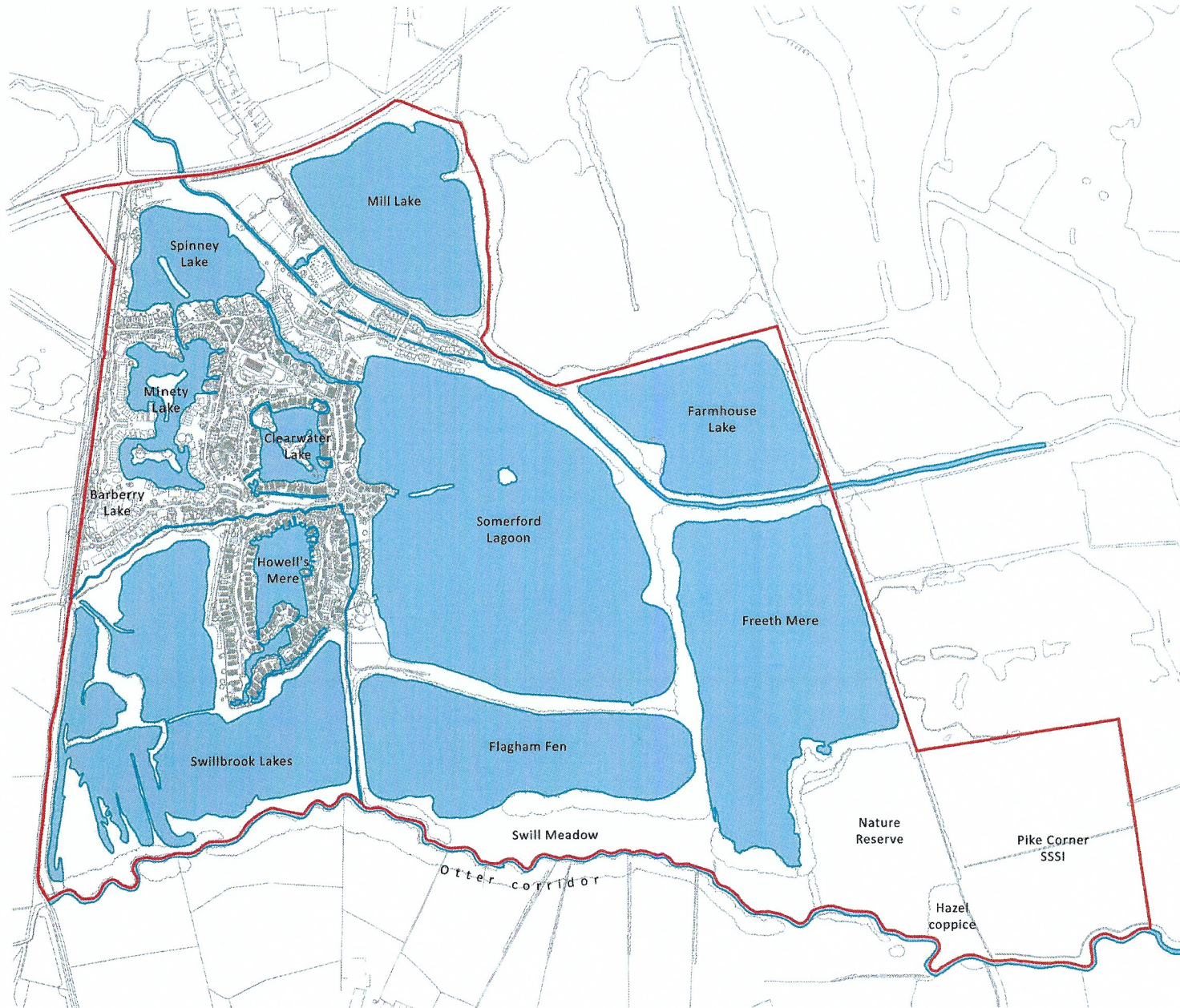
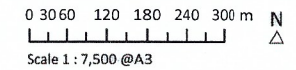


FIGURES



LEGEND



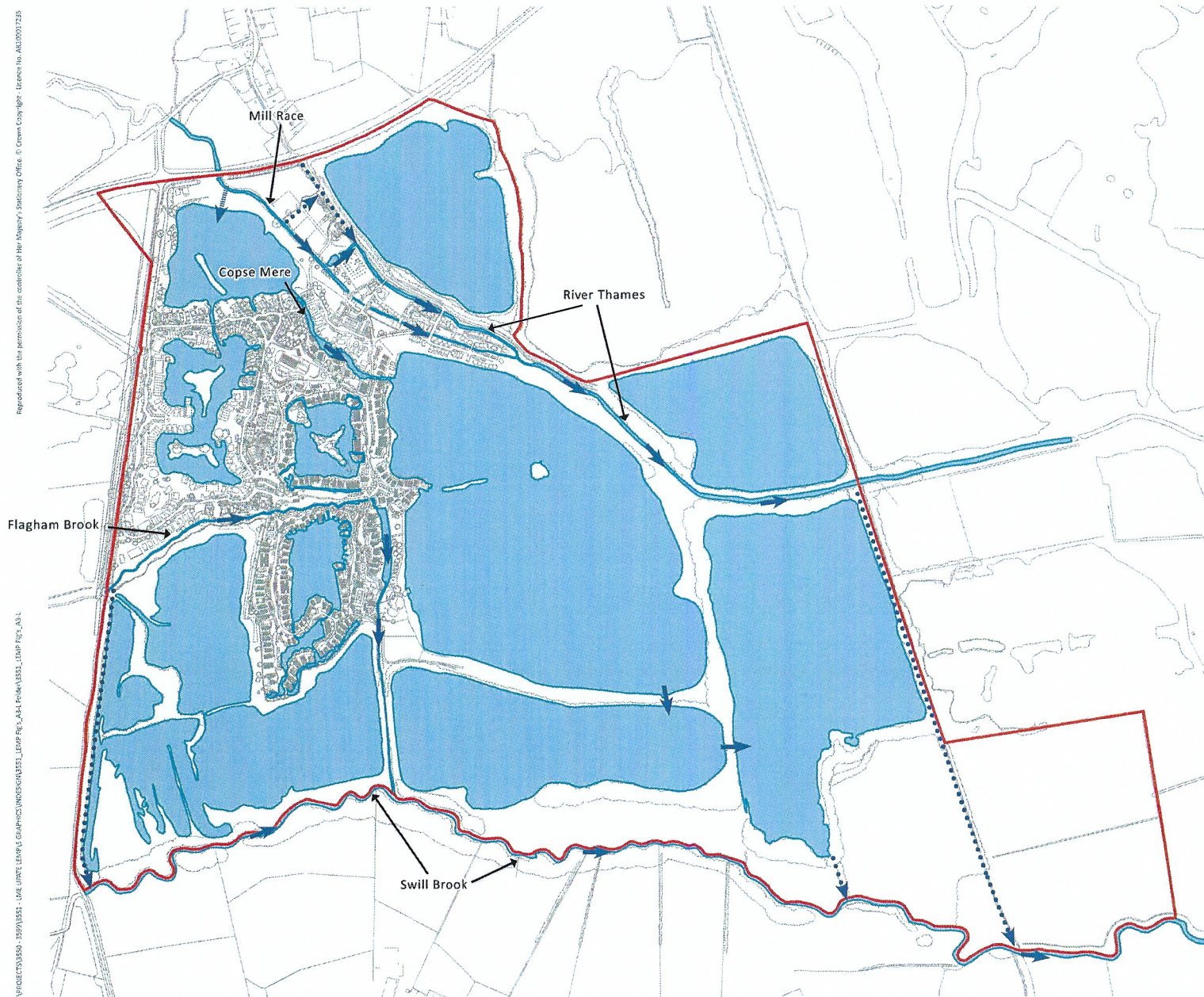
LOWER MILL ESTATE LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN 2022 - 2027

FIGURE 1
Estate map

THE Landmark
PRACTICE

3 The Hayes Court, Long Ashton Business Park, Hayley Lane, Bristol BS41 9LB
T: +44 (0)127 923 0455 E: enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com

Drawn: SB Checked: AS Date: 14 Jun 22



LEGEND

- Estate boundary
- Flow direction
- Flood relief route
- Flow direction (ditch)

0 30 60 120 180 240 300 m N
 Scale 1 : 7,500 @A3

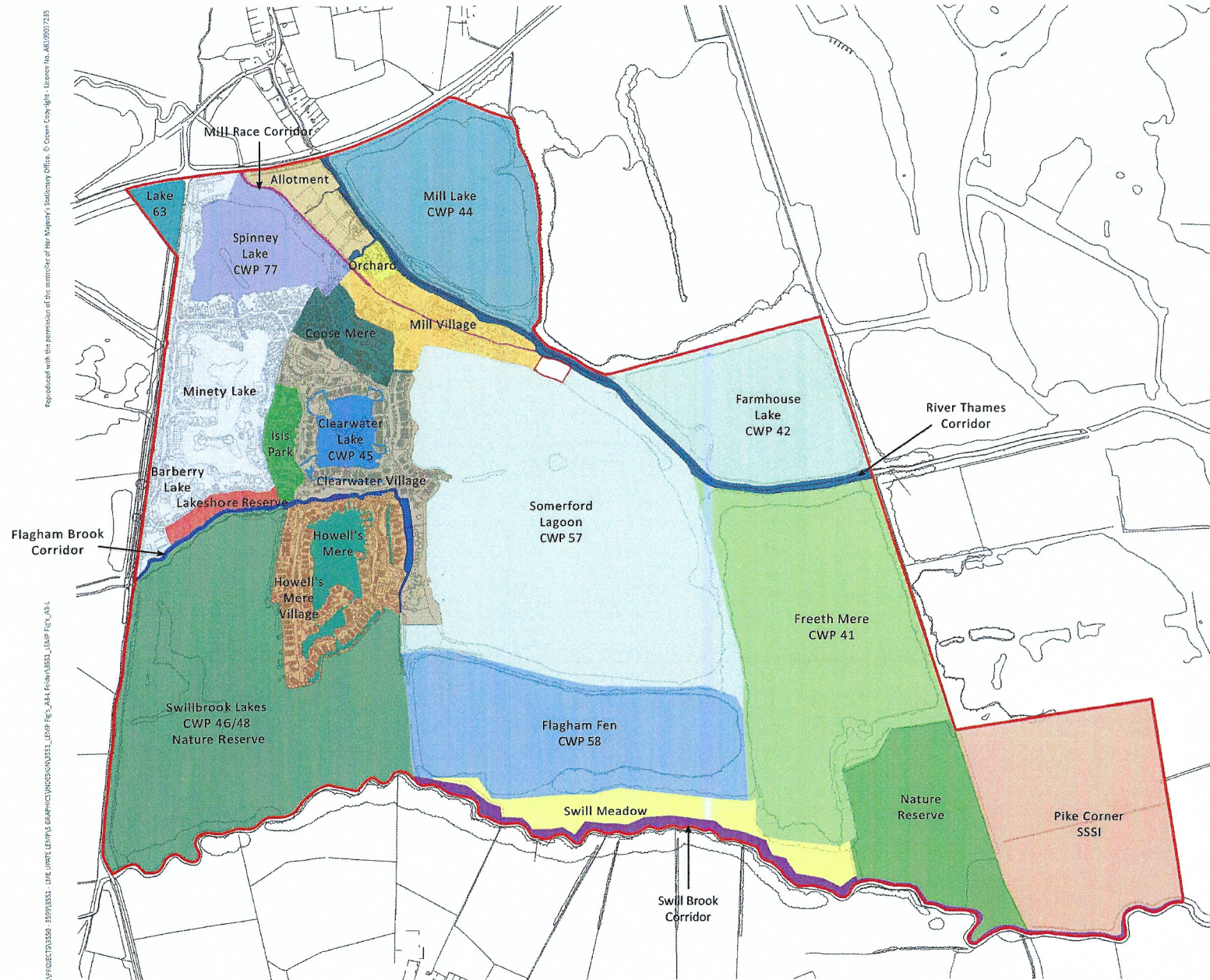
LOWER MILL ESTATE LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN 2022 - 2027

FIGURE 2
 Water flow interaction throughout
 Lower Mill Estate

THE Landmark
 PRACTICE

3 Thevies Court, Long Ashdon Business Park, Welby Lane, Birsted B541 9LB
 T: +44 (0)1753 203 0455 E: enquiries@thelandmarkpractice.com
 www.thelandmarkpractice.com

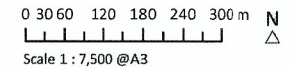
Drawn: SB Checked: AS Date: 14 Jun 22



LEGEND



- | | |
|------------------------|--------------------------|
| Clearwater Lake | Mill Lake |
| Clearwater Village | Mill Race Corridor |
| Copse Mere | Mill Village |
| Farm | Minety Lake |
| Farmhouse Lake | Nature Reserve |
| Flagham Brook Corridor | Orchard |
| Flagham Fen | Pike Corner SSSI |
| Freeth Mere | Somerford Lagoon |
| Howell's Mere | Spinney Lake |
| Howell's Mere Village | Swill Brook Corridor |
| Isis Park | Swill Meadow |
| Lake 63 | Swillbrook Lakes Reserve |
| Lakeshore Reserve | Thames Corridor |



LOWER MILL ESTATE LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN 2022 - 2027

FIGURE 3
Management Plan areas

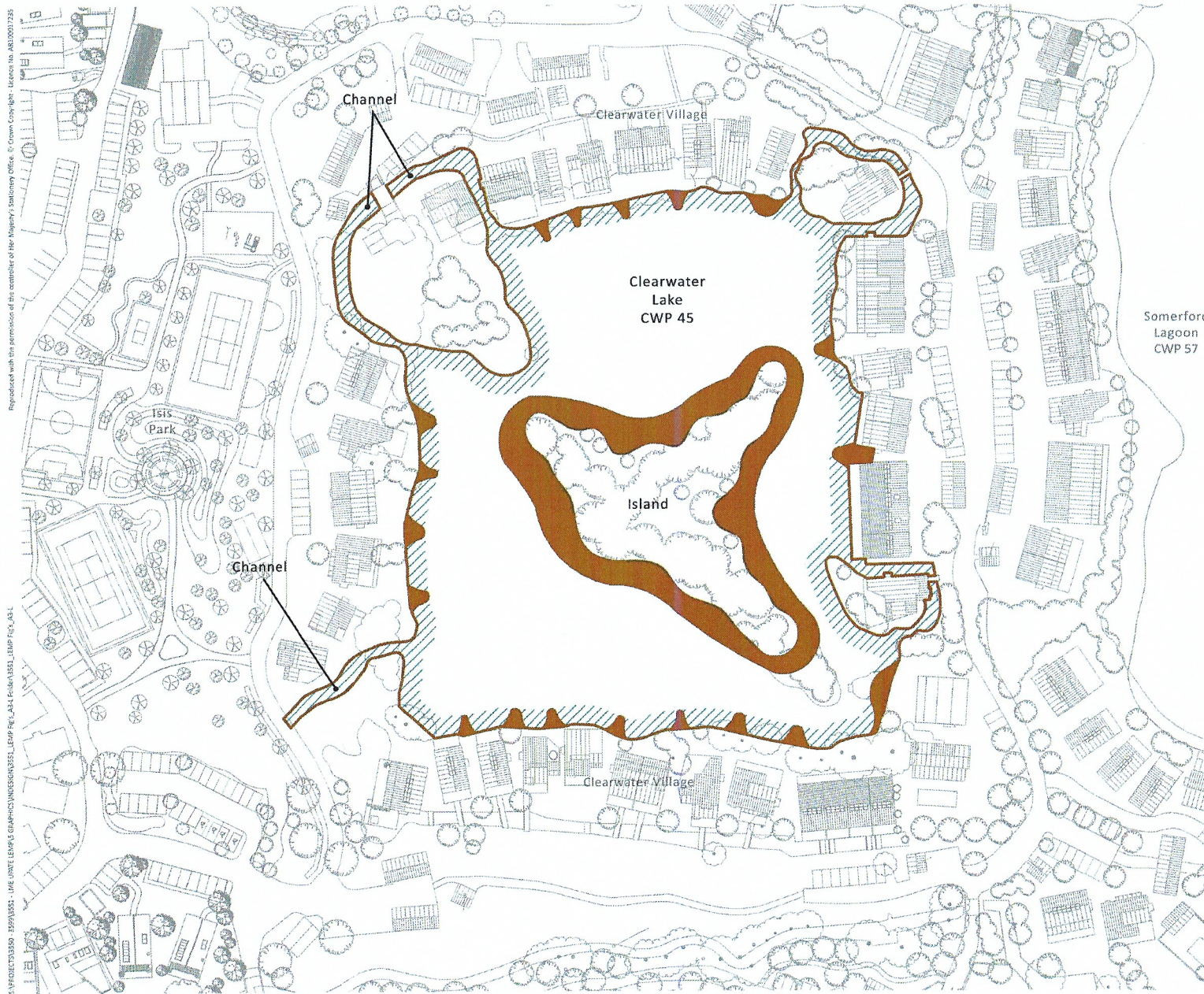
THE **Landmark**
PRACTICE

3 Thevies Court, Long Acreon Business Park, Valley Lane, Brest 8541 9ER
T: +44 (0)1753 0455 E: enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com




Drawn: SB Checked: AS Date: 14 Jun 22

Reproduced with the permission of the controller of the Copyright Licensing Agency Ltd. All rights reserved.

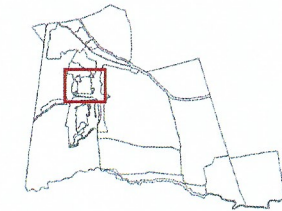
1:\PROJECTS\3550 - 1957\1957 - LIME JUNCT LIME'S GRAPHICS\DESIGN\3551_LIMP_Fig_A3.1_Plan_A3.1_LIMP_Fig_A3.1



LEGEND

-  Estate boundary
-  Maintain open water by removing encroaching vegetation
-  Retain and enhance/create a buffer of vegetation around island and lake margins

Somerford
Lagoon
CWP 57



0 4 8 16 24 32 40 m N
△

Scale 1 : 1,000 @A3

LOWER MILL ESTATE
LANDSCAPE AND ECOLOGICAL
MANAGEMENT PLAN
2022 - 2027

FIGURE 4
Clearwater Lake (CWP 45)
(refer to relevant prescription table)

THE **Landmark**
PRACTICE

3 The Hayes Court, Long Ashton Business Park, Water Lane, Bristol BS41 9ER
T: +44 (0)1273 23 0455 E: enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com

Drawn: SB Checked: AS Date: 14 Jun 22

Environmental Planning • EIA • Landscape Architecture • Ecology • Architectural Graphics

Reproduced with the permission of the controller of Her Majesty's Stationery Office. © Crown Copyright. Licence No. A1030017365

S:\PROJECTS\3550 - 3550\3550 - LIME (JUNE) LEAPUS GRAPHICS\UNDESIGNED\LEAP Fig_A34_Folios\3551_LEAP Fig_A34



LEGEND



Estate boundary

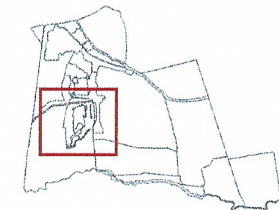


Section reference in prescription table



Native marginal planting

- Native rushes, sedges and other emergent plants around the lake;
- Reeds between properties but not in front of them; and
- Reeds lining B & C channels



0 10 20 30 40 50 m

Scale 1: 2,000 @A3



LOWER MILL ESTATE
LANDSCAPE AND ECOLOGICAL
MANAGEMENT PLAN
2022 - 2027

FIGURE 5
Howell's Mere
(refer to relevant prescription table)

THE Landmark
PRACTICE

3 Theyles Court, Long Ashton Business Park, Theyles Lane, Bristol BS41 9LB
T: +44 (0)1275 23 0455 E: enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com



LEGEND



Estate boundary

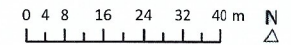
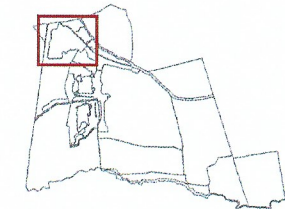


Section reference in prescription table



Lake edge - designed to be a wildlife corridor for the safe passage of amphibians and reptiles; birds; invertebrates; and small mammals.

Refer to Section One - Villages for management and monitoring tasks



Scale 1 : 3,000 @ A3

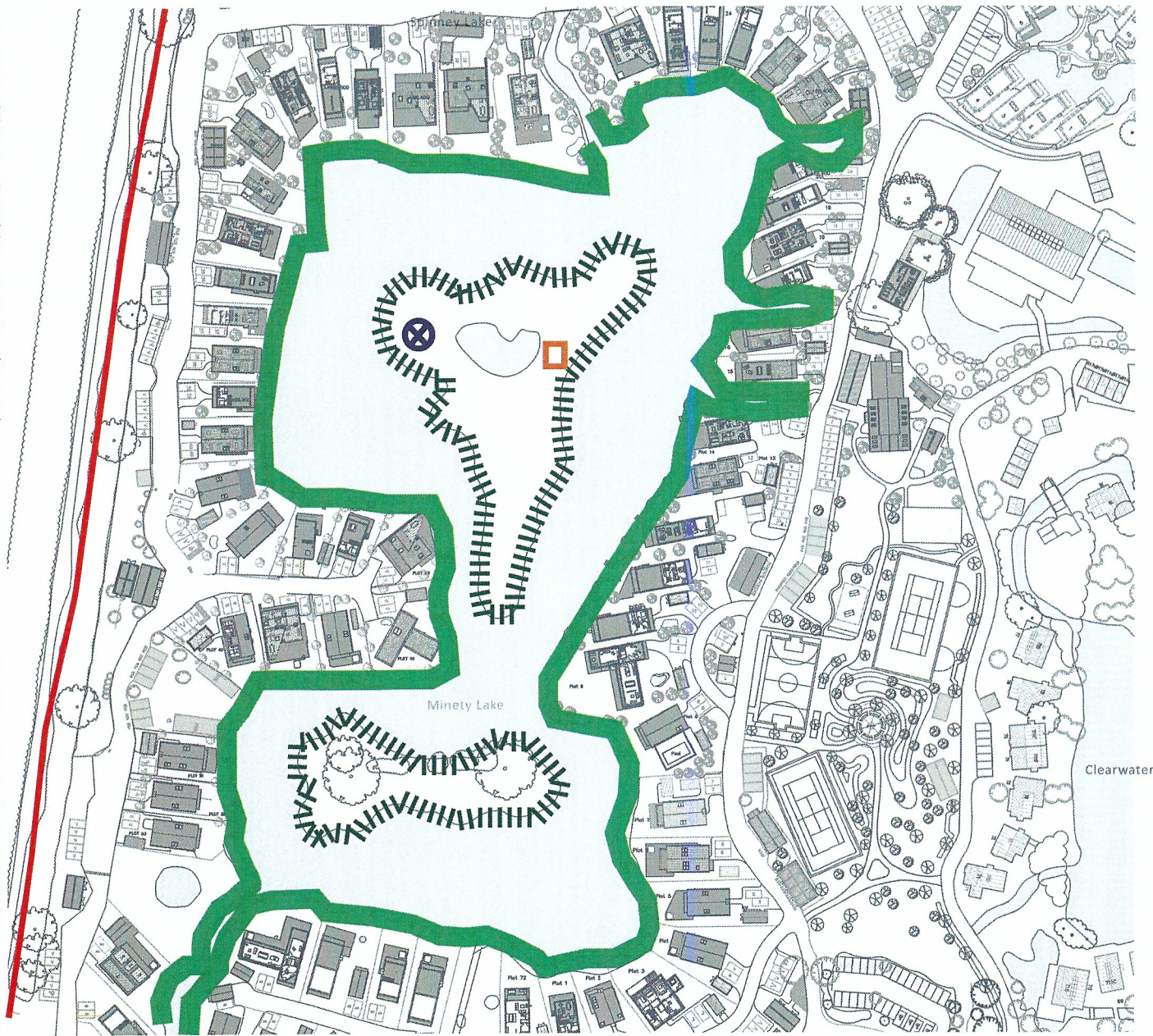
LOWER MILL ESTATE LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN 2022 - 2027

FIGURE 6
Spinney Lake (CWP 77)
(refer to relevant prescription table)

THE **Landmark**
PRACTICE

1 Thynnes Court, Long Ashdon Business Park, Tetter Lane, Bistol BS51 9LB
T: +44 (0)117 323 0455 E: enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com

Drawn: SB Checked: AS Date: 14 Jun 22



LEGEND



Estate boundary



Native marginal planting

- Native rushes, sedges and other emergent plants around the lake;
- Reeds between properties but not in front of them



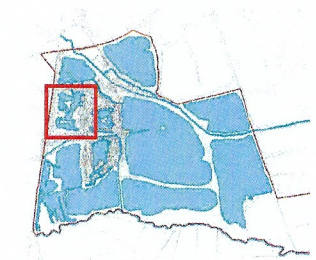
Reedbeds around islands



Otterholt



Swift Tower



Scale 1 : 1,250 @A3

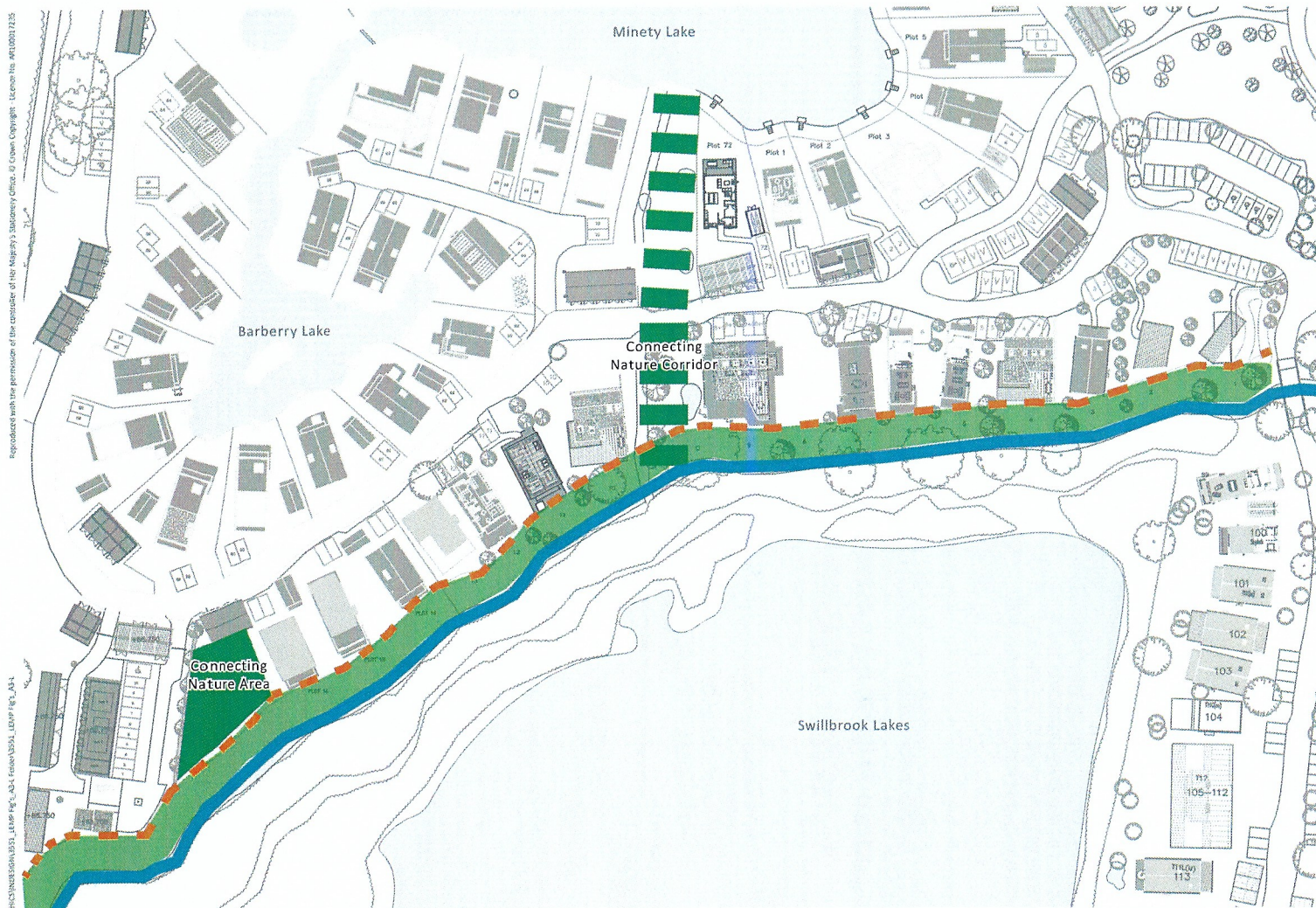
LOWER MILL ESTATE LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN 2022 - 2027

FIGURE 7
Minety Lake
(refer to relevant prescription table)

THE Landmark
PRACTICE

1 The Hayes Court, Long Ashton Business Park, Walsley, Walsley, B65 4DB
T: +44 (0)117 223 0455 E: info@thelandmarkpractice.com
www.thelandmarkpractice.com

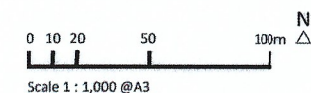
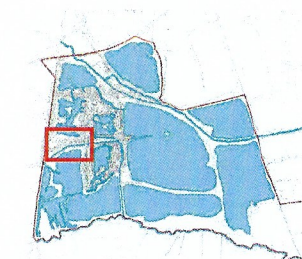
Drawn: SB Checked: AS Date: 14 Jun 22



LEGEND

- Flagham Brook - dark corridor
- Edge of no build zone
- Existing brook bank planting zone maintained and managed to enhance habitat for otters, water voles, reptiles and bats.

Refer to Section One - Villages for management and monitoring tasks

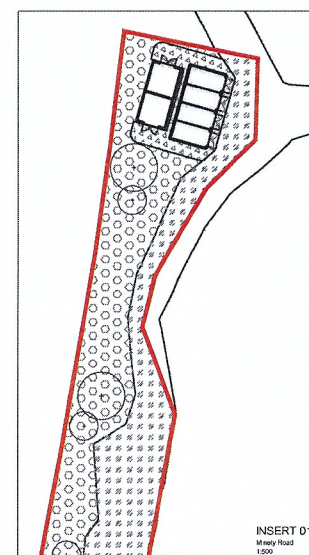
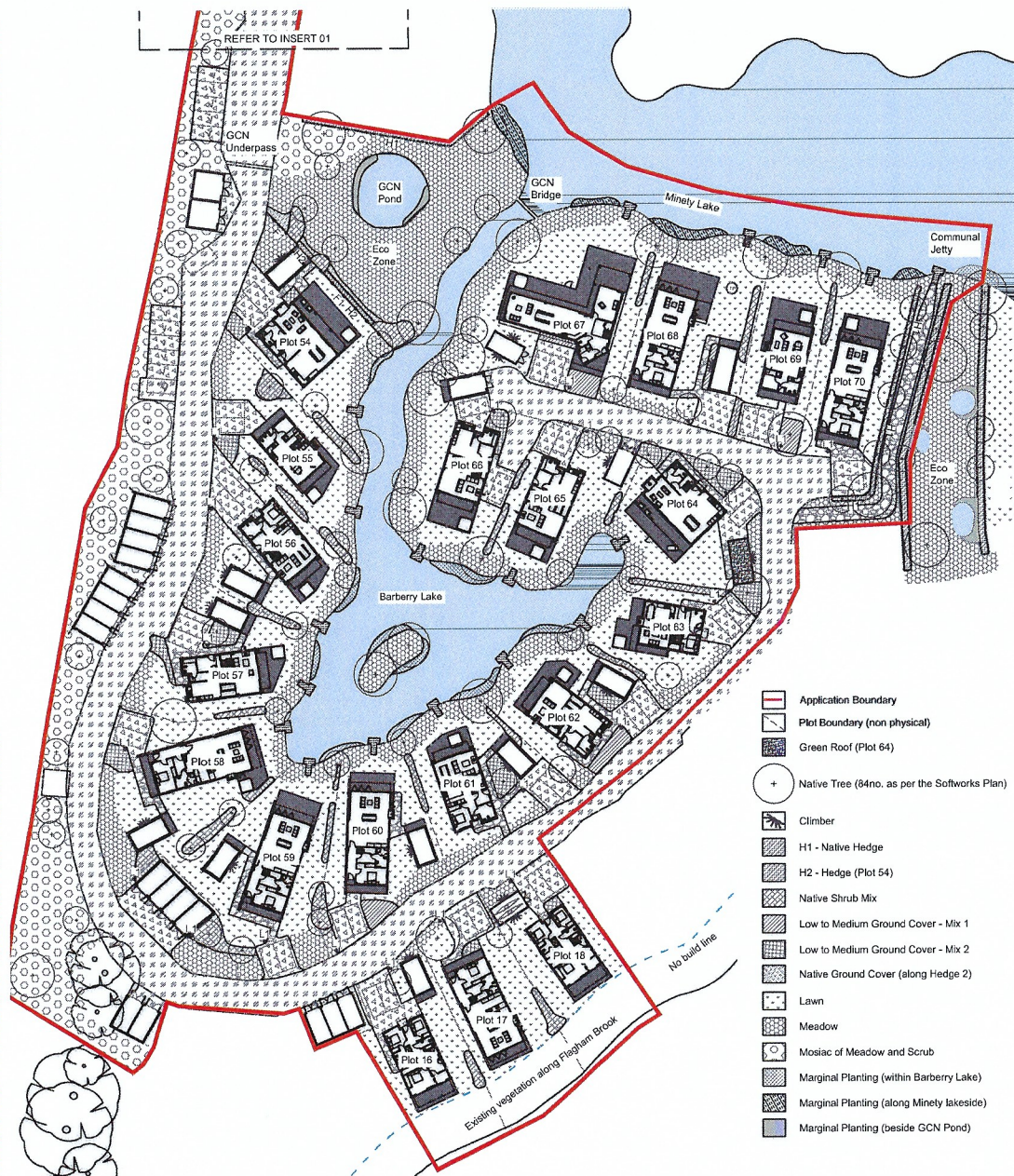


LOWER MILL ESTATE LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN 2022 - 2027

FIGURE 8
Lakeshore Reserve
(refer to relevant prescription table)

THE Landmark
PRACTICE

3 The Hayes Court, Long Sutton Business Park, Thaxley Lane, Boston 0541 988
T: +44 (0)1517 922 925 E: info@thelandmarkpractice.com
www.thelandmarkpractice.com



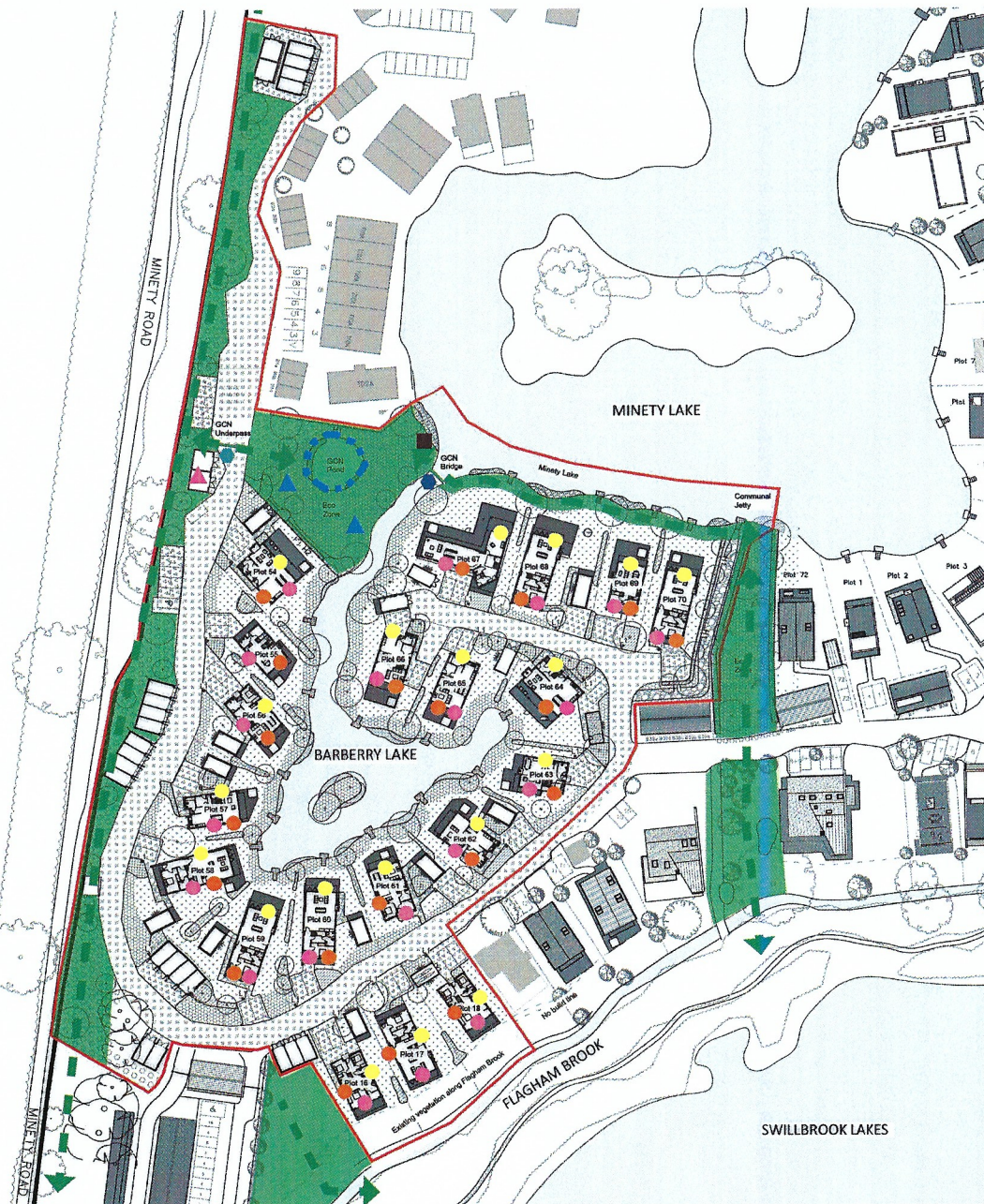
1

LOWER MILL ESTATE
LANDSCAPE AND ECOLOGICAL
MANAGEMENT PLAN
2022 - 2027

FIGURE 9
Barberry Lake
General Arrangement Plan
(refer to relevant prescription table)












THE Landmark PRACTICE

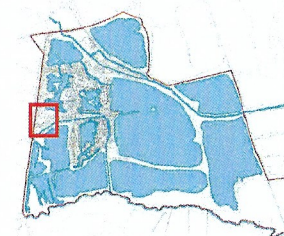
1 Theynes Court, Long Ashton Business Park, Yanley Lane, Bristol BS41 9LB
T: +44 (0)117 923 0455 E: enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com



LEGEND

Proposed ecological enhancements:

-  Great Crested Newt habitat zone
(this provides 3049 m² of suitable terrestrial habitat for GCN, an increase of 355 m² to what was originally present)
-  Connectivity between GCN habitat zones and the wider Estate
-  GCN Pond
(reinstatement of original GCN breeding pond)
-  GCN underpass x 1
(this will be completed at the end of construction when the road is topped off, approximately 3 years time)
-  GCN bridge x 1
(see 3345_L_HW_3_01 GCN Bridge Detail)
-  Swift bird box x 20
-  Bat box x 20
-  Bee brick x 20
-  Kingfisher nesting box x 2 in same location
-  Bat loft x 1
-  Reptile hibernacula x 2



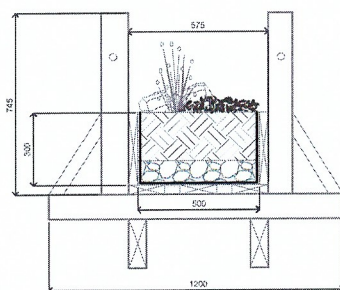
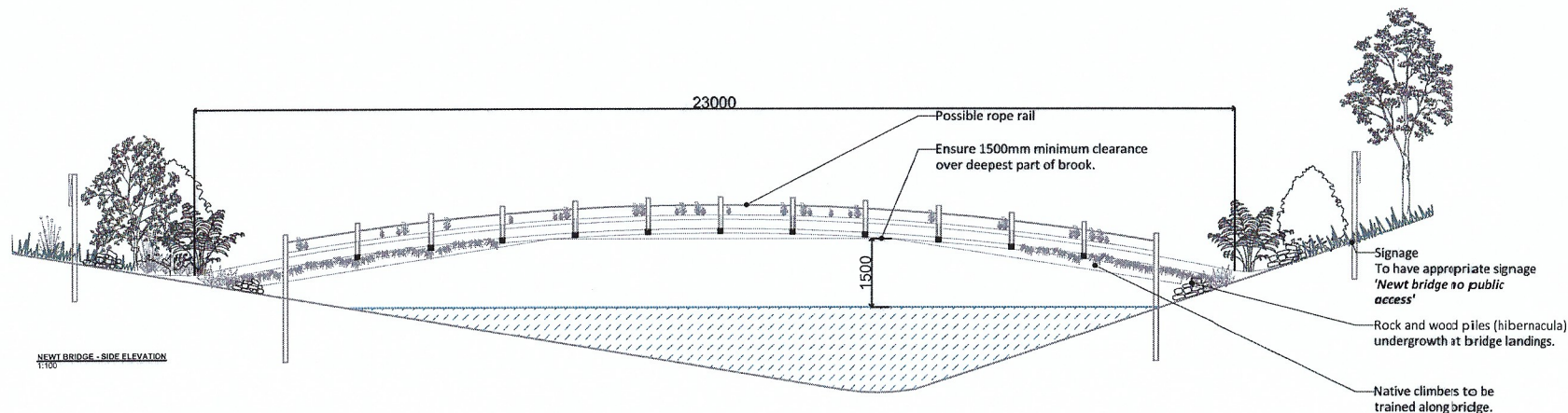
NTS

LOWER MILL ESTATE
LANDSCAPE AND ECOLOGICAL
MANAGEMENT PLAN
2022 - 2027

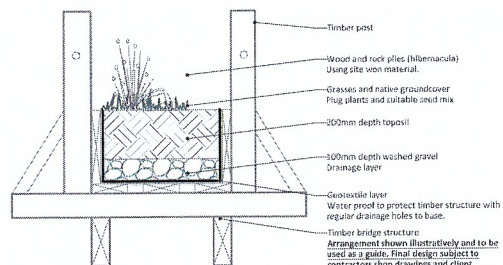
FIGURE 10
Barberry Lake
Ecological Enhancement Plan
(refer to relevant prescription table)

THE Landmark
PRACTICE

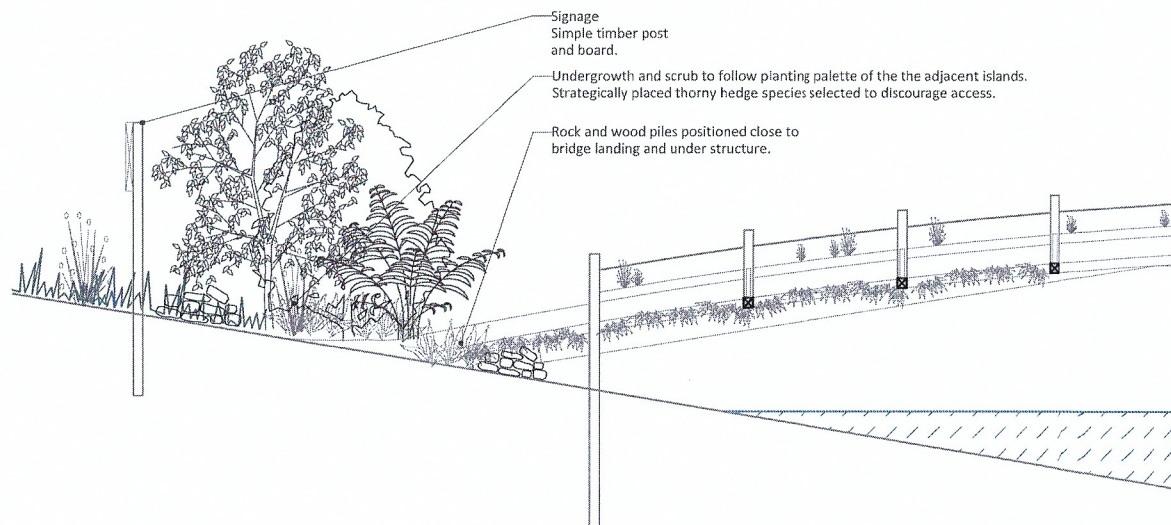
1 Theynes Court, Long Ashton Business Park, Yanley Lane, Bristol BS41 9LR
T: +44 (0)117 923 0455 E: enquiries@thelandsmarkpractice.com
www.thelandsmarkpractice.com



NEWT BRIDGE - SECTION WITH DIMENSIONS
1:20



NEWT BRIDGE - SECTION WITH ANNOTATION
1:20



NEWT BRIDGE - SIDE ELEVATION - WESTERN LANDING
1:50

LOWER MILL ESTATE
LANDSCAPE AND ECOLOGICAL
MANAGEMENT PLAN
2022 - 2027

THE Landmark
PRACTICE

3 Theynes Court, Long Ashton Business Park, Theynes Lane, Bristol, BS40 9LB
T: +44 (0)1272 810455 E: enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com

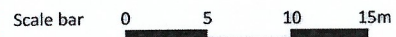
FIGURE 11
Barberry Lake - GCN BRIDGE
(refer to relevant prescription table)

Drawn: SB Checked: AS Date: 14 Jun 22

Environmental Planning • EIA • Landscape Architecture • Ecology • Architectural Graphics

Reproduced with the permission of the controller of Her Majesty's Stationery Office, © Crown Copyright - Licence No. AR100017235

S:\PROJECTS\15540 - 35209\3551 - LIME HURST LANDSCAPE GRAPHICS\DRAWINGS\1551_LIMP Fig's_A3-4_Folder\3551_LIMP Fig's_A3-L



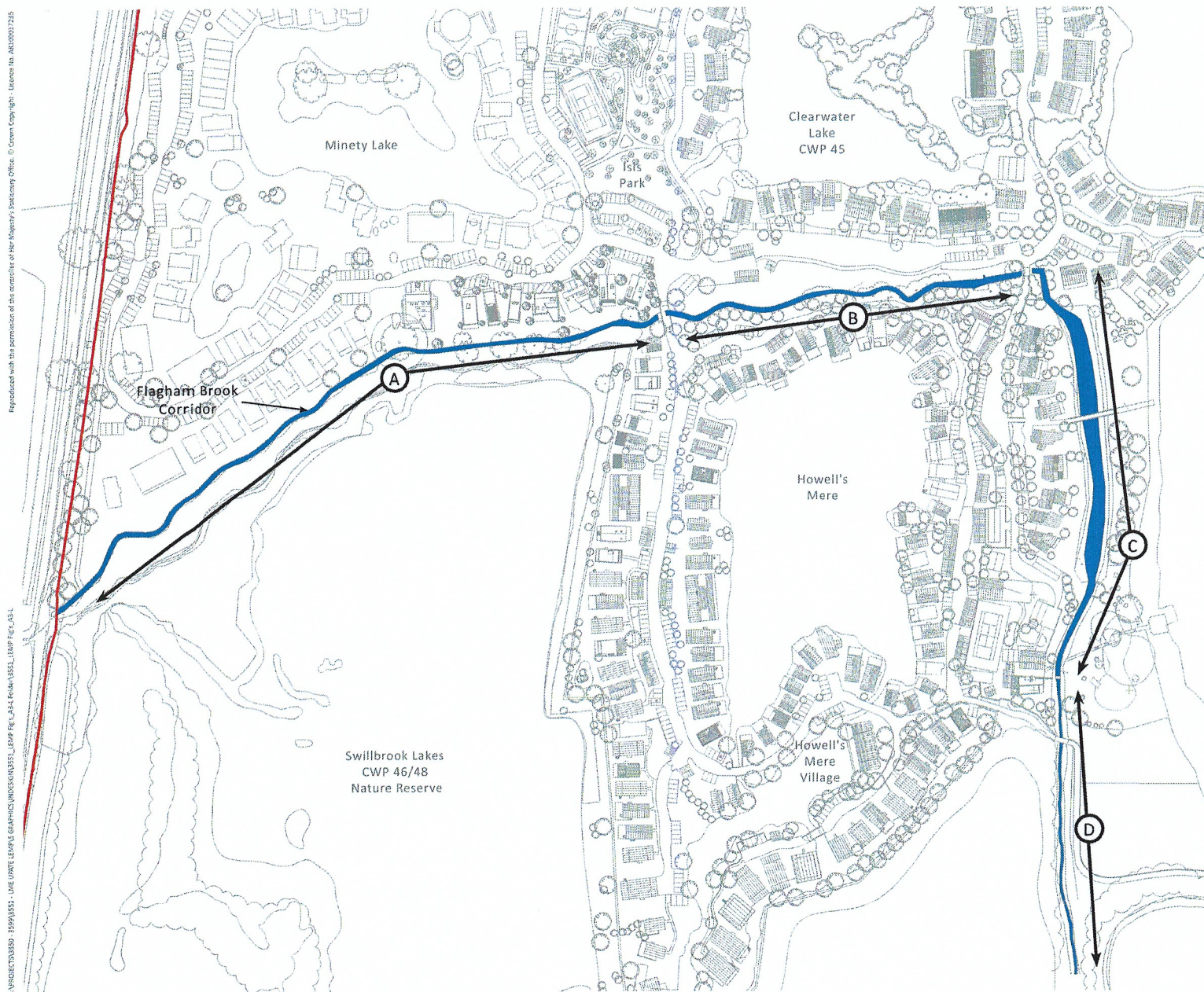
1

1 Theynes Court, Long Ashton Business Park, Yarley Lane, Bristol BS41 9LB
T: +44 (0)117 923 0455 E: enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com



Drawn: SB Checked: AS Date: 14 Jun 22

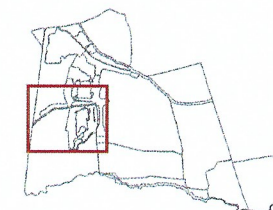
Reproduced with the permission of the architect of the Ministry of the Environment, © Crown Copyright. License No. A6100017255

S:\PROJECTS\3850 - 3850\3851 - LIME URBAN LEAP'S GRAPHICS\UNDESIGNED\3851_LEAP_Fig_384_Plan\3851_LEAP_Fig_384_A3



LEGEND

-  Estate boundary
-  Section reference in prescription table



0 510 20 30 40 50 m
Scale 1 : 2,000 @A3

N
△

LOWER MILL ESTATE
LANDSCAPE AND ECOLOGICAL
MANAGEMENT PLAN
2022 - 2027

FIGURE 13
Flagham Brook Corridor
(refer to relevant prescription table)

THE Landmark
PRACTICE

1 The Hayes Court, Long Ashton Business Park, Hareley Lane, Bazel B541 9EB
T: +44 (0)121 923 0455 E: enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com


Drawn: SB Checked: AS Date: 14 Jun 22



Environmental Planning • EIA • Landscape Architecture • Ecology • Architectural Graphics

LEGEND



 Estate boundary



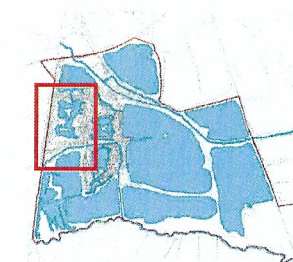
Nature corridors



▶ Lake edges that connect to the nature corridors



Flagham Brook corridor that some nature corridors connect too



0 5 10 20 30 40 50 m

Scale 1 : 2,000 @A3

4

LOWER MILL ESTATE
LANDSCAPE AND ECOLOGICAL
MANAGEMENT PLAN
2022 - 2027

FIGURE 14
Nature Corridors
(refer to relevant prescription table)

THE **Landmark**
PRACTICE

1 Theynes Court, Long Ashton Business Park, Yanley Lane, Bristol BS41 9LB
T: +44 (0)117 923 0455 E: enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com

Drawn: SB Checked: AS Date: 14 Jun 22

APPENDIX A

The Complete Hedge Good Management Guide

The Complete Hedge

Hedges are more than just lines of shrubs. They usually have some sort of herbaceous growth at or near the base and many contain mature trees. They may be set on banks and can have ditches along one or both sides. The best hedges have wide margins, often referred to as buffer strips or headlands, which are managed differently from the arable or grass crop.

It is important that all these different components; mature trees, shrub layer, base/bank, ditch and margins, are thought about when deciding how to manage a hedge.

This advice sheet considers what a good hedge for wildlife looks like. It covers individual hedges as well as networks of hedges at farm and landscape scales. There are accompanying advice sheets on bumblebees, hairstreak butterflies, dead wood insects, ditch life, farmland birds, grass snakes, dormice, hedgehogs and bats.

The advice is applicable to the many other ways hedges are culturally and economically useful, from soil protection, livestock shelter and reducing crop pests to enhancing the landscape.

Hedge Wildlife

Hedges provide significant habitat for many threatened species and are critical for the continued existence of much wildlife in farmed landscapes.

They play a vital role in supporting the complex ecological webs that are essential to life on farms. Over 2,000 species big enough to be seen with the naked eye have been found in just a single hedge!

Hedges are a Priority Habitat* and have 135 associated Priority Species*. Although each species has its own special needs, if the advice given here is followed, most will have a greater chance of survival on farmland.

Examples of Species that Depend on Several Structural Components

Bumblebees feed on pollen and nectar from shrubs and trees in the spring and from flowery margins in the summer. They nest and hibernate in the base of the hedge or in tussocky grass margins. When they move around the countryside, between their nests and food supplies, they prefer to follow hedges rather than cross open fields, so benefit from a network of connected hedges.

All these elements need to be in place for the bees to thrive. If they do well then through their pollinating activities shrubs like blackthorn and hawthorn will produce more berries, which will in turn feed birds like wintering redwings and fieldfares.

The yellowhammer, like many other farmland birds, nests in the shrub layer or hedge basal vegetation and feeds its young on invertebrates caught in grassy and flower-rich margins. They seek refuge from predators and adverse weather in the shrubs, and use trees as song posts. In the winter, seeds in the field margins form a valuable part of their diet.

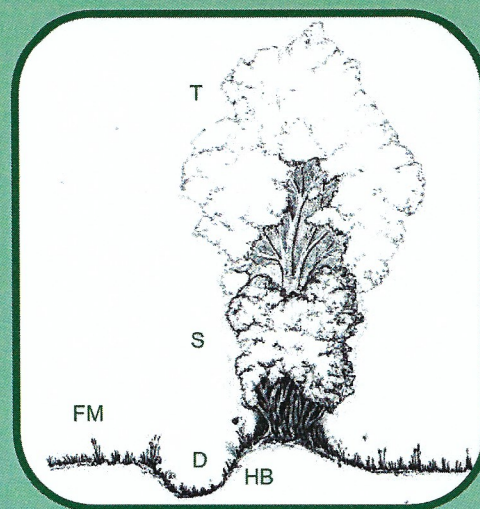


Figure 1: Hedge components: mature tree (T), shrub layer (S), base/bank (HB), ditch (D) and margin (FM)
Illustration: Tony Harris



Flower-rich margin
Photo: Rob Wolton

*Priority Habitats and Species are listed in the UK Post-2010 Biodiversity Framework (which replaces the UK Biodiversity Action Plan.) In England and Wales, they are recognised as Species of Principal Importance for the conservation of biodiversity under Section 41 (England) and Section 42 (Wales) of the Natural Environment and Rural Communities (NERC) Act (2006). The equivalent legislation in Scotland is the Nature Conservation (Scotland) Act 2004, and in Northern Ireland the Wildlife and Natural Environment Act (Northern Ireland) 2011. As a consequence, Government bodies in all four UK countries are required to consider the needs of Priority Habitats and Species when carrying out their duty to further the conservation of biodiversity.

Top 12 Management Principles

Following these management principles will produce healthy hedges, rich in wildlife, and ensure that the different structural components that comprise a hedge are in good condition and complement one another. Hedges managed following these principles will support most of the threatened species which use hedges as well as common ones.

1. Consider the Complete Hedge

Resist the temptation to think about a hedge just as a line of shrubs or trees. Manage all the components of the hedge to benefit wildlife. About two-thirds of Priority Species make significant use of at least two hedge components, and one-third three components or more.

Management that considers both shrubs and trees is particularly beneficial, as is management that considers the condition of the base and margins together with the shrub layer.

2. Promote joined-up Hedge Landscapes

Retain all hedges and plant new ones to fill in large gaps in the farm network. The more good hedges there are, and the better connected they are with other hedges and habitats like woodlands and ponds, the richer the wildlife on a farm.

There is increasing evidence that shows how wildlife, from bumblebees to bats, uses hedges to move around the countryside to find food and mates. Landscapes with a network of connected hedges help animals to disperse, allowing new sites to be colonised and the exchange of genes between populations. It may help them to adapt to climate change.

Small gaps such as gateways are probably not a problem for most species; for those species that find it difficult to cross hedges, such gaps may allow them to move more freely through the landscape.

3. Create Structural Diversity across the Farm

Plan a range of hedge heights; some tall, some shorter. Different species like hedges of different heights, for example grey partridges and whitethroats prefer short hedges (about 1.5m high) while others like turtle doves and bullfinches prefer taller ones (over 4m).

Adopting the **Management Cycle*** (Fig. 2) approach leads to good structural diversity. This cycle starts with new planting or the rejuvenation of an existing hedge by laying or coppicing.

Over the next 20 years or more, the shrub layer is cut at intervals to keep it thick, while being allowed gradually to increase in width and height. When the hedge starts to get gappy at the base, allow it to grow up, ready for rejuvenation (by laying and coppicing) and the start of a new cycle.

4. Encourage a Range of Shrubs and Trees

When planting new hedges, use a wide range of different and locally-appropriate native shrubs and trees. The greater the diversity of plants in a hedge, the more wildlife it will support and the longer the flowering and fruiting season.

Many insects and other invertebrates specialise on just one or a few plants, sometimes on just one part of a plant, like its leaves, flowers or fruits. A range of different shrubs will ensure a long flowering and fruiting season.



Dorset hedged landscape
Photo: Dave Pollard

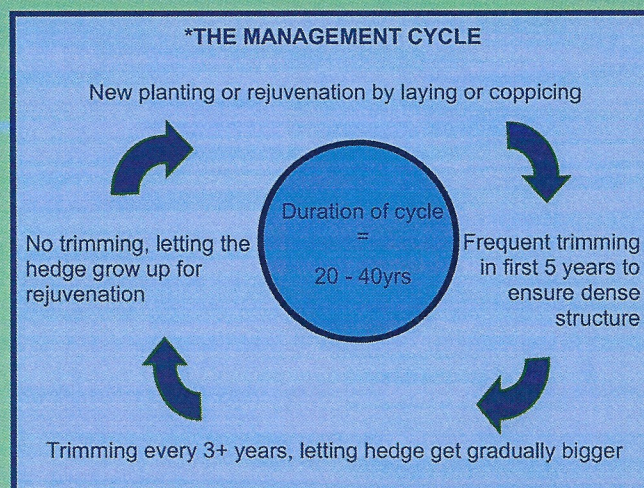
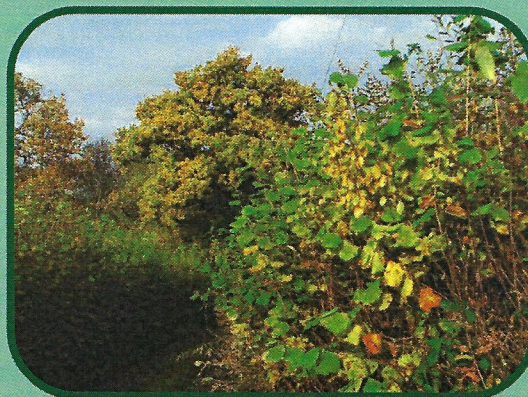


Figure 2. The management cycle



Species-rich hedge
Photo: Rob Wolton

Top 12 Management Principles

5. Keep the Shrub Layer Dense

Through good trimming practice (Management Principle 6), adopting the management cycle approach and careful livestock control, create hedges that are wide and thick. The wider and thicker the shrub layer the better, as long as ditches and margins are not shaded out.

Dense hedges provide shelter from harsh weather, have warmer sides and provide good nesting sites for small birds. Aim for hedges that are at least 1.5m wide and dense right down to ground level. Fencing may be needed to prevent the bottom of hedges being grazed out on livestock farms.

6. Allow Shrubs to Flower and Fruit

Encourage flowering and fruiting by trimming hedges on rotation and only once every three or more years, raising the cutting height each time. Nectar and pollen from flowers is vital to many insects, ranging from beetles which inhabit decaying wood as larvae, through to bees, flies and butterflies.

In the autumn and winter, blackberries, haws, sloes and other berries are an important food source for many farmland birds and small mammals. Most of these berries are only produced on growth that is two years old or more. Hedges that are cut every 3 years produce more than three times as many berries as those that are trimmed every year and 40% more berries than those cut every 2 years.

Try to avoid cutting the hedge back to the same point even if trimming every year. Raising the cutting height on each occasion by about 10–15cm will increase the berry crop and improve the shrub health. Importantly, trim hedges on a rotation, so only a third or less are cut each year, scattered across the farm. Avoid cutting in the bird breeding season (March to August), aiming for late winter (January/February) if possible.

7. Look after Mature Trees and Encourage New Ones

Look after mature hedgerow trees, retaining as much standing and fallen dead wood as possible. Encourage new trees by selecting and marking promising saplings or stems to grow on or by new planting. Scattered mature hedgerow trees are of great importance to wildlife, but across Britain we lost 4% of these trees in just the last decade: we need a further 30,000 new trees each year to keep numbers stable.

Hedgerow trees support a wide range of deadwood insect specialists, especially beetles, and also attract huge numbers of insects for birds and bats to feed on. Holes in trees provide nesting sites for birds such as tree sparrow and barn owl, and roosting places for bats. Ivy provides nectar and berries when other food supplies are scarce and does not kill trees, so stems should not usually be cut.

Exposed trunks (especially ash) can, however, support important lichens, and here ivy and shading shrubs may need to be cut back. Encourage both tall trees like oak and beech and fruit trees like crab apple. A single mature hawthorn will produce as many berries each year as 200m of hedge cut the previous year.

8. Encourage Out-Growths

The very best hedges for wildlife often have clumps of brambles and roses growing out from the side, together with some suckering blackthorn or elm growth. These patches create a scalloped and soft edge between the shrub layer and the crop. Many birds and dormice favour nesting in bramble outgrowths, and brown hairstreak butterflies will lay their eggs on blackthorn suckers. Patchy outgrowths between 1m and 2m wide are ideal.



Hedge with thick shrub layer
Photo: Rob Wolton



Hawthorn berries in hedge
Photo: Rob Wolton



Young ash tree and hedge flail
Photo: Rob Wolton

Top 12 Management Principles

9. Encourage Thick Basal Vegetation

Encourage tussocky grass-rich growth to develop at the base of the shrub layer, so there's at least 1m of such growth on each side, preferably with wildflowers present.

Dense grassy ground cover is essential for many invertebrates including spiders, beetles, flies and caterpillars, both for overwintering and breeding. Some of these move out into the field in the summer, helping to control crop pests and so reducing the need for pesticides.

Thick basal cover is also essential for birds like grey partridges that nest on or close to the ground and whose chicks need a plentiful supply of invertebrates. Grass snakes and hedgehogs are further examples of species favouring dense cover. Perennial herbs like cow parsley and hogweed are of great value to pollinators like hoverflies while woundworts and dead-nettles are important for bees, fleabane and knapweed for butterflies.

Only cut the base once every 5 years to control scrub encroachment, after flowering and on rotation, and, on pasture, protect it from heavy grazing. The establishment of wildflowers like knapweed, meadow vetchling and hogweed is more difficult and may require reseeding and specialist advice. Hedge banks can support rich plant communities, rich with woodland species, like bluebells, violets and ramsons. Encourage these flowers by cutting away shading growth and trimming or grazing the banks lightly each year.

10. Encourage Flower-Rich Margins

On arable land the creation of flower-rich margins by careful cultivation beyond the tussocky growth at the hedge base will be very beneficial to both birds and pollinators like bees.

Bees thrive on clover and vetch flowers, while partridges, finches and buntings find spiders, grasshoppers and the like for their nestlings, and seeds essential for winter survival. Seed mixtures will have to be chosen carefully depending on which wildlife you hope to attract, and the margins will require frequent management, including appropriate cutting and selective herbicide use to control noxious or aggressive weeds. The wider the margins the better.

11. Manage Ditches

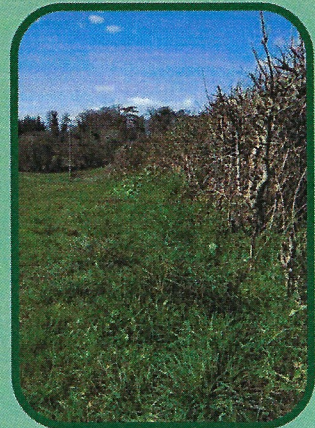
Cut back branches over ditches and clean them about once every 5 years, encouraging shallow sides. Wet ditches with at least a seasonal, if intermittent, flow of water, can produce huge numbers of small insects. These include non-biting midges, which provide the main food for a diverse range of animals such as swallows and pipistrelle bats.

The best wildlife ditches have gently sloping well-vegetated sides and are not shaded by overhanging branches. Cleaning ditches infrequently on rotation will help to keep them at least moist, while retaining some aquatic plants and decomposing debris.

12. Keep Fertilisers and Pesticides away from Hedge Bases and Ditches

Fertilisers result in dense growths of goose-grass (cleavers), nettles and docks, and result in the loss of many flowers. Pesticides like herbicides and insecticides, unless used very carefully, are likewise likely to lead to much loss.

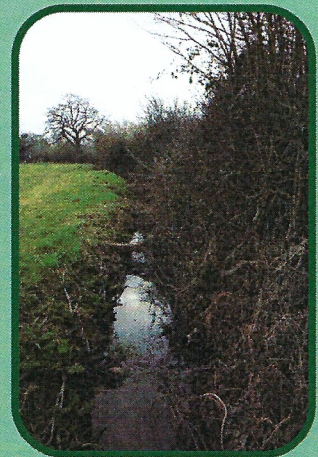
All these chemicals should be kept at least 2m away from hedge bottoms and ditches, and care should be taken not to allow them to run-off fields into hedge bottoms.



Tussocky grass margin
Photo: Rob Wolton



Species-rich margin
Photo: Rob Wolton



Hedge ditch
Photo: Rob Wolton

Further Information

The hedgerow management cycle. Hedgelink leaflet. www.hedgelink.org.uk
A cut above the rest: managing hedges for the future. Hedgelink DVD. www.hedgelink.org.uk
Growing farmland wildlife (with Environmental Stewardship). Natural England and Defra DVD.
<http://publications.naturalengland.org.uk/publication/608078>
Hedge cutting, Hedge planting, Hedgerow trees. Natural England leaflets. www.hedgelink.org.uk

