HyNet North West Hydrogen Pipeline

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Appendix 5G

Otter and Water Vole Survey Report

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1. Introduction

1.1.1 WSP UK Ltd was instructed by Cadent Gas Limited (Cadent) in 2022 and 2023 to undertake surveys to identify the presence/likely absence of otter (*Lutra lutra*) and water vole (*Arvicola amphibius*) at watercourse crossing locations along the HyNet North West Hydrogen Pipeline (hereafter referred to as 'the Project '). Cadent (the Applicant) is applying to the Secretary of State for a Development Consent Order (DCO) to construct, operate, and maintain a new underground hydrogen pipeline of approximately 100 kilometres (km) in length.

1.1.2 The Project within the Preliminary Order Limits can be split into five distinct areas, comprising four pipeline mainline routes and the Central Hub, an area where the four mainline routes meet which is not associated with any specific route. Please note that as part of the design process, the order limits have undergone a number of iterations (as described in **Appendix 2A: Design evolution** of the Draft ES) and this report is based on the Preliminary Order Limits as considered in the Preliminary Environmental Information Report (PEIR) published in September 2022.

1.1.3 This report details the results of otter and water vole surveys conducted in 2022 and 2023 to inform the impact assessment for the Project. The Preliminary Order Limits for the Project and watercourse crossing schedule are shown in **Figure 5G.1** in **Annex 5G 4.**

1.2 Legislation

Otter

1.2.1 Otters are listed in Schedule 5 of the Wildlife and Countryside Act 1981[1] (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017[2] (as amended). They are afforded full protection under Section 9(4) of the Act and Regulation 41 of the Regulations. These make it an offence, inter alia, to:

- Deliberately capture, injure or kill any such animal;
- Deliberately disturb any such animal, in particular in such a way as to be likely to:
- Impair their ability to survive, breed or reproduce, or rear or nurture their young;
- Impair their ability to hibernate or migrate;
- Affect significantly the local distribution or abundance of that species;

1 UK Government (1981). Wildlife and Countryside Act 1981 (online). Available at: https://www.legislation.gov.uk/ukpga/1981/69 (Accessed April 2024).

2 UK Government (2017). Conservation of Habitats and Species Regulations 2017 (online). Available at: https://www.legislation.gov.uk/uksi/2017/1012/contents (Accessed April 2024).

- Damage or destroy a breeding site or resting place of any such animal;
- Intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any place that any of these animals uses for shelter or protection.

Water Vole

1.2.2 As of 6 April 2008, water voles have been given full protection under the Wildlife and Countryside Act 1981[1] (as amended). They are listed on Schedule 5 of the 1981 Act, and are therefore subject to the provisions of Section 9, which make it an offence to:

- Intentionally kill, injure or take water vole from the wild;
- Possess or control live or dead water voles or derivatives;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection;
- Intentionally or recklessly disturb water voles whilst occupying a structure or place used for that purpose; and
- Sell water voles or offer or expose for sale or transport for sale.

2. Methods

2.1 Desk Study

Otter and Water Vole Records

2.1.1 A desk study was undertaken in Spring 2022 and the methodology for this assessment is set out in Section 5.5 and Table 5.8 of the Preliminary Environmental Information Report (PEIR). The desk study recorded the presence of statutory designated sites within up to 20km[3] of the Preliminary Order Limits (Section 5.6.1, Table 5.10, and Figure 5.1 of the PEIR) and non-statutory designated sites within 2km (Section 5.6.2, Table 5.11, and Figure 5.2 of the PEIR). The desk study also recorded the presence of Habitats of Principal Importance (HPI) within 2km of the Preliminary Order Limits (section 5.6.3., Table 5.12 and Figure 5.3 of the PEIR). Records of protected and notable species within 2km of the Preliminary Order Limits are discussed within section 5.6.12-5.6.41 of the PEIR.

2.1.2 The desk study information from the PEIR is not repeated in this report or discussed further. The desk study will be updated for the Environmental Statement following design freeze for the Project.

2.2 Survey Area

2.2.1 A desk-based exercise was undertaken in summer 2022 to identify potential survey locations. This included a review of the watercourse crossing schedule revision A02[4] to identify watercourses that would be crossed by the Project and which could potentially be directly or indirectly affected. Further to this, Ordnance Survey maps[5] and satellite imagery[6] were used to identify additional watercourses which could potentially be affected. Watercourse crossing location reference numbers used within this report are taken from crossing schedule revision A02[4].

2.2.2 Due to changes in the pipeline route due to evolving scheme design and a revision of the Preliminary Order Limits, the watercourse crossing locations were reviewed in March ahead of the spring 2023 survey period. At that juncture, the pipeline route had changed but an updated crossing schedule was not available. The revised pipeline route was reviewed against Ordnance Survey maps and satellite imagery, and each potential watercourse crossing location was reviewed against the crossing schedule revision A02[4] to identify the following:

- Crossing locations which remained unchanged;

3 Dependent on reasons for designation; within 2km for habitats, extending to 10km for bats, and up to 20km for ornithological interest for international sites.
4 Crossing schedule A02. HyNet North West Hydrogen Pipeline FEED - Pipeline Crossing Schedule, Doc. Ref. HYN02-PL-SCH-WDG-0000-0001, Rev: A02, May 2022.
5 Available at https://magic.defra.gov.uk/(Accessed 06/06/2022).
6 Google Earth Pro (Accessed 06/06/2022).

- Crossing locations on the same watercourse, but which had moved up or down stream. For the second survey visit, and within this report, these crossing locations are referred to using the same crossing reference number as per revision A02[4] t of the crossing schedule as a revised schedule had not been issued at the time of survey. Any spatial deviation from the original location is described in the survey results table in **Annex 5G 4.**
- Crossing locations which are no longer relevant as they are no longer crossed by the pipeline route; and;
- New crossing locations which were not previously crossed by the pipeline route[7].

2.2.3 Following the above process, this report details the survey results of 109 watercourse crossings.

2.2.4 At each identified watercourse crossing location, habitat assessments were undertaken at the crossing location, and presence/likely absence surveys extended along the watercourse for 250 metres (m) up and down stream. Incidental evidence of otter rest sites located away from watercourses were recorded during other surveys (i.e. badger and UKHab) within the Preliminary Order Limits[8].

2.2.5 Presence/likely absence survey results from watercourse crossings that are no longer relevant following the above process, but which are in close proximity to the Preliminary Order Limits, have still been included on the Figures in Appendices B and C.

2.3 Field Survey

2.3.1 Surveys were based on a combination of habitat suitability assessments and presence/likely absence surveys as described in the following sections.

2.3.2 In accordance with The Water Vole Mitigation Handbook[9], two surveys were undertaken at least two months apart where required/possible/access allowed, starting in mid-summer 2022 and continuing into late 2023; one in the first half of

7 Because these locations were identified at the time of survey in spring 2023, prior to an updated crossing schedule being issued, they are referred to within this report as 'NEW XX'. All crossing locations provided in the results table in Annex 5G4 include a spatial reference in the form of X/Y coordinates, so data can be linked spatially to subsequent revisions of the crossing schedule/locations, irrespective of changes to crossing reference numbers.

8 The Zone of Influence for fragmentation/disturbance effects on otter is up to a maximum of 200m from the construction/operational works as detailed in Scoping of Assessment Summary Annex 5B of the Draft ES. Given the nature of the Project design (which minimises in-channel works and incorporates embedded environmental measures) a survey area comprising 250m up/downstream of watercourse crossing locations along suitable watercourses and a 50m buffer of suitable terrestrial habitat is proportionate and sufficient to assess the potential effects of the Project on otter.

9 Dean, M., Strachan, R., Gow, D., & Andrews, R. (2016). The Water Vole Mitigation Handbook. London: The Mammal Society.

the survey season (April to June) and one in the second half of the season (July to September inclusive).

2.3.3 Otter surveys can be undertaken at any time of year but were undertaken concurrently with the water vole surveys for efficiency and to minimise potential disturbance.

2.3.4 Undertaking two survey visits across a season allows for the identification of changes in habitat suitability, where habitats may become more or less suitable over a season, as vegetation grows, or receives maintenance and where water levels change. It also aids with providing an understanding of otter and water vole distribution across an area, and seasonal changes in habitat use and population size.

Otter

Habitat Assessment

2.3.5 Each ditch and watercourse that a crossing location is located at was categorised as 'optimal', 'sub-optimal' or 'negligible' with regards to suitability for foraging, commuting and/or resting sites (holts and couches) for otter. The reasons for each categorisation were also recorded. In the absence of standard definitions this rapid appraisal was based on professional judgement with reference to the suitability criteria outlined in **Table 5G 2.1.**

Table 5G 2.1 Otter Habitat Suitability

Otter Feature	Optimal	Sub-optimal	Negligible
Foraging Habitat	Substantial sized watercourse/waterbody which is likely to provide foraging habitat that supports larger sized fish, and large fish populations and/or amphibians.	Minor watercourse/water body which is likely to provide limited foraging habitat that supports smaller sized fish, and small fish populations and/or amphibians.	Minor watercourse/water body which is likely to provide poor foraging habitat that does not support fish or amphibians and is likely to have little or no water and/or poor water quality.
Commuting Habitat	Substantial sized watercourse which is likely to provide a major commuting route between suitable habitats and has sufficient bankside habitat to provide cover, or a minor	Minor watercourse which provides limited commuting opportunities, and/or has limited bankside habitat to provide cover.	Minor watercourse which is unlikely to provide a commuting route and has poor water quality/little or no water and is deficient in habitats

Otter Feature	Optimal	Sub-optimal	Negligible
	watercourse/ditch directly connected to a main river.		that are likely to provide cover.
Resting Site	Watercourse/water body, particularly those substantial in size, with extensive bankside habitats which are likely to provide otter resting sites (e.g. exposed roots of mature bankside trees; dense areas of scrub/woodland and/or ruderal vegetation; large mammal burrows; holes/cavities in natural/artificial banks).	Watercourse/water body with limited bankside habitat and limited connectivity to suitable resting sites beyond the watercourse/water body bank.	Minor watercourse/water body that is deficient in habitats that are likely to provide otter resting sites.

2.3.6 Watercourses that support otter vary in their habitat suitability/quality and a 'negligible' habitat suitability categorisation does not indicate an absence of this species. Otters, for example, often have territories covering tens of kilometres of watercourse, incorporating reaches that vary widely in habitat suitability/quality, with no clear correlation between levels of otter activity and specific habitat characteristics[10]. The categorisation is therefore a visual appraisal of relative otter habitat quality.

Presence / Likely Absence Survey

2.3.7 The watercourses were systematically searched for signs of otter, employing methods based on good practice guidance[10]. Any signs of otter activity (e.g., resting sites, spraints[11], footprints, slides[12] or feeding/prey remains) were mapped and recorded.

10 Chanin, P. (2003a). Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough.

11 Otter droppings.

12 In this report the term 'slide' refers to any marks on the riverbank where an otter has slid down the bank and into the watercourse, for example flattened/smoothed vegetation/mud.

2.3.8 The European Commission (2007)[13] indicate "*It is not possible to provide a rigid definition of "breeding site" and "resting places" that will apply to all taxa*". They define otter as a "*wide ranging species*", and so advise "*to restrict the definition of a breeding and resting site to a locality that can be clearly delimited: e.g. the roosts for bats or the holt of an otter*." There also has to be "*a reasonably high probability that the species will return to these sites and places*". Findlay et al. (2017[14] and 2022[15]) suggest a 15 minute threshold reasonably separates a visit from an otter to a feature that is suitable for otter to use as a rest site[16] compared to an otter using the feature for a rest. As no camera monitoring has been undertaken to ascertain if otters have used a feature for 15 minutes or longer, rest sites have been categorised into the following:

- Likely – a feature that is suitable for otter to use as a rest site and where evidence of otter has been recorded.
- Potential – feature that appears to be suitable for an otter to use to rest, but where no evidence of otter is recorded.

Water Vole

Habitat Assessment

2.3.9 Each ditch and watercourse crossing location was subject to a habitat assessment using the Water Vole Habitat Suitability index (WVHS)[17] to determine its suitability.

2.3.10 Features considered were:

- Well-developed (>60%) bank-side and emergent vegetation to provide cover;
- Year-round availability of food sources;
- Suitable refuge areas above extremes in water levels;

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13 European Commission, Directorate-General for Environment, Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC – Final version, February 2007, European Commission, 2007,

14 Findlay, M. A., Briers, R. A., Diamond, N. and White, P. J. C. 2017. Developing an empirical approach to optimal camera-trap deployment at mammal resting sites: evidence from a longitudinal study of an otter Lutra lutra holt. – Eur. J. Wildl. Res. 63: 96.

15 Findlay, M.A, Briers, R.A., Ingledew, R.P., and White, P.J.C (2022) An evidence-based approach to identifying resting sites of Eurasian otter Lutra lutra from camera-trap and field-sign data. Wildlife Biology, 2023(1), Article e01036. https://doi.org/10.1002/wlb3.01036.

16 For example: large holes in watercourse/ditch banks (artificial or man-made); cavities in bridges, culverts and amongst exposed rocks or bank reinforcements; mature bankside trees exposed root systems; mammal burrows; and areas of dense vegetation, for example scrub and marshy grassland or tall ruderal vegetation.

17 Harris, J. E., Markwell, H. J., and Raybould, B. R., 2009. A method for assessing water vole habitat suitability. In Practice: Bulletin of the Institute of Ecology and Environmental Management. 65: 28–31.

- Steep banks suitable for burrowing;
- Permanent open water;
- Presence of berm (ledge at water level);
- Lack of disturbance through poaching, grazing and/or recent management; and
- Nest building opportunities in vegetation above water level.

2.3.11 For each feature that was present, a score of 1 was provided, and 0 if the feature was absent. These scores were then applied to habitat categories of suitability as outlined in **Table 5G 2.2.**

Table 5G 2.2 Water Vole Habitat Suitability

WVHS	Suitability
<3	Unsuitable
3-5	Sub-optimal
>5	Optimal

Water Vole Presence / Likely Absence Survey

2.3.12 In line with best practice guidance[9] and where possible, surveys involved searching both banks for evidence of water voles, including:

- Latrines – comprising a concentration of droppings in discrete locations, often in close proximity to the water;
- Feeding stations – comprising neat piles of chewed lengths of vegetation on pathways or haul-out locations typically close to the water's edge and within areas with plenty of cover. Length of vegetation can vary, and the ends are often cut at a 45-degree angle with a small tear;
- Burrows – these are typically found along the water's edge and in the bank (up to 5m from the water's edge) and are approximately 6-8 centimetres (cm) in diameter and round in shape. Holes may have 'lawns' around them (areas of grazed vegetation). Entrances may have 'puddled' clay at the base, worn and smooth sides, and/or a 'swirl' of vegetation around the entrance;
- Pathways – flattened vegetation or 'runs' through vegetation, usually leading from burrows to latrines or feeding stations; and
- Footprints – located in soft mud or silt.

2.3.13 Surveys were implemented by walking within the channel and/or along the top of the banks and searching for evidence, targeting visual inspection at accessible features likely to support evidence.

2.3.14 Other species create or use burrows which may appear similar to those of water voles (for example brown rat (*Rattus norvegicus*), kingfisher (*Alcedo atthis*) and crayfish species). Furthermore, burrows may persist for a number of years (and therefore cannot be used as conclusive evidence of current occupation). Likewise, other field signs such as feeding stations and footprints species may also appear to be similar to species such as brown rat, field vole (*Microtus agrestis*), and bank vole (*Myodes glareolus*). As a result of this, evidence of water vole has been further categorised into the following where needed:

- Latrines:
  - Characteristic – a latrine that has several characteristics[18] indicating this is water vole.
  - Potential – a latrine that cannot be confidentially confirmed as water vole. This may be for example, because the surveyor was not able to undertake a detailed inspection of the latrine due to it being on the opposite bank where access was not available.
- Burrows:
  - Characteristic – a burrow that has multiple characteristics indicating this is water vole.
  - Potential – burrows that did not appear to have multiple characteristics indicating this is water vole. However, the burrow is located along a watercourse where other characteristic evidence such as latrines, or where potential water vole evidence, was recorded.
- Feeding station:
  - Likely – feeding station has multiple characteristics indicating this is water vole.
  - Potential – feeding station that did not appear to have multiple characteristics indicating this is water vole, or the feeding station could not be inspected in detail and so could not be confidently confirmed as likely water vole.
- Footprint (potential).
- Potential sighting – where a small mammal was briefly observed and species identification was not possible.
- Small mammal burrows with no other characteristic or potential evidence recorded along the watercourse.

18 Characteristics that indicate whether a field sign is water vole, or is more likely to be water vole than other species, has been taken from: Water Vole Field Signs and Habitat Assessment: A Practical guide to Water Vole Surveys (Dean, 2021).

Water Vole Population Estimate

2.3.15 During the breeding season (generally April to September in northern England), female water vole territories do not overlap, and one male territory will usually include several female territories. A correlation has been recorded between the frequency of latrines and the number of breeding females at a site with studies suggesting an average of six latrines per adult female territory and female territories range between 30 and 150m[9]. Therefore, the number of latrines recorded gives an indication of the relative population size. **Table 5G 2.3** provides the relative population density based on latrine counts within 100m of bankside habitat[9].

2.3.16 The latrine counts from the surveys can give an indication of relative water vole population density for each watercourse. This aids in identifying the most valuable parts of the site for water voles, along with areas most suitable for enhancement, however latrine counts cannot provide robust estimates of absolute numbers of animals. The method was informed by guidance in The Water Vole Mitigation Handbook[9].

Table 5G 2.3 Relative Population Density Based on Latrine Count

Number of Latrines per 100m of Bankside Habitat		Relative Population Density
Visit 1 - Spring	**Visit 2 - Summer**	
10 or more	20 or more	High
3 – 9	6 – 19	Medium
2 or less (or none with other signs)	5 or less (or none with other signs)	Low

2.3.17 The number of latrines were recorded for 100m of bank or shoreline and this number was used to calculate the relative population density for all ditches surveyed where water vole presence was confirmed. This method gives an indication of water vole density only and is not intended to provide a precise numerical estimate of water vole numbers.

Evidence of Key Predators

2.3.18 During the field survey for water vole, evidence of American mink (*Neovison vison*), an invasive non-native species which heavily predates water voles, was also searched for. Evidence of American mink includes footprints and their scat (faeces), which can be found along the banks of watercourses.

2.4 Constraints

2.4.1 Survey constraints for relevant crossing locations are shown in **Annex 5G 4** and the nature of the constraint is described below.

2.4.2 As described above, the Preliminary Order Limits and scheme design were updated in the period between the summer 2022 and spring 2023 survey periods. This meant that some watercourse crossing locations moved to a new position on the same watercourse, either up or down stream. The crossing locations shown on **Figure 5G.1** (**Annex 5G 4**) and are taken from the A02 version[4] of the crossing schedule. Where crossing locations moved, the summer 2022 and spring 2023 survey visits would have been centred on a different crossing point. In some instances where a move occurred, there was overlap in the 250m up/downstream survey reaches between survey visits. Where changes occurred to a crossing location, this is described within the detailed results table in **Appendix D**. Habitat assessments were recorded during the first survey visit in summer 2022, and these were updated during the second survey visit in spring 2023 where necessary, i.e., if there was a significant change in the habitat quality, or a significant change in the revised crossing point location such that the original habitat assessment was no longer valid.

2.4.3 The review of the watercourse crossing locations in spring 2023 against the revised pipeline route identified a number of new crossing locations which were not subject to surveys in summer 2022. These locations have only received a single survey visit in spring 2023, and will be subject to a second survey visit during 2024.

2.4.4 One watercourse crossing location (STRX-01-00-00-005) was not accessible during surveys due to being located between two railway lines.

2.4.5 Due factors such as land access constraints, dense vegetation such as scrub, or terrain such as steep banks, the whole length of both banks in the survey area for each watercourse crossing location was not always accessible during surveys however it is considered that the surveys covered sufficient areas of representative at each watercourse crossing location to inform the baseline.

2.4.6 The summer 2022 survey visits were restricted in places by vegetation growth. Access through some areas of dense vegetation such as scrub was not feasible (e.g. chest high common nettle (*Urtica dioica*) and bramble (*Rubus fruticosus* agg.). The height of bankside vegetation in summer reduced both access to the banks and visibility for field signs in places, though surveys were aided by the use of binoculars where necessary. Nevertheless, such constraints may have reduced the proficiency of locating otter and water vole evidence along watercourses and ditches during the surveys in these instances. However, in most cases the constraint did not affect the entire survey reach, and spring surveys undertaken during periods of lower vegetation growth provided greater access and visibility. Surveys were conducted on a high number of watercourses distributed regularly throughout the Preliminary Order Limits, providing additional opportunities for detecting otter and water vole presence within localities, and providing good coverage of the likely distribution of otter and water vole to inform the baseline.

2.4.7 The date of some water vole surveys at a small number of watercourses and water bodies fell just outside the recommended survey periods in spring and summer due to land access restrictions.

3. Results

3.1 Field Survey

Habitat Assessment

3.1.1 The combined spring 2022 desk study and A02 crossing schedule[4] identified 131 crossing points. Following this, a spring 2023 desk study review and updated Preliminary Order Limits meant a new total of 109 potential crossing locations were identified as of spring 2023. Of these, one watercourse crossing location was unable to be assessed due to access restrictions.

3.1.2 A summary of the otter and water vole habitat assessment results are given below, with detailed results provided in **Annex 5G 4.**

Otter

3.1.3 Fifteen watercourse crossing locations were identified as being optimal habitat for otter in all three criteria (foraging, commuting or holt/resting places). Twenty watercourse crossing locations were identified as having sub-optimal habitat for all three criteria, with 51 assessed as being optimal or sub-optimal habitat in at least one of the criteria. Twelve were assessed as being negligible for all three criteria.

Water Vole

3.1.4 Sixty watercourse crossing locations were assessed as being optimal habitat for water vole by the WVHS method. Thirty-six watercourse crossing locations were assessed as being sub-optimal and 12 were assessed as being unsuitable to support water vole.

Otter Presence / Likely Absence Survey

3.1.5 Evidence of otter including spraints, footprints, and a likely resting site, was recorded along the watercourses at five crossing locations. A summary of the results is provided in **Table 5G 3.1** and shown on **Figure 5G.2** in **Annex 5G 4.**

3.1.6 Multiple potential rest sites i.e. features that are of a suitable size, shape, and location, which suggests they could be used by otter to rest, but where no field evidence of otter or other mammal was present at the feature or within the immediate vicinity, were recorded along many watercourses. These features have not been included in **Table 5G 3.1**, however they are summarised in **Annex 5G 4**.

Table 5G 3.1 Otter Presence / Likely Absence Survey Results

Watercourse Crossing Location	Otter Spraint	Feeding Remains	Footprints	Resting Site	Description
NEW15	Yes	-	-	-	Old otter spraint on stone in river adjacent to bank.
NEW42	Yes	-	Yes	-	Multiple otter spraints in sand deposited on outside of river bend. Footprint also present within sand.
NEW43	-	-	Yes	-	Single otter footprint readily identifiable amongst many dog prints on bank of River Mersey.
RVX-02-00-00-004	Yes	-	Yes	Likely	Fallen tree along bankside with cavity/hollowing at base. Otter prints recorded within the cavity/hollowing, and an old spraint was recorded on the tree by the cavity/hollowing entrance. Some grass/lesser celandine vegetation is present at the entrance indicating no recent usage, while a mammal path runs along the bankside to the tree. Otter prints also recorded approximately 110m north of the watercourse.
RVX-03-00-00-005	-	-	Yes	-	Otter footprints recorded along river banks.

Water Vole Presence / Likely Absence Survey

3.1.7 Evidence or potential evidence of water vole was recorded on watercourses at 23 crossing locations. Of these, characteristic/likely water vole evidence including burrows, latrines and feeding stations were present across six watercourses. Sixteen characteristic/potential latrines were recorded across eight watercourses. A summary of the results is provided in **Table 5G 3.2** and **Annex 5G 4** and shown on **Figure 5G.3** in **Annex 5G 4** which include all crossing locations where evidence, or potential evidence, of water vole was recorded on the watercourse.

Table 5G 3.2 Water Vole Presence / Likely Absence Survey Results

Watercourse crossing location	Latrines (characteristic)	Latrines (potential)	Burrows (characteristic)	Burrows (potential)	Feeding station remains (likely)	Feeding station remains (potential)	Footprints (potential)	Above-ground nest	Water Vole sighting (potential)
CLX-02-00-00-001	-	-	-	-	-	-	Yes	-	-
NEW01	-	-	-	-	-	-	Yes	-	-
NEW03	-	Yes (one)	Yes	Yes	-	Yes	-	-	-
NEW04	-	-	-	Yes	-	-	Yes	-	-
NEW08	-	Yes (one)	-	Yes	-	-	-	-	-
NEW42	-	-	-	Yes	-	-	Yes	-	-
NEW43	-	-	-	-	-	-	Yes	-	-
RVX-01-00-00-002	Yes (one)	-	-	Yes	-	-	-	-	-
RVX-01-00-00-003	-	-	-	-	-	-	-	-	Yes
RVX-01-00-00-007	-	Yes (three)	-	Yes	-	-	-	-	-
RVX-01-00-00-008	Yes (one)	-	-	Yes	Yes	Yes	-	-	-

Watercourse crossing location	Latrines (characteristic)	Latrines (potential)	Burrows (characteristic)	Burrows (potential)	Feeding station remains (likely)	Feeding station remains (potential)	Footprints (potential)	Above-ground nest	Water Vole sighting (potential)
RVX-01-00-00-009	-	-	-	-	-	Yes	Yes	-	-
RVX-01-00-00-010	-	Yes (one)	-	Yes	-	-	-	-	-
RVX-02-00-00-002	-	-	-	Yes	-	-	Yes	-	-
RVX-02-00-00-004	-	-	-	-	-	-	Yes	-	-
RVX-04-00-00-005	-	-	-	Yes	-	-	Yes	-	-
STRX-01-00-00-002	-	-	Yes	-	-	-	-	-	-
STRX-01-00-00-009	-	Yes (seven)	Yes	Yes	Yes	Yes	-	-	-
STRX-01-00-00-010	-	-	-	Yes	-	-	-	-	-
STRX-01-00-00-011	-	-	-	-	-	-	-	-	Yes

Watercourse crossing location	Latrines (characteristic)	Latrines (potential)	Burrows (characteristic)	Burrows (potential)	Feeding station remains (likely)	Feeding station remains (potential)	Footprints (potential)	Above-ground nest	Water Vole sighting (potential)
STRX-01-00-00-020	-	-	-	Yes	-	-	-	-	-
STRX-01-00-00-021	Yes (one)	-	-	Yes	-	-	Yes	-	-
STRX-03-00-00-010	-	-	-	-	-	-	Yes	-	-

Water Vole Population Estimate

3.1.8 Population density estimates were calculated for all watercourses where latrines[19] were recorded (NEW03, NEW08, RVX-01-00-00-002, RVX-01-00-00-007, RVX-01-00-00-008, RVX-01-00-00-010, STRX-01-00-00-009, and STRX-01-00-00-021). The water vole population density for all of these watercourses is low.

Evidence of Key Predators

3.1.9 No evidence of key predators was recorded.

[19] Includes both characteristic and potential latrines on a precautionary basis.

4. Summary

4.1 Otter

4.1.1 Fifteen watercourse crossing locations were identified as being optimal habitat for otter in all three criteria (foraging, commuting or holt/resting places). These were often large watercourses such as the River Mersey (NEW36, NEW43), River Weaver (RVX-01-01-00-002, RVX-01-00-00-015, RVX-02-00-00-001, and NEW15) which provide optimal habitat for foraging, commuting, holt creation and resting places, along with smaller tributaries with plentiful bankside cover. Twelve watercourse crossings were assessed as being negligible for all three criteria. The remaining watercourse crossing locations were assessed to be either optimal or sub-optimal in at least one of the criteria.

4.1.2 Evidence of otter was recorded at five watercourse crossing locations. One likely rest site was identified within the survey area (watercourse crossing location RVX-02-00-00-004) with direct/confirmed evidence of otter present in the cavity/hollowing at the base of a tree. Numerous other features that could be used by otter to rest, but where no direct/confirmed evidence of otter was present at these, were also recorded throughout the survey area.

4.1.3 Additional evidence of otter recorded during field surveys includes spraint, feeding remains, potential slides, and footprints.

4.2 Water Vole

4.2.1 Sixty watercourse crossing locations were assessed as being optimal habitat for water vole by the WVHS method, thirty-six watercourse crossing locations assessed as being sub-optimal, and 12 assessed as unsuitable.

4.2.2 Water vole field signs, including characteristic latrines and burrows, likely feeding stations, as well as potential latrines, burrow, feeding stations and footprints were recorded on watercourses within the survey area. Water vole field signs or potential evidence was recorded at 23 watercourse crossing locations, with characteristic/likely water vole evidence including burrows, latrines and feeding stations were present on six watercourses. Sixteen characteristic/potential latrines were recorded across eight watercourses.

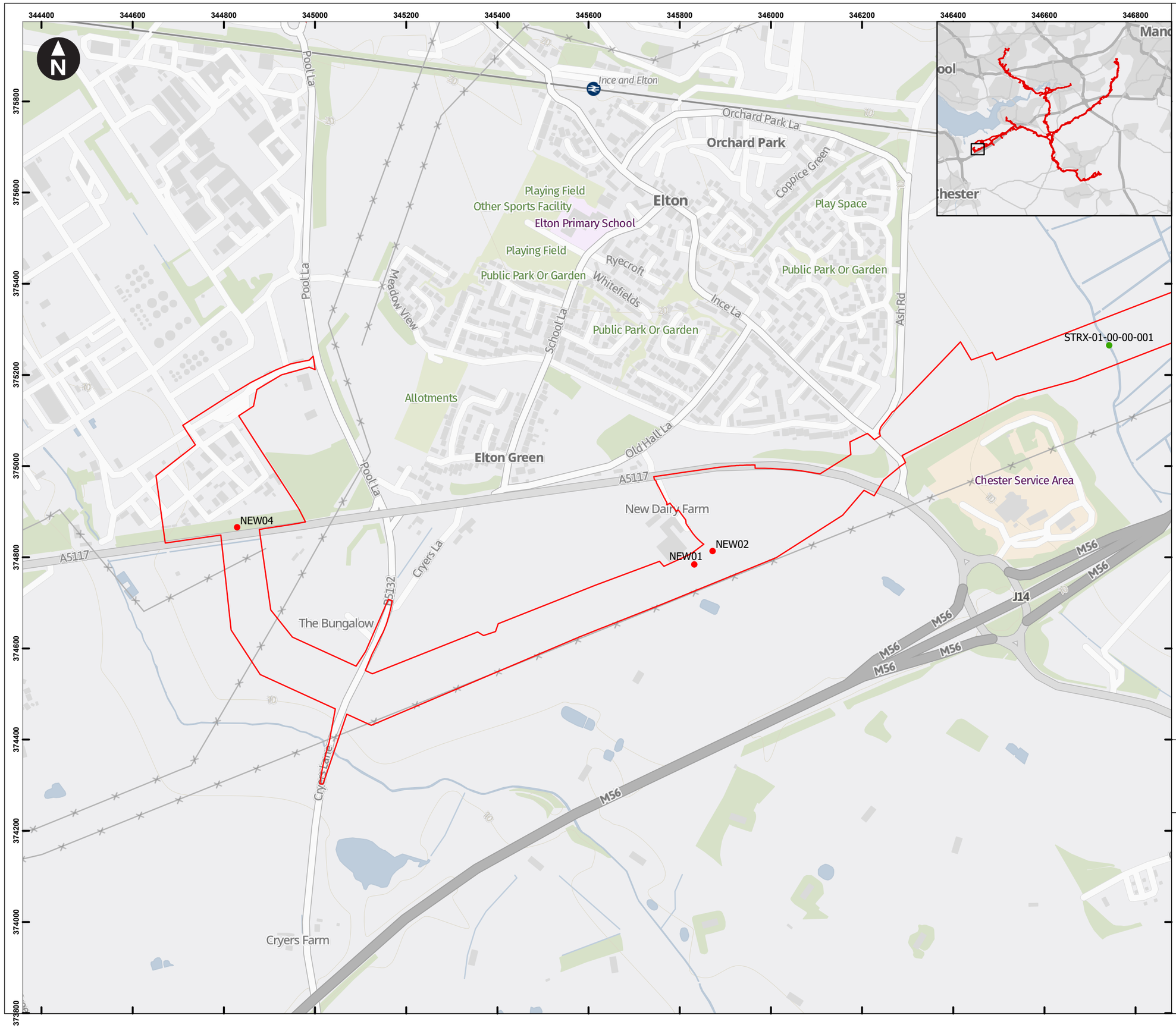
4.2.3 Numerous other burrows that could be used by water vole, but where no other characteristic or potential evidence of water vole was present along the watercourse the burrow was located on, were also recorded throughout the survey area.

4.2.4 The water vole population density for all watercourses where latrines (characteristic and potential) where recorded is low.

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Delivering clean growth

Annex 5G 1
Preliminary Order Limits and Watercourse Crossings Figure



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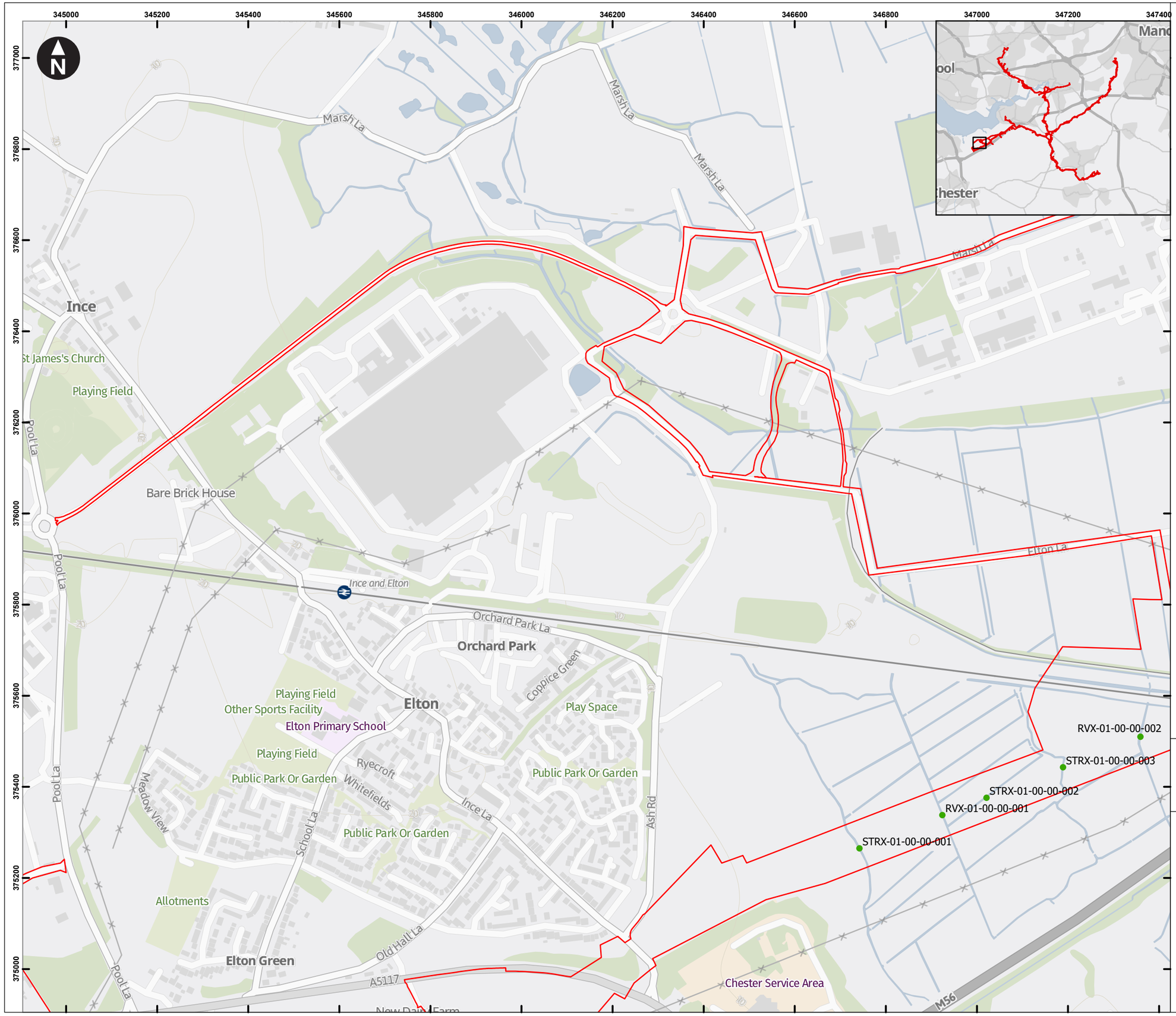
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Key

- Preliminary Order Limits
- New Crossings
- Crossing Schedule (May22)

0 100 200 300 400 m

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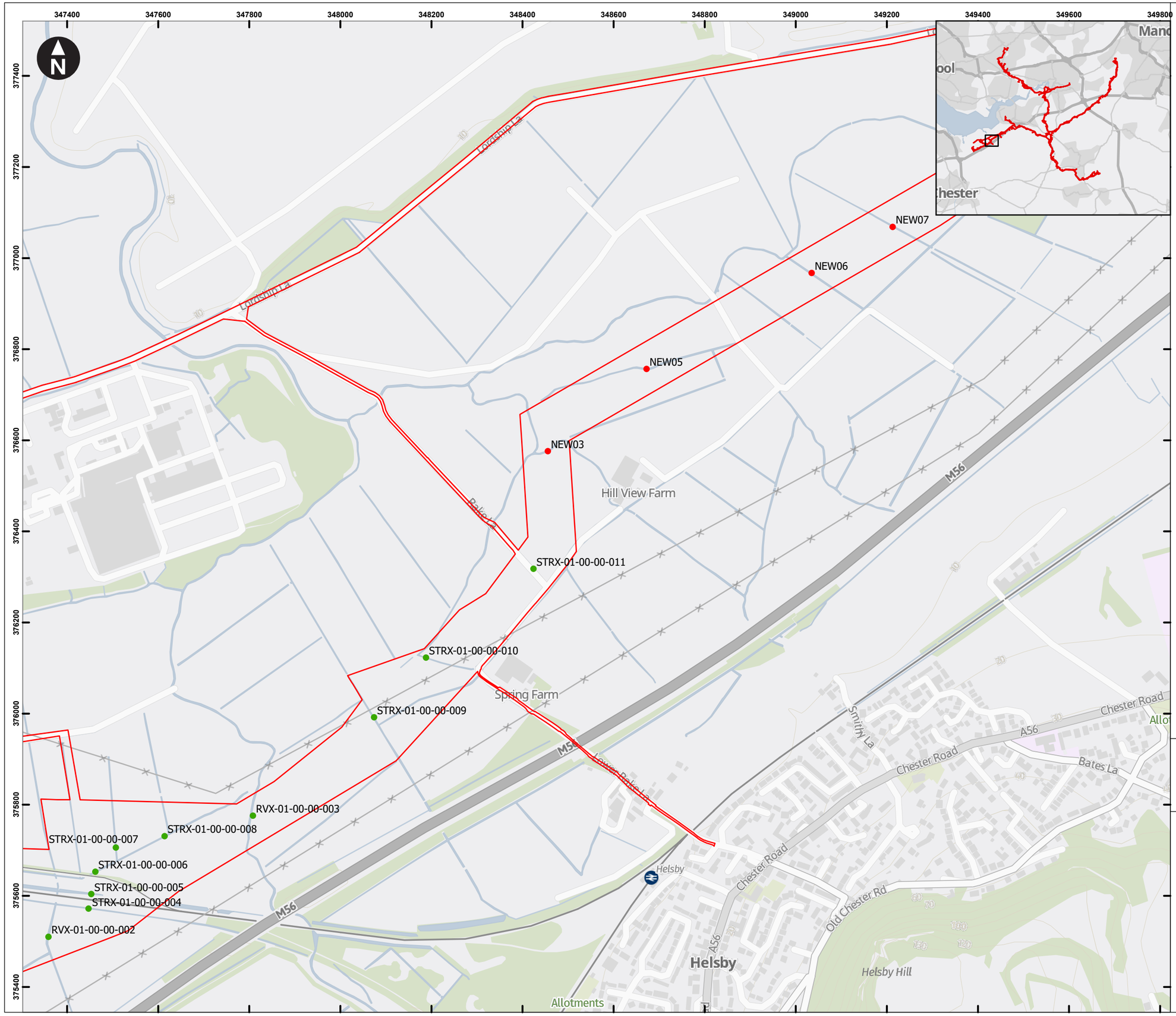
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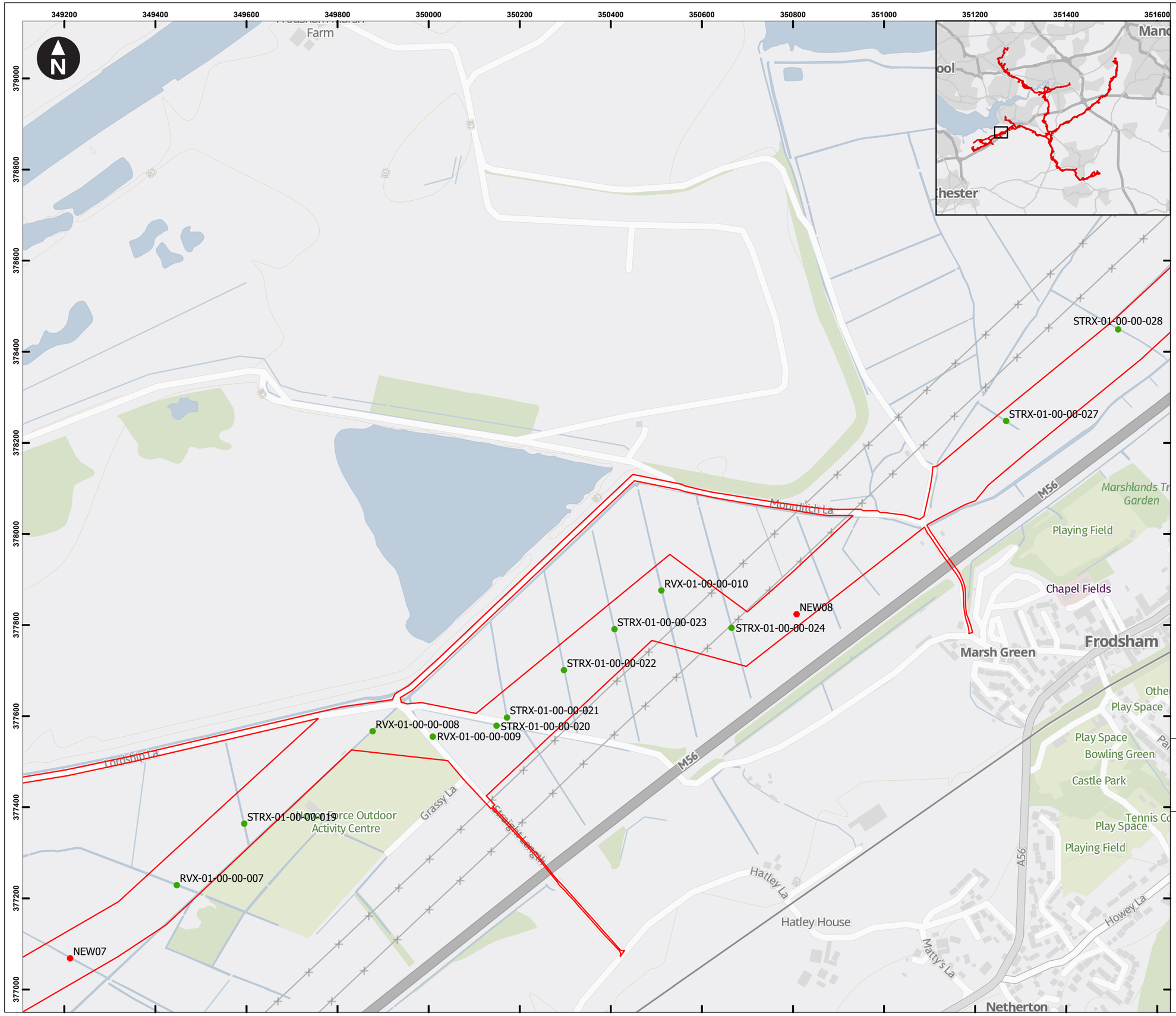
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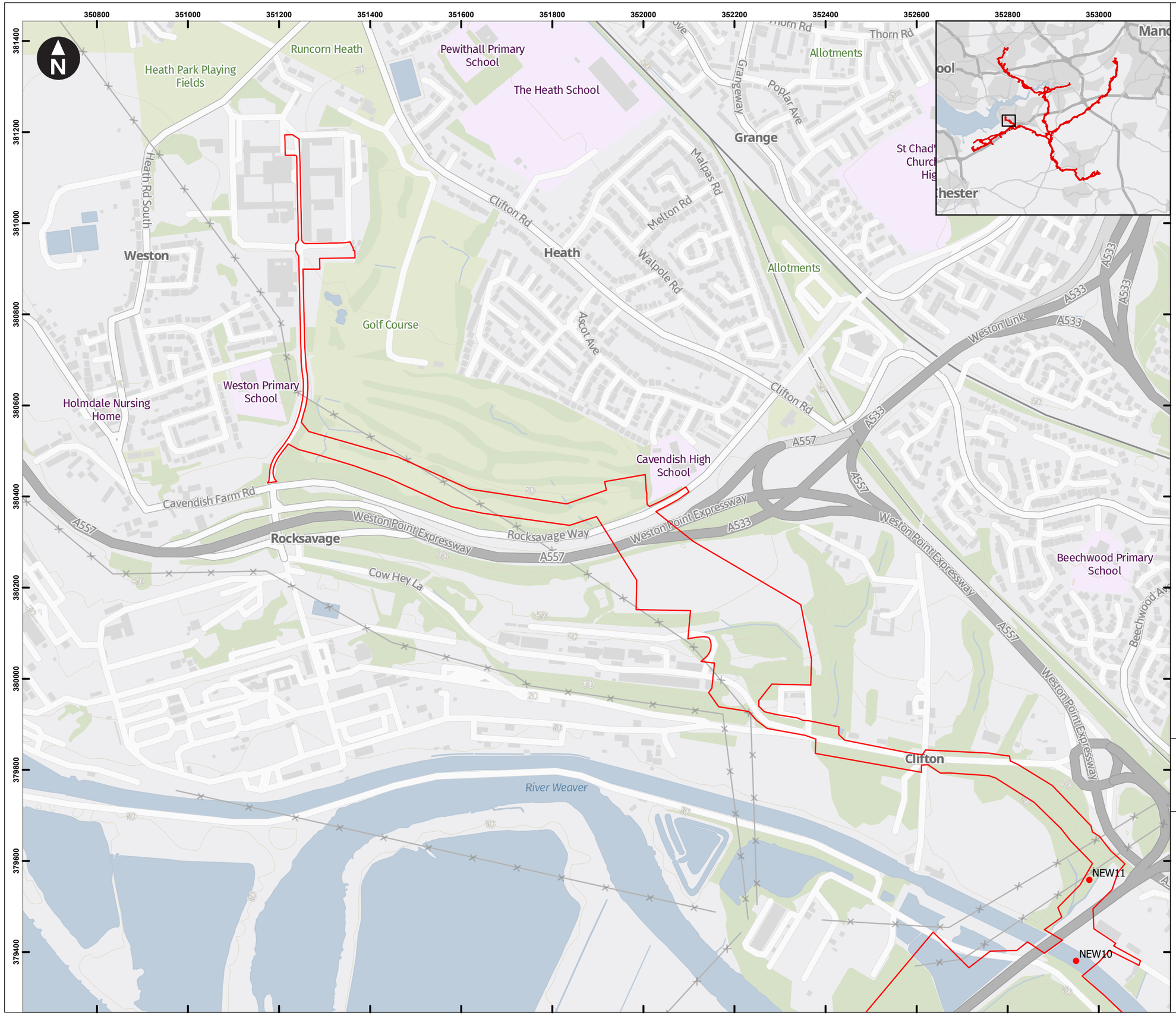
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Key
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New Crossings
Crossing Schedule (May22)
349200
349400
349600
349800
350000
350200
350400
350600
350800
351000
351200
351400
351600
379000
378800
378600
378400
378200
378000
377800
377600
377400
377200
377000
N
Farm
STRX-01-00-00-028
STRX-01-00-00-027
RVX-01-00-00-010
NEW08
STRX-01-00-00-023
STRX-01-00-00-024
STRX-01-00-00-022
STRX-01-00-00-021
STRX-01-00-00-020
RVX-01-00-00-008
RVX-01-00-00-009
STRX-01-00-00-019
RVX-01-00-00-007
NEW07
Manchester
Marshlands Tr
Garden
Playing Field
Chapel Fields
Frodsham
Marsh Green
Play Space
Bowling Green
Castle Park
Tennis Co
Play Space
Playing Field
Netherton
Hatley House
Hatley La
Matty's La
Howey La
Mouldrich La
Lordship La
Grassy La
Activity Centre
M56
A56
0
100
200
300
400
m
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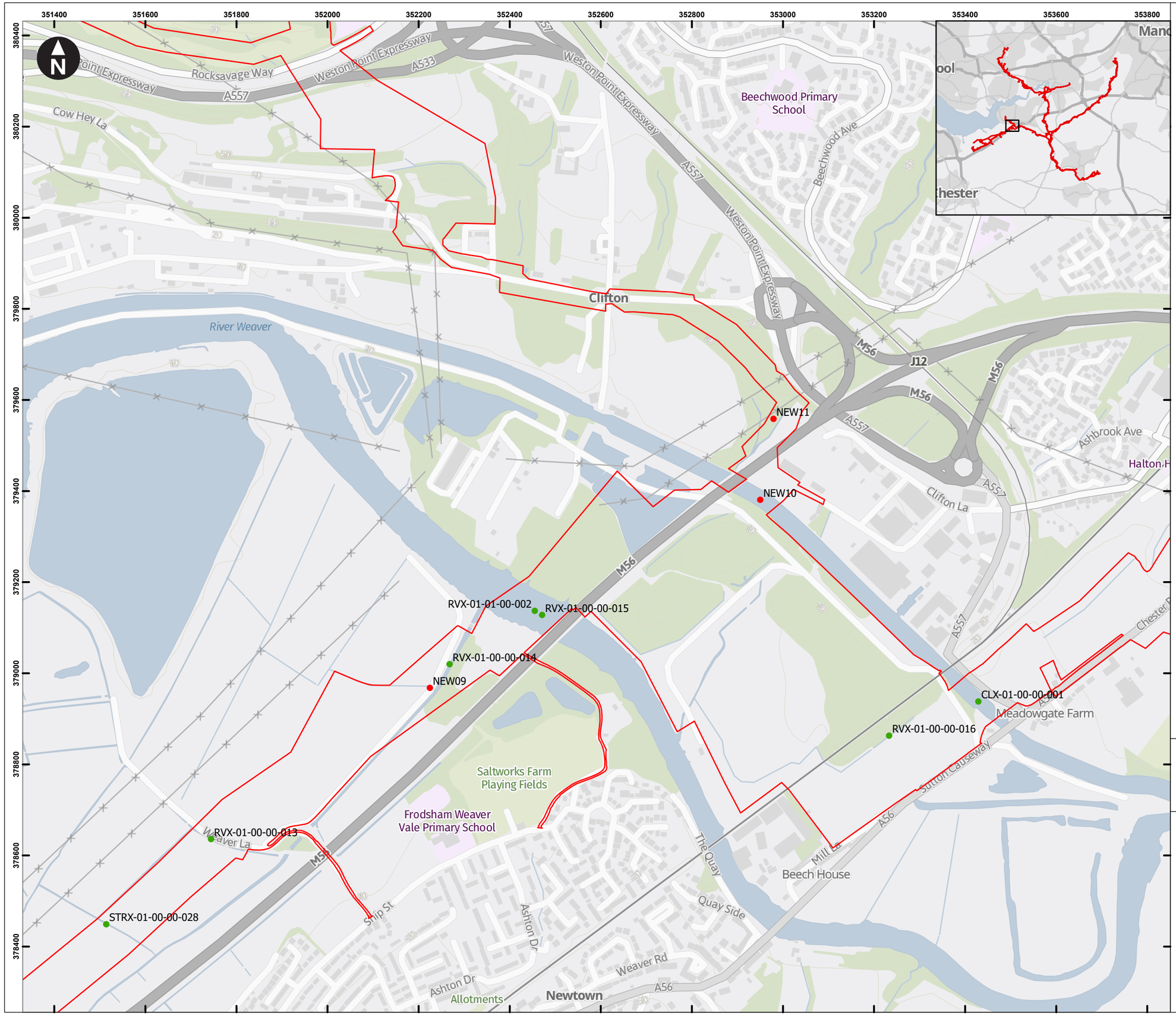
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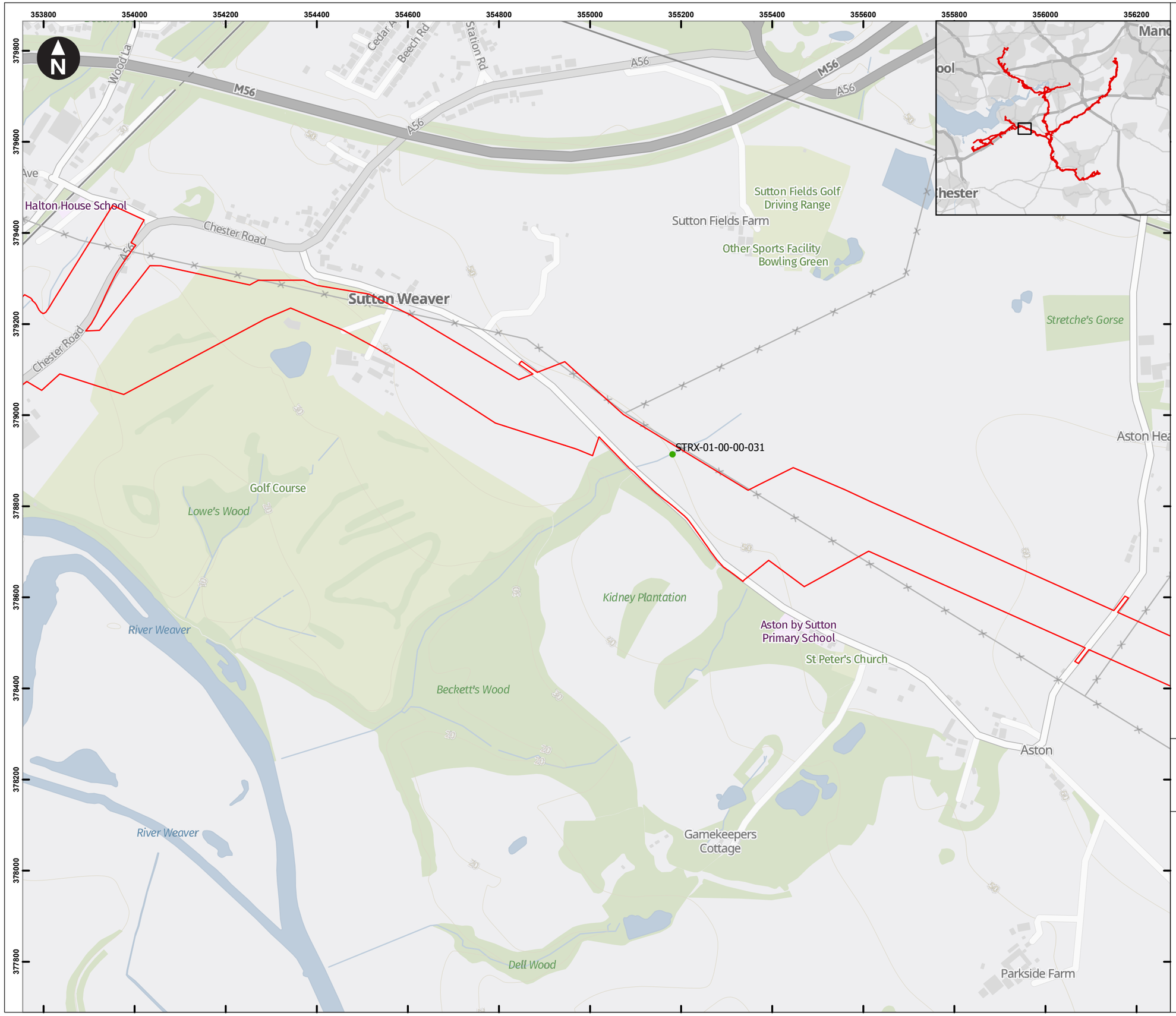
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351400
351600
351800
352000
352200
352400
352600
352800
353000
353200
353400
353600
353800
380400
380200
380000
379800
379600
379400
379200
379000
378800
378600
378400
N
Rocksavage Way
A557
Weston Point Expressway
A533
Cow Hey La
Beechwood Primary School
Beechwood Ave
Clifton
River Weaver
M56
J12
NEW11
NEW10
Ashbrook Ave
Clifton La
RVX-01-01-00-002
RVX-01-00-00-015
RVX-01-00-00-014
NEW09
CLX-01-00-00-001
Meadowgate Farm
RVX-01-00-00-016
Saltworks Farm Playing Fields
Frodsham Weaver Vale Primary School
RVX-01-00-00-013
Weaver La
Strip St
STRX-01-00-00-028
Ashton Dr
Allotments
Newtown
Weaver Rd
A56
The Quay
Quay Side
Mill La
Beech House
Sutton Causeway
Chester
Key
Preliminary Order Limits
New Crossings
Crossing Schedule (May22)
0
100
200
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0 100 200 300 400 m

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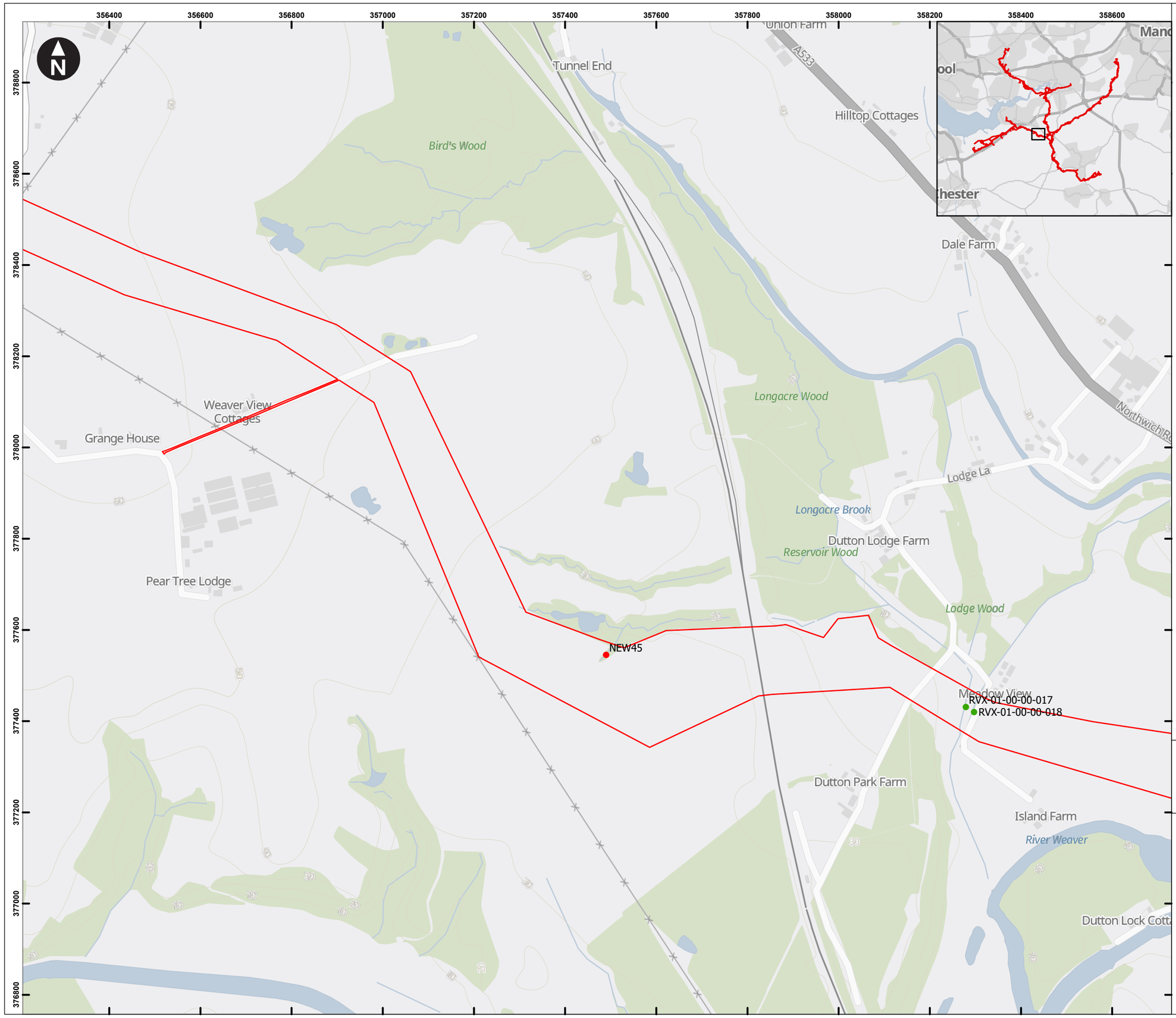
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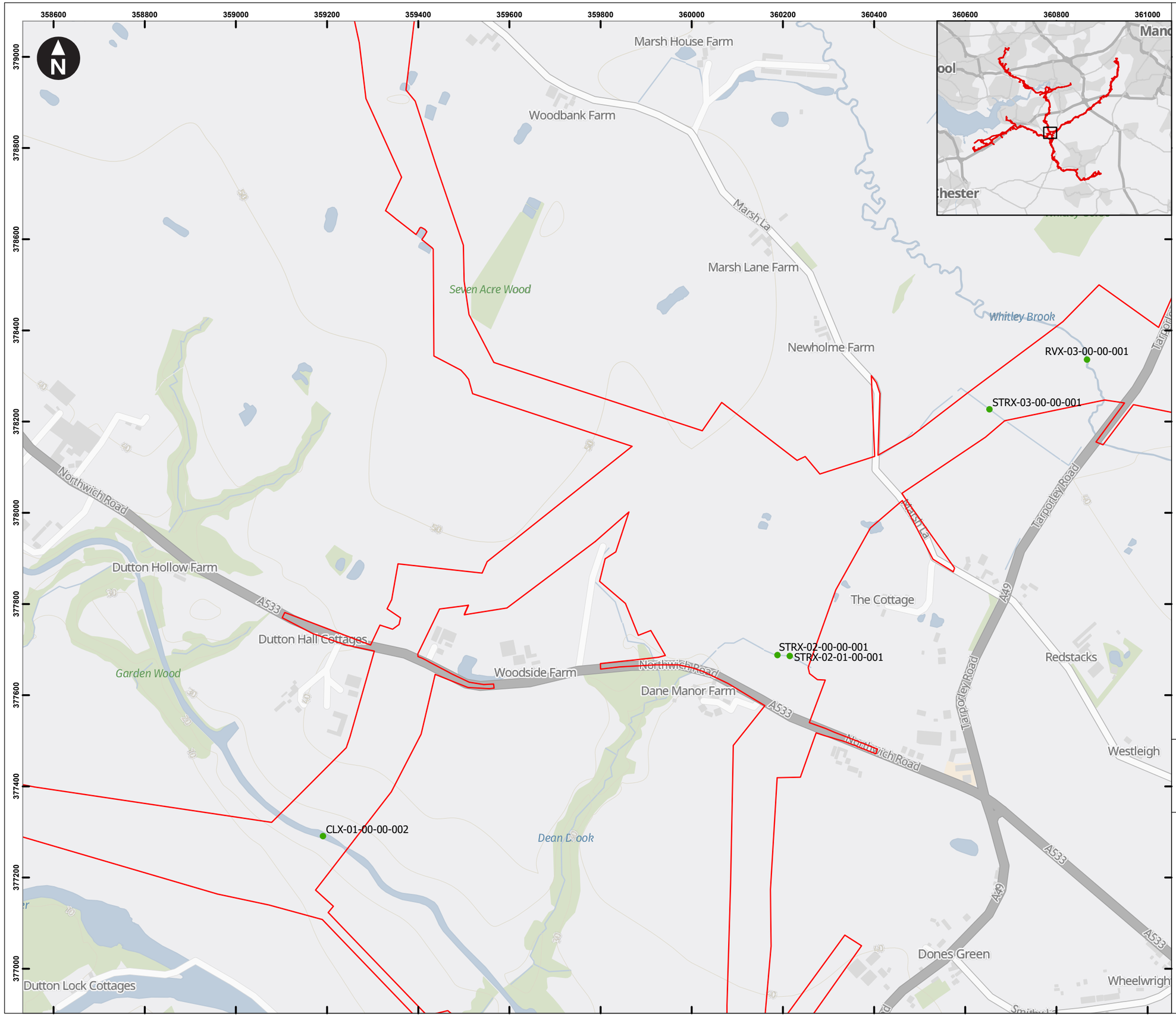
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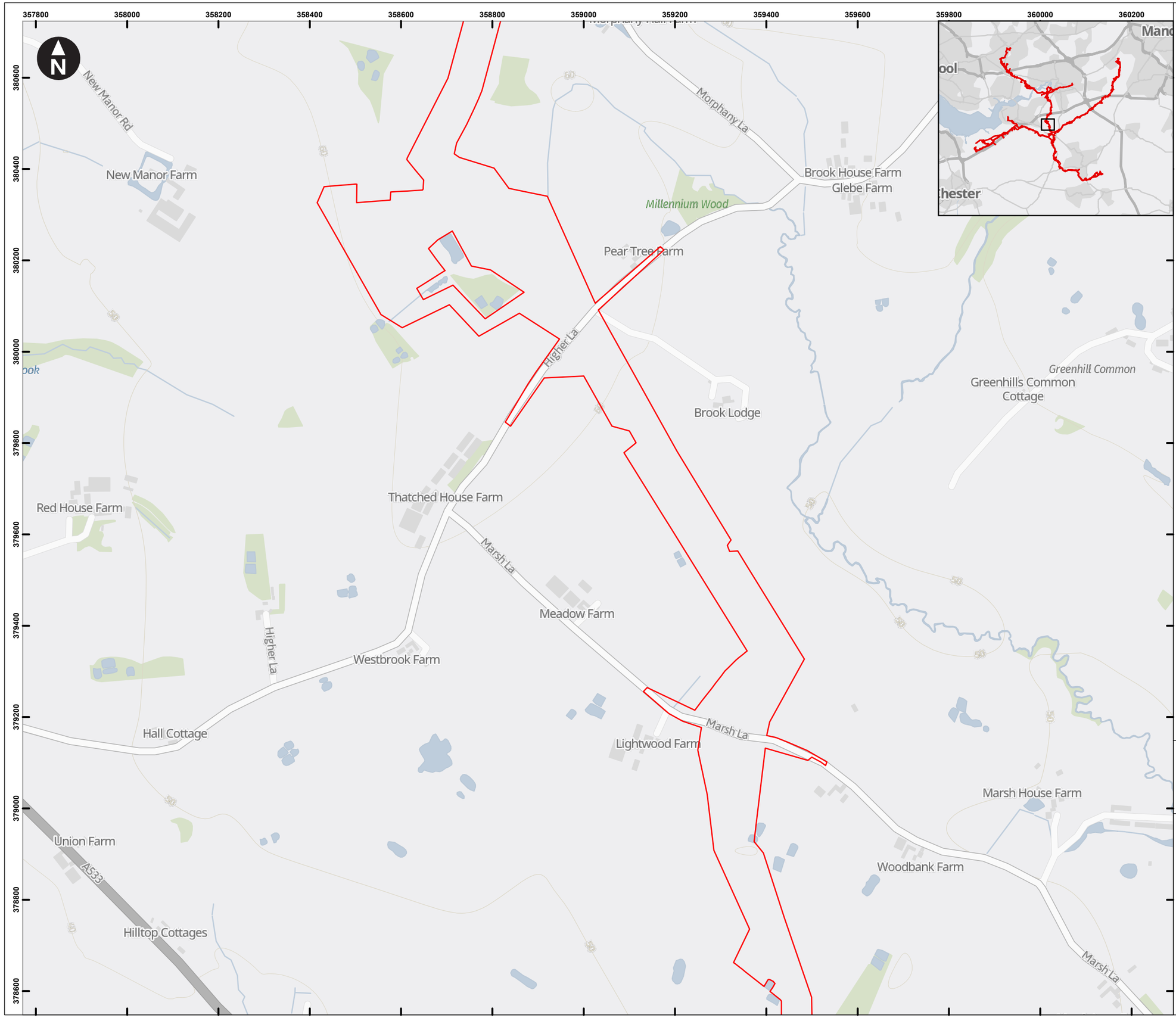
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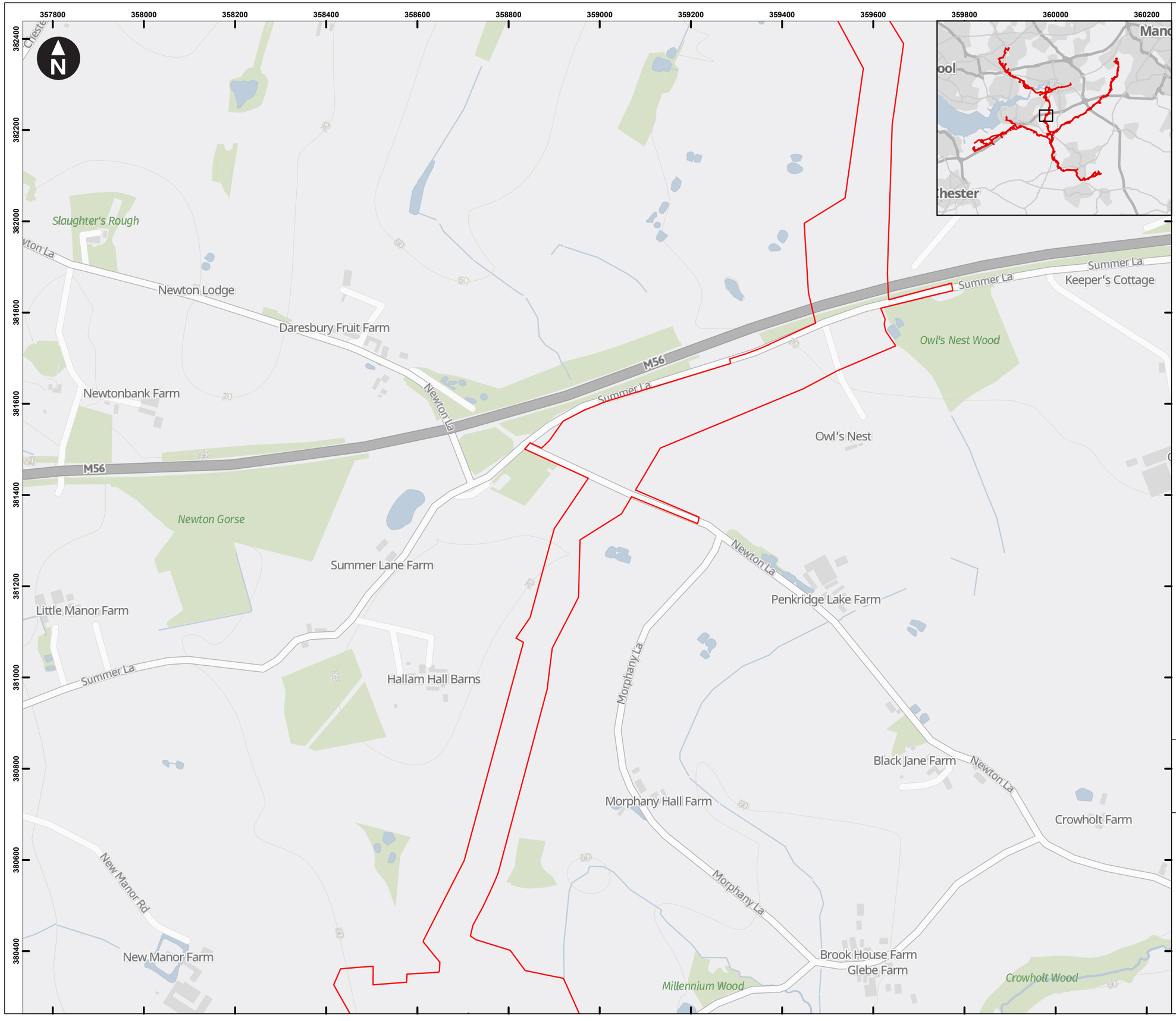
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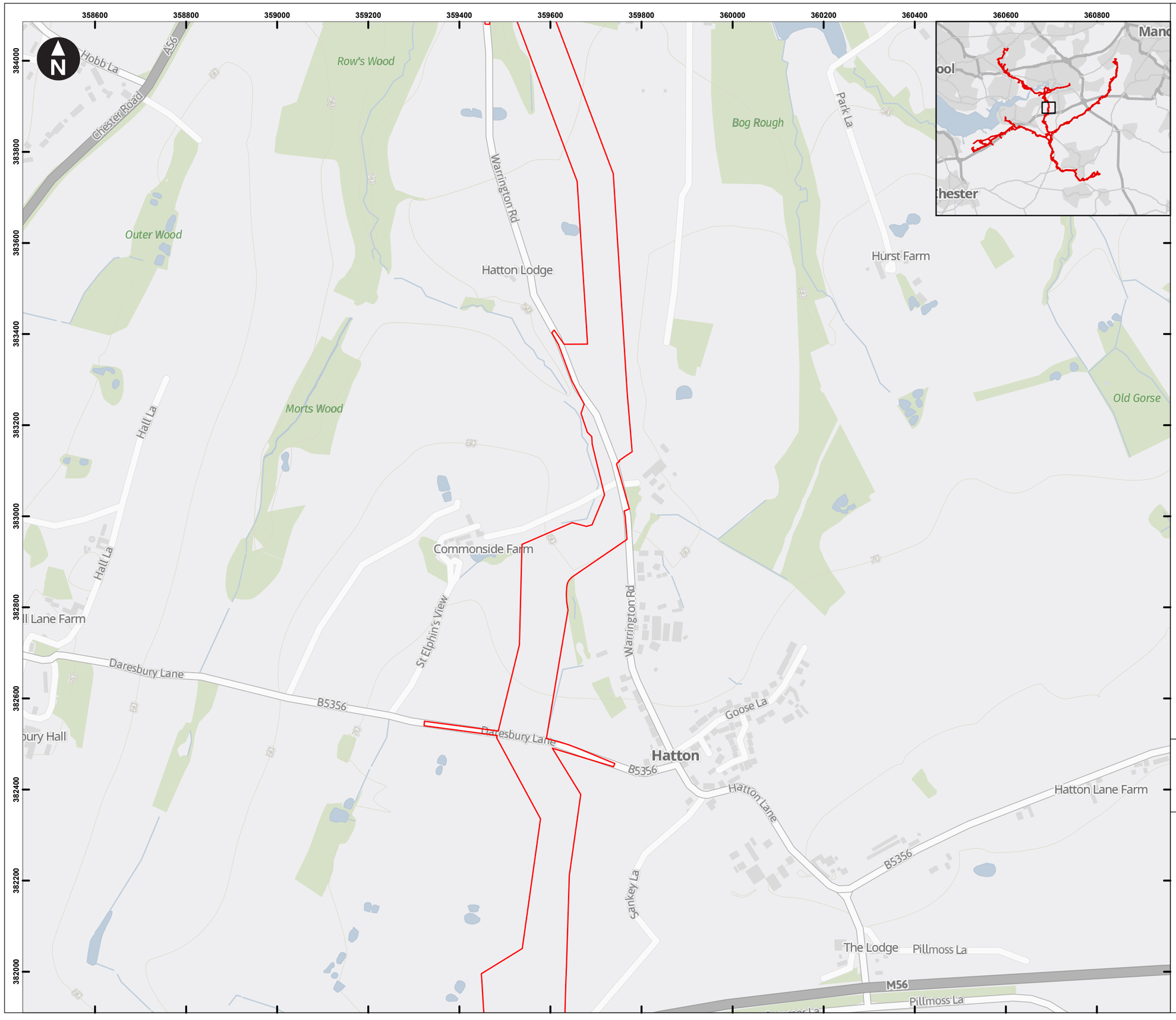
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0 100 200 300 400 m

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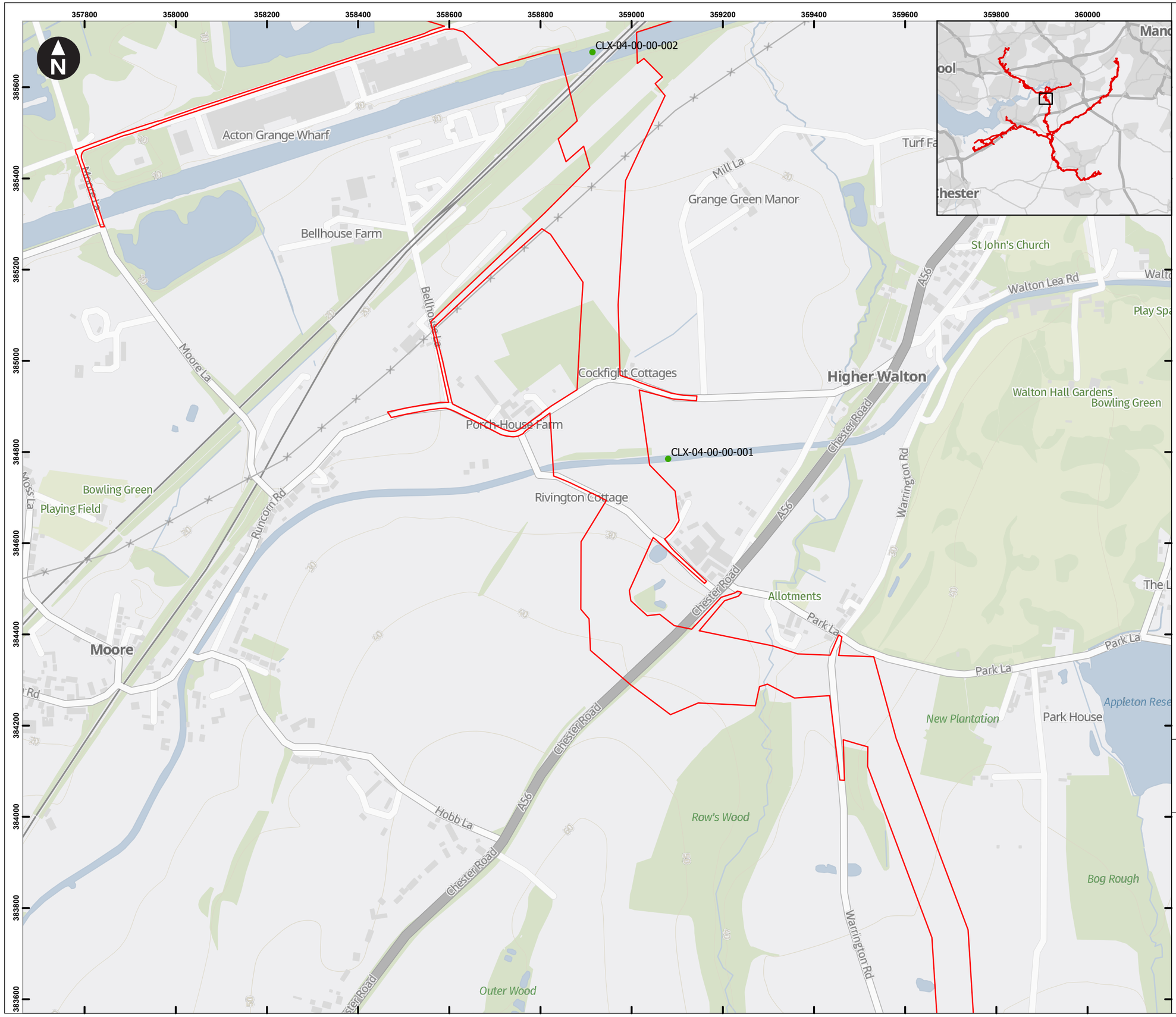
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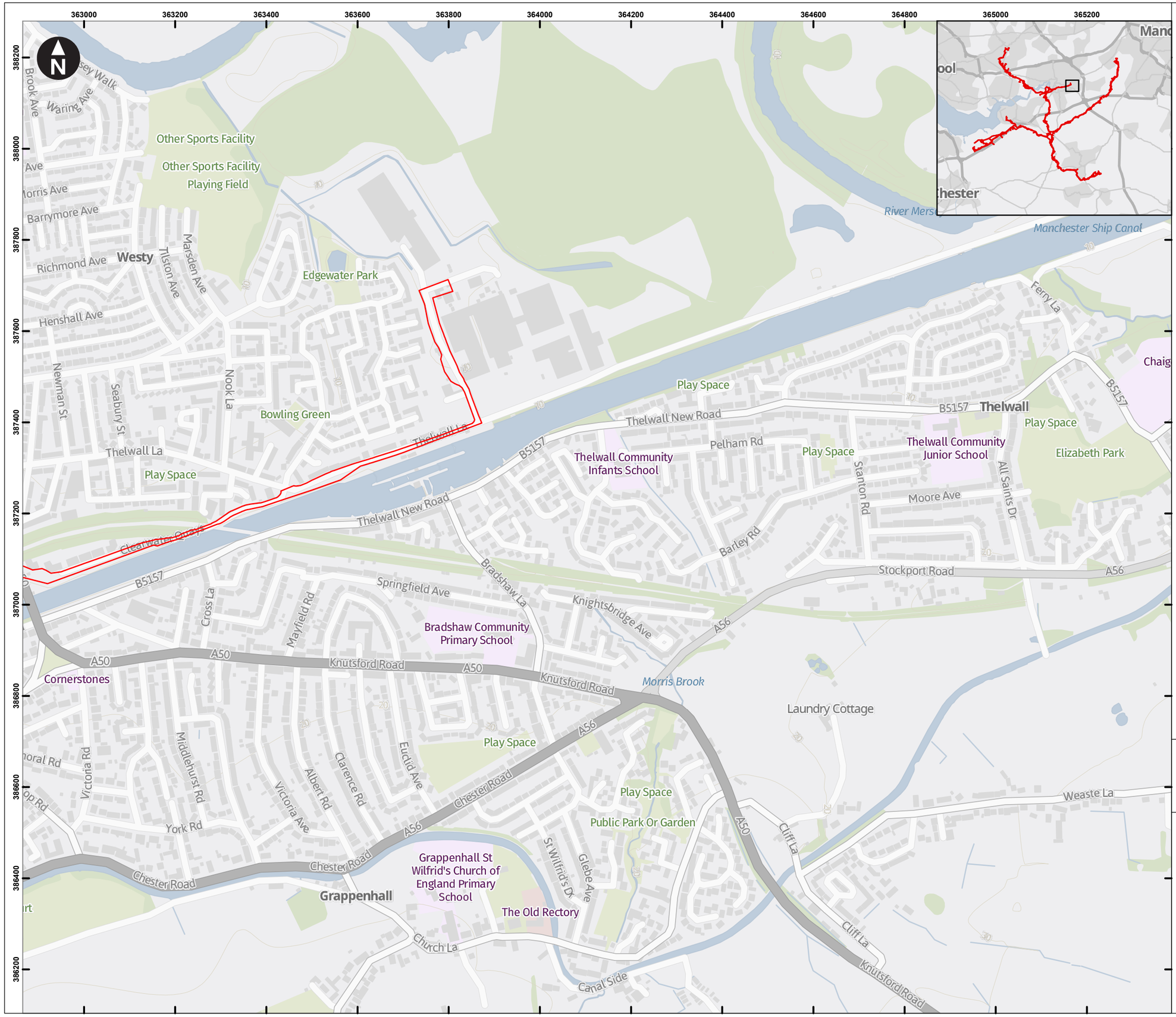
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October 2024


357800
358000
358200
358400
358600
358800
359000
359200
359400
359600
359800
360000
385600
385400
385200
385000
384800
384600
384400
384200
384000
383800
383600
N
CLX-04-00-00-002
CLX-04-00-00-001
Acton Grange Wharf
Bellhouse Farm
Grange Green Manor
Mill La
Turf Fa
St John's Church
Walton Lea Rd
Play Spa
Higher Walton
Cockfight Cottages
Porch House Farm
Walton Hall Gardens
Bowling Green
Rivington Cottage
Bowling Green
Playing Field
Moore
Moore La
Runcorn Rd
Chester Road
A56
Warrington Rd
Allotments
Park La
The L
Appleton Rese
New Plantation
Park House
Hobb La
Row's Wood
Bog Rough
Outer Wood
Key
Preliminary Order Limits
New Crossings
Crossing Schedule (May22)
0
100
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363000
363200
363400
363600
363800
364000
364200
364400
364600
364800
365000
365200
388200
388000
387800
387600
387400
387200
387000
386800
386600
386400
386200
N
Brook Ave
Waring Ave
Other Sports Facility
Other Sports Facility
Playing Field
Barrymore Ave
Richmond Ave
Westy
Tilston Ave
Marsden Ave
Edgewater Park
Henshall Ave
Newman St
Seabury St
Nook La
Bowling Green
Thelwall La
Play Space
Play Space
Thelwall New Road
B5157
Thelwall
Pelham Rd
Thelwall Community
Infants School
Play Space
Thelwall Community
Junior School
Elizabeth Park
Play Space
Moore Ave
Stanton Rd
Barley Rd
Bradshaw La
Springfield Ave
Knightsbridge Ave
Stockport Road
A56
Cross La
Mayfield Rd
Bradshaw Community
Primary School
A50
Knutsford Road
Cornerstones
Morris Brook
Laundry Cottage
Play Space
Victoria Rd
Middlehurst Rd
Victoria Ave
Albert Rd
Clarence Rd
Euclid Ave
Chester Road
Play Space
Public Park Or Garden
Weaste La
York Rd
Grappenhall St
Wilfrid's Church of
England Primary
School
Grappenhall
The Old Rectory
St Wilfrid's Dr
Glebe Ave
Cliff La
Church La
Canal Side
Manchester Ship Canal
Ferry La
Chaig
Elizabeth Park
All Saints Dr
Clearwater Quays
Key
Preliminary Order Limits
New Crossings
Crossing Schedule (May22)
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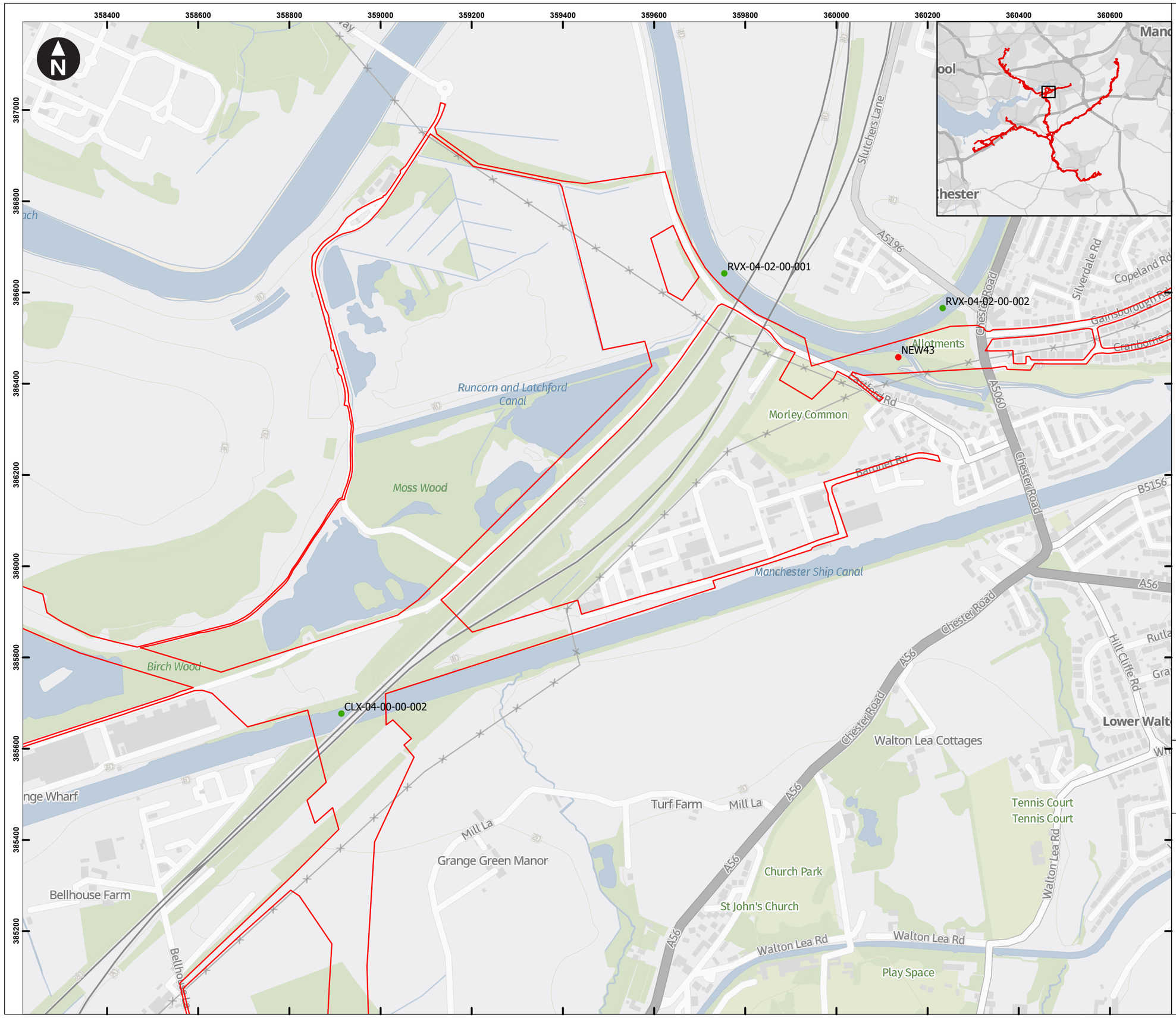
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Key
Preliminary Order Limits
New Crossings
Crossing Schedule (May22)
RVX-04-02-00-001
RVX-04-02-00-002
NEW43
CLX-04-00-00-002
Runcorn and Latchford Canal
Moss Wood
Birch Wood
Morley Common
Manchester Ship Canal
Allotments
Church Park
Play Space
Tennis Court
Tennis Court
Walton Lea Cottages
Grange Green Manor
Turf Farm
Bellhouse Farm
St John's Church
Slutchers Lane
A5196
A5060
A56
Chester Road
Silverdale Rd
Copeland Rd
Cranborne Rd
Rannel Rd
B5156
Hill Cliffe Rd
Walton Lea Rd
Mill La
Bellhouse La
Lower Walt
0 100 200 300 400 m
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Key

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- New Crossings
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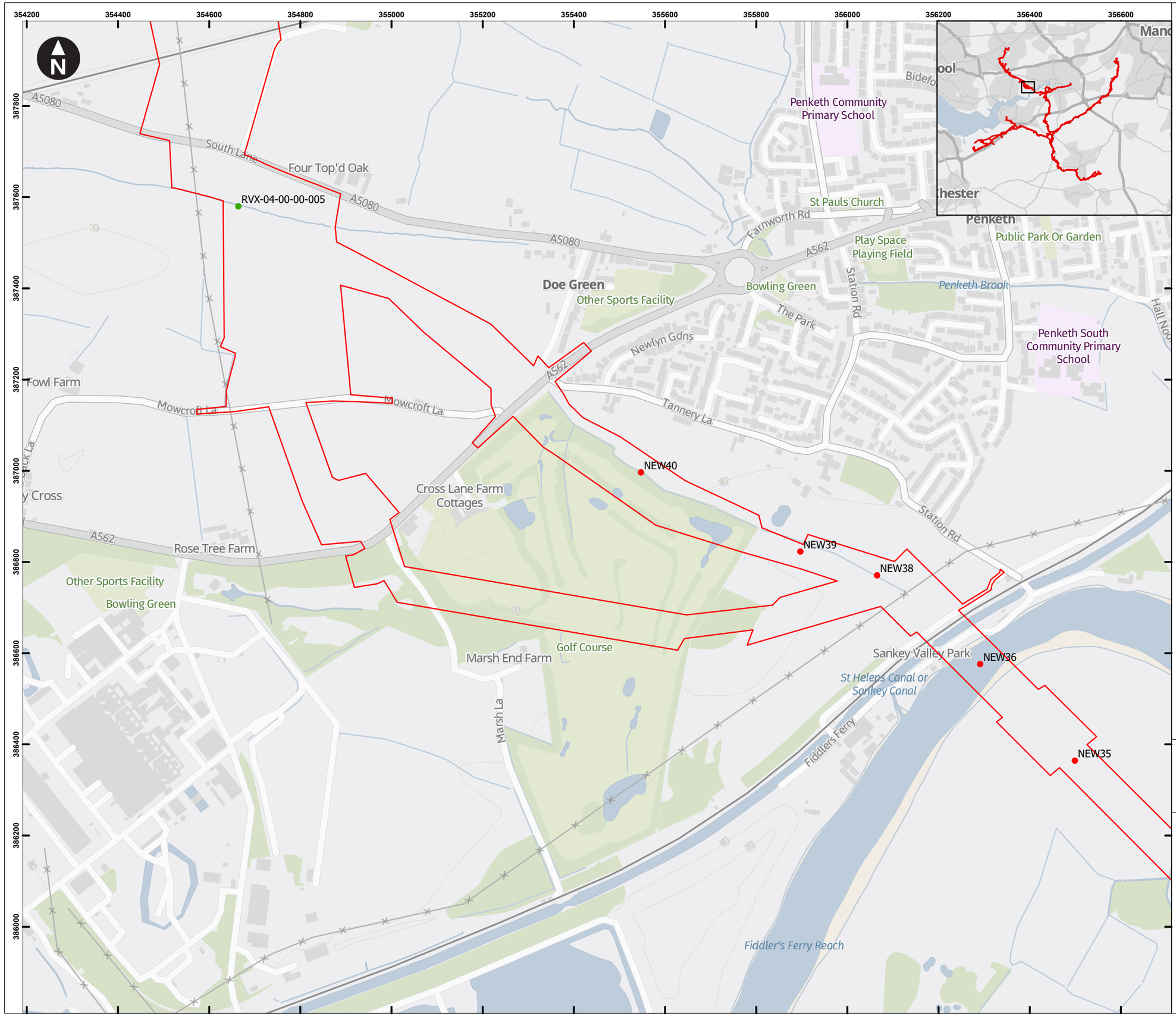
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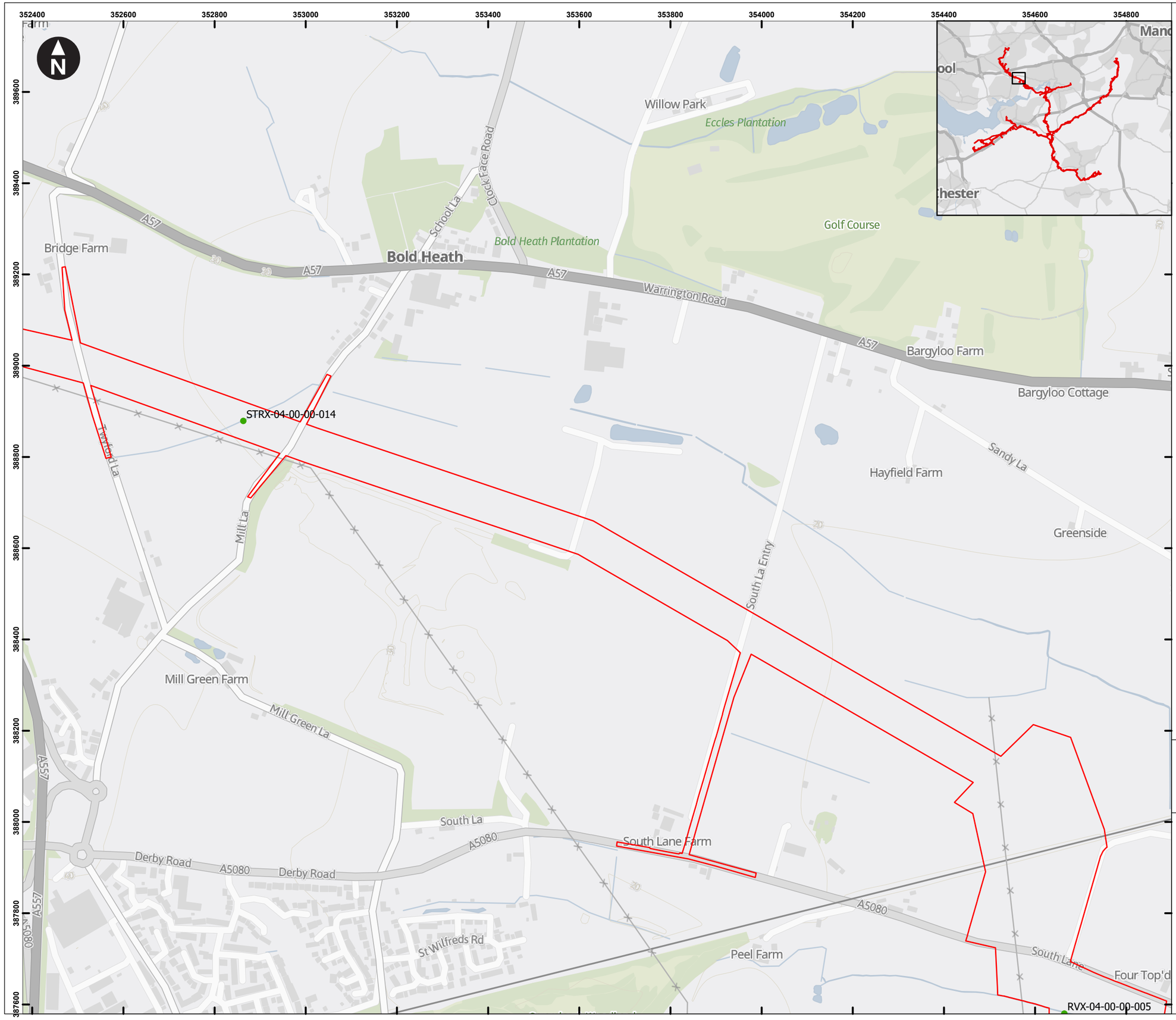
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354200
354400
354600
354800
355000
355200
355400
355600
355800
356000
356200
356400
356600
387800
387600
387400
387200
387000
386800
386600
386400
386200
386000
N
A5080
South Lane
Four Top'd Oak
RVX-04-00-00-005
A5080
A5080
Penketh Community Primary School
St Pauls Church
Farnworth Rd
A562
Play Space
Playing Field
Penketh
Public Park Or Garden
Doe Green
Other Sports Facility
Bowling Green
Penketh Brook
Station Rd
The Park
Newlyn Gdns
A562
Penketh South Community Primary School
Hall Nook
Fowl Farm
Mowcroft La
Mowcroft La
Tannery La
NEW40
Cross Lane Farm Cottages
Station Rd
NEW39
NEW38
A562
Rose Tree Farm
Other Sports Facility
Bowling Green
Golf Course
Marsh End Farm
Sankey Valley Park
NEW36
St Helens Canal or Sankey Canal
Marsh La
Fiddlers Ferry
NEW35
Fiddler's Ferry Reach
Key
Preliminary Order Limits
New Crossings
Crossing Schedule (May22)
0
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m
Scale at A3: 1:8,000
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Key

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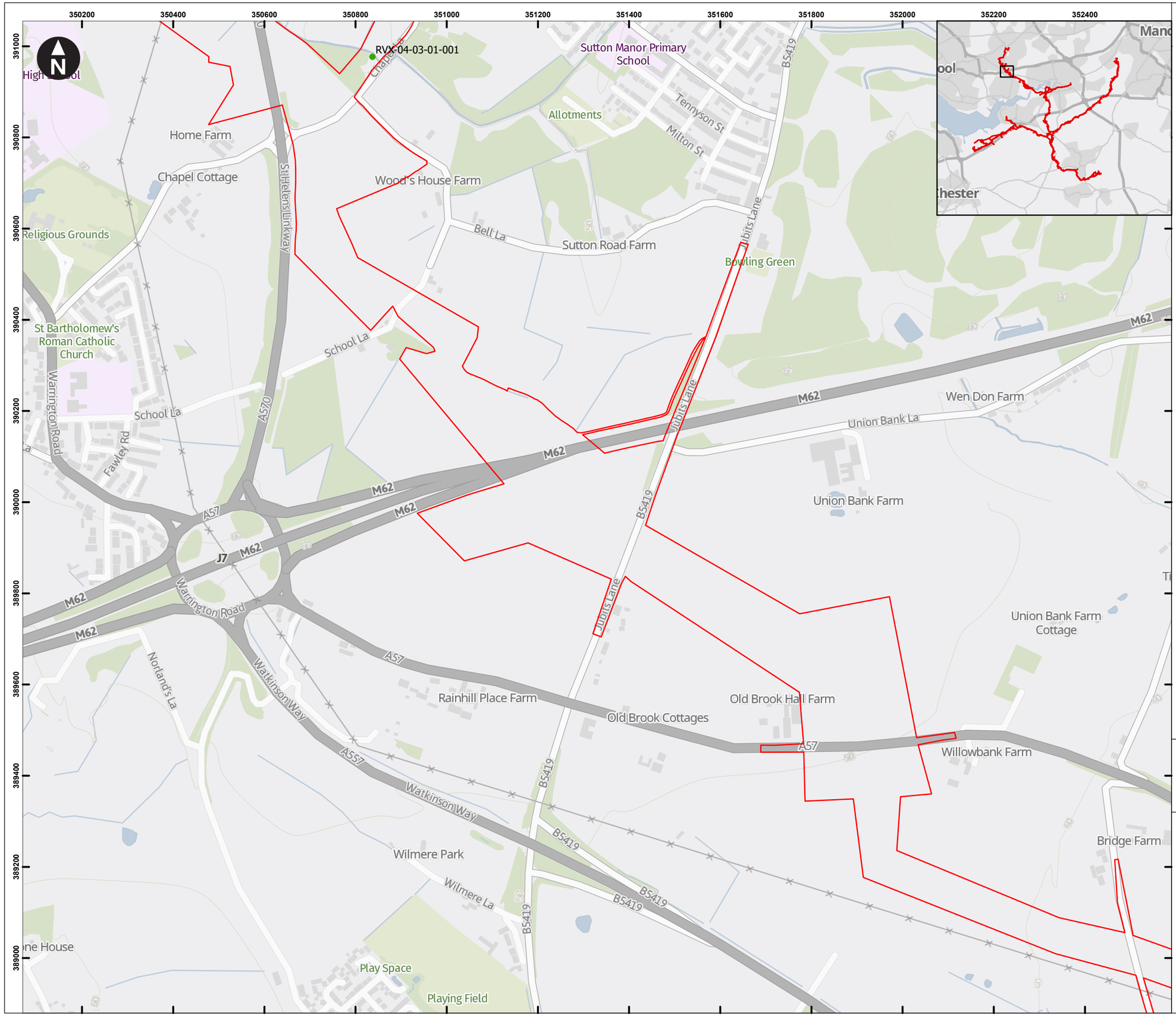
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Key

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- New Crossings
- Crossing Schedule (May22)

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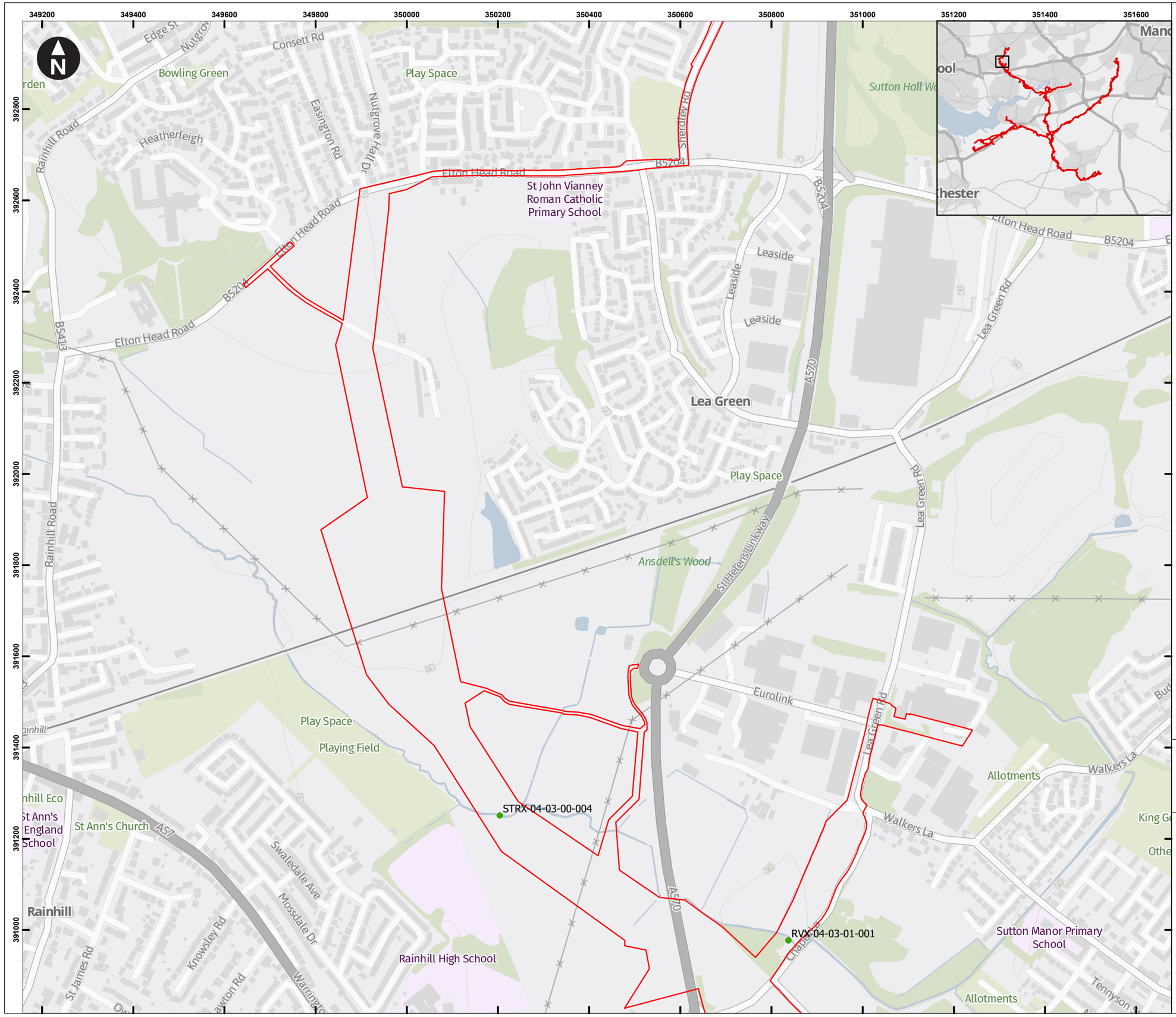
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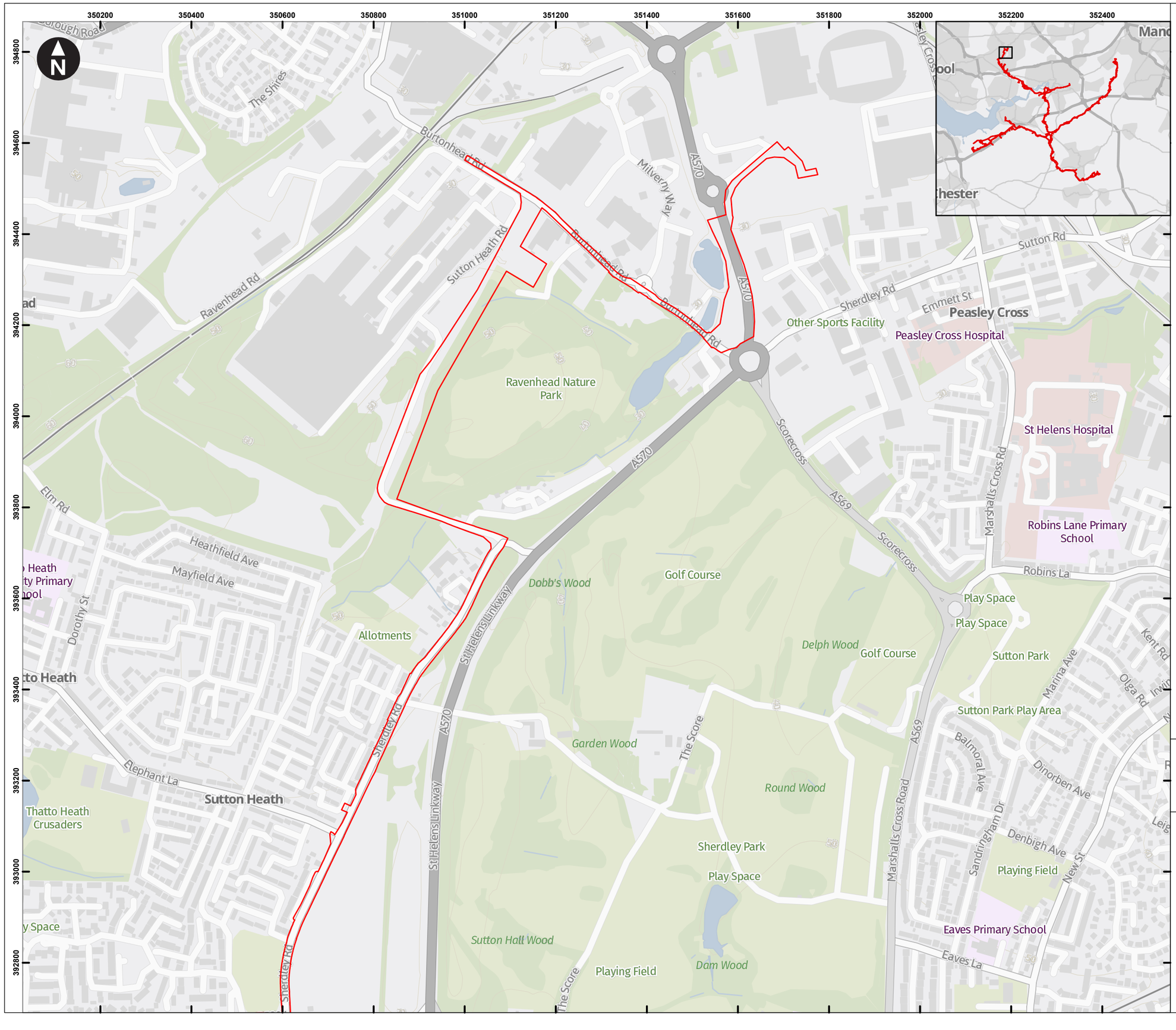
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Key

- Preliminary Order Limits
- New Crossings
- Crossing Schedule (May22)

0 100 200 300 400 m

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October 2024

Higher Whitley
Whitley Village School/School House
Rouge Farm
Ivy Dene Cottage
South View
Crimwellpool Farm
NEW25
Poachers Lodge
Oldmill Farm
Scotch Hall
Factor's House
Lester House Farm
House
Bowling Green
Lower Whitley
Whitley Gorse
STRX-03-00-00-002
Little Merryfall
Stable Gate Farm
Big Merryfall
Whitley Hall Cottages
RVX-03-00-00-001
Broom Cottage
Merryfall Wood
Whitley House Farm
A49
Tarporley Road
Village La
Back La
St La
Brookhouse La
Goosebrook La
Hall La

Key

- Preliminary Order Limits
- New Crossings
- Crossing Schedule (May22)

0 100 200 300 400 m

Scale at A3: 1:8,000

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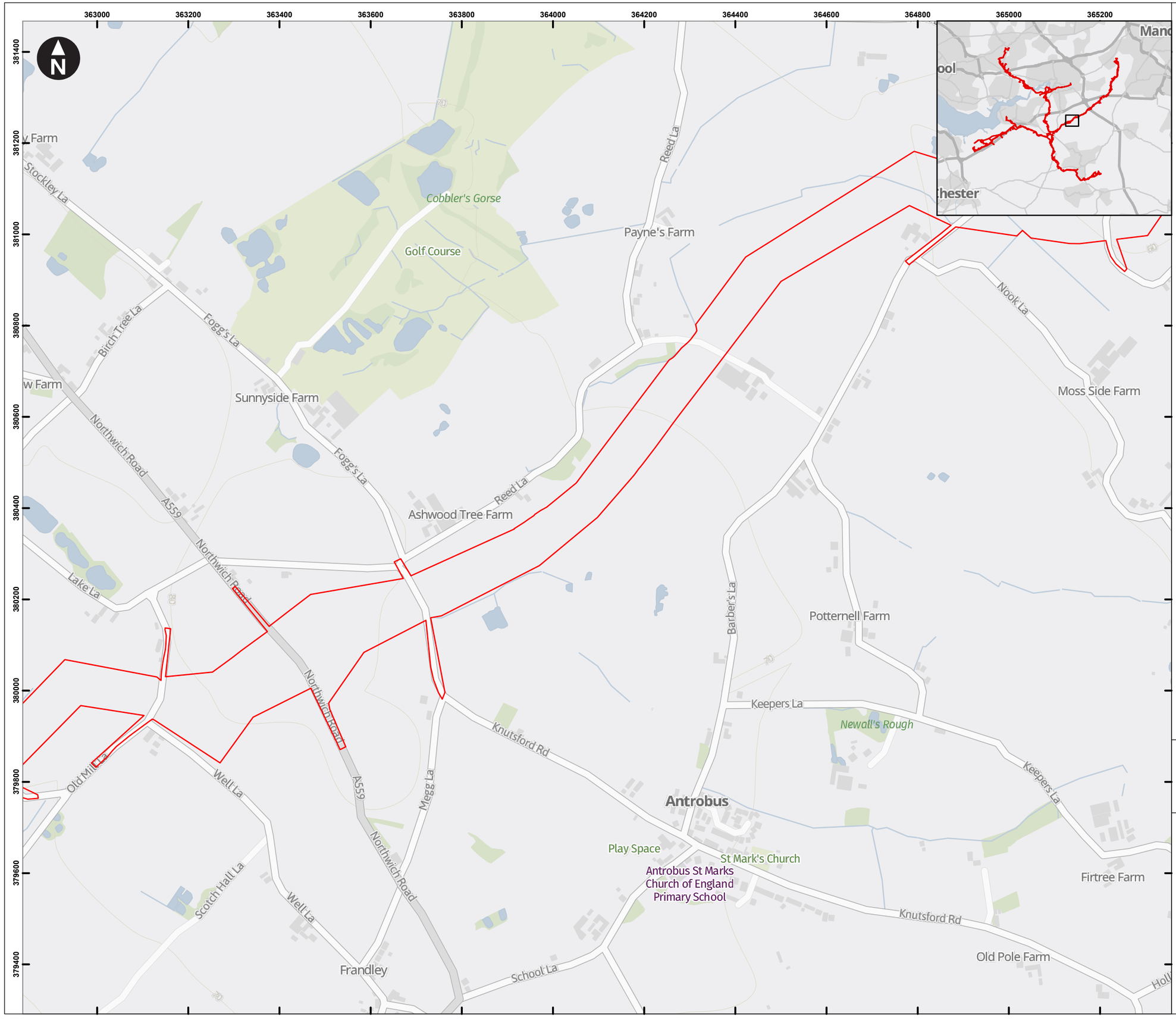
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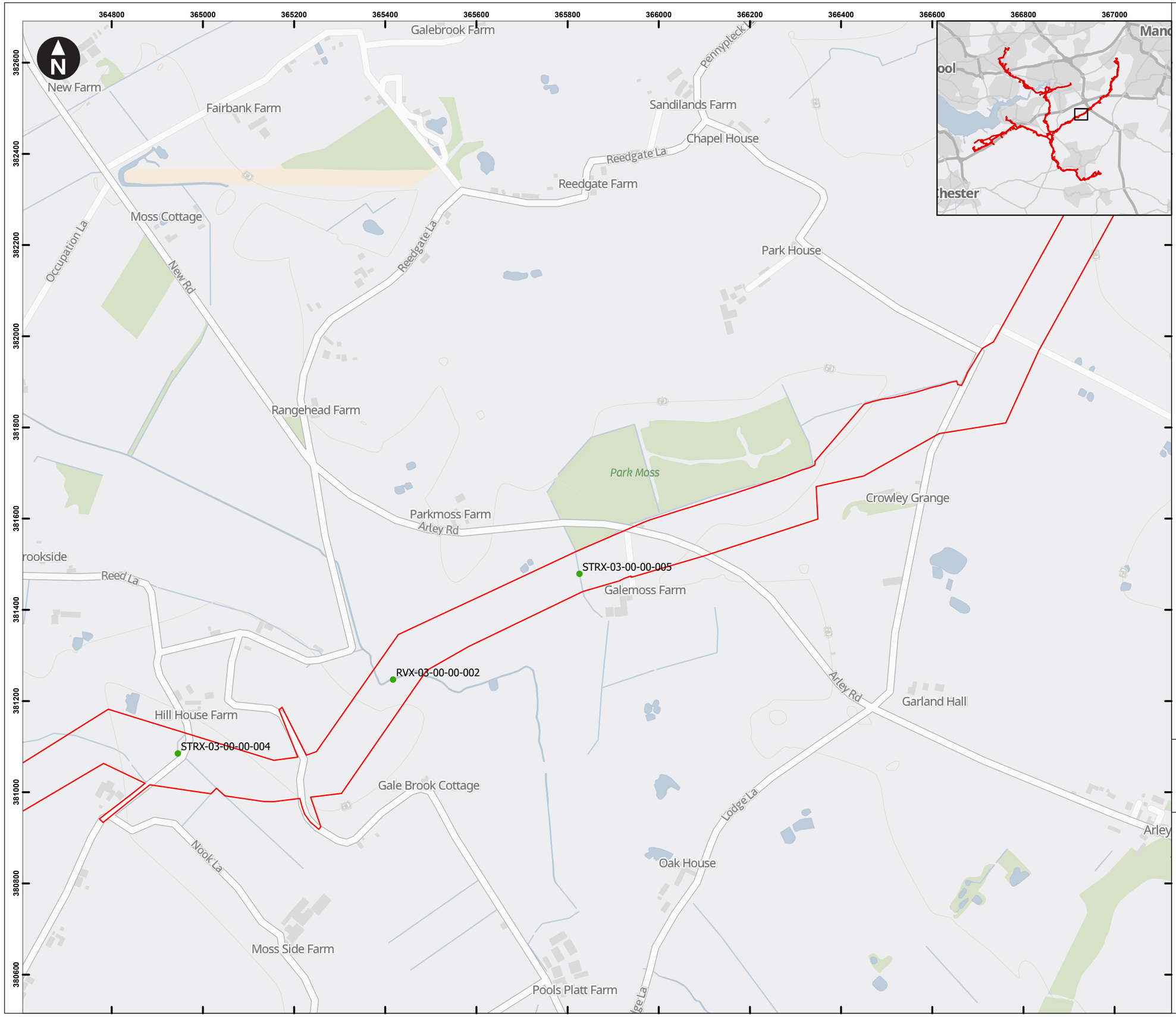
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Key

- Preliminary Order Limits
- New Crossings
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0 100 200 300 400 m

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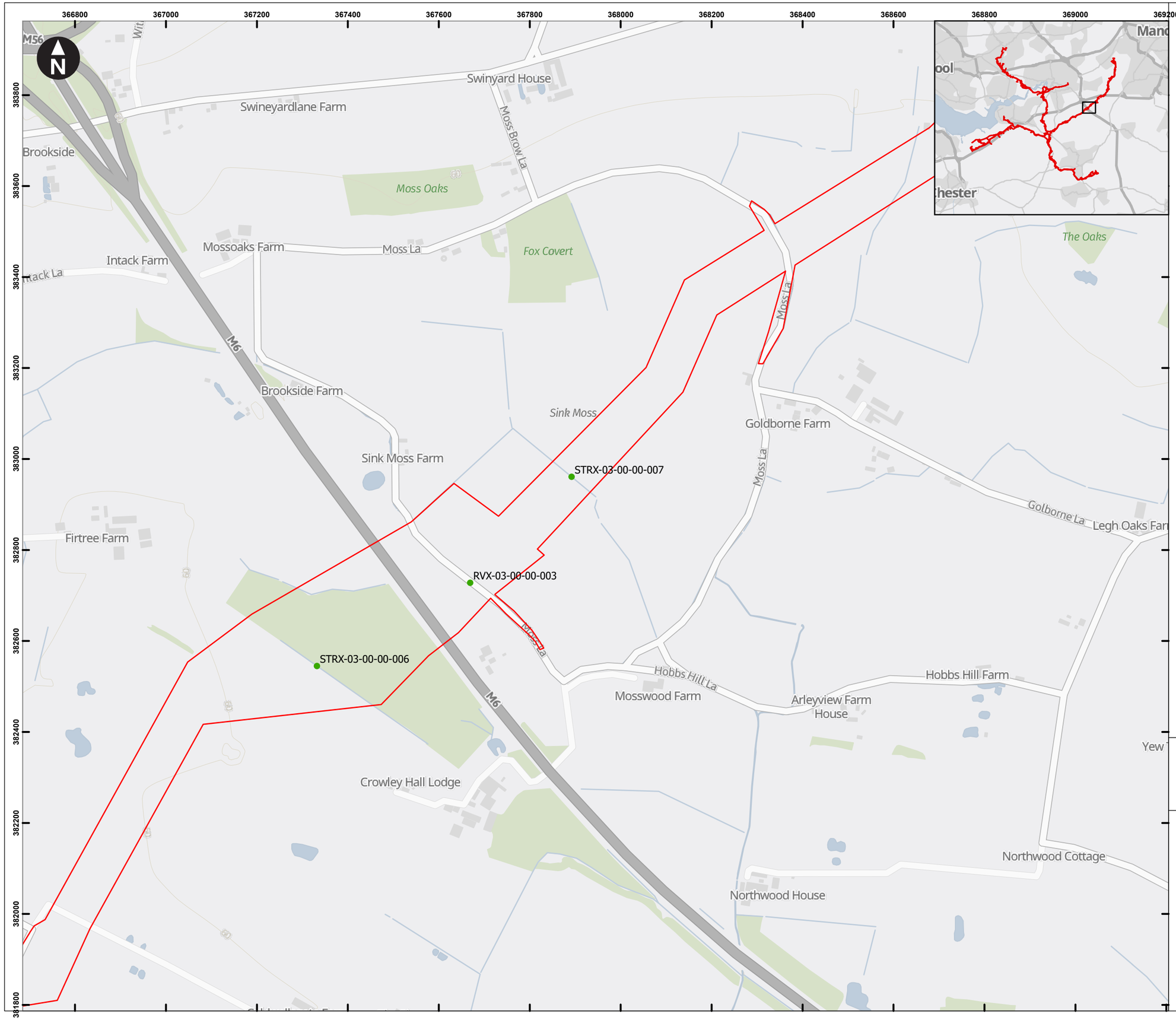
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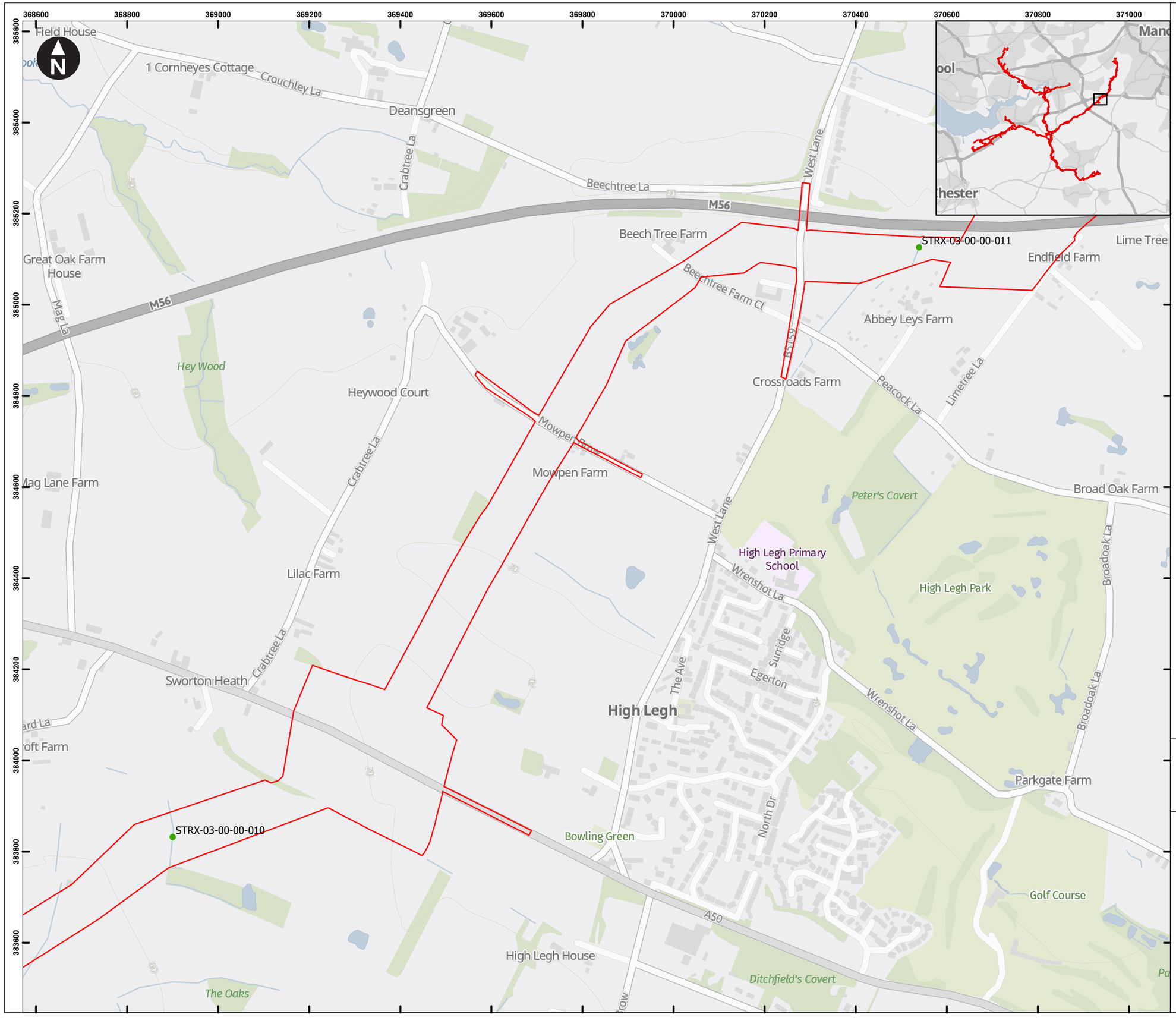
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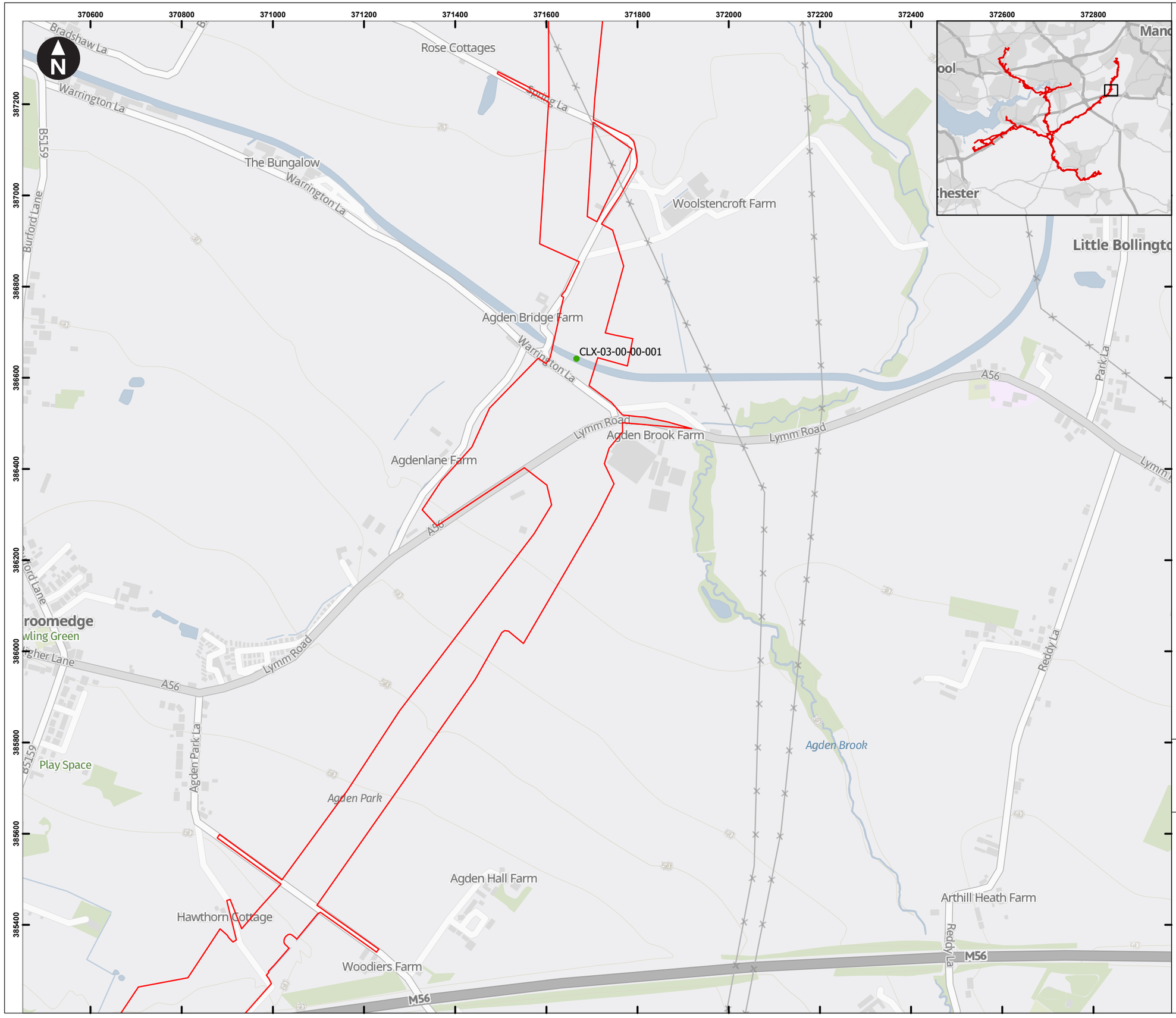
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Key

- Preliminary Order Limits
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- Crossing Schedule (May22)

0 100 200 300 400 m

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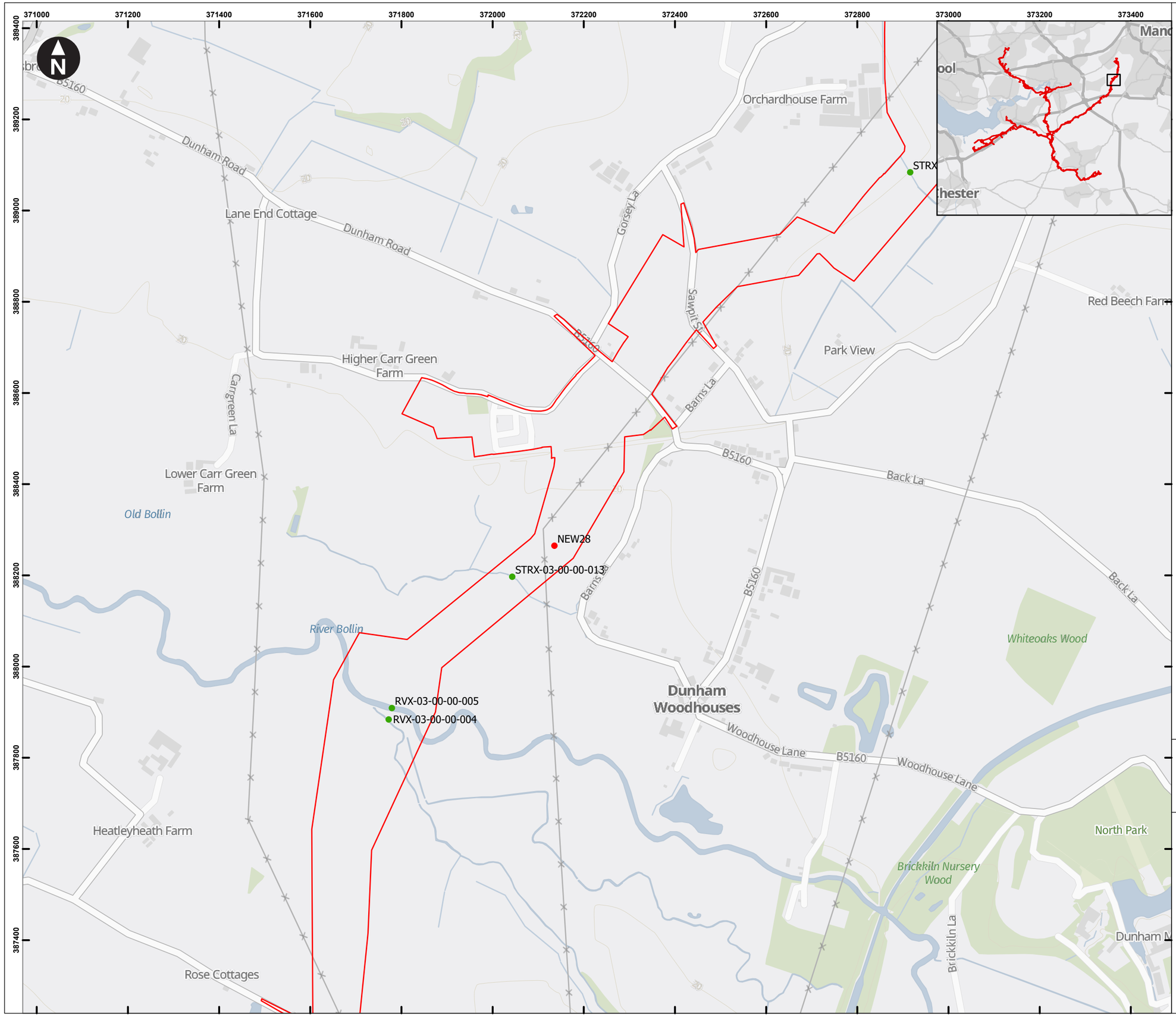
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Key

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- New Crossings
- Crossing Schedule (May22)

0 100 200 300 400 m

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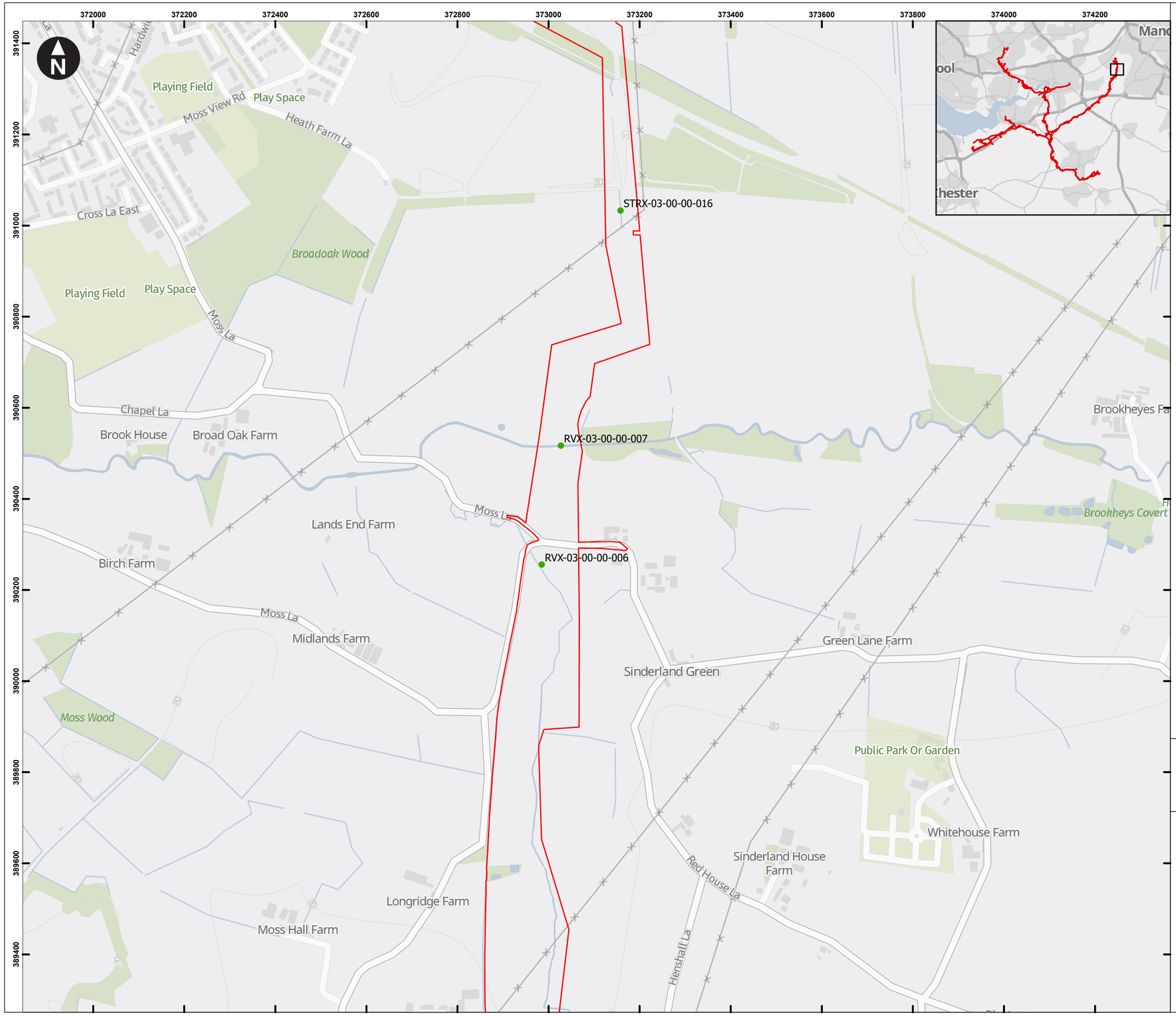
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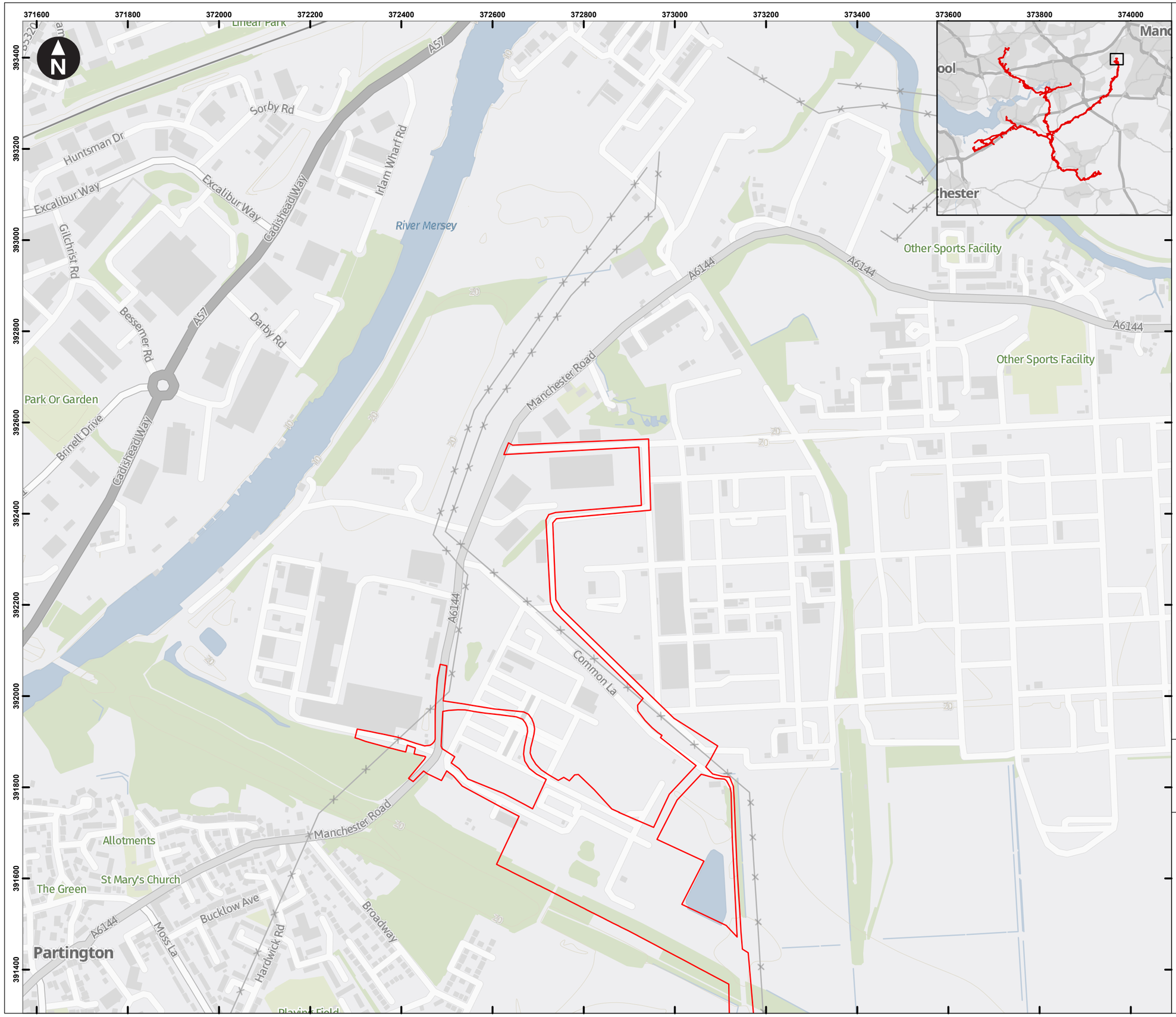
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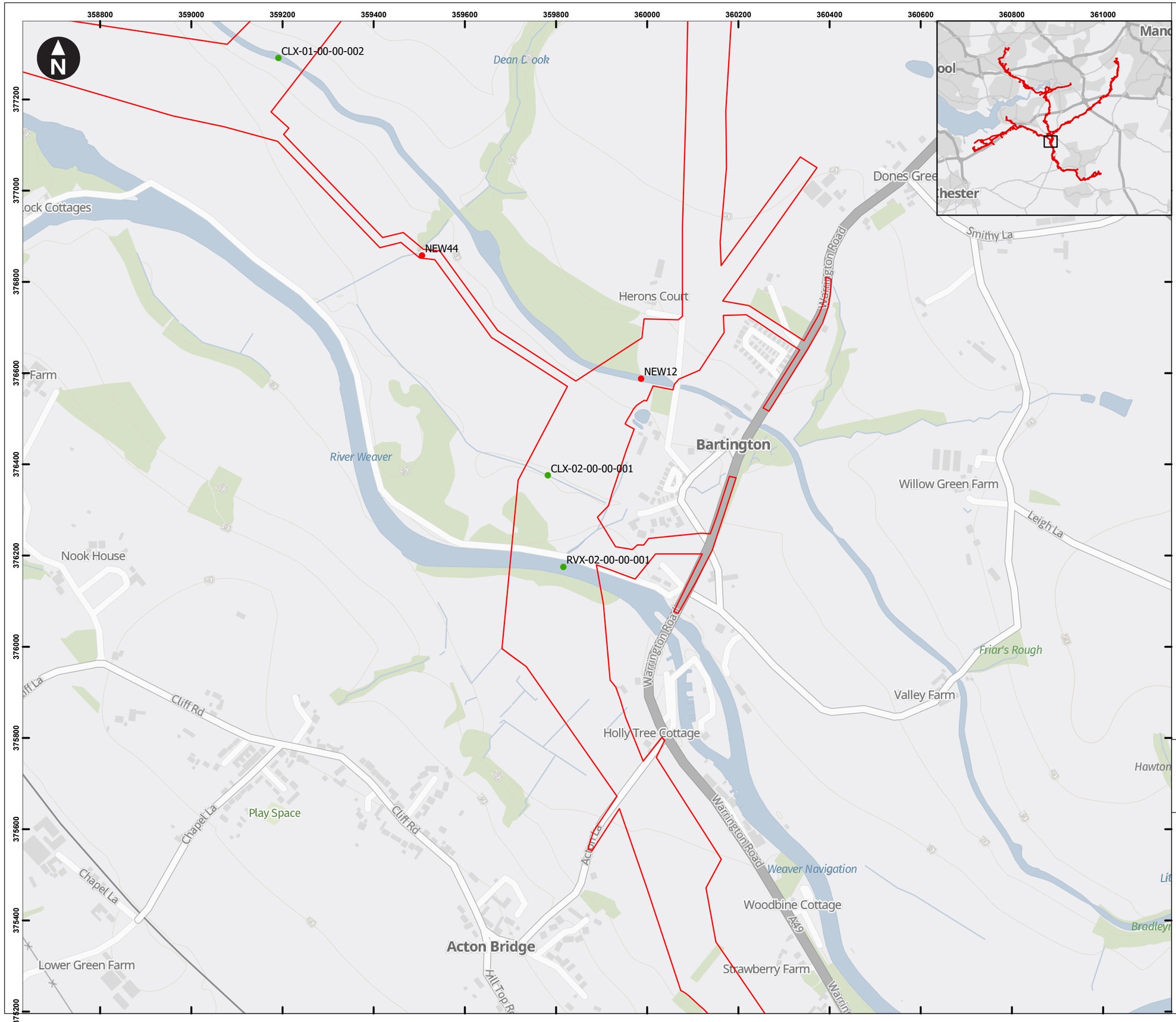
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372000
372200
372400
372600
372800
373000
373200
373400
373600
373800
374000
374200
391400
391200
391000
390800
390600
390400
390200
390000
389800
389600
389400
N
Playing Field
Play Space
Moss View Rd
Heath Farm La
Cross La East
Broadoak Wood
Playing Field
Play Space
Moss La
Chapel La
Brook House
Broad Oak Farm
Lands End Farm
Birch Farm
Moss La
Midlands Farm
Moss Wood
Longridge Farm
Moss Hall Farm
Moss La
STRX-03-00-00-016
RVX-03-00-00-007
RVX-03-00-00-006
Brookheyes Fa
Brookheyes Covert
Green Lane Farm
Sinderland Green
Public Park Or Garden
Whitehouse Farm
Sinderland House Farm
Red House La
Henshall La
Key
Preliminary Order Limits
New Crossings
Crossing Schedule (May22)
0
100
200
300
400
m
Scale at A3: 1:8,000
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371600
371800
372000
372200
372400
372600
372800
373000
373200
373400
373600
373800
374000
393400
393200
393000
392800
392600
392400
392200
392000
391800
391600
391400
N
Linear Park
Sorby Rd
Huntsman Dr
Excalibur Way
Excalibur Way
Gilchrist Rd
Cadishead Way
Irlam Wharf Rd
A57
River Mersey
Bessemer Rd
A57
Darby Rd
Other Sports Facility
A6144
A6144
A6144
Other Sports Facility
Manchester Road
Park Or Garden
Brinell Drive
Cadishead Way
A6144
Common La
Allotments
Manchester Road
St Mary's Church
The Green
Bucklow Ave
A6144
Moss La
Partington
Hardwick Rd
Broadway
Playing Field
Key
Preliminary Order Limits
New Crossings
Crossing Schedule (May22)
0
100
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Scale at A3: 1:8,000
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Key

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- New Crossings
- Crossing Schedule (May22)

0 100 200 300 400 m

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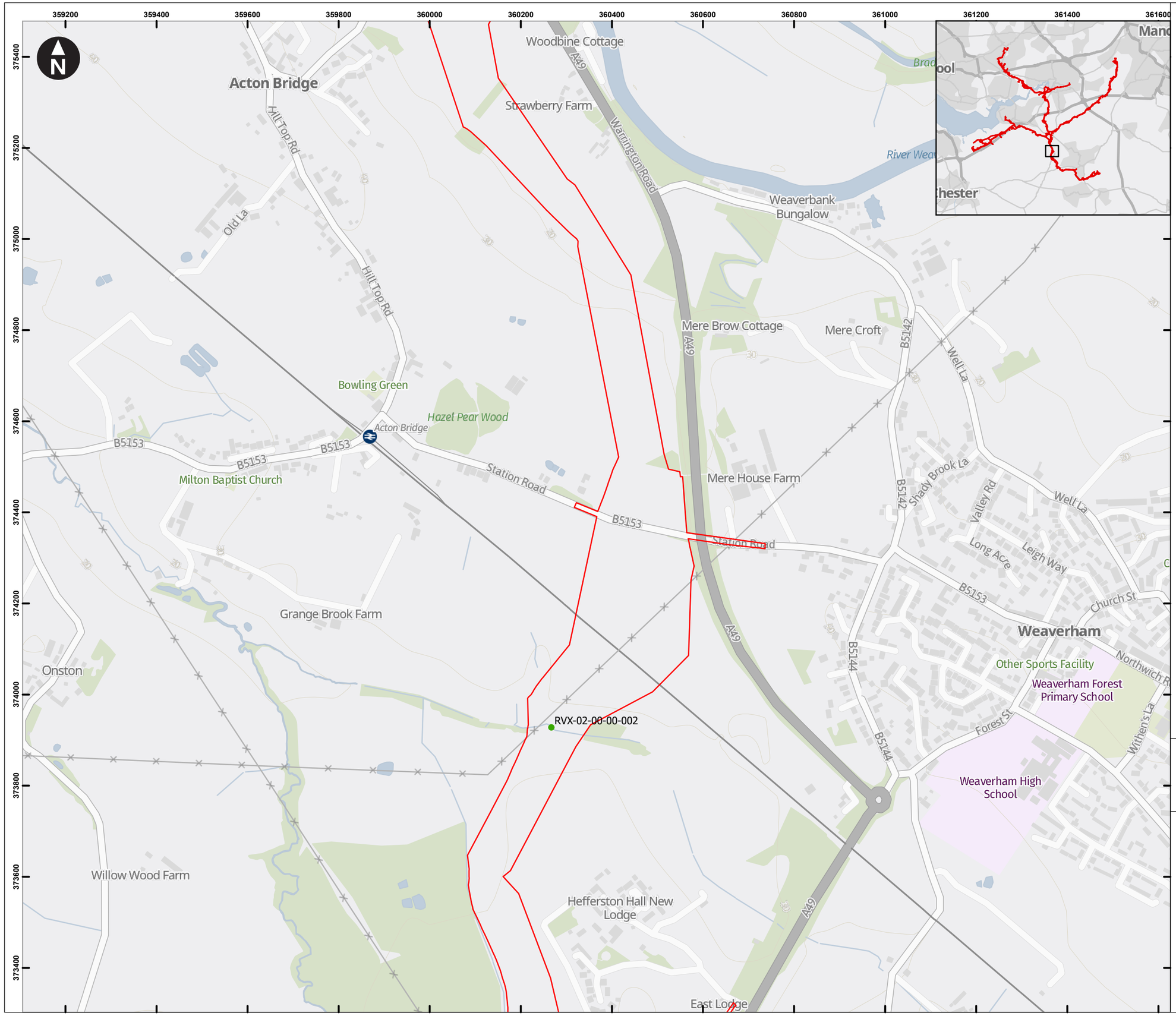
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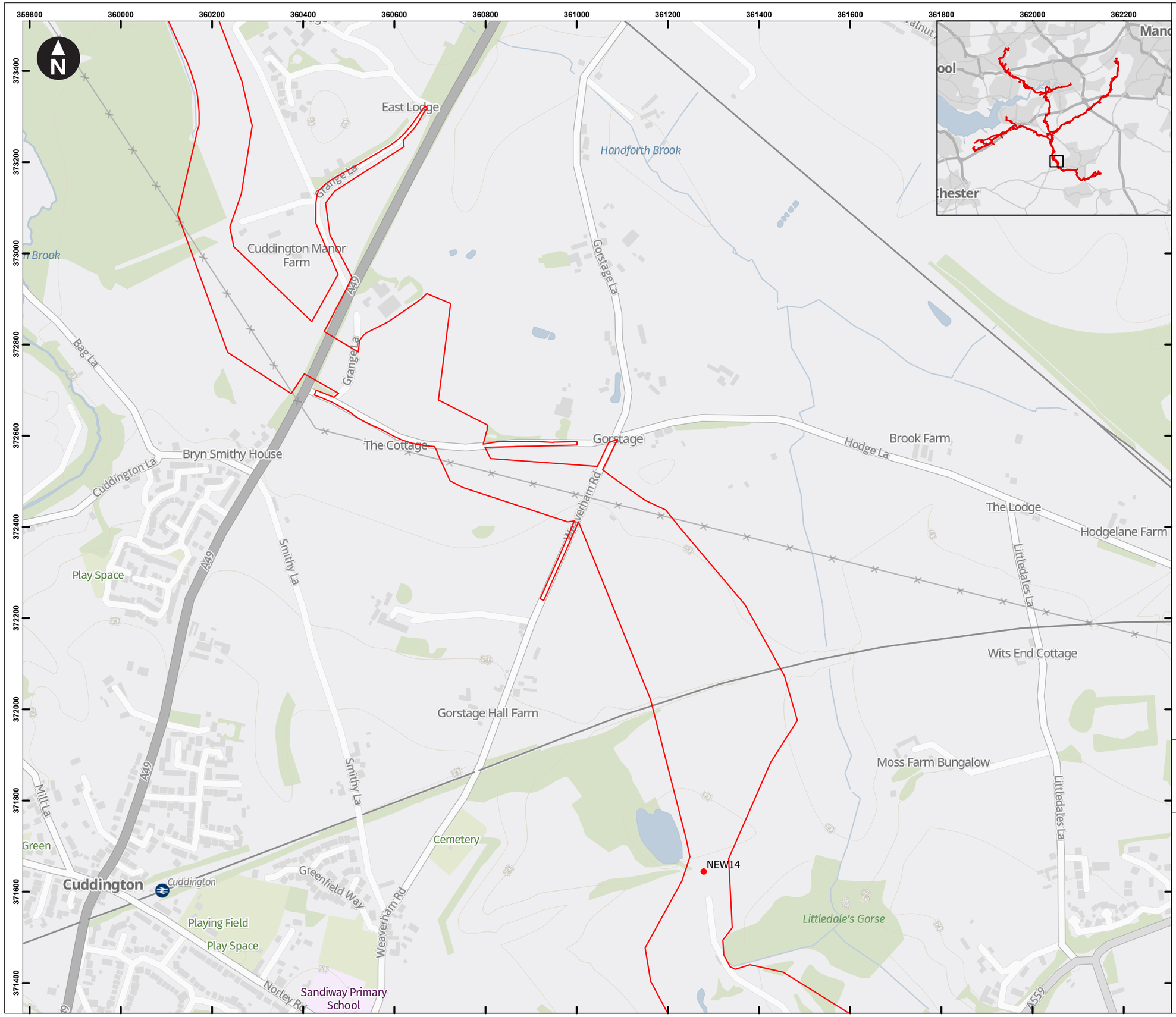
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359200
359400
359600
359800
360000
360200
360400
360600
360800
361000
361200
361400
361600
375400
375200
375000
374800
374600
374400
374200
374000
373800
373600
373400
N
Acton Bridge
Woodbine Cottage
Strawberry Farm
A49
Warrington Road
Hill Top Rd
Old La
River Weav
Weaverbank Bungalow
Mere Brow Cottage
Mere Croft
B5142
Well La
Bowling Green
Hazel Pear Wood
Acton Bridge
B5153
Milton Baptist Church
Station Road
Mere House Farm
Shady Brook La
Valley Rd
Long Acre
Leigh Way
Church St
Weaverham
Other Sports Facility
Weaverham Forest Primary School
Northwich R
Forest St
Withen's La
B5144
Weaverham High School
Grange Brook Farm
Onston
RVX-02-00-00-002
Willow Wood Farm
Hefferston Hall New Lodge
East Lodge
Key
Preliminary Order Limits
New Crossings
Crossing Schedule (May22)
0
100
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300
400
m
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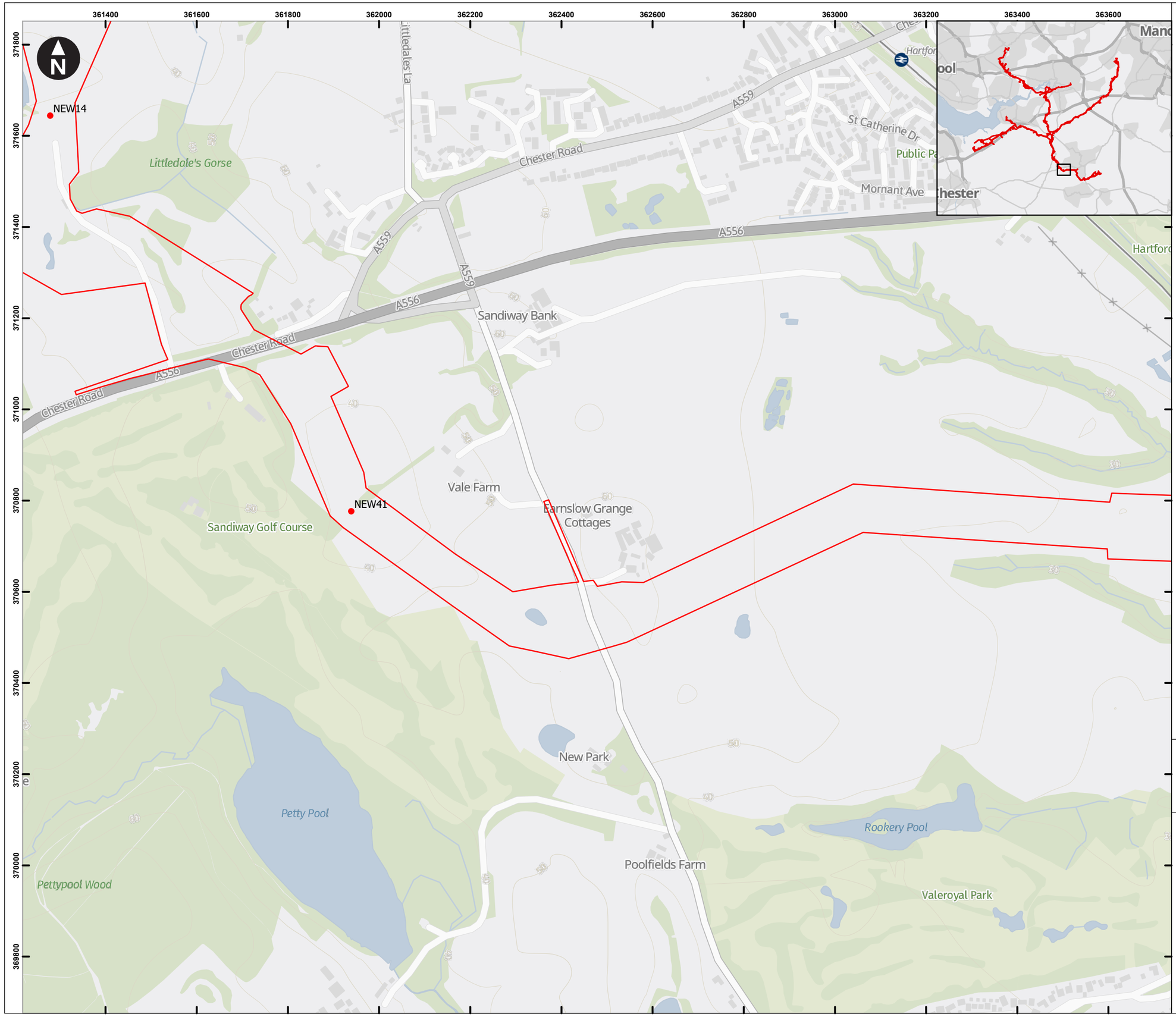
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Key

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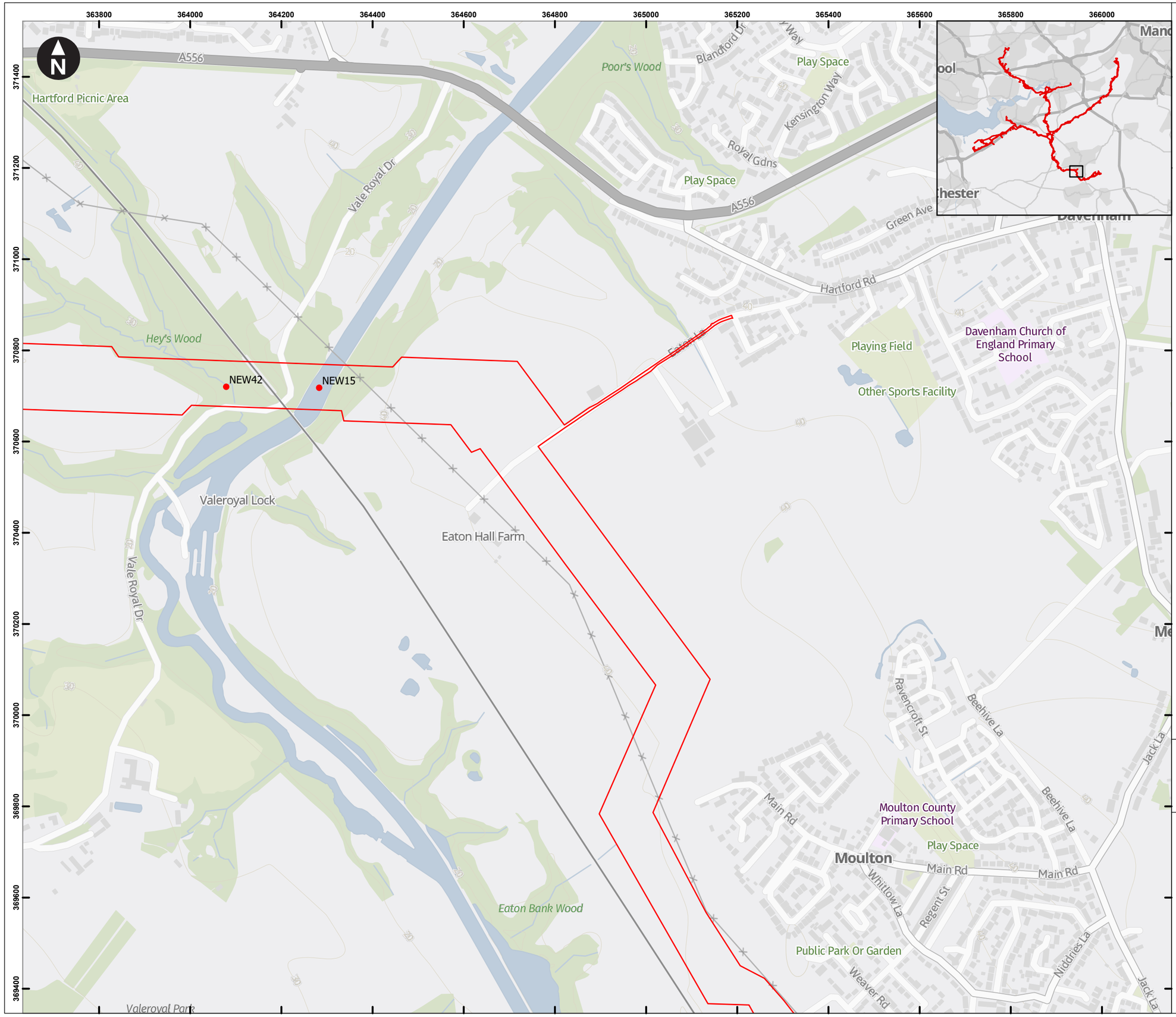
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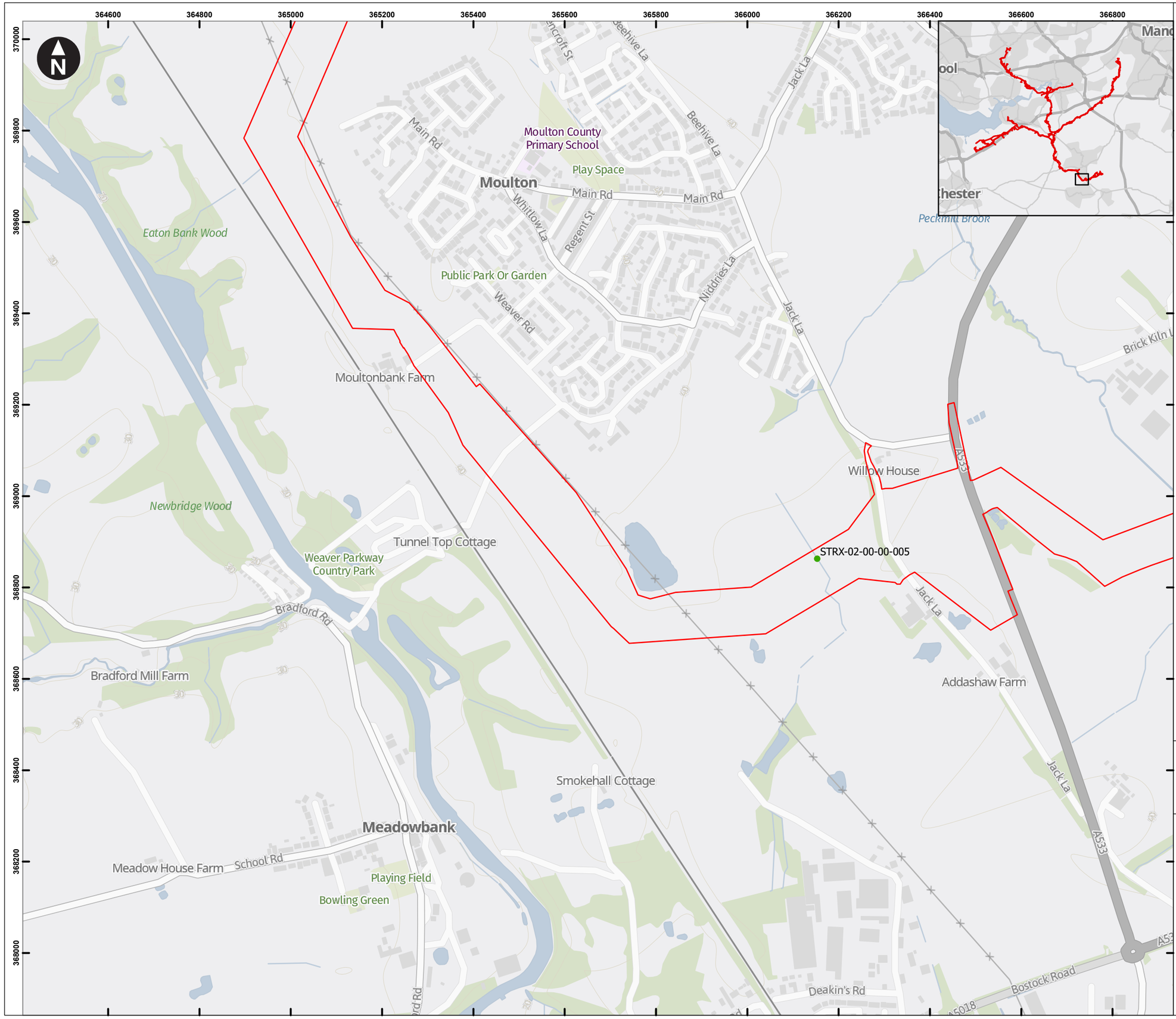
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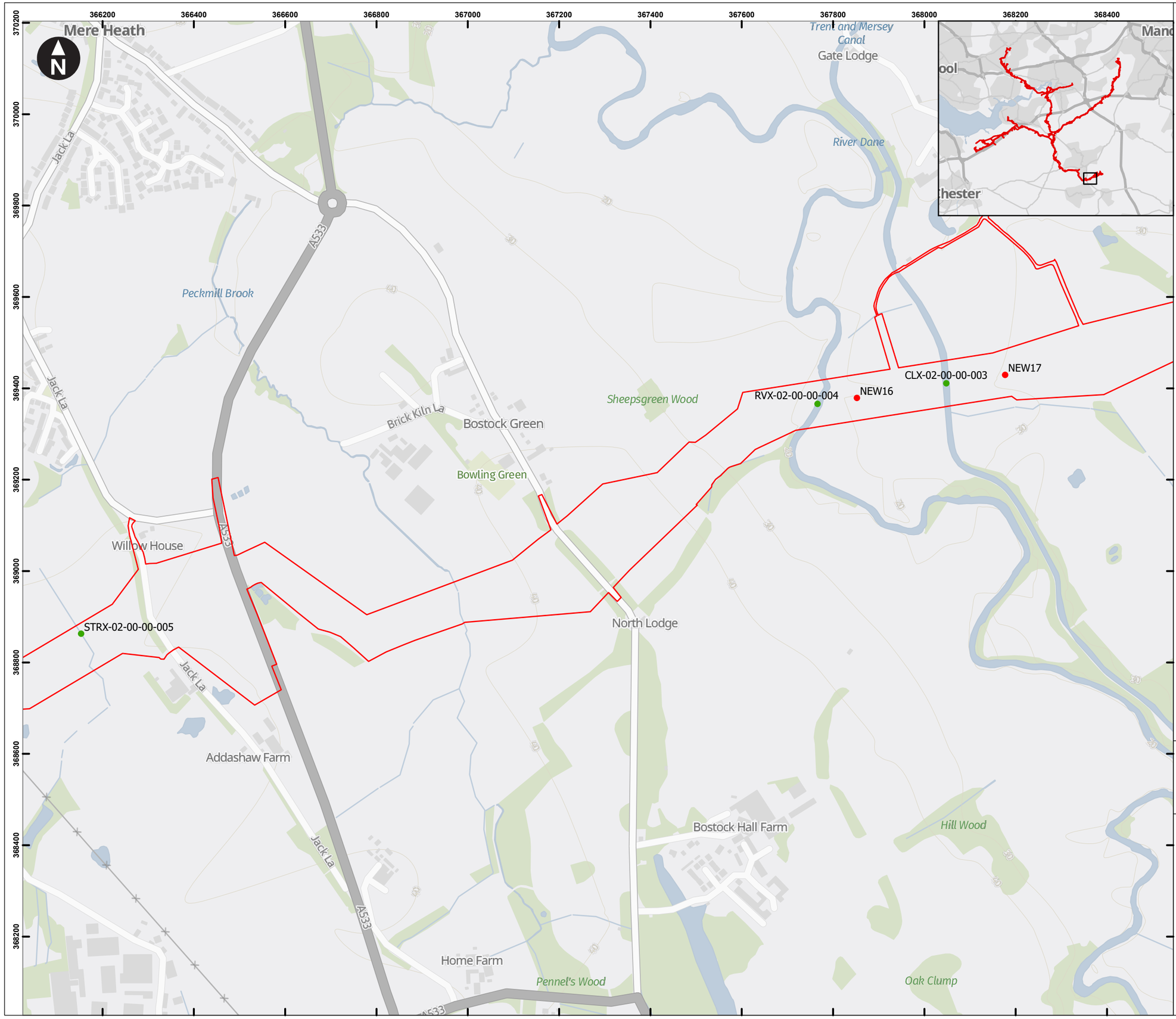
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363800
364000
364200
364400
364600
364800
365000
365200
365400
365600
365800
366000
371400
371200
371000
370800
370600
370400
370200
370000
369800
369600
369400
N
A556
Hartford Picnic Area
Poor's Wood
Blandford Dr
Play Space
Kensington Way
Royal Gdns
Play Space
A556
Green Ave
Hartford Rd
Vale Royal Dr
Hey's Wood
NEW42
NEW15
Eaton Hall Farm
Playing Field
Davenham Church of England Primary School
Other Sports Facility
Valeroyal Lock
Vale Royal Dr
Eaton Bank Wood
Valeroyal Park
Moulton
Moulton County Primary School
Play Space
Main Rd
Main Rd
Main Rd
Whitlow La
Regent St
Ravencroft St
Beehive La
Beehive La
Jack La
Jack La
Public Park Or Garden
Weaver Rd
Niddries La
Davenham
Key
Preliminary Order Limits
New Crossings
Crossing Schedule (May22)
0
100
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m
Scale at A3: 1:8,000
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364600
364800
365000
365200
365400
365600
365800
366000
366200
366400
366600
366800
370000
369800
369600
369400
369200
369000
368800
368600
368400
368200
368000
N
Moulton County Primary School
Play Space
Moulton
Main Rd
Main Rd
Main Rd
Beehive La
Beehive La
Jack La
Whitlow La
Regent St
Niddries La
Jack La
Weaver Rd
Public Park Or Garden
Eaton Bank Wood
Moultonbank Farm
Peckmill Brook
Brick Kiln L
Willow House
A533
Newbridge Wood
Tunnel Top Cottage
Weaver Parkway Country Park
STRX-02-00-00-005
Jack La
Bradford Rd
Bradford Mill Farm
Addashaw Farm
Smokehall Cottage
Meadowbank
Meadow House Farm
School Rd
Playing Field
Bowling Green
Jack La
A533
Deakin's Rd
Bostock Road
A5018
Key
Preliminary Order Limits
New Crossings
Crossing Schedule (May22)
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100
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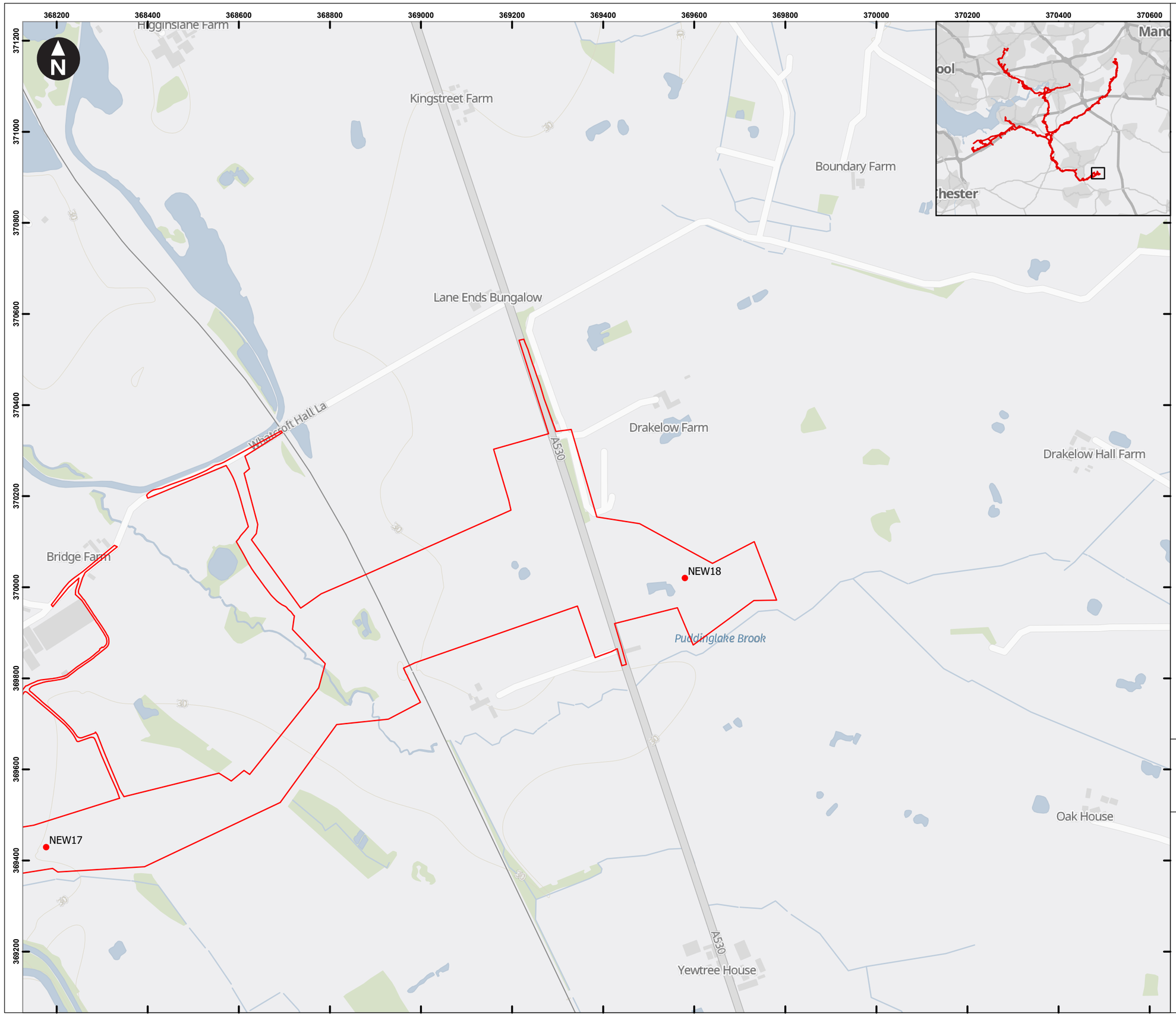
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Key

- Preliminary Order Limits
- New Crossings
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0 100 200 300 400 m

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Delivering clean growth

Annex 5G 2
Otter Survey Results Figure

Key

Preliminary Order Limits

Page extents

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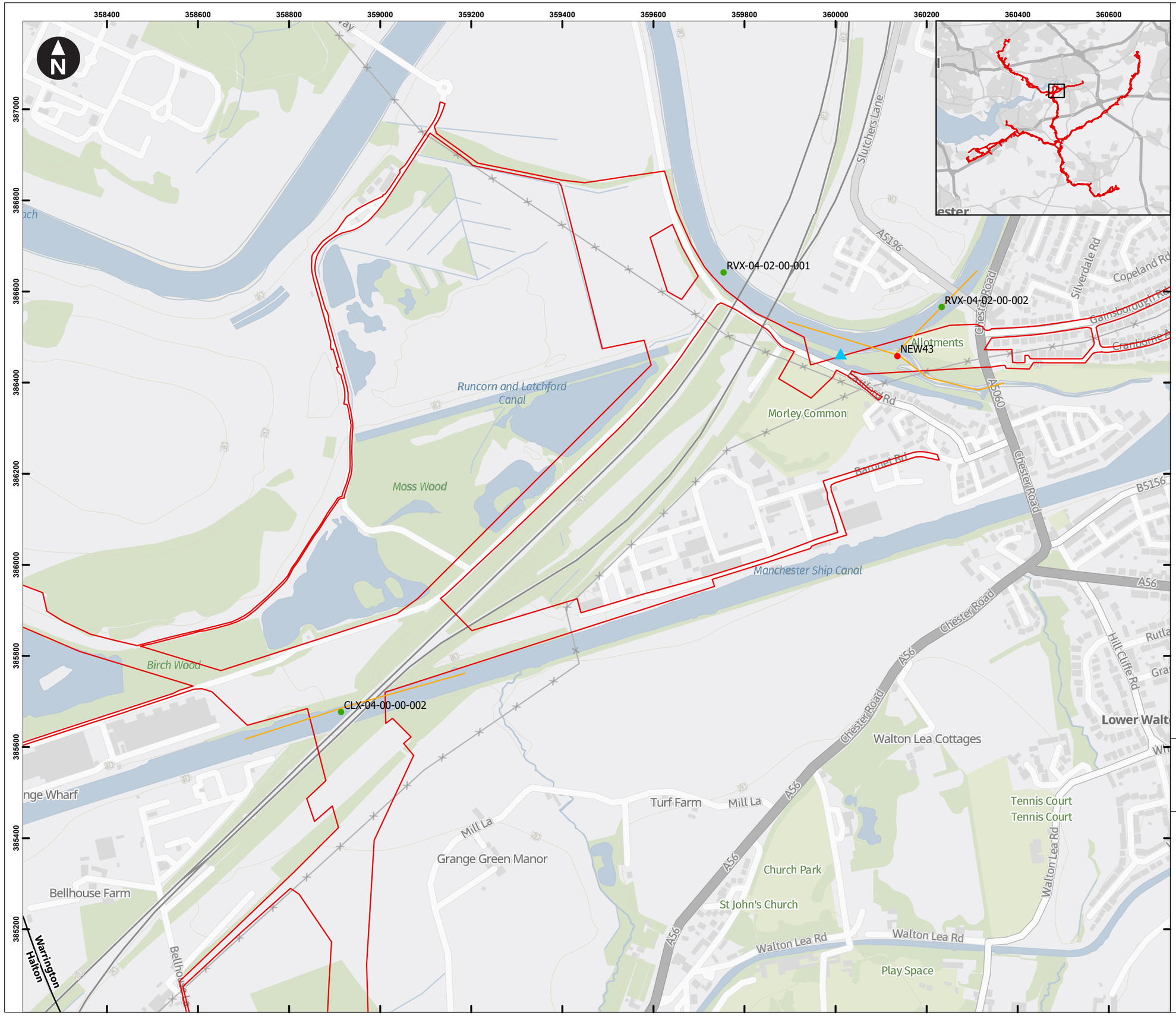
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Figure 5G.2: Otter survey results
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October 2024



Key

- Preliminary Order Limits
- Survey Reaches
- Crossing Schedule (May22)
- New Crossings

Otter survey results

- Footprints
- Footprints and spraint
- Likely rest site
- Spraint

0 0.1 0.2 0.3 0.4 Kilometres

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Key

- Preliminary Order Limits
- Survey Reaches
- Crossing Schedule (May22)
- New Crossings

Otter survey results

- Footprints
- Footprints and spraint
- Likely rest site
- Spraint

0 0.1 0.2 0.3 0.4 Kilometres

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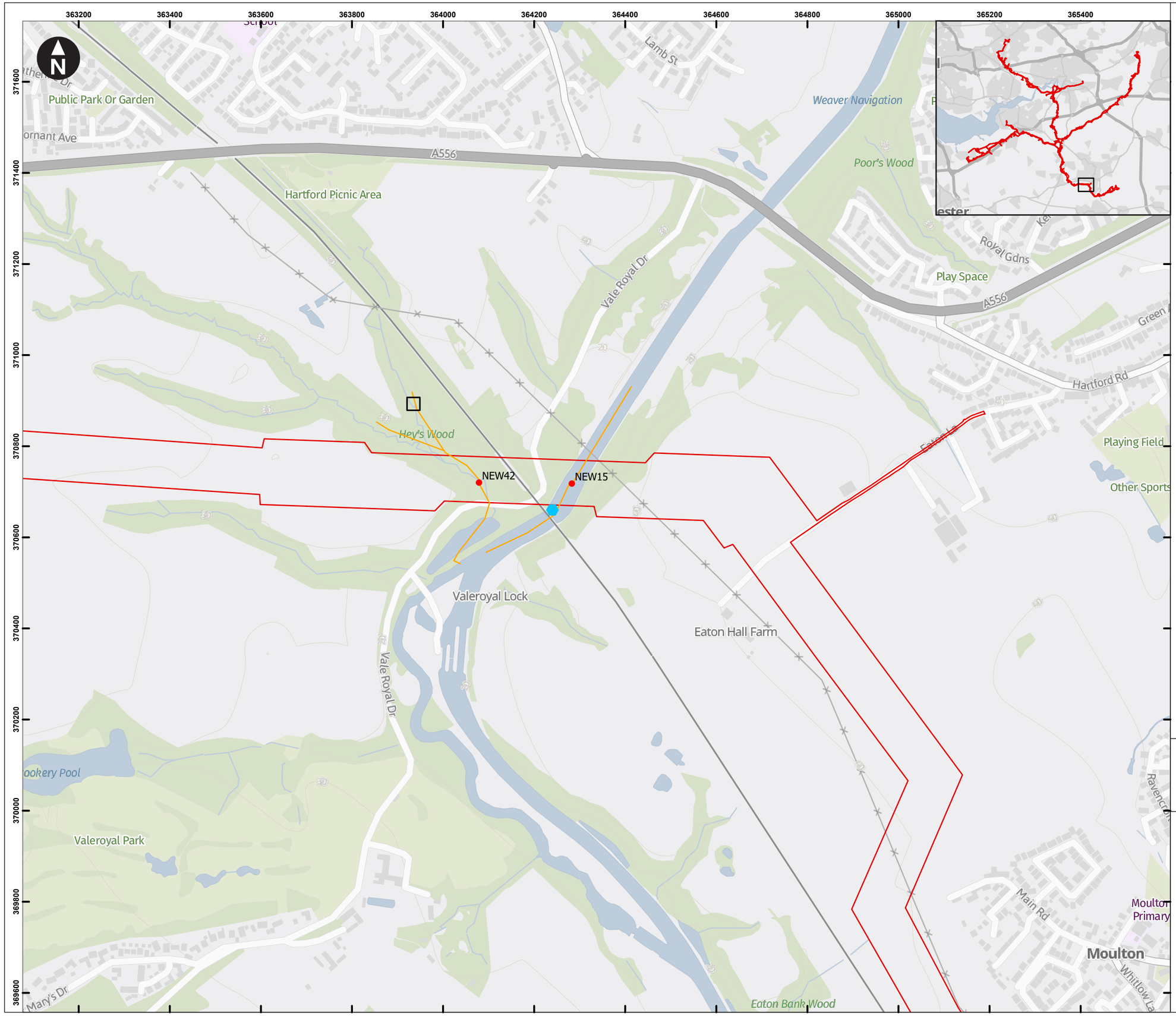
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Key

- Preliminary Order Limits
- Survey Reaches
- Crossing Schedule (May22)
- New Crossings

Otter survey results

- Footprints
- Footprints and spraint
- Likely rest site
- Spraint

0 0.1 0.2 0.3 0.4 Kilometres

Scale at A3: 1:8,000

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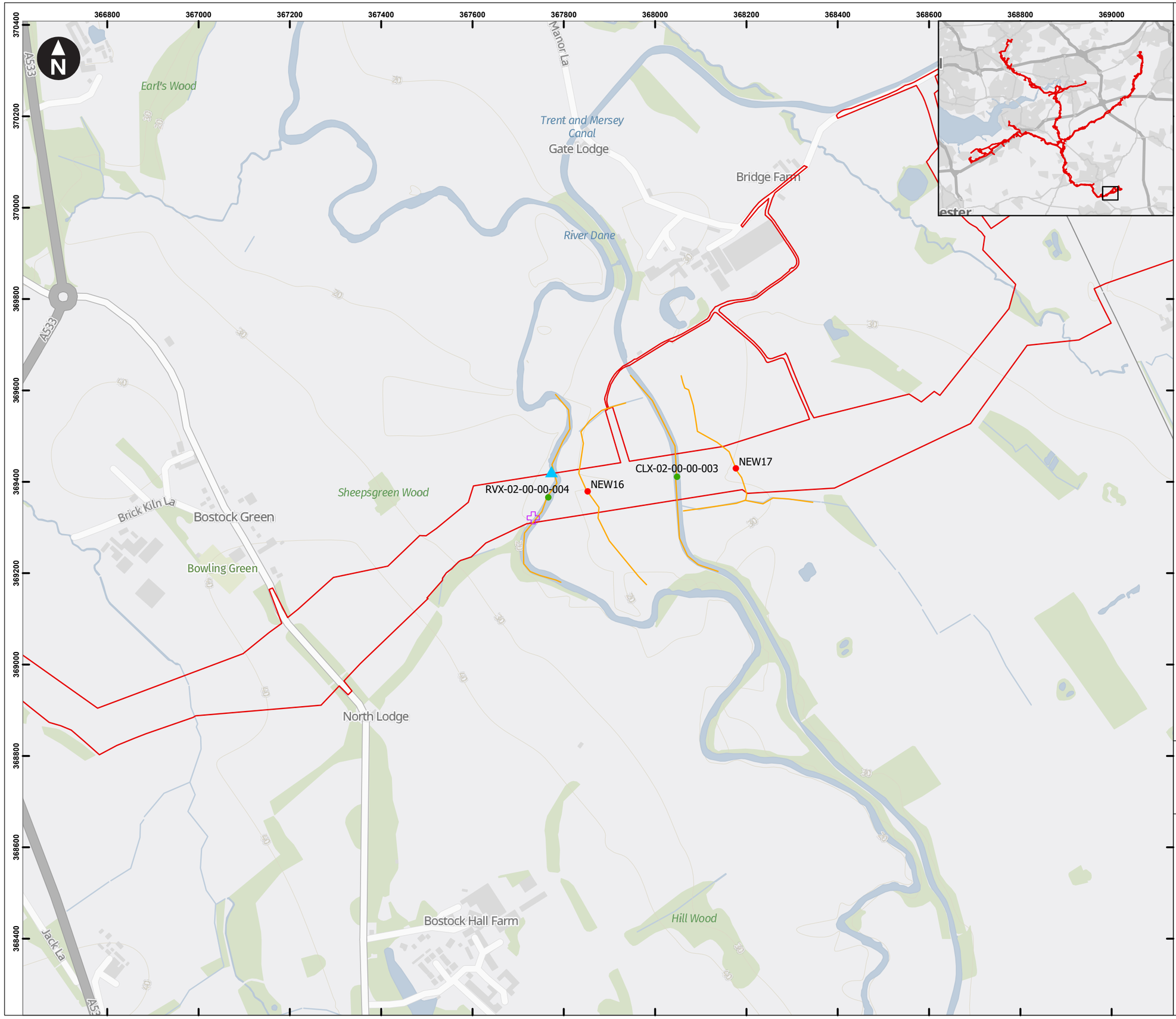
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Figure 5G.2: Otter survey results
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Key

- Preliminary Order Limits
- Survey Reaches
- Crossing Schedule (May22)
- New Crossings

Otter survey results

- Footprints
- Footprints and spraint
- Likely rest site
- Spraint

0 0.1 0.2 0.3 0.4 Kilometres

Scale at A3: 1:8,000

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Delivering clean growth

Annex 5G 3
Water Vole Survey Results Figure

Key

Preliminary Order Limits

Page extents

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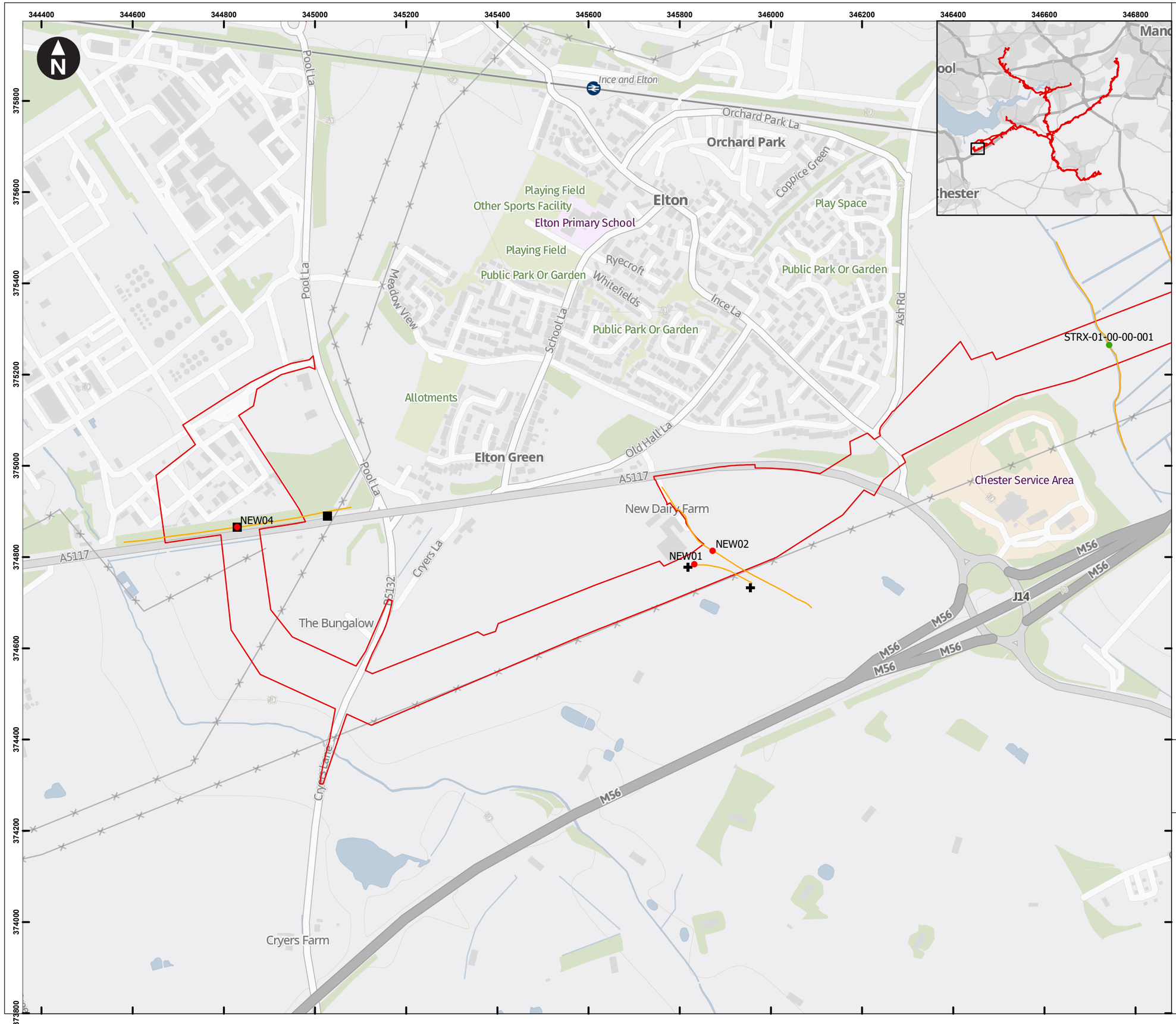
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- Survey Reaches
- New Crossings
- Crossing Schedule (May22)

Water vole survey results

- Burrow (characteristic)
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- Latrine (characteristic)
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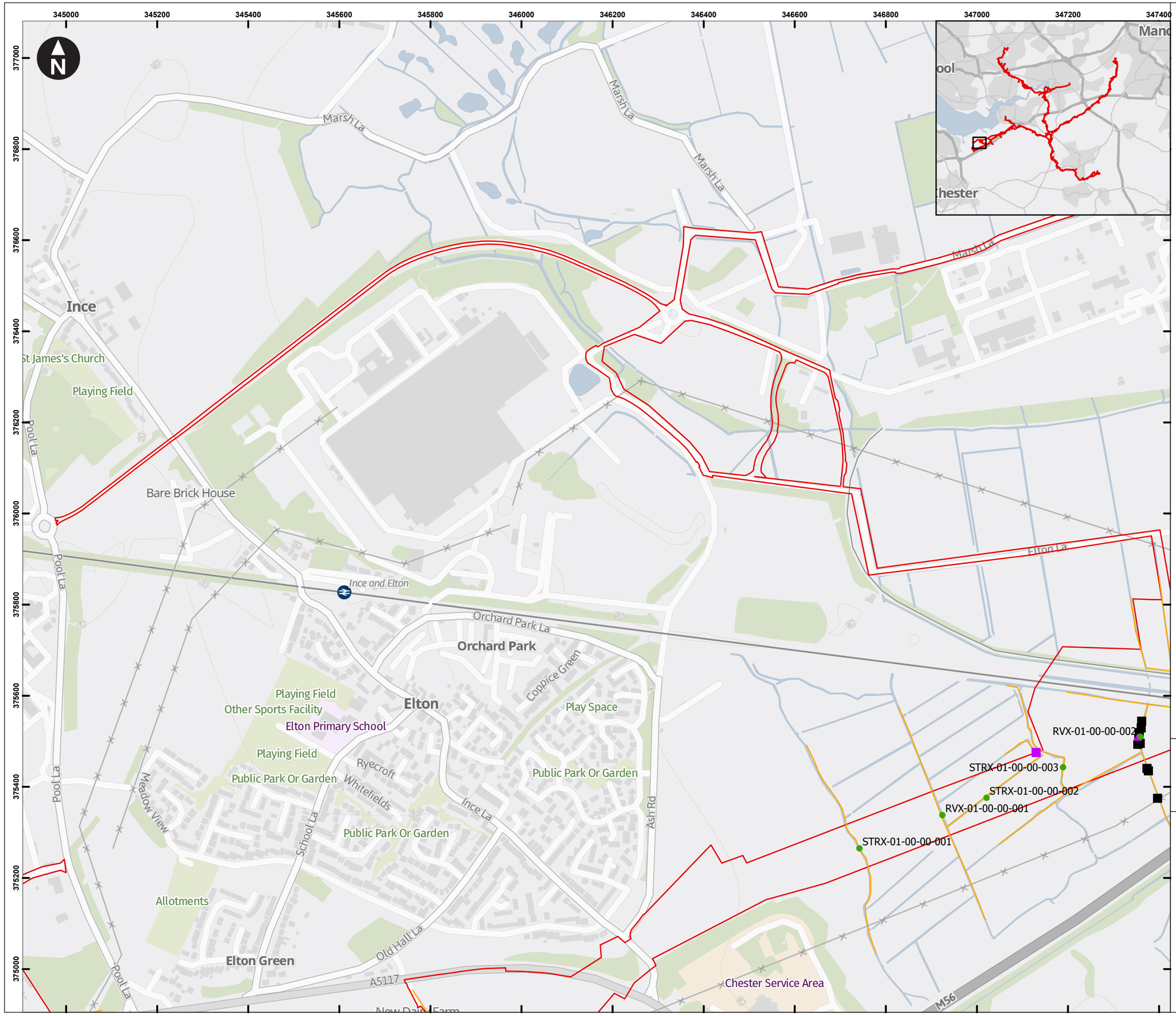
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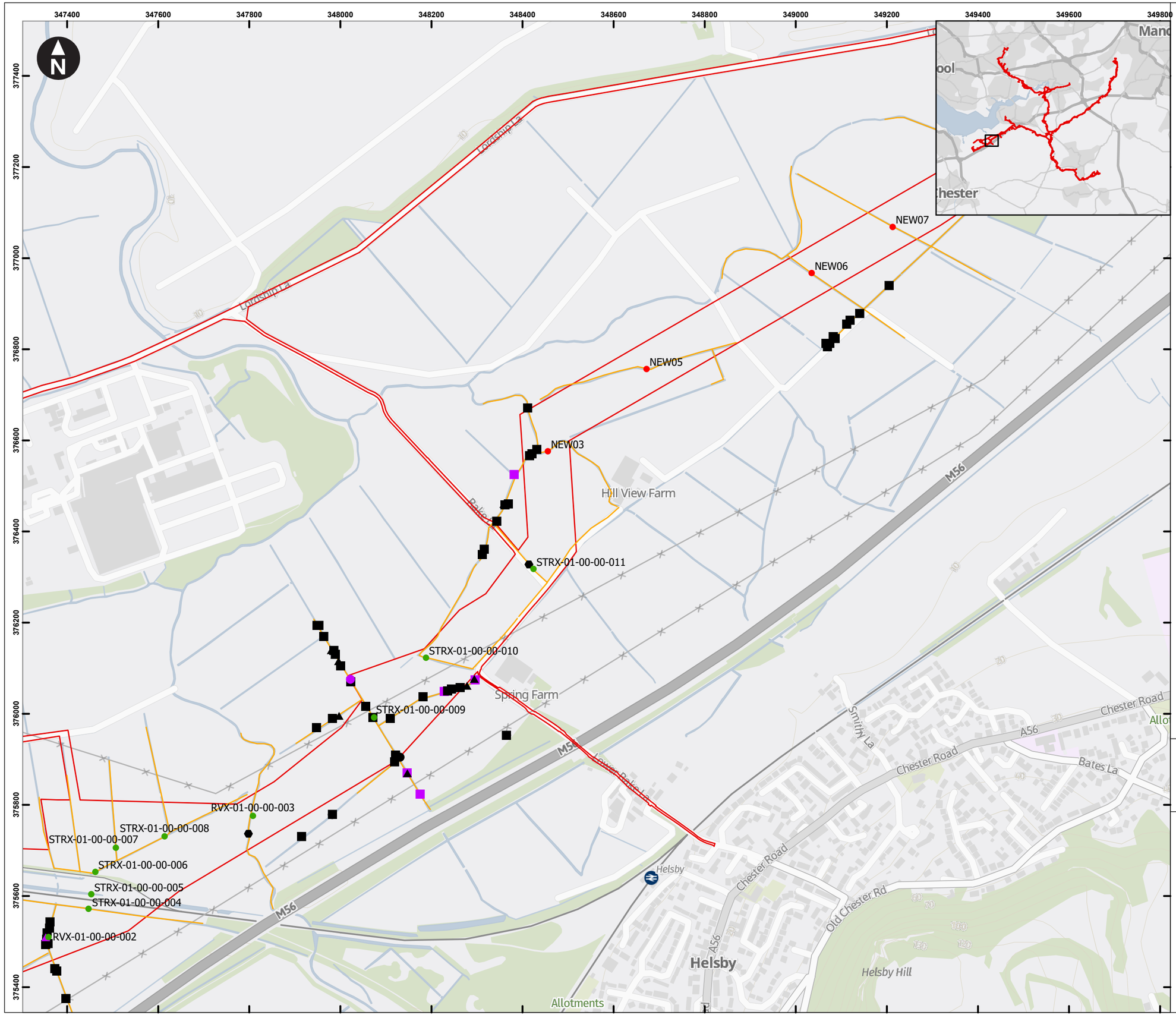
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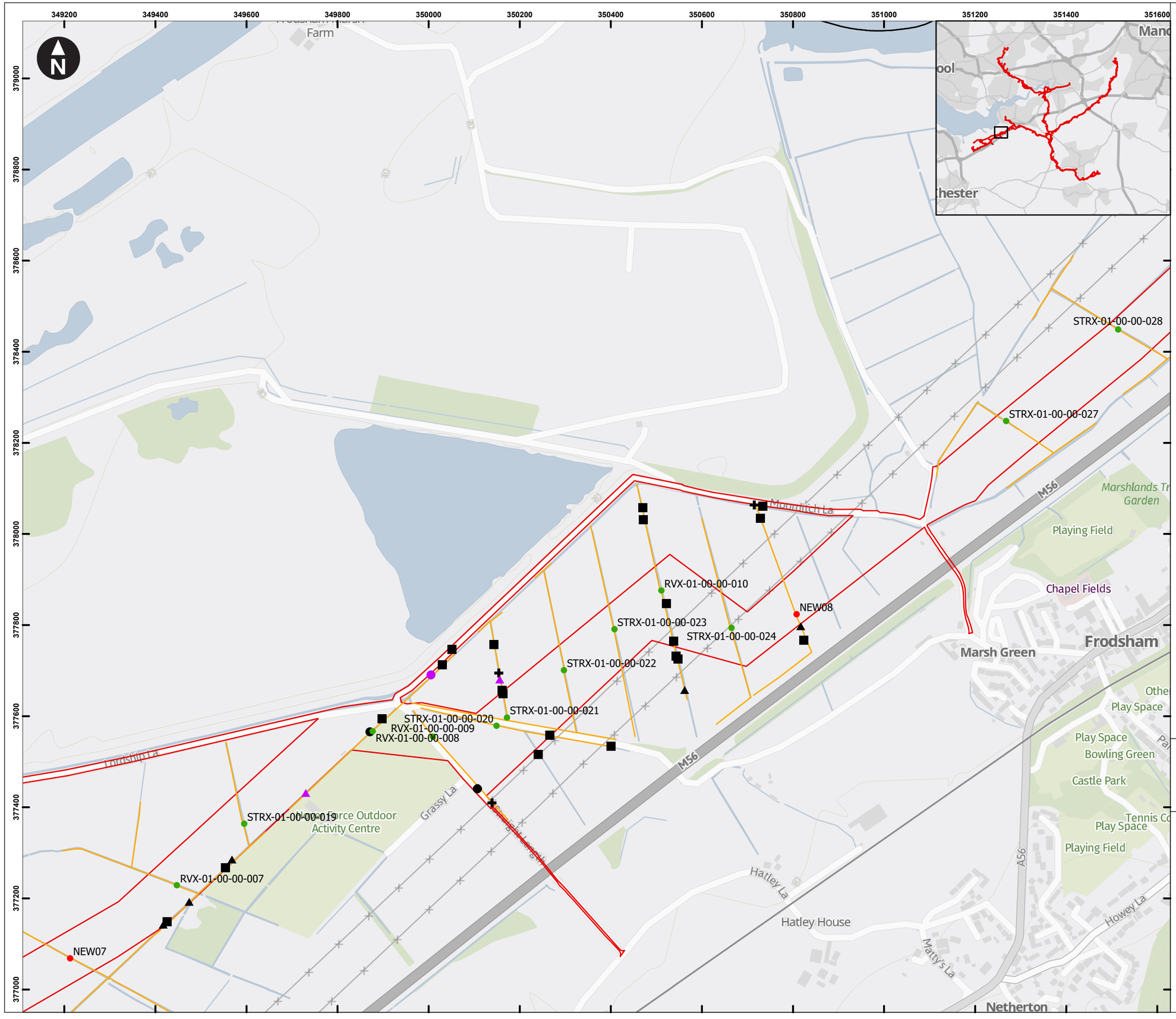
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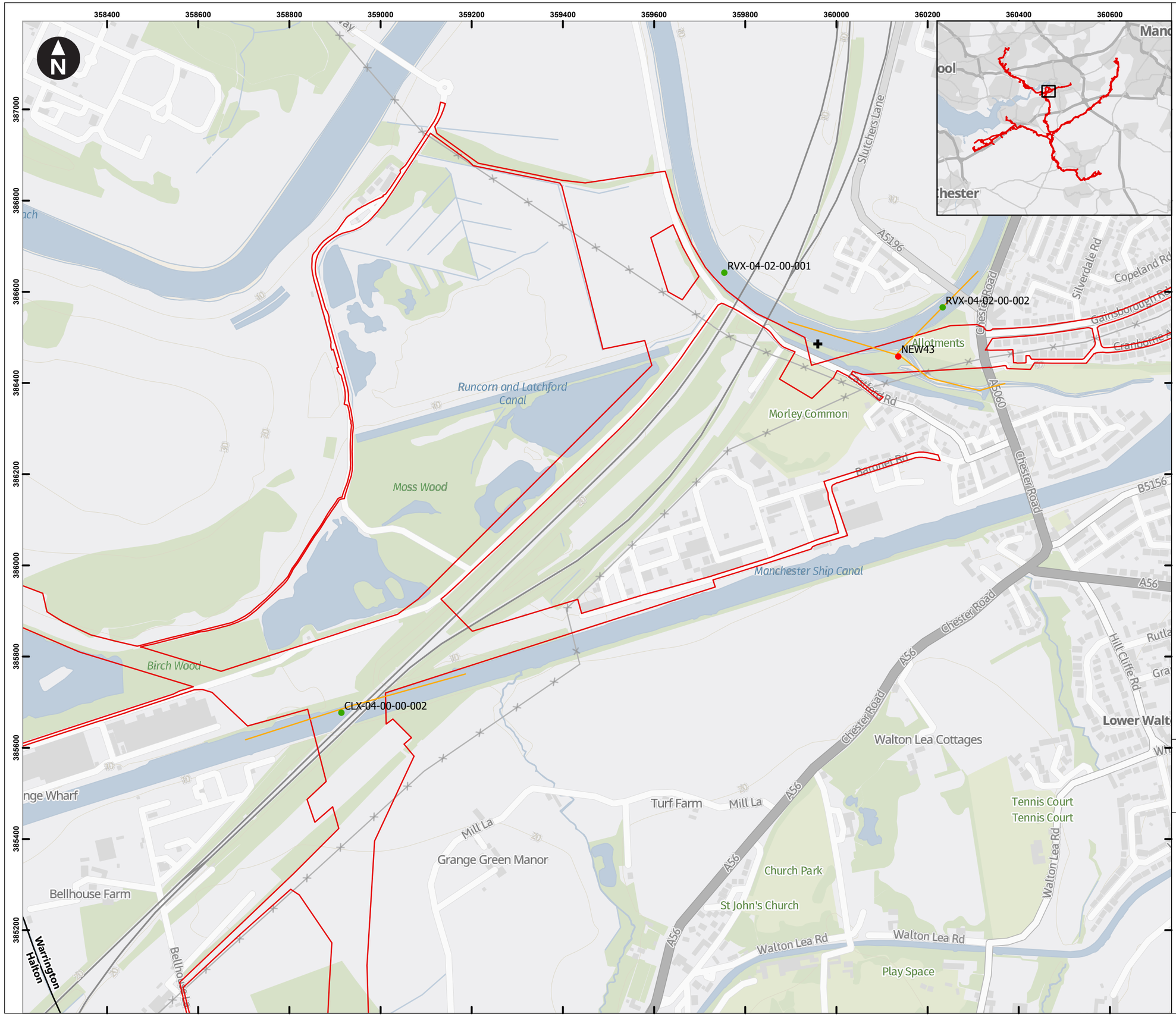
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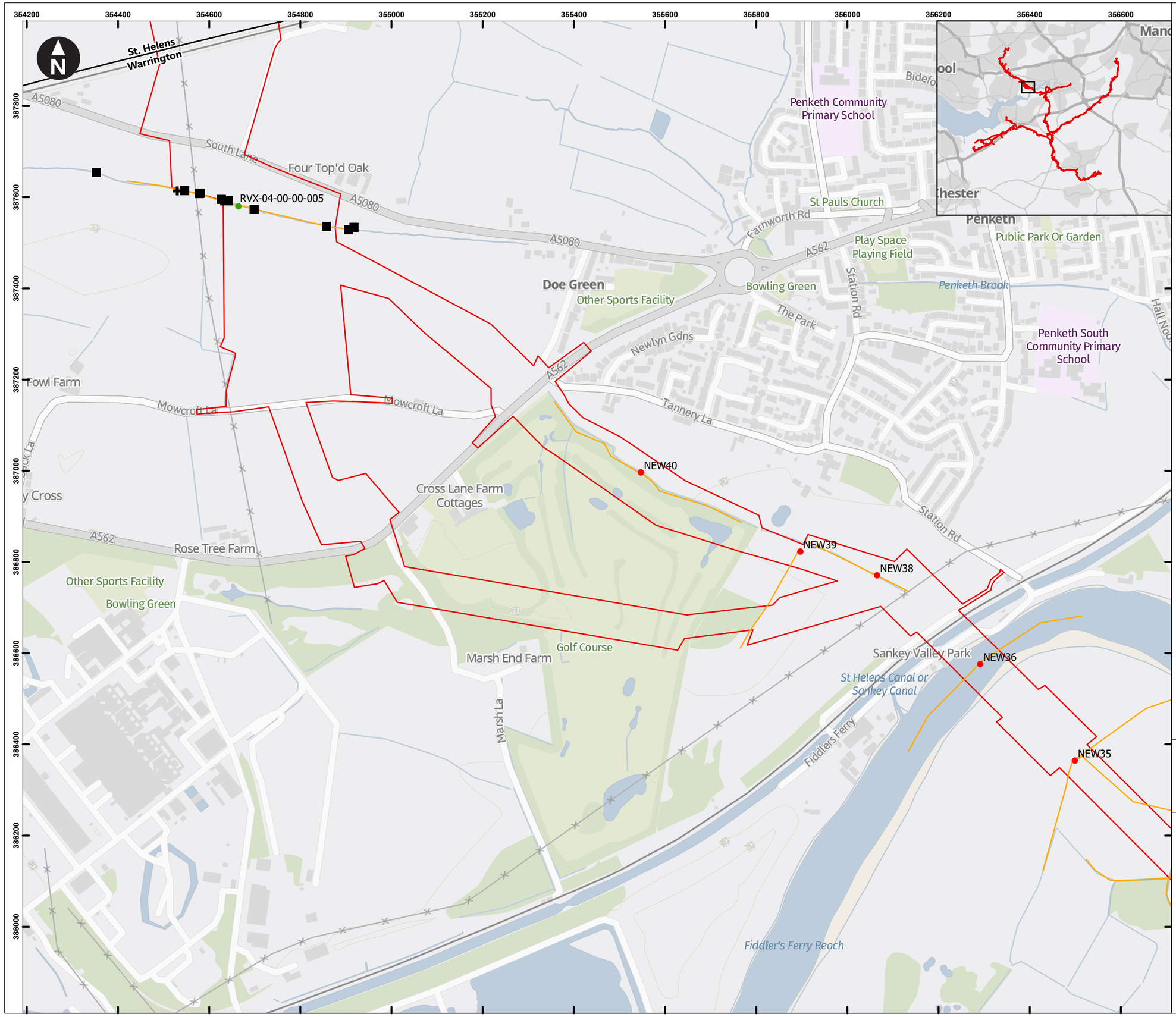
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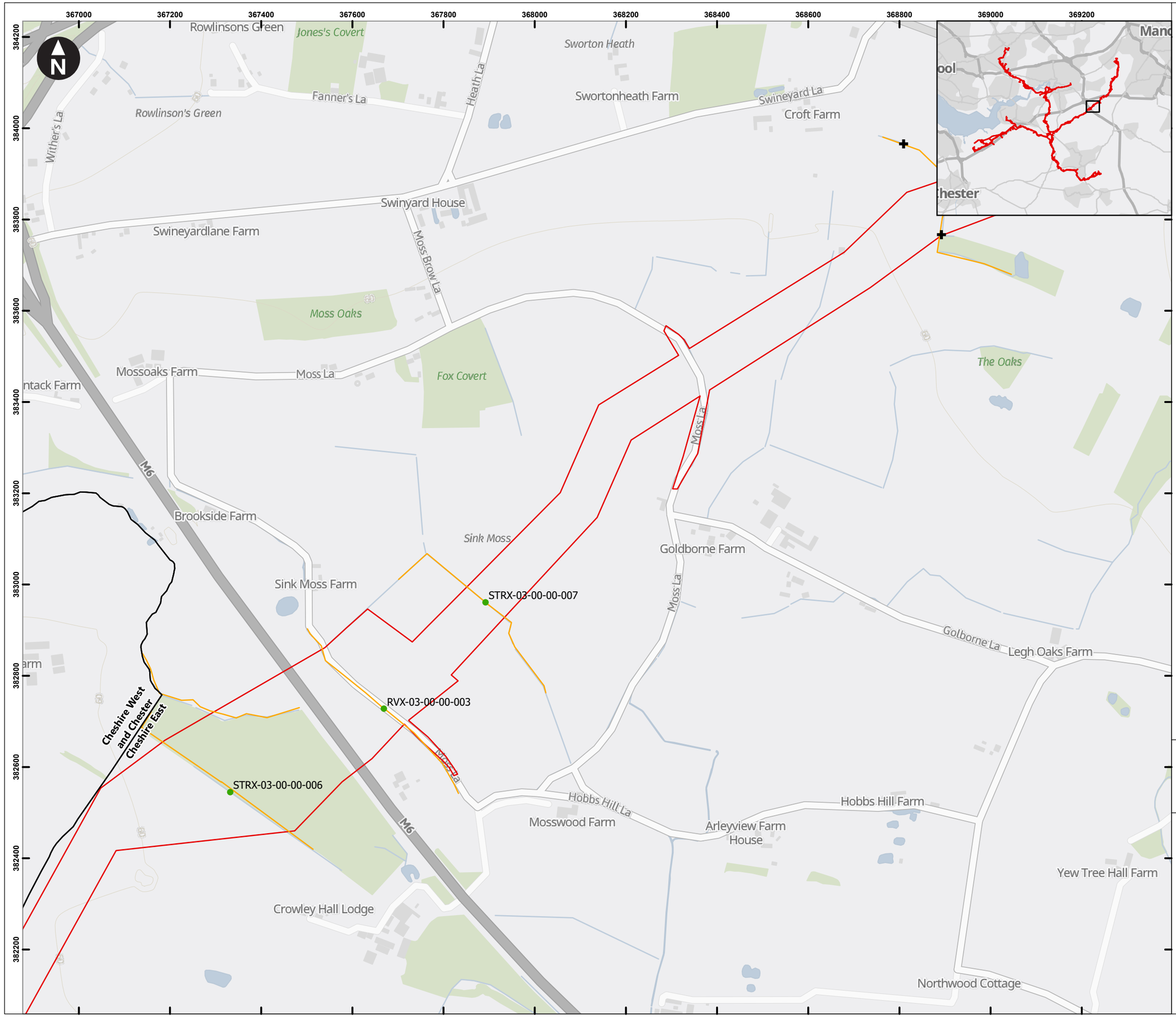
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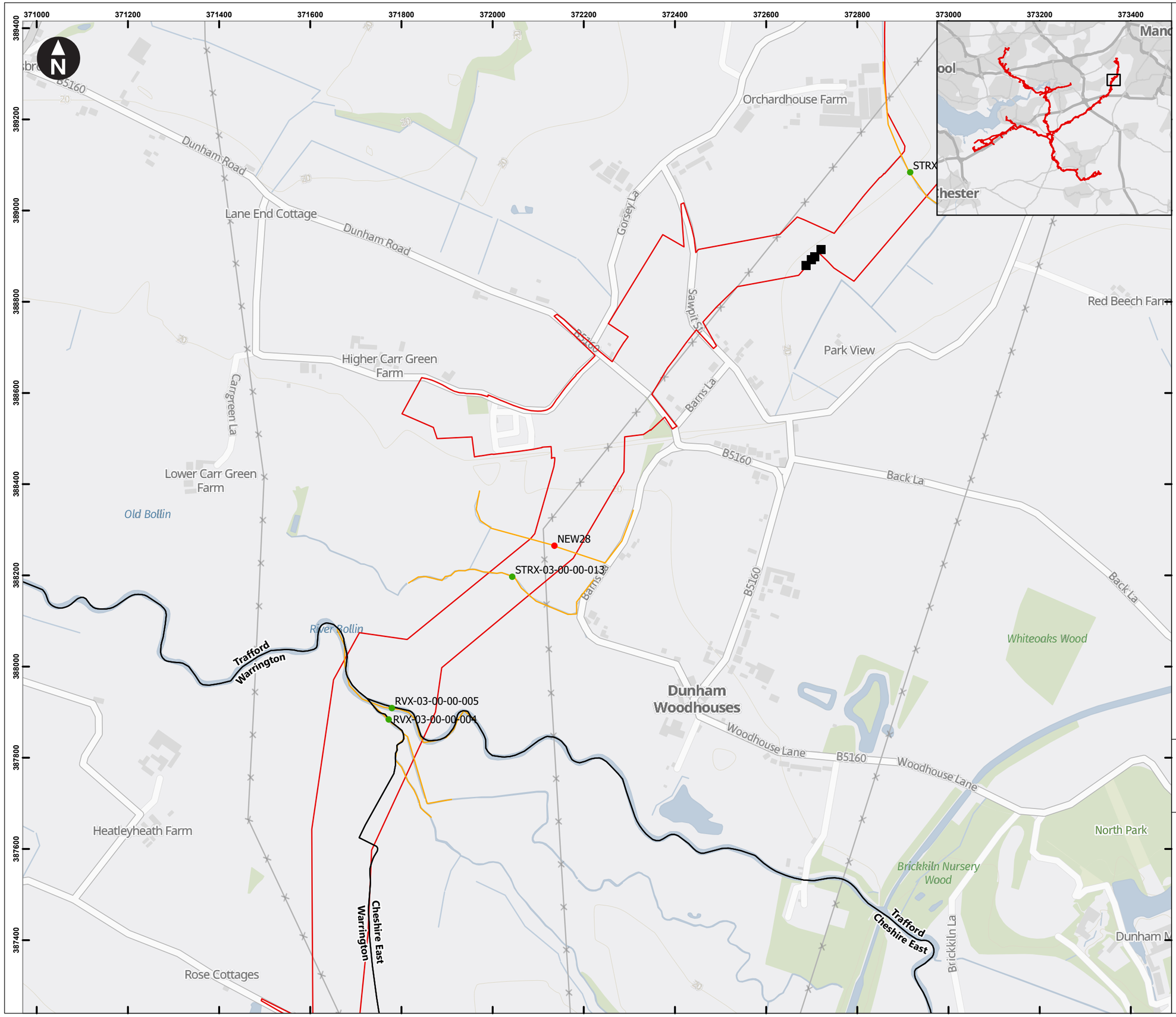
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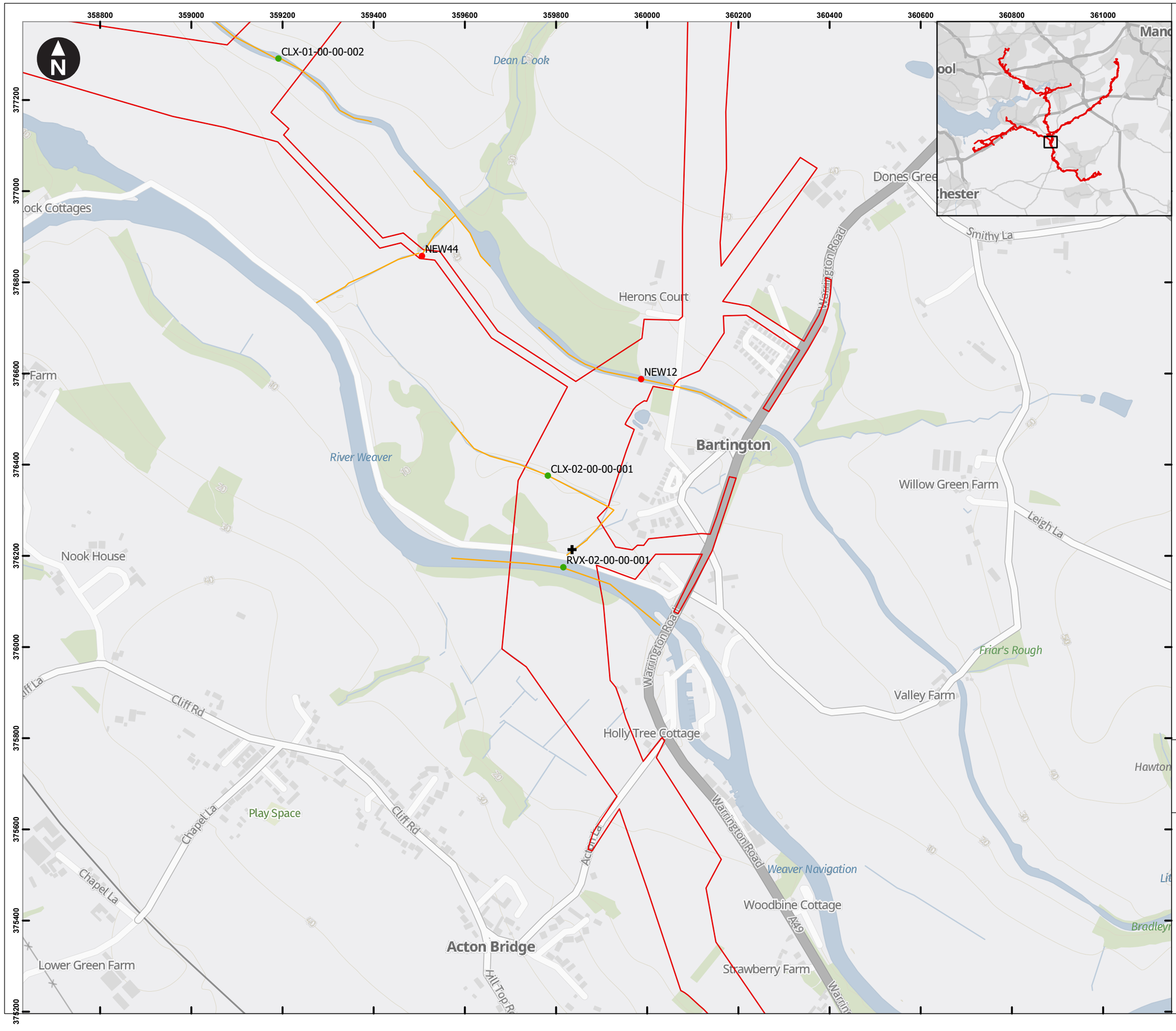
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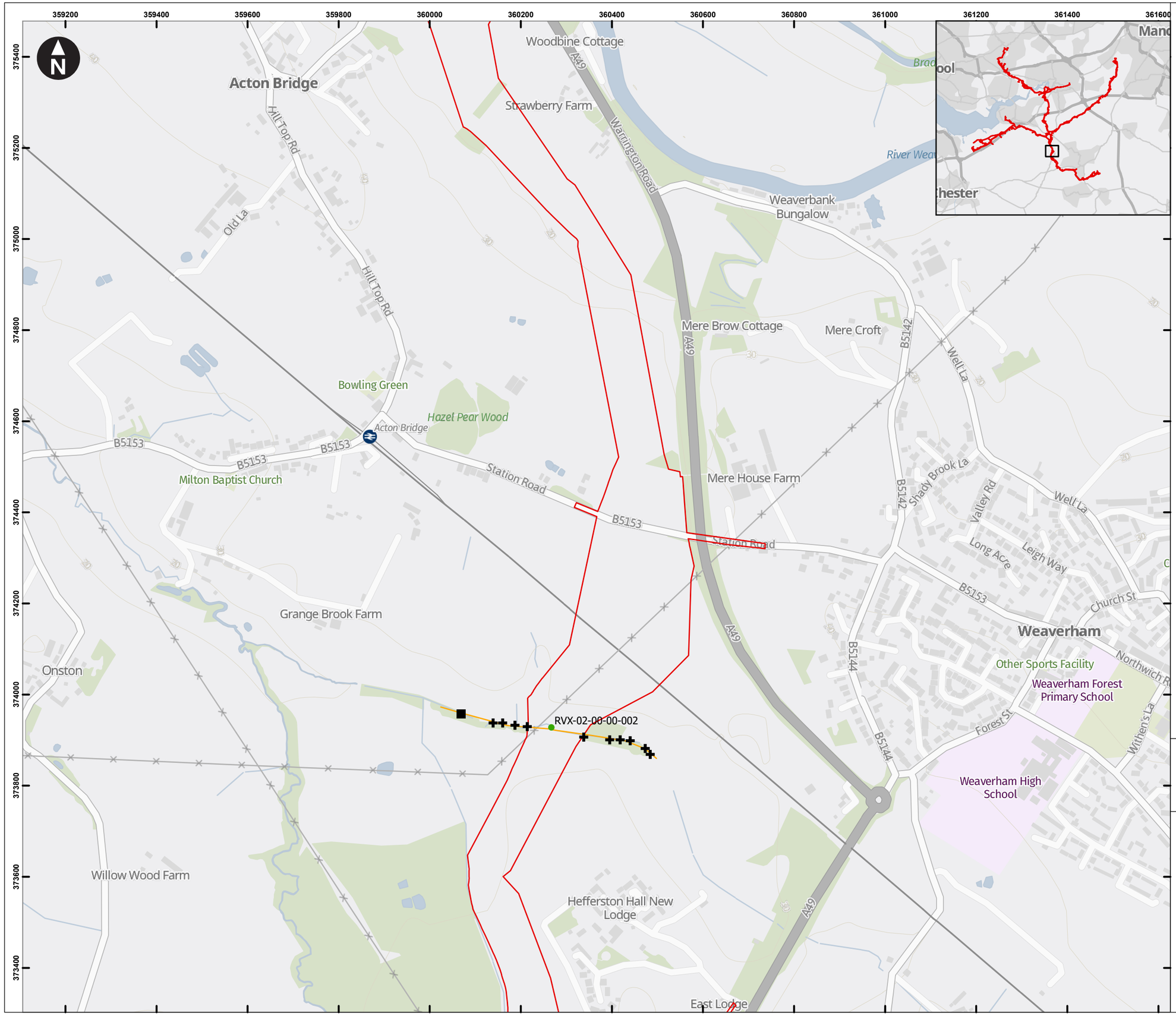
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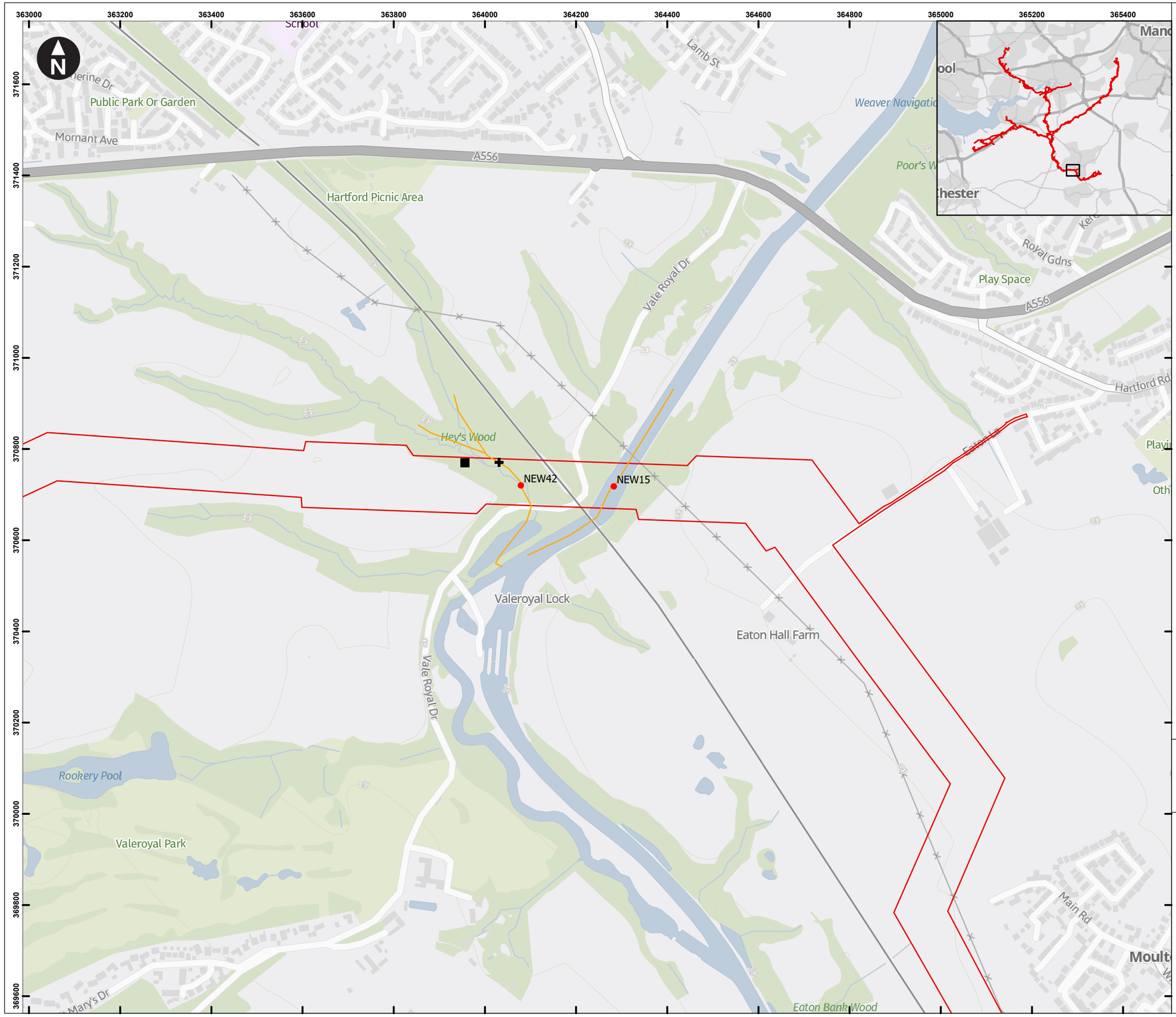
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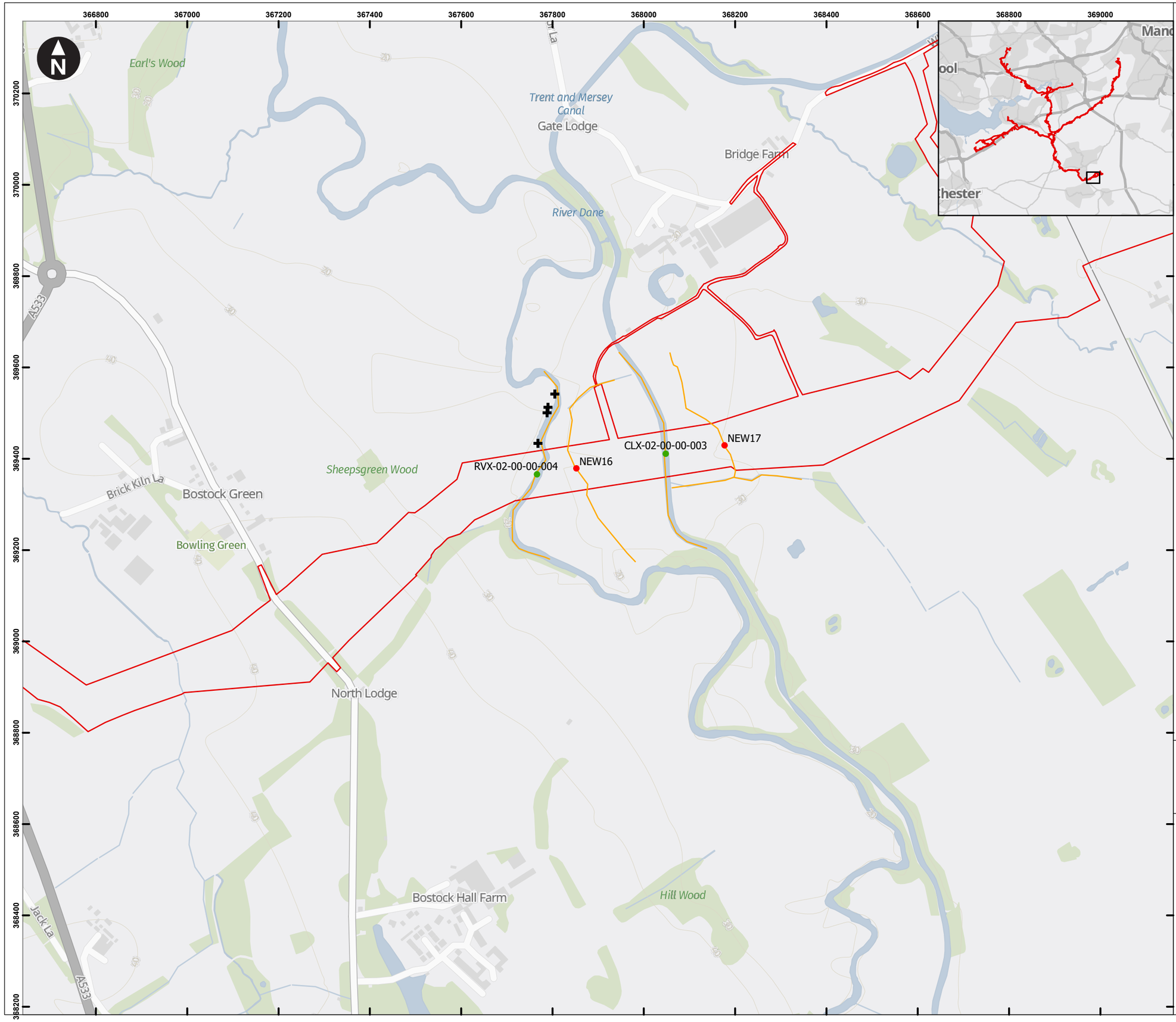
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Annex 5G 4
Summary Results Table

Key to Water Vole Habitat Suitability (WVHS) features:

Features indicative of habitat suitability for water voles are described in a series of Suitability Indices (SI) as follows:

SI1 – Well developed (>60%) bankside and emergent vegetation to provide cover; SI2 – Year-round availability of food sources; SI3 – Suitable refuge areas above extremes in water levels; SI4 – Steep banks suitable for burrowing; SI5 – Permanent open water; SI6 – Presence of berm (ledge at water level); SI7 – Lack of disturbance through poaching, grazing and / or recent management; SI8 – Nest building opportunities in vegetation above water level.

Habitat suitability is characterised based on the number of features present as: unsuitable (<3), sub-optimal (3-5) or optimal (>5).

Table 5G4.1 Watercourse Description and Otter and Water Vole Habitat Assessments and Survey Results

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW09	None	None	Full	Full	352225	378970	1	1	1	1	0	0	1	1	Optimal	Negligible (minor watercourse with poor water quality).	Optimal (minor watercourse connected to ditch network).	Sub-optimal (watercourse shaded by scrub).	Wet ditch between arable fields. No perceptible flow, mostly stagnant. Poor water quality. Heavily shaded. Heavily vegetated banks. Shaded by hawthorn and alder tree line. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
CLX-01-00-00-001	None	Surveys constrained due to south bank only surveyed from a distance because of access limitations.	Partial	Partial	353429	378938	0	0	0	0	1	0	0	0	Unsuitable	Optimal (fish very likely present, further indicated by presence of fishermen).	Optimal (large watercourse with some trees present).	Sub-optimal (mostly engineered concrete banks with little holt or resting place opportunity, but major watercourse with some woodland in northern edge of survey extent).	Weaver Navigation, a straightened section of the River Weaver. ~30m wide river, depth unknown, slow flow with turbid water, ~0.2m high bank on north side, ~2.5m on south side. Sloped banks on both sides. Engineered, concrete and corrugated metal banksides with small patches of reeds. Area at crossing is highly urbanised, lying between two bridges and near a major road and buildings. No otter or water vole evidence observed.
CLX-01-00-00-002	None	No access for survey in Autumn 2022. Survey to be completed in Autumn 2024.	Not surveyed	Full	359191	377291	0	0	0	1	1	0	0	0	Unsuitable	Optimal (major watercourse and likely to support fish populations).	Optimal (major watercourse likely to connect suitable habitats).	Sub-optimal (major watercourse but lacks suitable vegetation, mostly concrete banks and bramble scrub).	Trent and Mersey Canal. ~5-10m wide canal, with slow moving flow. Water appears turbid. Bramble scrub on north bank, artificial ~10cm concrete bank on south. Surrounded by other neutral grasslands on both banks. Heavily disturbed by canal boats. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
CLX-02-00-00-001	None	No access for survey in Autumn 2022. Survey to be completed in Autumn 2024. Spring 2023 survey constrained due to health and safety considerations caused by steep banks.	Not surveyed	Partial	359782	376376	1	1	0	0	0	0	1	1	Sub-optimal	Negligible (minor watercourse and unlikely to support fish populations).	Optimal (directly connects to River Weaver).	Negligible (vegetation unsuitable for holts or resting places).	Wet ditch connected to River Weaver. Shallow water under 10cm. Deep banks. Channel choked with common reed and willowherb. Potential water vole footprints recorded. No otter evidence observed.
CLX-02-00-00-003	None	None	Full	Full	368048	369411	1	1	1	1	1	1	0	1	Optimal	Optimal (major watercourse likely to sustain fish populations).	Optimal (major watercourse).	Optimal (major watercourse with woodland in south, multiple sites on stretch good for holt creation).	Trent and Mersey Canal. ~5m wide, unknown depth. Steady constant flow, turbid and poor-quality water due to field runoff. Banksides made up of hedgerow on the west side and reedbed on the east. Significant signs of human presence and management in the area. No otter or water vole evidence observed.
CLX-03-00-00-001	Crossing location moved <50m on same watercourse between Autumn 2022 and Spring 2023 surveys.	None	Full	Full	371666	386642	0	0	0	0	1	0	0	0	Unsuitable	Optimal (major watercourse likely to hold fish populations).	Optimal (major watercourse likely to be used for commuting).	Negligible (managed banks little vegetation or trees nearby).	Bridgewater Canal. ~10m wide, unknown depth and slow flow. Banksides are shallow and concrete, with little vegetation. Watercourse flanked by amenity grassland. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
CLX-04-00-00-001	Crossing location moved ~140m east on same watercourse between Autumn 2022 and Spring 2023 surveys.	Partial survey in Autumn 2022 as surveys were undertaken ~140m west of the crossing location. Spring 2023 survey constrained due to health and safety concerns.	Partial	Full	359080	384785	1	1	1	0	1	0	0	0	Sub-optimal	Optimal (major watercourse and likely to hold fish populations).	Optimal (major watercourse with overhanging trees and scrub).	Optimal (major watercourse with overhanging trees and scrub).	Cheshire Ring Canal. ~8m wide, unknown depth. Murky, turbid water. Light flow. Banks ~0.5m high. Reinforced bank on northern side. Unmanaged gently sloping southern bank. Overhanging trees could provide shelter for otters. Heavily disturbed by canal boat traffic. Small mammal burrow/s recorded but no other characteristic or potential water vole evidence observed along watercourse. No otter evidence observed.
CLX-04-00-00-002	None	No access for survey in Autumn 2022. Survey to be completed in Autumn 2024. Spring 2023 survey constrained due to south bank only surveyed from the north bank due to access restrictions.	Not surveyed	Partial	358914	385677	1	1	1	0	1	0	0	1	Sub-optimal	Optimal (major watercourse and likely to hold fish populations).	Optimal (major watercourse likely to provide a major commuting route between suitable habitats).	Optimal (major watercourse with woodland on northern side).	Manchester Ship Canal. ~45m wide, depth unknown. Banks ~5-10m high. Steep banks over 45 degrees. Average water quality. Steady flow. Reinforced banks on both sides. Banks shrubby, with grasses and reeds. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW01	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	345832	374786	1	1	0	1	0	0	0	0	Sub-optimal	Negligible (minor watercourse unlikely to sustain fish populations).	Negligible (minor watercourse with little connectivity).	Negligible (minor watercourse with little suitable vegetation).	Wet ditch associated with hedge, between grassland and crop field. ~1m wide. Very shallow water (~5cm), dry in parts and would likely dry in warmer periods. No visible flow. Poor water quality with visible pollution in water and subject to field runoff. Banks ~1.5m deep. Steep banks of over 45 degrees. Vegetated banks made up of hedgerow, gorse, bramble, nettles, cleavers. Ditch choked with willowherb vegetation in parts. nettles, also present. Potential water vole footprints observed. Rat droppings also present. No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW02	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	345872	374816	1	1	1	1	1	1	0	1	Optimal	Negligible (minor watercourse unlikely to sustain fish populations).	Negligible (minor watercourse with little connectivity).	Negligible (minor watercourse with little suitable vegetation).	Wet ditch between grassland and crop field. ~1m wide, depth under 10cm. Banks ~1.5m deep. No visible flow. Poor water quality subject to field runoff. Steep banks of over 45 degrees. Heavily vegetated banks with hedgerow, nettles, cleavers, willowherb. Watercourse occasionally choked with vegetation. No otter or water vole evidence observed.
NEW03	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	348455	376579	1	0	1	1	1	0	0	1	Sub-optimal	Negligible (minor watercourse with fish almost certainly absent and poor water quality).	Sub-optimal (minor watercourse but with several ditches and scrub patches nearby).	Sub-optimal (minor watercourse with little suitable vegetation such as trees and reeds nearby).	Wet ditch along hedgerow between arable fields. ~2m wide, depth unknown. No visible flow. ~2m high banks. Steep banks over 45 degrees. Poor water quality with turbid, algae covered water. Heavily polluted and subject to field runoff. Burrow with characteristics indicating water vole use, and other potential water vole burrows recorded. Water vole latrine, potential feeding station and footprints also recorded. No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW04	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	344829	374852	0	1	1	1	1	1	1	1	Optimal	Negligible (fish likely absent).	Negligible (minor watercourse with little connectivity).	Sub-optimal (wood present but not very mature).	Ditch between road verge and strip of woodland. ~1m wide, with unknown depth. Poor water quality. Banks ~2m deep and steep (over 45 degrees) Vegetated mud banksides made up of grasses, nettles, and brambles, with nearby wooded areas. Area is heavily disturbed by busy road to south. Potential water vole burrow and footprint. No otter evidence observed.
NEW05	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	348672	376759	1	0	1	1	1	0	0	1	Sub-optimal	Negligible (minor watercourse and fish likely absent).	Negligible (minor watercourse, likely dries, very exposed).	Negligible (lack of vegetation such as trees or reeds).	Wet ditch between pasture fields. ~2m wide, unknown depth, ditch also dries at some points. No visible flow. Very poor water quality, turbid water and algae present. Heavily polluted with field runoff. Steep banks over 45 degrees. Banks made up of grass and hedge vegetation. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW06	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	349034	376969	0	1	1	1	1	0	0	1	Sub-optimal	Negligible (minor watercourse with fish likely absent).	Sub-optimal (minor watercourse but connected to network of other ditches).	Negligible (lack of bankside vegetation and minor watercourse).	Wet ditch between arable fields. ~2-3m wide, unknown depth. No visible flow. Poor quality, turbid water. Heavily poached and polluted with field runoff and algae present. Banks ~1.5m tall. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. Potential water vole burrows and latrines recorded on interconnecting watercourse (on the same watercourse as crossing RVX-01-00-00-007). No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW07	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	349213	377071	1	1	1	1	0	0	1	1	Optimal	Negligible (lack of water in ditch).	Sub-optimal (connected to ditch network with some trees and woodland).	Negligible (minor watercourse with little suitable vegetation although suitability increases where woodland is present).	Partially wet ditch. Only wet in eastern part, where it connects with woodland. Ditch is between arable fields. ~2m wide. Unknown depth. No perceptible flow where water is present. Vegetated banks including trees and reeds. Steep banks over 45 degrees. No otter or water vole evidence observed. Potential water vole burrows and latrines and recorded on interconnecting watercourse (on the same watercourse as crossing RVX-01-00-00-007).
NEW08	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	350808	377825	1	1	1	1	0	1	0	1	Optimal	Negligible (minor watercourse which likely dries, and poor water quality making fish populations unlikely).	Sub-optimal (minor watercourse, but with good connectivity to ditch network).	Sub-optimal resting place suitability (minor watercourse and lacking in suitable vegetation).	Wet ditch between pasture fields. ~2m wide, ~2-10cm deep. Likely dries in warmer periods. Poor water quality. Slow flow visible. Steep, densely vegetated banks, with grasses, nettles, bramble, and hedgerow along bank, with wooded area to the north. Potential water vole burrows and latrine recorded. No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW10	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	352913	379431	0	0	0	0	1	0	0	0	Unsuitable	Optimal (large watercourse with fish populations likely).	Optimal (substantial watercourse with suitable habitat to provide cover).	Sub-optimal (major watercourse but with limited bankside habitat).	Weaver Navigation canal. A straightened section of the River Weaver. Canal with concrete reinforced banks. ~20m wide river. Depth ~2m. Some areas with reinforced concrete banks, other areas are vegetated. One bank ~0.5m high, the other ~2m high. No in channel vegetation. No otter or water vole evidence observed.
NEW11	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	353013	379521	0	0	0	0	0	0	0	0	Unsuitable	Negligible (low water levels unable to support fish populations).	Optimal (minor watercourse but connected to River Weaver).	Sub-optimal (watercourse with limited bankside habitat and limited connectivity to suitable resting sites beyond the bank).	Ditch within woodland. ~3-4m wide, ~5cm deep. Clear, fast flowing water. Silty, rocky substrate. No otter or water vole evidence observed.
NEW12	None	Not on original crossing schedule. Survey to be completed in Autumn 2024. Spring 2023 survey constrained due to south bank only surveyed from distance because of dense vegetation.	Not surveyed	Partial	359987	376589	1	1	1	1	1	0	0	1	Optimal	Optimal (substantial watercourse likely to sustain fish populations).	Optimal (substantial watercourse and with some trees providing shelter and connecting to woodland).	Sub-optimal (substantial watercourse and with some trees providing shelter and connecting to woodland, however highly disturbed by boat traffic).	Trent & Mersey Canal. ~10m wide, depth >2m, north bank ~1.5m high, south bank ~0.5m high. North bank covered by reeds. South bank concrete. Highly disturbed by boat traffic. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW14	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	361279	371646	0	0	0	1	0	0	0	0	Unsuitable	Negligible (shallow and partially dry ditch).	Sub-optimal (minor watercourse which dries annually but with woodland shelter).	Sub-optimal (watercourse runs through woodland).	Ditch with associated with line of mature trees. Partially dry in places. Clear water. In channel vegetation mostly absent. Bankside vegetation consists of grasses, nettles, willowherb. Connects to pond in east. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.
NEW15	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	364225	370723	1	1	1	0	1	1	1	1	Optimal	Optimal (major watercourse with fish present).	Optimal (major watercourse joining with nearby canal).	Optimal (woodland provides holt and shelter potential).	River Weaver. ~35m wide, unknown depth. Both steep and shallow banks. Highly disturbed by anglers and boat traffic. Otter spraint recorded. No water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW16	None	None	Full	Full	367852	369381	1	1	1	1	0	1	0	1	Optimal	Negligible (minor watercourse with little potential for fish populations).	Optimal (minor but connected to River Dane).	Sub-optimal (minor watercourse but near to River Dane).	Wet ditch between fields. ~1m wide, under 10cm deep. Likely dries in warmer periods. Banks ~1m high. Steep banks over 45 degrees. Banksides vegetated with grasses, nettles, brambles, and Himalayan balsam. Poor water quality, no visible flow. No otter or water vole evidence observed.
NEW17	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	368177	369431	1	1	1	1	0	1	0	1	Optimal	Negligible (minor watercourse and unlikely to support fish populations).	Optimal (minor watercourse but connected to Trent and Mersey Canal).	Sub-optimal (minor watercourse with limited suitable vegetation).	Wet ditch between fields. ~0.5m wide, under 10cm deep. Likely dries in warmer periods. Banks ~1.5m high. Steep banks over 45 degrees. Poor quality water, no visible flow. Vegetated banks with grasses, nettles, bramble, and scattered trees. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. Rat droppings observed. No otter evidence recorded.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW18	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	369579	370022	0	0	0	0	0	0	0	0	Unsuitable	Negligible (ditch mostly dry and unlikely to support fish).	Sub-optimal (minor watercourse but well connected).	Negligible (minor watercourse with limited bankside vegetation).	Partially dry ditch. Connects to Puddinglake Brook, ditch network and two ponds. Shallow where wet. Mixture of steep banks and shallow dip with mostly terrestrial grass cover. Ponds likely to have fish in but would only connect to ditches in flood. No otter or water vole evidence observed.
NEW25	None	Not on original crossing schedule. Survey to be completed in Autumn 2024. Spring 2023 survey constrained due to dense vegetation.	Not surveyed	Partial	362485	379655	1	0	0	0	0	1	0	0	Unsuitable	Negligible (minor watercourse with little potential for fish populations).	Sub-optimal (minor watercourse but some trees along watercourse could provide shelter).	Negligible (minor watercourse without suitable vegetation and in close proximity to road).	Wet ditch bordering hedgerow. Clear water, gentle flow. Sloped banks. Channel vegetation present. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW26	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	362759	379834	1	0	0	1	0	1	0	0	Sub-optimal	Negligible (minor watercourse with little potential for fish populations).	Negligible (minor watercourse with little vegetation along watercourse could provide shelter).	Negligible (minor watercourse without suitable vegetation and in close proximity to road).	Ditch next to road and arable field. Very shallow less than ~5cm deep. Banks ~2-2.5m high. Clear water. Banksides vegetated with grasses, bracken, willowherb, bramble. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.
NEW28	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	372135	388267	1	1	0	1	0	1	0	1	Sub-optimal	Negligible (minor watercourse unlikely to support fish).	Negligible (minor watercourse and isolated watercourse).	Negligible (minor watercourse with little water and mostly unsuitable vegetation).	Ditch along field edge. ~0.5-1m wide. Banks ~2-2.5m high. Varies between very shallow, dry, and some damp patches. No flow where wet. Steep banks over 45 degrees. Water choked with algae. Banks vegetated with grasses and herbs. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW30	None	Not on original crossing schedule. Survey to be completed in Autumn 2024. Spring 2023 survey constrained due to dense vegetation.	Not surveyed	Partial	357277	385830	1	1	1	1	0	0	1	1	Optimal	Sub-optimal (minor watercourse and likely to only hold small fish populations).	Optimal (minor watercourse but connected to River Mersey and large amount of woodland nearby).	Optimal (minor watercourse but connected to River Mersey and large amount of woodland nearby).	Wet ditch between fields. ~2m wide, ~0.5m deep water. Banks ~2.5m high. Steep banks over 45 degrees. Moderate water quality. No visible flow. Vegetated banks made up of grasses and reeds. No otter or water vole evidence observed.
NEW31	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	356988	385763	1	1	1	1	1	0	1	1	Optimal	Negligible (minor watercourse and unlikely to sustain fish).	Sub-optimal (minor watercourse, indirectly connected to River Mersey).	Sub-optimal (minor watercourse with mostly unsuitable vegetation).	Wet ditch between fields. ~1m wide, depth unknown, but ditch was dry during one survey season. Banks ~3m high. Steep banks, over 45 degrees. Poor water quality. Slow flow visible. Channel dominated by reeds. Occasional ash and horse chestnut. Small mammal burrow/s recorded along interconnecting ditch, but no other characteristic or potential water evidence observed along watercourse. No otter evidence recorded.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW32	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	356806	386024	1	1	1	1	1	0	0	1	Optimal	Sub-optimal (minor watercourse only likely to support minor fish populations).	Sub-optimal (minor watercourse, indirectly connected to River Mersey).	Sub-optimal (minor watercourse with mostly unsuitable vegetation).	Wet ditch between fields. ~2m wide, unknown depth. Banks ~2m deep. Poor water quality. Steep banks over 45 degrees. Grassy vegetated banks. No otter or water vole evidence observed.
NEW33	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	356753	386116	1	1	1	1	1	0	0	1	Optimal	Sub-optimal (minor watercourse only likely to support minor fish populations).	Sub-optimal (minor watercourse, indirectly connected to River Mersey).	Sub-optimal (minor watercourse connected to reedbed).	Wet ditch between reedbed and grassland. ~3m wide, unknown depth. Poor water quality. No visible flow. Steep banks over 45 degrees. Margins of reeds, willow scrub, bramble and thistle. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW34	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	356719	386152	1	1	1	1	1	0	0	1	Optimal	Sub-optimal (minor watercourse only likely to support minor fish populations).	Sub-optimal (minor watercourse, indirectly connected to River Mersey).	Sub-optimal (minor watercourse connected to reedbed).	Wet ditch between fields. Dry in some areas. ~1.5m wide. Channel ~1.5m deep. Steep banks over 45 degrees. Banks vegetated with brambles. Channel choked with reeds. Small mammal burrows recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.
NEW35	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	356499	386366	1	1	1	1	0	1	0	1	Optimal	Sub-optimal (minor watercourse only likely to support minor fish populations).	Sub-optimal (minor watercourse, indirectly connected to River Mersey).	Sub-optimal (minor watercourse with mostly unsuitable vegetation).	Wet ditch along hedgerow between crop fields. ~2m wide, ~20-50cm deep water, ~2m high banks. No visible flow. Turbid water. Steep banks over 45 degrees. Vegetated banks made up of reed and hedgerow. Small mammal burrows recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence recorded.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW36	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	356291	386578	1	1	1	0	1	1	1	1	Optimal	Optimal (major watercourse likely to hold fish populations).	Optimal (major watercourse likely to be used as commuting route).	Optimal (major watercourse with reeds providing potential shelter).	River Mersey. ~105m wide at crossing location. Unknown depth. Slow flow. Brown, turbid water. Fish likely. Sloped banks under 45 degrees. Exposed, silty/muddy substrate. Large amounts of reeds. No otter or water vole evidence observed.
NEW38	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	356065	386773	1	1	1	1	1	0	1	1	Optimal	Negligible foraging opportunity (very minor watercourse unlikely to provide substantial food sources).	Negligible (minor watercourse with little connectivity).	Negligible (minor watercourse with unsuitable vegetation).	Field drainage ditch. ~1.5m wide, ~0.3m deep. Slow trickling flow. Low turbidity. ~3m banks. Steep, over 45 degrees. Mud banks with some vegetation. Signs of human activity and runoff from surrounding fields. Recently felled trees in channel. Small mammal burrows recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence recorded.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW39	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	355897	386825	1	1	1	1	0	0	0	1	Sub-optimal	Negligible foraging opportunity (very minor watercourse unlikely to provide substantial food sources).	Negligible (mostly dry ditch).	Negligible (mostly dry watercourse).	Field drainage ditch. ~0.5m wide, ~0.1m deep. Dry in large parts during survey and likely dries completely in warmer weather. Banks ~0.5m high. Steep, over 45 degrees. Stagnant, poor quality water. No flow. Vegetated banks with grasses, bramble, ivy, hedgerow and trees. No otter or water vole evidence observed.
NEW40	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	355547	386999	1	1	0	1	1	0	1	0	Sub-optimal	Sub-optimal (minor watercourse but connected to River Mersey and within woodland).	Optimal (minor watercourse but connected to River Mersey).	Optimal (minor watercourse but connected to River Mersey and within unmanaged woodland).	Fast flowing brook through unmanaged woodland. ~3m wide, ~1.5m deep. Steep earth banks with trees. Fast flowing water. No otter or water vole evidence observed.
NEW41	None	Not on original crossing schedule. Survey to be completed in Autumn 2024. Spring 2023 survey constrained due to no access along southern survey extent.	Not surveyed	Partial	361939	370778	1	1	1	1	0	1	0	1	Optimal	Negligible (minor watercourse with little potential for fish populations).	Sub-optimal (minor watercourse but connected to woodland).	Sub-optimal (minor watercourse that runs through woodland).	Brook running through woodland. ~1m wide, ~10cm deep. Banks ~1.5m high. Very slight flow. Steep banks over 45 degrees. Vegetated banks with grasses, bramble, nettles, and trees. Culverts in some places. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW42	None	Not on original crossing schedule. Survey to be completed in Autumn 2024. Spring 2023 survey constrained due to southern survey extent going into a culvert.	Not surveyed	Partial	364082	370674	1	0	1	1	1	1	1	1	Optimal	Optimal (minor watercourse but directly connected to River Weaver).	Optimal (major watercourse connecting to River Weaver).	Optimal (connects to major watercourse and woodland).	Small stream within woodland. Less than ~1m wide, ~20cm deep. Banks ~1m high. Turbid, muddy water. Slow constant flow. Potential water vole burrow and footprints observed. Multiple otter spraints and footprints in sand deposited on outside of river bend.
NEW43	None	Not on original crossing schedule. Survey to be completed in Autumn 2024. Spring 2023 survey constrained due to no access along the northern bankside.	Not surveyed	Partial	360073	386395	0	1	1	1	1	1	1	1	Optimal	Optimal (major watercourse and likely to hold fish populations).	Optimal (major watercourse).	Optimal (major watercourse).	River offshoot of River Mersey, directly adjacent to main river. ~20m wide at offshoot, ~50m at main part of river. Deep, but unknown depth. Banks 5m high. Fast flowing water. Mostly steep banks. Muddy substrate on banks. Some reeds and balsam present. Trees overhanging on watercourse. Potential water vole footprints observed. Otter footprint observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
NEW44	None	Not on original crossing schedule. Survey to be completed in Autumn 2024.	Not surveyed	Full	359506	376860	0	1	1	1	1	1	1	1	Optimal	Sub-optimal (minor watercourse, but connects two major watercourses).	Optimal (connects two major watercourses).	Optimal (trees and culverts provide opportunity, as well as close proximity to major watercourses).	Dean Brook. Runs between two major watercourses River Weaver and Trent & Mersey Canal. ~4m wide. No flow, stagnant water. Culverts, fast flowing on one side, stagnant on the other. Rushes and sedges present in channel. No otter or water vole evidence observed.
NEW45	None	Not on original crossing schedule. Survey to be completed in Spring and Autumn 2024. Spring 2023 survey constrained due to dense vegetation and eastern survey extent went into a culvert.	Not surveyed	Partial	357490	377547	1	1	1	1	1	1	1	1	Optimal	Negligible (very shallow watercourse, dry in parts, and unlikely to hold fish populations).	Sub-optimal (small watercourse within sheltered woodland).	Sub-optimal (small watercourse within sheltered woodland).	Small, shallow watercourse, ~1m wide, ~10cm deep. No in-channel or emergent vegetation, banks covered in woodland vegetation. Culverted at far east extent. Varied banks, with some steep banks over 45 degrees, but near flat in others. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-01-00-00-001	None	None	Full	Full	346924	375338	1	1	0	0	1	0	1	1	Sub-optimal	Sub-optimal (fish observed in watercourse, but watercourse unlikely to hold larger fish populations).	Sub-optimal (minor watercourse with several connected).	Sub-optimal (no trees nearby, though reeds are present).	Wet ditch ~3m wide, depth approximately ~20cm, with no noticeable flow. Water contains a large amount of algae, though is mostly clear where visible. Sloped banks of under 45 degrees dominated by reeds and rushes. Ditch surrounded by pasture grassland. Bank height is ~0.5-1m. Vegetated banks dominated by reeds and rushes, with grasses and nettles also present. Channel filled with aquatics, reeds, rushes. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-01-00-00-002	None	Surveys constrained due to culvert, dense vegetation, and fencing along the northern survey extent.	Partial	Partial	347359	375510	1	1	1	1	1	1	1	1	Optimal	Sub-optimal (fish observed in watercourse, but minor watercourse).	Sub-optimal (medium watercourse with several connected).	Sub-optimal (no trees nearby, though reeds are present).	Wet ditch ~3m wide, depth unknown, water clear, but with some algae present. Water has no noticeable flow. Steep banks of over 45 degrees dominated by reeds and rushes. Ditch surrounded by pasture grassland. Contains emergent and marginal Reed bed, and occasional hawthorn tree. Partly covered with algae. Ditch side vegetation includes nettles, spear thistle, water forget me not, red campion. Small mammal burrow/s and characteristic water vole latrine recorded. No otter evidence recorded.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-01-00-00-003	None	None	Full	Full	347859	375926	1	1	1	1	1	1	0	1	Optimal	Sub-optimal (medium watercourse, connected to ditch network, and nearby to small woodland).	Sub-optimal (medium watercourse with several connected, but with limited bankside cover).	Sub-optimal (reed dominated areas could provide resting potential).	Hornsmill Brook. Wet ditch ~3-5m wide. ~1m deep. Water is clear but dark in colour. Steep banks over 45 degrees on one side. Ditch surrounded by pasture grassland and cropland. Banks on the west side, dominated by nettles and Himalayan balsam. East side of ditch contains rough stalked meadowgrass, cocks foot, perennial ryegrass, broadleaved dock, reeds, red campion. Small mammal (potentially water vole) briefly seen. No otter evidence recorded.
RVX-01-00-00-007	None	None	Full	Full	349447	377229	1	1	0	0	1	1	0	0	Sub-optimal	Negligible (mostly dry and unlikely to support fish).	Negligible (minor watercourse with poor connectivity).	Negligible (minor water course very little suitable vegetation).	Wet ditch ~1m wide, ~0.5cm deep water. No perceptible flow. Poor water quality with algae suggesting eutrophication. Sloped banks with vegetation consisting of hawthorn, common nettles and grasses. Surrounded by arable fields. Potential water vole burrows and latrines recorded. No otter evidence recorded.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-01-00-00-008	None	Surveys constrained due to access restrictions along the northern bankside during Autumn 2022, and along the southern bankside during Spring 2023.	Partial	Partial	349877	377567	1	1	1	1	1	1	1	1	Optimal	Sub-optimal (minor watercourse which could support small fish and/or amphibians).	Sub-optimal (minor watercourse but with some connectivity).	Negligible (minor watercourse with little sheltering vegetation).	Wet ditch ~2m wide. Depth ~1m. Slow flow. Vegetated banks with long grass, forbs, bramble, and hawthorn scrub. Water vole latrine, likely and potential feeding stations, and potential burrows recorded. No otter evidence found.
RVX-01-00-00-009	None	Autumn 2022 survey constrained due to health and safety concerns.	Partial	Full	350009	377555	1	1	1	1	1	1	1	1	Optimal	Negligible (very minor watercourse with shallow water).	Sub-optimal (minor watercourse but with good connectivity and shelter).	Negligible (lack of trees or other suitable vegetation).	Wet drainage ditch between pasture fields. Watercourse ~0.5-1m wide, ~10cm deep. Fast flow. Steep banks ~3-4m high, which are unmanaged and vegetated. Lack of disturbance and connected to network of ditches. Potential water vole footprint and feeding station recorded. No otter evidence found.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-01-00-00-010	None	Survey in Spring 2023 constrained due to dense vegetation.	Full	Partial	350511	377876	1	1	1	1	0	0	1	1	Sub-optimal	Sub-optimal (minor watercourse which could sustain minor fish populations).	Sub-optimal (minor watercourse, but well connected to ditch network).	Sub-optimal (reed dominated areas could provide resting potential).	Deep drainage ditch with sections of isolated open water. ~2m wide, ~10cm deep water. Steep banks over 45 degrees, ~3-3.5m high. Water clear but dark. In channel vegetation made up of bulrushes, willowherb and other aquatics. Vegetated banksides consisting of tussocky grasses, canary grass, bramble, reeds etc. Potential water vole burrows and latrine observed. No otter evidence recorded.
RVX-01-00-00-013	None	Surveys constrained due to health and safety concerns.	Partial	Partial	351744	378636	1	1	1	1	1	0	0	1	Optimal	Sub-optimal (minor watercourse unlikely to support large fish populations).	Sub-optimal (minor watercourse but well connected to ditch network).	Sub-optimal (minor watercourse, some suitable vegetation provided by reeds).	Wet ditch ~2m wide. Unknown water depth. Slow current. Steep banks of over 45 degrees. Banks heavily vegetated with cow parsley, nettles, bramble, horsetail, cleavers, cocks foot, rough stalked meadowgrass, perennial ryegrass and occasional Hawthorn. Heavily shaded by vegetation along points of the ditch. Watercourse also contains dense aquatic vegetation. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-01-00-00-014	Crossing location moved 200m north on same watercourse between Autumn 2022 and Spring 2023 surveys.	Spring 2023 survey constrained due to health and safety concerns. Survey to be completed in Autumn 2024.	Not surveyed	Partial	352268	379020	1	1	1	1	1	0	1	1	Optimal	Optimal (large watercourse connected to the River Weaver and therefore likely to support large fish).	Optimal (large watercourse connected to the River Weaver).	Optimal (dense ruderals and nearby scrub provide optimal resting place potential).	~3m wide ditch with water running through. Water depth unknown. Slow water flow. Turbid water. Steep banks over 45 degrees. Banks are heavily vegetated with cow parsley, nettles, bramble, horsetail, cleavers, cocks foot, rough stalked meadowgrass, perennial ryegrass and occasional hawthorn, alder. Yellow iris present along edge of ditch. No otter or water vole evidence recorded.
RVX-01-00-00-015 (same watercourse as RVX-01-01-00-002)	None	Surveys constrained due to health and safety concerns.	Partial	Partial	352471	379128	1	1	1	1	1	1	1	1	Optimal	Optimal (large watercourse with clear water, and likely to have fish).	Optimal (large river with potential to have small inlets).	Optimal (large watercourse, with woodland).	Large river (~45m wide) with potential to have small inlets. Depth unknown. Fast flowing water. Clear water. Varied banks with steep banks made up of reedbeds and scrub, and low and flat banks which are heavily vegetated. Watercourse heavily disturbed by boats. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-01-00-00-016	None	Surveys constrained due to dense vegetation	Partial	Partial	353233	378863	1	1	1	0	0	1	1	1	Optimal	Sub-optimal (minor watercourse, though well connected to flooded wet woodland and major watercourse).	Optimal (minor watercourse but connected to River Weaver).	Sub-optimal (some potential provided by dense vegetation, and within bulrushes).	Wet ditch with shallow water, and partially dry in places. Heavily vegetated, choked with bramble and willowherb. Steep banks of over 45 degrees. No otter or water vole evidence observed.
RVX-01-00-00-017	None	None	Full	Full	358279	377431	0	0	0	0	1	1	0	0	Unsuitable	Sub-optimal feeding suitability (minor watercourse unlikely to support fish populations, but woodland may provide alternative food sources).	Optimal (minor watercourse but connects to River Weaver and woodland could provide cover).	Sub-optimal (minor watercourse but woodland provides good potential).	Longacre brook. Managed shallow stream running through pasture fields. Stream is dug out frequently by owner to prevent flooding. Runs through woodland. Bankside vegetation sparse. Constant flow. Steep banks over 45 degrees. Passes through semi mature woodland. Low levels of disturbance in woodland. Vegetated banks. Chanel devoid of emergent vegetation. Directly connects to River Weaver. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-01-00-00-018	None	Surveys constrained due to access restrictions.	Partial	Partial	358297	377420	0	1	1	1	0	0	1	1	Sub-optimal	Negligible (shallow or dry ditch depending on season, therefore unlikely to hold any fish populations).	Optimal (minor watercourse, but connects to River Weaver).	Sub-optimal (watercourse runs through woodland).	Longacre Brook. Ditch ~1-1.5m wide. ~10cm deep water, but dry during one survey season. Banks ~1m high and over 45 degrees. Banks and channel dominated by willowherb. Directly connects to River Weaver. No otter or water vole evidence observed.
RVX-01-01-00-002 (same watercourse as RVX-01-00-00-015)	None	Surveys constrained due to health and safety concerns.	Partial	Partial	352455	379137	1	1	1	1	1	1	1	1	Optimal	Optimal (large watercourse with clear water, and likely to have fish).	Optimal (large river with potential to have small inlets).	Optimal (large watercourse, with woodland and suitable vegetation on both sides).	Large river (~45m wide) with potential to have small inlets. Depth unknown. Fast flowing water. Clear water. Varied banks with steep banks made up of reedbeds and scrub, and low and flat banks which are heavily vegetated. Watercourse heavily disturbed by boats. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-02-00-00-001	None	None	Full	Full	359816	376175	1	1	1	0	1	0	1	1	Optimal	Optimal (major watercourse and likely to support large fish populations).	Optimal (major watercourse and well connected).	Optimal (major watercourse with some reeds and trees along banks).	River Weaver. Large river (~20m wide), with deep water a moderately fast flowing water. Banks covered with reeds and trees. Steep banks over 45 degrees. Concreate banks over ~1.5m high. Natural banks ~50m west of the bridge with phragmites, scrub, and grasses. Highly disturbed from fishing, dog walkers and boat traffic. No otter or water vole evidence recorded.
RVX-02-00-00-002	None	None	Full	Full	360267	373928	1	1	1	1	1	1	1	1	Optimal	Sub-optimal (minor watercourse likely to only hold minor fish populations).	Optimal (minor watercourse but near to woodland and relatively undisturbed).	Optimal (protected banks and overhanging trees).	Grange Brook. Woodland brook near arable field. Steep banked watercourse with sandy banks. Banks 1m high. Mature trees (crack willow, alder) along edge. Potential water vole burrows and footprints observed. No otter evidence recorded.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-02-00-00-004	None	Autumn 2022 survey constrained due to dense vegetation.	Partial	Full	367766	369366	0	1	1	1	1	1	1	1	Optimal	Optimal (large watercourse and connected to another, with both likely to support large fish).	Optimal (large watercourse with trees along banks and woodland bordering).	Optimal (large watercourse with trees along banks and woodland bordering).	River Dane. ~10-20m wide, unknown depth. Banks ~1-10m high. Steep banks over 45 degrees. Fast flow. Average water quality. Mature trees nearby. Vegetated banks of grasses, reed, Himalayan balsam and scattered trees. Likely otter rest site present. Otter footprints and spraint observed. Potential water vole footprints observed.
RVX-03-00-00-001	None	Autumn 2022 survey constrained due to dense vegetation.	Partial	Full	360867	378336	1	1	1	0	1	0	1	1	Optimal	Optimal (substantial watercourse likely to hold fish populations).	Optimal (substantial watercourse connecting woodland and with shelter along banks).	Optimal (substantial watercourse connecting woodland and with shelter along banks).	Whitley Brook. ~3m wide, unknown depth, fast flow, earth banks, low disturbance, banks shallow in places but steep with dense vegetation cover. Brook culverts in places. No otter of water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-03-00-00-002	None	None	Full	Full	365417	381247	0	1	1	1	1	1	1	1	Optimal	Sub-optimal (minor watercourse likely only to support minor fish populations).	Sub-optimal (minor watercourse but shelter provided by trees and connects woodlands).	Sub-optimal (minor watercourse but some suitable trees and vegetation along margin).	Gale Brook. Wet ditch between crop fields. ~2m wide, ~0.5m deep. Likely dries in warmer periods. Banks ~5m tall. Steep banks. Poor quality water, turbid water. Constant flow. Vegetated banks with herbs, grasses, scattered young trees. No otter or water vole evidence observed.
RVX-03-00-00-003	None	None	Full	Full	367669	382728	0	1	1	1	1	0	0	0	Sub-optimal	Sub-optimal (minor watercourse likely only to support minor fish populations).	Sub-optimal (minor watercourse but shelter provided by trees and connects woodlands).	Sub-optimal (minor watercourse but some suitable trees and vegetation along margin).	Crowley Brook. Small ditch next to road. ~1m wide. Fast flow. Steep banks over 45 degrees. Open habitat at this section, with scattered, mature hawthorn and elder which provide shelter for commuting and opportunity for holts and couches. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence recorded.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-03-00-00-004	None	No access for survey in Autumn 2022. Survey to be completed in Autumn 2024.	Not surveyed	Full	371772	387884	0	0	1	1	1	0	0	0	Sub-optimal	Optimal (minor watercourse but connected to River Bollin).	Optimal (connected to substantial watercourse with sheltering opportunities).	Optimal (connected to substantial watercourse with mature willows providing potential shelter).	Agden Brook. ~1.5-2m wide, unknown depth. Steep banks. Some emergent vegetation but mostly dredged and left bare. No otter or water vole evidence observed.
RVX-03-00-00-005	None	Surveys constrained due to access restrictions.	Partial	Partial	371779	387909	1	1	0	0	1	0	1	1	Sub-optimal	Optimal (substantial watercourse likely to hold fish populations).	Optimal (substantial watercourse with sheltering opportunities).	Optimal (substantial watercourse with mature willows providing potential shelter).	River Bollin. ~8m wide, unknown depth. Poor water quality subject to field runoff. Fast flowing. Sloped banks under 45 degrees. Bankside vegetation made up of Himalayan balsam, nettles, bramble and willow. Otter footprints observed. No water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-03-00-00-006	None	Surveys constrained due to access restrictions.	Partial	Partial	372985	390256	0	1	1	1	1	0	0	0	Sub-optimal	Sub-optimal (minor watercourse likely only to support minor fish populations).	Sub-optimal (minor watercourse with some shelter provided by small woodland in northern section).	Sub-optimal (minor watercourse but some suitable trees and vegetation along margin).	Shallow stream through arable fields. ~1-2m wide, shallow water (depth unknown) Strong flow. Clear, good quality water with sandy substrate. Steep banks. Vegetated banks, but managed vegetation. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence recorded.
RVX-03-00-00-007	None	Autumn 2022 survey constrained due to access restrictions. Spring 2023 survey constrained due to dense vegetation.	Partial	Partial	373027	390517	1	1	1	1	1	1	0	1	Optimal	Optimal (substantial watercourse and could support fish as food source).	Optimal (substantial watercourse directly connected to River Mersey).	Optimal (substantial woodland in eastern section of watercourse).	Sinderland Brook. Stream between arable pasture land. ~4m wide, ~50cm deep, moderate flow with ~3m high, steep, 80 degrees banks of earth and rubble. Moderate water condition. Reeds present in stream with, with banks made up of grasses, cow parsley, large dock, nettle and common reed. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-04-00-00-001	None	Surveys constrained due to access restrictions and dense vegetation.	Partial	Partial	359295	384304	1	1	1	1	1	1	1	1	Optimal	Sub-optimal (minor watercourse but could support fish populations).	Optimal (minor watercourse but connected to Cheshire Ring Canal and woodland).	Optimal (minor watercourse but well connected to watercourses and woodland).	Small stream within woodland. ~1-4m wide, ~15-50cm deep. Steep banks over 45 degrees. Fast flowing water. Vegetated banks with grasses, sedges, hawthorn, hazel, and bramble. Culverts present in watercourse. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence recorded.
RVX-04-00-00-005	None	None	Full	Full	354664	387580	1	0	1	1	0	1	0	0	Sub-optimal	Sub-optimal (minor watercourse with limited fish population potential).	Sub-optimal (minor watercourse with limited bankside cover).	Negligible (very little bankside cover and isolated habitat).	Small stream running through arable fields. Approximately 10cm deep. Clear, moderately fast flowing water. Steep banks. Some in channel reed vegetation. Potential water vole burrows and footprints observed. No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
RVX-04-03-01-001	None	Surveys constrained due to access restrictions and dense vegetation.	Partial	Partial	350837	390977	1	1	1	0	1	0	1	1	Optimal	Sub-optimal (minor watercourse with poor quality water therefore likely to hold no or small fish populations).	Sub-optimal (minor watercourse, not connected to any major watercourses and near to road. However scrub and woodland could provide good cover).	Optimal (minor watercourse, but substantial bankside cover from woodland with mature trees and scrub).	Wet ditch running between roadside and scrubland. ~1.5-2m wide. ~15cm deep. Banks ~1m high. Steep banks over 45 degrees. Discoloured, poor quality water. Little flow. Vegetated banks with dense vegetation in most places, engineered stone banks in other areas. Numerous culverts along watercourse. Survey constrained by dense vegetation and access limitations. Small mammal burrows recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence recorded.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-01-00-00-001	None	Surveys constrained due to dense vegetation.	Partial	Partial	346742	375265	1	1	0	1	1	0	0	0	Sub-optimal	Sub-optimal (minor watercourse that may support fish or amphibian populations).	Sub-optimal (minor watercourse with good network of ditches in surrounding area).	Sub-optimal (minor watercourse with reedbed that could provide resting place potential).	Wet ditch ~1-2m wide, with ~0.5m deep water. Banks ~0.5-1m deep. Gradual banks of less than 45 degrees. Banksides managed and made up of emergent and marginal reedbed, with occasional hawthorn tree, rushes, grasses and nettles. Bordering land use is modified pasture grassland. No otter or water vole evidence recorded.
STRX-01-00-00-002	None	Surveys constrained due to dense vegetation.	Partial	Partial	347021	375376	1	0	1	0	0	0	1	1	Sub-optimal	Negligible (ditch is partially dry and unlikely to contain fish).	Sub-optimal (minor watercourse, partially dry, but connected to ditch network).	Sub-optimal (high disturbance and lack of suitable vegetation, though reeds could provide some shelter).	Semi dry ditch running between pasture fields. ~2m wide, water ~5-10cm deep where wet. No flow. Dark, turbid, poor quality water. Gradual, sloped banks. Vegetated banks dominated by grasses and rushes. Burrow with characteristics indicating water vole use. No otter evidence recorded.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-01-00-00-003	None	None	Full	Full	347189	375443	1	1	0	0	0	0	0	1	Sub-optimal	Negligible (very minor watercourse which periodically dries and therefore very unlikely to have fish populations).	Sub-optimal (well connected to ditches in surrounding area).	Sub-optimal (minor watercourse, with occasional mature willow).	Shallow stream running between pasture fields. Dries in summer. ~2.5m wide, shallow ~5-10cm water when wet. No flow. Poor quality, heavily polluted water with lots of algae. Vegetated banks lined with rushes, short grasses and forbs. Shallow, sloped banks under 45 degrees. No otter or water vole evidence observed.
STRX-01-00-00-004	None	Surveys constrained due to access restrictions.	Partial	Partial	347447	375572	1	1	1	1	0	0	1	1	Optimal	Negligible (watercourse dries in summer and is a minor watercourse).	Negligible (minor watercourse, partially dry, and heavily disturbed).	Negligible (minor watercourse, partially dry, and heavily disturbed).	Wet ditch bordering railway and pasture field. ~1.5m wide, with ~20cm deep water, but drying in summer. Turbid, poor quality water. Steep banks over 45 degrees. Vegetated banks with nettles, meadowsweet, reeds and rushes. No otter or water vole evidence recorded.
STRX-01-00-00-005	None	Not surveyed as unable to access watercourse due to location between two railway tracks.	Not surveyed	Not surveyed	347453	375604	-	-	-	-	-	-	-	-	-	-	-	-	

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-01-00-00-006	None	Surveys constrained due to access restrictions.	Partial	Partial	347462	375653	1	1	1	1	1	0	0	1	Optimal	Sub-optimal (minor watercourse likely to only sustain minor fish populations).	Sub-optimal (minor watercourse but connected to several nearby ditches and scrub could provide cover).	Sub-optimal (minor watercourse and highly disturbed by railway).	Wet ditch between crop fields, but dry in some parts. ~2m wide, depth unknown. Poor quality water with large amounts of algae. No flow. Vegetated banks with nettles, cleavers, reeds, and some nearby scrub. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence recorded.
STRX-01-00-00-007	None	None	Full	Full	347507	375706	1	1	1	0	0	0	0	1	Sub-optimal	Sub-optimal (minor watercourse likely to only sustain minor fish populations).	Sub-optimal (minor watercourse, with several connected ditches and some nearby scrub).	Sub-optimal (minor watercourse and the reeds could provide cover).	Wet ditch associated with hedgerow. ~1-3m wide, under ~0.5m depth, but dry in some areas. No flow. Steep banks over 45 degrees. Vegetated banks with hedgerow, scrub, nettles, cleavers and reeds. No otter or water vole evidence recorded.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-01-00-00-008	None	None	Full	Full	347614	375731	1	1	1	1	1	0	0	1	Optimal	Negligible (minor watercourse which periodically dries and with poor water quality, therefore very unlikely to have fish populations).	Sub-optimal (minor watercourse but well connected to several ditches and patches of scrub).	Sub-optimal (minor watercourse and reeds provide resting spot potential).	Wet ditch between crop fields. ~2m wide, unknown depth, but dry in some areas. No flow. ~1m bank height. Steep banks over 45 degrees. Poor quality polluted water. Densely vegetated banks. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence recorded.
STRX-01-00-00-009	None	None	Full	Full	348074	375992	1	1	1	1	1	1	1	1	Optimal	Sub-optimal (minor watercourse likely to only sustain minor fish populations).	Sub-optimal (minor watercourse but well-connected ditch network).	Negligible (minor watercourse lacking suitable vegetation for sheltering).	Wet ditch ~3-4m wide, and approximately ~1m deep. No flow. Generally steep banks. Banks vegetated with grasses, rushes, docks. Wide range of emergent aquatics. Burrows with characteristics indicating water vole usage as well as other potential water vole burrows recorded. Potential water vole latrines, as well as likely and potential feeding stations recorded. Evidence/potential evidence also recorded on adjacent interconnecting ditches. No otter evidence recorded.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-01-00-00-010	None	None	Full	Full	348188	376123	0	1	1	1	1	0	0	0	Sub-optimal	Negligible (very minor watercourse with poor water quality, unlikely to have fish populations).	Sub-optimal (favourable woodland and some connected watercourses).	Negligible (minor watercourse lacking suitable vegetation for sheltering).	Wet ditch. ~0.5m wide, ~10cm deep water, but likely dries in hotter periods. Poor water quality with signs of eutrophication. Heavily vegetated banksides with a variety of sedges and rushes. Steep banks over 45 degrees. Potential water vole burrows recorded; potential water vole latrines and feeding stations recorded on same watercourse but further to the north (see crossing location NEW03). No otter evidence recorded.
STRX-01-00-00-011	None	None	Full	Full	348424	376318	1	1	0	1	0	0	0	0	Unsuitable	Negligible (ditch mostly dry).	Sub-optimal (ditch mostly dry, but connects to others nearby).	Negligible (ditch mostly dry, but hedgerow may offer some protection, though is adjacent to road which reduces suitability).	Almost entirely dry ditch between arable fields. Where wet, ~1m wide, ~10cm deep. No flow. Polluted poor quality water. Steep banks. Overgrown vegetated banks. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-01-00-00-019	None	None	Full	Full	349595	377364	0	0	0	0	0	0	0	0	Unsuitable	Negligible foraging (mostly dry ditch).	Negligible (mostly dry and doesn't connect to more suitable sources).	Negligible (minor watercourse without any suitable vegetation).	Mostly dry ditch between arable fields. ~1.5m wide. Water ~1cm deep where wet. No flow. No vegetation on bankside. Sloped banks. No otter or water vole evidence observed. Potential water vole burrows and latrines recorded on interconnecting watercourse (see crossing location RVX-01-00-00-007)
STRX-01-00-00-020	None	Surveys constrained due to health and safety concerns and dense vegetation.	Partial	Partial	350149	377579	1	1	1	1	0	0	1	1	Optimal	Negligible (minor watercourse with very shallow water, therefore fish are unlikely).	Sub-optimal (minor watercourse, but with good connectivity and sheltered passage).	Sub-optimal (occasional patches of trees could provide shelter, but noise from motorway means high levels of disturbance).	Shallow ditch between pasture fields. ~0.5m wide, ~15cm deep. Steep banks approximately ~2m high. Unmanaged vegetated banks, with fence preventing disturbance from livestock. Overhanging willows in places. Potential water vole burrows recorded. No otter evidence recorded.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-01-00-00-021	None	None	Full	Full	350172	377597	1	1	1	1	0	0	1	1	Optimal	Negligible (minor watercourse which dries annually, so unlikely to support fish).	Sub-optimal (minor watercourse connected to ditch network).	Negligible (minor watercourse, with very open channel and lack of sufficient water levels).	Wet ditch with shallow water between road and arable field. ~0.5-1m wide, ~10cm deep, but was dry during one survey period. Channel and banks densely vegetated, with reedbed present on road side. Water vole latrine, and potential burrows and footprints recorded. No otter evidence recorded.
STRX-01-00-00-022	None	Spring 2023 survey constrained due to dense vegetation. Survey to be completed in Autumn 2024.	Not surveyed	Partial	350297	377701	1	1	1	1	0	0	1	1	Optimal	Sub-optimal (minor watercourse with fish populations likely limited or absent).	Sub-optimal (minor watercourse but connected to large network).	Sub-optimal (minor watercourse, but without major disturbance).	Semi dry draining ditch running into larger stream. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-01-00-00-023	None	Surveys constrained due to health and safety concerns and dense vegetation.	Partial	Partial	350408	377791	1	1	1	1	0	0	1	1	Optimal	Negligible (poor quality, stagnant, shallow water meaning fish populations likely absent or limited).	Sub-optimal (minor watercourse but with good connectivity to ditch network).	Sub-optimal (minor watercourse, but with occasional shrub and trees which could provide some shelter, but highly disturbed by motorway).	Ditch through grass pasture fields. ~1.5m wide, ~15cm deep. Steep banks ~3m high. Water slow flowing and stagnant in some areas. Dense unmanaged vegetation banks. High noise pollution and disturbance from nearby motorway. Some scrub on banks and connected with ditch network. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.
STRX-01-00-00-024	None	Surveys constrained due to health and safety concerns.	Partial	Partial	350665	377794	1	1	1	1	0	0	1	1	Optimal	Negligible (minor watercourse with very shallow water likely unable to support fish populations).	Sub-optimal (minor watercourse but connected to ditch network).	Negligible (high levels or disturbance and only limited sheltering vegetation).	Wet ditch through pasture fields. ~1.5m wide, ~10-30cm deep water. No perceptible flow. Earth banks densely vegetated with bramble, grasses, and reeds. Culverted on each end. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-01-00-00-027	None	None	Full	Full	351268	378248	1	0	1	1	0	0	0	0	Sub-optimal	Negligible (ditch drying means watercourse unlikely to support fish).	Negligible (mostly dry watercourse).	Negligible (minor watercourse with unsuitable vegetation).	Wet ditch between arable fields. ~1m wide, <0.1m deep. Low water levels suggest ditch likely dries in summer. Banks ~1.5m high. Banks densely vegetated, and channel choked with vegetation. No otter or water vole evidence observed.
STRX-01-00-00-028	None	Surveys constrained due to access restrictions.	Partial	Partial	351514	378449	1	0	0	1	0	0	1	0	Optimal	Negligible (low water levels and occasional drying).	Sub-optimal (good connectivity and presence of mature trees).	Sub-optimal (minor watercourse, with some mature trees, however disturbance caused by nearby road).	~0.5m wide ditch. Dry during one survey season, shallow water in second survey. 2m high banks. Vegetated banks with nettles, hawthorn and semi mature willow. Reeds present in channel. No otter or water vole evidence observed.
STRX-01-00-00-031	None	None	Full	Full	355181	378914	1	1	0	0	0	1	0	0	Sub-optimal	Negligible in woodland (minor watercourse unlikely to support fish).	Optimal (minor watercourse in woodland but directly connected to major watercourse, the River Weaver).	Optimal (minor watercourse in woodland connected to Beckett's Wood and River Weaver).	Mostly dry ditch between arable fields. Western end is in woodland. ~0.5m wide channel where wet. Banks between ~0.3-1.5m high. Moderate flow. Vegetated steep banks. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-02-00-00-001	None	No access for survey in Autumn 2022. Survey to be completed in Autumn 2024.	Not surveyed	Full	360215	377686	1	0	1	1	1	1	1	1	Optimal	Negligible (minor watercourse though connects to Dean Brook).	Sub-optimal (minor watercourse but connects to a pond and a woodland).	Sub-optimal (minor watercourse but reeds could provide some shelter).	Minor tributary of Dean Brook. ~0.5m wide, ~10cm deep. Sandy substrate. Steep banks over 45 degrees. Running water. ~5m high banks. Vegetated banks with eastern half completely covered in scrub and reeds. Culverts in places. No otter or water vole evidence observed.
STRX-02-00-00-005	Crossing location moved <50m	No access for survey in Autumn 2022. Survey to be completed in Autumn 2024.	Not surveyed	Full	366153	368863	0	0	0	0	0	0	0	0	Unsuitable	Negligible (dry ditch).	Negligible (dry ditch with little connectivity).	Negligible (dry ditch with little connectivity).	Dry ditch between pasture and arable field. Steep banks. Densely vegetated with Typha, common bulrush. No otter or water vole evidence observed.
STRX-02-01-00-001	None	No access for survey in Autumn 2022. Survey to be completed in Autumn 2024.	Not surveyed	Full	360215	377686	1	0	1	1	1	1	1	1	Optimal	Negligible (minor watercourse though connects to Dean Brook).	Sub-optimal (minor watercourse but connects to a pond and a woodland).	Sub-optimal (minor watercourse but reeds could provide some shelter).	Minor tributary of Dean Brook. ~0.5m wide, ~10cm deep. Sandy substrate. Steep banks over 45 degrees. Running water. ~5m high banks. Vegetated banks with eastern half completely covered in scrub and reeds. Culverts in places. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-03-00-00-001	None	No access for survey in Autumn 2022. Survey to be completed in Autumn 2024.	Not surveyed	Full	360653	378227	1	1	1	1	1	0	1	1	Optimal	Negligible (minor watercourse with little potential for fish populations).	Sub-optimal (minor watercourse but some trees along watercourse could provide shelter).	Negligible (minor watercourse without suitable vegetation).	Drainage ditch along field boundary. Width is ~0.5m, water depth ~10cm. Clear with slow flow. Banks ~1m in height and steep. Dense vegetation in channel with willowherb, fool's watercress, and water mint. Earth banks have limited vegetation. Open along length with limited shade. No otter or water vole evidence observed.
STRX-03-00-00-002	None	Surveys constrained due to dense vegetation.	Partial	Partial	361407	378644	1	1	1	1	1	1	0	1	Optimal	Sub-optimal (minor watercourse is likely to only hold minor fish populations).	Sub-optimal (minor watercourse but with some trees providing shelter and connects to woodland).	Sub-optimal (minor watercourse but with some trees providing shelter and connects to woodland).	Drainage ditch between pasture fields. ~4m wide, ~30cm deep water. ~2m high banks. Sloped banks under 45 degrees. Decent water quality, steady flow. Vegetated banks with grasses, dock, bramble and herb species. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-03-00-00-004	None	None	Full	Full	364945	381085	1	1	1	1	1	1	1	1	Optimal	Negligible (minor watercourse with little potential for fish populations).	Sub-optimal (minor watercourse but some trees along watercourse could provide shelter).	Negligible (minor watercourse without suitable vegetation).	Ditch between pasture field and road. ~1.5m wide, ~0.1m deep. Fast flowing. Culverts at some points. Vegetated banks with nettles and dogs mercury. Disturbed by proximity to road. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.
STRX-03-00-00-005	None	None	Full	Full	365826	381479	1	1	0	1	0	1	0	0	Sub-optimal	Negligible (minor watercourse with little potential for fish populations).	Negligible (minor watercourse without suitable shelter).	Sub-optimal (minor watercourse with little water but connected to large woodland in north).	Ditch in pasture field. ~1.5m wide, ~25cm deep. Dry during one survey season. Steep banks. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-03-00-00-006	Crossing location moved ~30m south on same watercourse between Autumn 2022 and Spring 2023 surveys.	None	Partial	Full	367332	382545	1	0	1	1	0	0	1	1	Sub-optimal	Negligible (minor watercourse with little potential for fish populations).	Sub-optimal (minor watercourse but alongside woodland).	Sub-optimal (minor watercourse with and alongside woodland).	Drainage ditch at field margin bordering plantation woodland. ~1m wide, ~15cm deep. Banks ~3m high. Steep banks over 45 degrees. Reeds and willowherb present in channel. Vegetated banks dominated by grasses bramble and nettles. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.
STRX-03-00-00-007	None	None	Full	Full	367892	382961	0	1	1	1	1	0	1	1	Optimal	Negligible (minor watercourse with little potential for fish populations).	Sub-optimal (minor watercourse with some trees providing shelter).	Negligible (minor watercourse with and lacking suitable vegetation).	Shallow stream in ditch separating fields. ~0.5m wide, ~10cm deep. Steep banks over 45 degrees. Vegetated banks covered mostly in grasses and rushes. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-03-00-00-010	Crossing location moved ~20m north on same watercourse between Autumn 2022 and Spring 2023 surveys.	Surveys constrained due to dense vegetation.	Partial	Partial	368900	383832	1	1	1	1	0	0	1	1	Optimal	Sub-optimal (minor watercourse that could support fish such as stickleback).	Sub-optimal (minor watercourse but connected to nearby watercourse, woodland and pond).	Sub-optimal (minor watercourse but connected to nearby woodland).	Wet drainage ditch along field margin. ~0.5-1m wide, ~0-10cm deep, but occasionally dry. Steep banks over 45 degrees. Murky, poor-quality water. Ditch overgrown with vegetation. Unmanaged vegetated banks. Potential water vole footprints. No otter evidence observed.
STRX-03-00-00-011	None	No access for survey in Autumn 2022. Survey to be completed in Autumn 2024. Spring 2023 survey constrained due to dense vegetation.	Not surveyed	Partial	370539	385126	1	1	1	1	1	1	1	1	Optimal	Negligible (minor watercourse unlikely to hold fish populations).	Sub-optimal (minor watercourse near busy road).	Negligible (minor watercourse close to busy road).	Wet ditch along fence between pasture fields. ~1m wide, ~15cm deep. Banks ~2m high. Clear water, but likely subject to field runoff. Steep banks over 45 degrees. Channel choked with willowherb. Vegetated banks made up of willowherb, nettles, docks, bracken, rushes, red campion and bramble. Culverts in some sections. No otter or water vole evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-03-00-00-013	Crossing location moved ~6m north on same watercourse between Autumn 2022 and Spring 2023 surveys.	Surveys constrained due to dense vegetation.	Partial	Partial	372043	388197	1	1	0	1	0	0	0	0	Sub-optimal	Negligible (minor watercourse unlikely to support fish).	Sub-optimal (minor watercourse with some shelter provided by trees).	Sub-optimal (minor watercourse with some shelter provided by trees).	Stream between two arable fields. ~0.5m wide, ~0-5cm deep. Gentle flow. Steep banks. Vegetated banks of bramble, bracken, nettle, grasses. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.
STRX-03-00-00-015	None	None	Full	Full	372916	389084	1	1	1	1	0	0	0	0	Sub-optimal	Sub-optimal (minor watercourse likely to only hold small fish populations, if any).	Sub-optimal (minor watercourse but connects some patches of woodland).	Sub-optimal (minor watercourse but connects some patches of woodland).	Wet ditch along arable field margins. ~0.5-1m wide. ~5-10cm deep water. ~1.5-2.5m high banks. No perceptible flow. Poor quality water, showing signs of pollution. Sparsely vegetated banks, with grasses, bramble, herbs. Some mature oaks also present. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-03-00-00-016	None	Surveys constrained due to dense vegetation.	Partial	Partial	373158	391033	1	1	1	1	0	0	0	1	Sub-optimal	Negligible (minor watercourse unlikely to support fish).	Sub-optimal (minor watercourse but connects some patches of woodland).	Sub-optimal (minor watercourse but connects some patches of woodland, also subject to busy footpath).	Ditch between grassland and arable field. ~0.5-1m wide, very shallow water ~0-5cm deep. Stagnant water with no flow. Poor water quality. Sloped banks under 45 degrees. Disturbed by proximity to footpath. No otter or water vole evidence observed.
STRX-04-00-00-005	None	None	Full	Full	357970	385993	1	1	0	0	0	0	1	0	Sub-optimal	Negligible (minor watercourse and unlikely to sustain fish).	Optimal (minor watercourse but connected to River Mersey and large amount of woodland nearby).	Optimal (minor watercourse but connected to River Mersey and large amount of woodland nearby).	Ditch part of network within woodland. ~2m wide. ~0-5cm deep. Dry. Steep banks over 45 degrees. Vegetated banks with greases, forbs and rushes. Ditch shaded by trees. Water is murky and shows signs of eutrophication. Small mammal burrow/s recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-04-00-00-006	None	Surveys constrained due to dense vegetation.	Partial	Partial	357837	385954	1	1	0	0	0	0	1	0	Sub-optimal	Negligible (minor watercourse and unlikely to sustain fish).	Optimal (minor watercourse but connected to River Mersey and large amount of woodland nearby).	Optimal (minor watercourse but connected to River Mersey and large amount of woodland nearby).	Ditch through woodland. ~2-3m wide, maximum 10cm deep. Dry during one survey season. Banks ~0.5m high. Poor quality stagnant water when wet. Sloped banks. Heavily shaded by trees. Vegetated banks with grasses, rushes and bramble scrub. No otter or water vole evidence observed.
STRX-04-00-00-007	None	None	Full	Full	357603	385859	1	1	0	0	0	0	1	0	Sub-optimal	Optimal (minor watercourse at crossing location, but connects to large pond and River Mersey).	Optimal (minor watercourse but connected to River Mersey and large amount of woodland nearby).	Optimal (minor watercourse but connected to River Mersey and large amount of woodland nearby).	Ditch within woodland. ~1m wide. Unknown depth, but shallow, and periodically dry. Steep banks over 45 degrees. Murky, turbid water. Sheltered from trees. Vegetated banks include rushes, mosses, honeysuckle, among others. Small mammal burrow/s recorded along interconnecting watercourse, but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
STRX-04-00-00-008	Nonev	Surveys constrained due to dense vegetation.	Partial	Partial	357474	385837	1	1	0	0	0	0	1	0	Sub-optimal	Sub-optimal (minor watercourse and likely to only hold small fish populations).	Optimal (minor watercourse but connected to River Mersey and large amount of woodland nearby).	Optimal (minor watercourse but connected to River Mersey and large amount of woodland nearby).	Ditch in woodland. ~1.5-2m wide. Shallow water, depth unknown. Ditch was completely dry during one survey season. Steep banks over 45 degrees. Poor quality water. Heavily overgrown hedge vegetation. Small mammal burrow/s recorded along interconnecting watercourse, but no other characteristic or potential water evidence observed along watercourse. No otter evidence recorded.
STRX-04-00-00-014	None	Surveys constrained due to health and safety concerns.	Partial	Partial	352863	388879	1	1	1	1	1	1	1	1	Optimal	Sub-optimal (minor watercourse with shallow watercourse likely to hold only small fish populations).	Sub-optimal (minor watercourse not connected to larger watercourse, but woodland and scrub could provide good cover).	Sub-optimal (minor watercourse, with woodland and scrub providing possible suitable cover).	Deep wet ditch. ~1.5m wide, ~10cm deep. ~1.5m high banks. Gentle flow. Steep banks over 45 degrees. Rocky substrate. Vegetated banks of rushes, brambles, hedgerow and mature trees. Small mammal burrows recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.

Reference	Crossing Location Movements*	Constraints	Autumn 2022 Survey Extent	Spring 2023 Survey Extent	X	Y	Water Vole Habitat Suitability									Otter Habitat Suitability			Additional Surveyor Notes
							SI1	SI 2	SI 3	SI 4	SI 5	SI 6	SI7	SI8	WVHS*	Otter Foraging Suitability	Otter Commuting Suitability	Otter Rest Site Suitability	
s	None	None	Full	Full	350204	391251	1	1	1	1	0	1	1	1	Optimal	Sub-optimal (minor watercourse unlikely to hold significant populations of fish).	Optimal (minor watercourse but lined with shelter and well connected).	Sub-optimal (minor watercourse but eroded banks and presence of trees could provide rest site opportunities) .	Small stream in ditch between arable fields. ~1.5-2m wide, shallow depth under 0.5m. Moderately fast flowing, with clear water. Steep, near vertical banks. Small mammal burrows recorded but no other characteristic or potential water evidence observed along watercourse. No otter evidence observed.

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