Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

CANAL & RIVER TRUST

WERN OFF-LINE NATURE RESERVE

SHADOW HABITAT REGULATIONS ASSESSMENT

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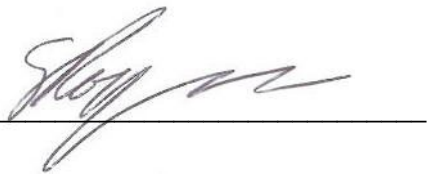
January 2024

This project has been undertaken in accordance with PAA policies and procedures on quality assurance.

Signed: 

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1. INTRODUCTION

Purpose of Report

1.1 Penny Anderson Associates Ltd (PAA) was commissioned by the Canal & River Trust ('the Applicant') to prepare a 'shadow' Habitat Regulations Assessment (HRA) to comply with Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) (the 'Habitat Regulations') in relation to a proposed off-line nature reserve (the 'Development') at Wern, Powys (nearest postcode SY21 9JX, NGR SJ 25880 13101) (the 'Site') located within the administrative area of Powys County Council.

1.2 The Site location plan is included at Appendix 1.

1.3 The Development forms part of a wider project to restore the Montgomery Canal in partnership with Powys County Council and other stakeholders after successfully securing funding through the UK Government's Levelling Up Fund (LUF). The wider project includes a number of elements comprising:

- Wern Off-line Nature Reserve (the Development);
- Carreghofa Lane Bridge (a proposed new bridge);
- Williams Bridge (a proposed new bridge);
- Red Lane Off-line Nature Reserve; and
- Vyrnwy Reserve.

1.4 It is anticipated that these aspects of the wider project that require planning consent from Powys County Council will be submitted with a separate planning application and shadow HRA for each element.

1.5 In addition, sections of the Montgomery Canal will be subject to a phased programme of dredging, and this will be undertaken under permitted development rights and in accordance with Site of Special Scientific Interest (SSSI) Assent from Natural Resources Wales (NRW).

1.6 The requirement for an HRA is detailed in Regulation 63 of the Habitat Regulations which states:

> *' 63.—(1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which—*
>
> *(a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and*
>
> *(b)is not directly connected with or necessary to the management of that site,*
>
> *must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives.*
>
> *(2) A person applying for any such consent, permission or other authorisation must provide such information as the competent authority may reasonably require for the purposes of the assessment or to enable it to determine whether an appropriate assessment is required.*
>
> *(3) The competent authority must for the purposes of the assessment consult the appropriate nature conservation body and have regard to any representations made by that body within such reasonable time as the authority specifies.*
>
> *(4) It must also, if it considers it appropriate, take the opinion of the general public, and if it does so, it must take such steps for that purpose as it considers appropriate.*

(5) In the light of the conclusions of the assessment, and subject to regulation 64, the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be). '

1.7 This shadow HRA has been prepared to assist Powys County Council and NRW in forming an opinion as to whether the Development is likely to have a significant effect on a European Site, and the information necessary to carry out an 'appropriate assessment' (AA) if required.

Report Structure

1.8 This report presents the process, methods and results of a shadow HRA and is structured as follows:

- Section 1: Sets out the purpose and structure of the report;
- Section 2: Describes the HRA process;
- Section 3: Presents details of the relevant European Site(s) that are screened into the assessment, their qualifying features and Conservation Objectives; and
- Section 4: Presents an AA of the project focussing on any issues that have the potential to result in an adverse effect on the integrity of the relevant European Site(s).

Reference Documents and Sources

1.9 The following documents and sources have been used in preparing this shadow HRA:

- Guidance on Habitats regulations assessments: protecting a European Site (https://www.gov.wales/habitats-regulations-assessments-protecting-european-site-html)
- Natural Resources Wales (2008) Core Management Plan including Conservation Objectives for Montgomery Canal Special Area of Conservation (SAC) (and SSSI);
- APEM (2023) Preliminary Ecological Appraisal. Report for Canal & River Trust;
- PAA (2023). EIA Screening Report – Wern Off-Line Nature Reserve. Report for Canal & River Trust;
- Montgomery Canal Partnership (2005) Montgomery Canal: Regeneration through Sustainable Restoration (A Conservation Management Strategy); and
- Montgomery Canal Partnership (2016) Montgomery Canal: Regeneration through Sustainable Restoration – Addendum to the Management Strategy.

2. HABITAT REGULATIONS ASSESSMENT PROCESS

The Habitat Regulations Assessment Process

2.1 Articles 6 (3) and 6 (4) of the Habitats Directive require an AA to be undertaken on proposed plans or projects which are not necessary for the management of the site, but which are likely to have a significant effect on one, or more, European Sites; either individually, or in combination with other plans and projects. As outlined in the introduction, this requirement is enacted in Wales through the Habitat Regulations 2017 (as amended), paragraph 63.

2.2 The European Commission has developed guidance in relation to Articles 6(3) and 6(4) of the Habitats Directive, implemented in Wales by the Habitat Regulations, and this recommends a four-stage approach to addressing the requirements of these Articles, as illustrated in Figure 1 (overleaf). In brief these stages are as follows.

Stage 1 – Screening

2.3 This stage identifies the likely effects of a plan or project on any European Site, either alone or in combination with other plans or projects. Specifically, this stage considers whether these effects would have a likely significant effect (LSE) on the qualifying features of any European Site, either alone or in-combination with other plans and projects. An AA is required if it is considered that any aspect of the plan or project will have a likely significant effect on any European Site.

2.4 In this case the distance that has been used to screen for in-combination effects is 5km from the project. This distance is considered appropriate and proportionate to the type and scale of Development.

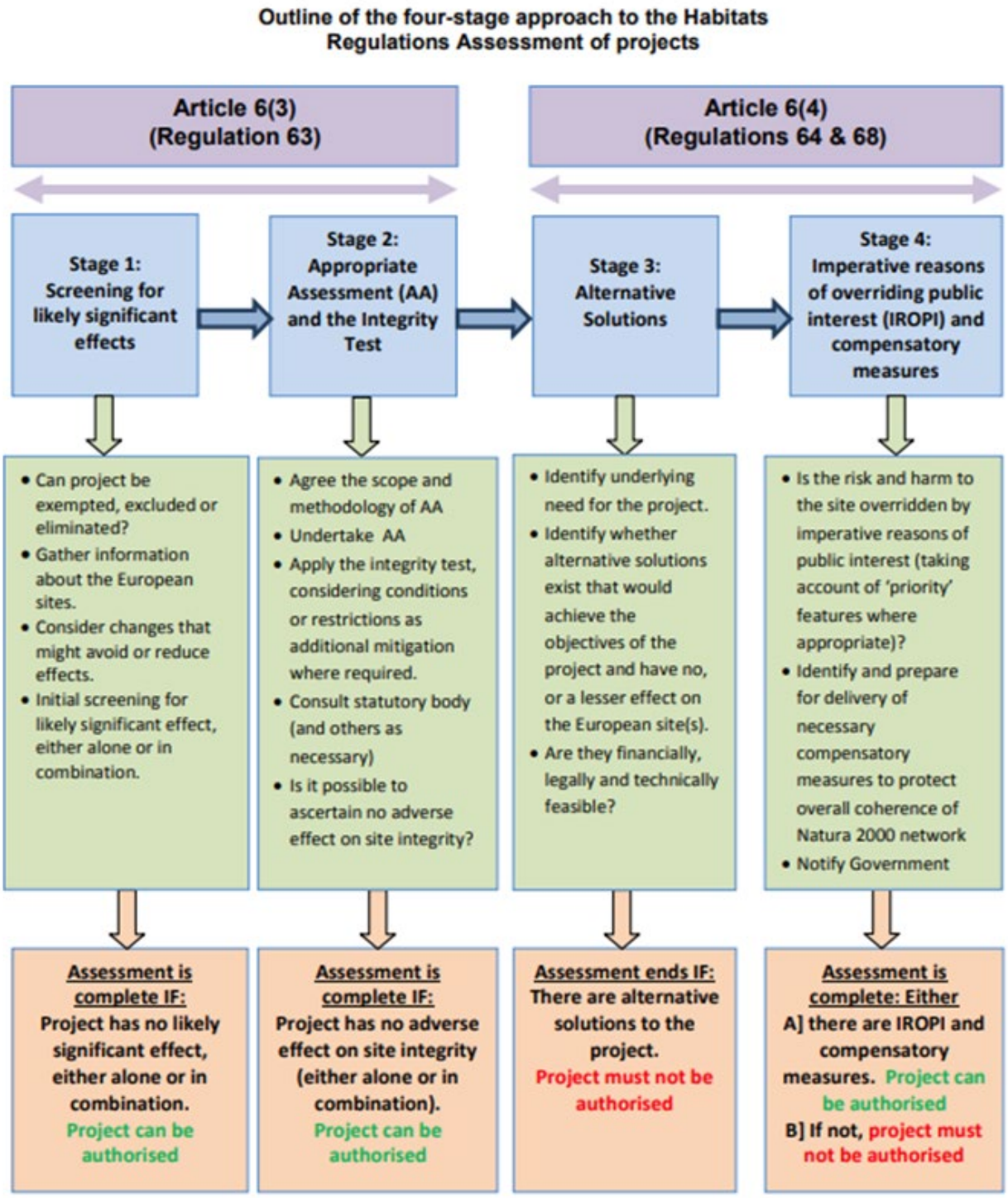
Stage 2 – Appropriate Assessment

2.5 If it is considered that a plan or project is likely to have a significant effect on the integrity of a European Site (or sites), the requirements of Stage 2 are triggered. This stage considers the impacts of the plan or project on the integrity of a European Site. The assessment should consider the implications for the European Site in view of the site's conservation objectives. If adverse impacts are identified this assessment should also consider measures to mitigate the identified impacts.

2.6 If necessary, modifications to the proposals are identified to avoid any adverse effects on site integrity. If mitigation is not possible and adverse effects on a European Site's integrity remain, the process must proceed to Stage 3.

2.7 In this case, as describe in the remainder of this report, it is possible to conclude that there would be no adverse effects on the integrity of the relevant European Site(s) screened into the assessment, and Stage 3 is not triggered.

Figure 1 Summary of Habitat Regulations Assessment Process (from DTA Publications Ltd, 2018)



3. SCREENING ASSESSMENT

Identification of Relevant European Sites

3.1 The Defra MAGIC[1] website was consulted on 4th December 2023 to identify European Sites, including SPA[2], SAC and Ramsar Sites, which fall within 5km of the Site. A search distance of 5km is considered sufficient in this case, given the type of Development and likely extent of effects which are anticipated to be relatively localised.

3.2 There are two European Sites, the Montgomery Canal SAC and Granllyn SAC, which fall within the 5km search zone and are 'screened in' for the purposes of the Stage 1 HRA 'screening assessment'. Brief details of the European Sites including distance from the Site and qualifying features are summarised in Table 1. Additional explanatory notes are included in Table 1.

Table 1 Summary of European Sites within 5km of the Site

Name of Site	Distance	Summary of Qualifying Features	Notes
Montgomery Canal SAC	Within the Site	Floating water-plantain *(Luronium natans)*	This is the largest and the most extensive population of floating water-plantain *Luronium natans* in Britain and is a highly significant lowland population. In favourable management conditions the species can be dominant over kilometre lengths of canal, carpeting the shallow bed and flowering and setting seed in abundance. This is a semi-natural population, having colonised from drift material or seed but needing periodic human disturbance for continued growth; in this respect the canal is a substitute for the species' former slow-moving, mesotrophic river niche, which has been largely destroyed in lowland Britain.
Granllyn SAC	3.36km south-west	Great crested newts *(Triturus cristatus)*	This site is centred around a glacial hollow or kettle-hole pool and a historic moat. The surrounding farmland is mostly pasture and rough grassland with good hedges and an area of planted broad-leaved woodland and natural willow scrub to provide suitable foraging habitat. The site is located in eastern Montgomeryshire at the centre of the Welsh distribution of great crested newt *Triturus cristatus*. This is the largest known population of the species in central Wales.

[1] *Multi Agency Geographic Information for the Countryside*

[2] *Special Protection Area(s)*

Consideration of In-combination Effects

3.3 There are no recent approved or pending planning applications in the vicinity of the Site.

3.4 There is the potential for cumulative effects in relation to other developments required to deliver the wider Montgomery Canal LUF Restoration project, namely proposed new bridges at Carreghofa Lane, Llanymynech and Williams Bridge, and proposed Off-line Nature Reserves at Red Lane and near the Vyrnwy aqueduct. However, none of these developments are anticipated to act in-combination with the Development due to distance from the Site, and the relatively small-scale and localised nature of the Development.

Consideration of Likely Significant Effects

Montgomery Canal Special Area of Conservation

3.5 The Montgomery Canal SAC is located within the Site, which encompasses land on either side of the canal as well as incorporating a section of the canal itself. As such, it is anticipated that the Development would result in a LSE on the Montgomery Canal SAC, and the need for an AA is triggered, as set out in the next section of this report.

Granllyn Special Area of Conservation

3.6 Granllyn SAC is located approximately 3.36km south-west of the Site with no direct habitat connectivity to the Site. Due to distance and separation from the Site, no LSE are anticipated and Granllyn SAC is screened out of the need for AA.

4. APPROPRIATE ASSESSMENT

Introduction

4.1 This section of the report describes the activities associated with the Development during the construction and operational stages which have the potential to adversely impact on the integrity of the Mongomery Canal SAC and its relevant qualifying feature, namely *Luronium natans.*

Description of Development

4.2 The full description of the Development is as follows:

> *'The construction of an offline nature reserve at Wern together with associated enabling works including construction access, compound and landscaping.'*

Layout, Scale and Appearance

4.3 The Site is illustrated in Appendix 1.

4.4 The purpose of the off-line nature reserve is to provide a sustainable, long-term freshwater habitat with favourable conditions to support rare and protected submerged aquatic plant species, as well as marginal wetland plants and associated invertebrates. The design involves the creation of a large pond which is connected to the Montgomery Canal. The edges of the pond will be graded to allow for the establishment of wetland vegetation at the edges of the pond, whilst the large size of the pond and greater water depth in the middle, of up to 1.5m, will prevent the vegetation from becoming dominant across the whole reserve.

4.5 The pond would be located within the eastern portion of the Site, spanning the central and eastern fields.

4.6 The total area of excavation will be approximately 1.2ha, including the banks of the pond, and the open water area will be 0.9ha. The water level will be at 65.5m Above Ordnance Datum (AOD) and the pond will utilise water from the canal to maintain levels.

4.7 The Development will incorporate tree planting around the pond to provide additional biodiversity enhancement. Existing trees and swamp habitat will be retained. Short sections of boundary hedgerow would be removed but the majority will be retained.

4.8 Due to the sloping topography the pond will need to be excavated to a depth of up to 1.5m deep along its southern edge, where it will cut down into the sloping field. As much as possible of the material won from the excavation will be retained within the Site area and landscaped to blend with the existing landform.

Landscaping

4.9 As outlined above, existing trees, hedgerows and swamp habitat will be retained, and new trees will be planted within the reserve to provide additional biodiversity value. Material won from excavation of the pond will be landscaped and planted with appropriate native species to provide an additional habitat.

Demolition and Construction Works

Programme

4.10 The works are programmed to commence in spring 2024 for a duration of up to 12 months.

Access and Temporary Works

4.11 The works area will be accessed off an un-named lane to the north of the Montgomery Canal with a temporary crossing over the canal to access the Site, temporary site compounds, parking and storage on land to the south of the Montgomery Canal.

4.12 The temporary crossing will comprise a causeway to provide temporary access for vehicles during the construction phase. Access from the south of the canal via Coppice Lane was investigated but it was concluded that this would not provide a suitable route for construction traffic. Access from the main road onto Coppice Lane is poor, there is a weight restriction on the canal bridge and the lane then narrows significantly leading up to the site. The alternative is to route access for temporary construction traffic through the field on the northern side of the canal and over a temporary crossing of the canal for the duration of the works.

4.13 The preferred method for the temporary crossing is a causeway design. The impacts and reasons for selection of a causeway in preference to the alternative of a temporary bridge crossing is presented in detail in Section 5 of this shadow HRA.

Hours of Work

4.14 The standard working hours for construction activity would comply with conditions attached to any subsequent planning permission but, if possible, this would be 07:30 to 18:00hrs Mondays to Fridays, and 08:00 to 13:00hrs on Saturdays with no construction on Sundays or Bank Holidays.

Phasing

4.15 The general phasing of works would be to excavate the pond followed by landscaping.

Conservation Objectives of the Montgomery Canal SAC

4.16 The overall vision is to maintain the extent and distribution of *Luronium natans* within the Mongomery Canal at favourable conservation status, where all of the following conditions are satisfied:

- *The L. natans* population in favourable condition will reflect the natural carrying capacity of the canal habitat and will be limited principally by species ability to spread or be relocated (vegetative or otherwise), the suitability of the rooting medium and competition between species as part of habitat succession;
- Recreation pressure, principally through boat movements and fisheries management, will not significantly affect the maintenance of the species, or its ability to disperse throughout the canal network and any associated off-line reserves;
- The ecological status of the water environment, including elements of water quality and physical habitat quality, will be sufficient to support the population of *L. natans* in favourable condition; and
- All factors affecting the achievement of the above conditions are under control.

4.17 A series of performance indicators for feature condition have been devised by NRW (Core Management Plan, NRW 2008) and are presented at Appendix 2.

Potential Effects of Proposed Project

4.18 The activities associated with the construction phase and completed Development that could adversely affect *Luronium natans*, with reference to the Site's conservation objectives are:

- Temporary crossing over the Montgomery Canal with potential for disturbance to *L. natans* (if present in this section of the canal);
- Construction of inlet/outlet structure to link the reserve to the canal;
- Pollution risk during construction including hydrocarbons and sediment run-off; and
- Risk of spread of invasive non-native species.

4.19 These potential effects and associated mitigation measures are discussed further below.

Temporary Canal Crossing (Including Alternative Design Options)

4.20 It is anticipated that the temporary crossing would be a single vehicle width crossing of a causeway design. A temporary bridge crossing has also been investigated as an alternative to a causeway. A summary of the potential effects associated with the causeway and bridge options is presented below, with a rationale for selection of the causeway design as the preferred solution.

Causeway Option – Potential Effects

4.21 The causeway option would comprise an earth bund placed within the canal, containing pipes to allow water to pass through for the duration of construction. The earth bund would be 8m wide at the top to provide sufficient width for construction vehicles to cross, with an additional approximate 5m width of batter on either side.

4.22 The method of construction would entail:

- Localised removal of vegetation;
- Installation of a fabric dam to retain water, and draw down of water over a maximum distance of 40m (20m either side of the bund);
- Fish rescue once draw down reaches 600mm water depth followed by continued draw down to bed level; and
- Installation of approximately 1m depth of clay into the canal bed topped with three or four 600mm twin bore pipes and backfilled with stone to form the bund with a clay face.

4.23 Water would be temporarily over-pumped to allow construction to take place in the dry. Once the bund is in place, the fabric dams would be removed allowing water to flow through the pipes for the remainder of the works. At the demobilisation stage, silt curtains would be installed prior to dismantling of the bund to prevent mobilisation of silt downstream.

4.24 The potential effects of the causeway option would, therefore, be direct (albeit temporary) loss of habitat and draw down of water over approximately 40m, reduced to 18m once the bund is in place and flow of water re-instated.

Bridge Option – Potential Effects

4.25 Due to the width of the canal, the bridge option would require construction works within the canal construct bridge abutments. This would involving the same initial steps as for the causeway design (vegetation removal, installation of fabric dams, water draw down over 40m and fish rescue).

4.26 Once the canal had been drained down, localised piling would be required to install the bridge abutments, with the additional complication that the off-site (south side) of the canal would need to be piled first and (as previously outlined) there is limited means of access from Coppice Lane in the south for the size of vehicles required to carry out the piling works.

4.27 Even if access for suitable vehicles was possible from the south, the bridge option would then involve temporary construction works to build the bridge abutments, with a clear span bridge placed over the top. Water flow would be re-instated once the bridge was in place for the duration of works.

4.28 As for the causeway option, demobilisation would entail use of silt curtains to prevent mobilisation of silt downstream prior to dismantling.

4.29 The potential effects of the bridge option would essentially be the same as for the causeway initially i.e. direct (temporary) habitat loss and draw down of water over approximately 40m. The key difference would be that the bridge would subsequently allow for movement of water and wildlife along the canal for the duration of works, whereas the causeway would create a temporary barrier to movement of wildlife.

4.30 The overall footprint of a bridge would also be less than for a causeway option, with the causeway having a total footprint of *c.*18m for the duration of works, and the bridge footprint comprising the abutments only.

4.31 In the longer term there would be no lasting difference between the causeway and bridge options, with both options involving removal of the temporary in-channel structure and sensitive re-instatement of habitats.

4.32 The precise location of crossing point (for both causeway or bridge option) would also be sited to avoid existing trees and as far as possible, *Luronium natans,* if present. If the disturbance or loss of *Luronium* is unavoidable, the plant will be sensitively translocated to a suitable, nearby, undisturbed location.

Selection of Preferred Option

4.33 In summary, the reasons for selection of the causeway as the preferred option are:

- Both options will involve intrusive (albeit temporary) construction works and drawdown of water within the canal over the same length (40m) whilst the causeway or bridge is built; and
- Access from the south is not possible to allow for construction of bridge abutments, so a bridge option is not technically feasible.

4.34 Nevertheless, there will be a direct and unavoidable impact associated with the causeway option over and above that of a bridge option, namely a footprint of *c.*18m wide for the duration of works (approximately 12 months) and temporary loss of continuity of the canal as a wildlife corridor.

4.35 Mitigation measures will, therefore, be required to avoid any adverse effects on the integrity of the Montgomery Canal for the duration of works, and to ensure that the area is sensitively re-instated on completion of works.

Inlet/Outlet Construction

4.36 A new gravity-fed inlet/outlet structure will be required, allowing water into and out of the off-line reserve. The installation of the inlet/outlet structure will entail:

- Localised removal of vegetation;
- Installation of a fabric dam and temporary de-watering to allow for construction in the dry; and
- Placement of pre-cast concrete structure with over pumping of water during installation.

4.37 Sluice boards would be incorporated at the outlet to ensure that water levels in the canal are maintained downstream.

4.38 The entire installation process is anticipated to take around 6 weeks.

4.39 The structure will be positioned to avoid existing trees but will require the localised removal of in-channel vegetation. There is also the potential for construction to impact on *Luronium natans*, if present, and for localised mobilisation of sediment during installation.

4.40 Mitigation measures will be required during the construction phase to avoid any adverse effects on the integrity of the Montgomery Canal, and (once installed) to ensure that water levels in the canal are maintained at a suitable level to support *Luronium natans*.

Pollution Risk

4.41 Typical construction activities within and adjacent to the canal that introduce the potential for pollution include use of vehicles and other plant within and adjacent to the canal, generators to operate pumps, fuel storage and re-fuelling.

4.42 In addition, there is a risk of sediment disturbance and release from within the canal during construction and installation of the temporary canal crossing and inlet/outlet structure, as well as sediment and surface water run-off from the adjacent land associated with excavation of the proposed pond. Mitigation measures will be required for the duration of construction and during demobilisation to avoid accidental pollution of the water environment.

4.43 *Invasive Non-Native Species and Biosecurity Risk*

4.44 Schedule 9 (Wildlife and Countryside Act 1981 (as amended)) species water solider (*Stratiotes aloides*), Nuttall's waterweed (*Elodea nuttallii*) and Himalayan balsam (*Impatiens glandulifera*) were recorded within the sections of the Montgomery canal located adjacent to the site during the Preliminary Ecological Appraisal survey (Arcadis 2023).

4.45 In addition, the Canal & River Trust (pers. comm.) has also reported that the invasive non-native species water fern (*Azolla filiculoides*) and Canadian pondweed (*Elodea canadensis*) are known from this stretch of the Montgomery Canal, though not necessary present at the site itself.

4.46 Mitigation measures will, therefore, be required to avoid the accidental spread of these species during the works and also to manage the future spread and colonisation of invasive non-native species more generally into the Wern off-line nature reserve once it has become established.

Mitigation Measures

4.47 As identified above, a number of mitigation measures will be required to avoid any adverse impact on the integrity of the Montgomery Canal SAC, with reference to its qualifying feature *Luronium natans.* The specific measures that will be required are:

- Sensitive design, location and re-instatement of temporary canal crossing;
- Sensitive design, location and operation of inlet/outlet structure;
- Measures to avoid pollution of the water environment; and
- Measures to prevent the spread of invasive non-native species during construction and to manage colonisation by invasive non-native species in the longer term.

4.48 Further details of proposed mitigation are described below.

Sensitive Design, Location and Re-instatement of Temporary Canal Crossing

4.49 The proposed preferred option for crossing the canal and anticipated construction methods are outlined in the previous section of this report, detailing why the causeway option has been selected in preference to a bridge crossing.

4.50 In order to avoid any adverse effect on the integrity of the Montgomery Canal SAC associated with the preferred causeway option, the following mitigation measures will be adopted.

4.51 The footprint of the canal crossing will be kept to the absolute minimum necessary to facilitate a single vehicle width crossing. The anticipated width of temporary impacts at initial causeway construction stage will be 40m, reduced to an 18m wide footprint for the duration of the works (approximately 12 months).

4.52 A pre-construction walkover will be conducted by an ecologist to map and describe channel and bankside vegetation as a baseline to inform subsequent restoration, and to advise on the most suitable location to avoid existing trees and to minimise the loss of bankside vegetation. It is reported by NRW (pers. comm.) that in a recent 2022 detailed monitoring of *Luronium* conducted jointly by NRW and Canal & River Trust, the occurrence of *Luronium* is 'rare to occasional'. It is, therefore, reasonable to assume that the species could be found at the site.

4.53 The walkover will, therefore, be completed at a suitable time of year to identify the presence of *Luronium natans,* and the crossing will be located to avoid any stands of this species, as far as possible. If the disturbance/loss of *Luronium* is unavoidable, then the plant will be sensitively translocated to a suitable, nearby undisturbed location.

4.54 During temporary over-pumping of water whilst the causeway is being installed, the pump will be fitted with a fine mesh to prevent fish and vegetation entrainment (including *Luronium natans*).

4.55 Sediment traps in the form of straw bales or silt curtains (or similar) will be deployed as required to trap any mobilised sediment and/or surface runoff generated at the crossing point during construction and operation, and these will be regularly checked and replaced as required when they become full of sediment.

4.56 The presence of the causeway will, as outlined in the previous section of this report, result in a temporary barrier to movement of wildlife along the canal but this will be relatively short-term with connectivity fully re-instated on completion.

4.57 On completion of works, the temporary crossing will be removed under ecological supervision and the channel and banks re-instated to match the existing. Due to the small footprint of the works it is not proposed to introduce any planting but instead to allow the channel to recolonise from the adjoining sections of the canal.

4.58 The re-instated section of canal will be monitored by an ecologist monthly for a period of six months after completion, with a further visit 12 months after completion, and preparation of a short monitoring report to include photographs, description and a botanical species list. Presence of INNS, other undesirable species or other remedial measures required to return the canal to its pre-construction condition will be identified and carried out no more than 24 months after completion of the construction phase. The monitoring report will be submitted to Powys County Council and NRW.

Sensitive Design, Location and Operation of Inlet/Outlet

4.59 The inlet/outlet size will be kept to the absolute minimum necessary.

4.60 It is anticipated that the structure will be formed of pre-cast concrete with a suitable cladding and no *in-situ* concrete batching will be required.

4.61 A pre-construction walkover will be conducted by an ecologist to advise on the most suitable location to avoid existing trees and to minimise the loss of bankside vegetation. The walkover will be completed at a suitable time of year to identify the presence of *Luronium natans,* and the inlet/outlet will be located to avoid any stands of this species as far as possible.

4.62 If impacts on *Luronium natans* are unavoidable, then plant material will be carefully translocated by the ecologist to a nearby undisturbed location.

4.63 Sediment traps in the form of silt curtains (or similar) will be deployed as required to trap any sediment and surface runoff generated during installation.

4.64 Planting around the structures is not considered necessary due to the small footprint and it is anticipated that the areas will recolonise from the adjoining habitat. A suitable biodegradable geotextile material, e.g. Geojute or similar, will be used (if necessary) to stabilise the banks prior to revegetation.

4.65 The completed inlet/outlet works area will be monitored by an ecologist monthly for a period of six months after completion, with a further visit 12 months after completion to check for any evidence of scour or erosion and to ensure that vegetation successfully re-establishes. A short monitoring report will be prepared to include photographs, descriptions and a botanical species list. Presence of INNS, other undesirable species, or other remedial measures (such as scour control) will be identified and carried out no more than 24 months after completion of the construction phase. The monitoring report will be submitted to Powys County Council and NRW.

4.66 At the operational stage it is anticipated that the water levels in the Montgomery Canal SAC will be maintained within the current range. The newly constructed off-line reserve will be filled under gravity when water levels in the canal are sufficiently high to reach the inlet level, and the level will be set so that the canal is not completely drained into the reserve.

4.67 Similarly, the outlet will be set at a suitable level so that the reserve does not empty back into the canal when levels in the canal fall below the outlet level.

Measures to Control Pollution Risk and Biosecurity

4.68 To ensure that there is no risk from pollution or biosecurity during the construction phase, a Construction Environment Management Plan (CEMP) will be prepared and implemented. The CEMP will incorporate best practice in relation to construction activities within or near the water environment and will typically include (but not be limited to):

- Toolbox talks to Contractor, including INNS issues;
- Ecological supervision and monitoring during construction;
- Clear demarcation of working areas and use of temporary protective fencing and signage, as necessary;
- Buffer zones around retained habitats;
- Use of sediment traps, e.g. straw bales, regularly checked and replaced as needed;
- Contractors to arrive and leave site with clean footwear and machinery and wheel wash facilities to be provided;
- Fuel storage and re-fuelling to take place in designated areas away from the canal;
- All vehicles and plant to be stored in a secure site compound overnight;
- Plant nappies and spill kits to be carried as standard; and
- Emergency pollution incident protocols in place.

4.69 In addition to the above, a buffer zone will be retained between the off-line reserve excavation area and the canal, to be protected with temporary Heras fencing (or similar) and suitable signage to confirm that no plant, personnel or materials may access the buffer zone.

4.70 A specific section in the CEMP will address methods to avoid spread of the invasive non-native species that are known, or may be present, in this section of the canal, namely water soldier, Nuttall's pondweed, Canadian pondweed, water fern and Himalayan balsam during the construction phase.

This will include careful management of vegetation removed from the canal prior to start of works and strict biosecurity measures as outlined above.

4.71 At the operational stage, it is anticipated that invasive non-native plant species, in particular water soldier which is already present in the canal at this location, could spread into the newly created off-line reserve where, without appropriate monitoring and management, it could form extensive stands shading out the *Luronium natans.* It is unlikely that the spread of water soldier can be avoided, but it is proposed to manage the process as far as possible with regular monitoring and management of if it does colonise. Management is likely to involve mechanical removal and disposal.

Conclusions of Appropriate Assessment

4.72 Overall, with the above mitigation measures in place, and secured and implemented via suitably worded planning conditions, it is concluded that the Development will not result in any adverse effects on the integrity of the qualifying feature of the Montgomery Canal SAC. Furthermore, in the longer term, it is anticipated that the Development will increase the availability of suitable open water habitat for colonisation and spread of *Luronium natans* as part of the wider LUF Montgomery Canal restoration project.

5. REFERENCE

Arcadis, 2023. *Montgomery Canals – Reserves Preliminary Ecological Appraisal*. Report for Canal & River Trust.

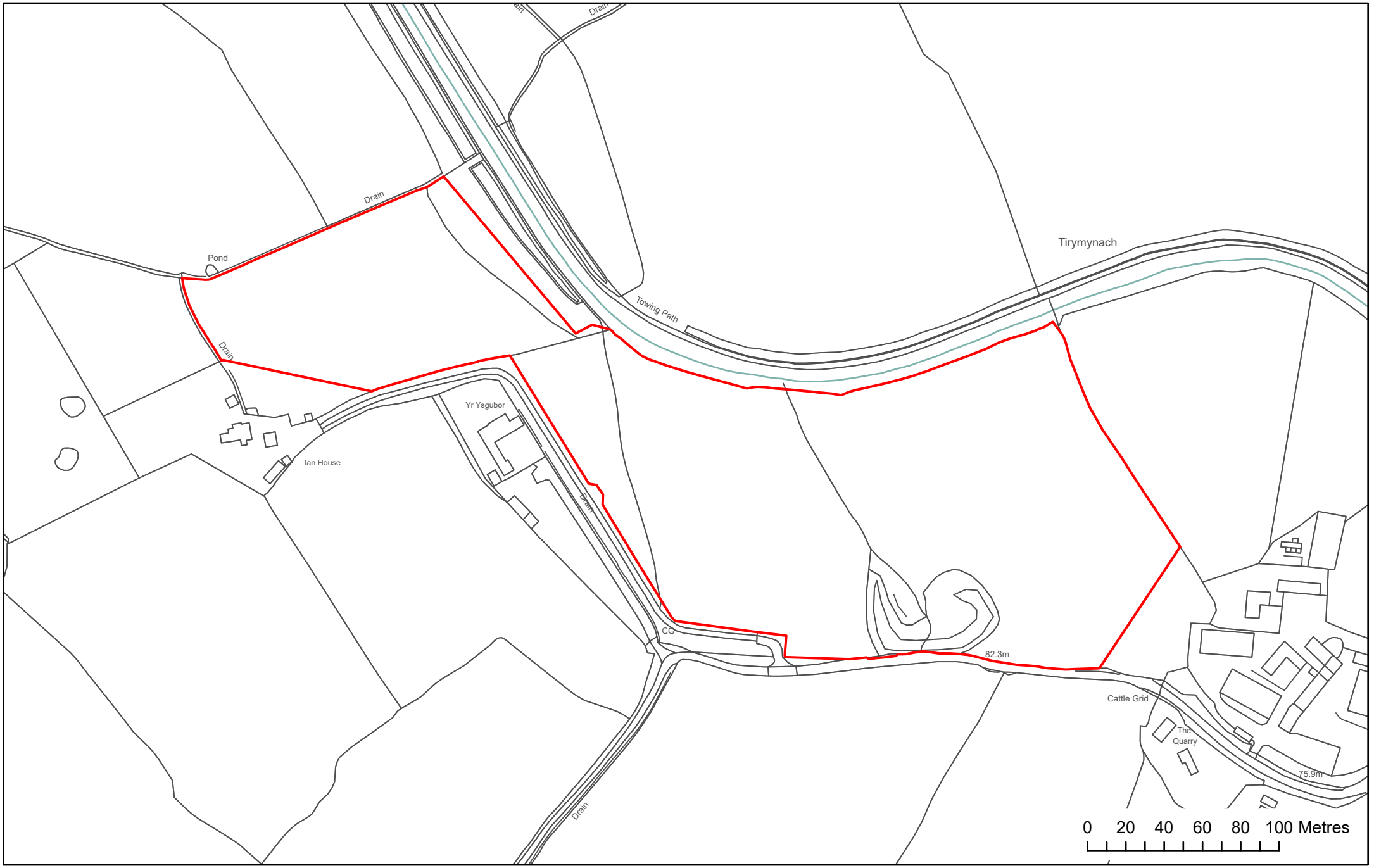
6. ABBREVIATIONS

AA	Appropriate Assessment
AOD	Above Ordnance Datum
CEMP	Construction Environment Management Plan
HRA	Habitats Regulations Assessment
LSE	Likely Significant Effect(s)
LUF	Levelling Up Fund
MAGIC	Multi Agency Geographic Information for the Countryside
NRW	Natural Resources Wales
PAA	Penny Anderson Associates Ltd
SAC	Special Area(s) of Conservation
SPA	Special Protection Area(s)
SSSI	Site(s) of Special Scientific Interest

APPENDICES

APPENDIX 1

Site Location Plan



Canal & River Trust

Wern Reserve, Llandrinio, Powys SY21

Produced By: BKeight
Date: 21/03/2023
Scale: 1:2,500
Print Size: A4

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APPENDIX 2

Performance Indicators for *Luronium Natans* (Extract from Core Management Plan NRW 2008)

Appendix 2 Performance Indicators (Extract from Core Management Plan, NRW 2008)

Table 1 Performance Indicators for Feature Condition

Attribute	Attribute Rationale and Other Comments	Specified Limits
A1. Extent of *Luronium natans*	The base-line area (measured from 2001 survey for mapped continuous stands only) is 1.5 hectares. The lower limit is set to allow for up to a 25% decline to allow for natural fluctuations or management activity (like dredging) necessary to restore open water conditions. In reality this is too time-consuming to measure, so will usually be covered by monitoring distribution (A2), unless a new comprehensive mapping survey is completed.	*Upper limit:* None required. *Lower limit:* 1.1 ha
A2. Distribution of *L.natans*	This has been set to ensure the size of the population is safeguarded. It also provides a means of ensuring that the species can recolonise areas subject to dredging and weed cutting to maintain open water and water flow. Note that some units are composed of a number of contiguous km lengths. There are no recent records for this species in Units 4, 12 or 13, but at low density this species is very difficult to find. Each offline reserve has also been treated as a separate unit. The performance indicator limits are over and above the minimum standards set by JNCC because the plant is so widespread along the canal.	*Upper Limit*: present along whole length of canal. *Lower limit*: Present in all non-navigable channel kms where it was found in 2001; AND present in 75% of samples and 75% of the mapped area in 2001 in Vyrnwy aqueduct. **Also present** in offline reserves at Wern, Guilsfield Arm, Whitehouse and Brithdir Pools. Also requires evidence of spreading by runners, and spreading around site by fragments

Table 2 Performance Indicators for Factors Affecting the Feature

Factor	Factor Rationale and Other Comments	Operational Limits
F1. Water Quality	The water determines the quality of the habitat and plant community in which this species grows. These standards are higher than may be required for this species to safeguard the SSSI feature. It is recognised that these standards may be replaced by better standards more specific to canals as and when they become available. The standard will only be failed if failure is sustained and is for criteria wider than biochemical oxygen demand and dissolved oxygen. There should be no deterioration from existing levels. These targets should be replaced by experience of the existing data available from the Environment Agency or emerging Water Framework Directive targets over the coming years.	*Upper limit*: As an interim guide the total phosphorus target for the whole canal is <40µg L^{-1} TP. None required for other elements. *Lower limit*: The current target is to seek to attain General Quality Assessment Grade A or B for biological water quality, and General Quality Assessment Grade B for water chemical quality.
F2. Water Clarity	It is considered essential to use a Secchi disk because observation alone cannot be a reliable measure of light penetration. This should not be measured during or after periods of heavy rain.	*Upper limit*: not required *Lower limit;* Secchi disk should be visible at depth of 1m in 90% of observations

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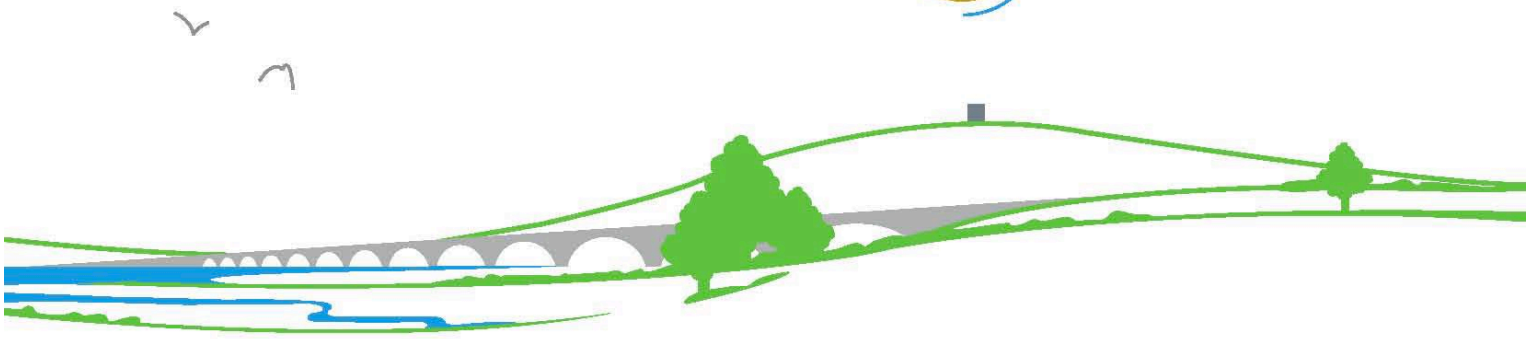

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