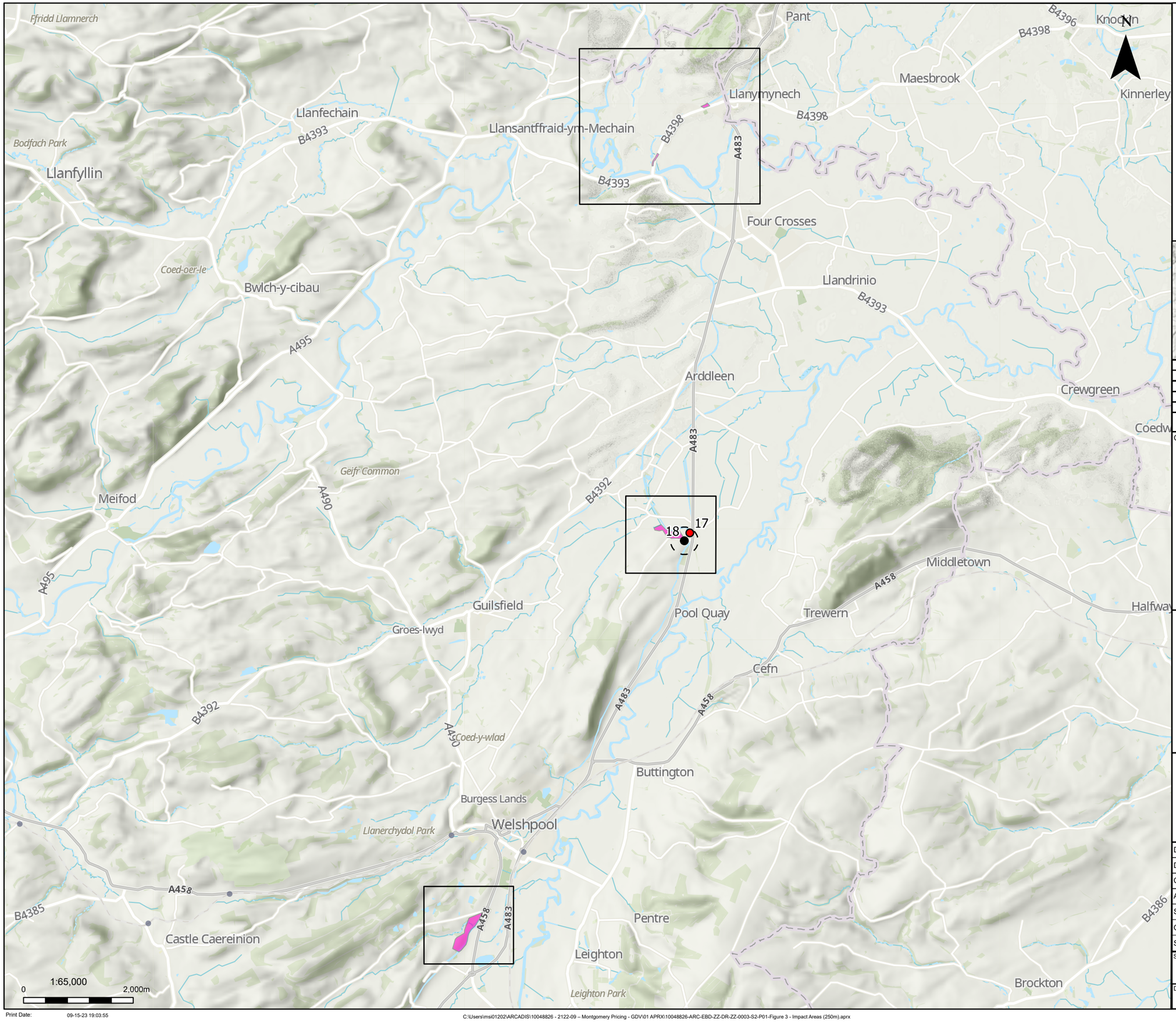

Legend

Pond locations

Presence

- Absent
- N/A

Works Locations

Notes

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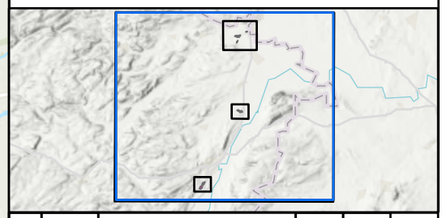

Rev	Date	Description	Drawn	Check	Approv
01	18/07/22	INITIAL ISSUE	KF	BM	MG

Client:

PROJECT:
MONTGOMERY CANAL

Site: Montgomery Canal

Client: National Highways

ARCADIS

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Figure 4 -
Impact Areas (250m)
Page 1

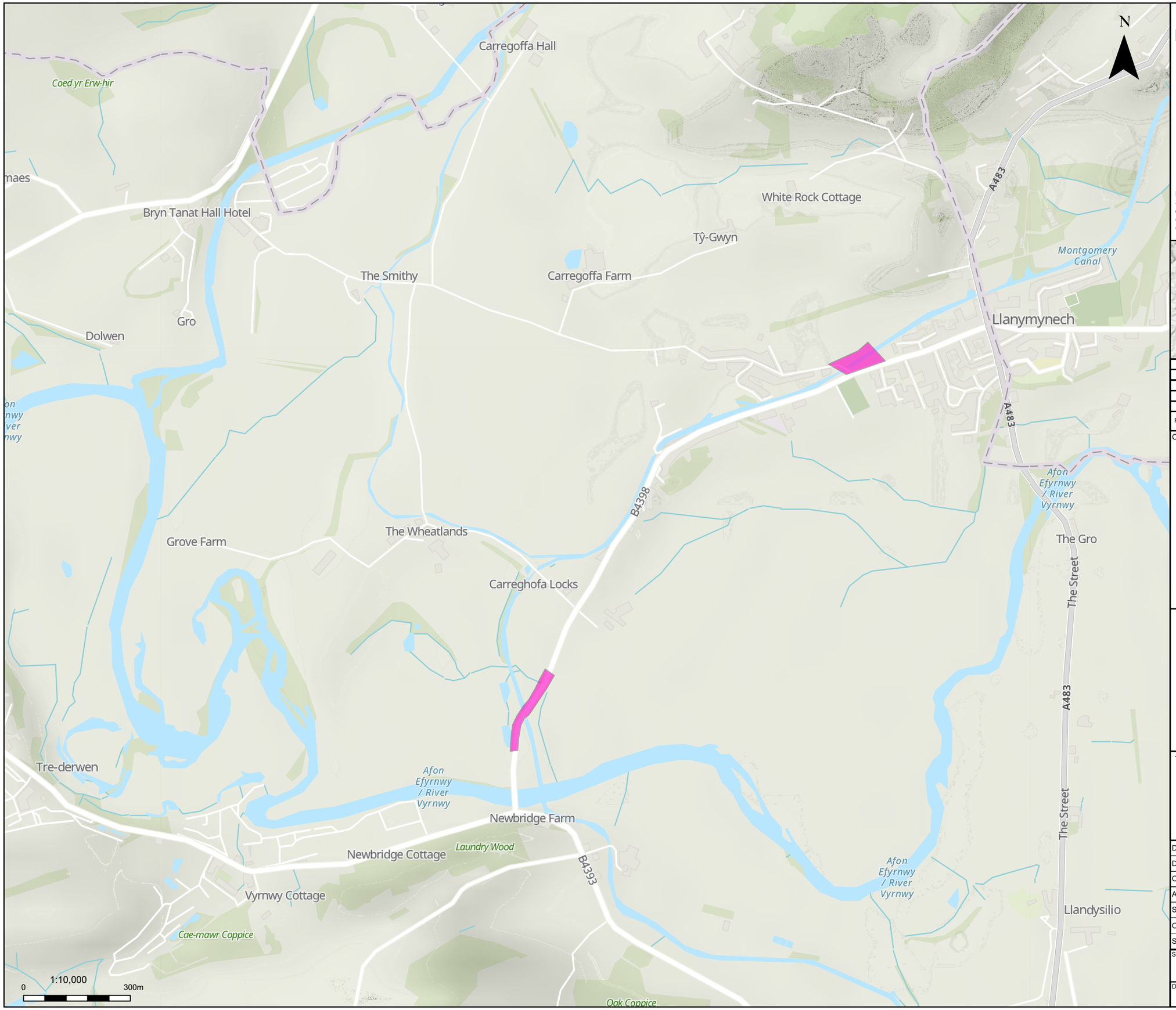
Designed	B. Murray	Date: 14 JUL 22	Signed
Drawn	K. Fischer	Date: 14 JUL 22	Signed
Checked	B. Murray	Date: 14 JUL 22	Signed
Approved	M. Girvan	Date: 14 JUL 22	Signed
Scale:	1:65,000	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	S2	Project Number:	10048826

Suitability Description:

For Information

Drawing Number: 10048826-ARC-EBD-ZZ-DR-ZZ-0003

Revision: P01



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Works Locations

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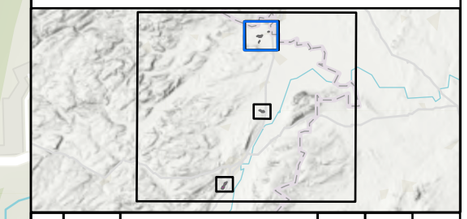

Rev	Date	Description	Drawn	Check	Approv
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PROJECT:
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Site
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Figure 4 -
Impact Areas (250m)
Page 2

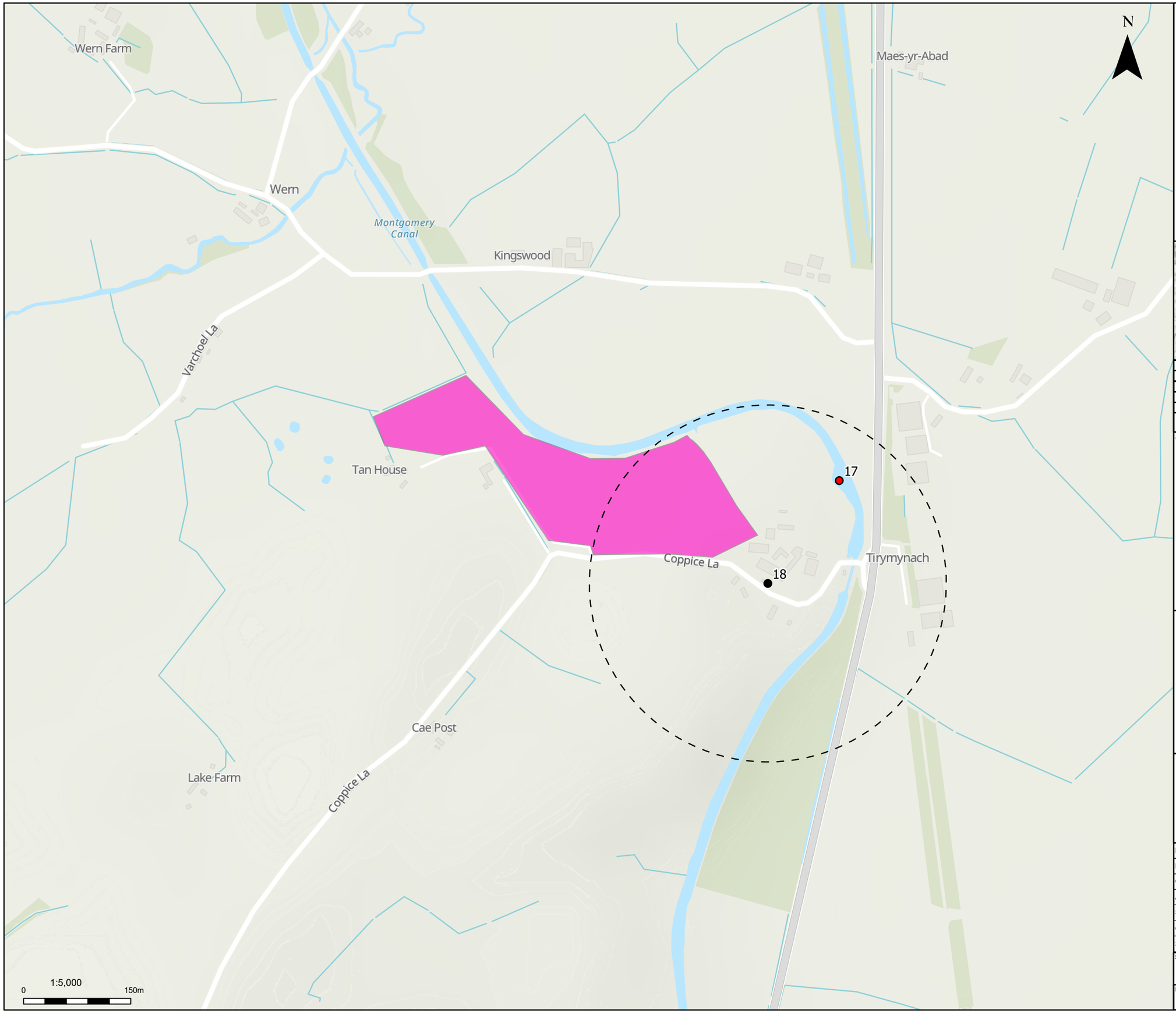
Designed	B. Murray	Date: 14 JUL 22	Signed:
Drawn	K. Fischer	Date: 14 JUL 22	Signed:
Checked	B. Murray	Date: 14 JUL 22	Signed:
Approved	M. Girvan	Date: 14 JUL 22	Signed:
Scale:	1:10,000	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	S2	Project Number:	10048826

Suitability Description:
For Information

Drawing Number: 10048826-ARC-EBD-ZZ-DR-ZZ-0003
Revision: P01

Print Date: 09-15-23 19:04:24

C:\Users\msi01202\ARCADIS\10048826 - 2122-09 – Montgomery Pricing - GDV\01 APRX\10048826-ARC-EBD-ZZ-DR-ZZ-0003-S2-P01-Figure 3 - Impact Areas (250m).aprx



Legend

Pond locations

Presence

- Absent
- N/A

Works Locations

Notes

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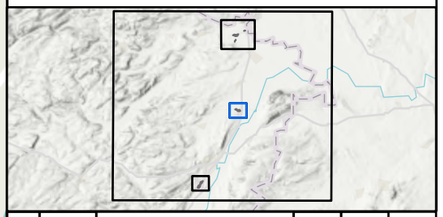

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Client:

PROJECT:
MONTGOMERY CANAL

Site: Montgomery Canal

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Page 3

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Drawn	K. Fischer	Date: 14 JUL 22	Signed:
Checked	B. Murray	Date: 14 JUL 22	Signed:
Approved	M. Girvan	Date: 14 JUL 22	Signed:
Scale:	1:5,000	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	S2	Project Number:	10048826

Suitability Description:

For Information

Drawing Number: 10048826-ARC-EBD-ZZ-DR-ZZ-0003

Revision: P01

Print Date: 09-15-23 19:04:44

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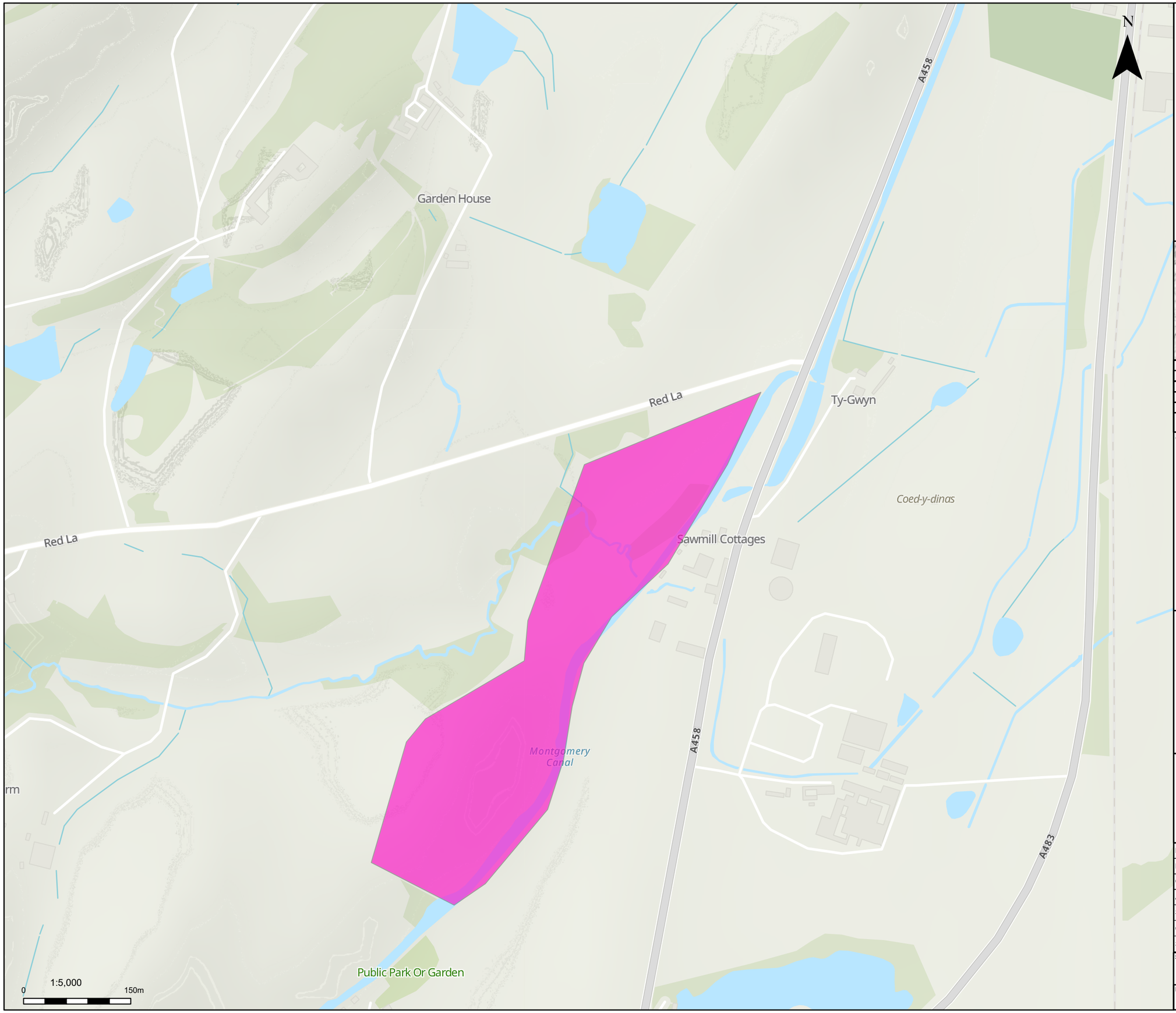

Legend

Works Locations

Notes

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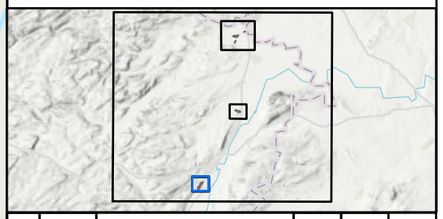

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Suitability Description:
For Information

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10048826-ARC-EBD-ZZ-DR-ZZ-0003

Revision:
P01

Print Date: 09-15-23 19:05:01

C:\Users\msi01202\ARCADIS\10048826 - 2122-09 – Montgomery Pricing - GDV\01 APRX\10048826-ARC-EBD-ZZ-DR-ZZ-0003-S2-P01-Figure 3 - Impact Areas (250m).aprx

Appendix F: Bat Survey Report (APEM)

Canal and Rivers Trust

Montgomery Canal- Reserves / Walls and Williams Bridge

Tree Climbing and Emergence Survey Report

Client: **Arcadis Consulting**

Project reference: **P000012185**

Date of issue: **September 2023**

Project Director: **Jessica Kent**

Project Manager: **Michael Underwood**

Author: **Katie Crawford**

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Fax: 0161 432 6083

Registered in England No. 02530851

"APEM (2023). *Montgomery Canal- Reserves / Walls and William Bridge Tree Climbing and Emergence Survey Report.* APEM Report P0000012185. Canals and Rivers Trust, September 2023 v1.0 Final"

Revision and Amendment Register

Version Number	Date	Section(s)	Page(s)	Summary of Changes	Checked by	Approved by
1	September 2023	All	All	Version 1 for Issue	AC	KR
2	8th September 2023			In line with comments	MU	KR

Contents

Non-Technical Summary	
Site Name	Montgomery Canal, located in Powys, Wales, (nearest postcode SY22 6PD, National Grid Reference (NGR) SJ 25756 20609).
Purpose and Brief	Tree Climbing and Emergence Survey Report.
Proposed Works	<u>Walls Bridge</u> The proposed works at the Site include construction of a new high-level fixed bridge (Carreghofa Lane Bridge) to allow a natural flow along the canal. The historical arch of the bridge will remain in place. <u>Williams Bridge</u> The proposed works at the Site include the removal of the original damaged high-level masonry bridge and replaced with the installation of a high-level fixed bridge. <u>Reserves</u> The proposed plan is to create compensatory wetland habitat at each site that connects to the Montgomery canal to enhance and compensate for habitat lost on the canal margins from increased boating.
Methods	Endoscope inspection of potential roost features in trees and Williams Bridge walls. Emergence surveys of the Williams Bridge walls and Walls Bridge for bats.
Key Findings	No bat roosts were recorded in trees or in either bridge, however, potential for bats was recorded in many of the features surveyed. The proposed works do not involve removing any trees, so the proposed works are unlikely to cause a breach in legislation. Both bridges did not record any emergences, however, have features suitable for crevice-dwelling bats and therefore a precautionary methodology is proposed.

Non-Technical Summary	
Recommendations	**Bats:** If any tree pruning or removal is planned to trees, further survey effort may be required, and an ecologist should be contacted to determine the approach. As a precautionary measure, it is recommended that the works avoid the core bat hibernation period (December-February inclusive). Precautionary supervision and a pre-works check for bats by an ecologist is also recommended. **Lighting:** The lighting should be designed in line with this guidance note: https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/

1. Introduction

1.1 Purpose and Brief

APEM Ltd (APEM) was commissioned by Arcadis Consulting (UK) Ltd on behalf of the Canal & River Trust in April 2023 to undertake both aerial inspection climbing surveys on trees and emergence surveys on two bridges and land for open water reserves located adjacent to the Montgomery canal, hereafter referred to as the 'Site'. Previous baseline surveys were conducted at both locations by APEM (APEM 2022, APEM 2023).

This report provides the survey methodology and results from the aerial inspection and emergence surveys carried out at the Site. Following interpretation of the results, this report provides recommendations for any further surveys and mitigation measures that are required in advance of any works being undertaken at the Site (where required), to ensure there is no detrimental impact on individual bats and that the favourable conservation status of bats is maintained.

1.2 Site Description

The Site consists of four areas located adjacent the Montgomery Canal, two of which are bridge structures proposed for removal and two of which have been identified as potential compensatory wetland habitat sites. The four sites are described below.

Walls Bridge

The Walls Bridge Site is located in Carreghofa, Powys, Wales**,** (nearest postcode: SY22 6PA, National Grid Reference (NGR) SJ 26286 20790.

The Site comprised of hardstanding, hedgerows, arable and amenity grassland, with the Montgomery canal and Carregofa Lane running through the centre of the Site. The wider landscape is dominated by agricultural land with hedgerow boundaries and blocks of woodland.

Williams Bridge

The Williams Bridge Site is located in Carreghofa, Powys, Wales (nearest postcode: SY22 2PE, NGR SJ 25357 19845), located *circa* 1km south-west of the Walls Bridge Site.

The site comprised of areas of broadleaved woodland, hedgerows, improved grassland with the Montgomery canal running through the centre of the Site. The wider landscape is dominated by agricultural land.

Wern

The Wern Site is located in Wern, Powys, Wales**,** (nearest postcode: SY21 9JX, National Grid Reference (NGR) SJ 25880 13101.

The Site comprised of semi-improved grassland, tall ruderal, standing water, hedgerows, swamp and quarry with the wider landscape being dominated by agricultural land, with a residential property to the west and some agricultural building structures located to the east.

Red Lane

The Red Lane Site is located in Red Lane, Welshpool, Powys, Wales (Nearest postcode: SY21 8RJ, NGR SJ 21892 05685.

The Site consisted of improved grassland, scattered trees, hedgerows, running water, marshy grassland, broadleaved woodland with the Montgomery Canal forming the eastern boundary of the Site. The wider landscape is dominated by agricultural land with hedgerow boundaries and blocks of woodland to the west and road infrastructure located to the east.

1.3 Proposed Works

The proposed works are part of several packages associated with the Montgomery Canal.

Walls Bridge

It is understood the proposed works at Walls bridge include the removal of the existing grade causeway and construction of a new high-level fixed bridge to allow a natural flow along the canal. The existing bridge (Walls Bridge) will remain in situ.

Williams Bridge

The proposed works at the Site include the removal of the original high-level masonry bridge and replaced with the installation of a high-level fixed bridge.

Wern

The proposed works for the Wern Site is to create approx. 1 hectare of wetland habitat.

Red Lane

The proposed works at Red Lane are to create approximately 2 hectares of wetland habitat (although the exact size is dependent on the root protection zones of nearby trees. It is understood that minimal vegetation clearance would be required to facilitate the works.

1.4 Survey Area

Emergence surveys were undertaken on Walls Bridge and Williams Bridge. Both were subject to a single emergence survey. Williams bridge was also subject to an endoscope survey.

Tree climbing surveys were undertaken on trees that have been assessed as having high (Wern – T4, T5, T6, & T7) or moderate (Wern – T6, Red Lane – T1, T2, T5 and T6.) potential to support roosting bats because of the presence of cavities, crevices or cracks.

2. Methodology

2.1 Aerial Inspection

Endoscope inspection was undertaken by APEM Principal Ecologist Alan Cowlishaw MCIEEM (NRW licence 76383:OTH:CSAB:2017), Senior Ecologist Courtney Hooper and Consultant Ecologist Jack Blackburn (Both qualifying members of CIEEM). All trees were climbed on the 10th, 11th and 20th of July 2023.

Bat roost inspection surveys are carried out according to appropriate best practice guidance (Collins, 2016). Trees assessed as having moderate or high potential for the presence of roosting bats were designated for a roost inspection survey if there were clear, defined features that could be inspected using a torch or endoscope.

These surveys are useful to prevent the need for emergence/re-entry surveys where features appear to be suitable from the ground but are of limited or no suitability. The aim of this survey is to reclassify potential roost features and determine the presence of bats at the time of survey and the need for further survey and/or mitigation (Collins, 2016).

Where appropriate these trees were climbed with the assistance of ladders and/or tree climbing techniques by suitably qualified and experienced surveyors with experience of identifying evidence of or presence of bats. Surveys were undertaken by Natural Resources Wales (NRW) licensed bat worker (Alan Cowlishaw NRW License S091900-1). All surveyors held NPTC/City & Guilds Tree Climbing and Aerial Rescue (formerly CS38) certification. All work complied with BS 8596 – Surveying for Bats in Trees and Woodland (BSI, 2012).

2.2 Emergence Surveys

Weather conditions for each emergence survey are detailed in Table 1 below.

Emergence surveys were undertaken on the 15th and 29th June 2023. Surveys commenced a minimum of 15 minutes before sunset to account for early emerging species and continued for up to 120 minutes after sunset to account for late emerging species. The time and location of bats observed emerging from the bridges under observation were recorded and cross-referenced with recordings made on the full spectrum bat detectors to allow identification to species or genus level.

In line with the interim guidance note issued by the Bat Conservation Trust (BCT, 2022) emergence surveys were undertaken using night vision aids which included one Nightfox Red HD night vision camera on each elevation.

Recordings and camera footage was then analysed using Kaleidoscope Pro analysis software and MotionMeerkat.

Please see Table 1 for the dates, times and weather conditions of each survey.

Table 1- Survey dates, times and weather conditions

Date	Structure	Sunset/ Sunrise Time (24hr)	Survey Time (24hr)		Temp (°C)		Rainfall (Y/N)		Wind (MPH)	
			Start	End	Start	End	Start	End	Start	End
15/06/ 2023	Wall Bridge	21:39	21:24	23:09	21	18	N	N	6	6
29/06/ 2023	Williams Bridge	21:47	21:32	23:17	16	16	N	N	9	9

2.3 Limitations

The results presented in this report represent those at the time of survey and reporting, and data collected from available sources.

All observations of bats using the structure and landscape are considered accurate at the times that surveys were undertaken. Bats are highly mobile animals, and some species move roosts on a regular basis. It is possible that bats could move into any building after the survey has taken place.

3. Results and Discussion

3.1 Desk Study

3.1.1 Statutory Sites

Hendre (Llangedwyn), a component of Tanat and Vyrnwy Bat Sites SAC, lies within 10 km of the proposed development. This is a maternity roost for lesser horseshoe bats *(Rhinolophus hipposideros)* and is subject to ongoing management and monitoring (DEFRA, 2023).

3.1.2 Species Records

Walls and Williams Bridge

Fifteen records of bat species were returned by the biological records centre (APEM, 2022) including records of the following species:

- Soprano pipistrelle (*Pipistrellus pygmaeus*);
- Daubenton's bat (*Myotis daubentonii);*
- Whiskered bat (*Myotis mystacinus*);
- Lesser horseshoe bat;
- Brown long eared bat (*Plecotus auritus*); and
- Noctule *(Nyctalus noctula)*.

The closest record to the centralised location of the two bridge Sites was as a sighting and bat recording of a Daubenton's bat foraging 915 m east of the Site in 2014.

Wern

Ten records of bat species were returned by the biological records centre (APEM, 2022) including records of the following species:

- Soprano pipistrelle;
- Brandt's bat (*Myotis brandtii*);
- Lesser horseshoe bat;
- Brown long eared bat; and,
- Noctule.

The closest record to the Wern Site was a sighting of a Soprano pipistrelle roost in the gable end of a private residential building 255 m east of the Site in 2015.

Red Lane

Thirty-eight records of bat species were returned by the biological records centre (APEM, 2022) including records of the following species:

- Soprano pipistrelle;
- Brandt's bat;
- Whiskered bat;
- Lesser horseshoe bat;
- Brown long eared bat; and
- Noctule.

The closest record to the Red lane Site was a sighting and acoustic recording of a Soprano pipistrelle foraging 179 m east of the Site in 2013.

3.2 Walls Bridge Emergence

No emergence was observed from Walls Bridge.

Eighty-eight bat passes were recorded including the following species:

- *Myotis sp.;*
- Noctule;
- Common pipistrelle *(Pipistrellus pipistrellus);* and
- Soprano pipistrelle.

3.3 Williams Bridge Emergence

No emergence was observed from Williams Bridge during the survey. No bats or evidence of bats was observed during the endoscope survey.

One hundred and eighty-three bat passes were recorded including the following species:

- Common pipistrelle;
- Soprano pipistrelle;
- Brown long-eared; and
- Lesser horseshoe.

Following the endoscope survey of the walls at Williams Bridge, this structure was subsequently downgraded from high potential to low potential and therefore a single emergence survey was deemed sufficient.

3.4 Wern and Red Lane Endoscopy survey.

Full survey results are provided in **Table 2**. In total, 10 trees were subject to endoscope surveys with moderate and high features being observed on these trees.

Table 2 Wern and Red Lane Endoscope Survey Results

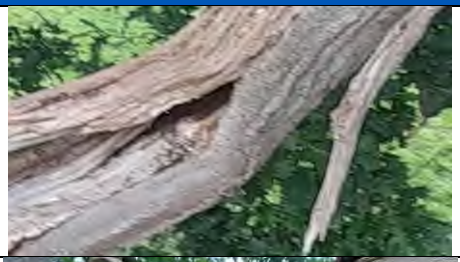
Tree Number	Feature Number	Feature Description	Feature Potential	Photograph
1 NGR: SJ 25715 12968	1	Double leader on southern elevation.	Negligible	No photo available
3 NGR: SJ 25711 12977	1	Frost crack on southern elevation, approximately 6 m high.	Moderate	

4 NGR: SJ 25717 13007	1	Frost crack with hollow on southern elevation, approximately 10 m high.	Low	
	2	Shearing crack.	Moderate	No photo available
	3	Butt-rot on northern elevation, over 100 cm internal height.	High	
	4	Chambered butt-rot on northern elevation (contained birds' nest).	High	

5 NGR: SJ 25685 13054	1	Knot hole on western elevation, approximately 10 m high.	Moderate	No photo available
6 NGR: SJ 25758 12996	1	Butt-rot approximately 2 m high on the northern elevation. Barn owl nest observed (Disused).	High	
7 NGR: SJ 25768 12973	1	Butt- rot on northern elevation.	High	

	2	Knot hole on southern elevation approximately 2 m high.	High	
	3	Hollow bole / tree hollow on southern elevation.	Moderate	No photo available

Table 3 Red Lane Endoscope Survey Results

Tree Number	Feature Number	Feature Description	Feature Potential	Photograph
1 NGR SJ 2173405 529	1	Tear out extending into hollow stem, approximately 6 m high on the southern elevation.	Moderate	
	2	Woodpecker hole on northern elevation.	Moderate	
2 NGR SJ21734 05533	1	Wound on northern elevation.	Moderate	

Tree Number	Feature Number	Feature Description	Feature Potential	Photograph
	2	Tear out extending into hollow stem on eastern elevation approximately 8 m above ground.	Low	
	3	Knot hole on eastern elevation, approximately 5 m above ground.	Moderate	
	4	Woodpecker hole on western elevation, approximately 5 m above ground.	Low	
	5	Tear out extending into hollow stem. Approximately 5 m above ground on western elevation.	Moderate	No photo available