important to note in such a scenario that pedestrians should be at the waterside and cyclists by the hedge and that wheelchair users will need to be on the pedestrian route not the cycle route.

Where these lengths of towpath are to be made fully accessible, the need is for a firm surface at least two metres wide so that two wheelchairs and mobility scooters can pass, and any barriers should be capable of being negotiated by both. Mobility scooters are longer and may be more difficult to accommodate if barriers are intended to stop cyclists and motorcycles so this will need to be taken into consideration to be fully accessible.

11.3 Additional Car Parking

To improve accessibility and ensure that everyone can enjoy the canal towpath, there is a clear need for additional car parks with blue badge spaces located closer to the path itself. While existing access points are generally well-placed, the current number of nearby parking facilities is insufficient to meet the needs of all users. By increasing

the number of conveniently located car parks, we can make it easier for people who rely on vehicles or mobility aids to access the towpath safely and comfortably, promoting inclusivity and enhancing the overall visitor experience.

The car parking would be a good location to include electricity charging points for mobility scooters and E-Bikes. A mobility scooter has a typical range of 5 miles on a battery. So, a safe return trip would be 4 miles or 2 miles out and back. On this basis, an electricity charging point at 4 miles would be appropriate.

11.4 Access to Boats

The first point to note, is that not all boats are accessible and that this cannot be resolved by towpath works. However, many trip boats are designed for wheelchair access either by use of a wheelchair lift or by having a level deck at approximately bank level and it is possible for other vessels to be either built for or adapted for disabled access.

There are three points to consider here:

1. First, the bank where a disabled person (or any other person) might board, will not be a consistent height above water level; it will vary from one location to another, and in any event water levels vary enough to interrupt a step free access, even 50mm change can prevent an electric wheelchair getting on board.

2. Second, and related to the first, different boats will not have an entirely consistent deck height above water level.

3. Third, at many locations there will be a small, but significant gap between the boat and the towpath surface. It is possible to moor a boat against a marginal habitat bank and a non-disabled person will be able to step off, but the gap of 150-200mm, is far too big for someone with mobility issues to cross or to get a wheelchair over.

In summary, for wheelchair users and those with mobility issues to be able to get on and off a boat, a gangplank will be needed at nearly all locations. Once a gangplank is used, it will be possible to board almost anywhere as the towpath is accessible so long as the boat is secured.

11.5 Trip Boats

Commercial passenger boats, such as trip boats and restaurant boats, will normally have a regular location for embarkation and disembarkation. Due to variable water levels, it will still be necessary to have a ramp for access, but it will generally be possible to closely align the bank height with the deck height and to minimise the gap between the boat and the bank by having a hard edge.

11.6 Suitable Vessels

Whilst most private vessels and self-steer hire vessels are not accessible for disabled people, and passenger trip boats are not necessarily so, it is not difficult to build an accessible vessel or to adapt an existing one.

A key criterion for any vessel needs to be that it is big enough for a wheelchair to move around internally and stable enough to take the weight of the person plus the wheelchair combined so that it does not cause the boat to rock unduly when boarding. For this reason, barges (or “wide beam narrowboats”) make a good choice with their large flat floor plan, their straight sides and flat bottom making it easy to bring them fully alongside, and their decks typically at about bank level. There are also small open boats that can accommodate a wheelchair by virtue of having a single level deck above water level.

12. Phasing of the scheme

12.1 Introduction

Due to lack of funding now and likely into the foreseeable future, the works for restoration will need to be carried out in phases. The rationale behind these phases is that to get the most, without spending the most. Also, the short-term works should not prevent the potential for full canal restoration in the long-term.

In line with the funding constraints and the desire for volunteers to carry out as much of the work as possible, again this supports the above suggestion that the work is phased.

Canals take many years to restore from the point of feasibility study. A canal system of around 22 miles would typically take around 10 years to restore. The canal is in relatively good condition with long lengths having been restored to varying degrees over the last 40 years. However, public funds and grant funding is limited for large capital projects, so restoration will take longer than delivered in the past.

Assuming a Charitable Incorporated Organisation takes over lead responsibility for restoring the canals, the priority will be to either secure transfer of ownership or long leases from Revantage and the Coombe Tennant Family.

The formal decision for the Council to start the legal process to take over lead responsibility as part of a Charitable Incorporated Organisation, is assumed to be agreed before the end of March 2026.

The Charitable Incorporated Organisation will then have to negotiate transfer of ownership and or a long lease arrangement for the canals. The process of transfer of ownership/long lease could probably last around of a year.

This study has already provided momentum and public awareness that the canals can be restored. It will be important to keep this momentum going, otherwise the restoration will stall and will be difficult to get the necessary enthusiasm to push forward again in the future.

A key catalyst is that the study has been funded as part of the 10 year Historic Places programme by NLHF, this creates a strong driver to maintain momentum and make good progress on canal restoration over the 8 years remaining of the NLHF programme. One item of major expenditure that should be undertaken within this 8 year period is the initial consolidation of Aberdulais Aqueduct, and later, the full restoration for navigation.

Considering the above, we therefore suggest that restoration of the Neath to Ynysbwllog trip boat lengths for navigation could be completed within a 5 year programme, with a short trip boat between Neath and Tonna being an early win in the first 2 years. The remaining trip boat lengths would follow the restoration of Aberdulais Aqueduct.

The following indication programme will give some structure to the suggested way forward.

12.2 Years 1 to 2

The priority will be to create a Charitable Incorporated Organisation. Only then can the process of legal transfer of ownership and or long lease begin. From discussions during this study, both Revantage and the Coombe Tennant Family would consider this way forward. This willingness to see a future for the canals will need to be backed up with quick action to start the legal process. It is hoped that after year 1, a draft or final legal agreement will be in place.

It will be important to keep the momentum going from the feasibility study on canal restoration projects.

Whilst the legal process is underway, there should be agreement with Revantage and the Coombe Tennant family that volunteers can get involved with canal maintenance.

We believe that the Canal Project Manager role should be an early commitment as the Canal Project Manager will then be responsible for scoping, tendering and appointing contractors for the early survey works.

Once the decision has been taken to commit to canal restoration, there will be the need to carry out site surveys and assessments to gain detailed data on the condition of the canal; in particular Aberdulais Aqueduct, surveying the extent of Japanese knotweed and other invasive species, and ecological surveys concentrated on particular areas of concern e.g. otters and bats. The findings will be incorporated into an Environment Management Plan.

Funding will need to be secured, which is likely to comprise a mix of grant funding.

The scheme will then require planning permission, Listed Building Consents, Scheduled Monument Consents, and NRW consents and be supported by land use and access statements.

The majority of renovation works (apart from major works to Aberdulais Aqueduct and the weir) could be undertaken by volunteers. We recommend that the Council creates the appointment of a Community Engagement Officer role (refer to 10.4.2) also during the first year.

The Community Engagement Officer will be able to plan volunteer works from year 1 onwards and the Canals Project Manager can be engaged in seeking grants for the works.

By year 2, it should be possible with volunteers to achieve the quick win of restoring Tonna Lock and dredging the canal between Neath and Tonna. This would then allow a trip boat to operate.

Also, weed cutting on the Tennant Canal would help open up a water space for kayaks and paddleboards.

Interpretation and access improvements to both canals could continue to take place in year 2, with continued work in the years that follow.

12.3 Years 3 to 5

This period will concentrate on heritage and biodiversity led initiatives. It will be important to continue the momentum that was gained in the first 2 years. The work will: concentrate on canal awareness raising, surveys, interpretation, invasive species control, water edge management and maintenance, biodiversity enhancements, consolidation of Aberdulais Aqueduct, works to stop the canal deteriorating, establish a trip boat, encourage kayak/paddleboat access to biodiversity led sections of the canal and areas outside the 3 trip boats routes, and establish volunteer groups.

Volunteers could consolidate the 3 locks between Machin and Ynysbwllog (masonry repairs and refurbishing the lock gates) and dredge the last 2.1km of canal.

The NHLF grant funding would finish at year 5, so further funding will need to be secured for post year 5. The completion of the works identified above will convince grant funders that the project is being managed properly and that future grant funding can be drawn down in a timely manner to budget.

12.4 Years 5 to 15

This longer term will look to extend the navigation trip boat experience to Neath Abbey and the biodiversity led work between Neath Abbey and Crymlyn Bog.

At the start of this phase of renovation works: Aberdulais Aqueduct, , and Aberdulais Lock will need full restoration for navigation to further raise the profile of the integrated canals and demonstrate commitment for further works. These works will need to be undertaken as a package of works by a contractor.

Opening navigation to Neath Abbey and biodiversity improvement to Crymlyn Bog will raise the UK wide interest in the canals, as well as encouraging more use of the canal for wellbeing by locals and tourists.

Apart from the restoration of Aberdulais Aqueduct and opening up the canal at Ynysarwed, the other canal structures renovation (lock and bridges) could be carried out by small volunteer groups, assisted by the Waterways Recovery Group.

The exact timing of works will be dependent on grant funding and availability of volunteer groups.

12.5 Quick Wins

The quick wins concentrate on works and activities that can provide volunteers with the opportunity of getting involved in canal maintenance and for interpretation and awareness raising of the canal.

NHLF grant money would be available to support quick wins from the current Historic Places grant, subject to grant funding drawdown applications. Large projects would be possible when Canal Project Manager and Community Engagement Officer posts are created and filled. In the short term, the work will need to be low supervision projects and activities as:

i. Litter picking days.

ii. Towpath surfacing improvements, canal bank, and hedge maintenance.

iii. Creating and publicising a circular walk from Bridge Street Neath to Aberdulais and back, which will link together both canals.

iv. Habitat improvements (subject to NPTC ecologist's direction).

v. Installing interpretation boards telling the storey of the canals along the entire length of both canals.

13. Costs

13.1 Introduction

The indicative budget cost of the restoration of both the Neath and Tennant Canals has been established using a combination of AtkinsRéalis' canal construction rates and prices, and reference to Spons 2025 Industry Price Database, where no contract rates were suitable, to produce rough order of magnitude costs. Historical prices were increased to 2025 levels using the Bank of England Inflation calculator and BCIS Indices.

Costs for the phased partial navigation restoration based on using civil engineering contractors are around **£15.7m** for the Neath Canal and around **£9.2m** for the Tennant Canal (including full restoration of Aberdulais Aqueduct).

The budget cost for a full time Canals Project Manager and Community Engagement Officer for 15 years would be around **£1.2m.**

Surveys, assessments and scheme development studies and plans are budgeted to cost in the order of **£2m.**

Heritage and biodiversity led initiatives over the first 5 years are estimated to cost in the order of **£1.8m.**

The hubs proposed on both canals would cost around an additional **£5.4m**, whilst full navigation of both canals are budgeted at around a further **£24.1m**.

In 2020, a canal condition survey by NPT, identified **£16.1m** of River Neath scour prevention works and flood walls at Resolven and Clyne.

	Indicative Budget Cost	**Indicative Budget Cost**
Item	**Neath Canal**	**Tennant Canal**
Partial Restoration	£15.7m	£9.2m
CIO Costs	£0.6m	£0.6m
Surveys and Assessments	£1m	£1m
Heritage and Biodiversity Initiatives	£0.9m	£0.9m
Total	**£18.2m**	**£11.7**
River Scour and Flood Management Works	£16.1m	£0m
Hubs	£4.6m	£0.7m
Extra costs for full navigation restoration	£16.1m	£8.0m
Full Restoration Total	**£55m**	**£20.4m**

A breakdown of costs is given in Appendix C.

13.2 Basis of Budget Cost Estimates

The budget costings assume that the restoration works will be undertaken by civil engineering contractors suitably experienced in civil engineering works, conservation, and working in and around water.

It is assumed that contractors will be able to access the canal by roads and the towpath. The typical canal rates allow an enhancement of 10% of costs for inefficiencies caused by this long linear working.

13.3 Quantities

The quantity of the repair works in our costings are based on approximate measurements from our site photographs for the structures and the canal channel.

The quantities for excavation are approximate estimates, without having the benefit of accurate survey data. Reliable quantities will need to be calculated after receiving a topographical survey of both canals.

13.4 Scheme Cost Uplifts

The canal item costings for the work are increased to reflect a typical contractor's site setup and management costs.

The typical unit rates for items of work, have been increased to allow for:

1. Design development factor at 10%.
2. Contractor's site set up preliminaries at 25%.
3. Overheads, and profit at 10%.
4. Temporary works at 10%.
5. Linear working at 10%.
6. Dayworks at 10%.

We have not reduced the renovation costs to reflect savings if undertaken by volunteers, however the savings will be considerable, but the works will take longer.

13.5 Detailed Design and Seeking Contractors

The costs of detailed design, tender drawings, tender documents, and tendering the scheme are based on typical Industry scale fees for the value of construction works.

The scale fee will be in the order of 5% of the cost of works.

13.6 Site Supervision, Project Manager and Cost Control

The construction works will require full time supervision by an engineer on site to oversee and record the works. The construction work contract will require a part time project manager to administer and report on the contract and to manage the programme. A part time cost consultant will: agree the works measure, certify monthly valuations, and agree the final account.

The costs will be around 10% of the cost of works.

13.7 Charitable Incorporated Organisation's Costs

The CIO will have costs to recover for staff to manage and administer the project.

The budget cost for a full time Canals Project Manager and Community Engagement Officer for 15 years would be around **£128k.**

13.8 Heritage Interpretation and Biodiversity Led Initiatives

During the first 5 years there will be opportunity to make tangible improvement for heritage access and interpretation, plus biodiversity led initiatives as described in Chapter 10; in particular control of INNS such as Japanese knotweed.

The budget cost estimate will be around **£1.6m**

13.9 Surveys, Investigation and Strategies

The main items are:

1. Detailed condition surveys of all canal structures and the canal alignment.
2. Site surveys relating to the ground conditions, chemistry of dredgings for disposal options, topographical, 3d drone point cloud survey of both canals, plus baseline biodiversity and environmental conditions.
3. Strategies to inform the design such as water supply, flooding, and dredging disposal.
4. Business Plan for the construction, maintenance, and management of the scheme.
5. Preliminary design studies and outline design to define the works and programme in more detail and reduce construction risk.
6. Environmental and planning impact assessments, and statements.
7. Biodiversity management plans.

8. Land ownership and land acquisition plans.

The budget cost estimate for these items will be around **£2m.**

13.10 Exclusions

The costings exclude: VAT, inflation past 2025, land purchase costs (Ynysarwed), legal fees, and any business relocation costs.

14. Benefits

14.1 Introduction

This chapter illustrate the benefits of the restoration of the Neath and Tennant Canals, taking the restoration schemes advised elsewhere in this report. That is:

- Restoration for **full navigation** of the Neath Canal between Bridge Street Neath and Ynysbwllog.
- Restoration for **full navigation** of the Neath Canal between Commercial Road Resolven and Rheola Aqueduct.
- Restoration for **full navigation** of the Tennant Canal between Neath Abbey and the junction of the Neath and Tennant Canals at Aberdulais.
- Restoration for **limited navigation** of the Neath Canal between Bridge Street Neath and the terminus at Briton Ferry.
- Restoration for **limited navigation** of the Neath Canal between Rheola Aqueduct and Ysgwrfa.
- Restoration for **limited navigation** of the Tennant Canal between Neath Abbey and Crymlyn Bog.
- Opening of a **heritage and nature trail** between Ynysbwllog and Resolven.
- Opening of a **heritage and nature trail** between Ysgwrfa and Glynneath.
- A **connection for pedestrians and cyclists** between the end of the canal at Briton Ferry and the Brunel Dock at Briton Ferry.

Note – it is assumed that full restoration and limited restoration will include a heritage and nature trail.

Full navigation is expected to include larger passenger trip boats operating a regular service (say 100 days a year) and access by licence for other boats that can be brought to the canals on trailers.

Limited navigation is expected to include smaller passenger trip boats for special excursions (say 15 times a year) and access for small unpowered and electrically propelled boats.

The restoration of these sections is to be phased over a fifteen-year period – this phasing is both geographic and functional, in that lengths of canal earmarked for full restoration may initially be reopened for limited access, whilst works continue towards full access.

14.2 The Finished Canal and How it Will Be Used

The use of the canal will depend on restoration status as described above.

Those lengths subject to full restoration will be capable of passage by full size canal boats (narrow boats) and cruisers up to a maximum length of 20 metres and beam of 2.2m. In practice it is expected that only boats based on the canal would exceed 7 metres in length. Boats based on the canal will either be trip boats or residential boats (home or holiday).

Trip boats are likely to navigate the canal up to 100 days a year; it is unlikely that any one length will host more than one trip boat on a regular basis – for example, there could be a trip boat based at Clyne and one at Neath, and such boats may meet at Aberdulais, but it is unlikely they would both be trading between Aberdulais and Bridge Street at the same time, and this would not be a regular occurrence.

Residential boats that have full time residents will move infrequently, if at all. Holiday residential boats may either be static or may move for day trips.

Lengths of canal subject to full restoration, will also host light and unpowered craft, such as paddleboards and dinghies, with or without an electric outboard motor.

Those lengths restored for limited navigation may be capable of passage by large craft, as this is generally only a matter of depth, but to prevent long term effects on the environment such passage will be restricted to a limited number of special trips per year. In addition, passage by lightweight unpowered craft will be permitted subject to conditions.

Lengths identified only as heritage and nature trail will connect the navigable lengths creating a continuous trail following the canal routes from Glynneath to the docks at Briton Ferry and to the end of the Tennant Canal on the outskirts of Swansea (and potentially on a new canal route to Swansea City Centre) although as this is not part of these proposals, the benefits of this are not included.

For the purposes of this analysis, we have assumed that the following public boat trips would operate on a regular basis over a six-month summer period (weekends and school holidays 1st April to 30th October, a maximum of approximately 100 days).

- Neath to Aberdulais via Neath Canal.
- Neath Abbey to Aberdulais via Tennant Canal.
- Ynysbwllog to Aberdulais via Neath Canal.

These lengths will therefore see a level of use that compares with some of the (less used) sections of the main canal system, such as the Chesterfield Canal, with between 200-800 boat movements a year.

In addition, we have assumed special interest trips on up to fifteen days a year as follows:

- Neath to Giants Grave via Neath Canal.
- Neath Abbey to Crymlyn Bog via Tennant Canal.
- Extend Resolven trip from Rheola to Ysgwrfa.

These lengths will therefore see a much lower level of use, of between 10 and 50 boat movements a year.

These figures form the basis of visitor and revenue forecasts for the local economy. Unpowered and light craft are not included in the above, as the numbers are less easy to predict, however the spending patterns for these users are very similar to bankside visitors and thus have been included under this heading.

We have also assumed that there will be 10 holiday hire houseboats and 20 permanent residential houseboats. Holiday hire houseboats will bring visitor spend and rental fees, residential houseboats will only bring mooring fees as it is assumed the occupants would live in the area anyway and thus any spend in shops etc would have occurred regardless.

Land based visitors are those visitors who visit the canal without actually taking to the water, by walking or cycling along the canal and by spending money whilst doing so. It is important to note that there must be opportunities for these visitors to spend.

14.3 The Benefit of Canals

Canals are an important part of national the cultural and built heritage, as symbols of a rich industrial past they are an important part of local identity and pride. Canals can contribute to many national and local government policy agendas, aimed at creating more sustainable places and communities, because they can offer opportunities for: informal recreation, education, regeneration, and alternative non-motorised transport routes. Canal restoration can help facilitate a wide variety of benefits to their local areas including:

- Providing options for sustainable transport (towpaths, well designed or suitable adapted, provide excellent off-road walking and cycle routes).
- Place-making, place-shaping and becoming a catalyst for urban renaissance (canals can add to local character and distinctiveness and instigate investment).
- Stimulating the visitor economy, sustainable tourism and recreation (by improving the attractiveness of an area, be in a draw in themselves and helping to link attractions).
- Improving health and well-being (by providing attractive locations for exercise and an environment that is conductive to reducing stress).
- Mitigating the impact of climate change (through carbon reduction/sink, drainage and flood management, and improving biodiversity and environmental sustainability).
- Facilitating housing growth and renewal (by unlocking land due to increased property values associated with waterfronts).

Investment in canals can have a wide variety of benefits beyond their immediate surroundings by feeding supply chains in the economy, helping to change perceptions, and improve the image of an area.

Restoration can offer opportunities to improve social cohesion by providing a focal point for community activity, and providing opportunities for volunteering and skills training.

14.3.1 Health Benefits

The health benefit of canal restoration is in two parts. The obvious one is providing places to exercise and environments that encourage exercise and outdoor activities. This benefits both physical and mental health as discussed later in this section. The second way that the canal will benefit health, is that it is known that poverty brings illness and wealth improves health.

There is a growing set of evidence to show that access to the natural environment, including urban green spaces, improves health and wellbeing, prevents disease and helps people recover from illness. In 2013 the Woodland Trust estimated that the NHS could save £2.1bn a year if everyone had access to green spaces, whilst Natural England have suggested experiencing nature in the outdoors can help tackle obesity, coronary heart disease and mental health problems by encouraging people to be more active and reducing levels of stress. Indeed, the role of waterways and towing paths are specifically referred to within NICE: Public Health Guidance 8, Promoting and Creating Built or Natural Environments that Encourage and Support Physical Activity (January 2008) and the Department of Health's publication Be Active, Be Healthy: A Plan for Getting the Nation Moving (February 2009) for their role in encouraging people to become more active.

Reports on Scottish canal regeneration suggests the network of canal towpaths, which is extensively used for different forms of active travel e.g. walking, jogging and cycling, contributes almost £7 million of additional public health benefits per annum through:

- 219,000 as the value of casualties saved from road traffic accidents.
- reduction in absenteeism.
- reduction in exposure to poor air quality.
- people visit outdoors more and take more exercise.

The report suggests that for every £1 invested in the canal towpath network, there is a return of £7 of health benefits. (Source CRT& IWA 2013).

14.3.2 Economic Benefits of Canal Restoration

It can be extremely difficult to quantify the economic benefits of canal restoration due to the complexities of supply chains, variable impacts upon land values as and the wide-ranging manifestations relating to impact upon the visitor economy. Because of the longevity of canals, benefits can keep being delivered decades into the future, yet is almost impossible to quantify them, as no one really knows what economic circumstances will be 50 or 100 years into the future. Further to this, there are a wide range of incremental values that are hard to quantify in monetary terms, such as improved community health and wellbeing, leading to reductions in the cost to the NHS and local authorities.

Research by The Canal and River Trust and the Inland Waterways Association has shown that canal restoration can bring both short term and long term economic benefits including direct job creation, during construction and after completion in marinas, boat yards, cafés, pubs and tourist attractions as well as in any new development sites that have been 'unlocked' as a result of potential uplift in property values. Canals can contribute to local economies by attracting tourists who spend locally, supporting the marine sector; particularly SME's and craft trades, which can then feed into local supply chains. Restoration can improve the image of an area and subsequently land and property values. For example, the British Marine Federation has reported that there are over 475 firms and 4,729 fulltime equivalent (FTE) jobs within the marine sector in the West and East Midlands, generating revenue of £407.8 million per annum.

Restored waterways can be valuable tools in place making and re-branding of areas to attract investment and enable transformational change, for example the Mail Box and surrounding waterside buildings in Birmingham were originally purchased by developers for £4 million, following redevelopment the site was valued at £125 million in 2003. Anecdotally it was suggested waterway restoration can increase property values by 15-25%.

14.3.3 Visitor Economy and Tourism Benefits

Inland waterways contribute significantly to the visitor economy, in addition to being important tourism visitor destinations in their own right, they provide key links to markets, other visitor destinations and attractions and are essential infrastructure upon which a wide range of leisure businesses depend. We have already cited a report by the TCPA in 2009 suggested that the waterway network owned and managed by Canal and River Trust contributed £1.2 billion per annum to the visitor economy, with a potential for growth of up to £2 billion by 2012. Their role in attracting overseas visitors generated £30 million alone.

14.3.4 Additional Incremental Benefits

As identified above, there are a wide range of potential incremental benefits that might be realised from restoration of the canal. Whilst these can be extremely difficult to quantify, they can offer highly valuable benefits to the local community including enhanced health and well-being as a result of more people undertaking physical activities, spending time outdoors and being close to nature, and they can provide new opportunities for volunteering or

community activities. Restoration can lead to increased local pride and self-confidence from witnessing investment in the local area and being close to a pleasant environment, and higher educational attainment as a result of local schools having nearby facilities to utilise for site visits and as ‘outdoor classrooms’.

14.3.5 Educational Benefits

The Neath and Tennant Canals are of significant historic and environmental interest which could be greatly capitalised upon for education. There are a number of educational benefits that could be realised by canal restoration including direct access to local heritage, biodiversity and the environment supporting subjects such as geography, history and biology. Many teachers believe field trips and site visits are vital educational assets, they are “*often the most memorable learning experiences help us to make sense of the world around*” (teachers.org.uk) that can help raise educational achievement. Evidence has proven that ‘outdoor classrooms’ that are highly conductive to learning and help children and young adults relate and connect to their local environment, something which can help combat the lack of understanding that feeds into a spiral of local and global environmental degradation.

In Welsh education, **Cynefin** is a core concept in the new Curriculum for Wales, meaning 'place of belonging' or 'habitat,' encompassing physical, cultural, and historical connections to community, landscape, and identity, encouraging learning through local exploration, diverse experiences (like BAME history), and fostering belonging, as seen in resources from Hwb and Creative Learning Cymru. It's implemented through projects like "Cynefin: Culturally and ethnically diverse Wales," linking curriculum to real life and supporting the nation's anti-racist goals by exploring Wales' multicultural past and present.

The Canal and River Trust already operates an educational programme and provides learning resources linked to the National Curriculum: trails, water safety sessions, challenges and other activities. Restoration provides the opportunity to utilise this and further develop resources such as heritage trails and dipping ponds.

In addition, restoration of the canal could provide opportunities for volunteering, where by people are given the opportunity to learn new skills, which may even improve their confidence and employability; whilst guided tours could provide an all-round educational asset to be used by tourists and locals alike.

14.3.6 Community Benefits

Canal restoration can offer opportunities for volunteering that enable communities to come together to focus on a collective goal, whilst gaining new skills, confidence and sense of pride. “It is important that local communities are fully engaged in the future planning of their local waterways so as to secure community ownership and use. The long-term sustainability of the waterways will be dependent upon a shared vision developed through community involvement and participation”. (TCPA / BW, Policy Advice Note: Inland Waterways, 2009).

14.4 Summary of Forecast Benefits

The following economic benefits (excluding land values) are suggested.

Annual Benefits – restoration as described

Table 14-1 - Annual Benefits accruing on restored length of canal

Visitor Type	Category	Expenditure/unit	Units	Total
Moored residential boats	Running costs (excluding mooring fees/licence)	£2,000	20	£40,000
	Mooring fees per annum	£3,000	20	£60,000
Holiday Hire	Average Hire Fee (week)	£1200	200 weeks (10 boats @20 weeks per boat)	£240,000
	Average spend per day (4 people per boat)	£60	800 days	£48,000
Trip boats	Passenger/trip	£15	2 boats @ 20 passengers per trip to 100 trips	£60,000
Restaurant Boat	Passenger/Trip	£80	1 boat, 12 passengers, 20 trips	£19,200
Angling/walking/ Cycling	Spend per visit	£15 (average)	22 miles @ 10,000 per mile	£3,300,000
			Annual Total	**£3.77**
Health Benefits etc.	*Savings to NHS etc.*	*£7 per £1 spent on towpath*	*£3.5m*	*£24.5m*

The benefits as assessed above depend heavily on bankside visitors: this is not unusual, and this reality is one factor that drives the funding priorities for canal restoration. However, it does make the restoration benefits dependent upon a successful bankside product that attracts significant numbers of visitors.

15. Scheme Development

15.1 Introduction

In addition to the important scheme promotion and engagement, there is still much technical work and baseline environmental surveys to be undertaken to drive the scheme forward.

The restoration works will be a considerable cost and need funding from a number of sources. The funders will want to see a robust business plan in support of funding applications. The business plan will need to demonstrate that the navigation proposals are: well-considered, buildable, of low risk, managed diligently, and have a long-term strategy for maintenance and management of both canals.

15.2 Detailed Condition Surveys

This feasibility report has been based on walkover surveys to assess the condition of structures and from our experience of restoring the structures and canal channel on both canals.

Restoration design will need detailed “within touching distance” site surveys of the locks, bridges and aqueducts, requiring the locks to be: dewatered, vegetation and trees removed, silt and debris removed, and the masonry pressure washed. Temporary scaffolding will be needed to gain access to lock walls.

Some assets, such as culverts, will need to be CCTV surveyed. The culverts needed dewatering and cleaning of all silt and debris, prior to the CCTV surveying.

Ecological habitat surveys will be required prior to any tree management and de-vegetation.

Drone surveys with 3D point cloud data would used as part of the condition surveys.

15.3 Ground Investigation

The feasibility study did not include ground investigations of the canal corridor. Assumptions have been made that the ground is suitable for full restoration; as it was once a working canal.

A wide-ranging ground investigation will be needed to confirm that the canal can be: dewatered, dredged, and the infilled sections lined in a safe manner. To confirm the suitability of dredgings for disposal, the silt will need to be sampled and tested for contaminants; especially considering the past heavy industries alongside the canals.

A detailed invasive species surveys (particularly Japanese knotweed) will allow the canal corridor to be designated clean and areas to be de-contaminated at a cost.

15.4 Topographic Survey

A topographic survey will be needed for design and to assess the extent of dredging.

The topographical survey will need to get gain access to structures not accessible at feasibility stage and in addition, record levels after the assets have been: dewatered, silt removed, and structure pressure washed as part of the visual condition survey. The survey could be combined with a drone high-definition photographic survey and point cloud scan survey of both canals and the structures.

15.5 Water Supply Strategy

A water supply strategy is needed to confirm that sufficient water is available to fill the canal and thereafter, to provide water to compensate for canal water losses due to: leakage, lockages, and evapotranspiration.

The Neath Canal has and will be fed by the many streams flowing down the hillsides of the Neath Valley, but how reliable is the water supply during periods of drought and low river flow, and what effect would low river flows have on navigation into and out of the canal.

A supply of water is needed at Aberdulais, which could require reconstructing the original weir, which collapsed after NRW river works or taking water from the Neath Canal.

Monitoring of water levels in streams and the canals would help inform the water supply strategy.

15.6 Flood Consequences Assessment

The converse of too little water is flood water inundating the canal and creating river flows too fast to allow navigation and affecting adjacent residential areas.

A flood consequence assessment will need to be undertaken to determine the flood effects on the canals resulting from climate change.

The assessment would inform towpath levels and the potential need for large culverts under the canal and improved water management by sluices and weirs into and out of the rivers.

There may be the possibility of diverting some flood flows into the canal, to use the canal as a conduit to transfer the flood water downstream where it can be discharged into the River Neath.

15.7 Environment Surveys and Assessments

An important part of the scheme development will be understanding the environment, observing and surveying baseline habitat conditions, and then assessing the impacts on the habitat from the restoration works and operational usage of the canals.

The following primary assessments will need to be undertaken on the proposed scheme and the likely construction techniques and operational usage. Whilst the actual construction techniques will be determined by the selected contractor, the designers will need to make their best estimate of techniques using their experience of canal restoration and construction to inform the following environmental studies:

- Water Framework Directive Assessment.
- Habitat Regulations Assessment.
- Environment Impact Assessment.

It is considered that a wide range of detailed ecological assessments will need to be undertaken to progress the project. Such surveys should be undertaken in liaison with the Council's Countryside and Wildlife Team. The full scope of ecological surveys will need to follow on from a Preliminary Ecological Appraisal, but it is anticipated that detailed studies, surveys and ecological assessment of potential impacts from construction will at least consider:

- Protected aquatic species.

- Riparian habitats.
- Wetland and woodland habitats.
- Surface water quality.
- Hydrological regime of the canals.
- Channel morphology and heterogeneity.
- Foraging, breeding and nesting sites of Otter, Kingfisher ,Bat Badger, and Fen Raft Spider.

15.8 Towpath Usage Numbers Surveys

People using the towpath have been recorded at Ynysbwllog. To help support future funding bids and to confirm usage after restoration works, the towpath traffic counters should be continued and locations increased to suit the phased restoration.

16. Summary and Conclusions

16.1 Introduction

The study was commissioned by Neath Port Talbot Council to investigate the feasibility and viability of restoring the Neath and Tennant Canals. The report has investigated the condition of the navigation, the works needed to restore, and the opportunities these works present.

16.2 The Finished Product

The canals if fully restored to navigation, would create a 22 mile navigable waterway connecting Briton Ferry to Glynneath and Aberdulais to Port Tennant. Restoring the Tennant Canal would offer up the potential to link to the Swansea Canal at Fabian Way.

Due to the high cost of full restoration for navigation, a partial full navigation scheme is proposed, which would open up the canal for trip boats from Neath to Ynysbwllog and from Neath the Neath Abbey across a renovated Aberdulais Aqueduct.

The resulting navigation combines heritage of international importance, rare biodiversity habitats and attractive countryside; three of the main drivers for tourism.

With use by unpowered boats and towpath walkers, as well as larger vessels, the navigation would become a corridor for interpreting the history of the Neath Valley and appreciating its natural splendour and habitat.

It is estimated that economic benefits of at around £3.77 million per annum would arise. Health benefits would be far in excess of this figure, with a typical quoted benefit of being “£7 for every £1 spent on towpath improvements.

16.3 Restoration Works

The canals are unusual in that much of the routes has been made navigable in the recent past, either by trip boats on the Neath Canal or by a weed cutter on the Tennant Canal.

Most locks have been restored in the past and could be made navigable again with relatively minor masonry repairs (typically to the top 1m of lock walls and installing new lock gates). Derelict locks can be brought back into use using conservation works, predominantly by volunteers. All the historic bridges (apart from Bridge Street, Milland Road and Diamond Bridge) have adequate headroom for navigation.

16.4 Issues and Constraints

There are no insurmountable engineering issues facing the restoration – all works are within the scope already experienced on other navigation projects and are less demanding that those encountered on many canals e.g. Cotswolds Canals and the Chesterfield Canal.

Transferring of ownership/long lease is the critical, but not insurmountable issue.

Water supply is an issue at Aberdulais, as the abstraction created by the river weir will need replacing, but there will be political difficulties getting an abstraction licence from NRW due to conflicting views on the river setting for flood

alleviation, fisheries, biodiversity and the cost of securing a new water abstraction licence (as found by the well-publicised difficulties on the Monmouthshire and Brecon Canal). An option would be to take water from the Neath Canal for the Tennant Canal and use back-pumping to limit lockage water losses.

16.5 Environmental Setting

The southern part of the Tennant Canal, is considered to be in an extremely sensitive environmental setting due to the proximity to nationally and internationally designated sites:

The Neath Canal is not adjacent to any nationally designated sites, but is close to SSSI; and local nature reserves.

In addition, all watercourses in NPT are designated as Sites of Importance for Nature Conservation (SINC), the whole of both the Tennant Canal and the Neath Canal are designated as SINC.

16.6 Opportunities and Benefits

The restored canals will bring many opportunities for leisure, tourism, and active travel along the towpath. These opportunities can be harnessed to the benefits for the local economy and employment. In addition, time spent by waterways is recognised to bring health and wellbeing benefits to local communities.

The navigation presents opportunities for enhanced biodiversity along both canals and within the valley, by enlarging habitat areas and promoting further diversity with alternative wetland settings, and by offering improvement to existing habitats connected with Crymlyn Bog and Pant-y-Sais Nature Reserve, including canal habitats that are presently of limited value.

The cultural heritage of both canals and other locations along the Neath Valley, can be provided with improved non-car access and set in the context and history of the canal corridors.

Estimated annual economic benefits exceed **£3.77m**, including visitor spend, and local employment. Health savings will be in addition and typical estimates are a factor of 7 for every £1 spent on towpath access for all improvements.

16.7 Programme

Canals take many years to restore from the point of feasibility study. There will be a period of around a year or two, to agree the transfer of ownership or a long lease. During this legal stage, subject to agreement of the canal owners, the CIO could employ the Canals Project Manager and Community Engagement Officer, who would then procure site surveys and source additional grant funding, from the likes of NHLF. There will also be the opportunity to start volunteer initiatives such as litter picking, towpath repairs, and some vegetation clearance.

Year 2 would involve: baseline environmental surveys, targeted engineering surveys, interpretation, and wide-ranging stakeholder and public engagement.

As soon as possible, a series of volunteer projects would start, with the aim of getting quick win projects such as providing improved interpretation of the canal, public awareness raising, creating a towpath ring from Neath to Aberdulais via Neath Abbey and a high profile project of restoring Tonna Lock and dredging the canal from Neath to allow a trip boat to operate and to help promote further the canal restoration.

From year 2 to year 5, the focus will then be to consolidate Aberdulais Aqueduct to stop it from deteriorating further and to be more capable of resisting floods. As soon as funds allow, the aqueduct should be restored to full navigation, thereby reconnecting the 2 canals, which would be a major feat and draw attention from across the UK.

By the end of year 5, it would be prudent to pursue another important project of restoring the 3 locks and canal from Tonna to Ynysbwllog, which would create a 8.5km route for a trip boat, offering a 4hr long journey through 4 locks and across the Ynysbwllog Aqueduct, which would raise interest from canal enthusiasts across the UK and the public.

Based on the likelihood of grant funding being limited and the resulting need for a high level of volunteer led restoration, it is believed that from feasibility study to full canal restoration will take around 15 years,

16.8 Costs

Costs for the phased partial navigation restoration based on using civil engineering contractors are around £15.7m for the Neath Canal and around £9.2m for the Tennant Canal.

The budget cost for a full time Canals Project Manager and Community Engagement Officer for 15 years would be around £1.2m.

Surveys, assessments and scheme development studies and plans are budgeted to cost in the order of £2m.

Heritage and biodiversity led initiatives over the first 5 years are estimated to cost in the order of £1.8m.

The hubs proposed on both canals would cost around a further £5.4m, whilst full navigation of both canals are budgeted at around an additional £24.1m.

In 2020, a canal condition survey by NPT, identified £16.1m of River Neath scour prevention works and flood walls at Resolven and Clyne.

	Indicative Budget Cost	**Indicative Budget Cost**
Item	**Neath Canal**	**Tennant Canal**
Partial Restoration	£15.7m	£9.2m
CIO Costs	£0.6m	£0.6m
Surveys and Assessments	£1m	£1m
Heritage and Biodiversity Initiatives	£0.9m	£0.9m
Total	**£18.2m**	**£11.7**
River Scour and Flood Management Works	£16.1m	£0m
Hubs	£4.6m	£0.7m
Extra costs for full navigation restoration	£16.1m	£8.0m
Full Restoration Total	**£55m**	**£20.4m**

Appendix A. Schematic Plan of the Canals

AtkinsRéalis

NEATH AND TENNANT CANALS
FEASIBILITY STUDY

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Appendix B. Condition Survey Photographs

Neath Canal

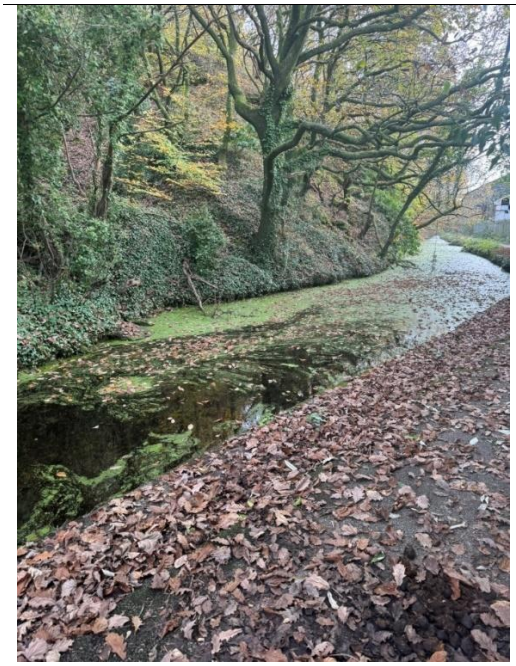

Image 1 – Pipe Bridge - Evidence of Neath canal condition

Image 2 – Canal viewed from Diamond Bridge showcasing structure and canal condition

Image 3 – Giants Grave turnover Bridge with vegetation on embankment

Image 4 – Giants Grave turnover showing reeds and vegetation blocking canal near edges and tarmacked footpath

Image 5 – Lift Bridge surrounded by thick vegetation

Image 6 – Canal adjacent to Lift Bridge overgrown with thick reeds and vegetation

Image 7 – Landfill Site Bridge with low headroom but sufficient for canal

Image 8 – Neath Junction Rail Bridge canal full of thick reed vegetation

Image 9 - Neath Junction Rail Bridge highlighting low headroom (5'3) for pedestrians but sufficient for canal navigation

Image 10 – Pipe Bridge with rusted exterior

Image 11 – Pipe Bridge with some vegetation on side bank with path in good condition

Image 12 – Tricks Bridge structure partially hidden by thick vegetation

Image 13 – Tricks Bridge river condition with reeds and animals grazing in adjacent field

Image 14 – Metal box Bridge with pedestrian and cycle path

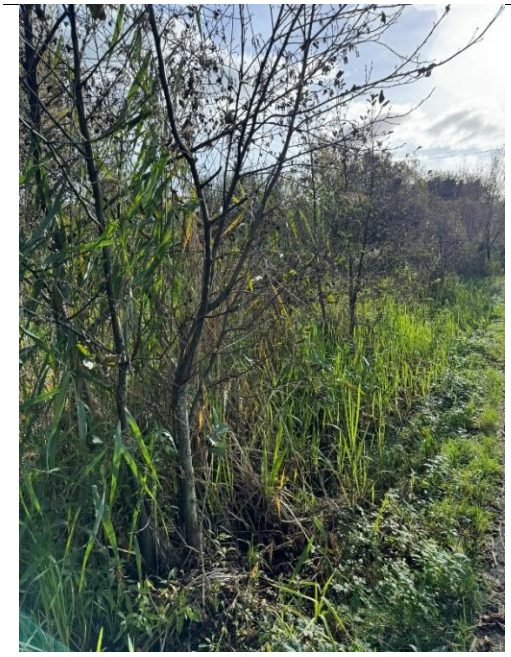

Image 15 – Canal section with thick vegetation near Metal Box Bridge

Image 16 – Pipe Bridge with adjacent metal tower. Rusted exterior

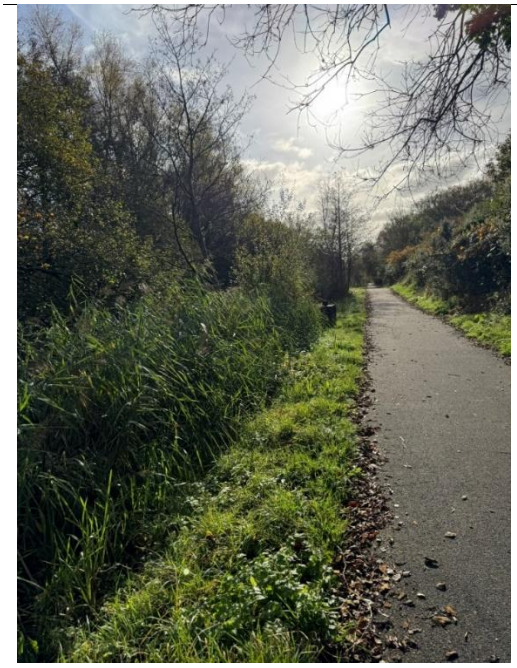

Image 17 – Pipe Bridge path and overgrown canal with thick reed vegetation

Image 18 – Swansea and Rhondda Bay Railway Bridge with thick vegetation growing on pier

Image 19 - Swansea and Rhondda Bay Railway Bridge with low headroom (5'8) for pedestrians

Image 20 – Link Road Bridge

Image 21 – Link Road Bridge side view with path in good condition

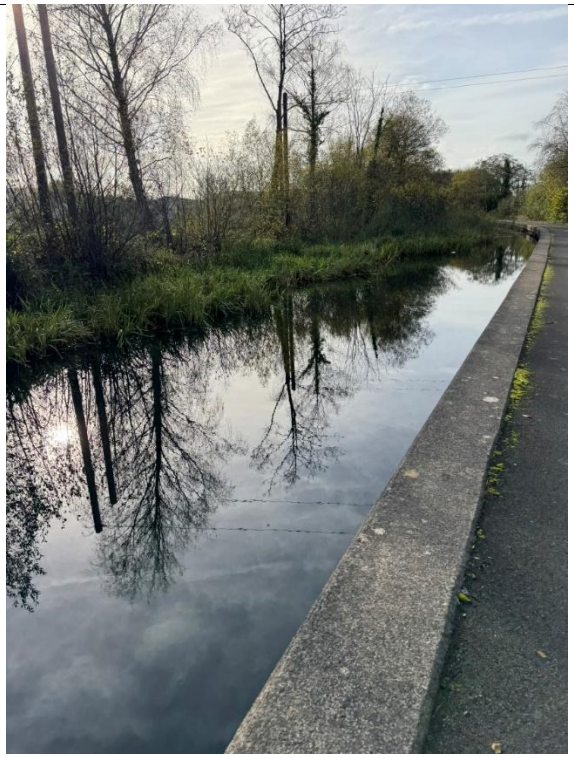

Image 22 – Canal in good condition near Link Road Bridge

Image 23 – Section of the canal near Link Road Bridge with light vegetation on banks

Image 24 – Pipe Bridge with rusted exterior and reeds blocking canal

Image 25- Pipe Bridge footpath and canal in relatively good condition

Image 26 – Milland Road Bridge with insufficient headroom for navigation

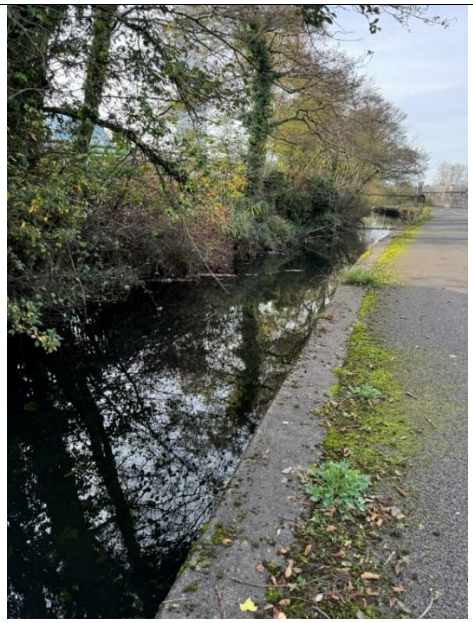

Image 27 – Canal section near Milland Road Bridge with trees overhanging

Image 28 – Pipe bridge with surrounding truss structure and overgrown canal

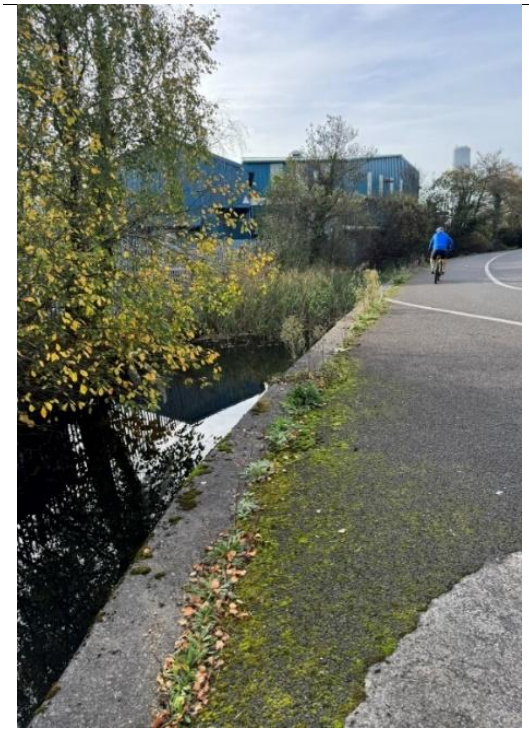

Image 29 – Canal section near Pipe Bridge clogged with reeds and overhanging tree

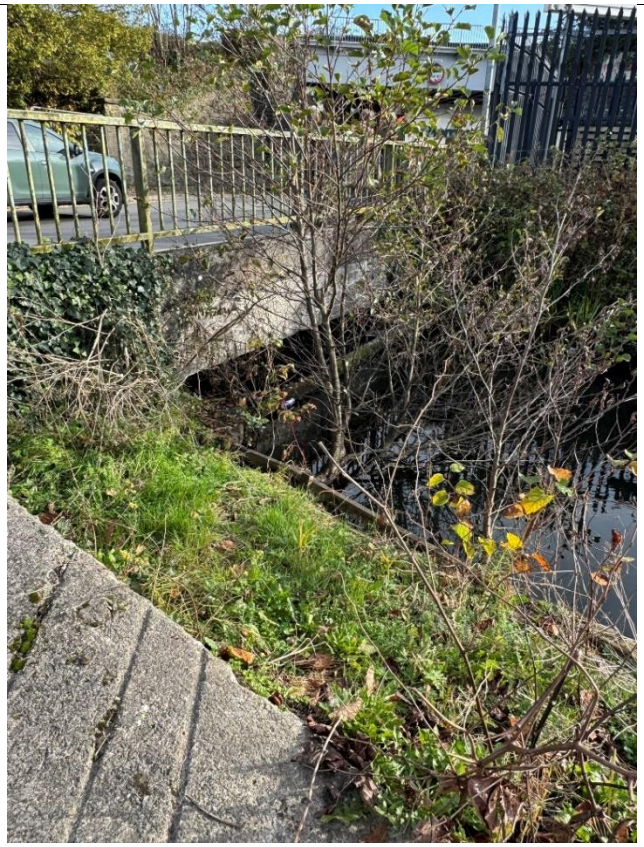

Image 30 – Bridge Street Bridge with low head room unsuitable for navigation

Image 31 – Bridge Street Bridge canal condition with large vegetation and trees overhanging water

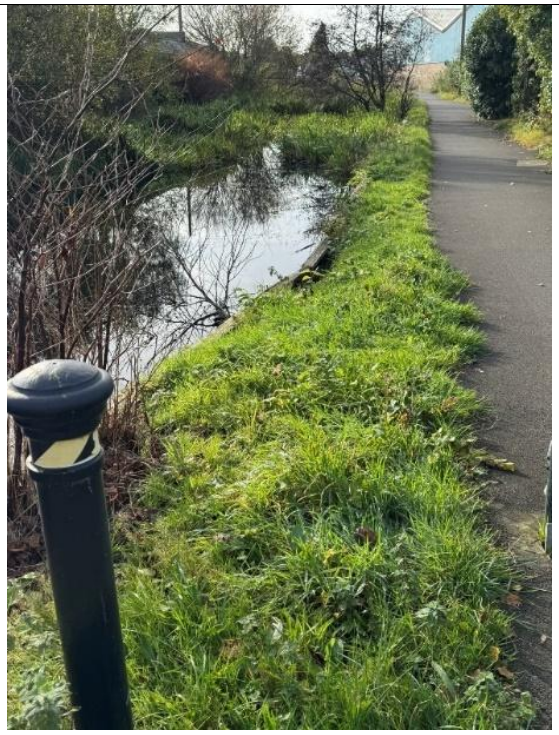

Image 32 – Bridge Street Bridge canal condition with rotten wood supporting canal embankment

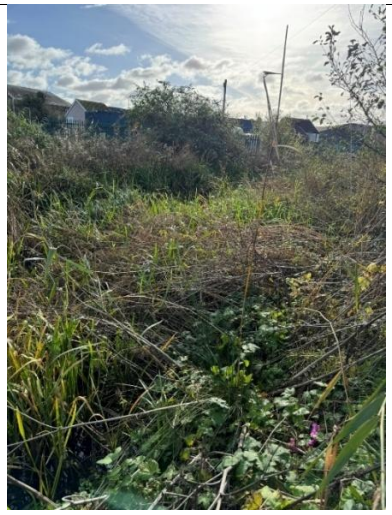

Image 33 – Bridge Street Bridge very overgrown section of the canal

Image 34 – Canalside bridge with low vegetation on embankment

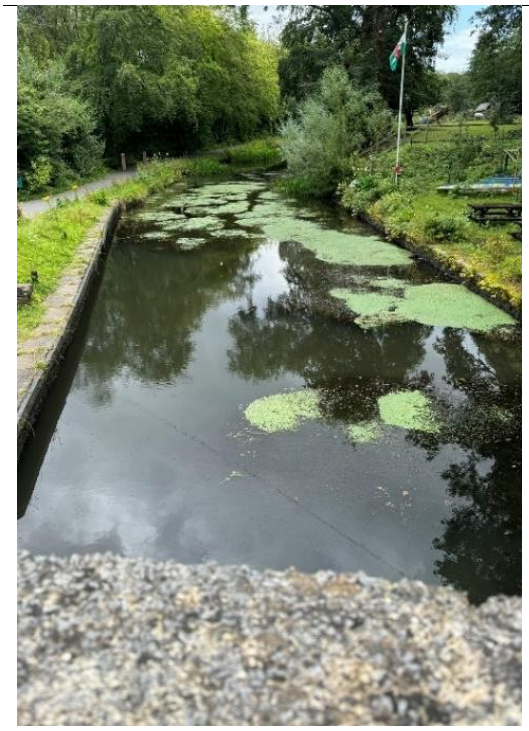

Image 35 – View from Tonna Lock Bridge with algal blooms in canal

Image 36 – Tonna Lock Structure with efflorescence on bricks and rhododendron growing on embankment

Image 37 – Tonna Lock Structure viewed from opposite embankment

Image 38 – Approach to Tonna Lock

Image 39 – Canal section near Dulais Fach Road Bridge with fallen tree in canal

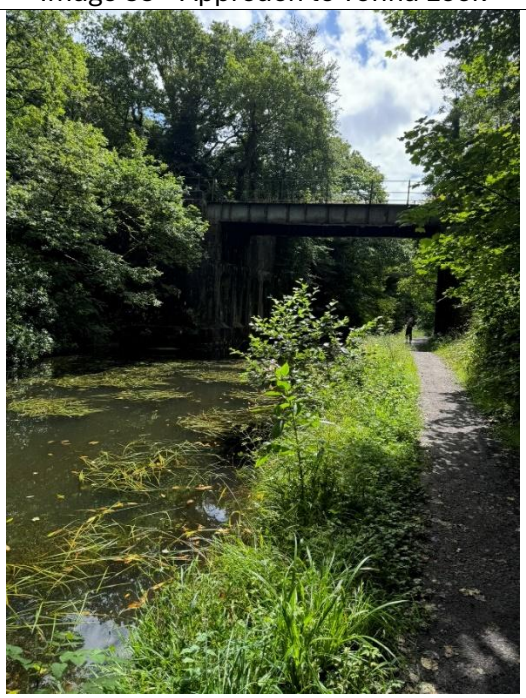

Image 40 – Vale of Neath Railway Bridge over canal

Image 41 – Junction with Tennant Canal

Image 42 – Howards Footbridge over Neath Canal

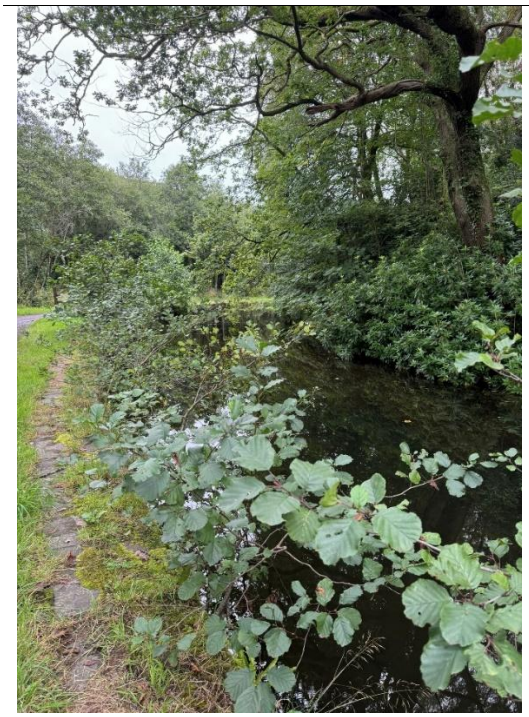

Image 43 – Trees and bushes growing on canal embankments near Howards Footbridge

Image 44 – Clearer section of the canal near Howards Footbridge

Image 45 – Spillway into River Neath near Howards Footbridge

Image 46 – Possible evidence of overtopping (LHS) from Canal near Howards Footbridge

Image 47 – Evidence of overtopping from Canal near Howards Footbridge

Image 48 – Pontygwaith Bridge path

Image 49 – Footpath near Pontygwaith Bridge

Image 50 - Evidence of overtopping/ flooding (sandbag) across footpath from Canal near Pontygwaith Bridge

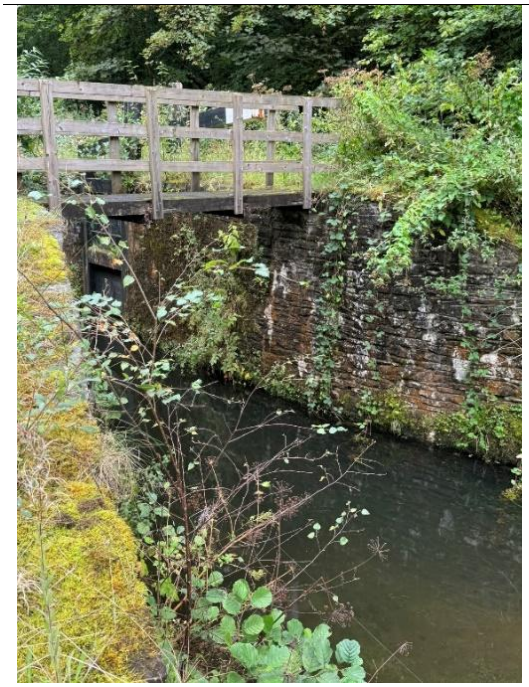

Image 51 – Lock Machin Bridge with buddleia growing on one abutment

Image 52 - Lock Machin with inoperable lock

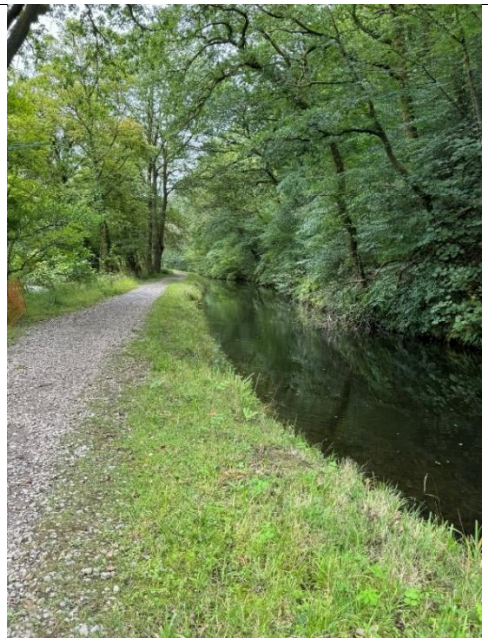

Image 53 – Canal near Lock Machin

Image 54 – Canal with small trees on embankment near Lock Machin

Image 55 – Ynysnedd Bridge with adjacent pipe bridge

Image 56 - Ynysnedd Bridge as viewed from opposite side

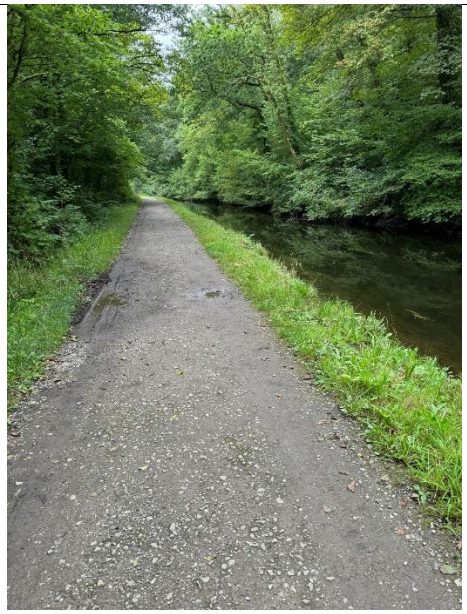

Image 57 – Canal section near Ynysnedd Bridge with slight flooding on footpath

Image 58 – Spillway in footpath to River Neath near Ynysnedd Bridge

Image 59 – Abertwrch Bridge with vegetation growing next to abutments

Image 60 – Reeds and small shrubs overhanging canal near Abertwrch Bridge

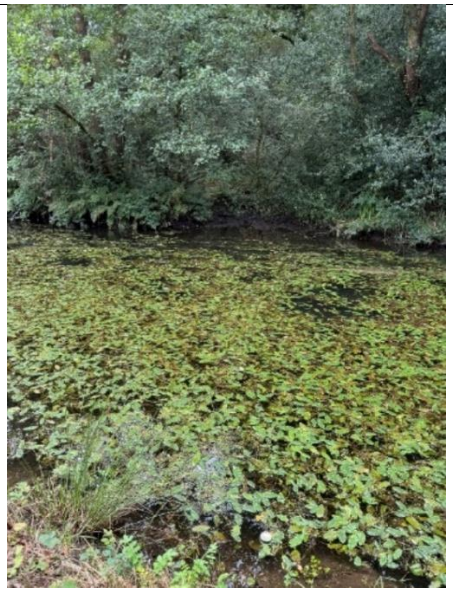

Image 61 – Algae/vegetation blocking canal near Abertwrch Bridge

Image 62 – Reeds/shrubs clogging canal near Abertwrch Bridge

Image 63 – Clun Isaf Lock Structure with efflorescence from masonry

Image 64 – Clun Isaf Lock currently inoperable with view of access ladder

Image 65 – Footbridge

Image 66 – Well maintained section of the canal

Image 67 – Section of Neath Canal with trees overhanging

Image 68 – Ynysbwllog Aqueduct with well-maintained footpath

Image 69 – Ynysbwllog Aqueduct in well maintained condition

Image 70 – Section of the canal near Ynysbwllog Aqueduct with reeds and lily pads obstructing navigation

Image 71 – A465 Bridge with pedestrian footpath adjacent to canal

Image 72 – Ynysbwllog bridge with light vegetation on footpath

Image 73 – Footpath near Ynysarwed Farm Bridge

Image 74 - Ynysarwed Isaf Lock currently inoperable

Image 75 – Himilayan Balsam invasive plant near Ynysarwed Isad Lock

Image 76 – Canal clogged with reeds near Ynysarwed Isaf Lock

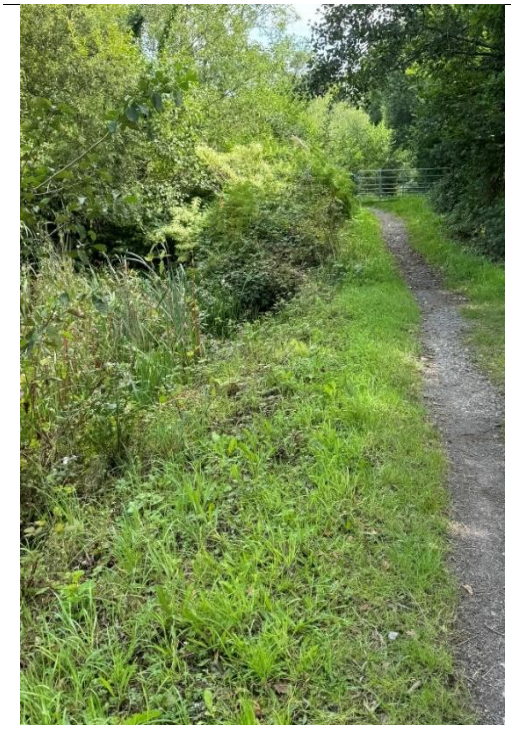

Image 77 – Ynsarwed Uchaf Lock

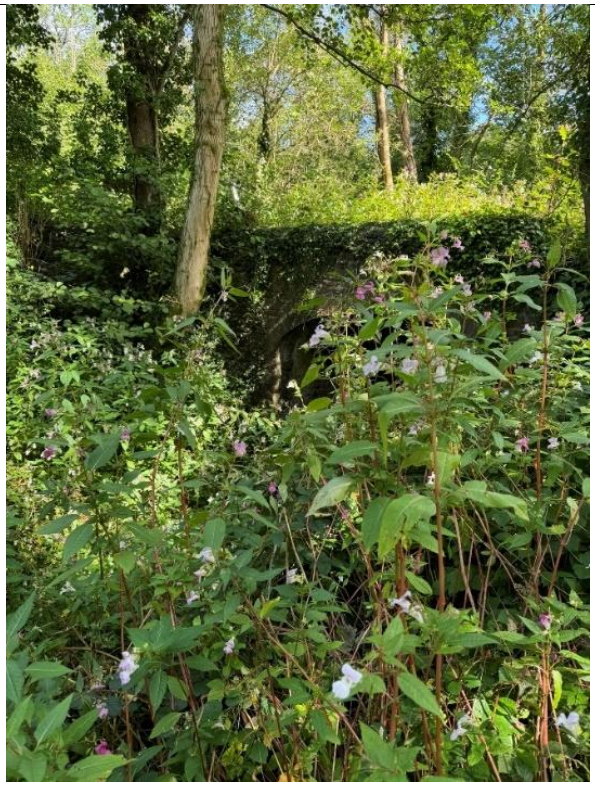

Image 78 – Ynysbiben Bridge

Image 79 – Resolven Uchaf Lock

Image 80 – Crugiau Bridge

Image 81 – Crugiau Lock now inoperable

Image 82 – Rheola Bridge

Image 83 – Rheola Iron Aqueduct

Image 84 – Rheola Aqueduct

Image 85 – Aberclwyd Bridge

Image 86 - Aberclwyd Lock currently inoperable

Image 87 – Ynys yr Allor Lock currently inoperable

Image 88 – Maesgwyn Bridge

Image 89 - Maesgwyn Lock currently inoperable

Image 90 – Ysgwrfa Lock currently inoperable

Image 91 - Ysgwrfa Bridge

Tennant Canal

Image 1 – Aberdulais Aqueduct

Image 2 – Aberdulais Lock currently inoperable

Image 3 – Station Road Bridge

Image 4 – Overhead Roundabout/viaduct/bridge on A465

Image 5 – Ash Tip Bridge

Image 6 -Cadoxton Bridge

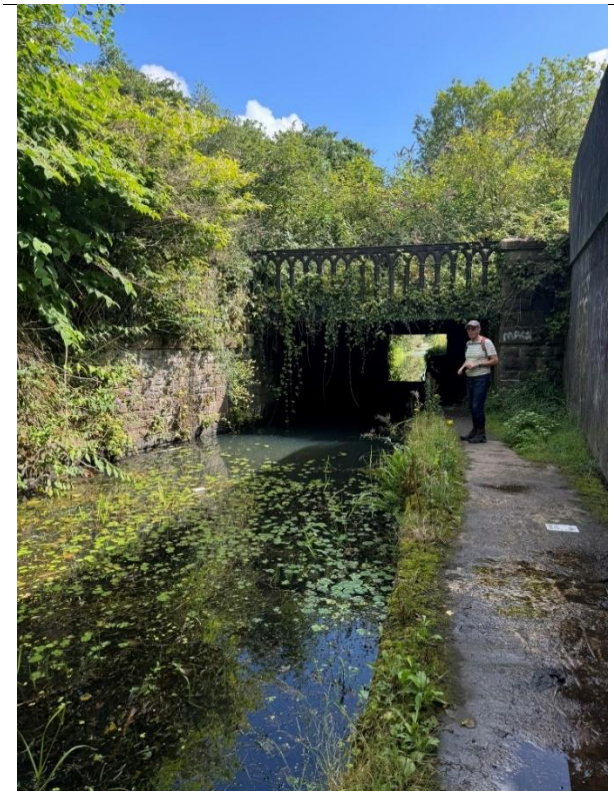

Image 7 – Vale of Neath Railway Bridge

Image 8 – Vale of Neath Railway Canal section in relatively good condition

Image 9 – A465 Bridge

Image 10 – Croft Bridge

Image 11 – Croft Bridge canal section with small Lilly pads

Image 12 – London Main Line Railway canal section relatively clear - tree-lined section of the canal with floating vegetation near the banks, bordered by a grassy towpath where two walkers continue along the route.

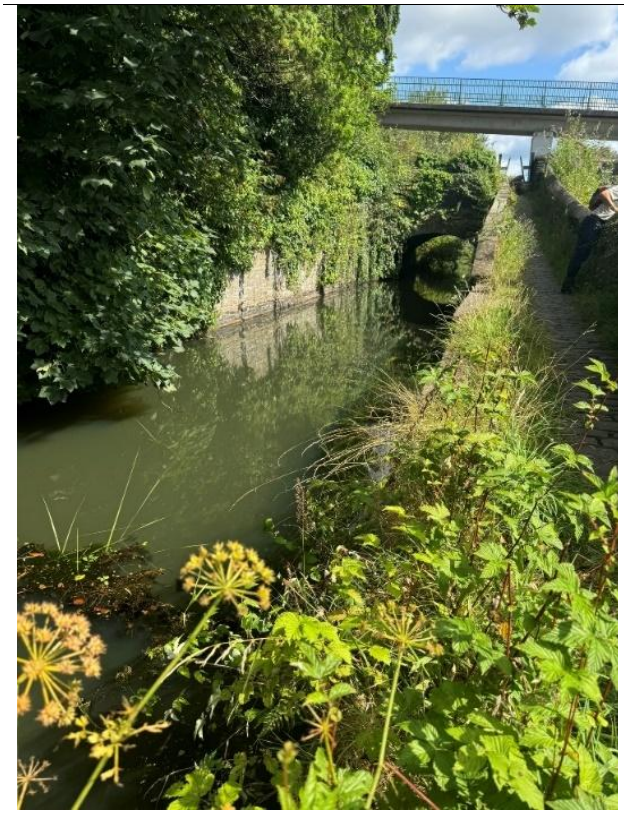

Image 13 – Bridge Street Bridge

Image 14 - Bridge Street Bridge Canal section with small reeds on embankment.

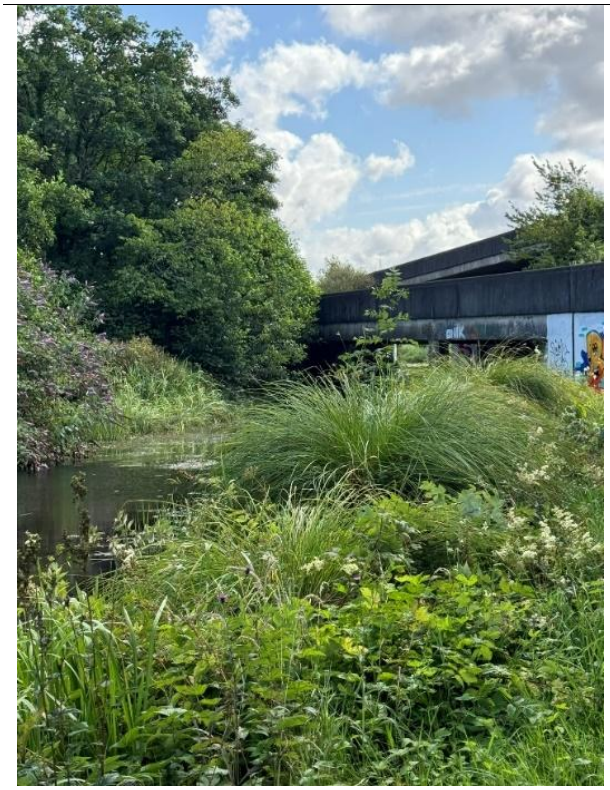

Image 15 – A465 Bridge

Image 16 – A465 Approach bridge.

Image 17 – A465 bridge approach canal section

Image 18 – A465 approach bridge with narrow pedestrian path

Image 19 – A465 approach canal section

Image 20 – Spillway into River Neath

Image 21 – Neath Abbey Bridge

Image 22 – Neath Abbey Canal section with light debris in canal

Image 23 – Old Tramroad bridge

Image 24 – Neath Abbey in Estate New Bridge

Image 25 – Neath Abbey in Estate New Bridge canal section

Image 26– Skewen Tramroad bridge

Image 27 – A465 Bridge

Image 28 – Pipe Bridge

Image 29 – Pipe Bridge canal section

Image 30 – Crown Copperworks Bridge

Image 31 – Abbey Wharf Bridge

Image 32 – Abbey Wharf Bridge canal condition

Image 33 – Railway Bridge

Image 34 – Cwrt yr Betws Bridge

Image 35 – M4 Bridge with canal adjacent to bridge

Image 36 – M4 Bridge canal section with minor footpath flooding

Image 37 – Gas works bridge with narrow footpath

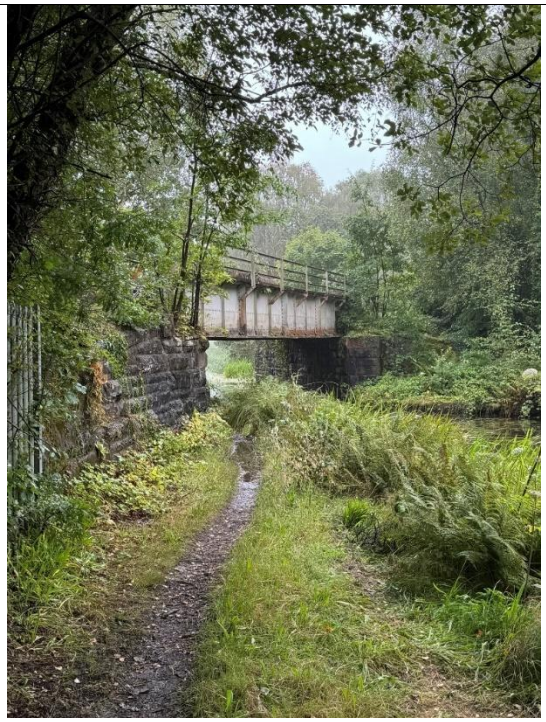

Image 38 – Railway Bridge with narrow footpath

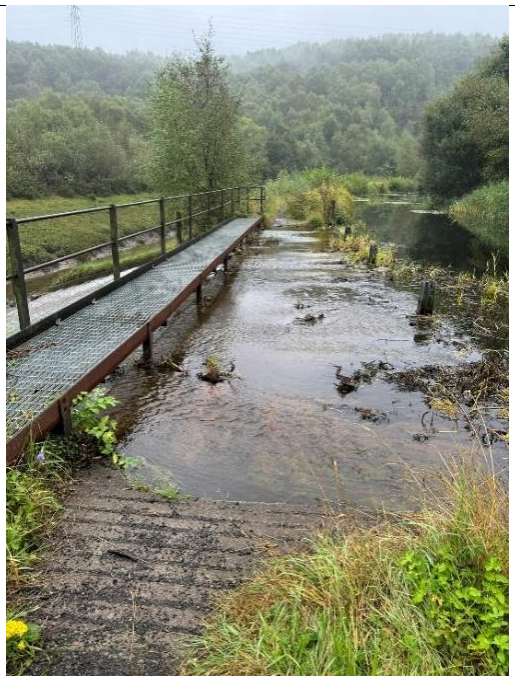

Image 39 – Red Jacket Bridge -

Image 40 – Quarry Bridge with shrubs on embankments

Image 41 – Rhondda and Swansea Railway Bridge with narrow footpath

Image 42 – Jersey Marine Bridge with grassy shrubs surrounding

Image 43 - Jersey Marine Bridge canal section in moderately good condition

Image 44 – Access Road canal section with reeds on both embankments

Image 45 – Former Vale of Neath Railway Bridge

Appendix C. Costings

Item	Indicative Budget Cost Neath Canal	Indicative Budget Cost Tennant Canal
Partial Restoration Works Costs	**£6,975,027**	**£4,075,451**
Design Factor Uplift 10%	£697,503	£407,545
Sub Total	£7,672,529	£4,482,997
Linear Working Uplift 10%	£767,253	£448,300
Temporary Works Uplift 10%	£767,253	£448,300
Sub Total	£9,207,035	£5,379,596
Contractors' Preliminaries 25%	£2,301,759	£1,344,899
Contractors' Overheads and Profit 10%	£920,704	£537,960
Sub Total	£12,429,498	£7,262,455
Contingency 10%	£1,242,950	£726,245
Sub Total	£13,672,447	£7,988,700
Design and Supervision Fees 15%	£2,050,867	£1,198,305
Total Cost	**£15,723,315**	**£9,187,005**
Hubs total cost	**£3,993,162**	**£575,000**
Design and Supervision Fees 15%	£598,974	£86,250
Total Cost	**£4,592,136**	**£661,250**
Full Navigation Restoration Works costs	**£7,123,853**	**£3,522,326**
Design Factor Uplift 10%	£712,385	£352,233
Sub Total	£7,836,238	£3,874,558
Linear Working Uplift 10%	£783,624	£387,456
Temporary Works Uplift 10%	£783,624	£387,456
Sub Total	£9,403,486	£4,649,470
Contractors' Preliminaries 25%	£2,350,872	£1,162,368
Contractors' Overheads and Profit 10%	£940,349	£464,947
Sub Total	£12,694,706	£6,276,785
Contingency 10%	£1,269,471	£627,678
Sub Total	£13,964,177	£6,904,463
Design and Supervision Fees 15%	£2,094,627	£1,035,669
Total Cost	**£16,058,803**	**£7,940,132**
River Neath Scour and Flood Protection Works Costs	**£7,130,534**	
Design Factor Uplift 10%	£713,053	
Sub Total	£7,843,588	
Linear Working Uplift 10%	£784,359	
Temporary Works Uplift 10%	£784,359	
Sub Total	£9,412,305	
Contractors' Preliminaries 25%	£2,353,076	
Contractors' Overheads and Profit 10%	£941,231	
Sub Total	£12,706,612	
Contingency 10%	£1,270,661	
Sub Total	£13,997,274	
Design and Supervision Fees 15%	£2,096,591	
Total Cost	**£16,073,865**	