



THE
ENVIRONMENT
PARTNERSHIP

Haweswater Aqueduct Resilience Programme

Chapter 9A - Appendix 9A.7

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United Utilities

Environmental Statement



Water for the North West



Haweswater Aqueduct Resilience Programme

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Appendix A. Bowland Ecology eDNA Survey Report

1. Amphibian Appendix

1.1 Introduction

- 1) TEP was appointed by United Utilities to complete an Ecological Impact Assessment (EcIA) for the Haweswater Aqueduct Resilience Programme - Proposed Bowland Section. The EcIA is required to inform an Environmental Impact Assessment (EIA) and support production of the Environmental Statement (ES).
- 2) A series of ecological surveys was undertaken to complete the EcIA. This Appendix is one of a series of Ecological Technical Reports (ETRs) produced to support the EcIA. This ETR documents the methods and findings of the eDNA surveys undertaken by Bowland Ecology.

1.2 Summary of Findings


1.2.1 Amphibian Records

- 3) The only amphibian species for which records have been received within 2 km of either compound area is common frog *Rana temporaria*.

1.2.2 eDNA Results

- 4) Amphibian surveys were completed by Bowland Ecology for the Proposed Bowland Section, comprising eDNA surveys of any waterbodies within 500 m of the project.
- 5) A wider area was surveyed than will be potentially impacted by the proposed works within the Bowland Section. Consequently only some of the ponds for which eDNA survey findings are presented within the following Technical Appendix will be used to inform the EcIA.
- 6) The ponds which fall within influencing distance of the proposed works, including the Newton-in-Bowland Compound and the Lower Houses Compound and all construction access areas, which will be included within the EcIA are:
 - Pond 5a (475 m from Lower Houses Compound)
 - Pond 5b (142 m from Lower Houses Compound)
 - Pond 5c (440 m from Lower Houses Compound)
 - Pond 87 (73 m from Newton-in-Bowland Compound)
 - Pond 88 (72 m from Newton-in-Bowland Compound)
 - Pond 89 (115 m from Newton-in-Bowland Compound)
 - Pond 89a (98 m from Newton-in-Bowland Compound).
 - Pond 92 (66 m from Newton-in-Bowland Compound).
- 7) Pond 5a was found to be dry and therefore was not sampled for eDNA.
- 8) Pond 5b, 5c, 87, 88, 89 and 89a all tested negative for great crested newt eDNA.

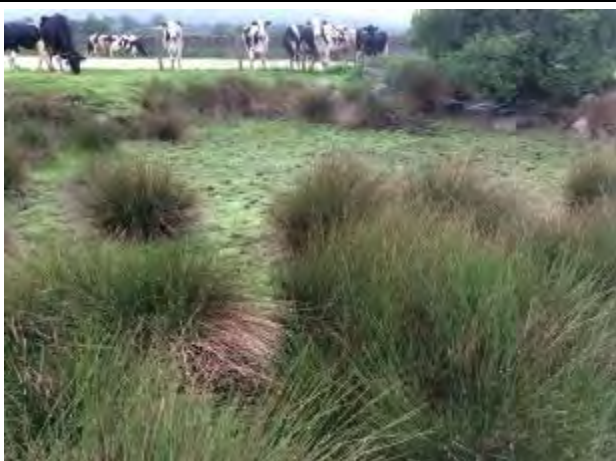
Appendix A. Bowland Ecology eDNA Survey Report

1 Project Details			
Project Name:	Haweswater Aqueduct Resilience Programme	Project Number:	80061155
Written:	Eve Loxham, <i>Ecologist</i>	Approved:	Ellen Milner, <i>Principal Ecologist</i>
Report reference:	TR3 Great Crested Newt eDNA Report	Date:	21.11.2019
2 Project Drawings			
TR3 eDNA Plan 1 of 20 – 20 of 20		BOW167_HARP_EDNA_TR3	
3 Ecology Surveys			
Surveyors:	Ellen Milner (Natural England Class I Survey licence holder for great crested newts 2015-18329-CLS-CLS), Mark Breaks (Natural England Class I Survey licence holder for great crested newts 2016-26714-CLS-CLS), Eve Loxham (Natural England Class I Survey licence holder for great crested newts 2017-27825-CLS-CLS), Sophie King, Lucy Pocock, Heather Whalley, Jack Driver, Luke Hall, Sam Robinson, Abigail Hamer as accredited agents / assistants of Natural England Class I Survey licence for great crested newts of Ellen Milner and Eve Loxham.		
Survey date(s):	18/04/2019, 24/04/2019, 25/04/2019, 15/05/2019, 05/06/2019, 07/06/2019, 10/06/2019, 14/06/2019, 17/06/2019, 20/06/2019,		
Survey Method:	eDNA sampling methods followed Biggs <i>et al.</i> 2015 and samples were sent to FERA, a Natural England accredited laboratory for DNA analysis.		
Weather Conditions:	18/04/2019: 19°C, Dry, Light Cloud, Wind:0 mph. 24/04/2019: 20°C, Dry, Clear, Wind: 13mph. 25/04/2019: 15°C, Showers, Scattered Clouds, Wind: 13mph. 15/05/2019: 19°C, Dry, Sunny, Wind:11mph. 05/06/2019: 13°C, Showers, Scattered Clouds, Wind: 15mph. 07/06/2019: 12°C, Light Rain, Partly Sunny, Wind: 12mph. 10/06/2019: 15°C, Dry, Scattered Clouds, Wind: 14mph. 14/06/2019: 16°C, Dry, Passing Clouds, Wind: 4mph. 17/06/2019: 18°C, Dry, Passing Clouds, Wind 19mph. 20/06/2019: 15°C, Dry, Passing Clouds, Wind: 16mph.		
4 Pond Descriptions			
TR3 Pond 1:			
		Dry pond which is approximately circular and appears to dry out annually, surrounded by species-poor semi-improved grassland and deciduous woodland at the base of a sloping sheep-grazed field.	
TR3 Pond 2:			



Large, roughly oval pond approximately 4500m². A timber fishing / dipping platform is present at the southern end which suggests the pond is likely to be fish stocked. In the centre of the pond is a small island with some dead trees along with willow (*Salix* sp.) and alder (*Alnus glutinosa*) scrub and some tall ruderal vegetation. Pond margins are fringed with canary grass (*Phalaris canariensis*), yellow flag iris (*Iris pseudacorus*), soft rush (*Juncus effusus*), sedges (*Carex* spp.), foxglove (*Digitalis purpurea*), and horse tail (*Equisetum* sp.). On the eastern bank there is a large stand of bulrush (*Typha latifolia*). The pond surface contains a large expanse of pondweed (*Potamogeton* sp.), water mint (*Mentha aquatica*), water horsetail (*Equisetum fluvatile*), and common water starwort (*Callitriche stagnalis*). Many tadpoles were present throughout the margins of the pond (not identified to species). There is evidence of sheep-grazing to the vegetation at the pond edges, and the pond is immediately surrounded by rough grassland and scattered scrub. The margins of the pond are shallow (<50cm), however it appears to reach considerable depths towards the centre. The bank profile is variable; steep vertical grassy banks and shallow water-logged slopes.

TR3 Pond 3:



Small dry pond within an agricultural field grazed by cattle. Appears to be permanently dry, with soft rush encroaching to, and choking the centre.

TR3 Pond 4:



Dry pond; the area is a small depression within a sheep-grazed species-poor semi-improved grassland which is infilled with stones and barbed wire rolls. Hawthorn (*Crataegus monogyna*) scrub and scattered soft rush are present within.

TR3 Pond 5:



Dry pond; the area is partially fenced off from the surrounding sheep-grazed species-poor semi-improved grassland and contains scattered soft rush and common nettle (*Urtica dioica*).

TR3 Pond 5b:



Small area of pooled water approximately 16m² at the corner of a ditch network. The flow through at the corner is moderately fast. The pond is essentially shallow pockets of water within a marshy grassland area, with no significant amount of open water. Scattered starwort (*Callitriche* sp.) are present within the pond.

TR3 Pond 5c:



Small circular pond approximately 24m² located next to a farm building at the bottom of a sloping field and surrounded by grassland. Floating aquatic vegetation includes common water starwort, pondweed (*Potamogeton* sp.), ivy-leaved crowfoot (*Ranunculus hederaceus*), floating sweet grass (*Glyceria fluitans*) and water mint, with banks dominated by foxglove (*Digitalis*), soft rush, broadleaved dock (*Rumex obtusifolius*) and cuckoo flower (*Cardamine pratensis*). There is an inflow from the north and outflow to the south, close by is a dry-stone wall and scrub line.

TR3 Pond 6:



Small pocket of water no larger than 12m². The water is ochre suggesting water inflows from peaty ground. This pond is one of many pockets of water within an upland flush habitat. Abundant soft rush surrounds the pond with occasional hare's tail cotton grass (*Eriophorum vaginatum*). There is a dry-stone wall in close proximity.

TR3 Pond 6a:



Kidney-shaped pond approximately 30m² with a depth of up to 1m in places, the water is ochre in colour suggesting water inflows from peaty ground. The pond resides within an exposed upland habitat that is wet/acidic. There is no emergent vegetation present, however the margins are fringed with abundant soft rush. Surrounding area has extensive carpets of sphagnum moss (*Sphagnum* sp.), with occasional hare's tail cotton grass and polytrichum moss (*Polytrichum* sp.).

TR3 Pond 7:



Medium sized pond approximately 80m² with a shallow depth and highly turbid water. The pond is within a cattle grazed field, and the banks and margins are heavily poached. Macrophyte species common duckweed (*Lemna minor*), pondweed sp. and common water starwort are present in low abundance with soft rush dominating the banks. Tadpoles (not identified to species) and pond skaters (*Gerridae* sp.) were recorded.

TR3 Pond 8:








Large pond approximately 120m², the depth is shallow at the margins (<5cm) but gets gradually deeper towards the centre. Located within a steep valley, the surrounding area is wet woodland with an alder dominated canopy, there is no understory and ground flora is dominated by Yorkshire fog (*Holcus lanatus*) and soft rush. There is a central island vegetated with soft rush, foxglove and broadleaved dock. Macrophyte cover comprises of floating sweet grass, duckweed sp., and common water starwort. There is dense organic plant matter which carpets the bottom of the pond. The pond has both inflow (northwest) and outflow (south east). Pond skaters, water spiders (*Argyroneta* sp.), whirligig beetle (*Gyrinidae* sp.), water boatman (*Corixidae* sp.), tadpoles (not identified to species) and water beetles (*Adephaga* Sp.) were identified, along with abundant damselflies (*Zygoptera* Sp.).




TR3 Pond 9:



Small, shallow pond approximately 30m² surrounded by wet, alder dominated woodland with no understory present. Marshy grassland ground flora dominates with species such as Yorkshire fog and soft rush. The pond is choked with macrophyte species including water forget me not (*Myosotis scorpioides*), floating sweet grass and common water starwort. The pond was rich in invertebrates such as water spider and diving beetle (*Dytiscidae* Sp.). The water is ochreous with a small area of duckweed sp. cover. There is a pond inflow (north-west) which may run from TR3 Pond 8.

TR3 Pond 10:	
No image.	No pond present; area is a slurry tank for farm waste.
TR3 Pond 11:	
	<p>Small roughly circular pond approximately 70m². Very turbid water of an unknown depth, with obvious waterfowl impacts. There are vertical earth banks. The pond is surrounded by dense marshy grassland, dominated by soft rush. It holds a relatively exposed position within the landscape with some nearby dry-stone walls. The water surface has some small areas of duckweed sp. (approximately 10%). Surrounding land use is a mixture of species-poor semi-improved sheep grazing pasture and upland moorland.</p>
TR3 Pond 11a	
	<p>Moderately sized, narrow pond which is approximately 80m². Very turbid water with obvious waterfowl impacts. The pond is an unknown depth with vertical earth banks. The pond is surrounded by dense marshy grassland which is dominated by soft rush and compact rush (<i>Juncus conglomeratus</i>). The pond is in a relatively exposed position within the landscape, being at the top of a hill with some nearby stone walls. The water surface has some small pockets of duckweed sp.. Surrounding land use is a mixture of species-poor semi-improved sheep grazing pasture and upland moorland.</p>
TR3 Pond 11b	
	<p>Medium sized oval pond approximately 5m by 15m, located on open moorland with tussock forming grasses including tufted hair grass (<i>Deschampsia cespitosa</i>), purple moor grass (<i>Molinia caerulea</i>) and also soft rush dominating margins. Sphagnum moss carpets the north of the pond. The surrounding land use is upland moorland and is managed for grouse with a low density of grazing sheep.</p>
TR3 Pond 12	

 <p>20 Jun 2018 at 11:08:10 ARF_20.06.2018_TR3_012</p>	<p>Small pond approximately 24m² that has almost dried up and is reduced to three shallow sections, approximately one third of the maximum size. The earth and peat banks are vertical and shade the water surface. The water is clear and a deep orange/brown colour suggesting water inflows from peaty ground. The surrounding land use is extensive upland heathland with species recorded including tufted hair grass, common cotton grass (<i>Eriophorum angustifolium</i>), sheep's fescue (<i>Festuca ovina</i>) and bilberry (<i>Vaccinium myrtillus</i>).</p>
<p>TR3 Pond 13</p>	
 <p>20 Jun 2018 at 10:26:33 ARF_20.06.2018_TR3_010</p>	<p>Small circular pond in an open heath moorland approximately 15m². The pond has dried to approximately one third of the size and has shallow sloping earth/peat banks. The remaining water is choked with algae. Carpets of sphagnum and polytrichum mosses surround the pond. Typical heath species dominate the surrounding landscape including tufted hair grass, common cotton grass, sheep's fescue, common heather (<i>Calluna vulgaris</i>), cross-leaved heath (<i>Erica tetralix</i>) and bilberry.</p>
<p>TR3 Pond 14</p>	

	<p>Dry pond; very small approximately circular depression within open heathland. Typical heath species dominate including tufted hair grass, common cotton grass, sheep's fescue and bilberry.</p>
TR3 Pond 15	
	<p>Small, thin and curved pond which is almost dry (approximately a quarter of the full size). Approximately 16m². Situated in high altitude open heathland, though sheltered from southerly winds by large overhanging earth cliff. This cliff also shades the pond by up to 50% and is lined with heather and bilberry. To the south vegetation at the water edge includes dominant purple moor grass, tufted hair grass, common cotton grass, sheep's fescue and bilberry. Water is clear and deep orange/brown in colour suggesting water inflows from peaty ground.</p>
TR3 Pond 16	
	<p>Small pond approximately 21m², filled with sphagnum mosses and contains a central island which is dominated by grasses including tufted hair grass. The pond is situated in open heathland with species present including tufted hair grass, sheep's fescue, common heather, cross-leaved heath and bilberry. Sphagnum and polytrichum mosses also carpet the surrounding area. The water is clear and a deep orange/brown in colour suggesting a water inflows from peaty ground.</p>
TR3 Pond 17	



Dry pond; a small depression within the open heather moorland which is choked with sphagnum mosses and surrounding by tufted hair grass.

TR3 Pond 18






Large oval pond approximately 600m² situated in an open heath moorland, at the summit of 'White Hill'. The pond is exposed to strong winds from all directions, creating a strong, persistent ripple over across the surface. The pond margins are short, vertical earth/peat banks. Species present at the water edge include sphagnum mosses, polytrichum moss, tufted hair grass, common cotton grass, sheep's fescue, common heather and bilberry. The water is clear and a deep orange/brown in colour suggesting a water inflows from peaty ground.

TR3 Pond 19



Irregular shaped pond approximately 80m² is situated in upland heath moorland. The water is clear and orange in colour suggesting water inflows from peaty ground. The pond is shallow and dominated by submerged moss species. The banks are shallow and boggy and vegetated by tufted hair grass, hare's tail cotton grass, sphagnum moss, polytrichum moss, bilberry and common heather.

TR3 Pond 20

 <p>14 Jun 2018 at 14:18:28 +54.020605,-2.505634 ASP_TR3_P20_14.06.2018_Bowland Ecology</p>	<p>Pond approximately 200m² situated in upland heath moorland. The water is clear and orange in colour suggesting water inflows from peaty ground. The pond is very deep in the centre and has shallow but vertical earth banks. Submerged sphagnum mosses species dominate the margins. The banks are boggy and vegetated by purple moor grass, tufted hair grass, hare's tail cotton grass, sphagnum mosses, polytrichum moss, bilberry and common heather.</p>
<p>TR3 Pond 21</p>	
 <p>14 Jun 2018 at 13:57:18 +54.020605,-2.504471 ASP_TR3_P21_14.06.2018_Bowland Ecology</p>	<p>Medium sized pond (15m x 15m) situated in upland heath moorland. The surrounding land contains undulating peat mounds. The pond margins are shallow sloping. The water is clear and orange in colour suggesting a high peat content. The banks are boggy and vegetated by purple moor grass, tufted hair grass, hare's-tail cotton grass, sphagnum mosses, polytrichum moss, bilberry and common heather.</p>
<p>TR3 Pond 22</p>	
 <p>14 Jun 2018 at 13:57:08 +54.020605,-2.504471 ASP_TR3_P22_14.06.2018_Bowland Ecology</p>	<p>Moderately sized (15m x 10m) oval pond, situated in upland heath moorland. The water is clear and orange in colour suggesting water inflows from peaty ground. The pond is rich in submerged mosses and shallow. The banks are boggy and vegetated by tufted hair grass, purple moor grass, sphagnum moss, bilberry, crowberry (<i>Empetrum nigrum</i>) and common heather.</p>
<p>TR3 Pond 23</p>	



Small (4m x 3m), oval pond on upland heath moorland. The pond is shallow, no more than 12cm deep. Surrounding banks are boggy and vegetated by sphagnum mosses, polytrichum moss, tufted hair grass, purple moor grass, hare's-tail cotton grass, bilberry and cross-leaved heath. Water is clear and orange in colour suggesting a high peat content. There is a good diversity of invertebrates within the pond. Polytrichum moss is present within the pond and dominates.

TR3 Pond 24






Oval pond (15m x 8m), with deep, turbid water that appears black in colour, suggesting water inflows from peaty ground. The pond is situated on an upland heath moorland. The banks are boggy and vegetated by tufted hair grass, polytrichum moss, bilberry and common heather. There is some evidence of waterfowl impacts to the banks. There is no shading or visible submerged macrophytes.

TR3 Pond 25



Large irregularly shaped pond approximately 30m x 15m. There is a small central island dominated by soft rush. This pond connects to TR3 Pond 27 via a small channel to the south. The pond is situated in an open heath moorland, with species recorded including soft rush, common heather, tufted hair grass, purple moor grass, sheep's fescue, heath rush (*Juncus squarrosus*) sphagnum mosses and soft rush. The water is deep, >1m, clear and an orange/brown colour indicating water inflows from peaty ground. The banks are a mixture of shallow, sloping and vertical earth / peat.

TR3 Pond 25a

	<p>Medium sized pond (approximately 20m x 20m) in an upland valley, surrounded by upland heath moorland. The water is deep and clear with a small stream inflow at the north bank. Soft rush vegetates the banks and two small central islands in the centre. The surrounding vegetation has a high water table and includes marsh pennywort (<i>Hydrocotyle vulgaris</i>), bilberry, common heather, purple moor grass, tormentil (<i>Potentilla erecta</i>), sphagnum mosses and polytrichum moss. There is some evidence of waterfowl impacts along the pond banks.</p>
	<p>Irregular shaped pond (approximately 15m x 10m) in an open heath moorland. The water is very deep, clear and inflows from peaty ground. Margins are edged with species including common heather, heath bedstraw (<i>Galium saxatile</i>), tufted hair grass, sheep's fescue, bilberry and soft rush. Sphagnum moss also forms dense carpets beneath vegetation. The area is at a high altitude and exposed to strong winds. The pond banks are vertical earth / peat.</p>
	<p>Medium sized circular pond (approximately 20m in diameter) with an island in the centre, consisting of soft rush. Very deep water, clear and orange in colour suggesting water inflows from peaty ground. The pond is situated in an open heath landscape with many moss species such as sphagnum, glittering woodmoss (<i>Hylocomium splendens</i>) and polytrichum moss present, and typical vascular species such as common heather, tufted hair grass and bilberry dominating.</p>



Irregularly shaped pond (approximately 15m x 10m) with shallow water which is dominated by moss species at the margins. The water is clear and inflows from peaty ground. The pond is situated in an open heath landscape that is grazed by sheep and cattle. Species present include common heather, and bilberry dominate the pond edges, along with tussocky grasses and a few individual specimens of hare's tail cotton grass.

TR3 Pond 29




Dry; the area is a small depression within open heathland which is dominated by soft rush.

TR3 Pond 30



Small circular pond (approximately 7m in diameter), surrounded and shaded by dense soft rush. Sphagnum moss carpets the edges and encroaches into the pond. The water is shallow, yet clear with a rich orange colour suggesting water inflows from peaty ground. The pond is situated in open heath moor, with species recorded including tufted hair grass, purple moor grass, soft rush and common cotton grass.

TR3 Pond 31

	<p>Dry pond; slight depression in the ground dominated by polytrichum moss, surrounded by dense soft rush, with a central soft rush 'island'.</p>
<p>TR3 Pond 32</p> 	<p>Large irregular-shaped pond (approximately 30m x 10m), scattered with polytrichum moss hummocks which protrude out of the pond. The pond edges are shallow and scattered with soft rush, sheep's fescue, tufted hair grass and common cotton grass. The water is clear and a deep orange colour suggesting water inflows from peaty ground. The pond is deep in the centre. The surrounding landscape is heath moorland. This pond is one of a cluster of four ponds located close together.</p>
<p>TR3 Pond 33</p> 	<p>Large oblong pond (approximately 25m x 10m) surrounded by heathland. Adjacent vegetation includes tufted hair grass and soft rush. The pond is rich in moss species including sphagnum and polytrichum which encroach within the pond and at the edges. The pond is deep, and the water is clear and a rich orange/brown in colour suggesting high peat content. This pond is one of a cluster of four ponds located close together.</p>
<p>TR3 Pond 34</p>	



Medium sized (approximately 20m x 20m), deep, irregular-shaped pond. The water is clear with scattered peat/moss hummocks throughout the centre of the pond. The pond is situated in an open heathland with dominant species recorded including soft rush, tufted hair grass, polytrichum and sphagnum mosses. This pond is one of a cluster of four ponds located close together.

TR3 Pond 35



Small circular pond (approximately 7m diameter) in an open heathland, surrounding habitat is bog with polytrichum and Sphagnum moss forming dense carpets in and around the pond. Soft rush, tufted hair grass and common cotton grass also present around pond. The water is very deep and a dark brown/orange in colour suggesting high organic matter content (peat rich). This pond is one of a cluster of four ponds located close together.

TR3 Pond 36



Dry pond; large and flat expanse of short-sward species poor semi-improved grassland surrounded by soft rush along the margins.

TR3 Pond 37



Large roughly oval-shaped pond (approximately 35m x 18m) surrounded by heathland / moorland habitats, with a hedgerow and large expanse of mixed woodland nearby. The immediate surrounding area is classified as a 'wildlife area' by the farm. The pond perimeter is dominated by soft rush. Mallards (*Anas platyrhynchos*) were recorded nesting at the pond edge. The pond banks are steep, vertical earth banks. The water is highly turbid, with an abundance of organic matter.

TR3 Pond 38



Moderately sized, approximately oval pond (24m x 16m) located within a grazed sheep pasture. A nearby hedgerow is present to the north and comprises silver birch (*Betula pendula*), hawthorn and holly (*Ilex aquifolium*). The pond is sectioned off from grazing animals via timber fencing. There is some minor evidence of waterfowl use at the pond edges. The pond is shallow and approximately 40cm in the centre. The pond edges are shallow, mud / earth with some exposed rock. Surrounding vegetation includes willow (*Salix* sp.) scrub, soft rush and rosebay willowherb (*Chamaenerion angustifolium*). Dense clumps of tadpoles (not identified to species) were noted throughout the pond.

TR3 Pond 39



Large, approximately rectangular pond (65m x 60m) which is situated within grazed semi-improved grassland. Species recorded include meadow grass sp., lesser celandine (*Ranunculus ficaria*), cuckooflower (*Cardamine pratensis*), yellow rattle (*Rhinanthus minor*) and marsh marigold (*Caltha palustris*). A farm track is adjacent to the east. There is a small central island which is dominated by soft rush at the edges and grasses in the centre. Common reed (*Phragmites australis*) dominates the northern pond edge. A group of mature sycamore (*Acer pseudoplatanus*) and alder trees are present at the southern edge of the pond. Nesting mute swans (*Cygnus olor*), mallard and tufted duck (*Aythya fuligula*) are present. The pond edges are a mixture of shallow sloping and vertical earth banks. Scattered alder scrub is present around the edges. A small inflow channel is present in the south-western corner.

TR3 Pond 39a



Small, roughly circular pond (approximately 8m diameter) which is dominated by common reed which is present both within the pond and along the edges. This pond is situated south-east of TR3 Pond 39b and in heavy rain they are likely to join together. The pond may also connect to the much larger TR3 Pond 39 (to the east) during heavy rainfall. It is likely that historically the two ponds were one. The surrounding habitat consists of semi-improved grassland with some scattered willow scrub. A tree line is present to the east.

TR3 Pond 39b





Small, roughly circular pond (approximately 6m diameter) which is completely choked with common reed. The tall vegetation shades the pond. This pond is situated north-west of TR3 Pond 39a and in heavy rain is likely to join together. Pondweed sp. and common water starwort are present within the pond. The surrounding habitat consists of semi-improved grassland with some scattered willow scrub.




TR3 Pond 40






Small, roughly rectangular pond (approximately 16m x 10m) which is fed by a brook to the south-east. The pond is fenced off to the north and south and there is a laid hedgerow along the southern boundary. The pond perimeter consists of dense tussocks of soft rush with scattered rosebay willowherb and marsh marigold. The water was highly turbid during the survey; however, this could be due to the recent heavy rain. Pond edges are steep grassy banks.

<p>TR3 Pond 41</p> 	<p>A moderately sized (35m x 16m), recently created pond. The pond edges are a mixture of stone vertical walls and gently sloping stone / bare earth. Fencing surrounds the pond on all elevations. There is inflow from the north-west via a small stream, and outflow to the south via a storm drain. The surrounding land use is grazing pasture. Vegetation along the banks is sparse and includes soft rush, bulrush, dandelion (<i>Taraxacum officinale</i>), meadow grass sp., sheep's fescue and teasel (<i>Dipsacus fullonum</i>). The water was highly turbid. Dense clumps of tadpoles (not identified to species) were noted throughout the pond.</p>
<p>TR3 Pond 42</p> 	<p>Dry pond; depression within sheep-grazed pasture which is likely to fill with water during heavy rain.</p>
<p>TR3 Pond 43</p> 	<p>Moderately size (24m x 12m), approximately oval pond surrounded by grazed pasture. The water is clear with small areas of common water starwort at the surface. Soft rush is dense on the eastern side of the pond. Some tadpoles (not identified to species) are present within the pond. Surrounding vegetation includes scattered willow scrub, yellow rattle, meadow grass sp., dandelion and cuckoo flower. Evidence of waterfowl use is present. The pond is adjacent to an area of recent landscaping.</p>




<p>TR3 Pond 44</p> 	<p>Large (50m x 70m) and irregular shaped pond with several large interconnected islands within the centre. The islands comprise dense soft rush and scattered willow scrub. The surrounding land use is grazed pasture although the pond itself is fenced off. The edges of the pond are shallow sloping and scattered with marsh marigold. A drain is present along the south-eastern corner.</p>
<p>TR3 Pond 45</p> 	<p>Moderately sized (40m x 20m) irregular shaped pond situated within grazed pasture. A farm track runs along the southern boundary. The pond perimeter is scattered with soft rush. Algae is present within the pond along with dense numbers of tadpoles (not identified to species). Pond edges are gently sloping. The pond is partially fenced off and also immediately adjacent to another pond on the west. A line of trees and scrub are present along the northern boundary.</p>
<p>TR3 Pond 46</p> 	<p>Moderately sized (40m x 22m) approximately rectangular pond situated within grazed pasture adjacent to a farm track. A small island is present within the pond centre and is vegetated with soft rush. A small inflow of water is present at the northern edge of the pond from TR3 Pond 47. The banks are gently sloping and there is a section of rocks at the north corner. There is some evidence of poaching of the water edges by livestock. A tree line is present along the south and a hedgerow to the east between the pond and the farm track. Low numbers of tadpoles (not identified to species) were noted within the pond.</p>




<p>TR3 Pond 47</p> 	<p>Large, irregular shaped pond (approximately 52m x 34m) surrounded by grazed pasture at the base of a slope. A small inflow of water is present at the northern edge of the pond. There is a small outflow of water at the southern edge of the pond which flows into TR3 Pond 46. A small central island is present within the pond and is vegetated with soft rush. Soft rush is also scattered around the pond perimeter. Water horsetail is present within the pond. A hedgerow is present to the east between the pond and a farm track. There is evidence of livestock access to the pond edges. A small number of tadpoles (not identified to species) were observed within the pond.</p>
<p>TR3 Pond 48</p> 	<p>Dry pond; a steep depression within the field surrounded by broadleaved woodland which is connected to a drain/ditch and likely to fill with water during heavy rain.</p>
<p>TR3 Pond 49</p> 	<p>A large (58m x 16m) roughly rectangular pond situated adjacent to a farm track and surrounded by grazed pasture. Nearby habitats include immature broadleaved plantation and a large expanse of coniferous plantation. The pond edges are a mixture of steep, marshy grassland banks and gentle sloping earth / exposed stone. A small number of tadpoles (not identified to species) were observed within the water. Tufted ducks and mallards were noted during the survey. There are two small islands at the western end of the pond which are vegetated with soft rush and scattered willow scrub. The pond is fenced off along the north-western elevation. The water was particularly turbid during the survey.</p>

<p>TR3 Pond 50</p>  <p>25 Apr 2019 at 13:46:57 ARP.T03.P50</p>	<p>A small (8m x 2.5m), mostly dry pond which has shrunk to approximately one half of the maximum size. The dry earth banks are sparsely vegetated with soft rush. Nearby coniferous plantation woodland is present to the south-west and north-east. The pond is in a series of ponds within a drainage network (TR3 Ponds 50 to 56). Outflow to the south-west connects to TR3 Pond 51. There is evidence of livestock poaching throughout the pond.</p>
<p>TR3 Pond 51</p>  <p>25 Apr 2019 at 15:23:06 ARP.T03.P51</p>	<p>Small (6m x 6m) roughly circular pond which is adjacent to Pond 50 and along a ditch/drainage line. The pond is surrounded by grazed pasture with nearby coniferous plantation woodland. The northern pond edge is steep and there are areas of exposed earth and rock. Soft rush is present in scattered clumps around the perimeter. Duckweed sp. is present within the pond.</p>
<p>TR3 Pond 52</p>  <p>25 Apr 2019 at 18:12:04 ARP.T03.P52</p>	<p>A moderately sized oval pond situated within grazed pasture with nearby coniferous plantation woodland. This pond is situated along a ditch/drainage line as are TR3 Ponds 50 to 56. An overflow is present on the eastern edge. There is evidence of cattle poaching to the edges of the pond which are vegetated with soft rush. The water at the time of survey was highly turbid.</p>




<p>TR3 Pond 53</p> 	<p>A small (12m x 6m) pond situated within grazed pasture and located within a network of drainage ditches and series of ponds (TR3 Ponds 50 to 56). There is slow outflow from the pond to the south-west, which extends towards a large expanse of coniferous plantation woodland. Evidence of livestock poaching is present throughout the pond perimeter. A small number of tadpoles (not identified to species) were present. The water at the time of the survey was moderately turbid.</p>
<p>TR3 Pond 54</p> 	<p>A small (12m x 6m) pond situated within grazed pasture and located within a network of drainage ditches and series of ponds (TR3 Ponds 50 to 56). Evidence of livestock poaching is present throughout the pond perimeter. The water at the time of the survey was moderately turbid. Surrounding vegetation is dominated by soft rush. The pond edges are gently sloping. Floating sweet grass is present within the pond.</p>
<p>TR3 Pond 55</p> 	<p>A small (6m x 6m) irregular shaped pond situated within grazed pasture and located within a network of drainage ditches and series of ponds (TR3 Ponds 50 to 56). A ditch overflow is present along the south-eastern edge. Evidence of livestock poaching is present throughout the pond perimeter. The water at the time of the survey was moderately turbid. Surrounding vegetation is dominated by soft rush. The pond edges are a mixture of gently sloping and steep grassy banks. Floating sweet grass is present within the pond.</p>




<p>TR3 Pond 56</p> 	<p>A moderately sized (24m x 14m) approximately rectangular pond situated at the base of a slope and connected to a network of drainage ditches and ponds (TR3 Ponds 50 to 56). The edges of the pond are poached by livestock and the water at the time of the survey was highly turbid. The pond edges are gently sloping mud with some scattered soft rush patches. There is evidence of use by waterfowl.</p>
<p>TR3 Pond 57</p> 	<p>Small (3m x 10m), roughly oval pond at the edge of a marshy grassland field. There is a small island in the centre vegetated with soft rush and tufted hair grass. There is no emergent vegetation besides scattered soft rush at the margins. The northern half of the pond has dried leaving exposed earth/stone banks. The pond is shallow and unshaded apart from the island in the centre which partly shades the surface. Waterfowl evidence is present on a shallow section of the pond perimeter, whilst the remaining pond edges are steep earth banks. The pond is immediately surrounded by marshy grassland with a dry-stone wall to the north-east. A small outflow pipe is present on the south-western edge of the pond which connects it to a series of ponds down the slope (TR 3 Ponds 57-57f) leading to a plantation woodland.</p>
<p>TR3 Pond 57a</p> 	<p>Small (5m x 6m) roughly circular pond, second in a succession of interconnected ponds along a drainage ditch (TR3 Ponds 57-57f) leading to a plantation woodland. The surrounding habitat comprises dense, soft rush dominated marshy grassland. The habitat is lightly grazed by cattle. The pond surface is heavily vegetated by soft rush, floating sweet grass and water mint. The pond is partially shaded by the dense marshy grassland but otherwise exposed. The water is clear, tinted brown (suggesting a high organic matter content) and there is a small area of surface oil pollution present at the north-eastern end. The pond depth is up to 40cm at the deepest point.</p>

<p>TR3 Pond 57b</p> 	<p>Small (5m x 2m) and shallow (up to 20cm) pond, third in a succession of interconnected ponds along a drainage ditch (TR3 Ponds 57-57f) leading to a plantation woodland. The surrounding habitat comprises dense, soft rush dominated marshy grassland. The habitat is lightly grazed by cattle. There is a high silt content within the pond. A small area (approximately 10%) of floating sweet grass is present along the south-eastern edge. The banks are gently sloping with some areas of exposed bare earth / rocks.</p>
<p>TR3 Pond 57c</p> 	<p>A small pond (3m x 10m), fourth in a succession of interconnected ponds along a drainage ditch (TR3 Ponds 57-57f) leading to a plantation woodland. The surrounding habitat comprises dense, soft rush dominated marshy grassland. The habitat is lightly grazed by cattle. The pond has dried and reduced in size (approximately one quarter of the full size). The pond is shaded partially by the steep earth bank and tall rushes. The pond is up to 40cm at the deepest point. A small area of floating sweet grass is present within the pond; approximately 10% of the surface.</p>
<p>TR3 Pond 57d</p> 	<p>Large pond (30m x 20m) within plantation woodland and fifth in a succession of interconnected ponds along a drainage ditch (TR3 Ponds 57-57f). There is evidence of use by waterfowl and a mallard nest was identified at the north-western edge. The pond banks are steep bare earth and undercut. The water level was particularly low at the time of survey evidenced by the exposed banks. The pond is shaded by the adjacent mature trees. The water was highly turbid at the time of the survey. There are small areas of scattered emergent soft rush but otherwise the banks are bare.</p>




<p>TR3 Pond 57e</p> 	<p>Small (5m x 5m) pond within plantation woodland and sixth in a succession of interconnected ponds along a drainage ditch (TR3 Ponds 57-57f). The pond is essentially a pooled area of stagnant water at the southern edge of a ditch and is almost entirely beneath an overhanging willow tree. There are large expanses of surface algae and no emergent vegetation. Nearby vegetation comprises coarse, marshy grassland and sheep-grazed pasture. The pond is shallow, up to 30cm, and the water is tinted bright orange / brown in places suggesting iron oxide content.</p>
<p>TR3 Pond 57f</p> 	<p>Large pond (39m x 10m), seventh/last in a succession of interconnected ponds along a drainage ditch (TR3 Ponds 57-57f). The pond is densely bordered by coniferous trees on the eastern side where the banks are steep, bare earth and undercut. The pond is heavily shaded by the nearby trees, although there is an open section to the west which is bordered by an area of grassland and gentle sloping banks. The pond is approximately 50cm deep. There is a small area of water mint along the western pond edge. Surface algae is frequent throughout the pond. Rabbit holes are frequent along the eastern bank. There is evidence of waterfowl use around the perimeter.</p>
<p>TR3 Pond 58</p> 	<p>Large lake/pond (50m x 25m) adjacent to a residential property and fourth/last in a succession of ponds along a drainage ditch (TR3 Ponds 60 to 58, not including 58a and 58b). The pond is maintained for use by waterfowl, with approximately 30 mallard ducks present at the time of survey and lots of evidence around the perimeter. The water is turbid and there is an inflow of water from the north-west, and outflow to the south-east. The pond edges are a mixture of stone boulders and steeply sloping grassy, undercut banks. The immediately surrounding habitat includes coniferous woodland (south), introduced shrub (east), marshy grassland and sheep-grazed pasture (north and west). There is no emergent vegetation, bankside species recorded include soft rush, common nettle, creeping thistle (<i>Cirsium arvense</i>) and broadleaved dock.</p>

<p>TR3 Pond 58a</p> 	<p>Small (5m x 10m), roughly circular pond within marshy grassland. The pond is situated along a ditch. There is a small central grassy island vegetated with soft rush. The pond is unshaded aside from the nearby tall rushes. Large numbers of tadpoles (not identified to species) were recorded within the pond. A small scattering of common water starwort is present within the pond. The water is clear although heavily silted at the base.</p>
<p>TR3 Pond 58b</p> 	<p>Small (4m x 3m) kidney shaped drain-fed pond which is immediately surrounded by marshy grassland (soft rush dominated). Emergent vegetation includes floating sweet grass, soft rush and water mint. A shallow sloping sandy bank is present to the north, and steep grassy/marshy grassland banks elsewhere. The pond is shallow; up to 30cm deep.</p>
<p>TR3 Pond 59</p> 	<p>Small (roughly 10m x 4m) 'U' shaped pond which is third in a succession of interconnected ponds along a drainage ditch (TR3 Ponds 60 to 58, not including 58a and 58b). The pond appears to have dried and is likely to be larger and circular during wetter periods. The island in the centre is grassland and willow scrub. Bulrush is dominant at the eastern side of the pond. The water is shallow, up to 40cm deep. Steep grassy banks surround the pond. Nearby habitats include plantation woodland, scattered scrub and a residential property.</p>

<p>TR3 Pond 60</p> 	<p>Small (5m x 10m), roughly circular pond with very slow inflow from the north-west and outflow to the south-east. This pond is second in a succession of interconnected ponds along a drainage ditch (TR3 Ponds 60 to 58, not including 58a and 58b). There is nearby immature willow scrub, semi-improved grassland and coniferous woodland. The water was turbid at the time of survey and the pond is an unknown depth. There is a small amount of soft rush along the pond perimeter but otherwise the edges comprise various grass species and scattered willow saplings. The pond edges are steep, partially undercut earth banks which shade the pond partially. A thin film of oil pollution is present on the surface in stagnant areas of the pond edges.</p>
<p>TR3 Pond 61</p> 	<p>Moderately sized (15m x 10m) roughly oval shaped pond which is first in a succession of interconnected ponds along a drainage ditch (TR3 Ponds 60 to 58, not including 58a and 58b). Bulrush dominates the pond edges and provides some shading below. There is also a small amount of water horsetail. The pond is immediately surrounded by marshy grassland and sheep-grazed pasture and is situated at the base of a shallow slope. The pond edges are a mixture of gently sloping and vertical earth banks.</p>
<p>TR3 Pond 61a</p> 	<p>Small (140m²) shallow pond situated within a silage field, 100m from conifer plantation. The pond is fenced. The water is clear, and the substrate is silty. There are no macrophytes and very few invertebrates. Horsetail sp. and soft rush are present at the pond edges. There are willow trees on the banks. There is a small outflow to the south. This pond is last / fifth in a succession of interconnected ponds along a drainage channel (TR3 Ponds 61e to 61a).</p>




<p>TR3 Pond 61b</p> 	<p>Small (50m²) and shallow pond (approximately 20cm deep) situated within a silage field and fenced off. The water is clear, and a silty substrate is visible. The banks are steep and vegetated with soft rush, meadowsweet (<i>Filipendula ulmaria</i>), ribwort plantain (<i>Plantago lanceolata</i>), yarrow (<i>Achillea millefolium</i>) and various grasses. Willow and hawthorn scrub surround the pond which is fourth in a succession of interconnected ponds along a drainage channel (TR3 Ponds 61e to 61a).</p>
<p>TR3 Pond 61c</p> 	<p>Small (80m²) shallow pond, situated within a hay/silage field. The water is clear with a silty substrate. There is a large willow tree on north-western bank. Surrounding vegetation comprises soft rush, horsetail, marsh thistle, meadow sweet, bracken and grass species. This pond is third in a succession of interconnected ponds along a drainage channel (TR3 Ponds 61e to 61a).</p>
<p>TR3 Pond 61d</p> 	<p>Small pond (150m²) situated within a hay / silage field. The pond is approximately 30cm deep, with brown coloured and turbid water. The banks are steep and vegetated by soft rush, horsetail and grass species. A conifer plantation is present approximately 10m north-west. This pond is second in a succession of interconnected ponds along a drainage channel (TR3 Ponds 61e to 61a).</p>

<p>TR3 Pond 61e</p> 	<p>Small (80m²) woodland pond at the edge of the conifer plantation which is fenced off from the hay / silage field. The banks are steep and approximately half is vegetated by willow scrub and soft rush. There are no macrophytes within the pond, however a dense amount of leaf litter is visible at the base. This pond is first in a succession of interconnected ponds along a drainage channel (TR3 Ponds 61e to 61a). There is inflow to the pond via a small drainage ditch to the north.</p>
<p>TR3 Pond 62</p> 	<p>Small (70m²) approximately oval pond within an immature, mixed plantation woodland. The pond appears to be deep and was dug in 2011 as part of efforts by the landowners to improve habitats on their land. A small island is present in the centre of the pond and is vegetated with soft rush. Dense carpets of common water starwort are present within the pond along with soft rush and water mint. The water was highly turbid during the survey.</p>
<p>TR3 Pond 63</p> 	<p>Dry pond; shallow depression within a cattle and sheep grazed improved grassland field.</p>



<p>TR3 Pond 64</p> 	<p>Small (60m²), very shallow accumulation of water within an arable field. The pond banks are exposed soil which grade into the adjacent arable crops. No submerged macrophytes or inflow/outflow. A dry-stone wall is present to the north but the pond is otherwise exposed with no shade.</p>
<p>TR3 Pond 65</p> 	<p>Small (approximately 30m²), almost dry pond approximately 12cm deep. The pond appears to have shrunk to approximately one fifth of the full size. The pond is situated within an agricultural field and there are signs of cattle poaching around the perimeter. The pond banks are gently sloped with exposed soil. Vegetated by grasses and pineappleweed (<i>Matricaria discoidea</i>). The water was turbid at the time of the survey with a dense coverage of algae.</p>
<p>TR3 Pond 66</p> 	<p>Small (50m²), approximately circular pond situated within a sheep-grazed improved grassland field. The pond appears to have dried up significantly, leaving two small puddles at the base. The pond is extremely cattle poached throughout and has highly turbid water. The surrounding vegetation is dominated by soft rush, common nettle and coarse grass species. A small stream is present 3m north of the pond, however there is no inflow or outflow. The pond appears to have been dredged with an earth bund piled up on the eastern bank.</p>

<p>TR3 Pond 67</p> 	<p>Large pond in two halves; one large deep section (250m²) on the east which is roughly oval shaped, and a smaller shallow section (25m²) to the west which is roughly circular. The pond has inflow from a small stream to the west. The surrounding habitat is sheep-grazed pasture, with an exposed rock cliff to the south which provides some shading to the pond. Vegetation surrounding the pond is dominated by soft rush and there is no emergent vegetation within the water. The water was clear at the time of the survey although there appeared to be a large amount of settled sediment.</p>
<p>TR3 Pond 68</p> 	<p>Moderately sized (16m x 16m) circular pond within grazed pasture. The pond is fenced off and there is a hedgerow to the south. There is evidence of waterfowl use. Surrounding vegetation is dominated by soft rush. The pond edges are a mixture of shallow, sloping earth banks and vertical earth banks.</p>
<p>TR3 Pond 69</p> 	<p>Large (32m x 26m) irregular shaped pond situated within marshy grassland area. The pond is fenced off from the surrounding semi-improved grassland. The area is sectioned off to protected nesting birds by the landowner. A hedgerow and immature willow trees are present to the north-west and west. The water at the time of survey was highly turbid. High numbers of tadpoles (not identified to species) were noted during the survey. A small inlet flow of water is present on the south-western side of the pond.</p>

<p>TR3 Pond 70</p> 	<p>Large (35m x 18m) pond within marshy grassland field which is fenced off from the surrounding semi-improved grassland. The area is sectioned off to protected nesting birds by the landowner. An oak and hawthorn hedgerow is present to the west and there is scattered willow scrub around the pond perimeter. Soft rush dominates the adjacent vegetation. The pond has a silty substrate and the water at the time of survey was highly turbid. There is evidence of waterfowl use of the pond, with tufted duck and mallard observed on the water. Common frogs (<i>Rana temporaria</i>) were identified within the pond.</p>
<p>TR3 Pond 70a</p> 	<p>No pond present; area of improved grassland.</p>
<p>TR3 Pond 70b</p> 	<p>No pond present; area of improved grassland.</p>




<p>TR3 Pond 71</p> 	<p>Moderately sized (18m x 18m) roughly circular pond which is partially fenced off. A hedgerow is present to the east. A nearby public footpath is present to the west. Dog footprints were observed at the pond perimeter. Nesting mallards were observed on the pond. Soft rush is scattered around the pond. The banks are shallow sloping. There is no emergent vegetation.</p>
<p>TR3 Pond 72</p> 	<p>Moderately sized (25m x 10m) pond adjacent to farm track and surrounded by semi-improved grassland. The pond edges are a mixture of vertical stone banks and gently sloping grassy banks. Marsh marigold is present along the eastern edge of the pond, adjacent vegetation includes soft rush and rosebay willowherb. Scattered willow scrub is present on the southern boundary. There is a small overflow pipe which connects to a stream on the western edge.</p>
<p>TR3 Pond 73</p> 	<p>Dry pond; small depression within grassland north of TR3 Pond 72. This area is likely to hold water during periods of heavy rainfall.</p>



<p>TR3 Pond 74</p> 	<p>Large (45m x 14m), narrow pond surrounded by a strip of marshy grassland within an agricultural field. The pond is fenced off and there is no access for livestock. 75% of the pond surface is vegetated with common water starwort. The pond has a very slow flow due to a small inflow from Eller Beck at the south-western corner, and outflow at the north-eastern corner. A dry-stone wall is present along the eastern edge of the pond. Evidence of use by waterfowl is present.</p>
<p>TR3 Pond 75</p> 	<p>No pond present; area is an old lime kiln.</p>
<p>TR3 Pond 76</p> 	<p>Dry pond; small depression in the ground within broadleaved woodland close to Croasdale Brook.</p>

<p>TR3 Pond 77</p> 	<p>Dry pond; small and shallow depression within the ground of sheep-grazed field.</p>
<p>TR3 Pond 78</p> 	<p>Dry pond; small fenced off area containing two immature willow trees and surrounded by grazed pasture.</p>
<p>TR3 Pond 79</p> 	<p>Dry pond; area of dense marshy grassland.</p>

<p>TR3 Pond 80</p> 	<p>Dry pond; depression within semi-improved grassland adjacent to a dry-stone wall. During heavy rainfall this area likely fills with water.</p>
<p>TR3 Pond 81</p> 	<p>Dry pond; livestock poached area of semi-improved grassland.</p>
<p>TR3 Pond 82</p> 	<p>Dry pond; area of dense marshy grassland.</p>

<p>TR3 Pond 83</p> 	<p>Dry pond; small depression within a semi-improved grassland adjacent to a dry-stone wall. During heavy rainfall this area likely fills with water.</p>
<p>TR3 Pond 84</p> 	<p>Dry pond; small and shallow depression within a semi-improved grassland field. During heavy rainfall this area likely fills with water.</p>
<p>TR3 Pond 85</p> 	<p>Large (277m²) approximately oval pond surrounded by agricultural fields. The pond edges are scattered with rushes. The banks are steep, exposed earth on the southern elevation and gentle sloping on the northern elevation. The pond appears to have dried up slightly. Emergent vegetation includes a small covering of brooklime (<i>Veronica beccabunga</i>). There is evidence of waterfowl use of the pond.</p>

<p>TR3 Pond 86</p> 	<p>Dry pond; depression within semi-improved grassland field.</p>
<p>TR3 Pond 87</p> 	<p>Small (3m x 3m) accumulation of water with an outflow to the south which connects to TR3 Pond 88, 89 and 89a. The surrounding habitat consists of semi-improved grassland and broadleaved woodland. The pond is fenced off and livestock have no access. There is a steep bank to the north. A small area of brooklime is present adjacent to a concrete structure within the pond. Evidence of waterfowl is present on the pond edges.</p>
<p>TR3 Pond 88</p> 	<p>Moderately sized (25m x 18m) pond within private garden. A small stream is present along the eastern edge of the pond, with a small inflow pipe at the northern edge. The pond is surrounded by scattered alder and willow trees. The western edge of the pond has areas of bulrush and there are dense clumps of common water starwort throughout the pond surface. Adjacent vegetation includes lesser celandine, daffodils (<i>Narcissus</i> spp.), cow parsley (<i>Anthriscus sylvestris</i>), common reed, meadowsweet and cleavers (<i>Galium aparine</i>). The pond edges are shallow sloping. There are two stone jetties and evidence of use by waterfowl.</p>

TR3 Pond 89	
	Large (500m ²) circular pond with a central island within residential garden. This pond connects to TR3 Pond 88 via a small inflow at the eastern edge and TR3 Pond 89a via a small inflow along the south-eastern edge. The banks are surrounded by immature tree species include ash, beech, willow and alder. The pond surface is heavily vegetated with common water starwort and there is a small scattering of common reed along the southern edge. Nesting birds were observed on the water including domestic geese and mallards. The pond is an unknown depth and has gently sloping banks with some exposed earth and rocks.
TR3 Pond 89a	
	Small (60m ²) rectangular pond which connects to TR3 Pond 89 via a small channel on the north-western edge. Emergent vegetation includes common reed and bulrush. The pond is heavily shaded by the trees above. The banks are gentle sloping earth. The pond surface has a significant coverage of common water starwort along with small areas of algae. The water was clear at the time of survey. Surrounding vegetation includes broadleaved dock, dandelion, common nettle and Yorkshire fog.

5 eDNA survey results		
Pond ID	Results	Limitations
TR3 Pond 1	N/A	Dry, not sampled.
TR3 Pond 2	Positive	
TR3 Pond 3	N/A	Dry, not sampled.
TR3 Pond 4	N/A	Dry, not sampled.
TR3 Pond 5	N/A	Dry, not sampled.
TR3 Pond 5a	N/A	Dry, not sampled.
TR3 Pond 5b	Negative	
TR3 Pond 5c	Negative	
TR3 Pond 6	Negative	
TR3 Pond 6a	Negative	
TR3 Pond 7	Negative	
TR3 Pond 8	Negative	

TR3 Pond 9	Negative	
TR3 Pond 10	N/A	No Pond present.
TR3 Pond 11	Negative	
TR3 Pond 11a	Negative	
TR3 Pond 11b	Negative	
TR3 Pond 12	Inconclusive (sample contamination)*	
TR3 Pond 13	Negative	
TR3 Pond 14	N/A	Dry, not sampled.
TR3 Pond 15	Negative	
TR3 Pond 16	Negative	
TR3 Pond 17	N/A	Dry, not sampled.
TR3 Pond 18	Negative	
TR3 Pond 19	Negative	
TR3 Pond 20	Negative	
TR3 Pond 21	Negative	
TR3 Pond 22	Negative	
TR3 Pond 23	Negative	
TR3 Pond 24	Inconclusive (sample contamination)*	
TR3 Pond 25	Negative	
TR3 Pond 25a	Negative	
TR3 Pond 26	Negative	
TR3 Pond 27	Negative	
TR3 Pond 28	Negative	
TR3 Pond 29	N/A	Dry, not sampled.
TR3 Pond 30	Negative	
TR3 Pond 31	Negative	
TR3 Pond 32	Negative	
TR3 Pond 33	Negative	
TR3 Pond 34	Negative	
TR3 Pond 35	Negative	
TR3 Pond 36	N/A	Dry, not sampled.
TR3 Pond 37	Negative	
TR3 Pond 38	Negative	
TR3 Pond 39	Negative	
TR3 Pond 39a	Negative	

TR3 Pond 39b	Negative	
TR3 Pond 40	Negative	
TR3 Pond 41	Negative	
TR3 Pond 42	N/A	Dry, not sampled.
TR3 Pond 43	Negative	
TR3 Pond 44	Negative	
TR3 Pond 45	Negative	
TR3 Pond 46	Negative	
TR3 Pond 47	Negative	
TR3 Pond 48	N/A	Dry, not sampled.
TR3 Pond 49	Negative	
TR3 Pond 50	Negative	
TR3 Pond 51	Negative	
TR3 Pond 52	Negative	
TR3 Pond 53	Negative	
TR3 Pond 54	Negative	
TR3 Pond 55	Negative	
TR3 Pond 56	Negative	
TR3 Pond 57	Negative	
TR3 Pond 57a	Negative	
TR3 Pond 57b	Negative	
TR3 Pond 57c	Negative	
TR3 Pond 57d	Negative	
TR3 Pond 57e	Negative	
TR3 Pond 57f	Inconclusive (sample contamination)*	
TR3 Pond 58	Negative	
TR3 Pond 58a	Negative	
TR3 Pond 58b	Negative	
TR3 Pond 59	Negative	
TR3 Pond 60	Negative	
TR3 Pond 61	Negative	
TR3 Pond 61a	Negative	
TR3 Pond 61b	Negative	
TR3 Pond 61c	Negative	
TR3 Pond 61d	Negative	

TR3 Pond 61e	Negative	
TR3 Pond 62	Negative	
TR3 Pond 63	N/A	Dry, not sampled.
TR3 Pond 64	Negative	
TR3 Pond 65	Negative	
TR3 Pond 66	Negative	
TR3 Pond 67	Negative	
TR3 Pond 68	Negative	
TR3 Pond 69	Negative	
TR3 Pond 70	Negative	
TR3 Pond 70a	N/A	No Pond present.
TR3 Pond 70b	N/A	No Pond present.
TR3 Pond 71	Negative	
TR3 Pond 72	Negative	
TR3 Pond 73	N/A	Dry, not sampled.
TR3 Pond 74	Negative	
TR3 Pond 75	N/A	Dry, not sampled.
TR3 Pond 76	N/A	Dry, not sampled.
TR3 Pond 77	N/A	Dry, not sampled.
TR3 Pond 78	N/A	Dry, not sampled.
TR3 Pond 79	N/A	Dry, not sampled.
TR3 Pond 80	N/A	Dry, not sampled.
TR3 Pond 81	N/A	Dry, not sampled.
TR3 Pond 82	N/A	Dry, not sampled.
TR3 Pond 83	N/A	Dry, not sampled.
TR3 Pond 84	N/A	Dry, not sampled.
TR3 Pond 85	Negative	
TR3 Pond 86	N/A	Dry, not sampled.
TR3 Pond 87	Negative	
TR3 Pond 88	Negative	
TR3 Pond 89	Negative	
TR3 Pond 89a	Negative	

*Inconclusive result indicates degradation or inhibition of the sample, therefore lack of detection of GCN DNA is not conclusive evidence for determining the absence of the species in the sample provided. T03.P12 and T03.P24 showed sample inhibition and degradation. T03.P57f showed sample degradation.

References

Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Dejean, T., Griffiths, R. A., Foster, J., Wilkinson, J. W., Arnell, A., Brotherton, P., Williams, P. & Dunn, F. (2015). *Using eDNA to develop a national citizen science-based monitoring programme for the great crested newt (Triturus cristatus)*. Biological Conservation. **183**, 19-28.