New Destinations for “Copper Jack”

Navigation on the River Tawe and Creating Blue/Green Waterway Corridors to Extend the Navigable Length to Clydach and Port Tennant

Feasibility and Benefits Study

June 2025

MOSS NAYLOR YOUNG

Cyngor Abertawe Swansea Council

UNDEB EWROPEAIDD EUROPEAN UNION
Llywodraeth Cymru Welsh Government
Cronfeydd Strwythurol a Buddosoddi Ewropeaidd
European Structural and Investment Funds

Swansea Community Boat Trust
Copper Jack

Swansea University
Prifysgol Abertawe

New Destinations for ‘Copper Jack’

Navigation on the River Tawe and Creating Blue/Green Waterway Corridors to Extend the Navigable Length to Clydach and Port Tennant

Feasibility and Benefits Study

Contents

Welcome aboard Copper Jack

Executive Summary

The first "Copper Jack – New Destinations" study was commissioned in January 2021 by Swansea Community Boat Trust, with funding from the European Maritime and Fisheries Fund administered by Welsh Government and Swansea Council. The original report examined navigation on the Tawe River, provision of a landing pontoon at Hafod Copper Works Quay, new canal links to the Swansea and Tennant canals, socio-economic benefits.

This revised report "New Destinations for Copper Jack" considers in greater detail the two new canals, which will connect the Tawe River Navigation where "Copper Jack" currently operates to the Swansea Canal at Clydach and to the Tennant Canal at Port Tennant.

The protected route of the "Swansea Valley Canal", as shown in the Swansea LDP, has been reviewed and an alternative route considered.

The protected route for the "Port Tennant Canal" through Swansea Docks, as shown in the Swansea LDP, is examined in more detail.

Implications for the operation of the Swansea Community Boat "Copper Jack" are assessed following the installation of a high-quality landing pontoon at Hafod Copper Works Quay by Swansea Council, with more pontoons planned along the river navigation.

Projected socio-economic benefits are outlined and indicative costings from the 2021 report have been updated.

A key community benefit will be ameliorating the impact of climate change. "Avenues" of trees will shade the active travel routes along the new canals. Areas of Urban Forest will be planted within the canal corridors.

The strategic significance of the two new canals for active leisure, tourism and placemaking is highlighted in relation to the proposed 35-mile inland waterway extending across Swansea Bay.

A master plan for taking forward the "New Destinations" scheme is outlined.

> "With rising sea levels, increased rainfall and ever greater pressure being placed on drainage and water management systems, there has never been a more important time to reconsider the management and flow of water through the valleys of South Wales and the risks and opportunities presented to affected communities.
>
> Proposed here are a series of blue-space and green-space structural interventions that will future proof the flood management schemes of the Swansea Valley whilst simultaneously providing enhanced amenity and active travel benefits to those that live and work in the region."
>
> **Dr. Alexander Langlands, Associate Professor History/Heritage, Swansea University.**

Introduction – Extending Navigation on the River Tawe

The idea of linking the Tawe to the Swansea Canal at Clydach and extending navigation by canalising the Nant y Fendrod is not a new one. It was first suggested in 1989 by Swansea Canal Society[(1)] but had its genesis in an earlier age when Swansea was at the focus of the local waterways, the Swansea Canal ran the length of the Swansea Valley from Abercrave to the North Dock, The Neath Canal did similar in the Vale of Neath, and the Tennant Canal (the longest private canal in the UK and originally called the Swansea and Neath Union Canal) connected the Neath Canal to the Tawe at Swansea via the Prince of Wales Dock at Port Tennant. Historically the same boats did not cover the entire network but had these waterways survived intact to the leisure era then undoubtedly pleasure cruisers would have crossed the Tawe between the Tennant and Swansea Canals and made their way inland on both waterways.

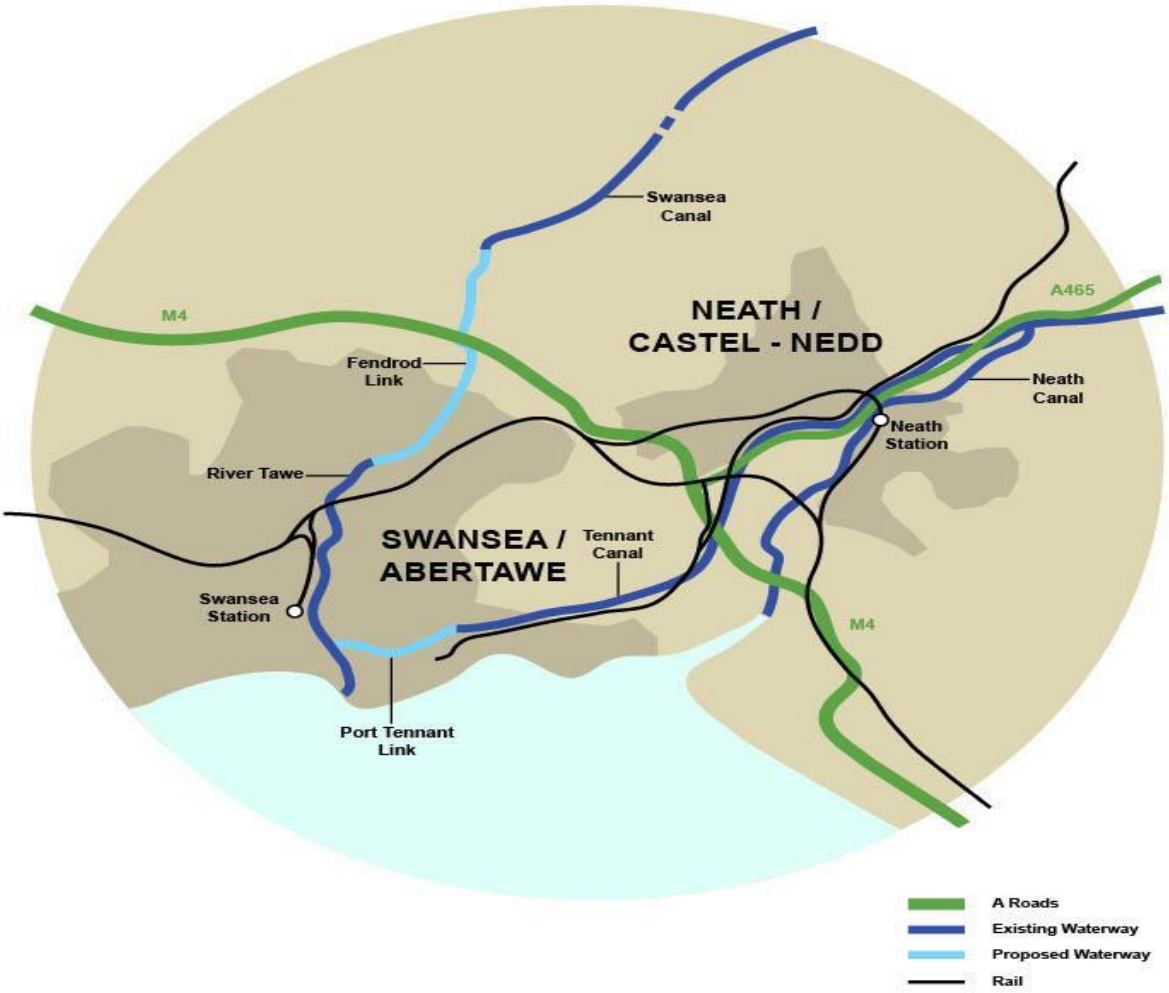
The Swansea Canal has vanished south of Clydach, and the Tennant Canal now disappears just north of Fabian Way, so new canal links are proposed to reconnect the Tawe to each canal. The previous studies (1992 and 2002 — both Atkins) looked at this in some detail and MNY have done significant work on the Swansea Canal and its links to the Tawe, the Prince of Wales Dock, and the Tennant Canal. However, these studies have treated the Tawe as a movement corridor which will carry boats between canal sections and the city centre, indeed even the links to the historic waterway have been treated in this way, a means of connecting Clydach and Neath to Swansea Marina rather than entities in their own right.

This study therefore considers in rather more detail the possibilities for the Tawe River Navigation and given that these possibilities focus on the potential for commercial passenger carrying vessels this study also looks at the potential for such vessels to travel the new links. Thus, the potential for navigation on the Tawe, to Clydach and Port Tennant, is examined in its own right rather than simply as a means of connecting historic waterways.

Note

(1) "The New Swansea Canal Proposals" – a paper prepared for Swansea Canal Society in February 1989 by John Andrew Davies and Clive Reed.

Waterways Of Swansea Bay



Swansea Valley Canal

The "Swansea Valley Canal" scheme has three main elements:

- a navigable waterway from the River Tawe to the Swansea Canal at Clydach.
- an active travel route with separated foot and cycle paths where possible.
- "The Avenue" – a new urban forest in the canal corridor north of the M4 motorway.

The Swansea Valley Canal will bring community benefits including:

Practical environmental measures to combat global warming.

Opportunities for active recreation and health benefits for the community.

Linking the Copper Works sites and Swansea Waterfront to the historic Swansea Canal to create a heritage visitor destination of national importance, thereby strengthening the local economy.

The proposed navigation between the Tawe and Clydach is formed by two distinct navigation sections. From the Tawe to the A48 Samlet Road the navigation is in the canalised Nant-y-Fendrod, from the A48 north the navigation is an entirely new canal. The new canal will link the Fendrod from where it emerges from a culvert under the A48, to the bank of the Tawe where the canal will then proceed under the M4 motorway and railway in the existing structures before passing through open country to Clydach.

The canal route is safeguarded from development in the Swansea Local Development Plan and has in part become a valuable and well used leisure corridor whilst awaiting development as a canal.

"The preferred route of the Swansea Valley Canal upstream of the A48 road crossing has been reviewed. Since the first report, a possible alternative route following the line of a disused storm drain has been identified by Dr Alexander Langlands, Swansea University. This route runs parallel to the original proposal a few hundred metres west, and thus passes through the same area. Most of the protected canal route along the Fendrod between the A48 and M4, which has been landscaped by Swansea Council, has a high amenity value. The protected route also runs adjacent to the *Swansea Vale* local nature reserve. The proposed alternative route would leave these areas undisturbed."

The principal advantage is that existing landscape and ecological value of the Fendrod route are unaffected, and the existing flood conveyance does not need to be factored in. Compared to the original preferred route more works will be required on the new proposal as road crossings are typically by embankments with a small pipe for drainage and these will need to be replaced with bridges, however the highway levels at these crossings are approximately the same as the original proposal and thus no issues with levels are anticipated.

Work on the new Swansea Valley Canal will be implemented in stages as funding becomes available. The initial scheme might be a navigable link from the River Tawe into the Fendrod Lake, as this would provide a new upriver destination for "Copper Jack".

North of the M4, the Swansea Valley Canal corridor will initially be protected and promoted with the active travel route, preliminary groundworks for the new waterway and by planting areas of Urban Forest.

The Swansea Canal carried boats similar in size to English narrow boats, and at present works related to the Swansea Canal are proposed to accommodate oversized narrow boats. The standard canal boat of the English Midlands is 72 feet long by 7 feet wide (22m by 2.1m). The Swansea Canal locks were slightly wider

at 7 feet 6 inches.

Copper Jack is designed for river use and is 15 feet (4.6m) wide, which has major advantages in terms of passenger operation. The river has no restrictions to such a large vessel but clearly, they could not proceed up the Swansea Canal above Clydach as locks and structures are too narrow. However, as the Swansea Valley Canal works have not yet been constructed, they could be built to allow passage of boats such as Copper Jack. The original concept was to connect the canals to Swansea, however when this concept is turned around, connecting Swansea to Clydach, it makes sense to allow river craft on the canal.

The critical dimension is beam of craft — the reason for allowing river vessels onto the link is for commercial passenger craft to benefit, although some private pleasure boats based in Swansea may also choose to make the journey. These vessels need not be any higher above the water than an ordinary canal boat, indeed Copper Jack is basically a narrow boat with an increased beam.

The Fendrod

The Fendrod is an unnavigable watercourse that has a confluence with the Tawe opposite Beaufort Road. The Fendrod (full name Nant-y-Fendrod) proceeds on a roughly north easterly course to the Fendrod Lake. This watercourse, and the Fendrod beyond towards the A48 road crossing, is proposed to be canalised as part of a link between the Tawe and the Swansea Canal at Clydach.

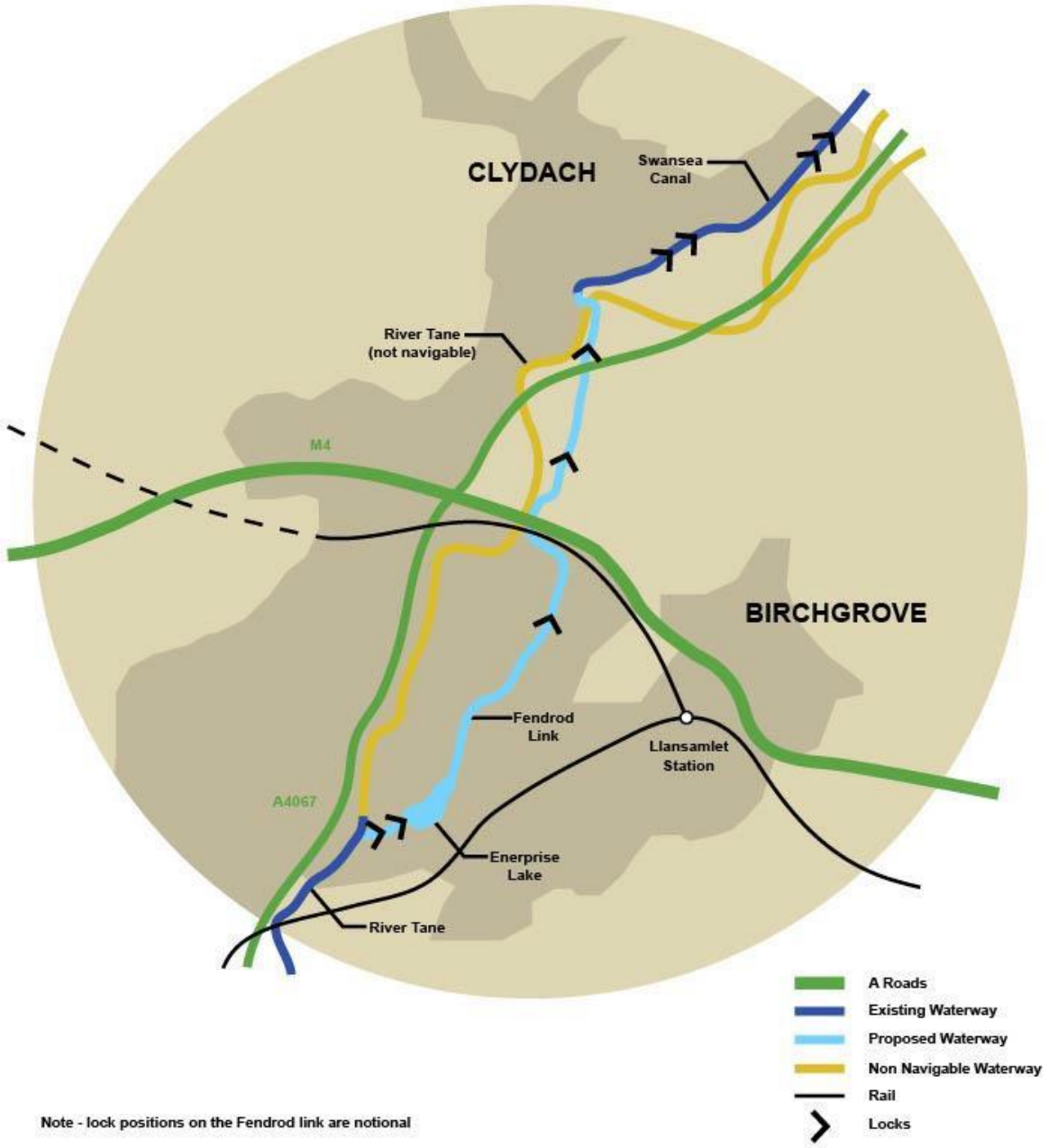
The Swansea Valley Canal would have four locks on its 1.5km length south of the M4 and would feature four bridges, all of them culverts carrying the waterway under existing roads, and all would need enlarging for the passage of canal craft. As the critical factor for the passage of larger vessels is width rather than height above water these bridges are made only marginally more expensive by increasing the gauge of boats.

The Fendrod Lake – boats would reach this oasis of calm amidst the enterprise area of the city.

M4 to Clydach

This length will be a new artificial canal, passing under the M4 and railway in the existing openings for the river Tawe. The canal will feature 7 locks, one bridge, five lift bridges and one large aqueduct. The aqueduct is necessary because the new canal is on the east bank of the Tawe whereas at Clydach the existing Swansea Canal is on the west bank. Ideally a corridor on the west bank of the Tawe would have been found, or the original line reinstated, but modern development precludes this. It is intended that the aqueduct will be of similar design to the modern aqueduct carrying the Neath Canal over the River Neath at Ynysbwllog.

Fendrod Link



The works from the Tawe to Clydach are summarised below.

Item	Number/distance/note
Canalisation of Nant-y-Fendrod	1450m of channel
New Canal to Clydach	1850m of channel
Locks	11
Bridges	5
Lift Bridges	5 (one electrified, four manual)
Aqueduct	1

Of the five bridges, one is a new tunnel under the A4067, the others are enlargements of existing culverts. Four of the lift bridges are for accommodation purposes, the fifth carries Garth Road over the canal.

In 2002 these works were estimated at £18 million pounds, a straightforward inflation factor would indicate a 2025 cost of approximately £38 million.

Port Tennant Canal

The "Port Tennant Canal" scheme has three main elements:

- a navigable waterway.
- an active travel route, with separate foot and cycle paths where possible.
- "The Avenue" – an urban forest planted along the new canal corridor.

We have already examined the options to navigate north from the Marina to reach the Swansea Canal at Clydach. The Port Tennant Canal is intended to allow navigation eastwards to disused railway land at Swansea Burrows alongside the Tennant Canal. As with the Swansea Canal, The Tennant Canal was designed for relatively narrow inland boats, in this case approximately 9 feet beam by 64 feet length (roughly 3m by 20m) whilst the Tawe can carry vessels significantly larger.

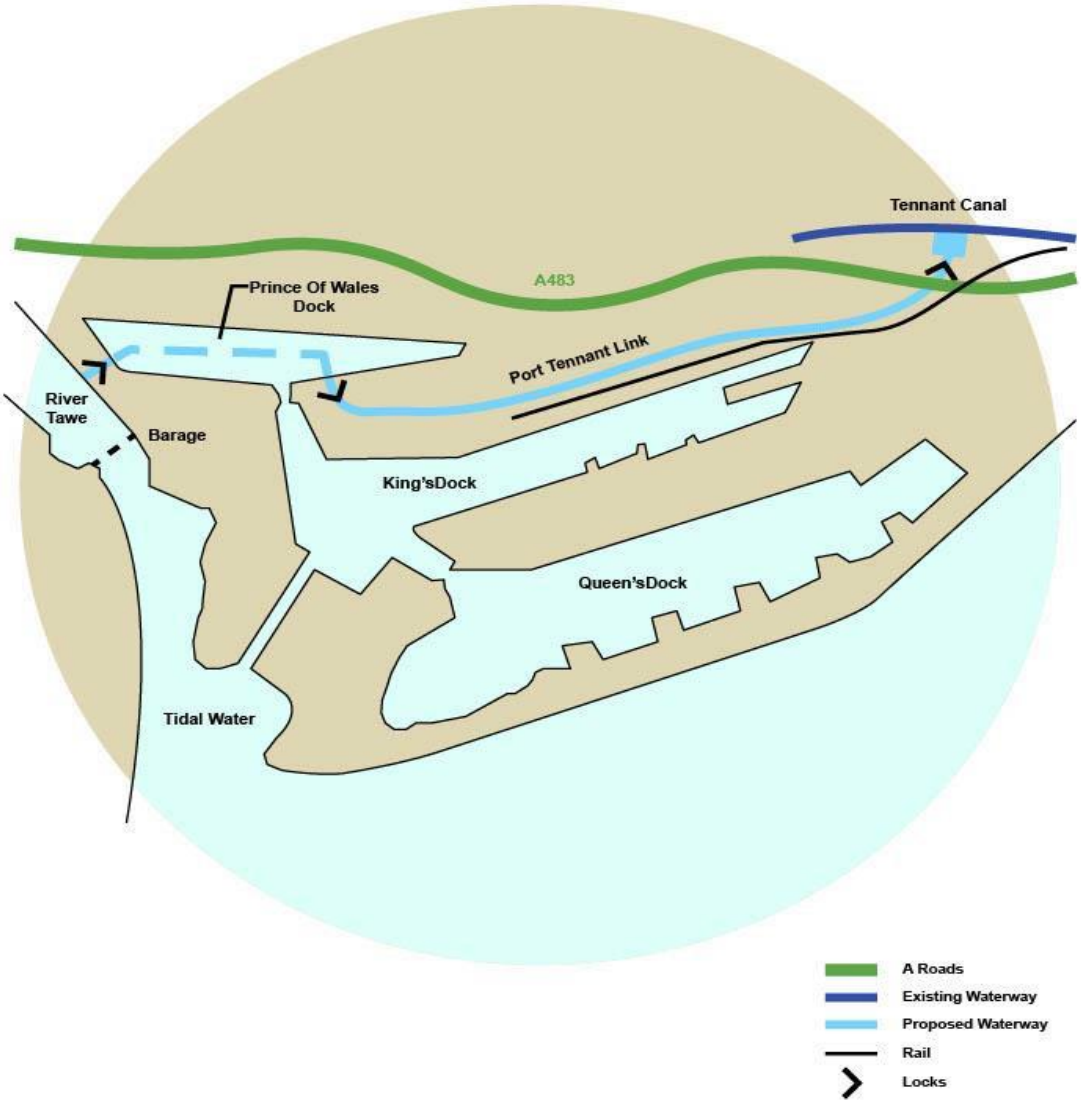
The original plan from 1992 onwards has envisaged a link in two parts, from the Tawe to The Prince of Wales Dock, and then across the Dock to a new canal linking to the Tennant Canal. Since the original report the Tawe Barrage has been built and the ship lock into the Prince of Wales Dock has been closed thus the link is essential if inland craft are to make this voyage as the alternative is the massive ship lock serving the Kings Dock, the entrance to which is virtually at sea.

A new lock from the Tawe into the Prince of Wales Dock was subject to a report by MNY in 2016/7 for Swansea Community Boat Trust – Copies are available from Swansea Community Boat Trust.

There is also an aspiration to run large trip boats such as Copper Jack to convey passengers to the Tennant Canal. The proposed link from the Tawe could be large enough for Copper Jack, but due to its dimensions and the fact that it is diesel powered, Copper Jack will not operate on the Tennant Canal. It is also likely that only electrically powered leisure craft will be allowed on the Tennant Canal, to safeguard sensitive areas such as Crymlyn Bog and Pant y Sais Fen.

It is proposed that a small canal basin will be constructed, where passengers can transfer from river boats to vessels able to navigate the Tennant Canal. It is likely that the junction between the Prince of Wales Dock and the Port Tennant Canal will be an area of interest in itself, and there will be benefits to a basin and mooring here, as well as a basin at the junction of the Port Tennant Canal with the Tennant Canal. There are benefits and costs in making the Port Tennant canal large enough for Copper Jack rather than the smaller width required for Tennant Canal boats, but this decision need not be made now – both scenarios work for the benefit of the corridor.

Port Tennant Link



The first section of the link from the Prince of Wales Dock is protected through the proposed POBL housing development, from here the link the Tennant Canal is proposed to cross unused industrial land — the 2002 report marks a route that passes along landscaping adjacent to an internal road within the docks system — this landscaping strip is typically 20 metres wide and will include a footway/cycleway. This is not the most direct route, but it does have the advantage that it is basically unobstructed and is likely to remain

so and is remarkably close to the historic route for much of the length. This route is protected in the Swansea Local Development Plan (see appendices)

A more direct route could be achieved by routing navigation through the Kings Dock, the eastern end of which is considerably closer to the Tennant Canal. This route is capable of navigation by inland boats, but the Kings Dock is an operational dock where transiting canal boats could become a nuisance and a hazard.

The proposed route exits the Prince of Wales Dock via a flood lock of flood gates — the level in the dock varies and there will be a need to protect the canal from either flooding or draining. The canal continues at the same water level as the dock, following in the most part a landscaped strip some 20m wide until passing under Fabian Way. Here the route will use one half of the railway crossing (the railway track using the other half, there is room for the loading gauge of the railway and of the canal here). The route will then lock up to the level of the Tennant Canal.

It is noted that the railways into the docks are not currently used, but the Swansea LDP 2023-2038 Preferred Strategy states that "Proposals must have regard to safeguarding the rail link to the docks and the potential for future enhancement of the rail freight network" This is achieved as the canal alignment does not affect the ability to run a single track railway under Fabian Way – given that Felixstowe container port, one of the busiest ports in the UK, is served by a 20km single track line that is shared with a passenger service then a single track under Fabian way should suffice for the foreseeable future of the Port.

The bridge under Fabian Way – there is room here both for the railway and the canal alongside each other.

The works from the Tawe to the Tennant Canal are summarised below.

Item	**Number/distance/note**
Lock between Tawe and Prince of Wales Dock	1
New Canal Prince of Wales Dock to Swansea Burrows	2100m of channel
Lock on Port Tennant Canal**	1
Flood gates/locks	1
Bridges	2?

**The lock on the Port Tennant Canal is proposed between the Tennant Canal and Fabian Way and would have a fall of approximately 2m. Detailed surveys may allow the lock to be relocated or dictate that the fall should be split between two locations.

In 2002 these works were estimated at £4 million; a straightforward inflation factor would indicate a 2025 cost of approximately £8.44 million. As with the Fendrod, some costs may actually have come down.

The channel width was determined in 2002 to be the minimum channel in which two nine-foot beam boats could pass, except under Fabian Way where the channel would be narrowed to allow the canal, accompanying path and the railway through the existing arch. The width of the canal at this point will be pivotal in determining whether the wider beam boats will be able to pass along the Port Tennant Canal and is a major factor in favour of building the canal for nine-foot beam vessels.

However, the channel would be at the Prince of Wales Dock water level for much of its length and thus the water level would be some 2-3m below ground level between concrete walls, a navigable link but hardly an attractive one. The landscape strip is some 20m wide, aside from widening the channel itself there are various measures that could be taken to increase the aesthetic appeal of the new canal; the creation of a tree lined avenue with the sides sloping to meet the canal would do much to improve the this. Alternatively, if levels permit the canal could climb to the level of the Tennant Canal on leaving the Prince of Wales Dock and thus be closer to existing ground level. At feasibility level the costs of each option are broadly comparable

In addition, a multi-user trail should be created along this corridor pending the canal construction, providing a link from Swansea City Centre to the Wales Coastal Path and adding weight to protection of the canal route.

An “Avenue” of trees will be planted along the new waterway. Unless constrained by adjacent development, the planted areas will be extended to create areas of Urban Forest, providing both a wildlife corridor and shaded areas for informal recreation. Overall, the effect would be to create a green-blue corridor linking The Prince of Wales Dock with the Tennant Canal at Crymlyn Bog, the Tennant Canal then providing a similar corridor all the way to Neath.

The Avenues

The two new canal links will make a positive contribution to dealing with the climate and nature emergency. The canals will have a key role as SUDs, draining increasing amounts of surface water. Planting trees in the canal corridor will absorb water and also screen people from the sun, improve air quality and enhance biodiversity with a wider range of habitats.

The canals of Swansea Bay have long been valued by the community as leisure destinations. Edwardian picture postcards show that canalside communities often had an “Avenue” where people enjoyed walking along the tree lined canal bank. Postcards depict the tree-lined “Canal Bank at Morriston”, “The Avenues” at Ynystawe, Clydach and other places on the Swansea Canal as far as Gurnos, together with locations on the Neath Canal. Boat trips on the canals were also popular into the 1930s.

The new canals will similarly become valued by local communities as sustainable venues for active recreation and for facilitating healthy travel.

The new “Avenues” will provide the shaded areas for leisure activities that will increasingly be needed due to global warming. The Avenues will also support increased biodiversity value and improved air quality.
The areas of urban forest will be planted with native species, some grown from acorns collected from veteran oak trees alongside the canals.

Climate change means many tree species planted today in Europe will not survive to the end of the century, but research at the University of Vienna [(2)] suggests that Sessile Oaks will continue to thrive in areas such as the Swansea Bay region.

Delivering the Scheme

The inspiration for the "Avenues" was the approach taken by Swansea Council when protecting the proposed canal route through Swansea Vale. A valuable recreational / landscape / wildlife feature was created, whilst still keeping the canal route available.

During the initial phases, volunteers will be involved in tasks such as tree planting. This will demonstrate that there is community support for the scheme, which will help secure funding for the major infrastructure works.

Construction of the structures - canal lining, bridges, locks etc. - will be undertaken by contractors.

The works will be phased and implemented as funding becomes available.

(2) Wessely, J., Essl, F., Fiedler, K. et al. A climate-induced tree species bottleneck for forest management in Europe. Nat Ecol Evol **8**, 1109–1117 (2024). https://doi.org/10.1038/s41559-024-02406-8

The Canal du Midi (above) in the south of France has acted as a tree lined avenue giving shade, reducing evaporation and forming part of a microclimate and ecosystem for three centuries – these trees were planted by the original canal builders and have been managed ever since.

A typical section across the canal corridor

Hedge bank boundary. with security fence.	Urban Forest and wildlife corridor. Landscaped using dredged material from local canals to improve fertility.	Canal bed excavated. Liner, locks bridges etc. to follow.	Separate footpath and cycleways Wild flowers / grass meadow areas and Tree planting where there is room.	Hedge bank boundary pedestrian access. Security fence.

The design and width of the canal corridor will be adjusted to suit adjacent land uses. Where the available space is restricted, the protected corridor would be reduced to the minimum 20m width, but a typical width will be 50m, more where this is available.

Where there is available land alongside the new canals, the Avenues will be enlarged to include areas of

Urban Forest.

Swansea Valley Canal - the northern section between the M4 and the river crossing at Clydach, where there is less urban development, provides an opportunity to create an area of Celtic Rain Forest.

Port Tennant Canal – the availability of disused dockland and the former railway land at Swansea Burrows offers another opportunity to create a Celtic Rain Forest near the internationally designated Crymlyn Bog.

The active travel route along the Port Tennant Canal will be available for adoption as part of the Wales Coastal Path, linking Swansea Beach, City Centre, Swansea Waterfront and the Crymlyn Bog Ramsar site.

Tawe River Navigation

Swansea Marina is intended to serve coastal yachting and boating. The Bristol Channel is a very popular area for yachts and motor boats and the scenery of the South Wales and North Devon Coasts coupled with the local harbours and ports that readily accept visitors makes it a popular base for those both local and living some distance away.

The Tawe is navigable from the sea to Swansea Marina via a lock in the Tawe Barrage which extends the times that navigation to the sea is possible. This lock retains a level rather above mid tide and thus the river is navigable (but seldom navigated) at all states of tide for some way upstream of the Marina to the confluence with the Fendrod and probably navigable upstream of the Fendrod with the limit of navigation varying dependent upon the size and draft of the craft attempting passage.

For the purpose of this study, navigation is only relevant between the marina and the Fendrod.

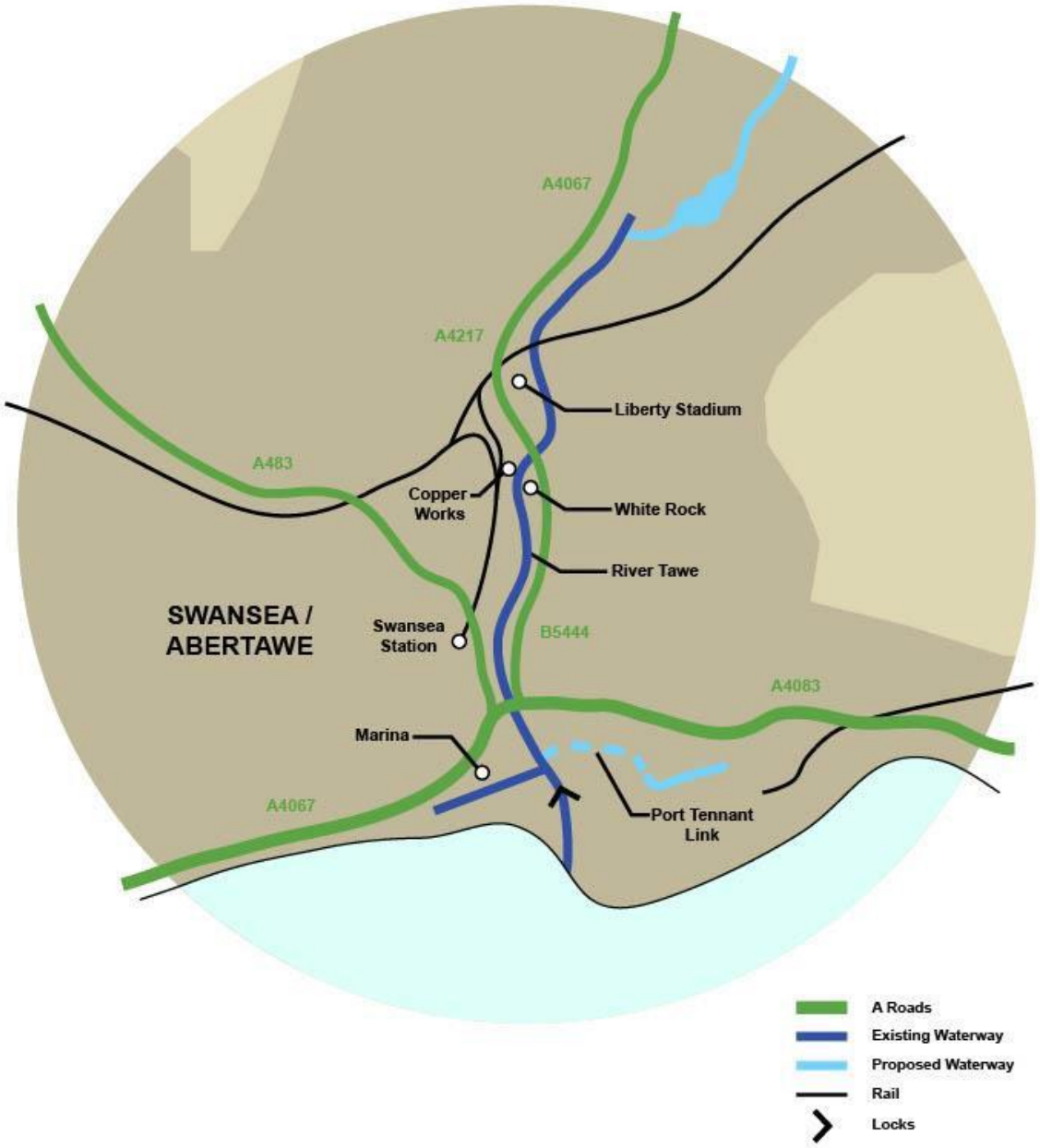
Use of the Tawe for navigation is not a new concept, in the late 18th century there were active wharves at the Hafod and Morfa copper works on the west bank and at White Rock on the east bank and upstream of this wherever industry was found up to the tidal limit. In 1996 the narrow boat “Progress” arrived by sea and travelled upstream on the tide beyond the location of the present day Swansea.com Stadium, which had not then been built. This voyage is documented in the video “A Canal Too Far” by Laurence Hogg Productions.

Copper Jack has navigated the river upstream from Swansea Marina for some years but did not make land and was prohibited from passage under the rolling bridge at Morfa due to safety concerns. The bridge span has been removed for refurbishment and thus the danger to navigation has also been removed — this danger related to the condition of the span and thus navigation may be possible when the span is reinstated.

Prior to navigation being permitted upstream of Morfa Bridge, a bathymetric survey will be required between the Swansea.com Stadium and the Fendrod confluence to identify any obstructions on the river bed.

Tawe Landing Stages

MOSS NAYLOR YOUNG



Apart from Copper Jack, no other large craft regularly use the navigable section and navigation is not encouraged or promoted. Small craft such as canoes are used throughout the length. Once the Swansea Valley Canal is made navigable, then inland craft will regularly make passage between Clydach and Swansea city centre.

The length between Swansea barrage and the Fendrod is semi tidal and thus some fluctuation in level occurs on an almost daily basis (neap tides do not come over the barrage but mid-to-spring tides do) and the river is also subject to increased flow and raised river levels after heavy rain. If this occurs coincidental with spring tides then levels are higher again and passage under bridges upstream of the marina becomes problematic or impossible. However, some fluctuation in level will occur and the river still be navigable. It is however well within the capabilities of inland navigators, comparable with, say, the Bristol Avon between Netham and Keynsham, or the Severn between Gloucester and Tewkesbury.

The immediate objective examined by this report is to allow Copper Jack or similar vessels to reach the Fendrod Lake and to be able to stop for passengers to board and alight at various locations. There is currently only one official landing pontoon on the river and none of the unofficial moorings are suitable for such a large vessel to serve fare paying passengers — the best that might occur at present is that a private motor boat might be able to moor and its crew scramble ashore.

Trip Boat Landings on the river

The brief calls for an examination of mooring locations along the river between the Marina and The Fendrod. The primary purpose of this is to serve as boarding and alighting points for Copper Jack and any similar craft that may be commissioned to work the river in future. Such vessels are fully disabled accessible and require moorings that can provide full disabled accessibility. In this respect the height of the river banks and the changing levels of the river are material factors — the owner of a private pleasure craft can use the roof of the craft for access and even scramble up the river bank if they choose, whereas Copper Jack requires wheelchair access, which requires a level and stable landing at a fixed height relative to the vessel — that is, can be adjusted for water level variations.

Since the original “New Destinations” report, Swansea Council has put in place a landing pontoon at the former Hafod Morfa Copperworks site at Hafod Quay, as part of the council's ongoing £1bn city regeneration.

The first party to arrive at the new Hafod Quay Landing Stage – Woodford Rugby Club disembark from Copper Jack

Funding came from the European Union and Welsh Government (main pontoon and lighting) and from the Welsh Government (stainless steel gates and railings). Plans were drawn up by Ashley Davies Architects and structural specialists Mann Williams. The main contractors were Inland and Coastal Marina Systems.

Copper Jack approaches the new Hafod Quay Landing

The pontoon and quayside will have safety equipment, signs and wall ladders. Life buoys have been installed along with lockable gates for key holders. It will be managed and maintained by the council's Swansea Marina team, for use initially by Swansea Community Boat Trust and other non-commercial groups that use the river.

There are two other obvious sites for landing pontoons at the Morfa Quay near the Swansea.com Stadium and at the White Rock Copper Works site.

In addition, there are other locations that suggest themselves at the city centre end of the river where passengers might board or alight without going into the Marina. Swansea Council plans to install another landing pontoon at the “river linkage” near where Morfa Road joins The Strand.

If and when the river is opened up to pleasure craft, then the river would benefit from informal visitor moorings in addition to the fixed moorings for passenger trip boats.

Until the Fendrod is navigable the Swansea.com Stadium forms the obvious upstream limit of operation for any passenger boat operation. The stadium is an attraction in its own right and the volume of parking in the area coupled with nearby residences, businesses and leisure uses makes this location both an attraction for visitors and a start point for trips to the city centre. Further, this is quite close to the location for the proposed “Skyline” to make land at the Hafod/Morfa Copper Works site, which will become a hub for two related sightseeing attractions and trip boats will have a landing there at Hafod Quay.

Swansea’s copper works were once a major source of industrial traffic on the river, and the regenerated area has a significant residential population and a level of heritage interest for the visitor. There would be benefit in having moorings at both the Hafod/Morfa Copper Works site and at the Swansea.com Stadium. It is likely that the Copper Works, with the various attractions and facilities to be located there, will attract regular daily traffic that would be well served with only a short walk from the landing, whilst the Swansea.com Stadium would appeal to those attending events.
There is potential for developing a “Park & Float” service at Hafod Quay in conjunction with the nearby Landore Park and Ride, which currently provides car parking and a shuttle bus to the City Centre. Copper

Jack or a similar vessel would provide sustainable travel on the river to the Swansea Waterfront.

Visitors would then have the option of travelling by bus or boat, or perhaps walking the "Tawe River Navigation Heritage Trail".

As visitor attractions such as the innovative and highly recommended Penderyn Swansea Copper Works Distillery tours get established, there will be an opportunity for "Copper Jack" to become part of a package of experiences for visitors.

White Rock is another informal attraction, based around the Smith's Canal and associated ruined furnaces. Aside from the heritage interest of the Smiths Canal tunnel and canal basin, the site is an attractive spot for informal recreation and could be a venue for events such as local fetes and festivals. The site has road access and is well connected with footpaths and a cycle way. It is a fairly lengthy walk from both the Hafod Quay and the Swansea.com Stadium so a separate stop can be justified although the impact of a third stop on the route would need to be considered — it would be wise to consider this and for any other additional calling points.

Swansea Council has applied to the UK government's Levelling Up Fund to revitalise the Lower Swansea Valley by celebrating its rich heritage and investing in its future.

The projects include:

"The River Tawe link from Copperworks to Strand Tunnels and City Centre project picks up the river linkages and eases public interface with the core City Centre through imaginative re-use of Victorian railway arches, enabling better access to public transport (bus, rail, river) and continuing the heritage experience that is currently underplayed." And "Installation of two pontoons along the River Tawe; North of the Copperworks site at the Liberty Stadium/Bascule Bridge, and South of the Copperworks site close to the Strand Victorian Tunnels in the City Centre."

The Swansea Community Boat Trust looks forward to supporting these exciting initiatives.

Developing the Passenger Boat Operation

At present there is no significant management of the river as a navigation and this needs to be considered before options in addition to Copper Jack are proposed. The river as far as the Swansea.com Stadium is a category B waterway under the Maritime and Coastguard Agency (MCA) regulations – upstream of the stadium the waters are not categorised, this is presumably because classification has never been sought rather than these waters being intrinsically more or less hazardous than the length down to the city centre.

Category B waters are defined as: wider rivers and canals where the depth of water is generally 1.5metres or more and where the significant wave height could not be expected to exceed 0.6 metres at any time.

Category A waters are the least hazardous and Category D the most — The Swansea Canal is a category A waterway and the water between the barrage and the end of the breakwater in Swansea is Category D. The categories apply to smooth and partially smooth waters, so beyond the breakwater is regarded as open sea.

Examples of issues that need to be addressed are:

- Speed limit
- Rules for the avoidance of collisions
- Licensing/registration

It may also be desirable to seek conditions on the size and type of craft using the river.

Somerset Estates have authority over the bed of the river, but it is not clear whether this gives them any authority over navigation. Navigation rights may be open as the river was (and to some extent still is) tidal — there are common law rights to navigate wherever tide ebbs and flows although in some instances (such as where a port authority exists) this right is modified and the regulation of navigation on the Tawe, at least in the vicinity of the marina, is likely to be vested in the Port of Swansea or Swansea City Council, or possibly both at different locations.

For significant use of the river to occur it would be advisable to ascertain who has what powers and to reach agreement between these bodies for one navigation authority (at least above the barrage) to lead on these powers. It is extremely unlikely that any of the interested parties has the right to prohibit navigation, but they may have the right to place conditions upon it.

Taking the above examples of areas where regulation may be useful:

Speed Limits
This is basically a safety issue, although in locations where the riverbanks are soft speed limits can help reduce erosion through wash. It is likely and desirable that a range of vessels will use the river, and speed limits reduce the risk to all users. Masters of smaller vessels that can travel quickly present a risk at excessive speed due possible loss of control: this affects their interaction with both larger craft and unpowered vessels. A vessel as large as Copper Jack (licensed to carry 47 passengers) is unlikely to represent a problem as the speed through the water is limited by their hull shape, but semi-displacement vessels that can get onto the plane when under power must refrain from doing so. In practice waterways similar to the Tawe tend to have a 6mph or 8mph speed limit.

Rules for the Avoidance of Collisions
It has been established on many occasions that COLREGS, intended for shipping at sea, also apply on inland waterways unless other local rules apply. It would be appropriate to consider whether local rules are required and also to establish a system of navigation markers and signals (if required) to delineate the channel and any course that vessels should take. It may be appropriate to establish rules around the landing stages and also a system of notices to mariners.

License/Registration
A license/registration system is useful as it allows vessels to be identified in the event of a collision (with another boat or with navigation equipment such as markers or even landings) or a breach of regulations. However there does need to be a statutory mechanism for enforcing this and it should be investigated as to whether one exists for the Tawe.

Characteristics for passenger boat operations
The distances along the route are as follows.

Marina mooring to:

- River Tawe — 0.4km
- A483 bridge —1.1km
- Copper Works/White Rock — 2.9km
- Swansea.com Stadium — 3.9km
- Fendrod Confluence — 5.2km

Once on the river a boat such as Copper Jack can cruise at 6kmh, probably more, subject to any current or future speed limit, although it is necessary to go more slowly in the marina. These factors give a cruise time to the Swansea.com Stadium of around 45 minutes with no intermediate stops. An intermediate stop would add between 5 and 10 minutes depending on how many passengers board and alight.

Copper Jack
Copper Jack runs trips from the Marina but at present turns in the river near the Stadium and returns to base without stopping. Copper Jack is available for public trips and for private charter, can carry 47 passengers and is fully disabled accessible. It was purpose built by Colecraft.

With one or more landing stages upriver, there is the scope for Copper Jack to vary its operation and act as a waterbus offering return or single journeys between different points on the river. However, it should be noted that Copper Jack is one vessel, and if it is operating excursions, it is not operating a waterbus service, and if it is doing either it is not on a charter trip.

There is room in the market for an additional smaller vessel operated by Swansea Community Boat Trust and licensed to carry 12 passengers.

Artists impression of Copper Jack on the Fendrod Lake / Swansea Valley Canal iCreate

Other Large Vessels/Operations
Waterbus services need a degree or reliability — the market for such services is harmed if the trips don't run because a more lucrative charter has been engaged, and if the service is to connect, say the city centre with the Skyline attraction then such interruptions cannot be tolerated. Restaurant boats and party boats form a valuable part of the water-based offer in many river towns and the Tawe is easily a big enough navigation for such vessels to have appeal. The boats could be bespoke build or more likely be converted commercial boats such as Keels, Peniche or Luxemotor that have reached the end of their working days.

Smaller Vessels
Copper Jack can carry 47 passengers and the river is big enough for vessels with an even greater capacity, however small vessels also have a role to play, especially boats that carry no more than twelve passengers and three crew. These vessels can operate a more responsive service for both passenger transport and charter services, the waterbus element responding to smaller groups "on demand" and the charter able to respond to families or special interest groups that cannot fill a larger vessel. These trips will benefit from multiple starting points as (1) the Swansea Marina landing is not available if Copper Jack is moored and (2) there is a significant distance from that mooring to potential sites of interest on the river, smaller vessels may benefit from running (say) Swansea.com Stadium to White Rock and/or Copper Works as special interest heritage tours for example.

Diversification
There is a significant and underutilised fishing fleet based on the Tawe just upstream of the Barrage, and an operational boat repair centre at the same location — both could benefit from a diversification of trade

on the river with the fishing vessels adapted to serve the smaller boat section of the leisure market and the boat repair facility gaining more regular trade from servicing passenger boats.

Potential Revenue for Operators

Copper Jack currently charges £14 per passenger (with concessions) — when calculating revenue it is often advisable to make concessions the baseline and the treat full fares as a bonus, grandparents taking grandchildren might well all count as concessions and it is for this reason that on many tourist operations the reduction for concessions is limited to perhaps £1-2 rather than the more normal half or two-thirds fare common on public transport. Family tickets are a useful incentive, but these also erode the cash-per-head equation.

Smaller vessels can have more flexible charging regimes and more flexible operations — it is economic for a small vessel to charge less for full vessel charter, and to charge more per head for bespoke trips. There is a cut off point for small vessels at a maximum capacity of 12 passengers and 3 crew, above which full MCA compliance is required. This tends to result in vessels having capacity for 12 passengers or not less than about 30 passengers as the increased costs of operation require a significant uplift in numbers. Thus, we have based our conclusions on a mix of boats with 12 passenger capacity and larger boats with 40+ passenger capacity.

Looking at figures for trip boats elsewhere the operators may reasonably charge £15 a head for a basic trip and might expect to operate on 100 days a year (weekends April-September and school holidays). A smaller vessel (up to 12 passengers) could expect a revenue of £45,000 per annum dependent upon how many trips per day were operated, plus the vessel would be available for other purposes on non-operational days. Larger vessels could see proportionately larger income but of course also have higher operating costs. Bespoke tailored tours, day long charters, “special occasion” charters and similar can all increase revenue over and above these basic figures. In addition, basic catering on board can provide additional revenue.

Landside Revenue

Passengers on boats spend money elsewhere in the local economy during their trip, this is especially true when the visitors are not local but even local users will tend to spend more on a day out than they would if staying at home, and by creating local attractions this is kept within the local economy rather than being lost to another area or town.

Passengers on boats also spend money bankside, and others come “to see the boats” — this extra expenditure occurs because of the increased dwell time of visitors as a result of linked attractions. Whilst a visitor to the Penderyn Distillery might spend two hours on site, a visitor who arrives by boat has linked this trip to time at the Marina and made a half day or even a full day of the visit.

Typically, a family or group drawn to the river will spend around £10 a head in addition to any expenditure on the boat fare. This revenue will go to outlets alongside the river assuming such outlets exist. From this perspective the landing at the Copper Works (see below) is particularly attractive as there will be outlets there that can benefit from extra expenditure.

These figures relate only to the use of the river as a result of encouraging commercial use through the provision of landing stages, a free-standing project that is not dependent upon the delivery of the new canal links to Clydach town centre and the Tennant Canal. There will be further uplifts if other forms of use are encouraged such as use by private or self-steer hire vessels if navigation on the river is extended.

Stakeholders

The following organisations or groups have an interest in the proposed improvements and enhanced use of the river:

- City of Swansea Council
- Welsh Government
- Natural Resources Wales
- Swansea Marina Operator
- Duke of Beaufort/Somerset Estate
- Penderyn Swansea Copperworks Distillery
- Swansea Community Boat Trust
- Tawe Angling Club
- Tawe Rowing Club
- Friends of the Copperworks
- Boat Repair Yard operators
- CADW
- Swansea Canal Society
- Neath and Tennant Canals Trust
- Other river users
- Local communities along the riverbank

Artists impression of the Port Tennant Canal approach to Fabian Way Bridge. *iCreate*

Summary

There are at least three more potential landing locations for passenger craft on the river: Swansea.com Stadium, White Rock and in the city centre on the river away from the marina. The city centre (marina or river) plus three outward stops would give potential for a timetabled service and a variety of one-off excursion or charter trips — e.g. City Centre to the Swansea.com Stadium on match days.

The increased potential of the river with landing stages presents the opportunity for additional vessels of varying capacity and for different purposes, it also presents the opportunity for diversification and repurposing of existing businesses and river boats.

Socio-Economic Benefits of Extended and Improved Navigation on the Tawe

The proposals see three distinct elements of an integrated scheme to extend the use and navigable length of the River Tawe, these are:

- Pontoons that will encourage waterborne commercial passenger traffic on the river and may contribute to additional private leisure use of the river.

- A canal extending navigation for river traffic to Clydach, where a new basin will form a junction with the Swansea Canal

- A canal extending navigation for river traffic to a junction with the Tennant Canal, though boating through the Crymlyn Bog is likely to be restricted to electrically powered vessels.

At both Clydach and Port Tennant further navigation along the Swansea Canal and Tennant Canal is dependent upon restoration of those waterways, and if navigation is possible these canals will be a smaller scale than the navigation leading to them —however the prospect of through navigation to Pontardawe and Neath for private leisure boats of less than 2.2m beam is a very real one.

The most recent restoration of the local canals has taken place at Clydach on the Swansea Canal. In 2020 the canal was dredged between Coedgwilym Bridge and Trebanos Locks by Glandwr Cymru. The Swansea Canal Centre, owned by Swansea Canal Society was opened in 2024, largely due to the support of Swansea Council. Reinstatement of Clydach Lock and a section of culverted canal at another site owned by Swansea Canal Society will be completed in 2025, again thanks to the support of Swansea Council. These schemes were funded by European Union, Welsh Government and UK Government programmes, plus charitable funders.

This is an impressive illustration of what can be achieved when the voluntary sector, local authority and canal owners work together.

The 2002 Atkin study examined two schemes — the full integrated waterway from Glyn Neath to Ynysmeudwy via Neath and Swansea, and a partial scheme that ran from Glyn Neath to Swansea. The forecast economic benefits (adjusted for inflation) were £6.9 million and £2.4 million, respectively. At that time increased activity on the Tawe was not anticipated, whereas this is now the main thrust of the proposals.

Extension of the Tawe Navigation to Clydach and to Port Tennant creates a waterway comparable to the partial scheme of 2002 at a present-day cost of £36 million. A fairly rudimentary cost-benefit analysis indicates that benefits from construction (construction cost spent in the local economy) and ongoing benefits of £2.4 million per annum would yield a positive NPV 14 years after opening. However, although this waterway is comparable in scale to the partial scheme promoted in 2002, it offers potential for much more activity and the potential benefits are much greater, of the order of £7 million as forecast for the full scheme.

The benefits of a navigation accrue from those using the waterspace e.g. travelling on passenger boats, having a boat of their own, or paddleboarding, and those who visit the area attracted by the activity on the water even though they don't take to the water themselves. It only requires some activity for this second effect to be felt, and in may instances the spend from bankside visitors, as they are known, can dwarf the spend by those on the water, sometimes by a factor of two-to-four times, but this spend is dependent on activity on the water for those observing from the bank to enjoy the spectacle.

The figures above take no account of non-fiscal benefits nor of the value for supporting certain sectors of

the economy. The proposed extensions would result in a new 10km long navigation suitable for large commercial passenger vessels and enable a boost to boat-related industries in Swansea providing an entire new sector to serve this market. In this instance, non-financial benefits include the creation of "Avenues" with patterns of shade and light, the ambience and cooling of the waterspace through the avenue that combined create a microclimate that is both pleasant in the heat of summer and the cool of winter, and has a character that offers peace in the middle of an urban environment. In addition, places become linked by their presence on the corridor, encouraging exploration. By this means the benefits are spread beyond the scheme as the canals beyond lead to Clydach, Pontardawe, Neath and the Vale of Neath.

This scheme differs from the 2002 scheme, not so much in the physical detail as in the target market and activities. The 2002 scheme aimed at a holiday boating leisure market, experience since then in Scotland and elsewhere has demonstrated that, where there is no established leisure boating market, trip boats linked to attractions is the way forward. This also works better with the environmental designations on the Tennant Canal and Crymlyn Bog. Thus, the market being developed here is primarily for passenger trip boats and bankside facilities, with an emphasis on benefits such as the avenues and urban spaces for the local population as well as the development of tourism revenue.

The benefits to the local population in this area extend well beyond the usual revenue generation from a tourist attraction and include improvement to the sustainable drainage and flood management, and the creation of a pleasant microclimate and ecosystem in the avenues which link urban areas to each other.

This 10km waterway would link Clydach to Port Tennant via Fendrod Lake, Swansea.com Stadium, The Copperworks, Swansea City Centre, Swansea Waterfront and SA1. This would open up other opportunities for water-based tourism and in time the system could be extended to Neath Abbey, Neath town Centre, Aberdulais, Pontardawe and Glyn Neath.

Development Opportunity

There is the opportunity as part of these proposals for the creation of a new development hub in Clydach at Players Estate. The proposal is to extend the Swansea Canal a short distance south from its existing end at Swansea Canal Centre in Clydach and to bring the new Swansea Valley Canal to the same point, where the two waterways would meet at a basin. The uplift in rental values resulting from the waterside location could be harnessed to form a canal quarter in Clydach as a focus for residential, commercial and leisure activity.

Future Development of Navigation

It would be remiss to conclude this report without mentioning the imminent decarbonisation of inland waterways. Whilst inland waterway traffic is only a very small percentage of CO2 emissions and is arguably beneficial compared with the alternatives of either car-based leisure or extensive foreign travel by plane, there is still a government led imperative for boats to cease use of fossil fuels. The target dates at present are:

- 2025 —all new boats to be capable of conversion to non-fossil fuel motive power
- 2035 —all new boats to be non-fossil fuel power
- 2050 -— removal of grandfather rights from older boats — all boats to be non-fossil fuelled.

A new waterway market has a head start here in that decarbonisation can start now — the extensions to the system could be designed for and limited to non-fossil fuel vessels, whilst the new floating pontoons could be developed to assist a transition to electrical propulsion on the river.

Implementation and Summary

The first task will be to bring together key stakeholders to co-ordinate the development of the Tawe River Navigation and new link canals, making provision for their long-term sustainability.

This co-ordinating group may include representatives from:

- Swansea Council
- Neath Port Talbot Council
- Welsh Government
- Natural Resources Wales
- CADW
- Associated British Ports
- Canal & River Trust
- Port Tennant Company
- St Modwen
- Swansea Community Boat Trust (additional voluntary sector reps may be co-opted)
- Specialist technical advisors from the business community

It is important that this group, whilst being in effect a collaboration, is led by both a body and an individual that is championing the scheme and will ensure the group pushes the project forward. It is important that the group has a “can do” attitude and seeks solutions to any implementation issues. The group itself will not be directly responsible for day-to-day management or delivery but it will play a key role in the appointment and creation of the agencies that are. The coordinating group should meet regularly, say a minimum of two and up to four times a year to review progress and give strategic direction. A small working group will be delegated to promote / coordinate the project between meetings.

It is likely that work will be undertaken in phases as funding is secured, but an agreed long-term programme will be essential. Each phase completed will then be viewed as forming part of the wider vision of creating a navigable waterway between Clydach and Port Tennant.

Masterplans will be required for both the Swansea Valley Canal and the Port Tennant Canal. The Masterplan will be a document that translates the overall vision of extending navigation from the Tawe to Clydach and Port Tennant and adds enough detail to allow detailed plans of each section to be developed. There will be an overlying vision and plan for the entire project that will be broken down geographically at each stage. This will ensure that underlying themes for the whole project are carried through to all elements whilst ensuring that delivery for each location and each section of the project reflects the particular characteristics and demands of the immediate locality.

The masterplan will cover:

- The route and corridor being proposed.
- The envelope for the corridor allowing for the creation of Avenue and Urban Forest areas.
- The facility being created including locks, bridges, moorings, adjacent multi-user trails etc.
- The focal points along the route where facilities might be provided – this will vary from a rest area with benches up to a “canal quarter” style development.
- Guidelines on the criteria for determining key design issues, e.g. craft size to be accommodated, urban design objectives that may influence water levels, key constraints that will impact on design such as road levels, pinch points through structures etc.

Summary

The proposals each form part of a plan for a 10km leisure waterway centered on Swansea — the previous concept of these elements being links between historic waterways has, by accommodating larger commercial trip boats on the new canal links, been turned into a freestanding waterway that can be extended along the historic canals beyond Clydach and Port Tennant, but has a purpose in its own right.

Significant further work is needed to refine this proposal, and some of this will be included in further iterations of this report, but the potential of the Tawe and its extensions has been demonstrated to be a worthwhile project of economic value to the city of Swansea. Restoration of the canals beyond will further add to that value.

Artists impression of Copper Jack in Prince of Wales Dock, alongside the entrance to the Port Tennant Canal. *iCreate*

To contact the "New Destinations for Copper Jack" team

NewDestinations@scbt.org.uk

Launch Event onboard 'Copper Jack' on 6th June 2025

"New Destinations for Copper Jack" was officially launched by invited guests :

Dr. Alexander Langlands, Associate Professor History & Heritage, Swansea University

Cllr. Rob Stewart, Leader Swansea Council

Torsten Bell, Member of Parliament for Swansea West

Cllr. David Hopkins, Deputy Leader Swansea Council

Cllr. Andrew Stevens, Cabinet Member for Environment & Infrastructure, Swansea Council

Mark Wade, Director of Place, Swansea Council

Paul Relf, Principal External Funding Officer, Swansea Council

Representatives from the offices of Members of the Senedd Jeremy Miles and Mike Hedges

Mark Whalley, Chair and the Swansea Community Boat Trust volunteers

Patrick Moss of MNY Consultancy attended by video link

Front row, L to R, Mark Wade, Torsten Bell MP, Dr Alex Langlands, Cllr. Ryland Doyle, Cllr. David Hopkins, Cllr. Andrew Stevens.