Walthamstow Wetlands
Bird Monitoring Report
Year 9: April 2023 to March 2024

London Wildlife Trust

Amy Attle
Conservation Officer, Walthamstow Wetlands
aattle@wildlondon.org.uk

Contents

London Wildlife Trust; summary

London Wildlife Trust ('the Trust'), a registered charity founded in 1981, is dedicated to protecting the capital's wildlife and wild spaces, and increasing people's understanding of and connection to the natural world through community engagement, education, access to our nature reserves and campaigning. We aim to inspire London's communities, influence people to adopt policies and practices to advance nature's recovery and transform natural habitats to address ecological and climate emergencies.

Our role is becoming ever more important in a city facing climate change, economic recession and a growing population, where people are increasingly disconnected from their natural environment. The Trust has a strong history of community engagement projects that target disadvantaged groups and those under-represented in nature conservation such as mental health service users, young people, and people with disabilities.

London Wildlife Trust has been engaged since 2014 as the delivery partner for Walthamstow Wetlands.

Walthamstow Wetlands; Bird Monitoring Report *Year 9: April 2023 to March 2024*	
Report author	Amy Attle
Data collectors	David Baker, Jessica Datta, Luke Gould, Tim Harrison, Kirsten Foster, Jonny Joseland, Atticus Kidd, Sarah Lo, Rebecca Millward, Caroline Nash, Amy Attle, Peter Salter, Paul Wastell, Karmannye Chaudhary, Daniel Whitelegg, Sue Nolan, Tim Atkinson, Shelagh Taylor, Jill Nicholls
Technical analysis, maps, editing	Richard Barnes Alex Toledo Mathew Frith MCIEEM CEnv Amy Attle Matthew Salter
Authorised	Mathew Frith MCIEEM, CEnv
Natural England	Max Slater Nunn
Thames Water	Kirsty Halford - Access, Recreation and Nature Reserves Manager

Executive summary

London Wildlife Trust ('the Trust') continued monitoring 'key species'1 for the ninth consecutive year; beyond the five-year monitoring plan required by the Habitat Regulations Assessment and

[1] Key species refers to gadwall, shoveler, pochard, tufted duck, and grey heron.

after discharging Planning Conditions 20 & 21 for Walthamstow Wetlands. This is due to the Trust recognising some changes to distribution and populations of species since the site opened in 2017 and the essential need for long-term monitoring.

The Bird Monitoring Programme was originally established by BSG Ecology as part of the planning application and Habitat Regulations Assessment requirements for the Wetlands' Development Programme in 2014. It was determined that project partners should monitor the Site of Special Scientific Interest (SSSI) and Special Protection Area (SPA) designated 'key species', their distribution and the disturbance caused to them as a result of increased access to the Walthamstow Reservoirs for a five-year period.

The Trust and its volunteers have been collecting bird disturbance and distribution data and have produced reports in a similar layout to the proceeding BSG reports. Replicating the survey methodology, GIS mapping, and reporting provides a more consistent and comparable data set across the survey period. The Trust has also collected and collated additional data to support and better understand visitor behaviour, particularly occurrence of joggers and cyclists, as they arguably cause more disturbance incidents.

As recommended in the 2019-20 (fifth year) report, the Trust introduced a more vigorous and targeted visitor monitoring to understand public use of specific areas and have introduced a winter closure of Maynard arm in attempt to mitigate against pochard (Aythya farina) declines.

Footfall numbers have significantly decreased since the unprecedented number of visits during the public lockdowns in 2020 - 21 (circa 750,000) and have stabilised at circa 420,000-450,000 pa for the last three years. Although numbers have levelled out, they are still higher than the two years prior to the COVID - 19 outbreak (circa 350,000 visits). This is likely due to people newly discovering Walthamstow Wetlands during the public lockdowns as well as the completion of housing developments in the surrounding area (Tottenham Hale and Blackhorse Road).

The additional visitor behaviour surveys showed that the site rules and seasonal paths that are in place to protect the sensitivities of the site were largely adhered to and were an effective way of managing visitors. Although the vast majority of people adhered to site rules, seasonal paths and path restrictions, surveys are snapshots in time and incidents do occur.

Although misuse is infrequent, any significant increase in visits is likely to cause disturbance, particularly on accessible raised pathways where birds can be disturbed when visitors emerge over the crest of the bank. It should be noted that although disturbance events have been recorded on popular raised pathway routes, there have been no apparent shifts in distribution of key species.

Continued monitoring is recommended, options for screening the southern end of East Warwick have been explored and we will aim to secure the available resources in the upcoming years. The Trust has finalised the signage review and rolled out signage for interpretation and site rules in 2024 in attempt to further mitigate incidents.

For most of the key bird species within the reservoirs there has been little clear change in their distribution, and the distribution of SPA/SSSI duck species have remained largely consistent when considering the entire nine-year monitoring period.

Shoveler (Anas clypeata) still mainly visit the southern portion of the reserve. However, increasing numbers are seen on Lockwood reservoir. The dredging of Reservoir Three created a more suitable habitat for Gadwall (Mareca strepera). The dredged silt was piled along the reservoir's edge, providing an ideal location for the transplantation and establishment of a new reedbed. As a result, their distribution has expanded beyond the important areas identified in the Walthamstow Reservoirs SSSI baseline surveys. This has coincided with an increase in overwintering numbers in recent years.

Tufted duck *(Aythya fuligula)* are still widespread, and their seasonal strongholds remain consistent, however, the overwintering population of pochard is showing no signs of recovery since opening. The majority of the remaining population has been observed away from publicly accessible areas in recent years (West Warwick and Reservoir Four) and showing no signs of redistribution on High Maynard despite the introduced winter closure of the Maynard arm visitor path to help mitigate this. It was also suggested in the Lee Valley SPA Re-assessment 2021 report that birds could have possibly moved to new sites further up the valley, as Walthamstow Reservoirs SSSI decline coincides with an increase in numbers elsewhere.

Ongoing monitoring is essential to assess the current design of access and seasonal controls, monitor long-term effectiveness of the introduced seasonal closure of the Maynard arm and changes in behaviour/distribution of key species and adapt access if necessary/possible. The effects of the Maynard arm winter closure to be reviewed in 2025 as part of the 10-year review.

Breeding pochard are no longer avoiding the south-west corner of Low Maynard, and there has been noticeable redistribution (as with tufted duck) onto Lockwood Reservoir. The habitat improvement works, including the addition of floating vegetation rafts onto Lockwood have benefitted SSSI breeding pochard and tufted duck. Both produced regionally important number of broods, 15 and 55 respectively. The number of tufted duck broods recorded is a record number for Walthamstow Reservoirs SSSI, far exceeding previous years and is likely the highest count recorded within Greater London. Two broods of gadwall were also recorded on site, this is expected to increase in the coming years due to the increasing number of gadwall that are becoming resident in the Lee Valley.

Given the international conservation importance of the Wetlands, the Trust will continue monitoring key bird populations and distributions and will present findings in future annual monitoring reports, as the Trust is acutely mindful that we and our partners need to ensure that minor changes do not accumulate into larger irreversible issues. This will be reviewed in 2025 as part of the 10 year-review that will also investigate populations within a regional context.

The Trust has now completed the ninth consecutive year of monitoring, and this report presents the data from 2023-2024 and provides comparison to the previous eight-year survey period.

1. Introduction

1.1 Site context

The Walthamstow Wetlands project was established in 2014. Its aim was to transform a set of 10 operational reservoirs, that have national and international designations for resident and

migratory waterfowl, into a publicly accessible nature reserve for people to immerse themselves in and celebrate urban nature conservation.

An application to the then Heritage Lottery Fund to deliver the initial stages of the project was approved in July 2014 and led to a number of enhancement and restoration works, including habitat creation and access improvements. The site opened to the public in October 2017 and has since had almost three million visits in March 2024. Following footfall highs of 750,000 visits in 2020-21, footfall has decreased and stabilised at circa 450,000 in 2022 and 23, with projected numbers following this trend for 2024. It is worth noting these numbers still exceed the anticipated projected figure of 230,000 visits after five years.

Walthamstow Wetlands encompasses Reservoirs One, Two, Three, Four & Five, East and West Warwick Reservoirs (all in the southern portion of the site), Low Maynard, High Maynard and Lockwood Reservoirs (in the northern portion), as well as tracts or edges of the Coppermill Stream, River Lee, and Lea Navigation, and a network of vegetated embankments and other terrestrial habitats – trees, scrub, grassland - covering approximately 211 hectares in the Lower Lee Valley.

The site encompasses the Walthamstow Reservoirs Site of Special Scientific Interest (SSSI), contributes towards the Lee Valley Special Protection Area (SPA), and forms part of a larger Site of Metropolitan Importance for Nature Conservation (site M071 The Lee Valley).2 The Wetlands also falls within the Lee Valley Ramsar site designated in 2000 under the Convention on Wetlands of International Importance, 1971.

The Lee Valley SPA is designated for its importance for overwintering waterfowl, namely shoveler, gadwall, but also bittern (Botaurus stellaris). Gadwall and shoveler however, occur on the Wetlands throughout the year in varying numbers. The SSSI designation outlines the site's importance as a breeding site for grey heron (Ardea cinerea), tufted duck and pochard. Furthermore, the SSSI also identified the importance of the site for post-breeding tufted duck, over-wintering tufted duck, shoveler, pochard, great crested grebe (Podiceps cristatus) coot (Fulica atra), and winter roosting cormorant (Phalacrocorax carbo ssp. sinensis, carbo and hybrids).

Prior to opening the Wetlands to the public, BSG Ecology undertook a survey to inform the Habitats Regulation Assessment (HRA) process and to guide the planning application conditions (BSG Ecology, 2014). This initial survey was used to inform long-term patterns of waterfowl distribution on site and the seasonal access constraints (e.g. through path closures) around Walthamstow Wetlands upon opening to the public.

Walthamstow Wetlands received planning consent in June 2014, subject to a number of conditions and sub conditions, several of which relate to ecology, and which have resulted in a requirement for monitoring of the bird community present. Predominantly, these are based on the recommendations of the HRA Report.

1.2 Planning Conditions

Planning Condition 20 for Walthamstow Wetlands states:

[2] The boundaries of the Wetlands do not entirely align with those of the SSSI and SPA. It falls entirely within the SMINC.

'Prior to the commencement of development, a bird impact management plan shall be submitted to and approved in writing by the Local Planning Authority. This management plan will address any potential impact on birds within the SSSI, SPA and Ramsar areas resulting from visitors to the site by addressing:

- *The collection of visitor monitoring data for a minimum period of five years from the commencement of development*
- *The collection of bird monitoring data for a period of no less than five years from the commencement of development*
- *Details of the process by which bird monitoring and visitor monitoring data will be assessed by the relevant parties*
- *Details of the means by which any negative impacts will be mitigated and how any required mitigation measures will be implemented in relation to geographical location, design and timeframe factor*

The approved scheme shall be implemented in accordance with the approved details unless any variation is agreed in writing.'

Planning Condition 21 states:
'the development shall be carried out in accordance with the mitigation measures contained in the Walthamstow Reservoirs report reference 6342 01_HRA_R_020414 (Walthamstow Wetlands Bird Monitoring Report, BSG Ecology – April 2014) and the approved scheme shall be implemented in accordance with the approved details unless any variation is agreed in writing.'

To achieve the discharge of the planning conditions, a Five-Year Bird Impact Management Plan (BIMP) was compiled (Waltham Forest Council, 2014) and submitted to Natural England and the Walthamstow Wetlands Board. A board set up to facilitate the opening of Walthamstow Wetlands.

BSG Ecology were contracted to deliver the first three years of the plan, the results of which are available in the BSG Bird Monitoring Reports for 2015-16, 2016-17 and 2017-18. London Wildlife Trust adopted the delivery of the five-year BIMP for 2018- 20 and has completed the fifth and final year.

1.3 Aims of study

The aim of this report is to address Section 4 of the BIMP. To achieve this, it considers the ninth year (April 2023 to March 2024) of monitoring data and identifies whether there is evidence of:

- Any significant reduction in the extent and distribution of the habitats used by key species;
- Any changes to the structure and function of the habitats used by key species;
- Any changes to supporting processes upon which the habitats of key species rely;
- Any significant reduction in the populations of key species using the site as a result of increase recreational use;
- Any significant changes to the distribution of key species within the site as a result of increased recreational use.

1.4 Mitigating for enhanced access

Access throughout the Wetlands by visitors is passively controlled via a network of seasonal gates and footpaths. This ensures visitor disturbance in areas sensitive to the Ramsar, SPA and SSSI features during key periods of the year is avoided or minimised as best as possible. These key areas for features of importance have been directed by the results of preliminary site surveys in the HRA Report and agreed by Natural England. Consequently, the seasonal access map has been drawn up and agreed by the Walthamstow Wetlands Board and Natural England (See Appendix 2).

The primary access path through the north of site, open at all times of the year, runs from the Wetlands' entrance gate north of High Maynard, along the east bank of Lockwood and west of Low Maynard to the entrance at Forest Road. For the south side of the Wetlands, the continuation of this path runs alongside the west of the Coppermill Stream to the gate at Coppermill Lane. This path is open to all site visitors, including cyclists and joggers, and is commonly used during the day as a cut-through between the reserve and sites to the north and south (such as Walthamstow Marshes).

The secondary paths are closed during sensitive periods to reduce disturbance, especially to the key species related to the site's designations. For example, the pathway west of Reservoirs Four and Five is closed from August to March to limit disturbance to post-breeding aggregations of tufted duck. All secondary pathways are walking routes only; no cycling or jogging is permitted on these paths.

A further set of paths are closed to the general public all year round, including those around West Warwick, the western bank of East Warwick and Lockwood and the eastern side of Reservoirs Four and Five. These paths, however, are accessible throughout the year for Thames Water and London Wildlife Trust staff to deliver work and as continued access for anglers. A limited number of birdwatchers, through a permit scheme, also have access to these paths. They regularly use all paths and visit most of the reservoirs and are not restricted by seasonal path closures. Across the site, bird watchers visited either as individuals, pairs or when a notable bird was on site in small groups of five or more. Angler numbers were greatest around Reservoirs Two, Three, Five and Low Maynard.

Since opening Walthamstow Wetlands to the general public, birdwatchers are no longer able to purchase one day permits from the Thames Water fisheries office to access the site during fisheries opening hours. They now apply to an annual permit scheme, issued by the Trust, giving them access to the Wetlands during the fishery's operational hours. Birders without permits are restricted to official Wetlands opening hours and limited pathway access.

The original promotion and infrastructure of the wetlands led to some inappropriate behaviours, however the liaison with birdwatcher representatives, together with the partners' own observations, resulted in some subsequent changes to the site management, signage and barriers. This is an on-going development as the Wetlands partnership adapts to the needs and behaviours of its wildlife, and all other site users.

2. Methods

2.1 Identification of focal species

The Trust has followed the methodology set out and implemented by BSG Ecology since 2015. The rationale for the determination of the focal species for the monitoring is set out in this section.

The Lee Valley SPA was designated due to its importance for three bird species; over-wintering gadwall, shoveler, and bittern. The SPA area includes the Walthamstow Reservoirs SSSI (and hence the Wetlands).

Bittern is an occasional visitor to the Walthamstow Reservoirs; all records relate to the winter period. Regular winter roosting sites of bittern have been identified elsewhere within the Lee Valley SPA (Harris, 2006), and Walthamstow is not currently one of the regular resources used by the SPA population. As the frequency of visits by bittern is low, disturbance directly as a result of increased recreational use of Walthamstow Wetlands would be difficult to measure; it is not subject of detailed consideration in this report. Nevertheless, circumstances may change in the future which would require its monitoring.

The other two SPA citation species – gadwall and shoveler - do occur with regularity, and detailed consideration is given to data collected with regard to them.

The SSSI citation lists several further bird species that meet thresholds of national importance, or for which the site is notable, namely:

- Breeding grey heron
    - A heronry survey was conducted by BSG Ecology in 2013 (Walthamstow Wetlands Bird Monitoring Report BSG Ecology, 2013) which identified that grey herons within the heronries did not show any reaction to people on the banks and that the majority of herons foraged off site. It was, therefore, considered that detailed monitoring of the grey heron population was unnecessary.

- Breeding tufted duck
- Breeding pochard
- Post-breeding tufted duck
- Overwintering tufted duck, shoveler, pochard, great crested grebe, and coot
    - Although both over-wintering great crested grebe and coot were identified within the SSSI citation and are present on site in large numbers, neither occurs in nationally important numbers (i.e. over 1% of British population), and baseline work had not identified any evidence that either species were particularly affected by periodic disturbance at the site. They are therefore not considered focal species.

- Winter roosting cormorant
    - Although winter roosting cormorant is identified within the SSSI citation, and the species is present on site in large numbers, it is not currently deemed of conservation concern. It was, therefore, considered that detailed monitoring of apparent effects on cormorant was unnecessary.

Therefore, the focal species for monitoring considered in detail in this report are:

- Breeding tufted duck, gadwall, shoveler and pochard
- Post-breeding (moulting) tufted duck
- Over-wintering gadwall, shoveler, tufted duck and pochard.

2.2 Field survey

The monitoring methodology is based on the approach set out in the discharge of condition 20 (see 1.3) and is the same as that undertaken for years 1- 5 (2015-20). This ensures that ornithological data are being collected in a consistent manner as best possible, and direct comparison of bird distribution within the area is possible minimising bias.

Data are recorded using a grid system (see Figure 1a & b), and consistent basic information is collected during each monitoring visit. The survey area includes all the reservoirs within Walthamstow Wetlands (see Figure 1). The grid system consists of a 50 x 50m digitised grid of the survey area created using QGIS. Each reservoir has been assigned a letter code with all component grid squares sequentially numbered in rows from the north-west to the south-east corner to enable standardised recording and distribution mapping of bird species. This is consistent with that undertaken in the baseline survey.

The order in which the reservoirs are surveyed is varied so that each one is not always surveyed at the same time of day. Monitoring is undertaken during the Wetlands opening hours for public access. Where possible half the surveys for the year are undertaken during weekend days to capture a full representation of how the birds respond to the Wetlands' visitors and activities.[3] Visitor numbers are generally higher at weekends. Effort is also taken to carry out the surveys during a range of different weather conditions, although conditions that made recording problematic or inaccurate (e.g. prolonged heavy rain, snow, dense mist or fog) were avoided. It should also be noted that there was one less survey completed in the 2023-24 period, due to staff and volunteer leave. However, the influence of this on results is minimal as at least one survey was completed in each month required for monitoring.

Two visits are made per month. During one visit, all waterfowl species are counted (as individuals) and mapped using the grid system, including those using islands and the immediate shoreline.

On the other visit, a targeted disturbance monitoring survey is undertaken. A full count of all waterfowl species is carried out whilst also recording disturbance events. This enables a more detailed understanding of how visitors may be disturbing the range of waterfowl present, whilst still providing detailed information on the distribution and numbers of the target species.

Any recreational or operational activity or external noise is recorded, together with details of the approximate location from which it originates (e.g. the adjacent grid squares using the grid system) for all visits. Any apparent behavioural response by waterfowl to these events (including details of the species and numbers involved) is recorded using a 9-point scale:

1. No behavioural response noted
2. Bird(s) becoming alert but showing no other signs of avoidance
3. Birds swimming slowly away from the activity / moving into fringing vegetation

[3] Weekend and weekday surveys alternate monthly. Two weekend surveys followed by two weekday surveys and so on.

4. Birds swimming rapidly away from activity source
5. Birds flushing and submerging / making short flight over the water surface and resettling further from the activity source (but typically within 50m)
6. Birds making a directional flight away from the activity source but resettling within visual distance of the surveyor
7. Birds flying a considerable distance from the activity source but apparently resettling elsewhere on the site
8. Birds making prolonged wheeling flights before (apparently) resettling on a different part of the site
9. Birds apparently leaving the site and not returning.

The cause of disturbance is recorded and classified using these terms and definitions:

Surveyor	The persons undertaking the bird disturbance survey
Angler	Persons partaking in fishing at water's edge
Visitor	Member of the public walking around the wetlands
Vehicle	A vehicle permitted to be on site, e.g. Thames Water, London Wildlife Trust or contractor's vehicle
Operations	Persons or actions relating to Thames Water operations, not in a vehicle
Cyclist	Persons on a bicycle
Jogger	Persons moving at speed, above a walking pace. Also includes running
Train	Train on railway passing through site, West Anglia Mainline or Gospel Oak to Barking line

A bespoke survey form is used for each visit to capture the above information and to ensure consistency of recording (see Appendix 1).

For the purposes of monitoring the relevant key species, the breeding season is taken as the months April, May and June; the post-breeding (moult) season is taken as August and September; and the overwinter season is taken as October to March inclusive. July is not included in the key periods.

2.3 Additional data

Data from additional surveys are referenced such as Breeding Bird Survey and national schemes including BTO Heronries Census of apparently occupied nests (AON) and BTO's Wetland Bird Survey.

The Trust undertook additional monthly visitor behaviour surveys throughout the key survey periods, recording visitor behaviours, including inappropriate behaviours, that occur on restricted paths and on the water's edge. The monitoring methodology is based on the approach set out by the bird monitoring, where surveyors followed set routes, across various times of the day and days of the week plotting visitor behaviour and patterns across the reserve using a grid system. Where possible, this survey was carried out on the same day as the disturbance monitoring survey.

A dedicated group – the Walthamstow Birders – provide a detailed update on birds seen at Walthamstow Reservoirs on their website (143 species in 2023 and 99 species recorded between January-March 2024). Information on dates, numbers, locations, and other details were cross referenced with survey data.

3. Results and interpretation

The results of the 2023/2024 surveys have been considered alongside the baseline data as presented in the HRA (BSG Ecology, 2014) and the previous eight years of monitoring (BSG 2015 -2018 and LWT 2018-2023).

The distribution of the key species has been compared to their distributions recorded during the baseline surveys and the previous year's monitoring.

3.1 Presence of visitors within the site

Lee Valley SPA has been cited as vulnerable to the 'threat' of human recreational pressure by the JNCC but limiting visitor access to the site's 'core' areas[4] allows for wildfowl refuge areas. These core areas provide limited access to the reservoir edges, with just 44% and 39% accessible to the public during summer (April – July inclusive) and winter (August – March inclusive) respectively to potentially cause disturbance to birds on the water. The south portion is largely screened with either vegetation or has the Coppermill Stream on the western edge of Reservoir One to act as a buffer, although audible disturbance could occur.

3.1.1. Gate Counter data

Year nine received slightly lower footfall, with roughly 420,000 visits, compared to year eight (circa 450,000), both being a significant decrease to the unprecedented visits during public lockdowns in 2020-21. Although numbers are levelling out, these numbers are still higher than the two years prior to lockdown (circa 350,000 visits). This is likely due to people newly discovering Walthamstow Wetlands during the public lockdowns and the completion of housing developments in the surrounding area (Tottenham Hale and Blackhorse Road). It is possible that visit numbers are higher than recorded, as two gate counters experienced errors spanning across 4 months (December-March), therefore reduced counts were performed.

As seen in previous years, the south portion of the reserve was considerably more visited, receiving 63% of visits. This is likely due to the facilities on offer; toilets, café and shop. Differing from previous years, only 45% of visits were on weekend days, compared to 73% seen previously. While visitor numbers remain high, the spread of visits throughout the week may alleviate peak-time congestion and disturbance.

As in almost all previous years since opening, the main entrance gate (entrance with car park and visitor centre) was the most visited (39%), excluding in 2020-21 year which was possibly due to the closing of the public car park[5] and reduced use of public transport as per government guidelines.

The remaining footfall to entrances follows the trend of previous years; Coppermill (24%), Maynard (22%) and Lockwood (15%).

[4] The Primary and Secondary routes outlined in 1.4.
[5] Car park remained open for blue badge holders only. This was to ensure the Wetlands did not encourage visitors to travel as per government guidelines.

3.1.2. Field Survey

Most visitors recorded were walkers (49%), followed by anglers (15%), and joggers (13%) who visited in small groups, averaging a group of two.

As illustrated in Figures 2a and 2b, the primary routes were the most popular routes with 36% of recorded visitors using the main path on the south side and 25% on the north side path. 12% of these visitors that were using the main path on either portion of the site chose to use the exposed raised bank, where disturbance events are more likely to occur. The south side winter secondary route held 11% of visitor records and its northern counterpart, the Maynard arm had 4% of visitor counts. The south side summer secondary route had a similar take of 15% of visitor records. This is partly because these paths are closed for almost half of the year to the general public.

During surveys, the number of rule-breaking incidents has increased, however is still rare considering the overall footfall; with 82 cases of visitors by the water's edge. Joggers and cyclists were observed using the restricted banks and the open secondary path, this occurred in very low numbers (no more than five incidents) for each activity type. Although the vast majority of people adhered to site rules, seasonal paths and path restrictions, surveys are snapshots in time and incidents do occur, particularly when gates are left open by visiting contractors etc.

The additional visitor behaviour surveys showed that the site rules and seasonal paths that were in place to protect the sensitivities of the site were largely adhered to and were an effective way of managing visitors.

3.2 Changes in habitats used by key species

The operational nature of the reservoirs means that water levels fluctuate according to the needs of water production and not as would be found in a naturally occurring waterbody. There were no Thames Water 'draw downs' in this survey period that had any notable impact on the key species. There were also no significant habitat changes that would impact designated species.

Due to regular disturbance from visitors on the bank and/or put off by the large gull breeding colony on the East Warwick Island, the breeding black-headed gull colony nested again on the Lockwood vegetation rafts. The East Warwick Island was however favoured as a breeding ground for at least 15-20 pairs of common tern, who this year avoided the tern rafts created for them on West Warwick. SSSI tufted duck and pochard broods were also recorded on the vegetation rafts. The vegetation and tern rafts were introduced through the Environment Agency's' National Environment Programme.

3.3 Breeding season (April to June inclusive)

3.3.1 Tufted duck (Figure 4)

A peak count of 422 tufted duck (371 male, 51 female) was recorded on 3rd June 2023, this is the highest breeding record during the monitoring period for Walthamstow Reservoirs SSSI. The first hatched brood was recorded on the 22nd May, which was early compared to previous records, however the overall number of broods recorded in 2023 (31 broods) was lower than 2022 (55 broods).

Previous years counts range from a low of 229 in 2012 (baseline date) and a peak count of 395 in 2015. Broadly speaking, distribution of tufted duck present during breeding season has

remained relatively even across the site and within the individual reservoirs. Reservoir One, Two & Three, High Maynard, East and West Warwick held consistent numbers throughout the breeding period. Tufted duck was recorded in all reservoirs in the breeding season, however Reservoir Four, Five and Low Maynard had a lack of records for the second half highlighting they are not important breeding reservoirs. Lockwood held 29% of all birds recorded during the breeding period, which is surprising as the deeper reservoirs are usually preferred when in post-moult and overwintering. It should be noted that almost 44% of these were recorded during a single visit (out of five) and although the vegetation rafts now support breeding broods this should not be considered representative.

3.3.2 Gadwall (Figure 5)

The peak count of 25 gadwall was recorded on 28th May, which is a decrease from the record number of 67 in 2022. The record of 67 can be explained by the sudden arrival of males (59), these individuals may have been failed breeders from elsewhere as all other counts were 21 or below. Consistent numbers of gadwall were present throughout the breeding period with the average being 19. Although present, most are non-breeders with one brood observed by Walthamstow Birders Group this year. This is expected to increase in the coming years due to the increasing number of gadwall present in the Lee Valley during summer.

Following the increase in distribution observed in year eight, gadwall were detected on all reservoirs, with the exception of Reservoir One. Notably, Low Maynard was added to the list of known locations this year. In the past, East Warwick held the most records, however this year reservoirs 2 and 3 had the highest peak count (39%). However, it should be noted that this is two reservoirs combined, therefore the second highest peak count of 26% on East Warwick should be considered.

3.3.3 Shoveler

Shoveler were absent throughout the breeding season with the exception of records on the 13th and 21st April, and 23rd June. Circa four individuals were seen on each occasion, on Reservoir One, Two and Three and West Warwick. Again, unanimously on the southern side of the site. As in previous years, there was no evidence of breeding.

3.3.4 Pochard (Figure 6)

A peak count of 107 pochard were recorded on 23rd June 2023, late in the breeding season. This is close to the highest peak count recorded during the monitoring period (115 in 2019). It was a good year for breeding pochard with 16 broods, a notable number for the region based on the numbers found across London in the 2022 London Bird Report.

Almost 80% of pochard records were relatively evenly distributed across Reservoir Two & Three, East Warwick, Low Maynard and High Maynard. This distribution typically matches previous survey years, however a noticeable change is that they are no longer avoiding the south-west corner of Low Maynard, and this reservoir now has the highest records (23%). Additionally, Lockwood still holds 7% of records for this species, whereby they were absent here before 2022, this change is likely due to the vegetation rafts providing suitable nesting habitat and cover. Furthermore, this year records indicate that pochard avoided the outermost extremities of the site, namely the points furthest north, south-east and south-west.

3.4 Post-breeding period (August to September inclusive)

3.4.1 Tufted duck (Figure 7)

The post-breeding peak count for tufted duck was 2,204 on 26th August 2023. This is the lowest recorded since 2018, however falls within the range of 1,979 in 2018 to 3,026 in 2015. The peak count for males was 1,923 on 26th August 2023, while the female peak count came later on 28th September with 346. Previous surveys have shown that the later arrival of females is common as their moult period is marginally later, which is attributed to breeding behaviour. As recorded in previous years, males outnumber females significantly during this period (circa 90% male). Males are known to be able to dive longer than females and may therefore be better suited to the deeper waters of the reservoirs.

Moulting tufted duck were recorded on all reservoirs, except Reservoir One and as with all previous years of monitoring, Reservoirs Four and Five were of high value that, when combined, attributed to 52% of the total season's records. Reservoir Four had a peak of 701 on the 13th August and Reservoir Five had 479 on the 26th August. Lockwood (281), Low Maynard (346) and East Warwick (476) held large numbers, with Low Maynard displaying higher counts than High Maynard, differing from previous years. Reservoirs Two & Three and West Warwick all had low uptake in this monitoring period which isn't unusual for this time of year, as tufted ducks favour these reservoirs during the breeding period and move to the open water to undergo moult.

3.5 Over–wintering period (October to March inclusive)

3.5.1 Tufted duck (Figure 8)

The peak number of tufted ducks was 1300 individuals on 7th October 2023. This is the highest count recorded during the monitoring period since the pre-opening peak count of 1610 individuals on January 6th 2016, and is a dramatic increase compared to the count on 7th October 2022 (700 individuals). It is unsurprising the peak count for over wintering ducks is almost always in October due to remaining post-breeding birds finishing their moult. The arrival time of post-breeding ducks will highly influence this peak count. After October, numbers declined to an average of 387 for the over-winter period, which is within the range of the past four years (310-441).

Tufted duck were present and well distributed on all reservoirs but favoured Lockwood with 21% of all overwintering records. East Warwick (17%), Reservoir Four and Five (12% respectively) also held significant numbers. It has been previously suggested that tufted ducks favouring Reservoir Four and Five could be attributed to lack of visitor access on the seasonally closed path adjacent to Reservoir Four and Five whereas the west bank of East Warwick has visitor presence year-round. But the Warwicks have held the highest percentage of population post opening in some years, and fluctuation in distribution is to be expected. Reservoir One held considerably less of the overwintering population with just 4% of counts, consistent with previous years.

3.5.2 Gadwall (Figure 9)

Gadwall had a peak count of 66, recorded on 25th January 2023. The record peak count was 122 in 2022, attributed to the cold spell, heavy snowfall, and ice coverage on many waterbodies, forcing birds in the surrounding area onto the reservoirs, as they are the last to freeze over due to their depth. It should be noted that aside from extreme weather, 2022 had an average number of 52, suggesting the 2023 record of 66 falls within the expected range, demonstrating that the reservoirs still hold significant numbers of gadwall.

The majority of gadwall populations were observed at High Maynard (27%) and Reservoirs Two & Three (32%), with a preference for island habitats. This indicates a positive shift in distribution, as evidenced by the lack of records from Reservoir Two in year eight. As noted in the 2020-21 year six report, gadwall numbers had significantly increased at the southern end of Reservoir Three, utilizing the island and secluded reed pools. This year, a further shift in distribution is evident, with Low Maynard now included but West Warwick excluded.

3.5.3 Shoveler (Figure 10)

Shoveler had a peak count of 103 recorded on 25th January 2023, however it is worth noting that 115 were recorded on 18th January 2024, a record for this month. Previous counts for the eight-year period were a low of 15 in 2017 and a high of 141 in 2018. Additionally, in the baseline year of 2012, 199 were recorded.

The trend in numbers differed from previous years, whereby lower numbers of shoveler arrived in October (23 recorded on the 7th, versus the 66 that arrived on the same date in 2022). Most birds moved on quite quickly with an average of 8 individuals recorded for November - December. However, a second peak of birds arrived in January, similar to 2015-2019, consistent with other sites in the Lee Valley. Following this, an average of 4 individuals were recorded for the remainder of the overwintering period (February – March).

Most records were observed on the southern portion of the reserve, following previous years. However, this year displayed a slightly different distribution in that records were found on Lockwood reservoir and almost all records were recorded on Reservoir One (51%) and East Warwick (31%). Previously, most observations were found on Reservoirs Four and Five. This year, shoveler appeared to have avoided the mid-east of the site, namely Reservoirs Two and Four, as well as Low Maynard and High Maynard. Disturbance is unlikely to be the cause, as only the western part of Low Maynard and Reservoir Two are accessible to the public during winter, and Reservoir Four and High Maynard are out of public access during this time.

3.5.4 Pochard (Figure 11)

A peak count of 46 pochard was recorded on 21st March 2024; in keeping with peak counts from 2020-2022 (average of 56), however lower than the peak count recorded in 2023 of 83 individuals, demonstrating that the population is still in overall decline. This is also referenced in the wetland resource of the Lee Valley 2021 report by Graham White, suggesting this sharp decline corresponds with an increase on the gravel pits of the northern half of the valley, suggesting a movement to new roost sites further up the valley.

The population of pochard were recorded on all reservoirs, and unlike previous years where West Warwick and Reservoir Four were favoured, this year pochard heavily favoured Reservoirs Two and Three (30%). This is important to note as the west side of Reservoirs Two and Three is within public access during the winter, therefore habituation to visitors may be increasing,

particularly around the Richard Woolley hide. Notably, Reservoirs Four and Five held low numbers of pochard compared to previous years.

High Maynard and Reservoir One also held significant numbers (24% and 15%). Elsewhere, pochard were evenly distributed, with an average of 5% across remaining reservoirs. High Maynard, considered a stronghold, has increased in numbers compared to the 2022 count of 13%. However, it should be noted that the reduced distribution on open water on the Maynard's in recent years remains. The introduced seasonal closure of the Maynard arm has allowed for small flocks to return to the southern island, however most of the records continue to be to the north end of High Maynard.

3.6 Other species

3.6.1 Breeding grey heron

Grey heron was recorded on all reservoirs, with an increase of nests recorded on reservoir three highlighting a differing distribution to previous years. After a long-term trend of decrease, most notably from 2010 onwards, the population has levelled off to 28 apparently occupied nests since 2022. This is still above the 10 pairs needed to qualify for the SSSI designation.

3.6.2 Winter roosting cormorant

A peak count of 141 wintering cormorant was recorded on 23rd January 2024. This is in keeping with previous peak counts (166 in 2023 and 126 in 2021) and is still well above the SSSI 'favourable target' of 79. No count was performed in 2022.

3.6.3 Over-wintering great crested grebe

A peak of 103 great crested grebe was recorded on 7th October 2023. A record overwintering number for the site, compared to the lowest peak count of 40 in 2017 and the highest of 70 in 2016. Great crested grebes were often recorded on all reservoirs for most of the survey days.

3.6.4 Over-wintering coot

Coots were widespread and abundant across all the reservoirs. A peak count of 695 in 2023, is the highest overwintering count for the site, barring the anomaly of 1,027 in 2015. This is well within its normal range with the lowest peak count being 480 in 2019. According to the 2015 London Bird Report, the anomaly was not seen across London and numbers in this extreme have not been seen on site since.

3.7 Analysis of disturbance events

A total of 116 disturbance events were recorded during the surveys of which 115 were negative and 1 was positive. Figure 8 illustrates the disturbance events that occurred during the 2023-24 monitoring period, caused by stimuli such as surveyor, visitors, and contractors.

As in all years, the response of waterfowl to the presence of the surveyor was the most frequently recorded event (with 103 of 115 negative disturbance events caused by surveyor). This is expected as surveyors spend time on the banks and in restricted areas to conduct counts. Surveyors being responsible for 90% of negative disturbance events, 80% (or 82 incidents) were low level, where the response is no greater than 'birds swimming rapidly away from activity

source' and typically to a distance of no more than 10m either into surrounding vegetation or away from the shore.

Species impacted by surveyor disturbance were often tufted duck and coot (15 and 38 respectively) which made up almost 51% of disturbance events. This is unsurprising given that they are the most abundant and widespread of species at the reservoir complex.

Of the high-level disturbance events (21 incidents) caused by the surveyor, 29% impacted designated species. One incident affected tufted duck and the remaining disturbance events to designated species were shoveler and heron, with heron being a particularly flighty species.

Disturbance events in the 2023-24 year occurred on all reservoirs except reservoirs 2, 3 and 5. The areas of greatest disturbance are highlighted in Figure 12. The high disturbance areas are where multiple disturbance (four or more) events occur or disturbance events greater than level 6 occur. Low disturbance areas are where three or less disturbance events occur at a particular grid cell or where disturbance level 5 events occur. Disturbance events more commonly occur on exposed reservoir banks that offer no screening, this includes the west bank of East Warwick, east bank of Lockwood and High Maynard. The latter often has feeding/resting coots, gulls, and geese out of the water on the grassy banks which are disturbed by surveyor presence and in response, often move back into the water.

Whereas the data shows an absence of disturbance incidents within the central core of the site; Reservoir One and Two & Three. This is likely a result of high level of vegetative screening (trees, scrub lined banks and marginal emergent vegetation) as was the design in the landscaping of the site to help protect birds from disturbance. Additionally, as seen with overwintering pochard on reservoirs Two and Three, the level of habituation to visitors may be increasing for certain species, as this is the sixth year of the site opening to the public.

There is a cluster of high disturbance events on East and West Warwick, but three of the six events affected heron, a typically flighty species, that choose to feed on the Warwicks due to suitable feeding habitat and possibly away from disturbance of visitors.

It is important to note, as most of the disturbance events are caused by surveyors, events will be biased towards the transect route. The exposed west bank of Lockwood and exposed east bank of East Warwick are key examples of areas not walked by surveyors and would likely lead to disturbance events. It is important to remember that a surveyor mimics the behaviour of a typical pedestrian visitor and should be taken as such whilst analysing the distribution of disturbance.

The remaining 10% of negative disturbance events were caused by visitors (12 incidents – namely bird watchers and joggers). A positive event was due to a coot moving towards a bird watcher.

4. Conclusions

The aim of this analysis is to identify any changes in key species abundance and/or distribution and whether there is a recognised and significant causal link between those changes and the introduction and promotion of wider public access to the site.

In isolation, the results of the 2023-24 survey show only a limited snapshot of the abundance and distribution of key species and how they responded to disturbance stimuli during surveys.

4.1 Visitor use and disturbance events

The addition of visitor monitoring shows that visitors overall adhere to the site's rules and sensitivities and the Wetlands design, and its on-going management can absorb significant recreational use.

Footfall numbers have significantly decreased since the unprecedented number of visits during the public lockdowns in 2020 - 21 (circa 750,000), and have stabilised at circa 420,000-450,000pa for the last three years. Although numbers have levelled out, they are still higher than the two years prior to the COVID - 19 outbreak (circa 350,000 visits), this likely due to people newly discovering Walthamstow Wetlands during the public lockdowns and the completion of housing developments in the surrounding area (Tottenham Hale and Blackhorse Road).

Although misuse is infrequent, it is accepted that any significant increase in visits will cause disturbance regardless of if visitors are behaving appropriately or not. The presence of surveyor is a good proxy for this, as a surveyor mimics the behavior of a typical pedestrian visitor and were responsible for the majority of disturbance events. As disturbance events largely occurred in restricted areas and were more common on exposed banks, it demonstrates the importance of maintaining restricted areas as refuge areas (without continued disturbance by members of public) for waterfowl and more flighty species such as heron to feed undisturbed.

With development in mind, continued monitoring is recommended, and options for screening the south end of East Warwick reservoir will be explored and we will aim to secure the available resources in the upcoming years. The Trust has finalised the signage review and rolled out signage for interpretation and site rules in 2024 in attempt to further mitigate incidents. Visitor monitoring will be reviewed as part of the 10-year report.

4.2 Distribution

For the most part, there has been no clear or significant change in the overall distribution of key bird species within the reservoirs. As identified within the HRA, the most sensitive areas that are used by SPA/SSSI species have been protected from disturbance through careful control of access.

Nevertheless, ongoing monitoring is essential to assess the current (and future proof) access and seasonal controls, as there has been a few observed changes in distribution/behaviour. Gadwall have benefitted from the reedbed habitat works and have expanded beyond their baseline strongholds and breeding pochard are no longer avoiding the south-east corner of Low Maynard and have redistributed onto Lockwood reservoir due to vegetation rafts providing suitable nesting habitat and cover.

The continued monitoring of the Maynard arm winter closure for at least the five period (until 2025) is required to assess its effectiveness as overwintering pochard are yet to show signs of redistribution on this reservoir.

4.3 Populations

Although there is variation year to year, when comparing the trend of on-site numbers almost all key species (during each key period) fluctuate within natural parameters.

Gadwall have shown relative stability, with numbers fluctuating around an average of 35 (breeding) and 77 (overwintering) for the past 3 years.

Incongruous to what was seen in 2022, there were two peaks of shoveler, the first arriving in October 2023 and the second arriving in January 2024, consistent with the rest of the Lee Valley.

The apparent declines in pochard, since the site opened are not necessarily a direct impact of increased visitor access. Despite the cause for these declines likely being multi-faceted and complex, the Trust acknowledge that visitor presence is a key component of those changes and have taken measures in an attempt to mitigate disturbance and thus apparent population declines.

As outlined in the earlier reports, unless regional context can be provided, it is more useful to assess distribution and disturbance events due to variation in numbers between each year can be driven by other factors such as climatic changes and food availability. Regional context was investigated in the year 5 report findings and is recommended to be reviewed again in 2025 as part of a 10-year review.

5. Monitoring in Year 10

Monitoring of disturbance and bird populations, along with targeted visitor monitoring should continue into year 10 (2024 -25), to follow the method and data interpretation as set out in this report. Following monitoring of year 10, a comprehensive review of all data within the 10-year period should be conducted and suggestions made regarding seasonal closures, disturbance reduction, habitat management and monitoring beyond this period.

6. References and bibliography

BSG Ecology (2013). *Extended Phase 1 habitat survey, post breeding duck survey and breeding waterbird survey.*

BSG Ecology (2014). *Walthamstow Wetlands Project. Report to Inform a Habitats Regulations Assessment for the Lee Valley Special Protection Area*.

BSG Ecology (2016). *Walthamstow Wetlands Project. Bird Monitoring Report – Year 1: April 2015 to March 2016*.

BSG Ecology (2017). *Walthamstow Wetlands Project. Bird Monitoring Report – Year 2: April 2016 to March 2017*.

BSG Ecology (2018). *Walthamstow Wetlands Project. Bird Monitoring Report – Year 3: April 2017 to March 2018*.

Burley, R., Game, M., & Frith, M. (1989). *Nature Conservation in Waltham Forest*, Ecology Handbook 11, London Ecology Unit.

Frith, M., Owens, C. and Wileman, T. (2021). *Walthamstow Wetlands; a bird and people hotspot? Lessons from the front-line.* In: Lambert, P. et al (2021). *London Bird Report 2019*, pp.217-230. London Natural History Society, London.

Frost, T.M., Calbrade, N.A., Birtles, G.A., Mellan, H.J., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. & Austin, G.E. (2020). *Waterbirds in the UK 2018/19: The Wetland Bird Survey*. BTO, RSPB and JNCC, in association with WWT. British Trust for Ornithology, Thetford.

Harris, A. (2006). Roosting behaviour of wintering Eurasian Bitterns in the Lee Valley. *British Birds*, 99:174-182.

JNCC (2015) Joint Nature Conservancy Council Lee Valley Natura 2000 Standard data form. http://jncc.defra.gov.uk/pdf/SPA/UK9012111.pdf [Accessed online 02/12/2021].

London Natural History Society (2017) *London Bird Report 2015*. rep. London: THE LBR EDITORIAL BOARD.

London Natural History Society (2024) *London Bird Report 2022*. rep. London: THE LBR EDITORIAL BOARD.

London Wildlife Trust (2018). *Walthamstow Wetlands Bird monitoring methodology and reporting*.

London Wildlife Trust (2019). *Walthamstow Wetlands Bird Monitoring Report 2018-19.*

London Wildlife Trust (2019). *Walthamstow Wetlands Bird Monitoring Report 2019-20.*

Salter, P. & O'Connor, A., 2020. *Walthamstow Wetlands; Visitor Monitoring Report Years 1 & 2: March 2018 to February 2020*, London Wildlife Trust.

Waltham Forest Council (2014). *Bird Impact Monitoring Programme*.

Walthamstowbirders.blogspot.com (accessed August 2024)

White, G. (2021) *The wetland resource of the Lee Valley: a re-assessment of its importance to nature conservation, with special reference to waterbirds*

London Wildlife Trust (2023). *Walthamstow Wetlands Bird Monitoring Report 2022-23.*

7. Figures (overleaf)

Figure 1a; Grid squares used for the survey (south)

BSG | ecology

OFFICE: Oxford
T: 01865 883833

JOB REF: 7718,01

PROJECT TITLE
WALTHAMSTOW RESERVOIRS MONITORING YEAR 2

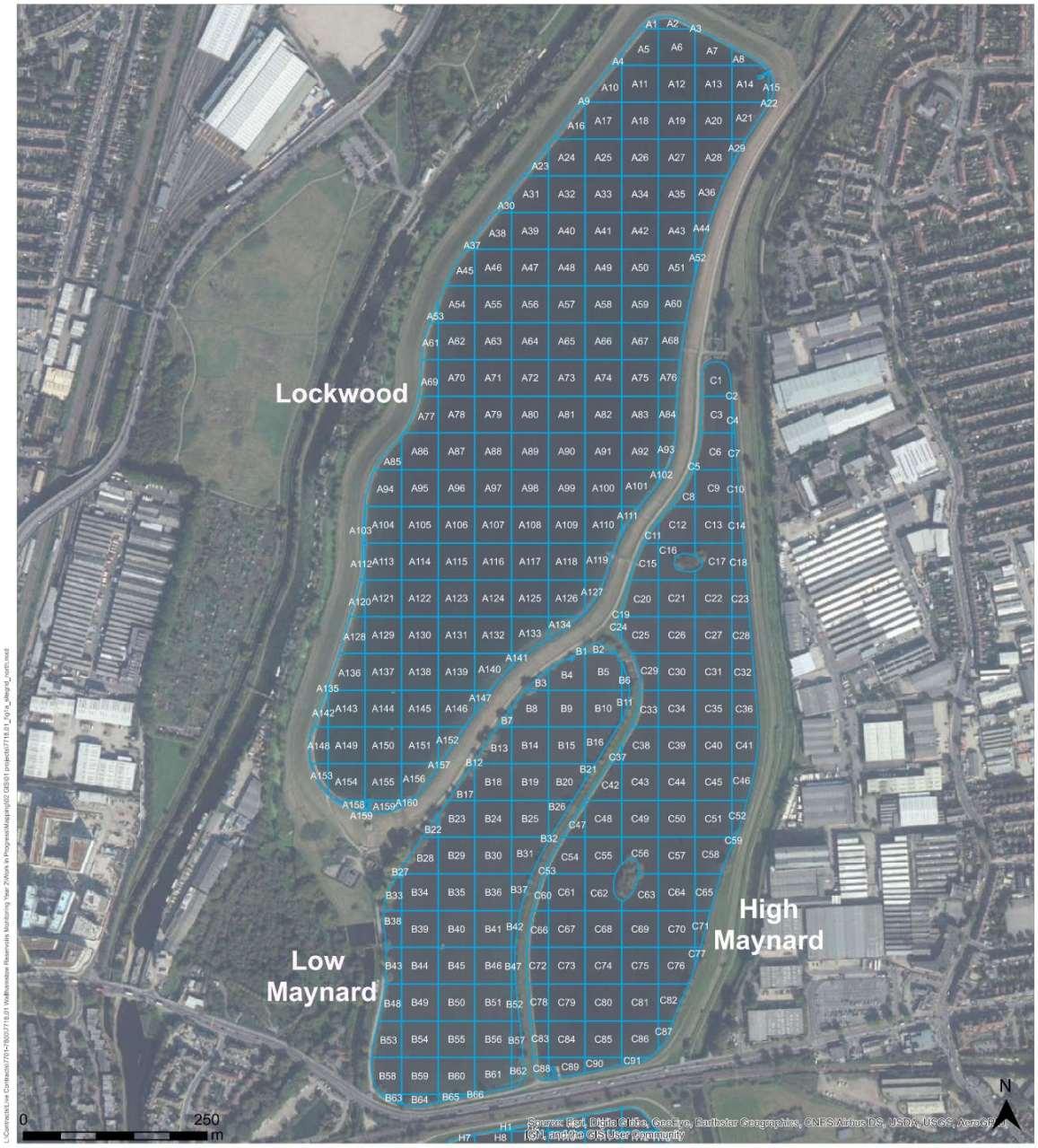
DRAWING TITLE
Figure 1b: Reservoirs and study grid (south)

DATE: 06.04.2017 CHECKED: PN SCALE: 1:5,000
DRAWN: COH APPROVED: OG STATUS: FINAL

LEGEND

50 x 50 m study grid

Figure 1b; Grid squares used for the survey (north)



BSG | ecology

OFFICE: Oxford
T: 01865 883833

JOB REF: 7718_01

PROJECT TITLE
WALTHAMSTOW RESERVOIRS MONITORING YEAR 2

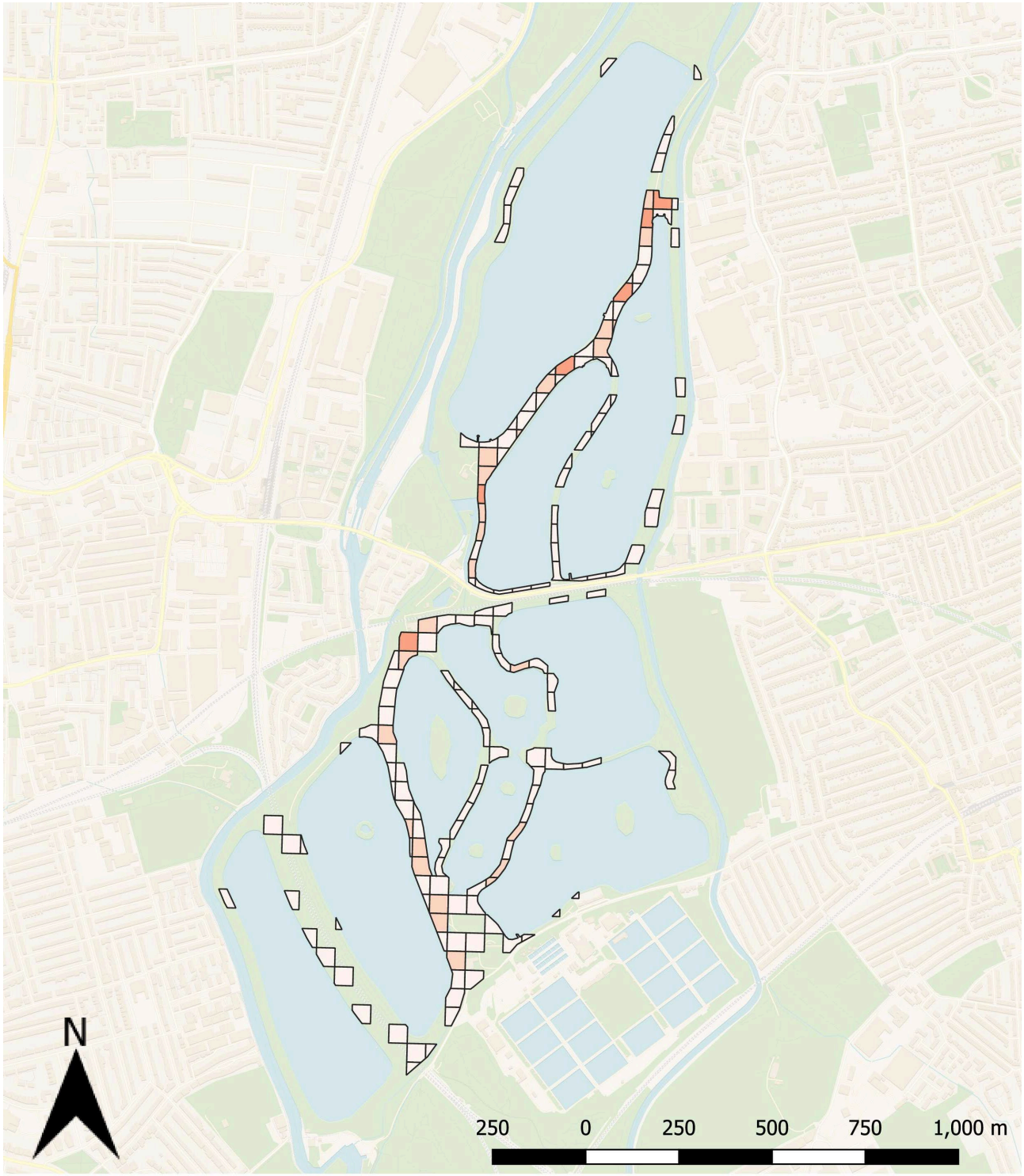
DRAWING TITLE
Figure 1a: Reservoirs and study grid (north)

DATE: 06.04.2017 CHECKED: PN SCALE: 1:5,000
DRAWN: COH APPROVED: OG STATUS: FINAL

LEGEND

50 x 50 m study grid

2a. Distribution of weekday visitors



WALTHAMSTOW WETLANDS MONITORING YEAR 9

Figure 2a: Distribution of weekday visitors

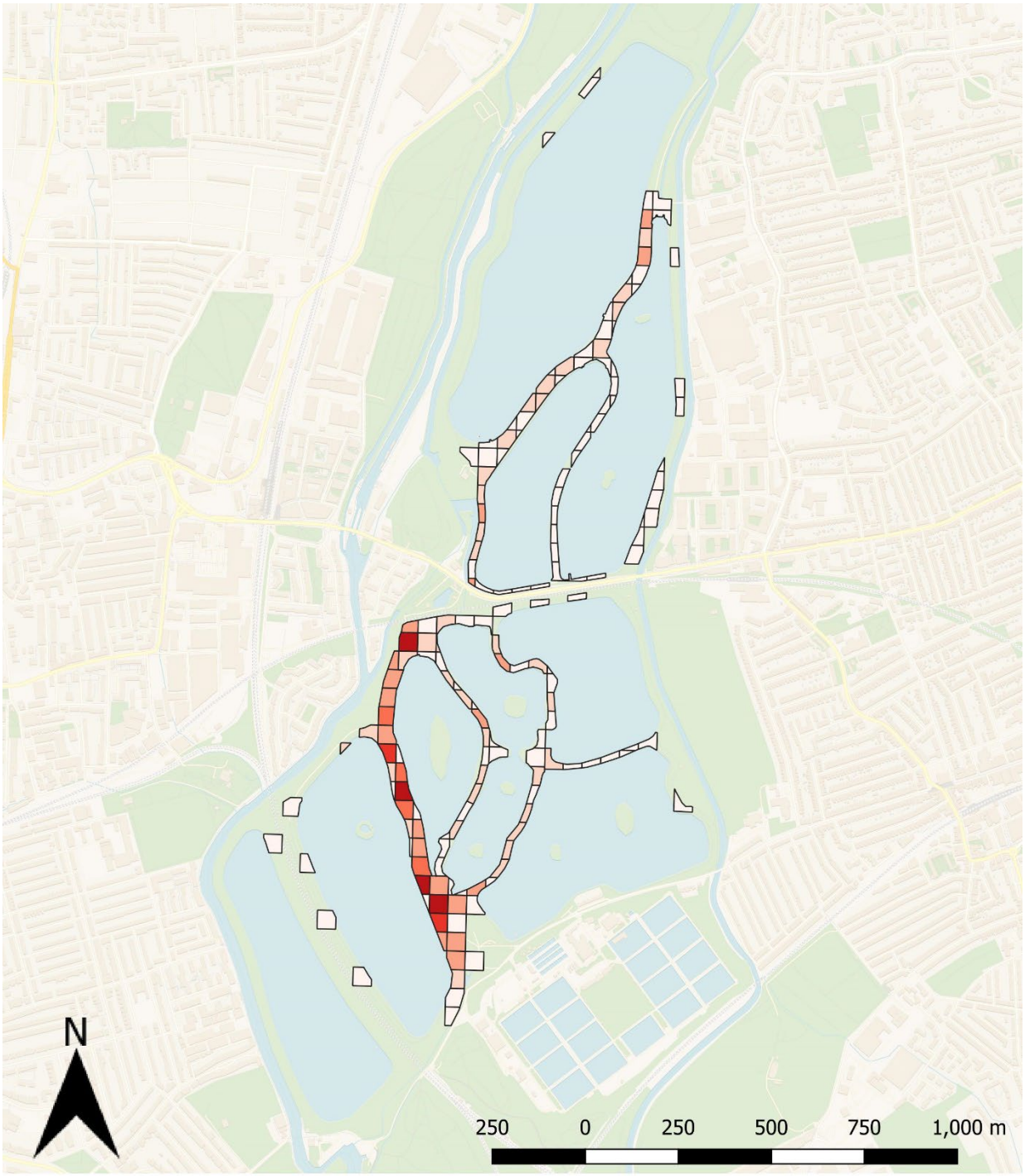
Key

1 - 10	30 - 40
10 - 20	40 - 50
20 - 30	50 - 60
	60 - 97

London Wildlife Trust

Produced by the London Wildlife Trust

2b. Distribution of weekend visitors



WALTHAMSTOW WETLANDS MONITORING YEAR 9

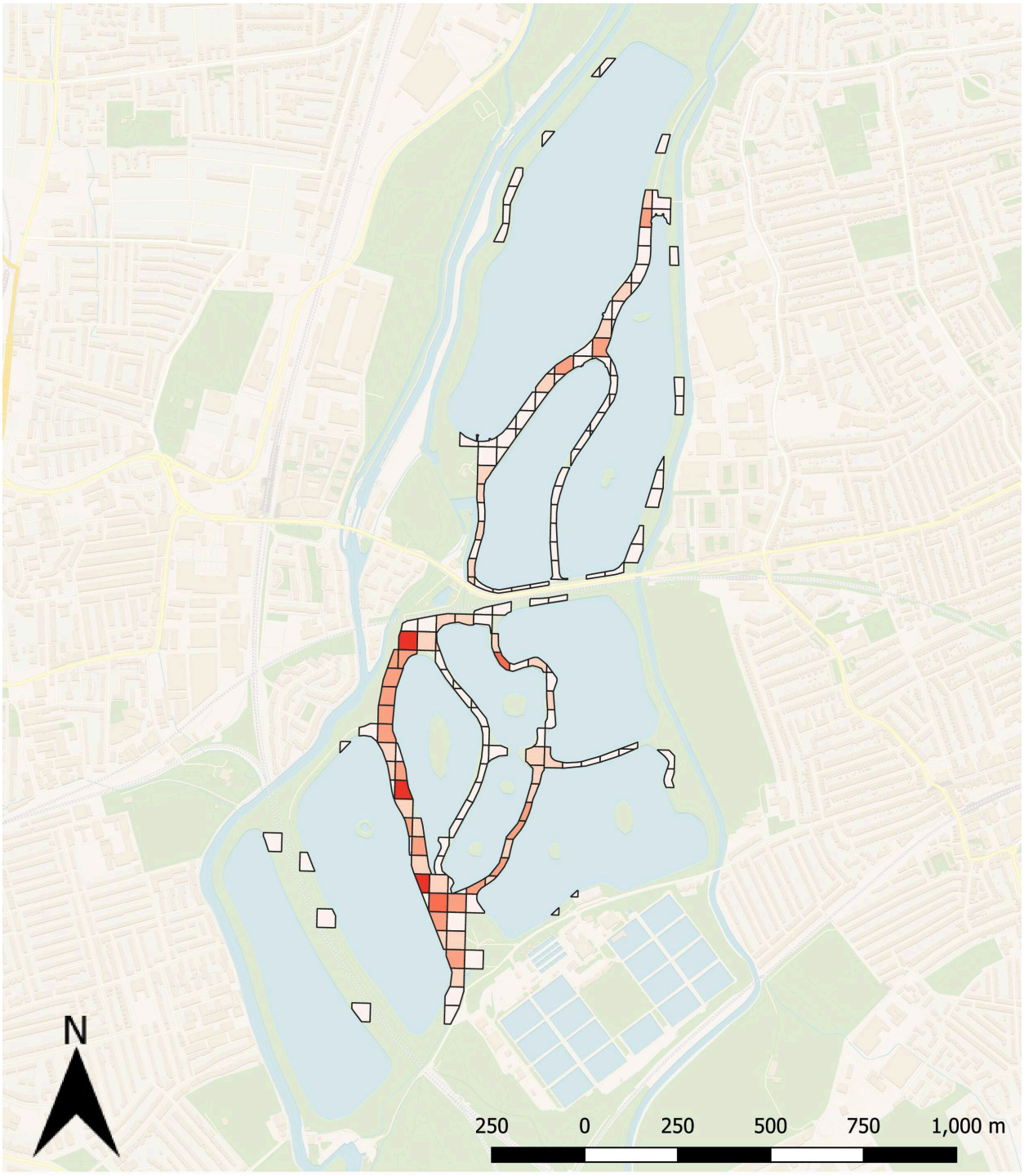
Figure 2b: Distribution of weekend visitors

Key

1 - 10	30 - 40
10 - 20	40 - 50
20 - 30	50 - 60
	60 - 97

London Wildlife Trust

3a. Distribution of visitors (March – July inclusive)



WALTHAMSTOW WETLANDS MONITORING YEAR 9

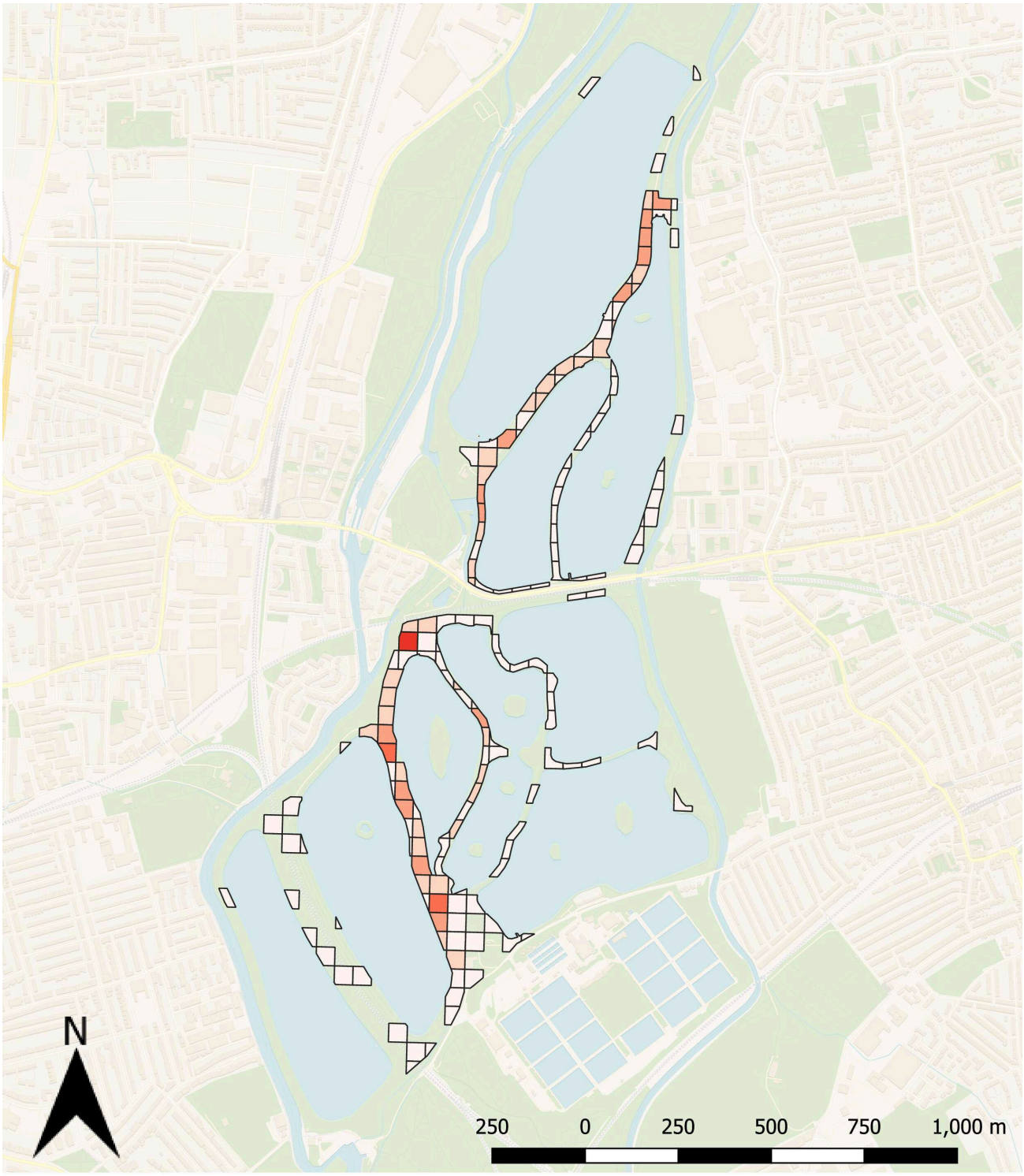
Figure 3a: Distribution of visitors (March - July)

Key

1 - 10	30 - 40
10 - 20	40 - 50
20 - 30	50 - 60
	60 - 82

London Wildlife Trust

3b. Distribution of visitors (Aug – February inclusive)



WALTHAMSTOW WETLANDS MONITORING YEAR 9

Figure 3b: Distribution of visitors (August - February)

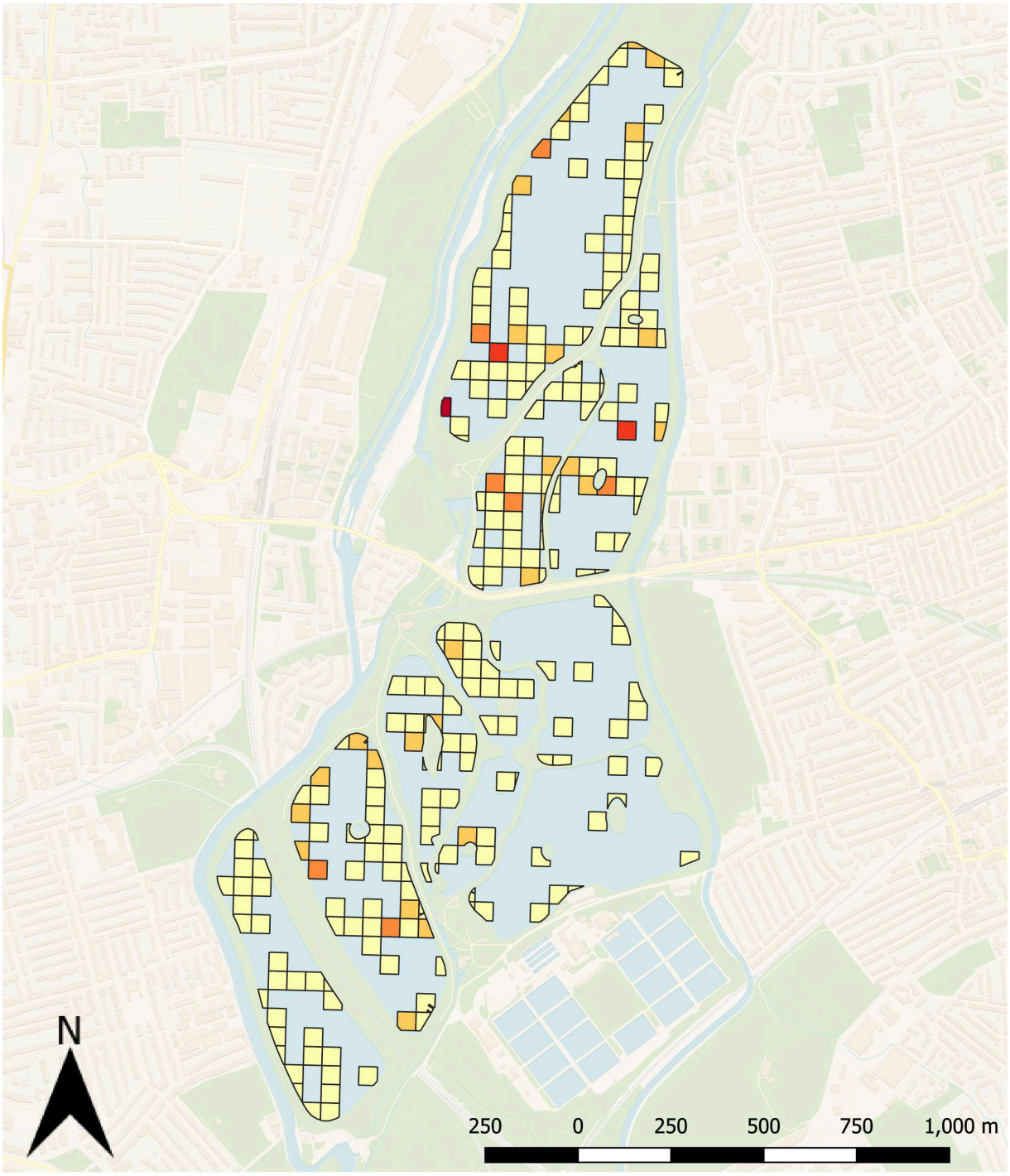
Key

1 - 10	30 - 40
10 - 20	40 - 50
20 - 30	50 - 60
	60 - 108

London Wildlife Trust

Produced by the London Wildlife Trust

4. Distribution of breeding tufted duck April to June inclusive



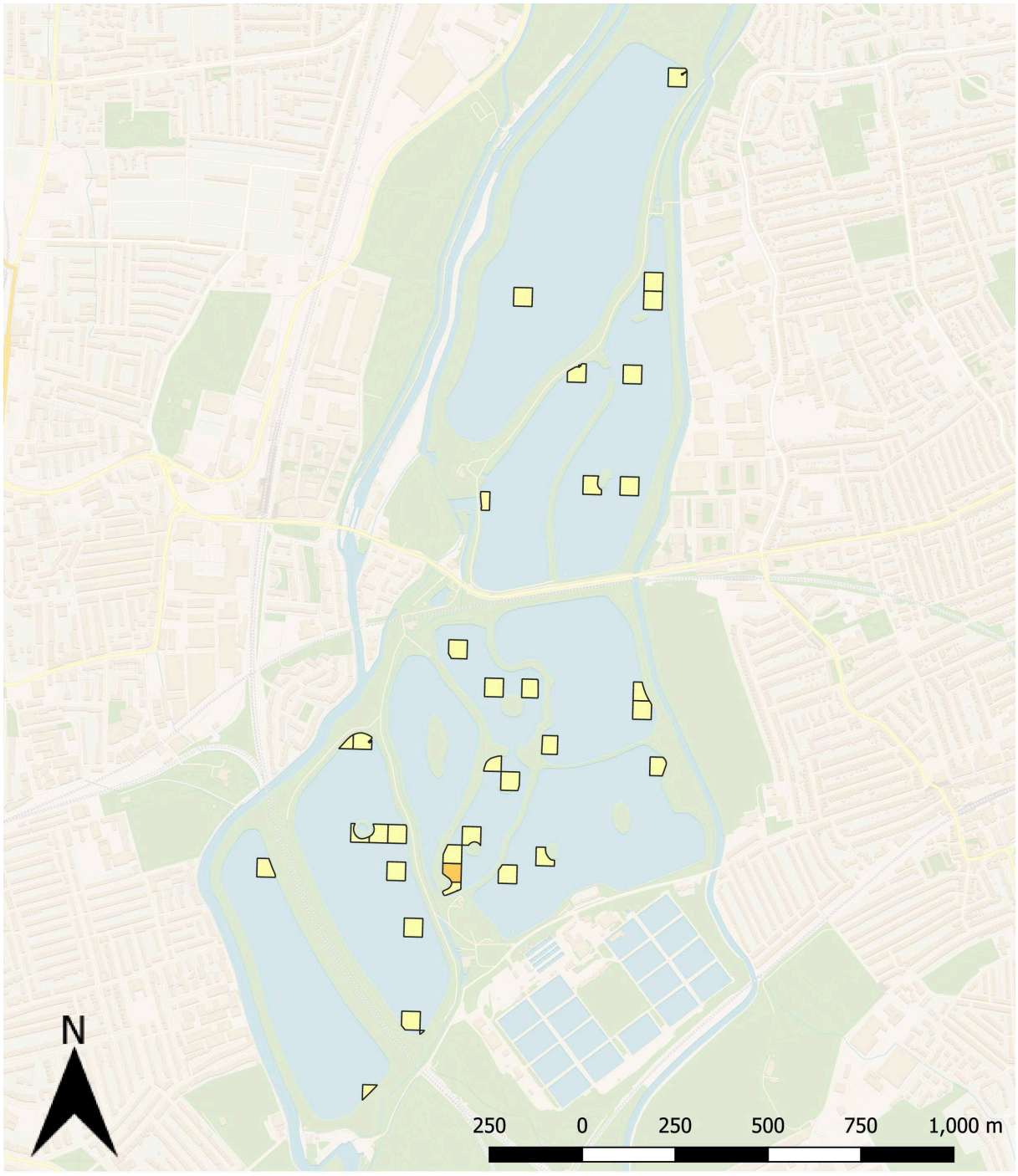
WALTHAMSTOW WETLANDS MONITORING YEAR 9

Figure 4: Distribution of tufted duck breeding April to June inclusive

Key
1 - 10
10 - 20
20 - 30
30 - 40
40 - 56

London Wildlife Trust

5. Distribution of breeding gadwall April to June inclusive



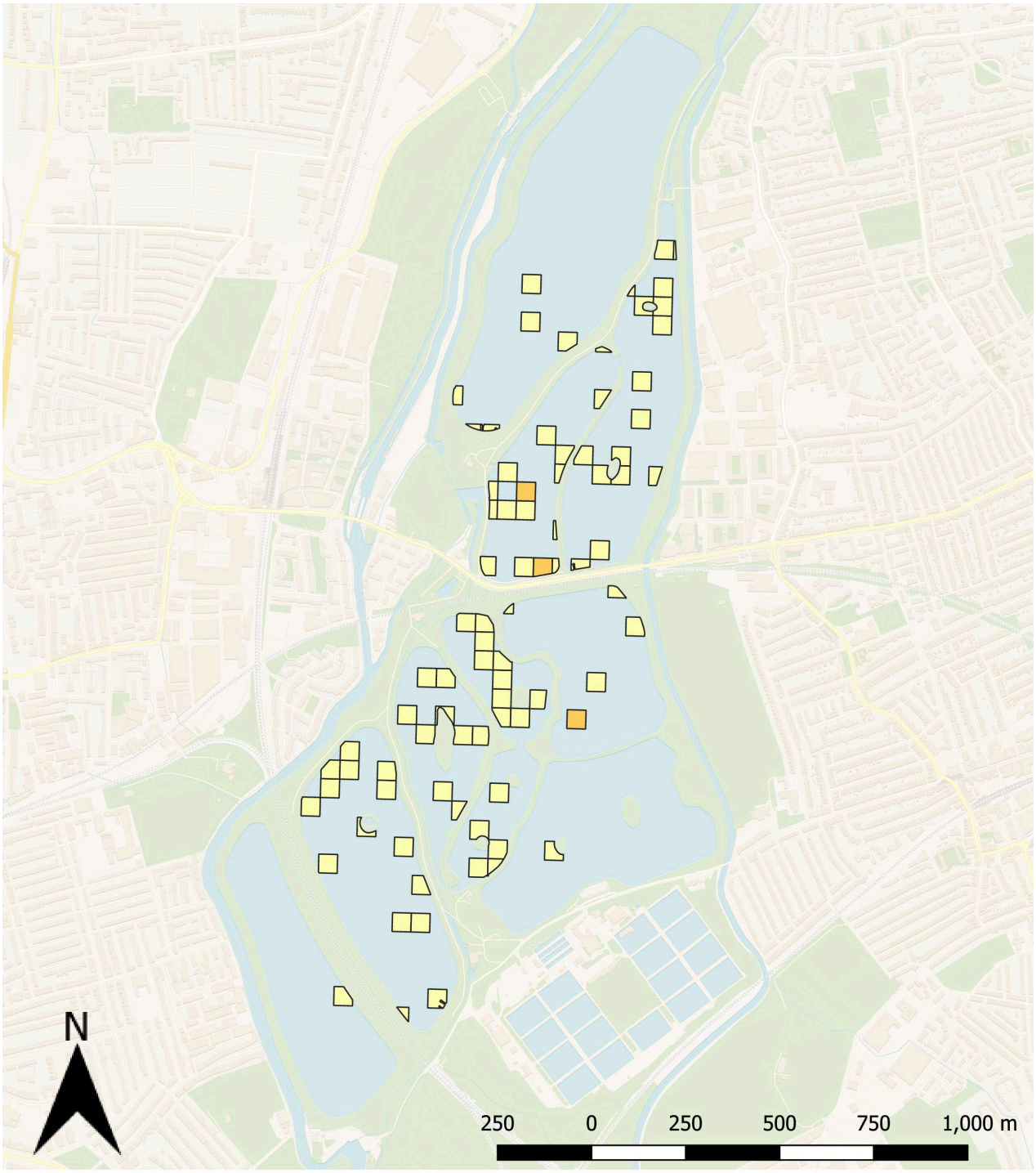
WALTHAMSTOW WETLANDS MONITORING YEAR 9

Figure 5: Distribution of gadwall breeding April to June inclusive

Key
1 - 10
10 - 20
20 - 30
30 - 40
40 - 45

London Wildlife Trust

6. Distribution of breeding pochard April to June inclusive



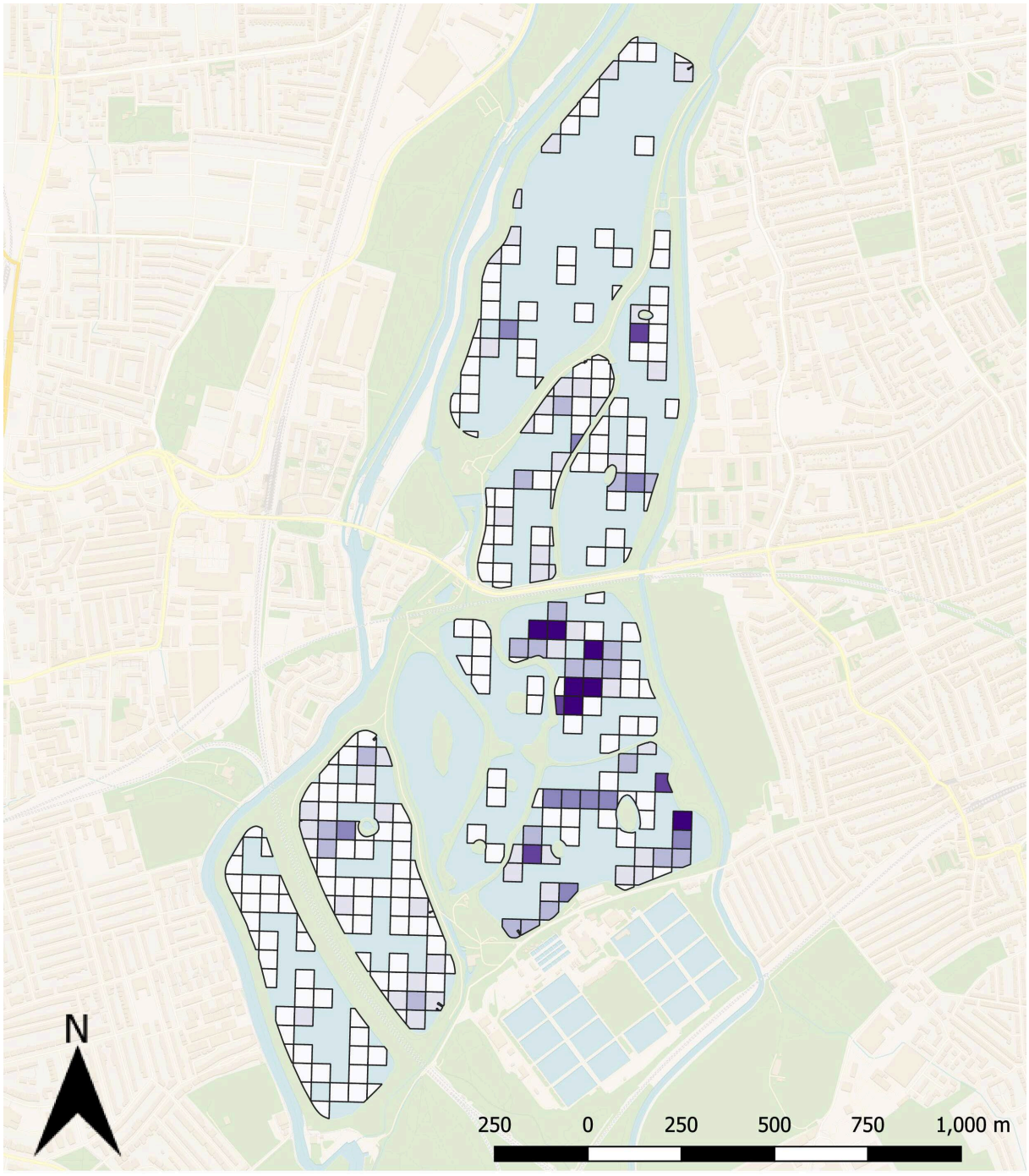
WALTHAMSTOW WETLANDS MONITORING YEAR 9

Figure 6: Distribution of pochard breeding April to June inclusive

Key
1 - 10
10 - 20
20 - 30
30 - 40
40 - 45

London Wildlife Trust

7. Distribution of post-breeding tufted duck August to September inclusive



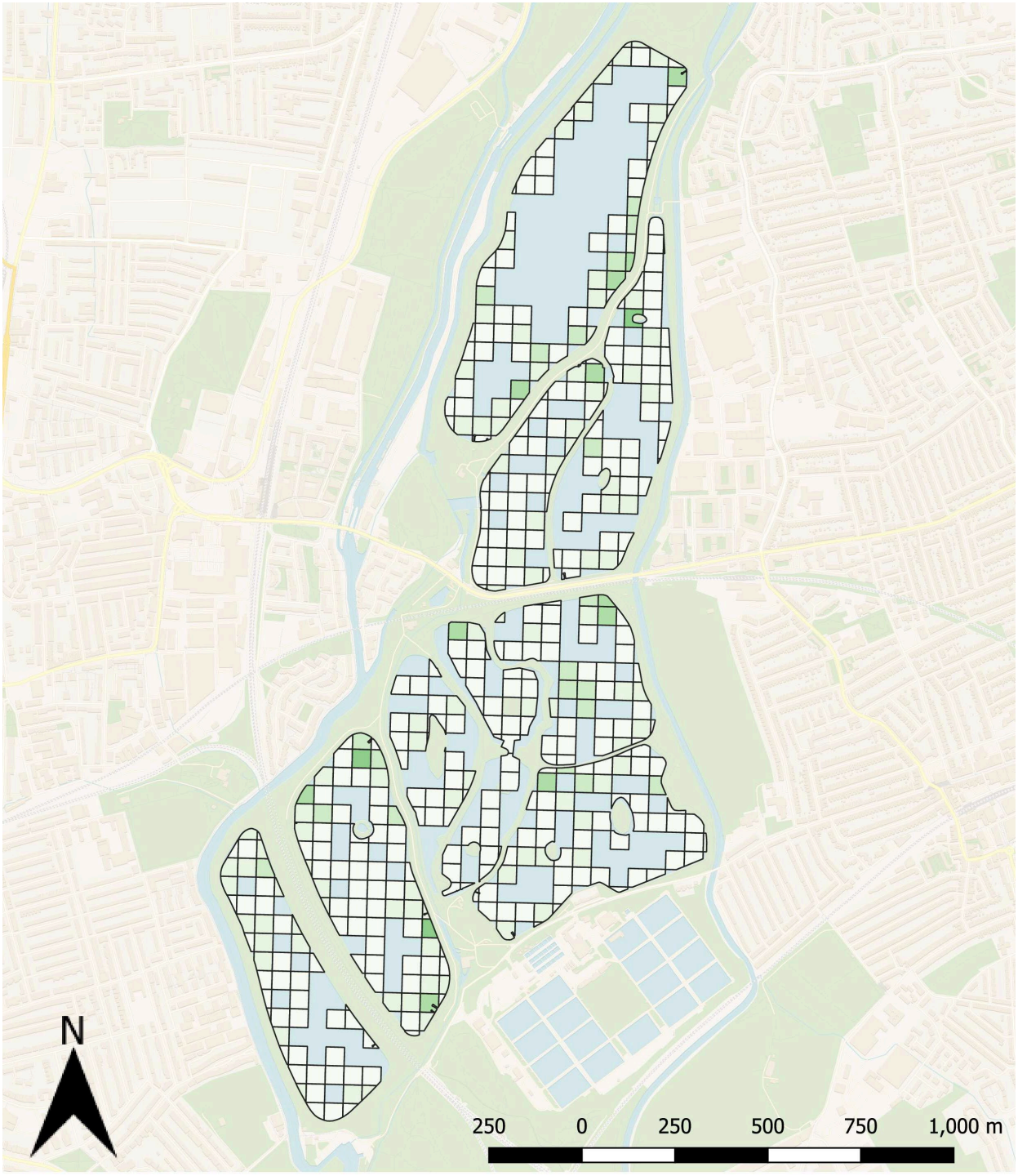
WALTHAMSTOW WETLANDS MONITORING YEAR 9

Figure 7: Distribution of tufted duck post-breeding August to September inclusive

Key
1 - 20
20 - 40
40 - 60
60 - 80
80 - 100
100 - 170

London Wildlife Trust

8. Distribution of over-wintering tufted duck October to February inclusive



WALTHAMSTOW WETLANDS MONITORING YEAR 9

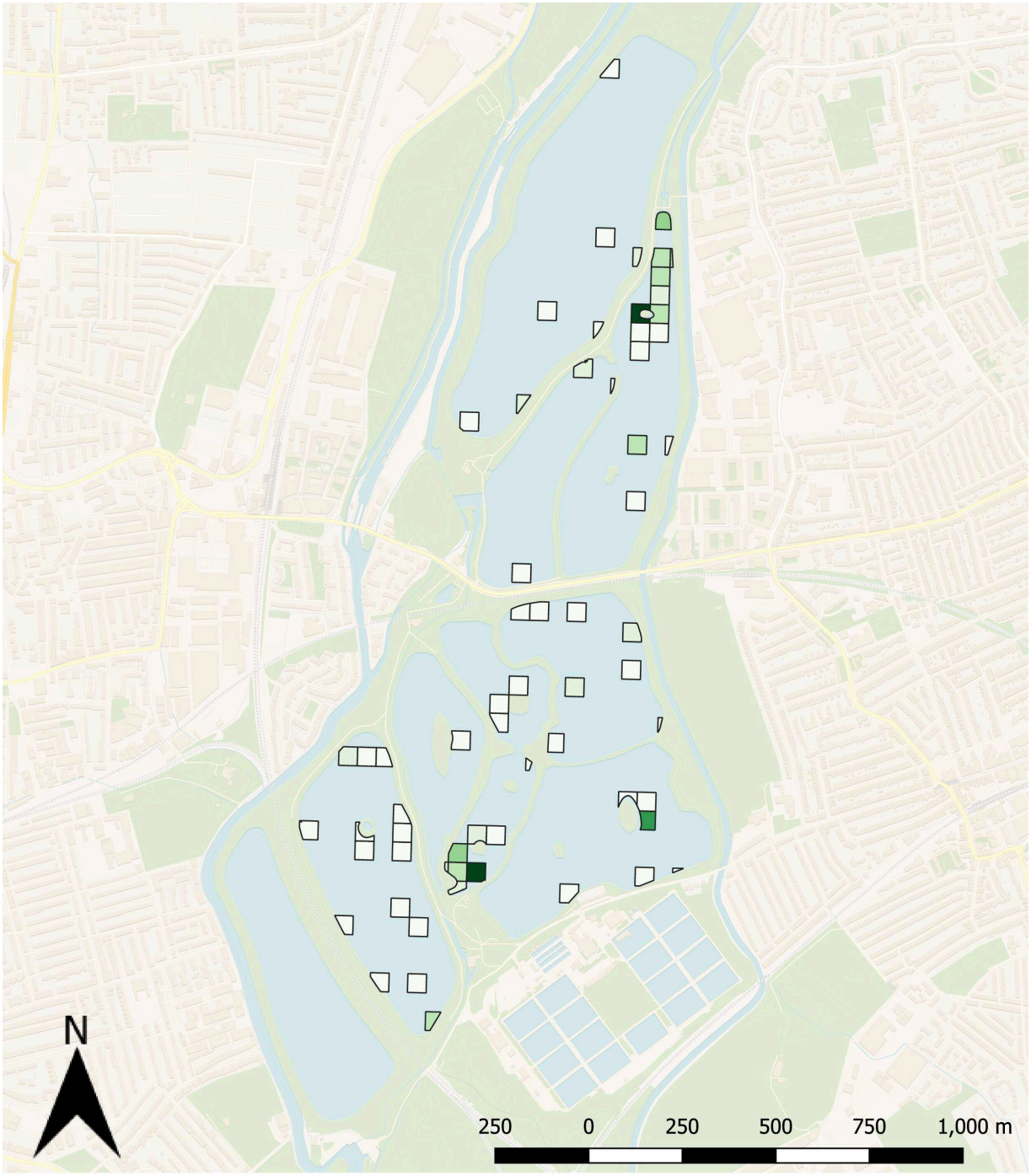
Figure 8: Distribution of tufted duck overwintering October to February inclusive

Key

1 - 20	100 - 120
20 - 40	120 - 140
40 - 60	140 - 160
60 - 80	160 - 180
80 - 100	180 - 185

London Wildlife Trust

9. Distribution of over-wintering gadwall October to February inclusive



WALTHAMSTOW WETLANDS MONITORING YEAR 9

Figure 9: Distribution of gadwall overwintering October to February inclusive

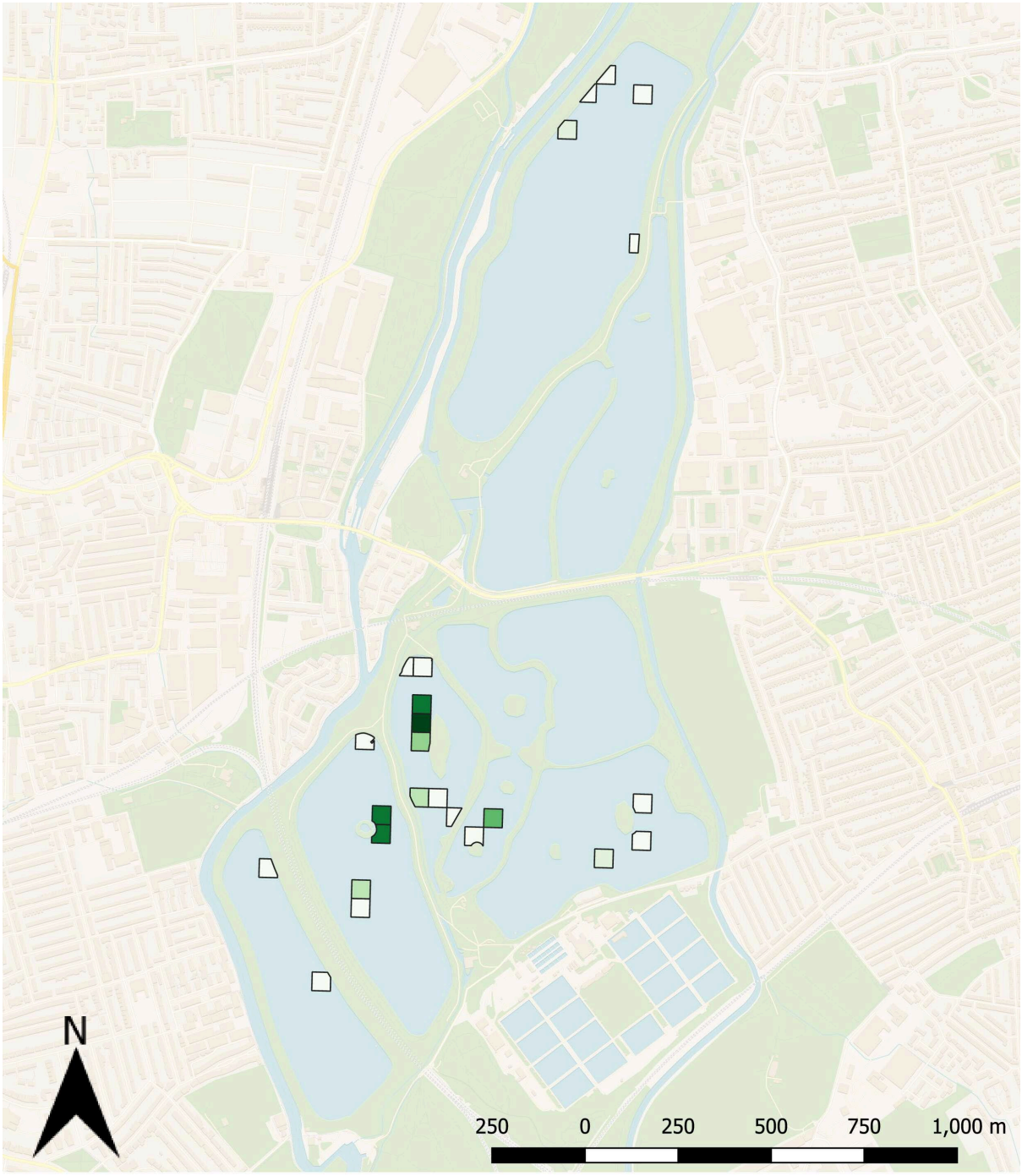
Key

1 - 5	20 - 25
5 - 10	25 - 30
10 - 15	30 - 35
15 - 20	35 - 89

London Wildlife Trust

Produced by the London Wildlife Trust

10. Distribution of over-wintering shoveler October to February inclusive



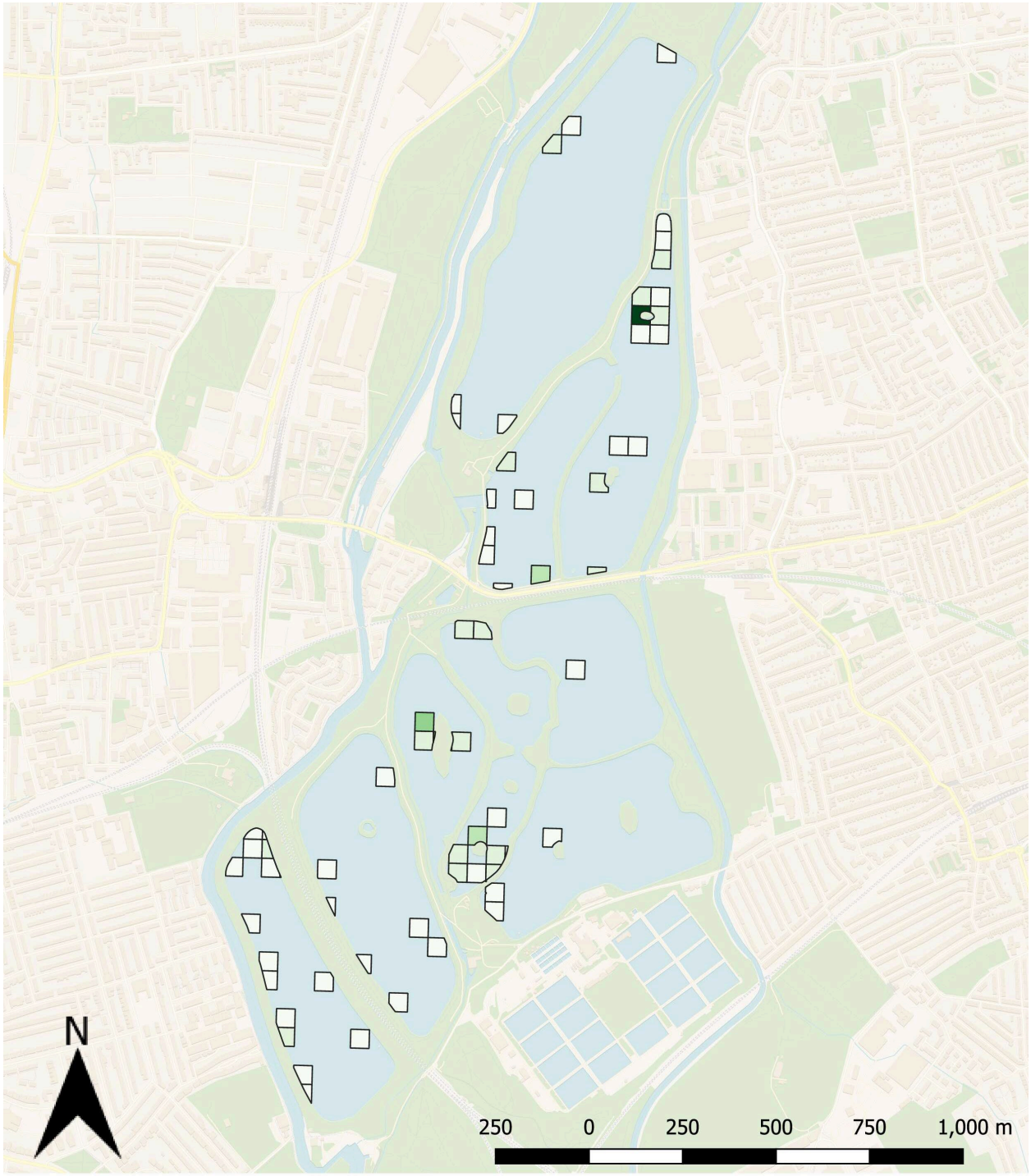
WALTHAMSTOW WETLANDS MONITORING YEAR 9

Figure 10: Distribution of shoveler overwintering October to February inclusive

Key
1 - 5
5 - 10
10 - 15
15 - 20
20 - 25
25 - 30
30 - 35
35 - 68

London Wildlife Trust

11. Distribution of over-wintering pochard October to February inclusive



WALTHAMSTOW WETLANDS MONITORING YEAR 9

Figure 11: Distribution of pochard overwintering October to February inclusive

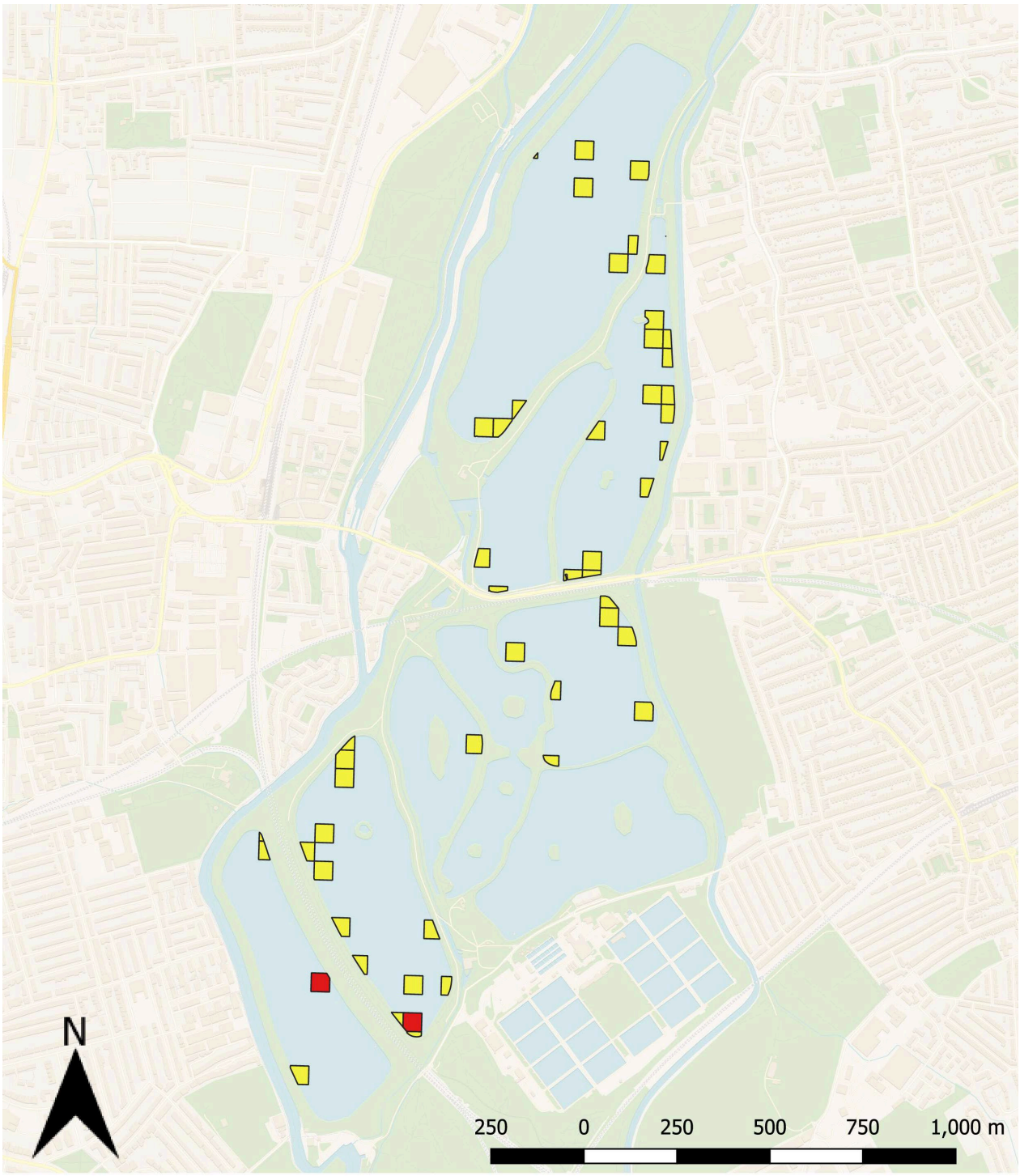
Key

1 - 5	20 - 25
5 - 10	25 - 30
10 - 15	30 - 35
15 - 20	35 - 39

London Wildlife Trust

Produced by the London Wildlife Trust

12. Disturbance events recorded during Year 9



WALTHAMSTOW WETLANDS MONITORING YEAR 9

Figure 12: Distribution of disturbance events

Key
Low
High

London Wildlife Trust

8. Appendices

Appendix 1: Example recording forms

Bird distribution and count survey form

This form is to be used from April to June (inclusive). For Tufted (TU), Pochard (PO), Shoveler (SV) & Gadwall (GA) please record male and female numbers in their respective columns. Do not fill in the 'Number' column for the aforementioned species as this will be done when data is digitised. Please record anglers as much as practically possible.

Reservoir Count Form (Breeding Season)																
Reservoir ID			Wind speed			Cloud Cover										
Date			Wind direction			Percentage Ice										
Observer			Precipitation			Condition of surface										
Start/end time			Temperature													Anglers
Square	Species	Number	Female	Male	Square	Species	Number	Female	Male	Square	Species	Number	Female	Male		Square

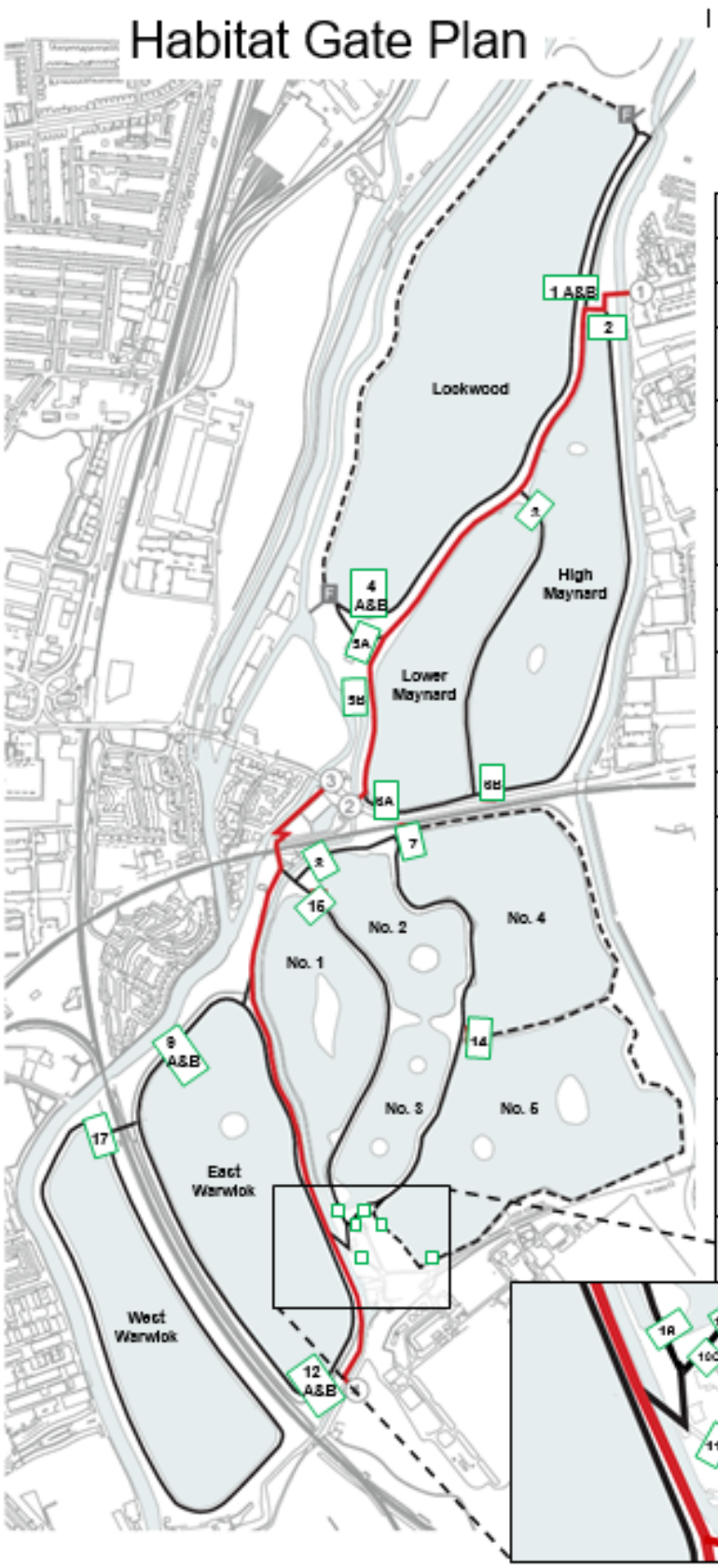
Disturbance recording form

Reservoir	Grid Squares/ Location	Time	Species	Neutral	Neg.	Pos.	Notes/Comments

Disturbance vector definitions

Surveyor	The persons undertaking the bird disturbance survey, generally singly or in pairs
Angler	Persons partaking in fishing at water's edge, generally occasional movement
Visitor	Member of the public walking around the wetlands, generally slow or gently paces, singly, small or occasionally large groups
Vehicle	A vehicle permitted to be on site, e.g., Thames Water or London Wildlife Trust van
Operations	Persons or actions relating to Thames Water operations, not in a vehicle
Cyclist	Persons on a bicycle, generally moving at pace
Jogger	Persons moving at speed, above a walking pace, often running.
Train	Train on embanked railway line passing through site, West Anglia Mainline or Gospel Oak to Barking line

Appendix 2. Seasonal access map 2020 onwards



GATE	OPEN	CLOSED
1 A & B	-	ALL
2	-	ALL
3	01 May - 31 Sept	01 Oct – 30 April
4 A & B	-	ALL
5 A & B	-	ALL
6A	01 May - 31 Sept	01 Oct – 30 April
6B	-	ALL
7	-	ALL
8	01 Mar - 31 July	01 Aug – 28/29 Feb
9 A & B	-	ALL
10 A	-	ALL
10 B	01 Mar - 31 July	01 Aug – 28/29 Feb
10 C	-	ALL
11	-	ALL
12 A & B	-	ALL
13	-	ALL
14	-	ALL
15	01 Aug – 28/29 Feb	01 Mar - 31 July
16	01 Aug – 28/29 Feb	01 Mar - 31 July
17		ALL

Appendix 3: Survey dates and conditions

Date	Average temperature (°C)	Average wind speed (Beaufort)	Prevailing wind direction	Cloud cover (/8)	Rain event	Ice on reservoirs present
13.04.23	10	5 to 6	NNE	8 in PM	Rain in PM	
21.04.23	10	2	SE	8	Rain in AM	
14.05.23	14	0	NNE	8		
28.05.23	17	0	SW	1		
23.06.23	25	0	WSW	1		
13.08.23	19	0	SW	3		
26.08.23	18	2 to 3	SW	2 to 5		
28.09.23	16	3	SW	8		
07.10.23	23	10	WSW	3		
22.10.23	8	2	SW	1		
09.11.23	10	3	NNE	7		
23.11.23	10	14	W	4		
09.12.23	10	4	S	8	Rain 9mm	
23.12.23	11	4	W	6		
11.01.24	5	2	WSW	1		
25.01.24	12	3	NNE	8	Rain light drizzle	
11.02.24	8	2	NW	7	Rain 1mm	
25.02.24	6	2	E	6		
07.03.24	10	4	E	3		
21.03.24	15	2	W	4		