

Thrupp Lake Site Management Plan 2021-2026



Prepared by the Earth Trust on behalf of
RWE Generation UK Plc



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Appendices

All appendices are available as separate documents that can be found by emailing the Earth Trust at admin@earthtrust.org.uk Documents are also available as hard copies on request.

1. Introduction

This is the second version of this management plan, now covering the period 2021-2026. This plan is largely based on first management plan and does not seek to make major changes to the existing management of Thrupp Lake but to generally review and update it (including the formatting of the plan to bring it in-line with other Earth Trust management plans). It takes into account all of the available information regarding the reserve and attempts to strike a balance between what is desirable and what is achievable within the various levels of protection on the land i.e. the Local Wildlife Site status, within the Green Belt; natural restrictions e.g. the Lake falls within the Thames floodplain; and available resources. It will be under continual yearly review during the period of the plan as a dynamic document. Success will be measured against the management activities with site surveys, ecological monitoring and a review of the completion of the work plan. Additional objectives and actions have been identified by looking at the experience of managing the site over the first plan period, and by consultation with RWE Generation, and conversations with associated groups; Friends of Radley Lakes, Radley Lakes Trust and Radley Parish Council. The plan also takes in account recent developments for the Lakes area as a whole, stemming from the Radley Lakes Masterplan and creation of the Radley Lakes Trust.

The aim of this management plan is to set out a framework for the management and use of Thrupp Lake, 14 hectares of land and lake adjacent to the Thames. The plan sets out how the Earth Trust will manage Thrupp Lake, on behalf of RWE Generation, for the benefit of wildlife and people. Detailed annual work programmes have been drawn up based on the recommendations contained in this document. The plan will allow operational staff to understand and follow the management and monitoring activities for the site and for stakeholders to understand the management of the site and rationale behind it. It also seeks to highlight the importance of community involvement on the site and its contribution to future plans. The structure of the plan is such that the plan should be a working document that is easy to use and refer to.

1.1. Executive summary

Reserve Name:	Thrupp Lake
OS Grid Reference:	SU 520 978
Total Area:	Total Area of site - 14 hectares (ha) Thrupp Lake - 11.7 ha
District:	Vale of the White Horse
County:	Oxfordshire
Local Planning Authority:	Vale of the White Horse District Council (VWHDC)
Owner:	RWE Generation UK Plc



Photo 1: Aerial view of the Radley Lakes complex and Thrupp Lake in its landscape context

Current status:	Local Wildlife Site (formerly known as County Wildlife Site) reference no. 59I03 and within Green Belt
Overall responsibility:	John Norton, Estates Manager, RWE Technology UK Ltd, Windmill Hill Business Park, Whitehill Way, SN5 6PB Swindon
Type of holding:	RWE Generation UK Plc owns site Freehold
Date of purchase:	2005
Works/vehicle access:	Through vehicle gate, off Thrupp Lane SU520977
Land Tenure:	Leasehold on 5 year lease until end of 2025 This is not a legal document. Please refer to the original tenure documents before taking any decision or action that may have legal implications.
Tenant:	Earth Trust
Lease break dates:	31 st December 2022, 31 st December 2023 and 31 st December 2024

Site context

Thrupp Lake is one of a series of former gravel pits, known as Radley Lakes, which are situated about 2km east of Abingdon and 1.5km south of Radley village. The Radley Lakes area was formed from gravel extraction that started during the 1940's. Excavation below the water table meant that the disused pits became flooded from groundwater. From 1985, the Central Electricity Generating Board (CEGB, which later became National Power, the plant then passed to Innogy Plc which was taken over by RWE npower latterly becoming RWE Generation – from now on referred to as 'RWE') began filling the lakes with waste pulverised fuel ash (PFA) from the coal-fired 'Didcot A' Power Station.

Thrupp Lake is a large Lake, up to 6m deep, with 24 islands. For many years Thrupp Lake had formed part of the grounds of the private house known as 'Sandles', and was used for water sports and recreation by the owners. Following its purchase by RWE in 2005, RWE applied for permission to infill Thrupp Lake and Bullfield Lake with PFA.

In 2005, local opposition formed a protest campaign called 'Save Radley Lakes'. The house had fallen into disrepair and been subject to squatting and vandalism; however the value of the lake as a sanctuary for wildlife had become widely recognised, and was designated within a wider County Wildlife Site by TVERC in 2006. After some clearance work carried out by RWE in February 2007, the lake was allowed to revert to a more natural state.

See Appendix 1 for a detailed site history.



Photo 2: Aerial photograph of Thrupp and Bullfield Lakes in 2007

Management constraints

Local Wildlife Site (LWS) designation is a non-statutory local declaration. Thrupp Lake sits within the Radley Gravel Pits Local Wildlife Site. LWS (formerly known as County Wildlife Sites) are sites that support wildlife-rich habitats, or particularly important species, but which aren't protected nationally. Local Wildlife Sites are vital to supporting biodiversity. LWS do get some protection from development in the planning system, but their value is poorly recognised and understood.

The purpose of the designation was to safeguard, maintain and enhance the ecological interest, and at the same time ensure continued public enjoyment and involvement in the reserve. For more information please see Appendix 2.

2. General description

2.1. Location & Site Boundaries

Thrupp Lake LWS is located 2km east of Abingdon and 1.5km south of Radley village (SU 520978), nearest postcode is OX14 3NG.

2.2. Tenure

RWE bought Thrupp Lake in 2005 with the initial hope of gaining permission to infill Thrupp Lake (and Bullfield Lake) with PFA. In May 2009, Earth Trust (known as Northmoor Trust at the time) was chosen by RWE and Radley Parish Council as a partner for management of Thrupp Lake as a conservation area. In January 2010, the Earth Trust was given a 25 year lease of RWE land at Thrupp Lake. The break clause in this original lease agreement was enacted in December 2019 and new 5 year lease agreement has now started with RWE as of January 2021.

2.3. Management/Organisational Infrastructure

As the site owner, RWE is the budget-holder and ultimate decision-maker for the site. Within RWE Generation the Estates Manager has overall responsibility for the management of the reserve.

RWE employ the Earth Trust to manage Thrupp Lake. The current lease agreement between RWE and Earth Trust runs from January 2021 to December 2025 and will be reviewed periodically before December 2025 in accordance with RWE's lease procedure rules.

The Earth Trust employ a Warden within the Land Management Team who has responsibility for the management of Thrupp Lake, including undertaking all aspects of site management contained in this plan.

The Warden/s and RWE have six monthly catch-up's, often in the form of a report, unless specific things on the ground need to be looked at; to review progress against an agreed set of targets (as set out in this management plan) and there is regular communication over all aspects of site management between the Trust and RWE.

2.4. Resources

In order to effectively implement the objectives and actions identified in this plan sufficient resources are required. The massive contribution of the local community in the management of the site through various forms of volunteering cannot be overstated in its importance and the maintenance of good community relations is key to ensuring the effective long-term management of the site.

In addition to these staff and voluntary resources RWE has and continues to invest significantly in the development of the site since its purchase in 2005.

Revenue expenditure:

There is an annual revenue budget, which in 2020 totalled approximately £13,000. This budget pays for the contractual agreement with the Earth Trust for the day-to-day management of the site and any materials.

2.5. Associated Groups

Friends of Radley Lakes

Friend of Radley Lakes (FRL) grew out of the 'Save Radley Lakes' campaign and was set up in 2010 to act as a community group to help care for the Radley Lakes area and has evolved into taking on the role of ambassadors in the local community. Members of FRL take part in Earth Trust conservation work parties, and FRL also organise regular social and fundraising events, such as 'Tea at the Lakes' normally held at Thrupp Lake in May. FRL also comment on planning applications and other matters which may affect the Lakes area. The Earth Trust warden/s keep in regular contact with FRL, meeting with the FRL chair every 6 months, sending out an annual "Warden's report" by email, and attends the FRL annual AGM in November, sometimes giving an in person update to the AGM.

Radley Lakes Trust

Radley Lakes Trust (RLT) is a Charitable Incorporated Organisation, which was registered in November 2020. The Trust's main task is completion and then delivery of the Radley Lakes Masterplan, an initiative which stems from the Radley Neighbourhood Plan 2018-2031. The masterplan applies to the Lakes area to the west of the rail main line including Thrupp Lake. Following consultation in 2020 the final version is planned to be published in the spring. Its vision is below.

'Radley Lakes will be an oasis of tranquillity set within beautiful environment. Nature will thrive supported by a diversity of habitats. The area will be easily assessable by the local community, providing opportunities for quiet recreation, education and enhanced health and wellbeing.'

Although the Trust has the power to hold land delivery of the masterplan will primarily be through agreements with existing Lakes landholders and through the provision of finance. Within this approach discussions are taking place between RLT and RWE and RLT and Earth Trust to set up bilateral agreements (Memorandums of Understanding) towards the common goal of caring for Thrupp Lake.

At the time of writing this management plan, discussions are taking place with FRL and RLT with a view to combining the two bodies. The plan is also to set up an advisory group of people with relevant expertise (e.g. in nature conservation, community engagement and land management). At the time of writing this has yet to be formed.

Abingdon Naturalists' Society

Abingdon Naturalists' Society (AbNats) are a small community volunteer conservation group set up in 1967 by wildlife lovers, to give an opportunity to learn about the natural world, promote conservation, and to get out and see it in the company of experts and friends. They help with survey and monitoring at Thrupp Lake and the wider Radley Lakes area.

2.6. Environmental Information

Soils

There is no record of a systematic soil survey for Thrupp Lake. However, the 1:25,000 Soil Survey of England and Wales (1983) viewed using the Soilscales simplified soils dataset, records the area as within Soilscale 7; Freely draining slightly acid but base-rich soils, where the texture is loamy, free draining but groundwater contamination with nitrate; siltation and nutrient enrichment of streams from soil erosion. The underlying geology is Kimmeridge Clay. This is overlaid by sand and silt. (For more information see geological solid and drift maps sheets 253).

Climate

Thrupp Lake is located in the Thames Basin, which is characterised by a continental climate with high summer temperatures and little wind exposure. Frost occurs on an average of less than 80 days per year. Mean monthly minimum temperatures of around -1°C occur in February. Mean monthly maximum temperatures of around 24-26°C occur in July.

Hydrology

The area is affected by regular flooding from the Thames and also by fluctuations in groundwater levels. The impact of the bunded Ash-pits in the wider Radley Lakes areas has resulted in changes to 'normal' groundwater flow so that previously north to south flowing groundwater (there is a north to south dip along the Kimmeridge Clay bedrock) is deflected westwards (and eastwards, towards the Oxford-Didcot railway line).

Thrupp Lake has low conductivity levels (470-535 micro Siemens/cm). Conductivity is a measure of material dissolved in the water – low levels generally means higher water quality because of lower levels of nutrients, such as nitrates and phosphate and lower levels of pollutants. Low conductivity is a feature of eutrophic and particularly oligo-mesotrophic waters.

Ecology

The site has been surveyed by ecologists from the local area (e.g. AbNats), BBOWT, Thames Valley Environmental Records Centre (TVERC) and Earth Trust over the period of the previous

plan. A species list collated from these surveys is included in Appendix 3. The ecological surveys undertaken on site have not been exhaustive but give a good understanding of the nature conservation status of the site, and allow informed decisions to be taken in the management plan. A key part of the monitoring over the coming years will be to undertake regular surveys to build up a comprehensive species list for the site, so that changes brought about by the actions in this plan can be assessed.

Flora

Thrupp Lake is mostly comprised of open water but there are a variety of terrestrial habitats along the fringe of the Lake, mostly deciduous woodland but also some open grassland areas, as well as the islands on the Lake itself. The open ground includes freely drained and waterlogged areas, with a wide variety of ruderal species both native and introduced (especially near where the old residential property Sandles used to be). The grassland is recent, and lies over former arable or gravel areas. It has species which prefer neutral to calcareous and ungrazed conditions. The scrub is mostly over landfill and is composed of hawthorn and bramble with introduced species such as buddleia. The emergent and aquatic plants are varied, including three species of pondweed *Potamogeton*, Ivy-leaved Duckweed (*Lemna Trisulca*) and floating-leaved plants include the yellow water lily (*Nuphar lutea*). At the northwest corner there is some open ground where Wall Bedstraw (*Galium parisiense*) a Red List species (first Oxon record, recorded in TVERC 2006 survey) is found and Tall Aloe Moss (*Aloina ambigua*) which is Nationally Scarce species. Around the formal pedestrian entranceway towards the area where the residential property was sited, shrubby St. John's Wort or Tutsan (*Hypericum androsaemum* - Oxon Rare Plants List) can be found along with Elf-dock or Elecampane (*Inula helenium* - also on the Oxon Rare Plants List). The banks of the Lake are mostly shaded by willow spp. (*Salix spp.*), but here are some open areas with notable species including bee orchid (*Ophrys apifera*) and white helleborine (*Cephalanthera damasonium*). The white helleborine should be considered a priority species on site as it is in serious decline nationally due to the loss of habitat. In particular it is locally scarce in Oxfordshire. There is a good population along the beech/poplar tree line, at the western edge of Thrupp Lake.

There are other, potentially problematic and invasive non-native, species present on site, including Japanese Knotweed (*Fallopia japonica*).

Fauna

Reptiles and amphibians

Casual observations have been made over the last 12 years including common frog (*Rana temporaria*) and common toad (*Bufo bufo*), which have been recorded in various locations across the site. Great crested newts (*Triturus cristatus*) have also been positively recorded, along with grass snakes (*Natrix natrix*) around Thrupp Lake.

Fish

No fish systematic fish survey has been undertaken at Thrupp Lake, but there are casual records from the fishing syndicate which operates at Thrupp Lake. There are coarse fish,

including roach (*Rutilus rutilus*), tench (*Tinca tinca*), carp (*Cyprinidae*) and pike (*Esox lucius*) present in the Lake.

Birds

Regular bird recording has taken place on site, by a volunteer, supplemented by additional records from the site warden, volunteers and others; a summary of the findings included in Appendix 3. Of note is a resident population of Cetti's Warbler (*Cettia cetti* - listed on Schedule 1 of the Wildlife and Countryside Act 1981), with three territories around Thrupp Lake; Kingfisher (*Alcedo atthis* – Sch1. and an Amber Listed Bird); Mediterranean gull (*Larus melanocephalus* – also a Sch1.) with a pair successfully breeding on one of the islands during 2020; the summer migrant Common Tern (*Sterna hirundo*) nesting on islands in most years, and in 2018 & 2019 on tern rafts; and the spring/autumn migrant Osprey (*Pandion haliaetus* – also a Sch1. and an Amber Listed Bird) recorded visiting the Lake during 2011 and 2017.

As part of a biodiversity project by the Trust for Oxfordshire's Environment (TOE) a number of feature for nesting birds were installed at Thrupp Lake in 2016/17, constructed by the Thursday Group volunteers:

- Thirteen wooden bird boxes; 3 tree creeper, 4 open fronted and 6 tit nest boxes.

A further 3 tit nest boxes were installed in 2018 (as part of a youth offender outreach/restorative justice project).

- Two wooden tern rafts. They are put out at the end of March attached to weights on chains (which stay in the lake) and are brought in for the winter months (to discourage other birds using them) after the end of September.
- Artificial Sand Martin Bank, installed on 'Otter Island' with 48 nesting chambers, and access to the back for bird ringing and pulli (juvenile birds ringed in the nest) and cleaning the chambers ahead of new nesting season.

A solar power speaker with Sand Martin playback calls was installed in 2019, to help attract sand martin to the bank

Mammals

Seven species of bat have been recorded using the site including all 3 species of pipistrelle bats; Nathusius' Pipistrelle (*Pipistrellus nathusii*), common pipistrelle (*Pipistrellus pipistrellus*), and soprano pipistrelle (*Pipistrellus pygmaeus*). For a full species list please see Appendix 3. All species of bat are protected under both British and European legislation. Three 2FN Bat Box which have two entrances - one at the front and one at the rear against the tree, were present on site before Earth Trust became involved in the management of the site. Eleven Schwegler Bat boxes with built-in wooden rear panel (1FF style) were installed in 2012. Bi-annual bat box surveys are carried out in the winter and summer each year.

As part of the same TOE funded biodiversity project, the Thursday Group volunteers also constructed for mammals:

- Thirteen wooden Kent bat boxes; were installed in 2016 to provide additional roosting sites for bats.
- An artificial otter holt which is installed on 'Kingfisher Island'

A number of other mammalian species have been recorded including the Eurasian Otter (*Lutra lutra*), woodmouse (*Apodemus sylvaticus*), muntjac deer (*Muntiacus reevesi*), grey squirrel (*Sciurus carolinensis*) and fox (*Vulpes vulpes*). Badgers (*Meles meles*) are thought use the site but no setts are known to be on site.

In 2016 the BBOWT Water Vole recovery project carried out a Water Vole survey at Thrupp Lake but found no signs of them present at Thrupp Lake.

Invertebrates

Periodic invertebrate recording has taken place on site, supplemented by additional records from the site warden, volunteers; invertebrate findings are included in Appendix 3. Of note the white-legged damselfly (*Platycnemis pennipes*) which was recorded as part of the Local Wildlife Site surveys carried out by TVERC, is a Nationally Notable species. Adults were seen foraging across the site but the larvae will inhabit the river, so it is unlikely to breed on site.

Since 2016 a butterfly transect has been walked across the site weekly from April to September, and feeds into the National Butterfly Monitoring (UKBMS) scheme run by Butterfly Conservation. The Small Blue (*Cupido minimus*) butterfly is a Biodiversity Action Plan Species for the UK has been recorded in the past in the small meadow area on site known as St David's Meadow, which is sadly declining in most areas of the UK.

Lesser Stag beetles (*Dorcus parallelipipedus*) have been recorded from across the site. The Oil Beetle (*Meloe rugosus*) has also been recorded on site; they are on the International Union for Nature Conservation (ICUN) Red Data Book of rare species. A club-horned sawfly (*Cimbex conatus*) was recorded during a survey in 2009 and is on the data deficient, nationally extremely rare or near extinct species with no UK status list. And the cuckoo bee (*Sphecodes niger*) was recorded on site in 2006, which is also on the ICUN Red Data Book of rare species.

2.7. Map Coverage

The reserve is covered by OS Landranger (1:50 000) no. 164 (Oxford) and OS Explorer (1:25 000) no. 170 (Vale of White Horse).

2.8. Photographic Coverage

There are current and past aerial photos for Thrupp Lake on the Earth Trust's QGIS mapping system.

3. People, Stakeholders and Local Community

3.1. Local Communities and Stakeholders

The reserve is well used by residents of in the local area as well as many visitors to the local town. During 2010, 2012 and 2019 visitor surveys of Thrupp Lake (see Appendix 4) were carried out and indicate that the main uses of the site are for dog walking and recreational

walking, with the majority of visitors visiting from the neighbouring town of Abingdon or neighbouring village of Radley, the rest of visitors coming from further afield elsewhere.

2019 visitor survey:

- over 65% coming from Abingdon Town
- 10% from Radley Village
- 25% from elsewhere.

During the Covid-19 pandemic, especially during the summer and autumn of 2020, green and blue spaces such as Thrupp Lake, proved their status as lifelines for local communities. However the various social restrictions and lockdowns lead to a rapid increase in visitor numbers, which had a sizeable impact, especially on things such as littering, dog fouling, vandalism, anti-social behaviour/s, denudation of footpath surface during the summer and increased footpath poaching during the winter. These are all impacts that are likely to have longer term consequences on the site.

3.2. Access

The site is open to the public and it is not possible to close the site to those on foot. There is a circular walk interesting walk around Thrupp Lake as well as taking in some of Bullfield Lake. Just under half of the walk is on land that is in other ownerships and is not managed by Earth Trust. Earth Trust nevertheless has landowner permission to maintain public access over this land. There are currently two official access points to the site, both have a pedestrian gate in place, and between which a permissive footpath path runs around the Lake. There a number of un-official entrances onto the reserve with 'desire-line' paths criss-crossing the Radley lakes area. Public rights of way exist around the exterior of the reserve.

3.3. Interpretation Provision

In May 2011 a (A0) welcome board was installed near the main entrance gate. Initially there was a self-guided trail map available in a leaflet dispenser on the welcome board but following a number of vandalism incidents to this and to a number of the features installed onsite as part of the LEADER funding (including arson on the Lily Shelter and the bird hide), the decision was taken to remove this.

3.4. Educational Use

Since Earth Trust's involvement in the site Thrupp Lake has been used on an irregular basis for education purposes. Other groups also use the reserve including girl guides, beavers and scouts.

Earth Trust launched its new Strategy covering 2018-2023 and as part of this process the Trust is currently reviewing and rewriting the Engagement Strategy as part of an education overhaul in line with the new Gateway Project, which includes outdoor education on the community reserves, including Thrupp Lake. When this is available it will be available as an appendix to this management plan.

4. Conservation Features of Interest

In defining the overall features of interest and their management objectives for the site it is important to look at a number of factors:

- The reasons the site was not filled with PFA
- The current status of the site including the ecological, agricultural, historical, archaeological and amenity interests
- The constraints on future management and use of the site
- The potential of the site to contribute to targets for biodiversity conservation

In light of the above, five broad areas for the future management of the site have been defined. These are not presented in order of importance.

1. Lake
2. Grassland
3. Woodland
4. Visitor Enjoyment & Public Access
5. Community Engagement

For full summary table of management and monitoring activities please see Section 8.

4.1. Lake

4.1.1. Evaluation

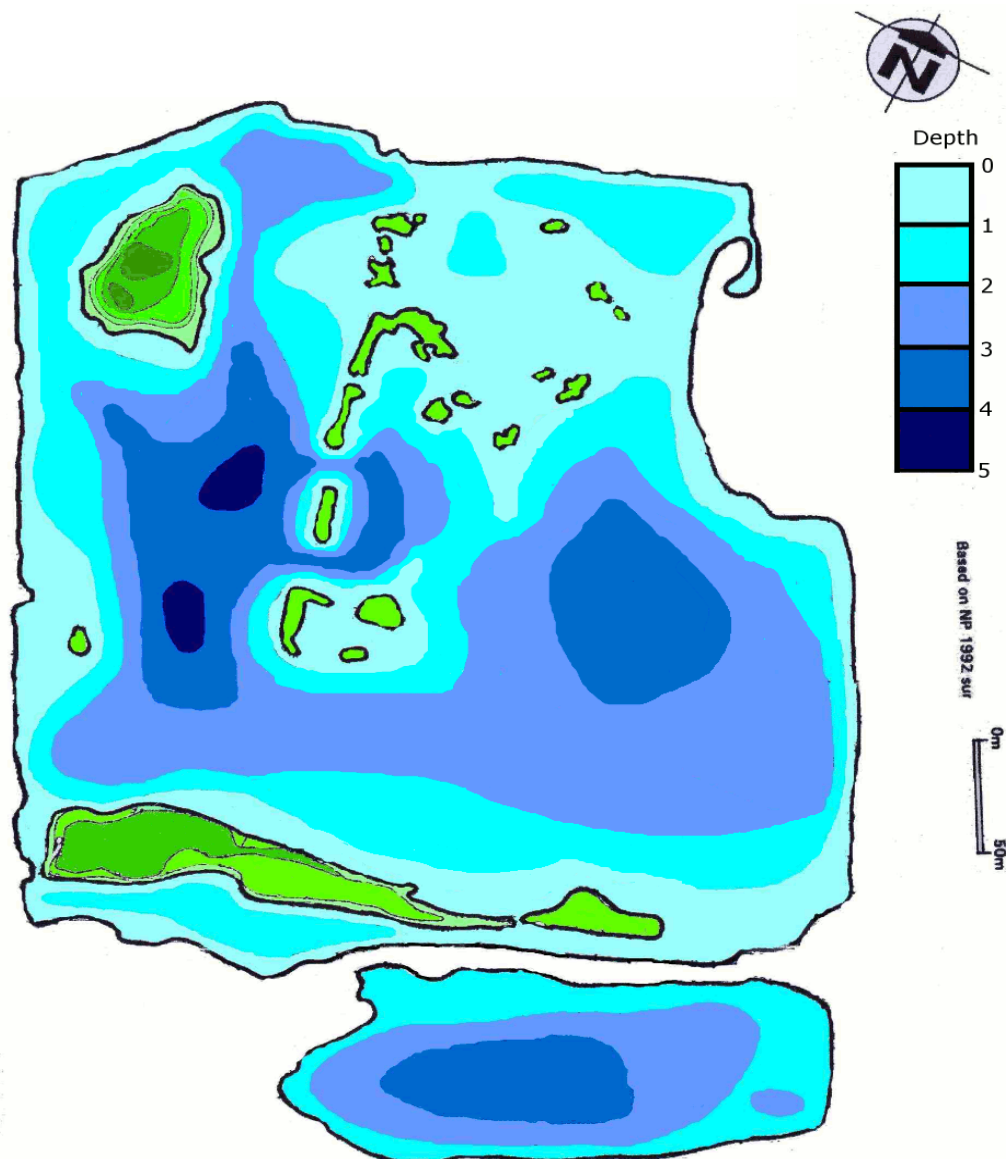
Eutrophic standing waters/lakes are highly productive bodies of water because plant nutrients are plentiful. They may be naturally eutrophic or result from artificial enrichment. This habitat is most typical of hard water areas in the lowlands of southern and eastern Britain. These water bodies are characterised by having dense, long-term populations of algae in midsummer, often making the water green. Their beds are covered by dark anaerobic mud, rich in organic matter. In their natural state, such waters have high biodiversity. Planktonic algae and zooplankton are abundant in the water column. Submerged vegetation is diverse, and numerous species of invertebrate and fish are present. Bottom-dwelling invertebrates, such as snails, dragonflies and water beetles are also often abundant. Plant assemblages vary, but pondweeds and submerged aquatic perennials are characteristic throughout the UK. Common floating-leaved plants include water lilies and there can be marginal fringes of reedswamp.

Because individual lakes vary significantly in their species compositions, overall they often contribute more to regional biodiversity than rivers. As well as aquatic species, lakes are also wonderful for our terrestrial wildlife, providing resources for other species with wider ecological requirements, for example otters and many bird species will both use lakes as part of the larger habitat they occupy. Lakes provide drinking water during dry weather, a supply of insect and plant-based food, and shelter among the emergent and surrounding plants and trees. This is especially important in environments which are otherwise lacking in places for wildlife; we now know that nationally, about two thirds of all Britain's freshwater plants and animals can be found somewhere in/around lakes.

For these reasons, eutrophic lakes are especially important in the UK, where they are a UK BAP Priority Habitat. However, lakes and their associated species are threatened by a range of factors including (but not limited to) pollution, invasive alien species, recreation and climate change.

4.1.2. Current Status

Thrupp Lake incorporates the majority of the site (11.7 hectares). The lake itself is generally shallow, average depth is around 2.5m, with deeper areas of over 4m according to a CEEB survey in the 1990s. A further diving survey of the topography of the lake bed in 2010 added to this original survey – results from this survey are shown in Map 1 below. The majority of the lake has a steeply sloping straight shoreline, the lake itself being roughly rectangular in shape. Otter appear to be transitory species that may use or pass the through the site, but are regular visitors but not resident.



Map 1 Contour map of Thrupp Lake

(Map partially updated, based on the results of P. Lukasik's 2010 survey)

There are a number of islands on the lake, varying in size from 2m² to approx. 2450m². Water depth is the primary environmental factor controlling the numbers and variety of plants and animals in a wetland area; water depth over 1.5m is the least valuable habitat for most wetland wildlife, however the deeper areas over 1.5m provide habitat for diving ducks such as tufted duck (*Aythya fuligula*), pochard (*Aythya farina*), smew (*Mergellus albellus*) and goosander (*Mergus merganser*). There is a 48 chamber artificial sand martin bank located on Otter Island (installed in 2017), two wooden tern rafts that go out onto the lake at the end of March/early April and come off the lake at the end of September, and an artificial Otter Holt on Kingfisher Island (again installed in 2017).

4.1.3. Factors and Constraints

- Positive factors
 - Water quality is at least reasonable as the lake is fed by ground water and direct precipitation.
 - The Lake and its islands already sustains populations of water birds, migratory bird species (such as sand martins), aquatic invertebrates and is good feeding ground for bat species.
 - There are regular visits by otter, indicating Thrupp Lake is part of their wider territory.
 - Logs, branches or whole trees that have fallen in naturally or have been felled create reefs/refuge for fish fry and aquatic invertebrate species.
 - The northern edge of the lake and a number of the islands have large high vertical banks (created from spoil dug from the lake during gravel extraction), which have the potential to be suitable nesting sites for kingfishers.
- Constraints
 - Water quality can be affected by surface run-off from the local catchment which is surrounded by farmland – a likely source of polluted water
 - Non-native invasive plants. Complete eradication of invasive species is costly and difficult.
 - Sensitive to disturbance (e.g. dogs or leads in the water, undesirable recreation activity such as kayaking, wild swimming) affecting bird and mammal populations.
 - Sensitive to manipulation of fish stocks which could lead to increased disturbance of sediments. This increases turbidity and mobilises nutrients, which encourages algal blooms and cause other fundamental changes.
 - Sensitive to the impacts of climate change. Changes in the amount, timing and distribution of rainfall and run-off will affect the character and ecology of lakes.

4.1.4. Lake Objectives

The Lake maintained in a favourable condition, able to sustain a balanced aquatic community where:

- The surroundings are safely accessible to the public
- Aquatic and marginal plants continue to establish and grow around/in the lake

- Breeding water birds, e.g. tufted duck, common tern and oystercatcher continue to breed on the islands and overwinter birds use the islands within the Lake every year
- Deadwood is present in the lake for invertebrates and structural diversity, providing underwater 'reefs' eventually supporting their own suite of (plants and animals)
- Sand martins start to use, and then continue to use, the artificial sand martin bank
- A number of islands, e.g. Kingfisher Island remain as undisturbed as possible providing suitable laying up and holt sites for otters
- And if funding allows:
 - Increase the area of shallows around the lake for the benefit of aquatic, emergent and marginal plants and in turn invertebrates, water birds, amphibians, etc.
 - Increase the number of suitable nesting sites for common tern with additional tern rafts.
 - Create a reedbed/s in the shallower areas of the lake, using locally sourced spoil/clean fill/stone and planting seedlings. (Providing additional nesting sites and sheltered areas creating better conditions for marginal plants).

4.1.5. Management Rational

The lake at Thrupp Lake is managed by maintain the lake looking at:

- Clean water
- Good surrounds (wildlife friendly)
- Variety of structure/habitat
- Undesirable weeds and non-native species control

Clean water (volume and regularity of supply is less critical)

Clean water is the single most important factor to maximise the ecological potential of a lake or a series of lakes in a landscape, with water quality being strongly linked to land use within the lake catchment. High levels of nutrients can trigger blooms of algae (filamentous, floating at the surface or suspended in the water column) that increase water turbidity.

Across the site, however, the water quality is likely to be at least partly impacted, as it ground water/aquifer fed. This is because the release into the atmosphere of gases and particles from power stations, car exhausts, etc. has modified the chemistry of the rainfall. It is the rainfall chemistry that provides the primary input of solutes to recharge water for aquifers. The consequence has been an increase in concentration of oxides of both nitrogen and sulphur and a reduction in the pH. More significantly, most of the recharge areas for aquifers in England are intensively farmed and chemicals associated with agriculture (NO₃, SO₄, Cl, K, PO₄) have been leached in increasing quantities during the past 40 years (Shand *et al.*, 2007). In addition, in such an urban setting, there is the potential for deliberate incidences of pollution by members of the public, such as pouring oil into the water.

In partnership with the citizen science project 'WaterBlitz' run by EarthWatch, water quality testing is carried out twice yearly (April and September) at Thrupp Lake looking at nitrogen and phosphorus levels, as well as surface conditions (e.g. litter, algae, etc. present).

- **Good surrounds (wildlife friendly)**

Supporting or complementary habitats around the lake provides buffering from any damaging external influences and are extremely important in creating the right kind of conditions to maximise the biodiversity of the lake.

- **Variety of structure/habitat**

This variety of structure/habitat is derived from variations in plants, basin shape and depth, bottom substrate, water chemistry, silt type and volume, density of shade or light levels etc.

- **Undesirable weeds and non-native species control**

Some undesirable weeds (e.g. broad-leaved dock, common nettles) or non-native species such as *Crassula*, parrot's feather and *Azolla* can cause major problems if they enter a lake system. These plants can grow extremely vigorously and will completely dominate the pond, often wiping out all native flora. These species can spread vegetatively and as such can 'take over' from even the smallest fragment. Being an urban site there is the possibility that people will introduce such plants from their own garden ponds. Undesirable weeds or non-native species should be controlled where possible.

4.1.6. Management Activities

- Maintain 'deep water' safety signage at entrance ways into the reserve
- Maintain (repair/replace as needed) fencing/barriers that are positioned around the lake to prevent dogs/people entering the lake in these gently sloping shallow areas to allow them to be colonised by vegetation.
- Island management:
 - o Clear a number of islands on rotation (see Appendix 5 for details) for nesting water birds and for overwintering ducks
 - o Bundle cut material and place into the lake in certain areas to create 'reefs'
 - o Leave some islands undisturbed and manage by non-intervention
- Annually install gravel filled tern rafts:
 - o Tern rafts are put out in late March/early April onto the lake for nesting Terns,
 - o Bring in tern rafts at the end of September (to prolong their life span and prevent roosting cormorants/gulls etc. moving in on them)
- Leave logs, branches or trees/branches that naturally fall in or are felled to create reefs and perches for species such as kingfishers.
- Maintain sand martin bank:
 - o Put out sand martin call play-back speaker next to the sand martin bank in April
 - o Check sand martin bank for signs of use; if in use contact local bird ringing group to enquire about sand martin pulli/ringing
 - o If sand martin bank used clear and re-fresh sand within chambers after nesting season ahead of the new nesting season every 2 years (to reduce parasite loading)
- Remove invasive species from the lake as required

4.1.7. Monitoring Activities

- Carry out Freshwater Habitat's Trust National 'Spawn Survey'
- Carry out EarthWatch's 'WaterBlitz', monitoring water quality
- Record pollution incidences and report to the Environment Agency
- Survey bird assemblage on the lake and islands; as part of site wide bird survey
- Continue to work with the BBOWT Water Vole recovery project to establish if there are any mink present on site and trap as appropriate
- Survey Odonata (dragon and damselflies); as part of site wide Odonata survey
- Carry out Lake Rapid Assessment's between May and the end of August every 3 years (aims to quickly and simply assess the condition of the lake) to monitor:
 - o For presence of non-native invasive plants
 - o Bankside vegetation
 - o Levels of shade over the ponds and effects on vegetation
 - o Amount of dead wood in ponds

4.2. Grassland

4.2.1. Evaluation

Grassland, with rough/rank species, tall-herb communities and areas of scrub have not been identified as a UK BAP habitat but, nevertheless, tussocky, grassland can have a high ecological value; DEFRA has recognised this value by promoting rough grassland which supports target species within the Environmental Stewardship Scheme.

Scrub is difficult to define but may be loosely described as woody vegetation (dominated by shrubs or bushes) up to 5m tall. It is a transient habitat, tending to develop on uncultivated ground, developing on grassland and other more open vegetation and going on to form secondary woodland. It is usually regarded as being of high conservation value only when in association with other important wildlife habitats, rather than when on its own. It is an important component of many of the UK Biodiversity Action Plan (BAP) Habitats. Recent conservative estimates put 10% of terrestrial BAP Priority Species as believed to be associated with scrub.

A grassland/tall-herb/scrub mosaic with a diverse mix of vegetation structures, can provide an important habitat for a variety of invertebrate species. For example, bare ground is important as an area where invertebrates can bask, while solitary wasps and bees will use it to dig their burrows and for hunting. Grass tussocks provide a micro-climate that is different to the surrounding vegetation; the centres of tussocks are protected from the extremes of temperature and humidity, and this can be especially important for hibernating invertebrates, while shorter turf areas benefit a different range of species. Long vegetation and scrub forms an important habitat resource providing cover, shelter, nesting and feeding opportunities. A long list of birds, such as garden warbler (*Sylvia borin*), blackcap (*Sylvia atricapilla*), whitethroat (*Sylvia communis*), willow warbler (*Phylloscopus trochilus*), and goldfinch (*Carduelis carduelis*) all rely on various forms of scrub habitat. Increased abundance of invertebrates, such as caterpillars, beetles and grasshoppers, and seeds from species normally

considered weeds, such as docks, thistles and teasel will also provide an abundant food source for seed eating birds. Scrub stands in close association with woodland and grassland, forming complex mosaics which are particularly valuable for a wide variety of invertebrates including butterflies such as brown argus (*Aricia agestis*).

4.2.2. Current Status

Whilst the grassland mosaic is not of major botanical significance at Thrupp Lake, other than the small area of wildflower meadow (known as St. David's meadow). The structural variation it provides creates a wide range of habitats for birds, invertebrates, fungi and lichens and provides a good setting for the wetland habitats found on this site.

The small triangle of land in the south eastern corner of the lake called St David's Meadow, has developed into a wildflower rich patch of grassland. Some species already existed here; common spotted orchids, bee orchids, knapweed, etc. Bi-annual cutting and removal of the vegetation has taken place since September 2011 and in spring 2017 additional wildflower plug plants were planted to improve the diversification of the sward in the meadow:

Betony (<i>Stachys officinalis</i>)	Red Campion (<i>Silene dioica</i>)
Birdsfoot Trefoil (<i>Lotus corniculatus</i>)	Red Clover (<i>Trifolium pratense</i>)
Devil's Bit Scabious (<i>Succisa pratensis</i>)	Sneezewort (<i>Achillea ptarmica</i>)
Meadowsweet (<i>Filipendula ulmaria</i>)	Yarrow (<i>Achillea millefolium</i>)
Oxeye Daisy (<i>Leucanthemum vulgare</i>)	Yellow Flag Iris (<i>Iris pseudacorus</i>)
Primrose (<i>Primula vulgaris</i>)	Ragged Robin (<i>Silene flos-cuculi</i>)
Purple Loosestrife (<i>Lythrum salicaria</i>)	

There area along the western strip of Thrupp Lake is mixture of areas that have lots of willow and bramble scrub and areas more open with an existing population of white helleborine. This area used to support southern marsh orchid in the past.

The area surrounding where the old Sandles building was located, in the north east of the site, was previously a formal garden when the property was a private residential building. The area contains a number of exotic species and other less common wild flowers that have become established or naturalised in this area including Elecampane (*Inula helenium*), which is on the Oxon Rare Plants List, and Musk Mallow (*Malva moschata*). It is within this area that the proposed Radley Lakes Master Plan by RLT are proposing a car park and associated 'hub' to be situated. There are two stands of Japanese knotweed in this area which have been treated since Earth Trust has been involved in the site. Ragwort also occurs over this area and needs to be controlled to prevent its spread onto neighbouring land, however being mindful that it is an important food plant for the Cinnabar moth (*Tyria jacobaea*), a UKBAP species.

4.2.3. Factors and Constraints

- Positive factors
 - o Well-managed grassland/scrub and its margins support a range of wildlife

- Varied age, species and structure supports the widest range of wildlife, as some species depend on specific growth stages of certain plants
- Existing population of white helleborines
- Establishing area of wildflower rich meadow at St. David's meadow
- Constraints
 - Past land use of site (old gravel workings) limits species diversity
 - Continuing state of change where:
 - succession of existing grassland habitats to scrub
 - succession of existing scrub habitats to woodland

4.2.4. Grassland Objectives

To maintain the grassland mosaic habitat in a favourable condition, where:

- The grassland, tall-herb and scrub areas across the site will each be a mosaic of varying heights.
- St David's meadow continues to flourish
- Viewing points are maintained to allow the public to have a good view of the lake at a number of points around the circular walk.
- There is <5% ragwort on site
- There is <5% non-native invasive species (e.g. Himalayan balsam)
- Japanese knotweed continues to be controlled and the stands reduce in size to only a few stems, although it is acknowledged it will never be eradicated from site.

4.2.5. Management Rational

The grassland mosaic will be managed by:

- Cutting
- Coppicing the scrub
- Controlling invasive species

Cutting

In order to support the greatest possible range of invertebrates a grassland must have a good range of successional stages and vegetation structures, from bare ground to scrub, and from short open turf to tall grass and tussocks (Kirby 2001). In order to achieve this at Thrupp Lake, areas will be cut at different frequencies and different times of the year and to different heights:

- The path is regularly used and trampling creates and maintains areas of bare ground and very short turf on the path surface.
- The strip of grassland immediately adjacent to the footpath along areas of the circular walk will be cut through the growing season April – September, creating a strip of vegetation either side of the path, taller than that of the path surface, but shorter than that beyond it.
- Scallops are cut into a few areas adjacent to the footpath, into the tall-herb/brambles to create warm, sheltered areas for invertebrates. Some blocks of rank, tussocky grassland and tall-herb will be left uncut as they grade into the scrub. Flowering umbellifers provide a food source for insects and tussocks provide micro-climates and places for invertebrates to hibernate in sheltered conditions.

- Finally, St David's meadow will be cut twice a year in early spring, March and then towards the end of the summer in August.

Arisings left in-situ will cause nutrient enrichment, smother plants and prevent seeds from reaching the soil surface and germinating. Therefore, throughout the site, all arisings will be raked into piles, tucked out of sight where possible, and placed in areas of low botanical interest.

Manage Scrub

A certain amount of scrub around the lake can greatly enhance the invertebrate interest, and a strip of scrub only one or a few bushes wide will support as great an assemblage of invertebrates as a large area (Kirby 2001).

The aim is to maintain a scrubby edge with varied structure around Thrupp Lake, with scattered bushes or clumps of scrub/bramble. In winter, out of bird breeding season, the scrub front will be cut back where it is encroaching the circular footpath. Structural diversity will be maintained by coppicing or pollarding the outer bushes of the scrub with only a fraction of the margin of the scrub block being managed in any one year. Where there is minimal risk of injury to the public or damage to property, standing dead wood will be retained.

Control invasive plant species

All garden plants escapes should be removed where possible, whether this be hand pulling, digging them up, cutting down or treating with herbicide (glyphosate).

Depending on the species, the arisings may be left on site in such a way as to not be detrimental to the native flora and fauna or removed from site in bags for later disposal. However, many garden plants that get dumped are invasive in nature and may need to be killed off chemically, in which case the native species should be considered when devising a plan to do so. If herbicides are to be used near a water course the Environment Agency should be consulted.

4.2.6. Management Activities

- Cut the grassland at different times of year and to different heights in order to maintain a diverse structure, ideally using scythes (or BCS/Brushcutter may be needed):
 - o Cut the vegetation along the circular walk between April and October
 - o Cut scallops into the vegetation on each side of the path on rotation
- Cut the St David's meadow March & early August and remove all arisings.
- Coppice back the scrub in the western portion of the site during winter to create bays and scallops but leave some areas of scrub un touched around the rest of the lake
- Control non-native plants by hand pulling, digging, cutting or chemical means

4.2.7. Monitoring Activities

- Carry out grassland mosaic rapid assessment between May and end of August every 3 years (aims to quickly and simply assess the condition) to monitor for:
 - o Structure of the mosaic

- Presence of non-native invasive plants
- Presence of positive indicator species
- Amount of scrub
- Survey bird assemblage (as part of site wide bird survey)
- Survey Odonata (dragon and damselflies); as part of site wide Odonata survey

4.3. Woodland

4.3.1. Evaluation

Lowland mixed deciduous woodland includes woodland growing on the full range of soil conditions, from very acidic to base-rich, and takes in most semi-natural woodland in southern and eastern England (and in parts of lowland Wales and Scotland). The woods tend to be small, less than 20 ha. Scrub also occurs within woodland areas where it makes a valuable contribution towards the overall structural and biological diversity of the woodland area. There is often a great variety in the species composition of the canopy layer and the ground flora, and this is reflected in the range of associated National Vegetation Classification (NVC) and Stand Types of which under the grouping of 'mixed deciduous and oak/birch (*Quercus spp/Betula spp*) woodlands' there are 7 sub-communities but all with the following species present:

Field Maple (<i>Acer campestre</i>)	Dog's-mercury (<i>Mercurialis perennis</i>)
Hazel (<i>Corylus avellana</i>)	Bramble (<i>Rubus fruticosus agg.</i>)
Ash (<i>Fraxinus excelsior</i>)	Common Feather-moss (<i>Eurhynchium praelongum</i>)

There are no precise data on the total extent of lowland mixed deciduous woodland in the UK, but in the late 1980s the Nature Conservancy Council estimated the total extent of this type to be about 250,000ha. There is, however, no doubt that the area of this priority type on ancient woodland sites has declined in area by clearance, overgrazing and replanting with non-native species, by about 30-40% over the last 50 years.

4.3.2. Current Status

Thrupp Lake because of its large size and relative lack of marginal cover, is rather exposed and windblown. There is a row of beech and grey hybrid poplars along the western edge of the lake, this along with the row of leylandii, provide a shelter belt for the lake when the prevailing wind is coming from the west. The beech trees and other areas along the western edge of the lake, such as the area around the bird hide, support a population of white helleborine right beside the circular walk. The poplars support a population of Hornet clearwing moth, a Nb nationally notable species. The Alder sawfly, Red Data Book species, has been noted on site, increasing the number of Alders around the lake could help benefit this species.

The northern edge is the most heavily wooded area of the site, but even here the trees are in a relatively thin blocked area. This does however provide good woodland edge habitat. An annual tree survey is undertaken in October/November and the works associated with the recommendations undertaken over the subsequent winter. Excavation of the lower path along the lakeshore to the boardwalk has created steep banks which provide excellent habitats for wasps, bees and other invertebrates, within this wooded area. Three 2FN Bat Box were present on site before Earth Trust

became involved in the management of the site in 2010. 11 Schwegler Bat boxes (1FF style) were installed in 2012. Then in 2016 13 wooden bird boxes; 3 tree creeper, 4 open fronted and 6 tit nest boxes and 13 wooden Kent bat boxes were installed within this northern block of woodland. A further 3 tit nest boxes were installed in 2018 (as part of a youth offender outreach/restorative justice project).

4.3.3. Factors and Constraints

- Positive factors
 - o Succession

Over time the trees within the woodland and wet woodland will continue to mature, growing older and eventually dying. This leads to a natural processes of gap creation and tree regeneration. If however this does not occur, then the woodland will become very dense, the ground flora will be shaded out and the structure lost. The affect that succession may be having on the woodlands ecological integrity can be monitored by looking at the attributes of the wood.

- Constraints
 - o Development, e.g. urban/industrial growth.
 - o Overgrazing, through expansion of populations of deer in southern regions.
 - o Climate change is likely to affect the distribution of various species and increase of existing and new tree diseases e.g. ash dieback (*Hymenoscyphus fraxineus*).

4.3.4. Woodland Objectives

To maintain the areas of woodland in a favourable condition, where:

- Trees on site are safe and pose no danger to traffic or site users.
- Bat roosting and bird nesting sites are preserved despite the removal of decaying trees for health and safety reasons.
- A good coverage of typical woodland ground flora species (e.g. at least 20% cover)

The more diverse and abundant the woodland flora, the better the woodland will be for biodiversity.

- Steep banks in sunny locations along the excavated footpath are kept clear of vegetation; to provide suitable habitat for bees, wasps and other invertebrates
- A good coverage of native tree seedlings/saplings (e.g. at least 10% cover)

Woodland in good condition should have a complex structure of tree seedlings ready to grow into trees, an understory layer of tree saplings, and a canopy layer of mature trees. This structure provides the mix of habitats and conditions that woodland species need to thrive.

- The shelterbelt along the western edge of the lake is maintained; to provide shelter for the waterbirds using the lake and to prevent wind erosion of the lake shore.
- The white helleborine are stable/increasing in number and protected from disturbance, grazing and trampling.
- Viewing points are maintained to allow the public to have a good view of the lake at a number of points around the circular walk.
- Maintain a mixed age structure of scrub around the edge of the lake.
- A good amount of dead wood left on site (e.g. at least 20%)

Dead wood provides a very important habitat for many invertebrates and fungi, and is an integral part of any healthy woodland and wet woodland.

4.3.5. Management Rational

The woodland will be managed by:

- Tree safety works
- Tree planting
- Retaining deadwood

Tree safety works

As much of the woodland at Thrupp Lake is right alongside the circular walk, especially the northern and western woodland blocks these should be kept clear and monitored for unsafe trees; an annual tree safety survey along the whole circular walk is undertaken by a contractor. Where possible standing deadwood will be left and as much dead wood will be kept on site in habitat piles.

Tree planting

Following any tree felling works replacements of native tree and scrub/understory species will be replanted, in order to perpetuate the survival of the woodland blocks, and to ensure a varied age structure (including Alder). Where necessary young trees have been protected with tree guards/tree corrals to prevent damage from grazing deer.

Retaining deadwood

Several trees that have been felled for safety reasons have been left on site compensate for the standing deadwood habitats that were lost. The majority of the other logs are left on site to provide other deadwood habitat. Where possible dead branches have been left on trees as they unlikely to affect the health of the tree.

4.3.6. Management Activities

- Warden to organise licenced contractor to undertake tree safety survey on site, and organise tree safety works as appropriate
- Tree planting following and tree felling works on site at a ratio of 1 'standard' to 5 'understory' native tree species
- Create habitat piles with fallen/felled timber on site
- Maintain the bird and bat boxes and check fixings.
- Cut back or remove vegetation from steep banks along the excavated footpath.
- Path edging in the form of small (e.g. 50cm high) logs or hurdles created from management tasks on site are installed along the path beside the beeches to guide walkers and dogs away from the helleborines.
- And if funding allows:
 - o Install some Tawny owl boxes
 - o Install some bat maternity roost bat boxes (e.g. 1FS Schwegler Large Colony Bat Box)

4.3.7. Monitoring Activities

- Bi-annual bat box surveys are carried out in the winter and summer each year using fully licensed bat workers.
- Monitor number of white helleborine's from mid-May to late June
- Carry out woodland rapid assessment between April and May every 5 years (aims to quickly and simply assess the condition) to monitor for:

- succession and structure within the woodland
- composition of ground flora
- composition of tree species
- amount of dead wood within the woodland
- amount of canopy cover
- Survey bird assemblage (as part of site wide bird survey)

4.4. Visitor Enjoyment and Public Access

4.4.1. Current Status

Interpretation

In May 2011 a (A0) welcome board was installed near the main entrance gate. It features a large colourful map, blackboard for wildlife sightings on the reverse side and spaces for permanent and temporary posters at the bottom. It was funded through a Southern Oxfordshire LEADER local rural regeneration and tourism grant and funding from RWE. Initially there was a self-guided trail map available in a leaflet dispenser on the welcome board but following a number of vandalism incidents to this and to a number of the features installed onsite as part of the LEADER funding (including arson on the Lily Shelter and the bird hide), the decision was taken to remove this. This current A0 panel has a map of the site and minimal wildlife information, but does not go any way to explain the sites history or wildlife. It is hoped that a new updated interpretation/welcome sign will be installed as well as self-guided walk will be designed as part of the 'Thrupp Lake Hub' (outlined within the Radley Lakes Masterplan) which will tie Thrupp Lake into the Radley Lakes area as a whole. This is as part of the longer-term aspirations of RLT to create a self-guided trails along public rights of way to the adjacent areas of interest, and interpretation of wetlands and wildlife and the historical significance and industrial heritage of the site (see below for more information). As part of the interpretation re-design it is also hoped at the time of writing this management plan that a second smaller interpretation panel (e.g. A1) will be installed at the south-western entrance.

There is also a welcome notice, with the Earth Trust 'Countryside Code' also near the same entrance to the site. Deep water signage and waymarker discs to indicate certain behaviours e.g. dogs on leads, are used at both entrance gates, in addition to the welcome sign.

Visitor Access

The site is open to the public and it is not possible to close the site to those on foot. There is a circular walk which is way marked with eleven posts at obvious junctions, and provides an interesting walk around Thrupp Lake as well as taking in some of Bullfield Lake. Just under half of the walk is on land that we do not manage; the north/south section of the Byway Open to All Traffic (B.O.A.T) along the eastern side, the east/west path that runs parallel to the Sustrans route No. 5 along the southern side, or the path through J. Curtis' land to the south and west. The Earth Trust has permission to maintain the access through these areas by cutting overhanging and encroaching vegetation to maintain a minimum path width of 2m.

The walk is way marked with eleven posts at obvious junctions and is surfaced in some areas with woodchip during the winter months, with some sections having hardcore or rubble added underneath the surface to assist with drainage, however much of the path and becomes boggy. Hoggins could be added to the surface of these areas to improve the path surface or a boardwalk installed which

allows visitors to avoid the boggy areas completely; this project would be subject to additional funding.

There are currently two official access points to the site. These are the main entrance gate off the B.O.A.T and Sustrans Route No. 5 in the north-eastern part of the site and then a second gate off the Sustrans No. 5 route in the south-western end of the site. Both have a pedestrian gate in place, and between which a permissive footpath path runs around the Lake. There a number of un-official entrances onto the reserve with 'desire-line' paths criss-crossing the Radley lakes Area.

Vehicular access for site management and maintenance is either from the B.O.A.T track, through the large green gates that used to form the entranceway to the old Sandles building or via J. Curtis's vehicle barrier on the western edge of the site. It is possible to drive the length of the B.O.A.T down the east of the Lake and the length of the path on the west of the Lake.

There are no recreational facilities at the site. Dogs are currently allowed on the reserve if kept under control/on a lead. The primary recreational uses of the reserve are for walking, dog walking, and running which do not generally conflict with the interests of the reserve management. Public rights of way exist around the exterior of the reserve. Since Earth Trust has been involved in the management of the site a considerable amount of work has been undertaken to increase the access provision, including a 25m section of boardwalk/bridge across the north-western corner in 2010.

There is currently only one bench on site installed at the end of the summer in 2017 in memory of James Culling by the 'beach' area. There are a few rest stops (fallen/felled tree trucks) around the lake which people have been utilising. 'By all reasonable means', the Countryside Agency's guide to inclusive access to the outdoors for disabled people, recommends that benches are installed every 200m along a path. However given the lack of land around the lake and the fact that the Earth Trust doesn't own nearly half of the circular walk, this is not achievable, though some additional benches could be provided through either the Earth Trust's memorial bench scheme and/or as part of the Radley Lakes Masterplan/FRL proposals for more seating (with associated finance).

Car parking

There is currently no official car parking facilities at Thrupp Lake. Informal car parking does however occur along the B.O.A.T and at the 'T-junction' of Thrupp Lane onto the B.O.A.T. One of the key objective of RLT's 'masterplan' is to reduce the potential conflict between pedestrians/cyclists and vehicular traffic. This can be a particular conflict near the entranceway to the B.O.A.T at Thrupp Lake. It is the suggestion of the masterplan to develop as far as is practicable an alternative route but it is recognised that this will require the full consent and cooperation of all the land owners in this area. The masterplan proposes and number of possible routes for this and well as including a desire to create a more formal car parking solution at Thrupp Lake. At the time of writing this management plan, very early discussions between RLT, Earth Trust and RWE have taken place regarding car parking solutions, such as an extended layby at the edge of the B.O.A.T. All are in support of but it is outside of the scope of this plan and would be subject to planning permission and funding.

Visitor Surveys

The site is well used by residents of Abingdon and Radley, as well as visitors to the area. There have been two visitor surveys carried out to date in 2012 (by Earth Trust) and 2019 (by Radley

Parish Council), and we are hoping to carry out some additional surveys in the coming year along with those being carried out at the other sites that Earth Trust manages. The visitor surveys that we have used have been used to find out more about people were using the site, where they travelled from and asking for their comments and suggestions on site management. The results of past surveys at other sites have helped us to make improvements to Thrupp Lake, plan interpretation and find out what the visitors really think about the site as a whole, including access and accessibility. Most recently helped inform the Radley Lakes Trust 'Masterplan' for the Radley Lakes area, currently still in the drafting process. They also help us to monitor and report on visitor numbers and visitor satisfaction, with our aim being that visitors are happy with the site management in at least 90% of interviews.

People counter

A radio beam people counter was installed at the welcome board gate at Thrupp Lake between 2011 and 2014; findings from this indicated over 29,000 visitors per year on average to the site. A new people counter has been planned for installation during spring 2021, with the hope of providing more up-to-date visitor number information.

General Attractiveness

Regular litter picks are carried out at Thrupp Lake. The welcome signs are checked and cleaned regularly. One dog bin is provided for people's convenience near the welcome sign (this is emptied by VWHDC). Access points are checked and maintained regularly.

Radley Lakes Trust – Radley Lakes Masterplan

The RLT Radley Lakes Masterplan proposes a 'Thrupp Lake hub' to be created in the current location of the main visitor entranceway. This would provide signage and interpretation and link into three waymarked trails:

- The 'Lake trail' (1.3km) would be the existing circular walk around Thrupp Lake
- The 'Ash trail' (3.2km) would go round (but not through) the areas that have been in-filled with PFA and are now restored for nature conservation; and
- The 'Thames trail' (5.1km) would link with the Thames footpath providing a longer and more varied walk

It is the hope of the 'masterplan' that the Thrupp Lake hub would provide a sense of identity and character for the wider Radley lake area, and Earth Trust and RWE are in full support of this.

4.4.2. Visitor Enjoyment Objectives

All visitors to the site should have a positive experience.

- The circular walk will be clearly marked.
- All visitor furniture including memorial benches etc. will also be maintained at the standard that makes visitors feel welcomed to the site.
- Directions to the site are clear on the Earth Trust and VWHDC websites.
- If funding allows and in line with the aspirations and findings of the Radley Lakes Masterplan, new updated interpretation should be considered where:
 - o The visiting public are aware of the site's main features and its significance for biological conservation.
 - o The public are aware of the significance of the site in relation to the surrounding area.
 - o The site is seen as one of the principal attractions of the local area.

- New interpretation panels to be considered for both entrances, if funding allows, erected lectern style, so that they can be easily viewed by people of all sizes, whether standing or in wheelchairs and should include:
 - A welcome message, key information, and contact details for further information about the Trust.
 - Contact information for the Trust should include website, phone, address and charity number.
 - A brief history of the site
 - Interesting features and wildlife of the site should be highlighted with pictures and text.
 - The name of the site, Earth Trust, RWE and key partners (e.g. FRL/RLT) branding should be prominent
 - Information about how to get around, with a map and any paths clearly identified.
- All boards should be visually attractive, lively and engaging.
- Consideration given to potential footpath improvement project e.g. through installing boardwalk or adding hoggin to sections; would need to seek funding.

4.4.3. Factors and Constraints

- Positive
 - General attractiveness of site
 - Potential for a good range of quality habitats on the site to engage visitors.
- Constraints
 - Some forms of interpretation could be visually intrusive and conflict with the landscape and setting.
 - Vandalism to expensive interpretation panels etc.

4.4.4. Management Activities

Public Access and Interpretation at Thrupp Lake will be managed by:

- Dog owners using the site will be encouraged to exercise control over their dogs to prevent conflicts with other site users and to reduce dog-fouling problems by the provision of a dog bin.
- Maintenance of access points and access furniture (e.g. gates) as and when required
- Maintenance of visitor furniture e.g. gates as and when required
- Maintenance of notice board and waymarker discs as and when required.
- Regular litter picks, removing rubbish off site
- Maintain the network of Volunteer Community Wardens (see section 4.5.4 for more information)
- Site risk assessment carried out every 6 months, see section 5.2 for further information and Appendix 6.
- Install new people counter at main entranceway into the reserve during spring 2021
- Consideration given to design of and installation of interpretation panels at entrance ways; would need to seek funding.

- Consideration given to potential footpath improvement project e.g. through installing boardwalk or adding hoggin to sections; would need to seek funding.

4.5. Community Engagement

4.5.1. Current Status

The site is managed in a way that safeguards, maintains and enhances the ecological interest, and at the same time ensures continued public enjoyment and involvement in the reserve.

The main objectives of management are to:

- Promote nature conservation
- Provide informal public access and enjoyment through quiet recreation

The Earth Trust's mission statement is:

"To give people access to and experience of the environment through the natural green spaces we manage and together understand what we should do to care for the planet."

This will be achieved by:

- Engaging and inspiring the public
- Demonstrate and communicate sustainable management and the public benefits of land
- Care for, improve and communicate about the natural green spaces we manage
- Being financially sustainable

The management of Thrupp Lake directly contributes to the Radley Lake's Trust's Objectives:

- To maintain and enhance the environment
- To improve health and well-being

In addition, it indirectly contributes to the Council's strategic objective to maintain and improve the economy by helping to boost the local tourist industry.

In order to ensure that the management of Thrupp Lake fits with both Earth Trust's strategic objectives and the RLT objectives it is crucial the site is used to engage with the visiting communities.

Thrupp Lake has an active community group, Thursday group who understand the importance of the reserve for wildlife. They are committed to enabling other people to visit, enjoy the site and learn about the natural history of the site. Members of the community group keep an eye on the site and inform staff of any issues that arise. The group also undertakes general maintenance of the site with the site warden. The volunteer group is a mutually beneficial partnership between local residents and Earth Trust.

4.5.2. Factors and Constraints

The factors and constraints affecting community engagement are:

- Anti-Social Behaviour and Vandalism
- Barriers to Engagement

Vandalism and anti-social behaviour

Thrupp Lake has had problems with anti-social behaviour in the past. Some of this has involved minor vandalism of signage, fires associated with parties on summer evenings, littering, dog fouling and vandalism and latterly arson of both the lily shelter (2014) and the bird hide (2017).

Barriers to Engagement

There are a number of barriers which may stop people engaging with a green space, such as Thrupp Lake. These can be availability (proximity to), accessibility (such as walkability and connectivity to) and attractiveness (whether they would want to visit e.g. a place subject to antisocial behaviour or vandalism is not likely to be frequently visited by most members of the local community. For many people, safety fears (whether real or perceived) are a concern which may preclude people from going to a site.). There may also be cultural barriers or people may not perceive the place as being relevant to them.

Community work at Thrupp Lake aims to identify, understand and reduce such barriers. We will work to develop an inclusive culture providing opportunities for people to get involved.

Most of our Community Nature Reserves are surrounded by housing. At the very least there is a centre of population near to the site. Community Nature Reserves provide a focus for a variety of community engagement activities, through which we can communicate our messages about the importance of the natural world and encourage people to consider their actions, working together to benefit wildlife.

4.5.3. Community Engagement Objectives

Local residents have been involved in the reserve from early on and it is therefore important to keep the link going. It is our wish that the community near to and regular users of the site (e.g. families, walkers, dog walkers) will respect the site and understand and uphold any restrictions that may apply. They will know that there is an active community group (Earth Trust volunteers) and understand how to become involved if they wanted to. They will be engaged with the Earth Trust and the work that we do, in general terms.

People who attend events at Thrupp Lake will continue to have an enjoyable experience providing them with a better understanding of wildlife, the site and its management. They will leave the event with an understanding of the work of Earth Trust. Attendees are inspired to take action for green spaces. They will be able to participate further with the organisation and make changes to their lifestyle, such that it becomes more sustainable and lessens its impact on the natural world.

Finally, Thrupp Lake will be inviting to the community, families and children. The more people from the community using Thrupp Lake, the less likely it will be that antisocial-behaviour and vandalism will occur on the site.

4.5.4. Management Activities

- Carry out at least one event on the reserve each year involving the local community
- Encourage local community members to get involved in the volunteer work parties on the reserve

- Continue to recruit, train and manage the team of volunteer wardens
- Staff and volunteers will litter pick the site regularly
- Keep regular contact with the local Neighbourhood Police Team (NPT),
 - o action advice given regarding antisocial-behaviour and vandalism given by the NPT and any that comes out of the Radley Lakes Masterplan
- Keep the notice board regularly updated with relevant information
- Establish/maintain good relationships with neighbours

Community event

The main format for events on Community Nature Reserves is likely to be a Wildlife Wednesday. They are small scale, fun family, drop-in events for local people encouraging them to discover the wonders of the site. It may or may not have a theme. It is likely to include a series of family friendly environmental education activities, relevant to the site and season, designed to help people to get closer to nature and find out about what makes the place special. The activities should be spread around the nature reserve, to encourage people to move around the site and feel confident doing so on a subsequent visit. By keeping the activities simple it reduces the resources required and the activities may be replicated at other sites where appropriate.

Other events appropriate for Thrupp Lake include guided walks (staff or volunteer led) showing people around the site, explaining certain aspects of the site in detail e.g. bat walk or wetland bird walk. Other recent community events have included:

- Night Safari's arranged for families (includes checking small mammal traps, using bat detectors, and checking moth traps).

Supporting community groups

Abingdon Naturalist Society (AbNats) has been in existence for several years. Their main interest has been and continues to be wildlife surveying of the reserve. They are also keen to encourage other members of the community to visit the site and get involved with surveying. The main focus for staff is to continue to utilise the AbNats (and Earth Trust) volunteers for surveying and support the group in their current activities on the site.

Maintain the network of volunteer wardens

In 2018 a team of Volunteer Community Wardens was established. They act as site wardens during the year. The wardens talk to the visiting public, carry out litter clearance and report problems, incidents or health and safety issues directly to the site warden so they can be acted on.

5. Legal Responsibilities and Obligations

5.1. Legal Responsibilities and Obligations at Thrupp Lake

Local Wildlife Site Designation

Local Wildlife Site (LWS) designation was given to Thrupp Lake in 2006 by Thames Valley Environmental Record Centre (TVERC). LWS are sites with 'substantive nature conservation value'. They are defined areas, identified and selected for their nature conservation value, based on important, distinctive and threatened habitats and species with a national, region. They support both locally and nationally threatened wildlife, and many sites will contain habitats and species that are priorities under the county or UK Biodiversity Action Plans (BAP). Collectively they play a critical role

in the conservation of the UK's natural heritage by providing essential wildlife refuges in their own right and by acting as stepping stones, corridors and buffer zones to link and protect other site networks and the open spaces of our towns and countryside. LWS is a non-statutory designation, which are defined in local plans under the Town and Country Planning system and the National Planning Policy Framework and are a material consideration when planning applications are being determined.

Wildlife and Countryside Act (1981)

The Wildlife and Countryside Act 1981 prohibits:

- the killing, injuring or taking by any method of those wild mammals listed on Schedule 5 of the Act.
- the damage, destruction, or obstruction of access to any structure or place which any wild mammal listed on Schedule 5 uses for shelter or protection and the disturbance of any such mammal while it is occupying a structure or place which it uses for that purpose.

The following Schedule 5 species have been found or are likely to be present at WCM:

- | | |
|---------------|---------|
| – water vole | – bats |
| – common frog | – otter |
| – common toad | |

Occupier's Liability Act

This Act imposes an obligation on all occupiers of the land, to ensure that every reasonable care is taken to remove any risk both to visitors and trespassers.

Health and Safety at Work Act 1974

All operations carried out on site must be undertaken by trained personnel using methods and equipment approved by the Health and Safety Executive, and also in compliance with national and local safety procedures. This obligation is extended to ensuring compliance by contractors working on the site.

5.2. Health and Safety Responsibilities

Review site risk assessment

A site risk assessment is required to ensure compliance with statutory and organisational health and safety procedures. In the UK all organisations which employ staff on sites, or provide public access to sites, must complete a detailed risk assessment or audit of the site. All potential dangers or threats on the site must be identified. All the implications for the health and safety of visitors are considered, and then controls, if necessary, are established and applied. Access to any site may be restricted by the presence of hazards. In extreme circumstances, there may be an obligation to close parts of sites, or even entire sites. Of course, in most instances, it will be possible to take remedial action to remove or isolate the risk and ensure visitor safety.

A site risk assessment should be reviewed at least on a six month basis and also whenever a new hazard is known to be present. A date for review should be set and adhered to – these can be staggered to avoid the need to review lots of sites at the same time but should not be allowed to run on beyond the year for any individual site. An earlier visit and review will be prompted if a likely cause of new hazards is known to have occurred, e.g. exceptional winds or flooding. Site risk assessments are freely available for anyone who requests them. In addition, they should be sent out to visiting

groups or contractors before activities and used by anyone planning a project on a nature reserve to inform their 'on the day' risk assessment.

The Thrupp Lake site risk assessments is the responsibility of the site manager (e.g. Earth Trust Warden) but the task of reviewing can be delegated to any person with competence to carry out a risk assessment. A formal risk assessment process has been adopted, a copy of the risk assessment form used can be found in Appendix 6.

Site safety inspections are carried out regularly by the warden; any issues are noted and actions taken noted on the site risk assessment form. In addition, the volunteer wardens and members of the public are encouraged to report any issues to the site warden. The warden will deal with issues that pose a threat to public health and safety immediately or the area is cordoned off with appropriate warning signs and the council are then notified. If the problem does not require immediate action then it is scheduled into the quarterly work plan or the council informed and appropriate contractors appointed.

The warden is contactable at all times in the event of an emergency.

Risk assessment process:

- Risk identified – assess level and severity of risk.
- Warden/volunteer removes/reduces risk immediately where possible.
- If immediate removal is not possible then reduce level of risk to an acceptable level and plan work to remedy situation as soon as reasonable.
- If this is not possible and there is a significant risk to site users then the site can be closed until level of risk is made acceptable.

Carry out tree safety work

The condition of trees on the reserve in relation to health and safety should be regularly reviewed and any safety work identified carried out. Earth Trust uses a licenced tree safety surveyor who carries out an annual tree safety survey during the summer and any works being undertaken as and when necessary to maintain the safety of the site, undertaken either by trained Earth Trust staff or arboriculture contractors.

Once the need for safety work has been identified there are decisions to be made about carrying out remedial work. Safety work tends to involve much higher potential for serious outcomes than tree work in a general nature reserve surrounding where the public can be kept at a safe distance.

5.3. Legal Responsibilities

Comply with Protected Species Legislation

A large number of different species are protected under law through various pieces of legislation. In general this does not pose a problem for conservation work, which is aimed at protecting habitats and species. However, it is essential that RWE and Earth Trust remains both legal and also demonstrates best practice. The majority of species are legally protected from standard activities

including: being disturbed; injured; killed; sold; up-rooted; or having their 'shelter/home' disturbed or damaged.

The main pieces of legislation which protect species are:

- The Birds Directive 1979
- The Wildlife and Countryside Act 1981 (as amended)
- The Badger Act 1992
- Wild Mammals (Protection) Act 1996
- European Habitats Directive 1992 (The Conservation of Habitats and Species Regulations 2017 (as amended))

As otters are widespread across Oxfordshire the potential presence of otters should be considered as there ditches/stream connected to the Thames close to site. Similarly, it is assumed that as there is woodland on site and trees are considered as potential bat roosts, appropriate bat best practice guidance should be adhered to.

5.4. Site Infrastructure and Administration

Site boundaries are important to maintain in their exact positions so that there is no chance of boundary disputes with neighbours. If fences or hedges are removed, the exact position of the boundary should be recorded.

Roadside and public footpath hedges should be maintained in such a way that the growth does not interfere with passing vehicles or pedestrians. Boundaries which border roads, footpaths or private properties should be checked for dangerous trees by contracted tree surveyor.

Establish/maintain good relationships with neighbours

Thrupp Lake is not an isolated patch of land but is bordered on all sides by neighbouring land owners. Periodic liaison or contact with our neighbours is important for several reasons. Work that we carry out may have impacts outside our boundaries, most often these will be visual, but there may also be practical implications such as noise, alteration to drainage, access, bonfire smoke, or increased traffic and public presence. Without warning or discussion with our neighbours, these could become negatives and lead to a poor opinion of RWE and Earth Trust being created. Good communication of our objectives may also help to protect green spaces, if our neighbours can be persuaded to adopt sympathetic land management on their boundaries, to buffer the habitats on our land. Good lines of communication with neighbours will also help in the speedy resolution of problems if they arise.

Liaison with neighbours should take place when we are planning works or events likely to have any of the impacts listed above, or when any work needs to happen on common boundaries such as fencing or tree safety work. It may also be appropriate if practices are observed or reported on neighbouring land likely to have an impact on a Trust reserve. More general regular contact could also be useful, even if there is no specific issue to discuss, just for the purposes of maintaining lines of communication.

Liaison with neighbours may take various forms, namely phone call, email, or letter; it could even be meeting in person. Records of communication should be noted on the Earth Trust database, and if appropriate, copies of letters or emails retained in the database. Contact details for key neighbours should also be retained by the Earth Trust Warden. RWE/Earth Trust signage should always be visible, so that it is clear to new neighbours (or members of the public) who we are as landowner or leaseholder, and so they can contact us.

6. Environmental Sustainability

RWE and the Earth Trust seek to manage Thrupp Lake in the most sustainable way. The key issues relevant to the sustainable management of the site are:

- Biodiversity protection and enhancement
- Sustainable procurement
- Carbon reduction
- Waste management Pollution reduction

6.1. Biodiversity Protection and Enhancement

One of the key aims of site management is the protection and enhancement of biodiversity. Section 4 of the management plan sets out how this, along with the other key objectives, will be achieved.

6.2. Sustainability Procurement

The management of the site does not require large scale or regular procurement of goods or services however; we will always seek to obtain goods and services from local, sustainable sources. Examples of this include the purchase of timber products from local suppliers, the use of wood chip from the for path surfacing and mulching of trees, the printing of posters for the interpretation/notice board on chlorine free paper and the purchase of log benches from local forestry contractors.

6.3. Carbon Reduction

The main factors contributing to carbon emissions are the use of contractors for regular maintenance such as the maintenance of infrastructure and travel to and from the site by site managers, volunteers and visitors. Contractors are used to carry some tree safety works. The level of carbon emissions from contractors is therefore relatively low. Site managers are based either in nearby Little Wittenham (warden). Travel to and from the site is therefore minimal in carbon terms. Regular volunteers are encouraged to car share where necessary and the Earth Trust provides transport for volunteers to the site from Little Wittenham. The majority of regular volunteers are local and either walk or cycle to the site.

6.4. Waste Management

Rubbish dumping and dog fouling has been a problem on the reserve in the past. One dog bin has been installed and the welcome signage asks people to use it. Currently no litter bins are provided on site. This is a deliberate stance to encourage site users to act responsibly and take their litter home

to recycle it. Experience over the management of the site suggests that this policy works very well as the level of littering is generally very low. Where problems have occurred in the past this is as a result of unauthorised parties, in this case it is unlikely that the presence of bins would make any material difference. The litter situation is continually monitored and if there is any significant change then this policy will be reviewed. Such as in the 2020/21 years during the Covid-19 pandemic and subsequent lockdowns etc. where littering became a very big problem, therefore this may be revisited as part of the RLT 'masterplan' and creation of the 'Thrupp Lake hub'. Any litter that is left on the site is collected either by the warden, volunteer wardens or volunteers. The Earth Trust offices have recycling facilities that deal with any recyclables. Non-recyclable waste is also disposed of at the Earth Trust offices. Relatively little waste is produced on the site from management operations.

6.5. Pollution Reduction

The only potential source of pollution which arises from the management of the site would be through the use of herbicides. The use of herbicides on the site is strictly controlled and avoided when possible, in favour of non-chemical control (manual removal/ hand pulling) unwanted/invasive plant species. All herbicide applications are carefully controlled and undertaken by licensed members of Earth Trust staff/contractors so that the likelihood of pollution occurring is minimised.

7. References

Andrews, J. & Kinsman, D. (1990) *Gravel pit restoration for wildlife: A practical manual*. Ashford: RSPB.

Cabe space: *A guide to producing park and green space management plans*.

HLF public park initiative: *10 year management and maintenance plan guidelines*.

Kirby, P (1992) *Habitat Management for Invertebrates: A Practical Handbook*. RSPB. Kirby, P (2001) *Habitat Management for Invertebrates: a practical handbook*. RSPB Langton, T (1989) *Snakes and Lizards*. Whittet Books, London.

Shand, P, Edmunds, W M, Lawrence, A R, Smedley, P L, and Burke, S (2007) *The natural (baseline) quality of groundwater in England and Wales*. BRITISH GEOLOGICAL SURVEY Groundwater Programme RESEARCH REPORT RR/07/06. ENVIRONMENT AGENCY Science Group: Air, Land and Water TECHNICAL REPORT NC/99/74/24.

8. Table of Management and Monitoring Activities

Management tasks				Month/s to be carried out											
Location	Task	One off, Annual, Continuous task	Detail	January	February	March	April	May	June	July	August	September	October	November	December
Lake margins	Leave felled trees/branches in the lake To create kingfisher perches i.e. felled material from island coppicing	A		✓	✓								✓	✓	✓
Lake islands	Clear a number of islands on rotation.	A		✓	✓								✓	✓	✓
Otter Island – sand martin bank	Check over and re-fresh sand in artificial Sand Martin bank on Otter Island	A	Every 2/3 years; before sand martins return to UK or after they have left.		✓	✓						✓	✓		
Thrupp Lake	Put out Tern rafts X2	A	Go out in late March/early April and come back in September after bird nesting completed (to prevent Cormorants & Gulls moving in permanently)			✓	✓					✓			
St David's Meadow	Cut the meadow - spring cut & summer cut	A	Removing all arisings to designated piles			✓	✓				✓	✓			
St David's Meadow	Reduce thistle and nettles in the meadow	A	ONLY if necessary - Hand pulling, but if it is ineffective consider a selective herbicide to treat.					✓	✓	✓					
Whole site	Hand pull ragwort	A	Until < 5% target achieved.					✓	✓	✓	✓				
Wooded areas - Northern edge & Shelterbelt along western edge	Replant locally native tree species as understory/replacements for felled trees especially following tree safety works	A	Plant 1 to 5 = 1 'standard' to 5 understory species	✓	✓								✓	✓	✓
Circular walk	Remove ground covering ivy and other vegetation on sandy vertical banks along footpath towards boardwalk	A										✓			

Circular walk	Monitor and cut encroaching vegetation along circular walk, around way-marker posts, around entrance	C	Ideally path width of 2m	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Circular walk	Monitor and maintain footpath and post & rail fencing	C	Add rubble/woodchip if required to footpath	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Byway Open to All Traffic (B.O.A.T) track	Cut back encroaching vegetation to entrance and along length of B.O.A.T track	C	Manage surface - periodically scrape mud etc. off track esp. edges	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Western & south-western edge	Rotational cutting of scrub & willow on	A	(near Bullfield Lake)A three year rotation. Habitat pile brash	✓	✓									✓	✓	✓

Monitoring/Survey tasks				Month/s to be carried out in											
Location	Task	One off, Annual, Continuous VWHDC task	Detail	January	February	March	April	May	June	July	August	September	October	November	December
BMS transect route	Butterfly transect	A	1st April - 30th Sept weekly - Volunteer surveyors				✓	✓	✓	✓	✓	✓			
Whole reserve	Tree safety survey	A	Carried out by Contractor in summer						✓	✓					
Bird transect route	Bird transect	A	Carried out by volunteer as part of wider Radley Lakes bird survey	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wooded areas - Northern edge & Shelterbelt along western edge	Bi-annual bird & bat box survey	A	With volunteer who has bat licence. Clean boxes in winter survey	✓				✓	✓						✓
<i>Odonata transect route</i>	<i>Odonata survey</i>	A	<i>Not yet set up - would be good to register transect square with British Dragonfly Society (BDS) https://app.bto.org/batmap/squares/bds_adapt_site</i>	<i>When set up</i>											
Thrupp Lake	Spawn survey (frog/toad)	A	Check lake edge, use Fresh Water Habitat Trusts reporting forms		✓	✓	✓								

Thrupp Lake	Record any pollution incidents - report to EA	C	Ad hoc.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Whole site	Record & report incidences of vandalism	C	To the police 101	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Admin tasks			Month/s to be carried out in													
Tasks	One off, Annual, Continuous VWHDC task	Detail	January	February	March	April	May	June	July	August	September	October	November	December		
Claim management payment for each 6 month period	C	June & December						✓			✓					
Revise site risk assessment	A	Every 6 months – email over to RWE		✓							✓					
Book tree safety survey - summer	A	Use qualified contractor						✓	✓							
Pay invoice to Japanese Knotweed Ltd	A	5yr plan for J. Knotweed treatment (come out twice a year)							✓							
Revise/update fishing syndicate rent agreement & invoice syndicate for annual rent		Garth Ethelston													✓	
Arrange catch-ups with FRL Exec and/or just Roger Thomas	A	6 monthly						✓							✓	
Revise site management plan (5 yearly revision)	O	Next revision in 2026	2021-2026													