A sample of Elm branches in reach of the ground were searched. Similar to the 2011 and 2013 searches, we used a long-handled pruner and a pole-grab to enable searches of a sample of some branches not in reach of the ground. This enabled sampling of some branches to a height of 5 metres.

Each sample area was visited and searched for an approximately equal period of time. Where eggs were found the condition of the elm was also recorded. The assessment of condition followed the categorisation established in Goodyear *et al.* 2011, see table below.

QUALITY	DEFINITION
GOOD	Usually a medium to larger tree, maybe with flower buds developing and Wych Elm-like qualities. All trees identified to this level of quality were felt to be able to support White-letter Hairstreak even if eggs weren't found.
MODERATE	A medium sized elm or of sufficient, sheltered quality that could possibly be suitable for egg laying, more so if in a favourable location.
POOR	Tree not favourable for egg-laying due to a combination of small size, poor health (canker, DED), very small leaves and buds, and/or poor, exposed location.
VARIABLE	A group of elms showing a combination of the above qualities.

Blackthorn (which supports Black Hairstreak and Brown Hairstreak) and Oak (which supports Purple Hairstreak) were not targeted for searching.

3. Results

Three White-letter Hairstreak eggs were found and recorded. One egg was intact and two eggs were empty (already hatched)..

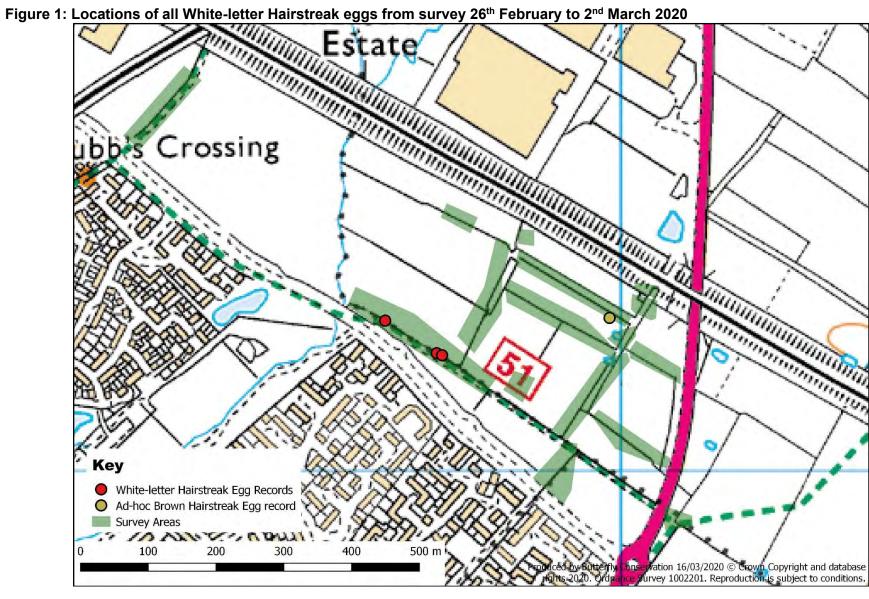
All three eggs were recorded in the same sample area (see Figure 1) and all three elms were assessed to be of Moderate condition.

Although we were not targeting Blackthorn for searches, a Brown Hairstreak egg was spotted on a low Blackthorn sucker. This was also recorded (see Figure 1).

All of the sample areas contained elms of Good, Moderate or Variable quality. It was noted that many elms on the site are in Poor condition or dead, presumably as a result of the ongoing presence of Dutch Elm Disease (DED).

Summary of Records

Species	Date	Stage	Grid Reference	Intact	Hatched	Total
Satyrium w-album	03/03/2020	Egg	SP5972922168	0	1	1
Satyrium w-album	03/03/2020	Egg	SP5973722165	0	1	1
Satyrium w-album	27/02/2020	Egg	SP5965322216	1	0	1



4. Discussion

The results confirm the continued presence of breeding White-letter Hairstreak on the site. It also confirms the continued presence of breeding Brown Hairstreak on the site (Brown Hairstreak is believed to be widespread on the site).

White-letter Hairstreak eggs are relatively difficult to find and only a small proportion of any elm is usually accessible to search. The discovery of three eggs suggests there are many more on the site. The absence of records from some sample areas does not indicate the absence of White-letter Hairstreak activity from those area.

The recording of hatched eggs suggests that the surveys were slightly late this season. Hatched eggs are often harder to see. Had the survey been conducted earlier in the year it would likely have been easier to locate more eggs.

White-letter Hairstreak populations are known to fluctuate from year to year depending on a wide variety of factors. The results of any stand-alone egg search cannot therefore provide an indication of population size or of overall distribution; eggs were found in 2013 in areas where eggs were not found in 2011 and vice-versa. In addition, in 2013 adult White-letter Hairstreak was recorded in a sample area where no eggs had been recorded but elms were of suitable quality for egg-laying. The combination of these three surveys indicates there is an established and dynamic population on the site.

It is recommended that a survey of adult White-letter Hairstreak is undertaken in the summer. This is done by scanning the canopy using binoculars and recording the presence of adult butterflies, specifically male activity, from mid-June to mid-August, ideally between 09:00-11:00 or 14:00-17:00.

In England, Section 41 of the NERC Act (2006) gives public bodies a duty to conserve Species of Principal Importance for the purpose of conserving biodiversity. Therefore the presence of White-letter Hairstreak (and Brown Hairstreak) on the site should be taken into consideration by any proposed development and must be taken into account by the planning authority.

Many elms on site were observed to be in Poor condition. A more accurate assessment of elm condition would be better made during the spring or early summer. Retaining good and moderate elms on the site, and managing those elms appropriately, is of increasing importance. White-letter Hairstreak will only lay eggs on elm branches in sunlight and in sheltered positions. Management is required to prevent overshading of the elm. Native Elm should be encouraged and allowed to sucker from roots. When this growth reaches 5-10m tall, it should be coppiced. Avoid clipping elm in hedgerows until after July to ensure larvae have a plentiful supply of flowers and young leaves to feed upon.

Planting further elms within the site is recommended, although it has to be considered that a colonisation of a new area would only be likely when the tree becomes sexually viable. The highest priority should be the conservation of the native elms already on the site and, identified through the 2011 ad 2013 surveys.

Actions identified by JNCC (2010) include:

- Ensuring the planting of Dutch Elm disease resistant Elm in the English countryside
- Ensuring current management of remaining sites is appropriate (retaining elm trees, coppicing suckering elm on a 10 year cycle, sensitive hedgerow management)

Butterfly Conservation has recently produced a position statement on the planting of Disease Resistant Elms. Whilst planting might be considered, we believe that conserving native and naturalised elm should form the core part of any elm management strategy.

The Gavray Drive site is the only site in Bicester known to support a breeding colony of White-letter Hairstreak. The butterfly has also been recorded on the public footpath crossing the Industrial Estate (2013) and 1.6km to the east (2017). The next nearest known colonies are at Piddington, 6.4km to the south and Calvert Jubilee, 7.5km to the east. A previous experiment has recorded adults regularly moving between trees up to 300m apart (Davies 1985 & 1986). Many colonies are restricted to a small group of trees, but dispersal appears quite common and individuals have been seen several kilometres from known breeding sites.

It remains important to consider the importance of the Gavray Drive site for all five English Hairstreak butterflies, including Brown Hairstreak, Purple Hairstreak, Green Hairstreak and the Black Hairstreak.

5. References

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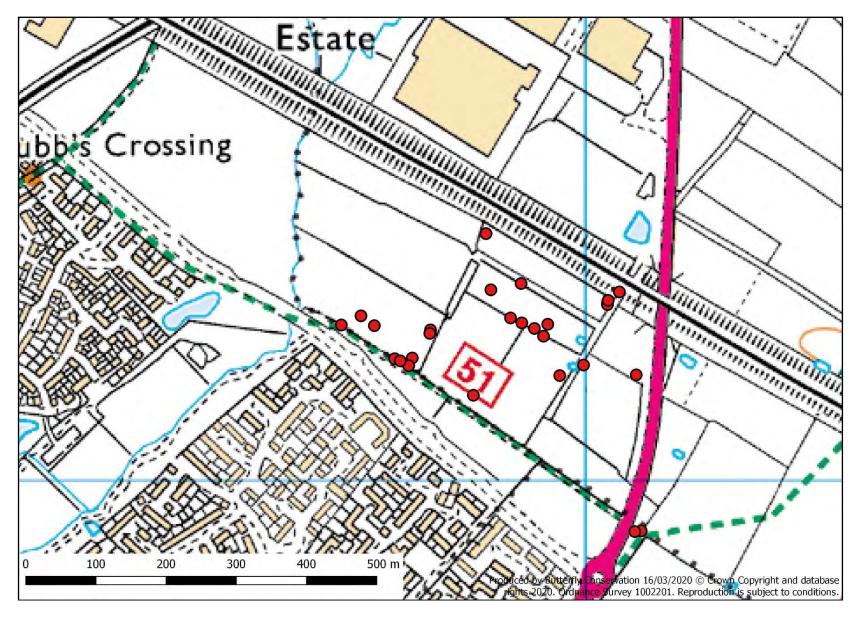
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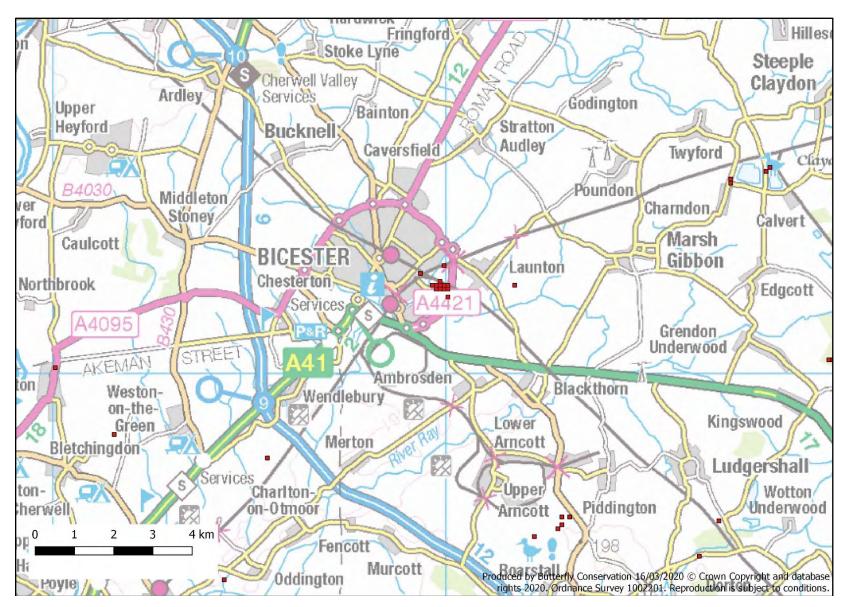
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JNCC (2010) *UK BAP priority species accounts - Satyrium w-album version* 2 http://archive.jncc.gov.uk/_speciespages/2586.pdf

Appendix A: Locations of all White-letter Hairstreak eggs from surveys 2011, 2013, 2020



Appendix B – White-letter Hairstreak Records since 2000 in the wider Bicester area



Plans

Plan EDP 1	Extended Phase 1 Habitat Plan (edp0124_d130c 13 July 2021 MJC/WC)
Plan EDP 2	Statutory Designated Sites (edp0124_d155a 13 July 2021 GY/VF)
Plan EDP 3	Non-statutory Designated Sites (edp0124_d156a 13 July 2021 GY/VF)
Plan EDP 4	Hedgerow Plan (edp0124_d158a 13 July 2021 GY/VF)
Plan EDP 5	Langford Brook River Corridor Survey (edp0124_d146a 13 July 2021 MH/ND)
Plan EDP 6	Wintering Bird Survey Results (BOCC only) – December 2019 (edp0124_d142a 13 July 2021 MJC/CL)
Plan EDP 7	Wintering Bird Survey Results (BOCC only) – January 2020 (edp0124_d143a 13 July 2021 MJC/CL)
Plan EDP 8	Wintering Bird Survey Results (BOCC only) – February 2020 (edp0124_d144a 13 July 2021 MJC/CL)
Plan EDP 9	Wintering Bird Survey Results (BOCC only) - March 2020 (edp0124_d145a 13 July 2021 MJC/CL)
Plan EDP 10	Breeding Bird Survey Results (BOCC only) - April 2020 (edp0124_d139a 13 July 2021 MJC/VF)
Plan EDP 11	Breeding Bird Survey Results (BOCC only) - May 2020 (edp0124_d140a 13 July 2021 MJC/VF)
Plan EDP 12	Breeding Bird Survey Results (BOCC only) –June 2020 (edp0124_d141a 13 July 2021 MJC/VF)
Plan EDP 13	Trees with Bat Roost Potential (edp0124_d157a 13 July 2021 GY/VF)
Plan EDP 14	Transect Routes and Anabat Locations (edp0124_d147a 13 July 2021 GY/VF)
Plan EDP 15	Bat Transect Survey Results (Sheets 1 to 6)

(edp0124_d148a 13 July 2021 GY/VF)

Plan EDP 16 Dormouse Survey Plan

(edp0124_d149a 13 July 2021 GY/VF)

Plan EDP 17 Otter and Water Vole Survey Results

(edp0124_d150a 13 July 2021 GY/VF)

Plan EDP 18 Great Crested Newt Survey Plan

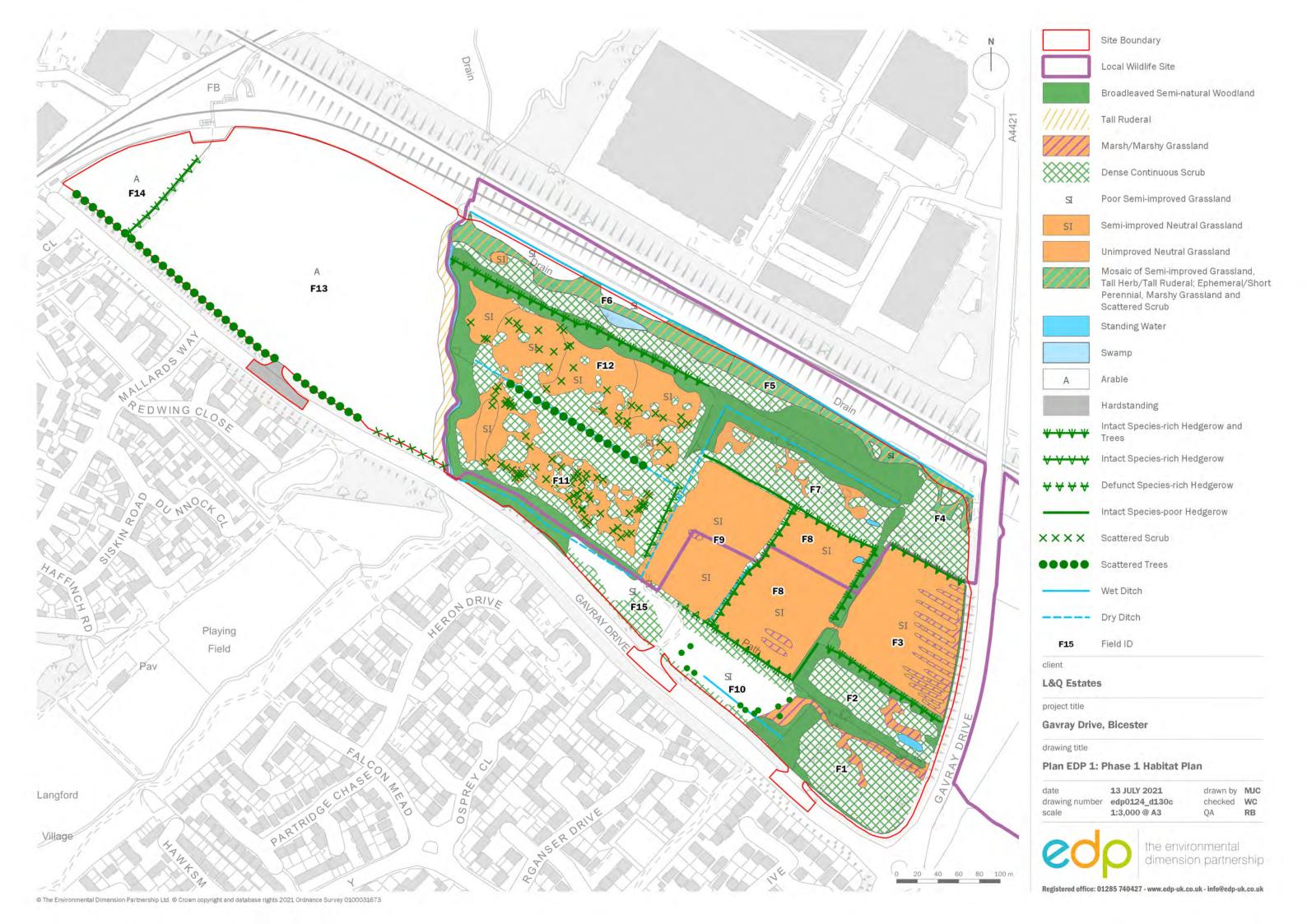
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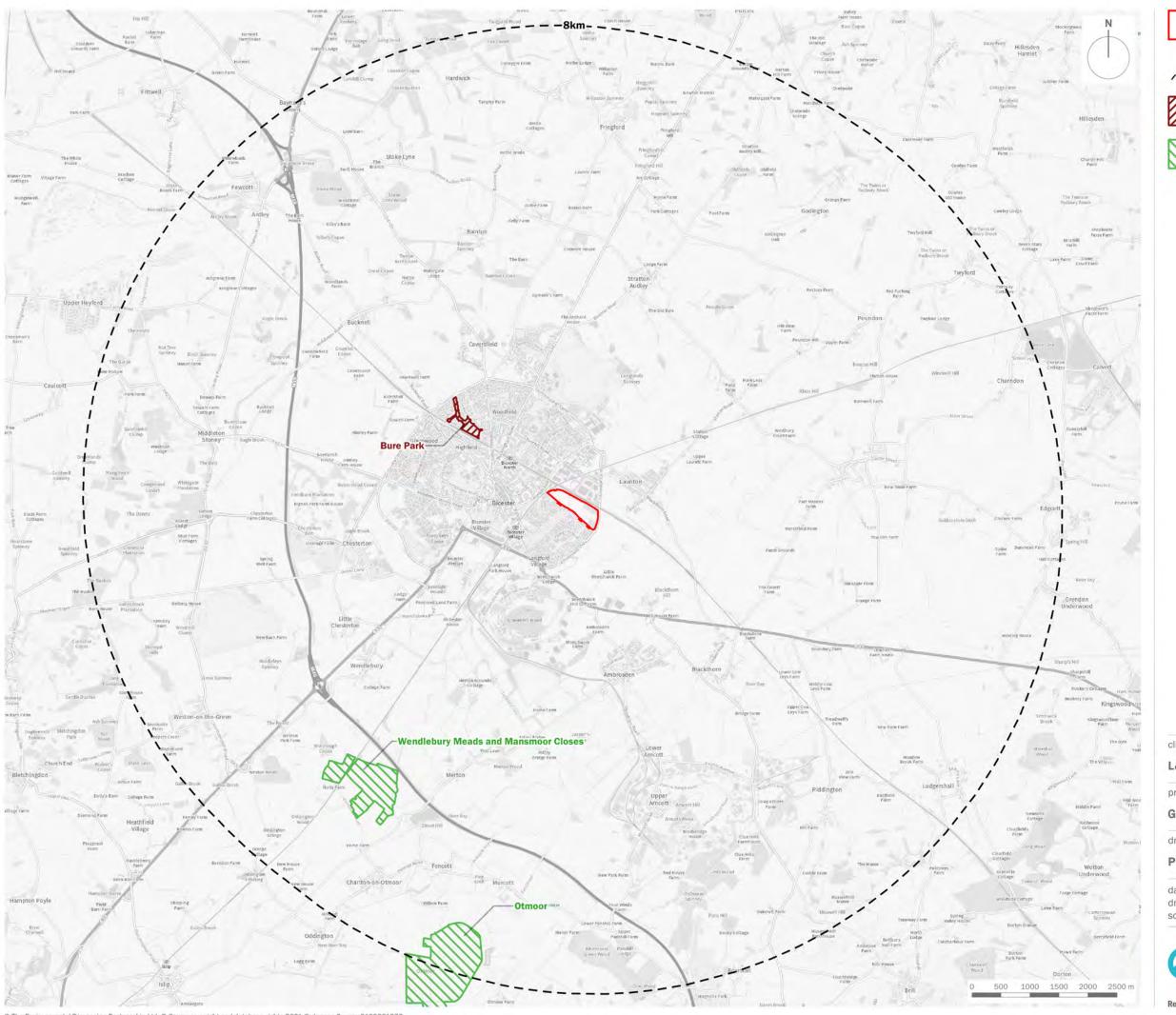
Plan EDP 19 Reptile Survey Plan

(edp0124_d152a 13 July 2021 GY/VF)

Plan EDP 20 Hairstreak Butterfly Records 2020

(edp0124_d154a 13 July 2021 GY/VF)







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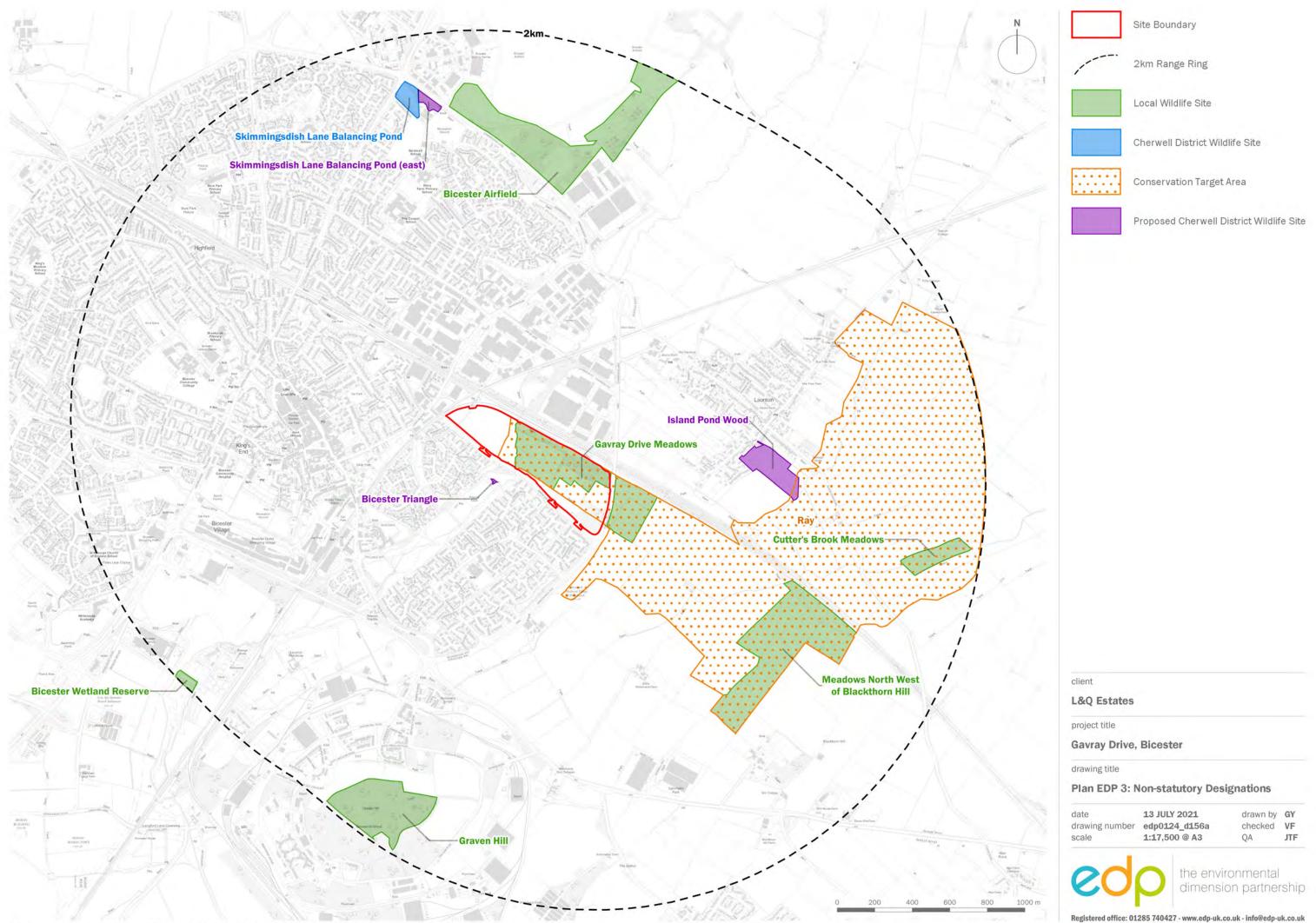
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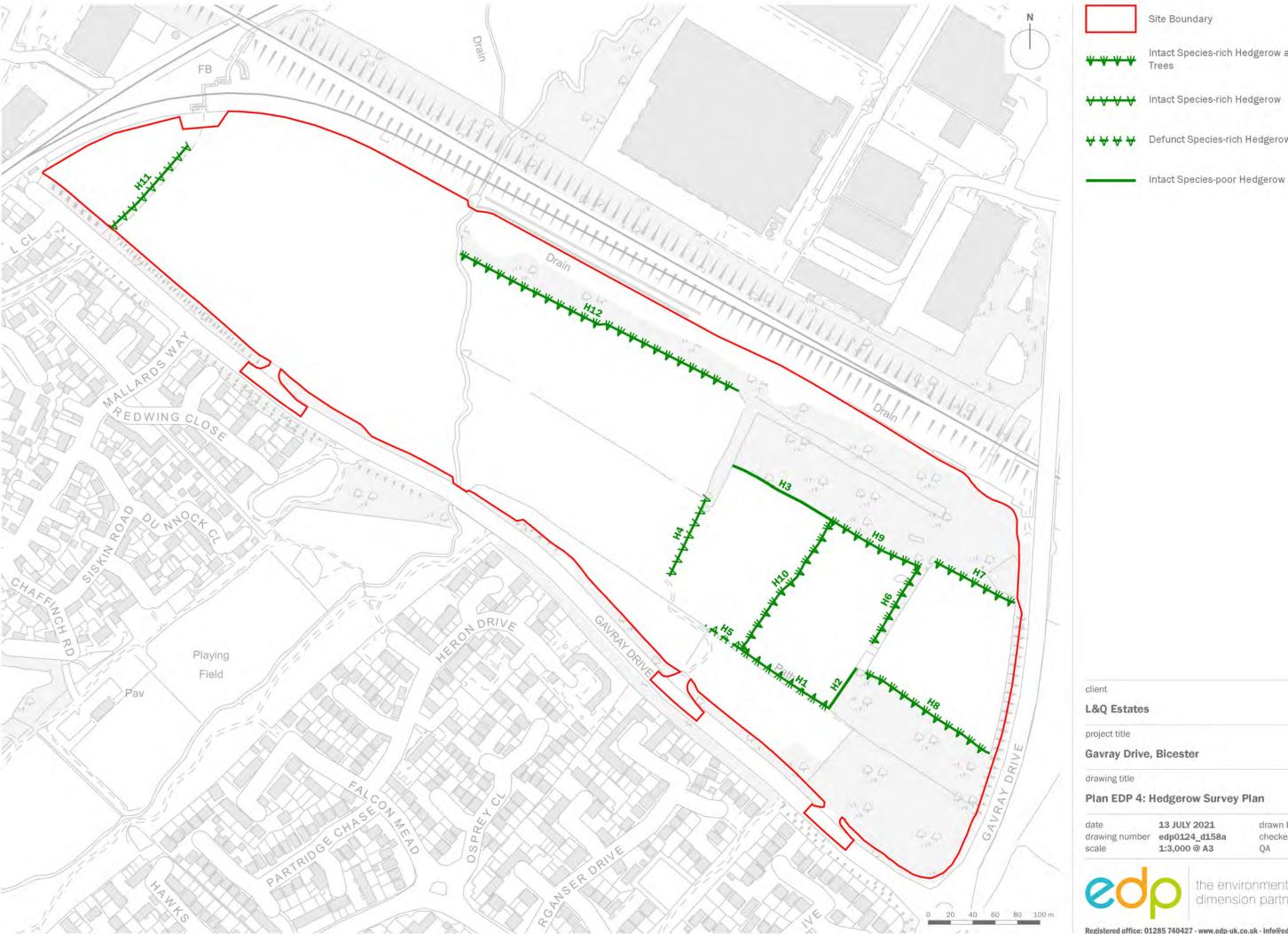
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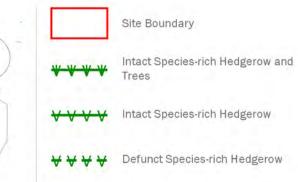
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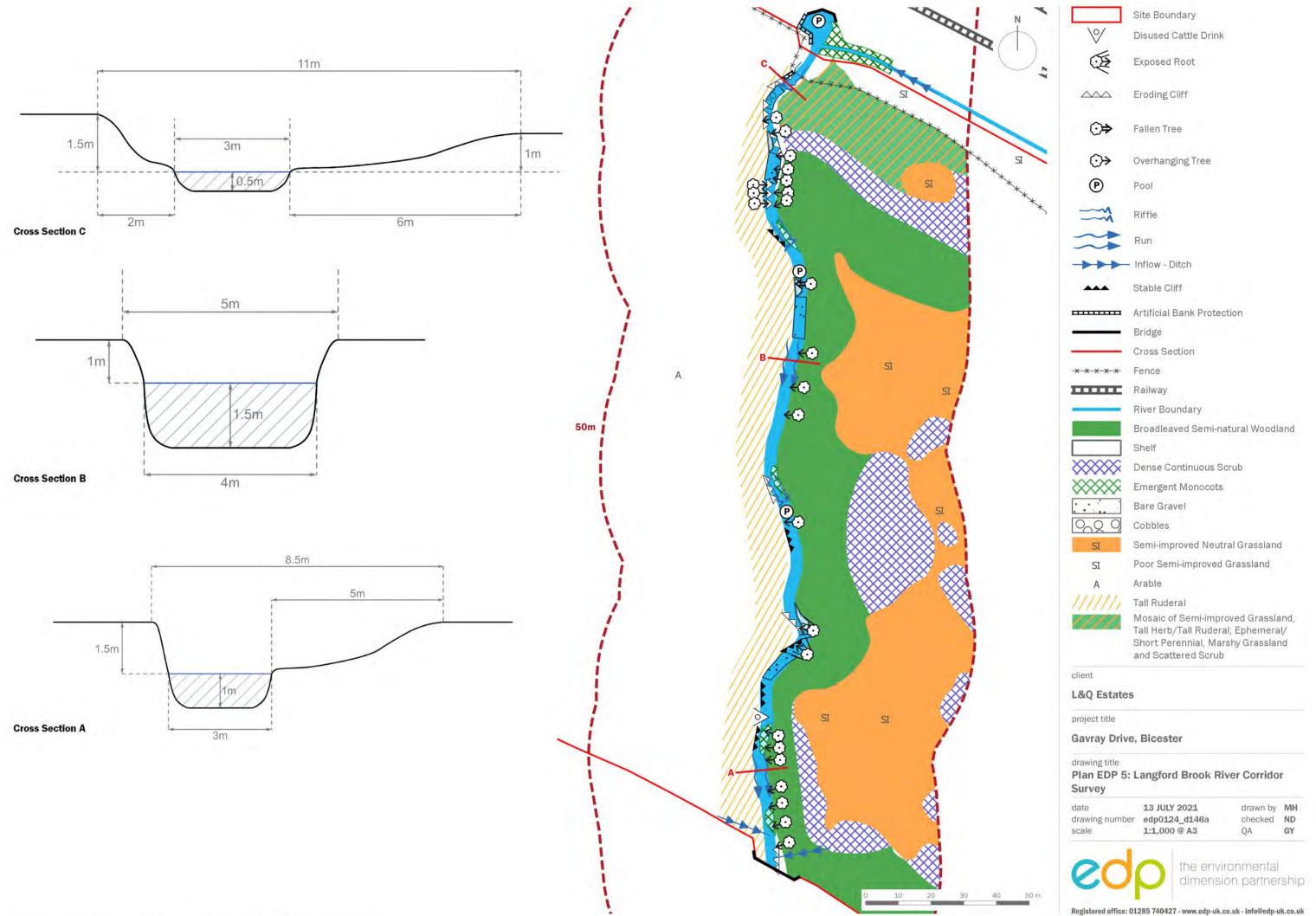


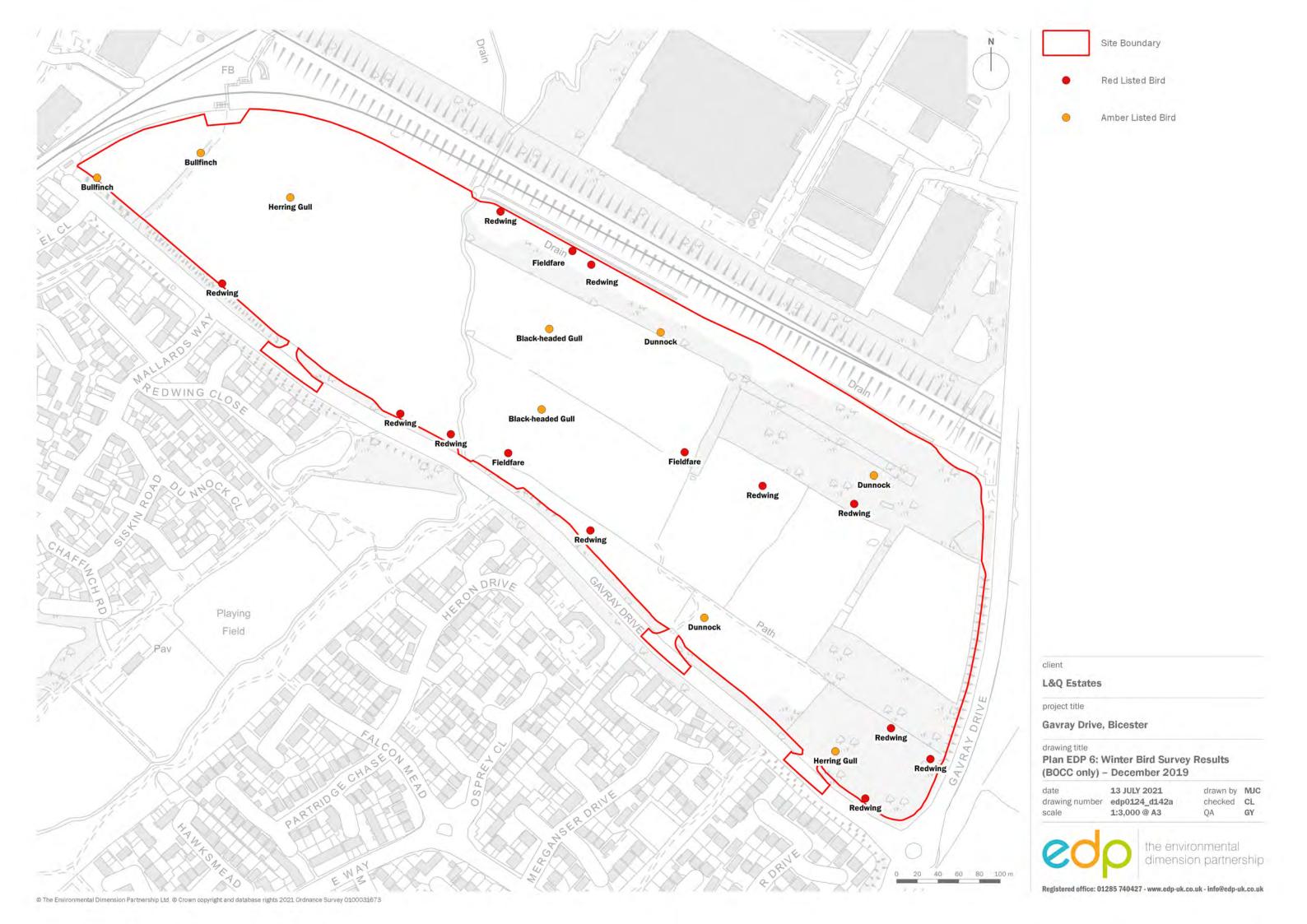


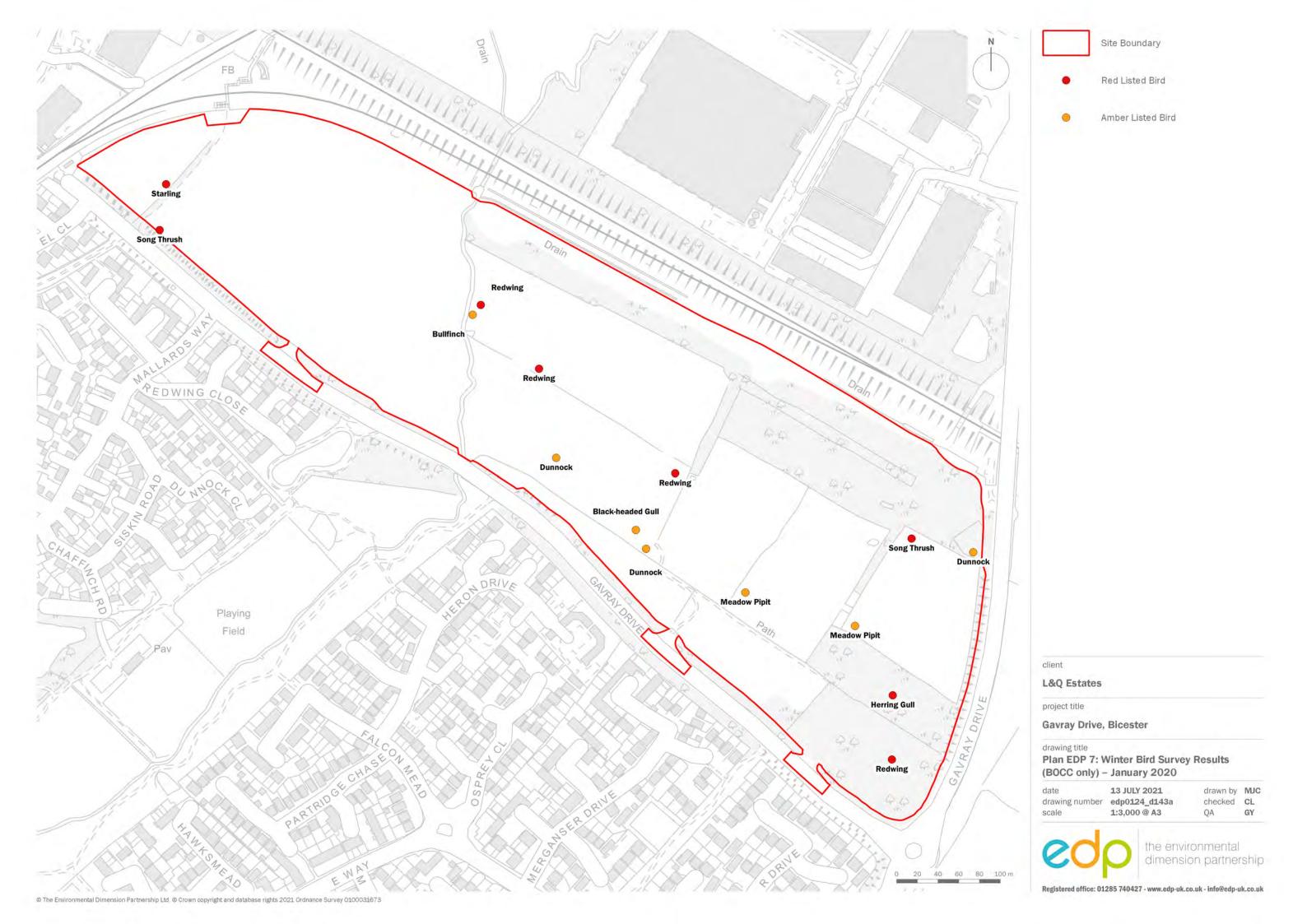


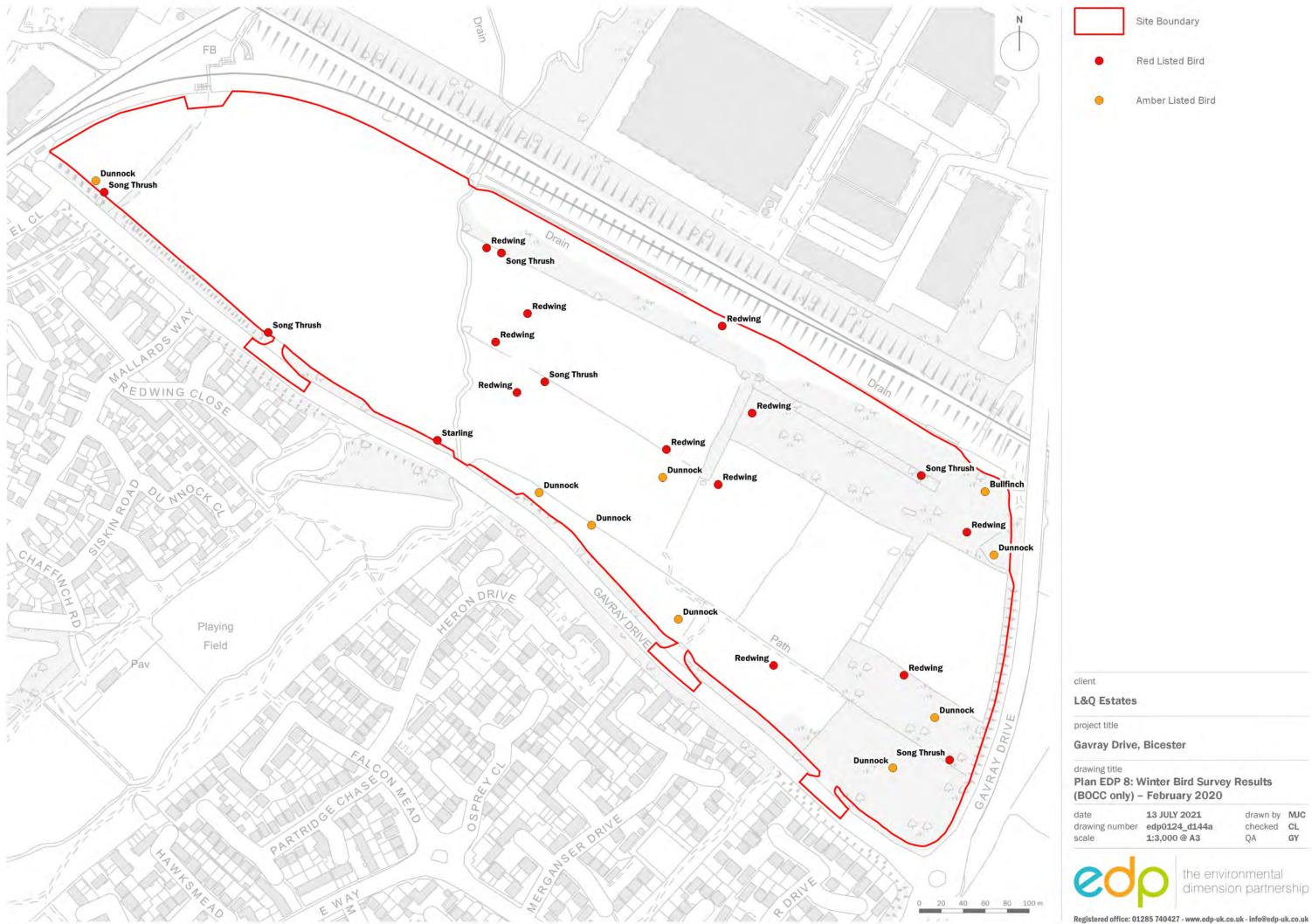
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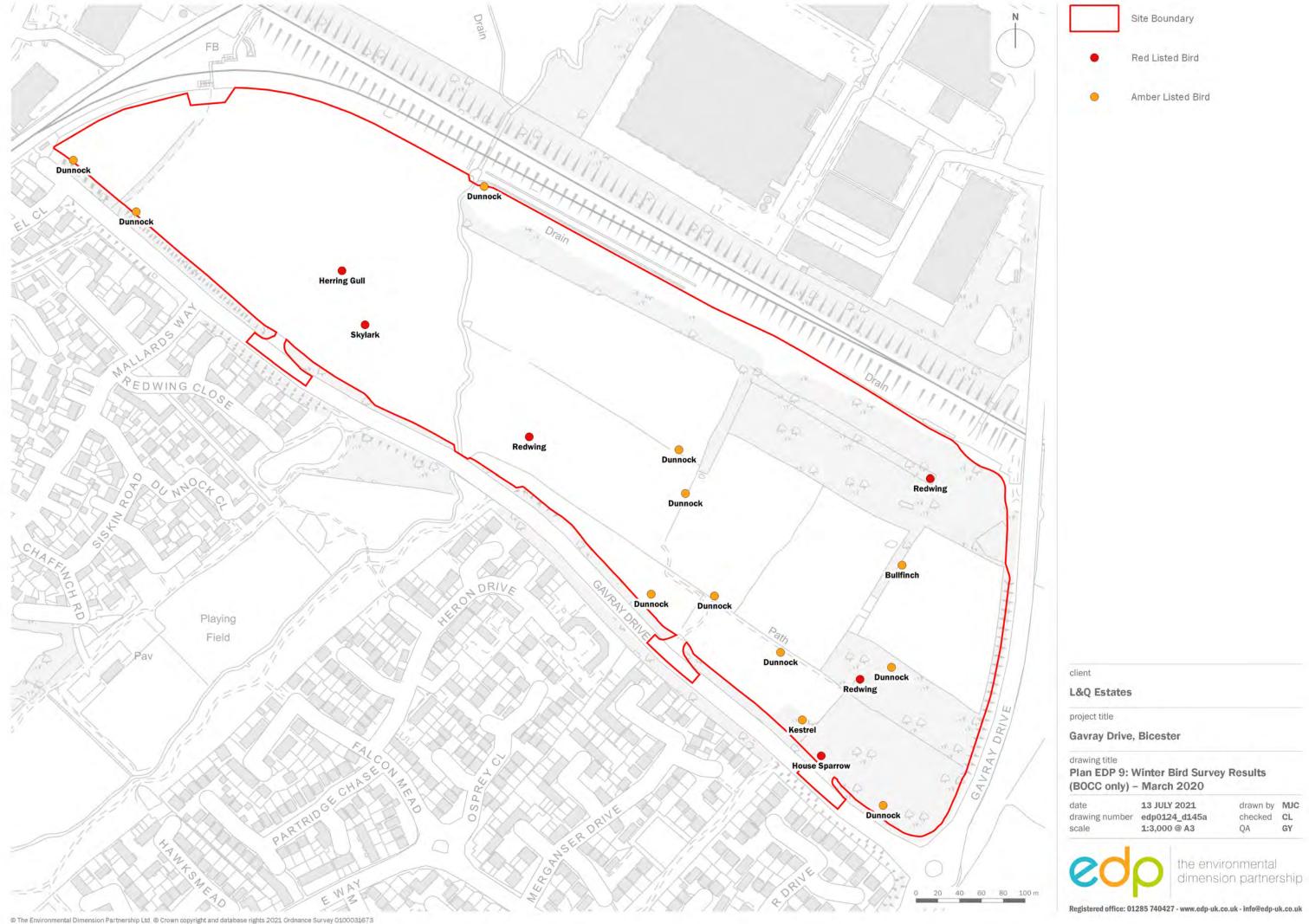
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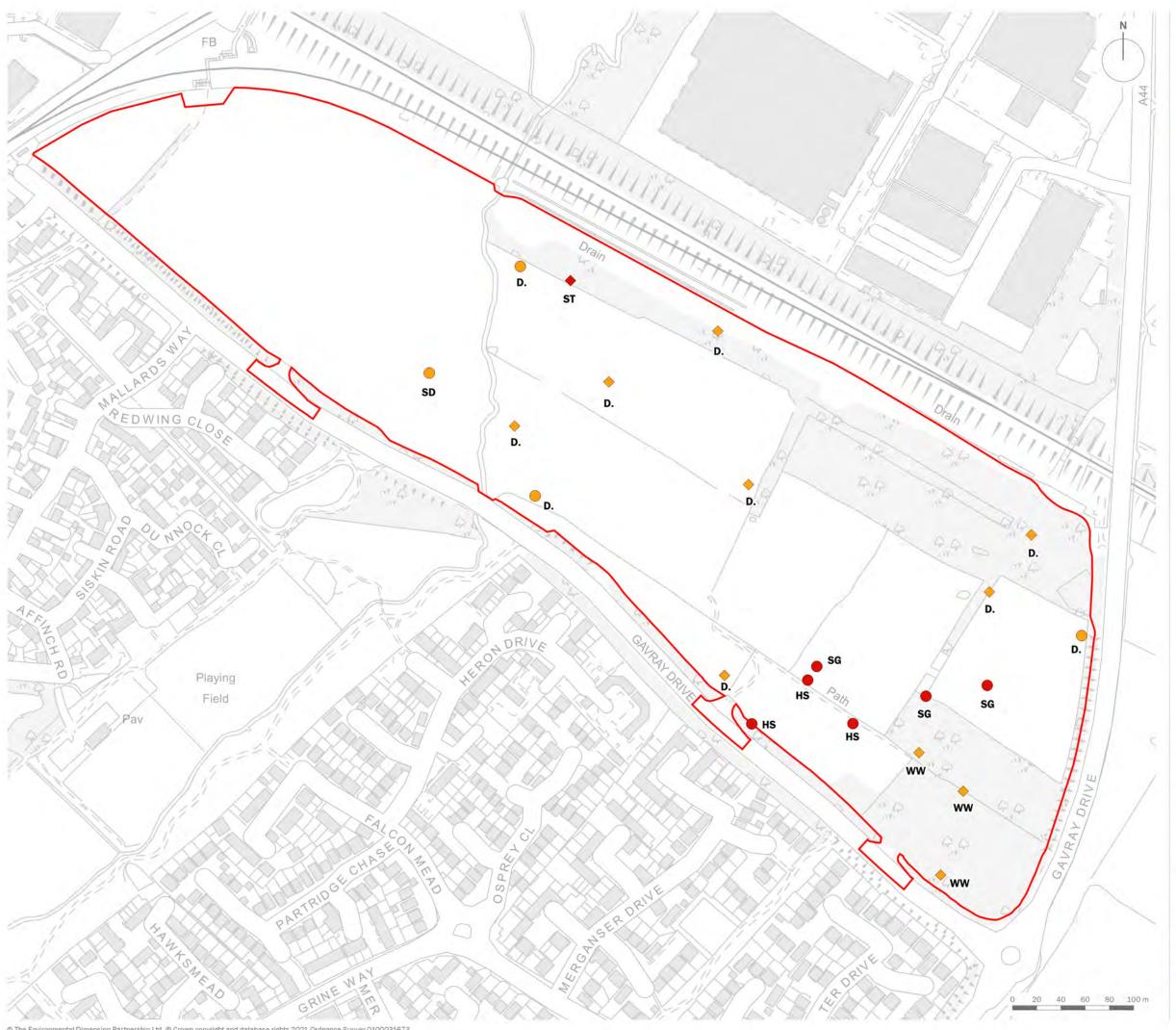














Site Boundary



Red Listed Bird



Amber Listed Bird



Singing Bird

Label	Species
D.	Dunnock (Prunella modularis)
HS	House Sparrow (Passer domesticus)
SD	Stock Dove (Columba oenas)
SG	Starling (Sturnus vulgaris)
ST	Song Thrush (Turdus philomelos)
WW	Willow Warbler (Phylloscopus trochilus)

client

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project title

Gavray Drive, Bicester

drawing title

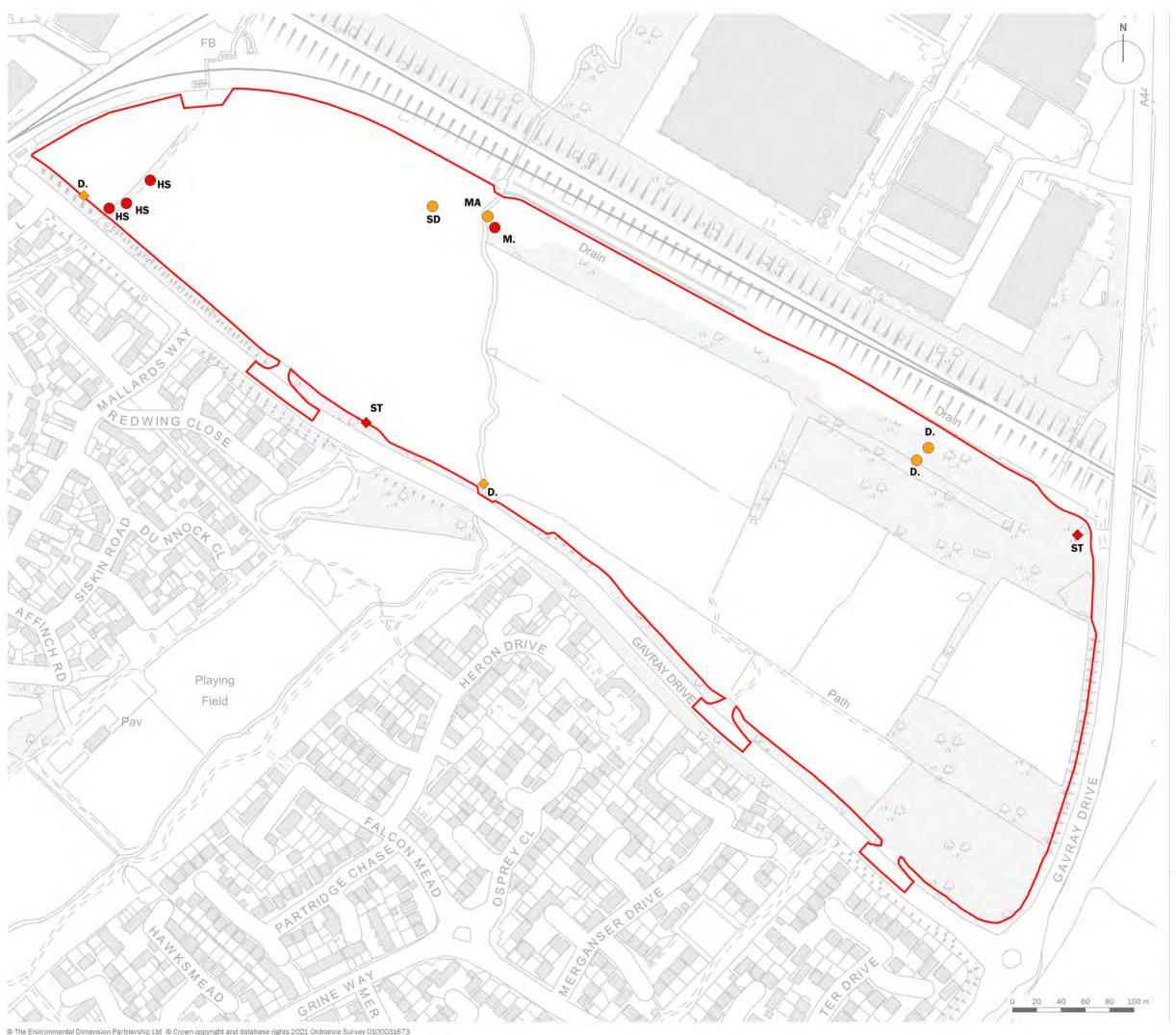
Plan EDP 10: Breeding Bird Survey Results

(BOCC only) - April 2020 13 JULY 2021

date drawing number edp0124_d139a scale 1:3,000 @ A3 drawn by MJC checked VF QA GY



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Site Boundary



Red Listed Bird



Amber Listed Bird



Singing Bird

Label	Species
D.	Dunnock (Prunella modularis)
HS	House Sparrow (Passer domesticus)
M.	Mistle Thrush (Turdus viscivorus)
MA	Mallard (Anas platyrhynchos)
SD	Stock Dove (Columba oenas)
ST	Song Thrush (Turdus philomelos)

client

L&Q Estates

project title

Gavray Drive, Bicester

drawing title

Plan EDP 11: Breeding Bird Survey Results

(BOCC only) - May 2020

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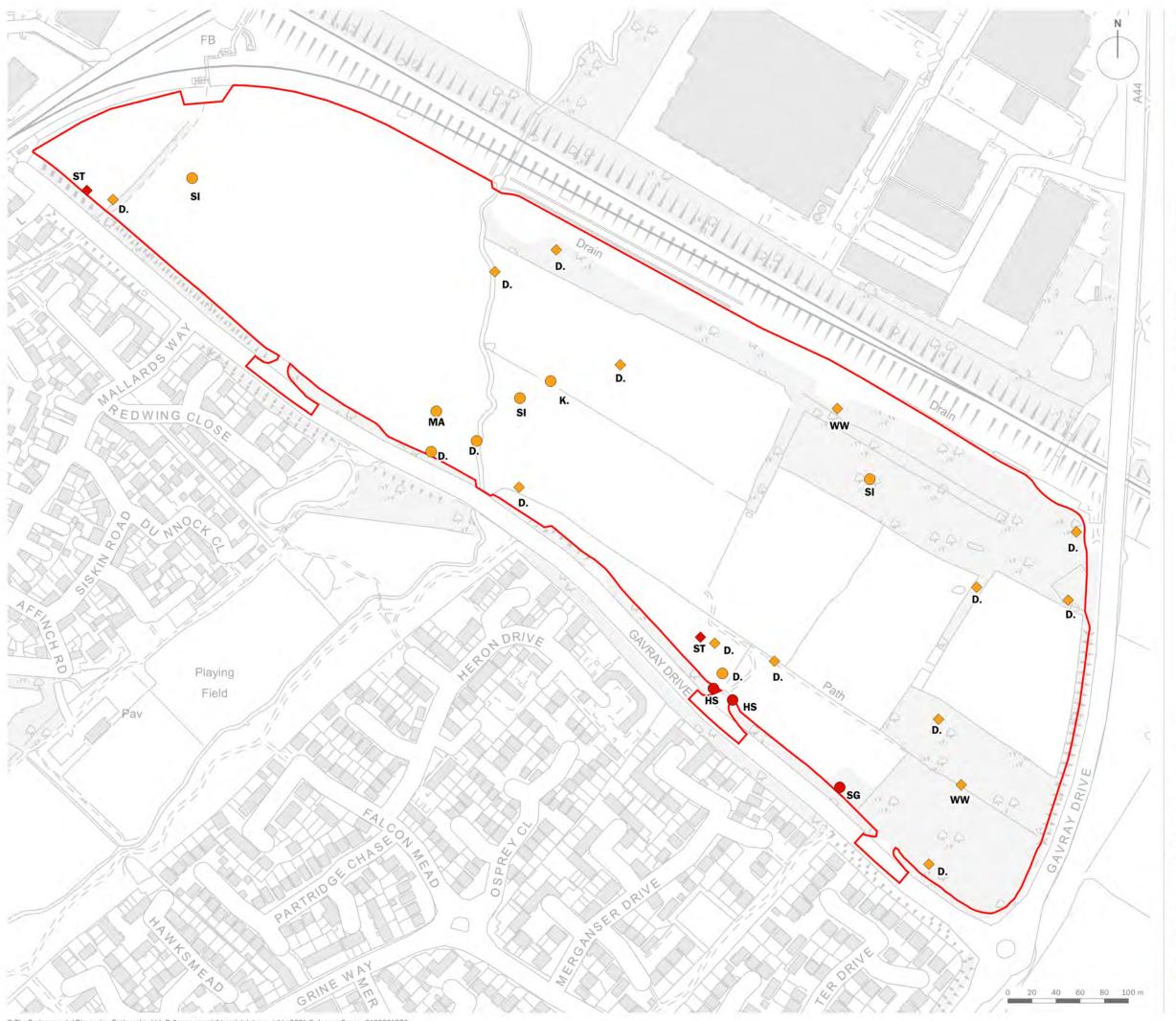
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Site Boundary

Red Listed Bird



Amber Listed Bird



Singing Bird

Label	Species
D.	Dunnock (Prunella modularis)
HS	House Sparrow (Passer domesticus)
K.	Kestrel (Falco tinnunculus)
MA	Mallard (Anas platyrhynchos)
SG	Starling (Sturnus vulgaris)
SI	Swift (Apus apus)
ST	Song Thrush (Turdus philomelos)
WW	Willow Warbler (Phylloscopus trochilus)

client

L&Q Estates

project title

Gavray Drive, Bicester

drawing title

Plan EDP 12: Breeding Bird Survey Results

(BOCC only) - June 2020 date 13 JULY 2021

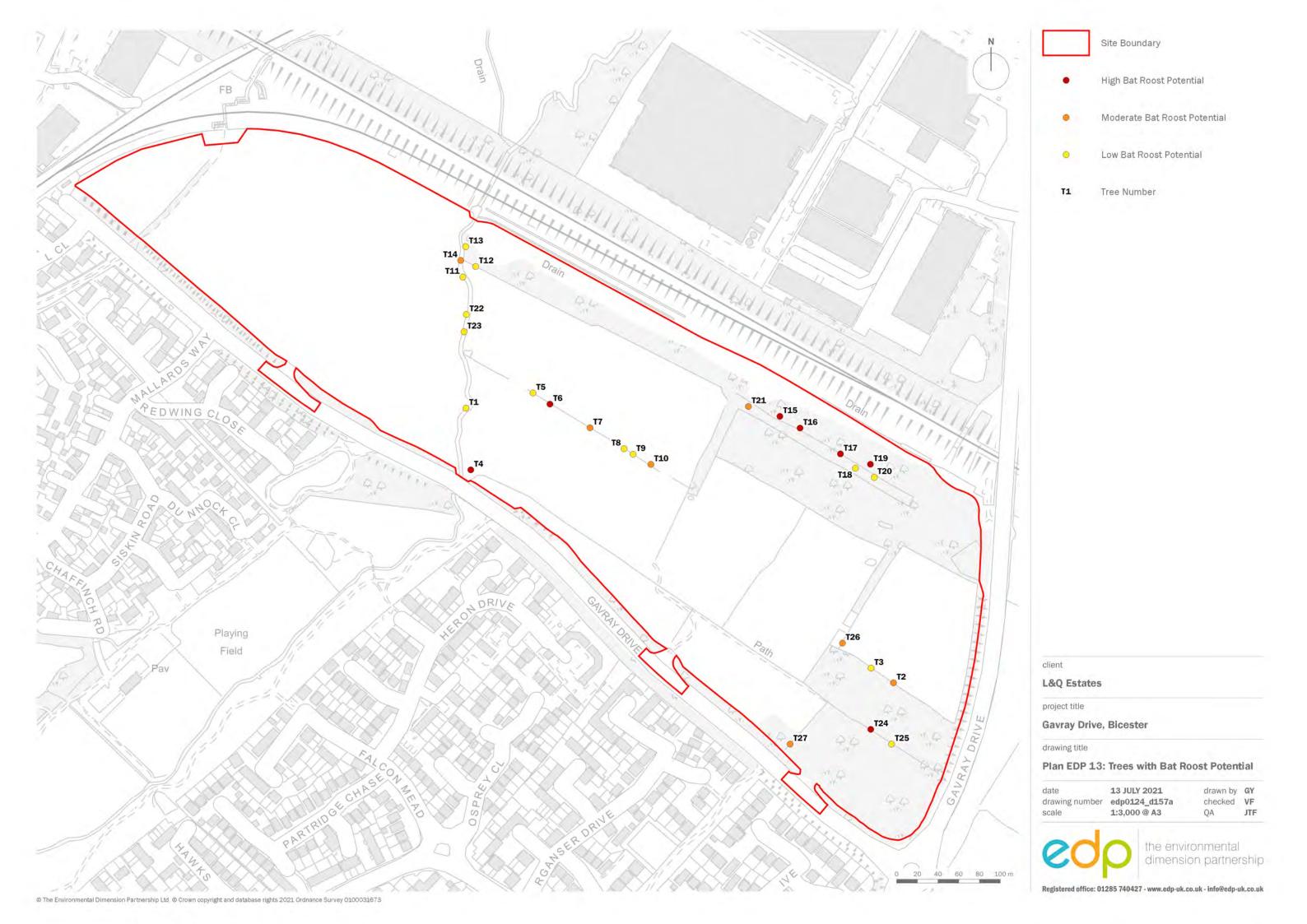
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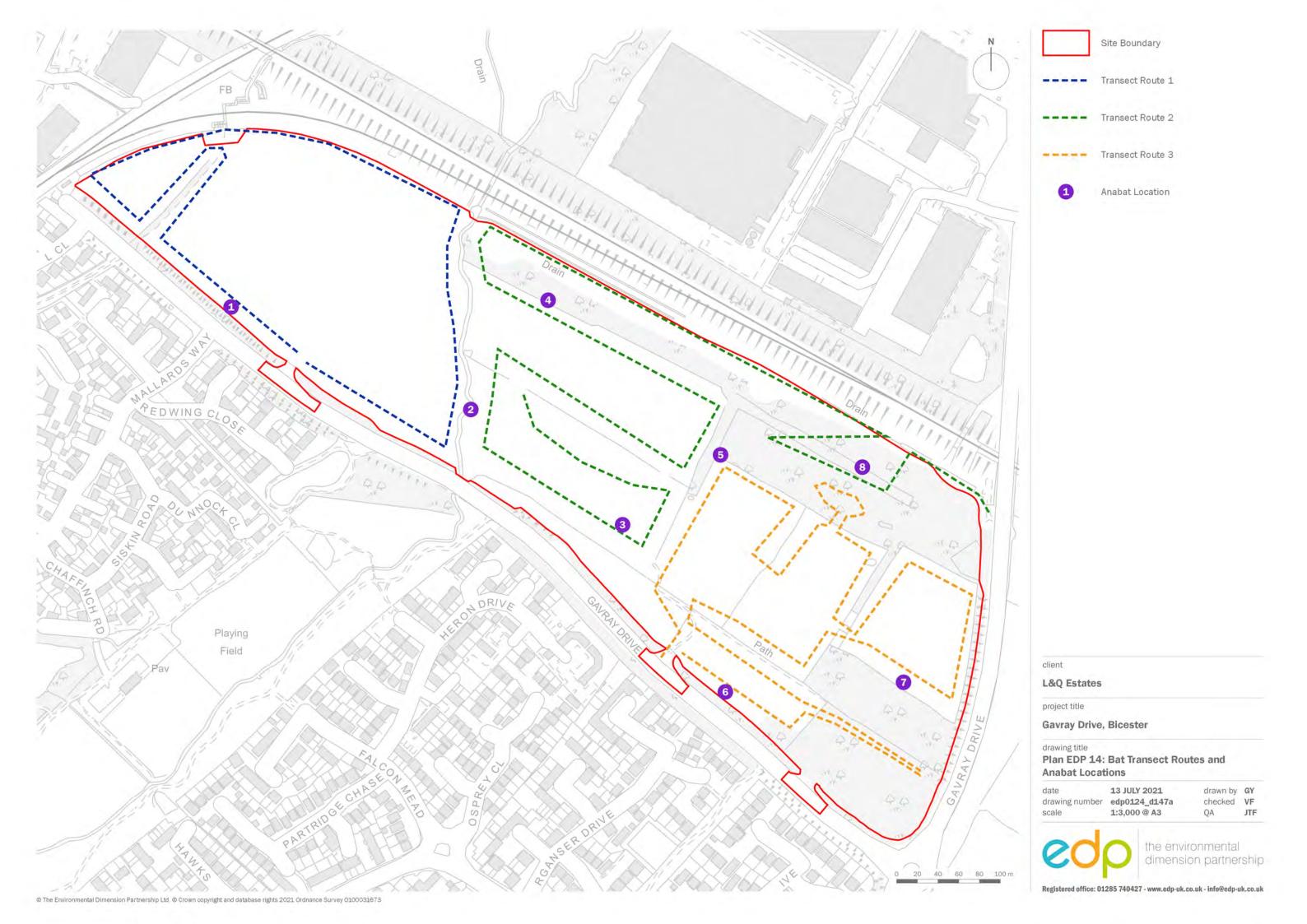
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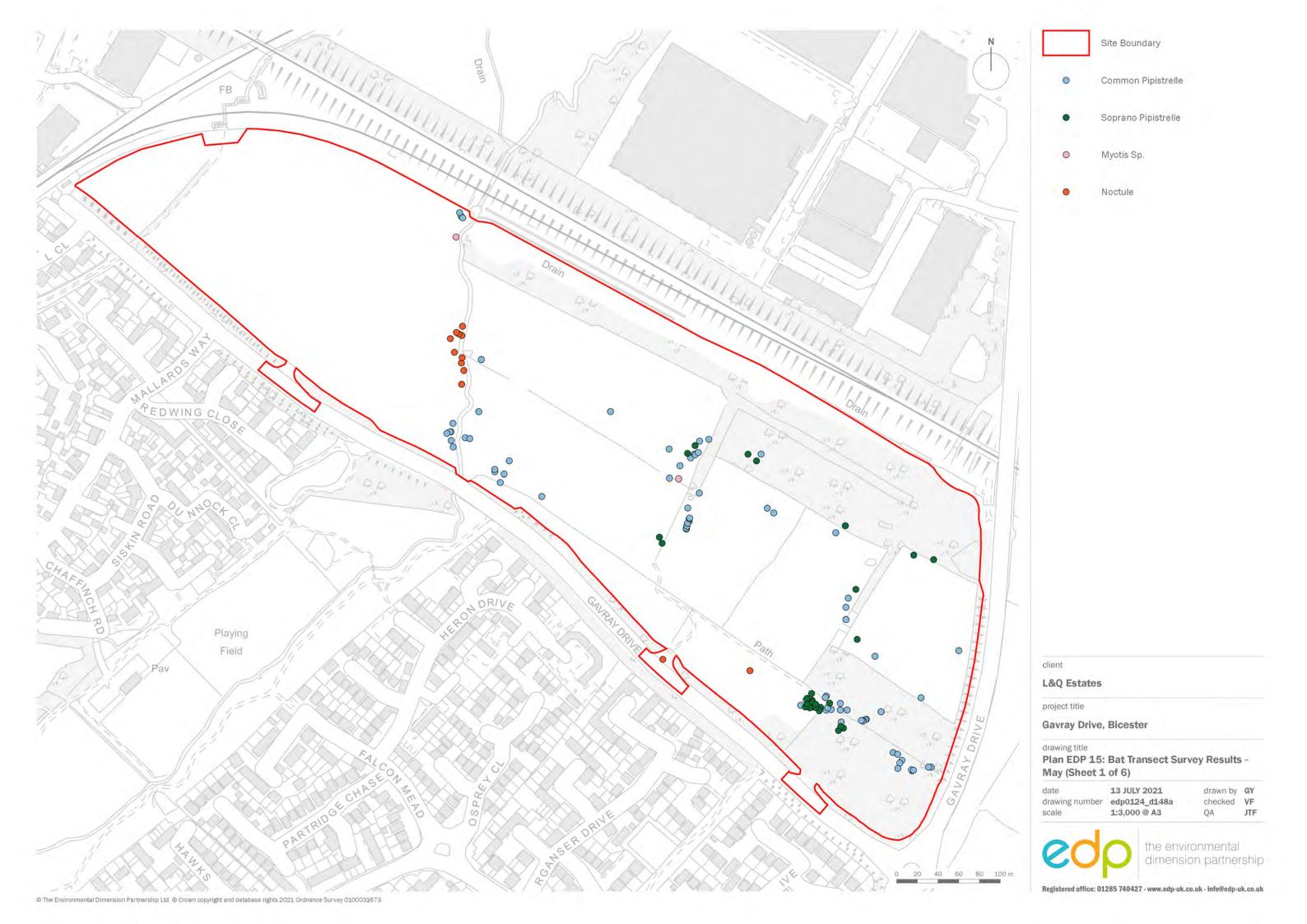


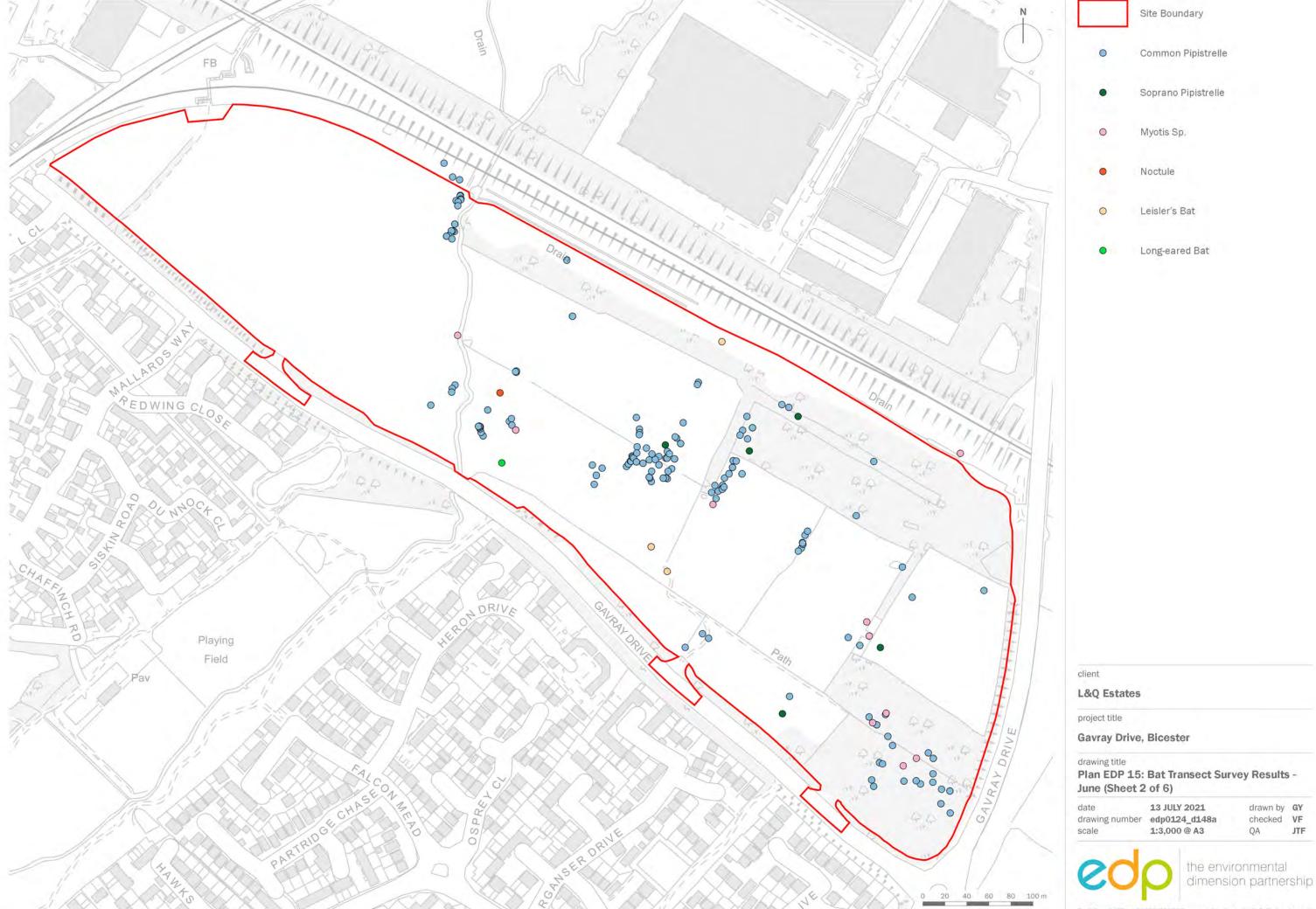
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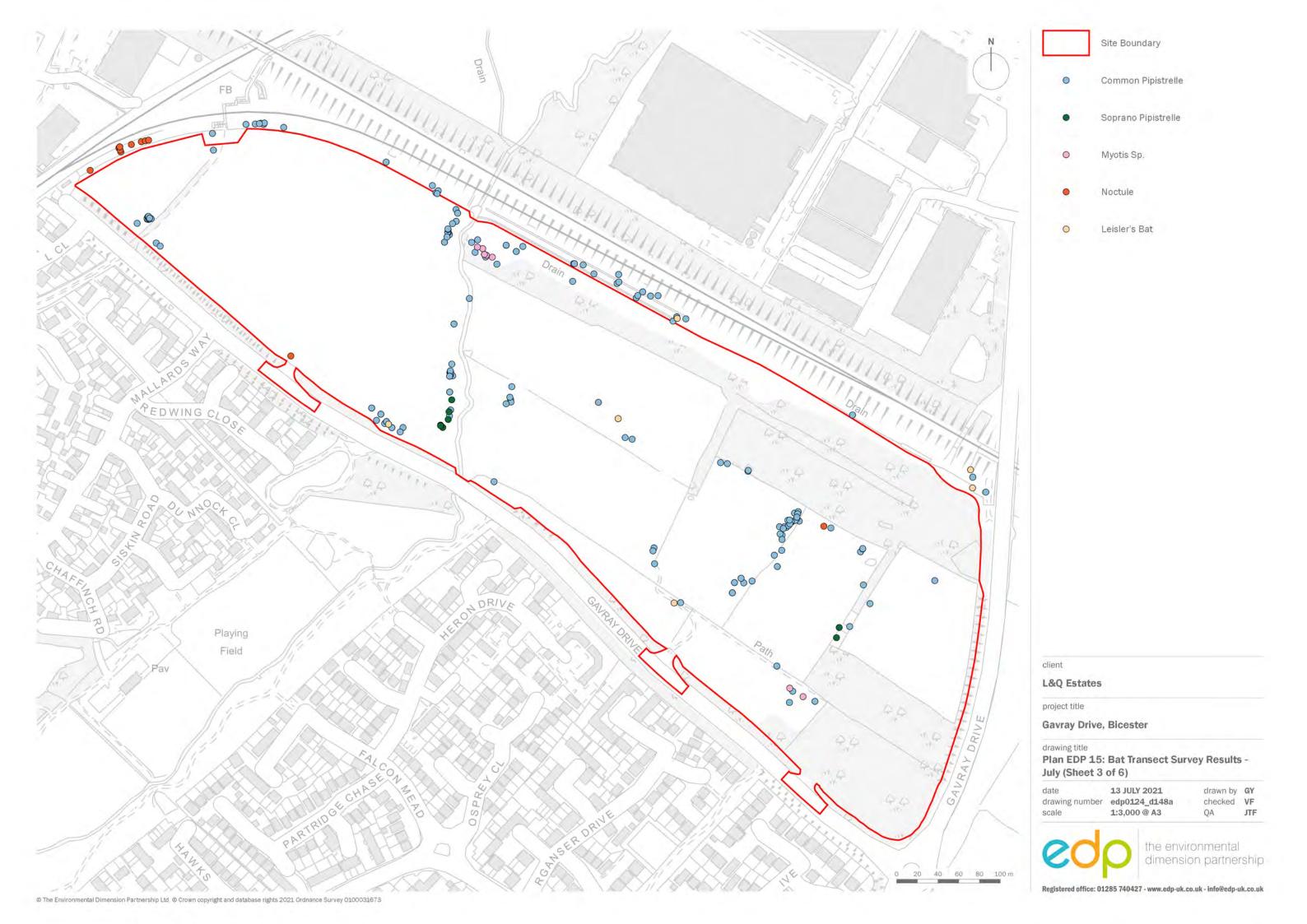


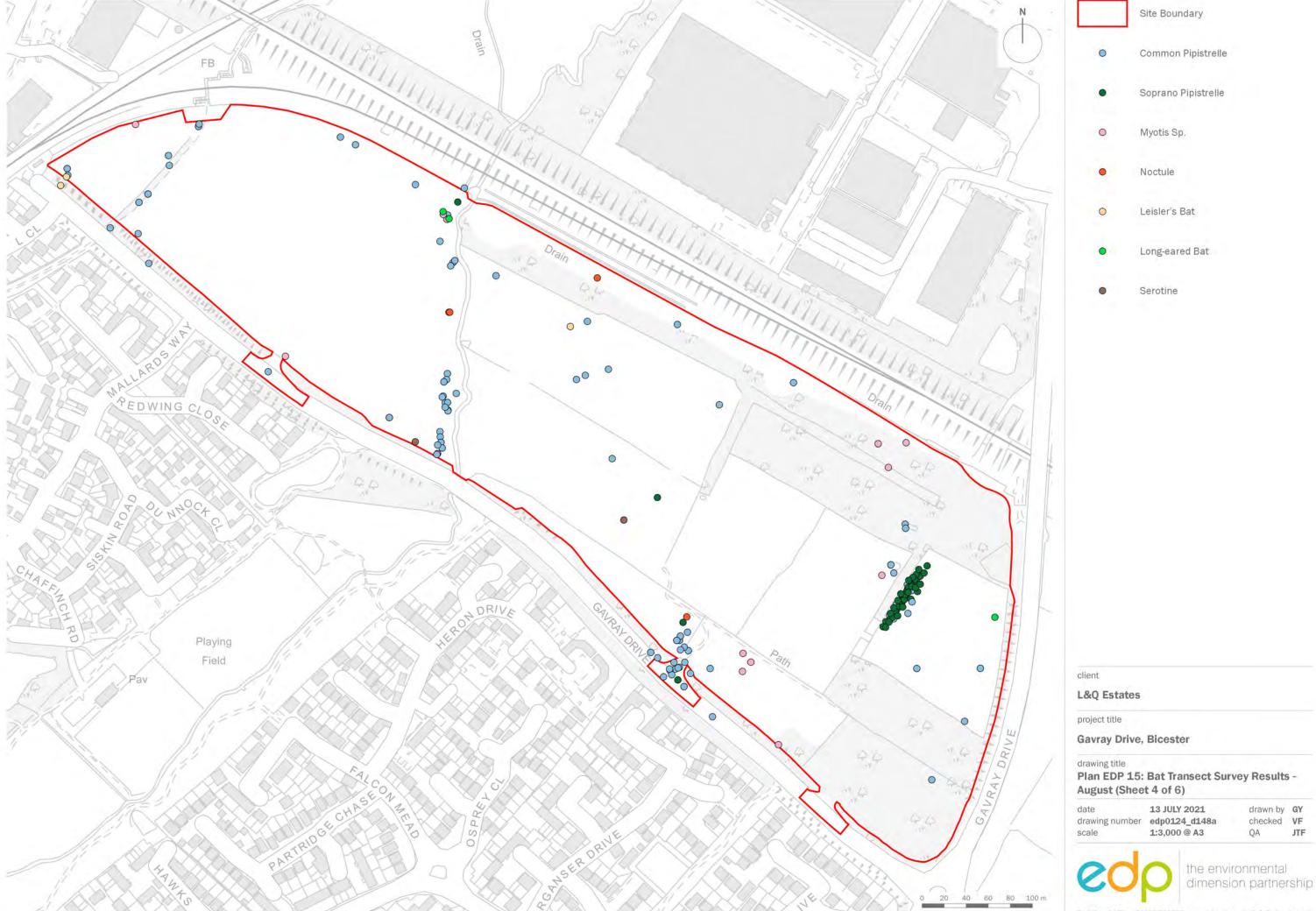




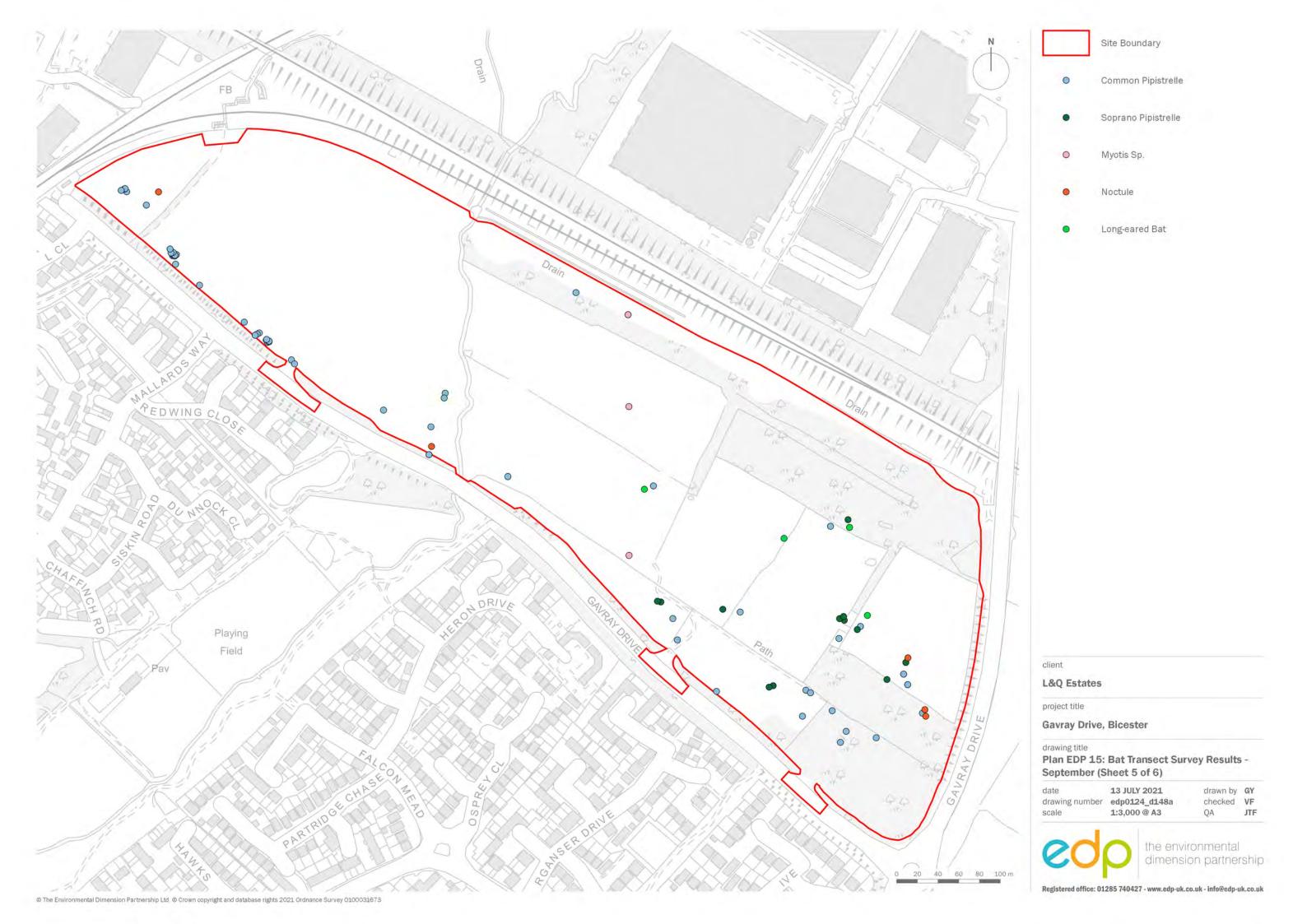


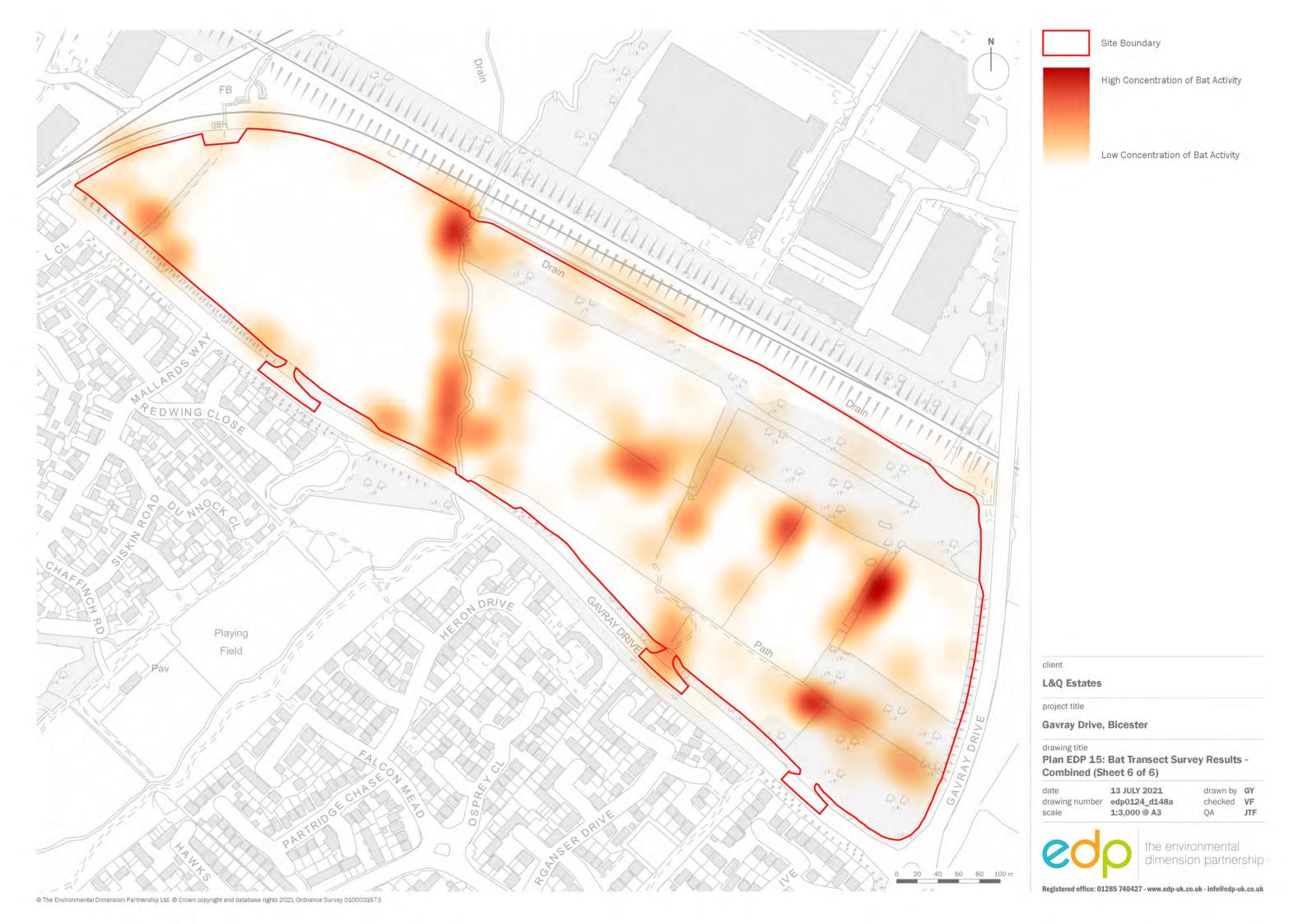
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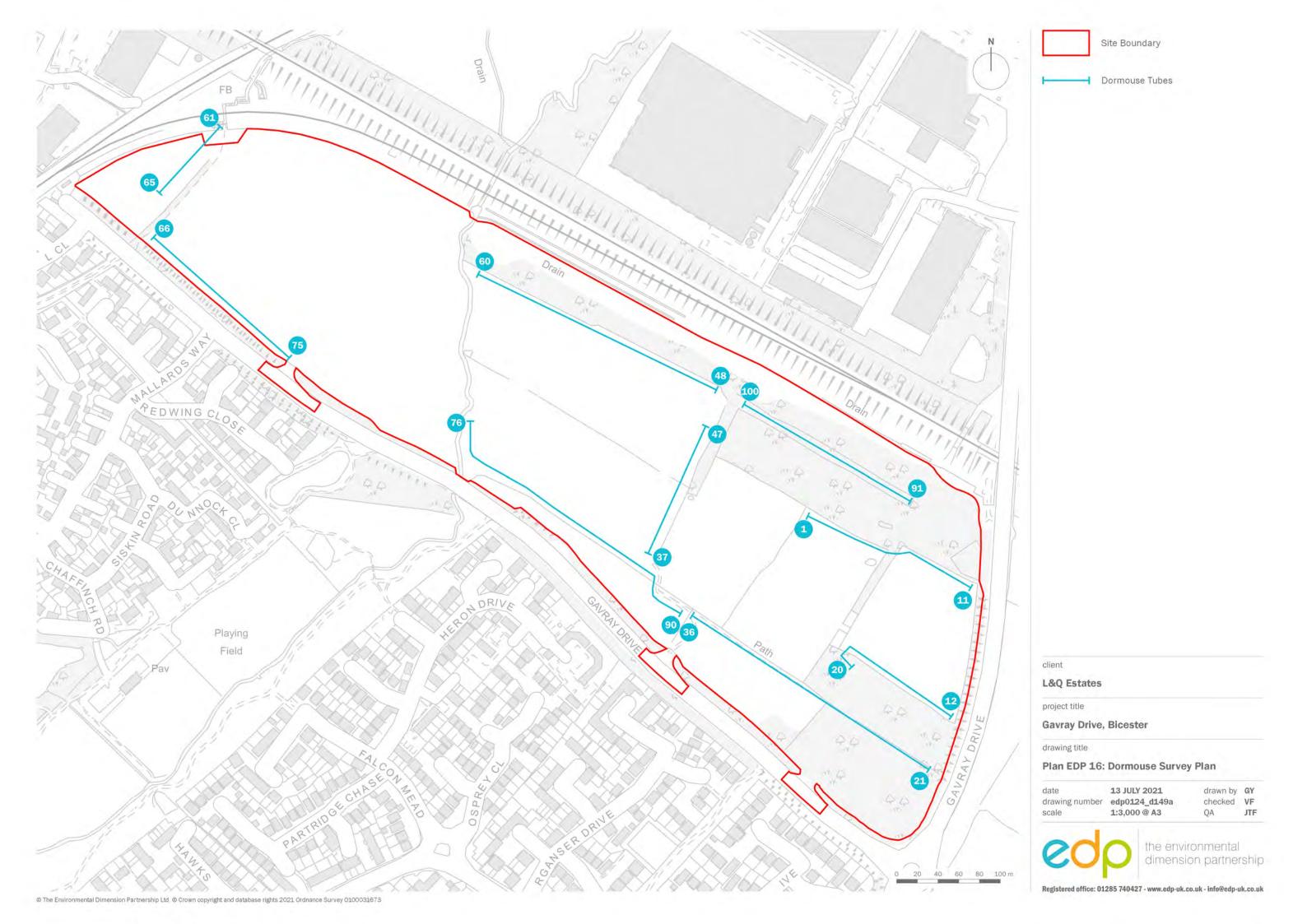


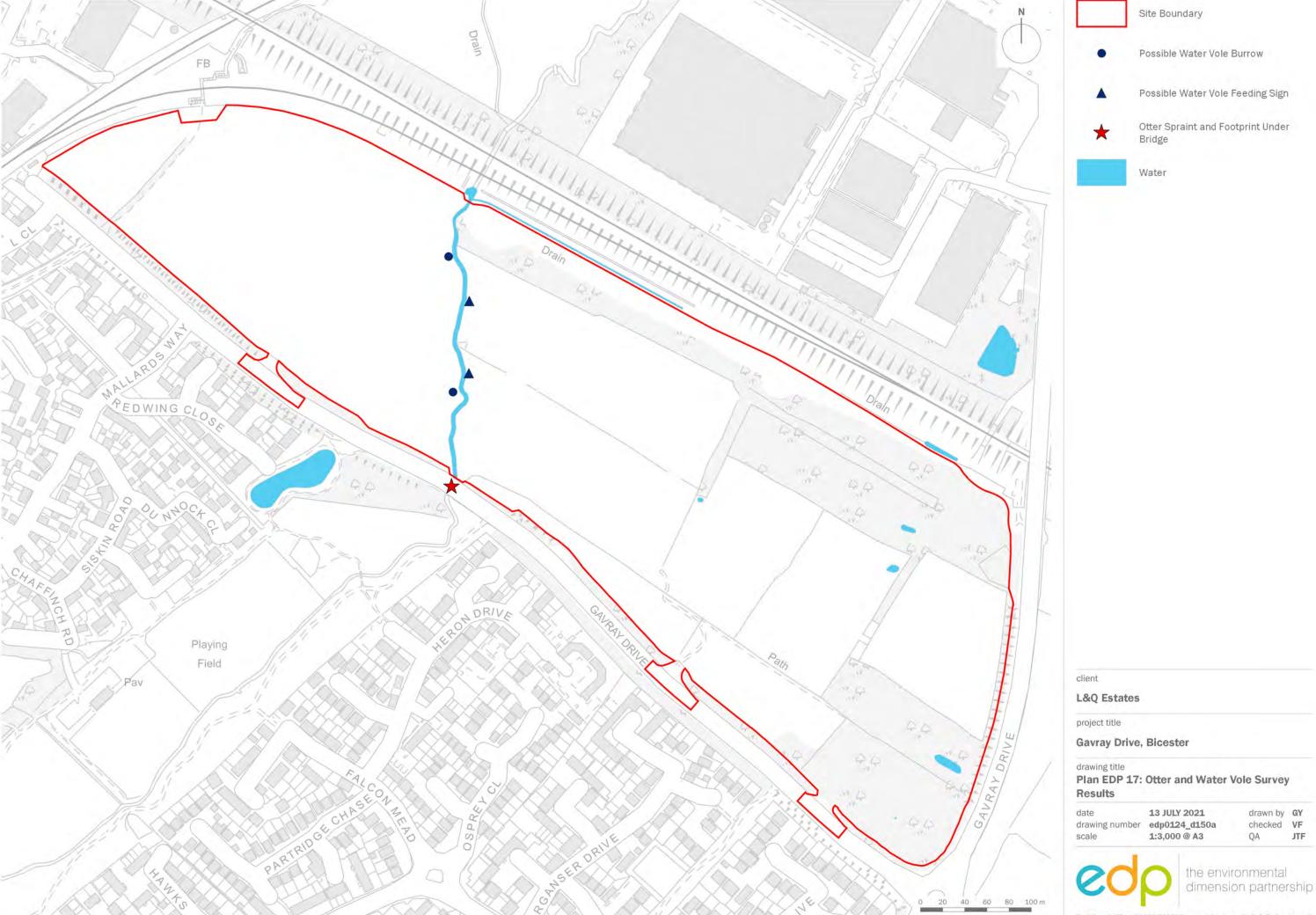


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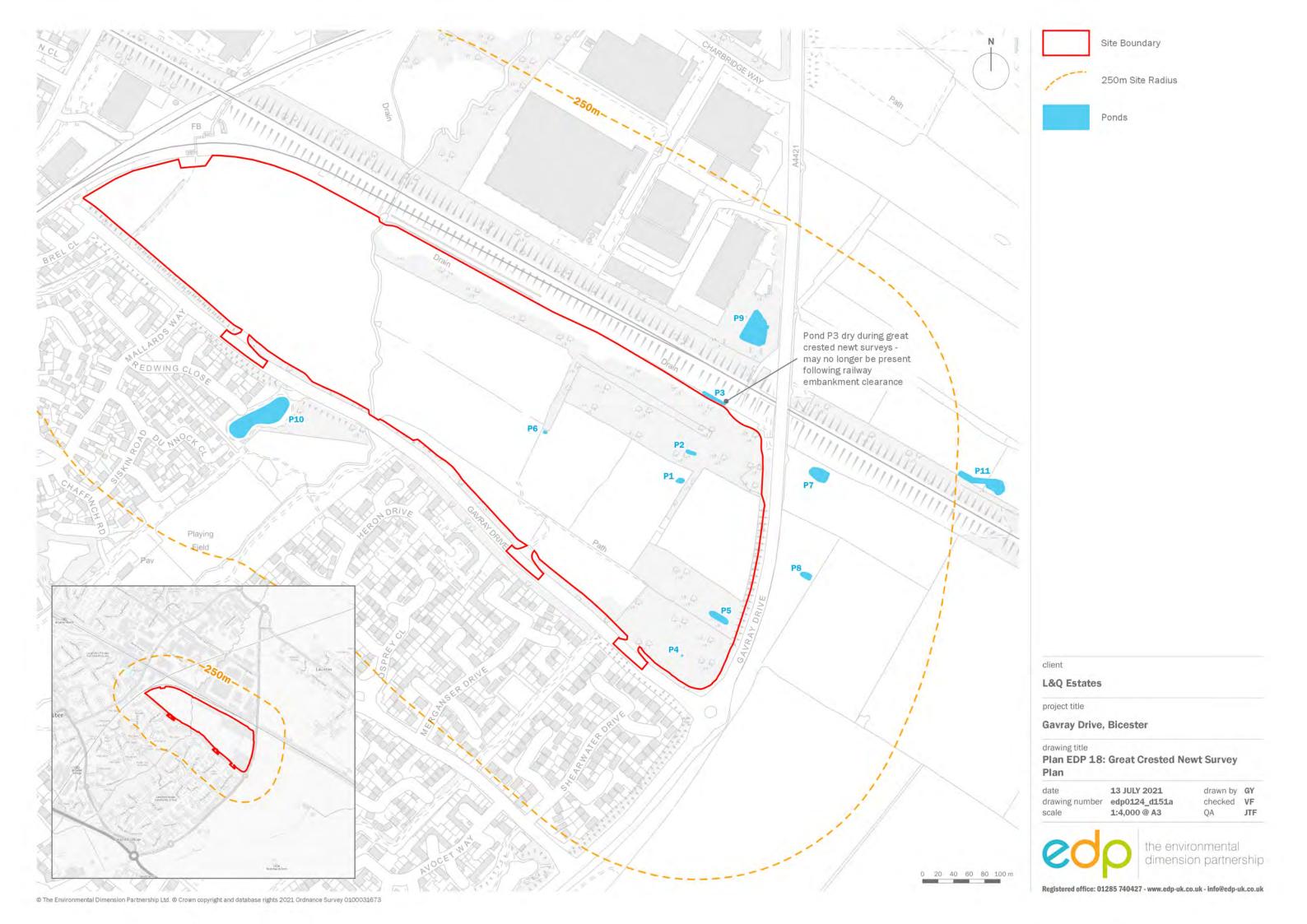


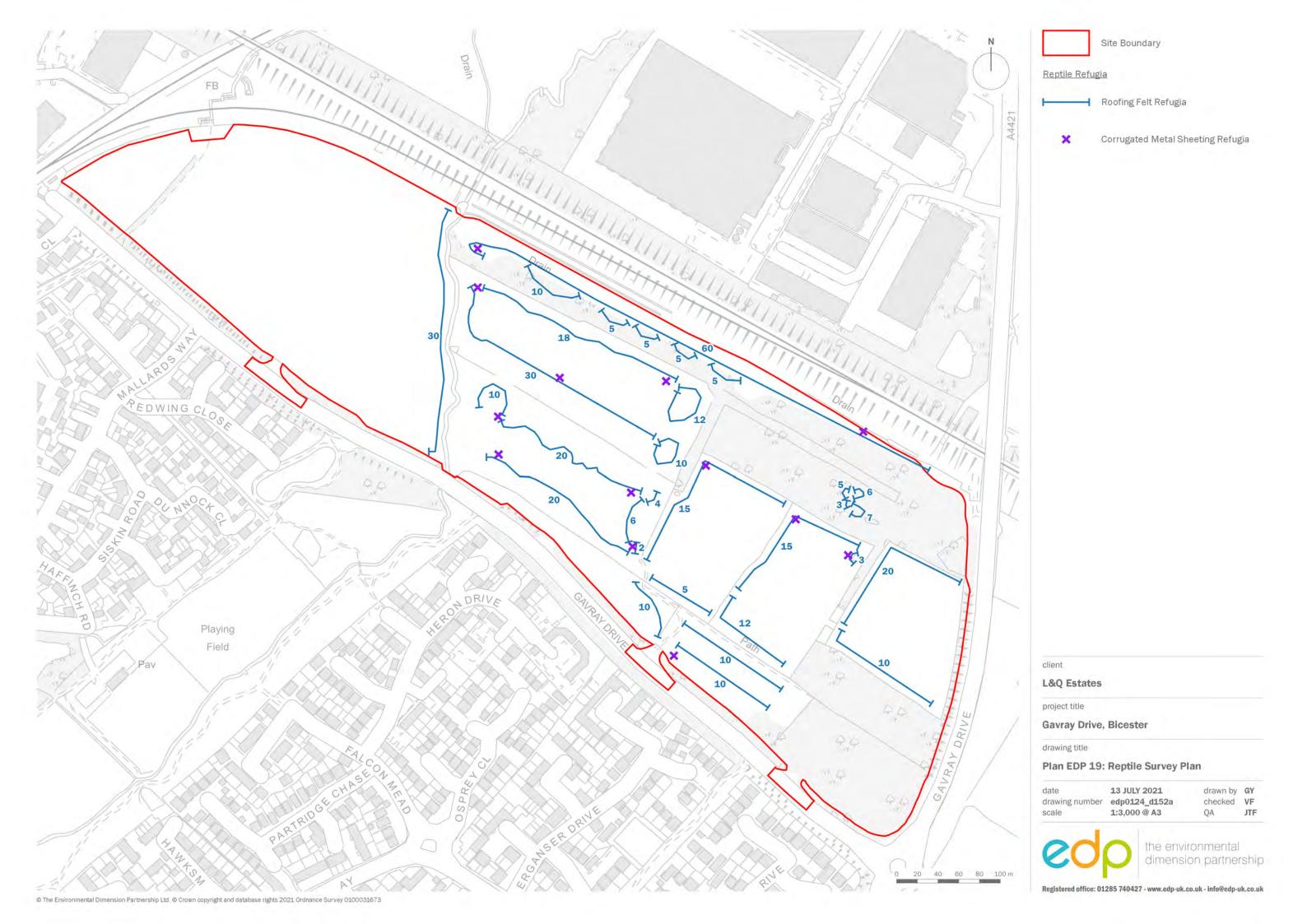


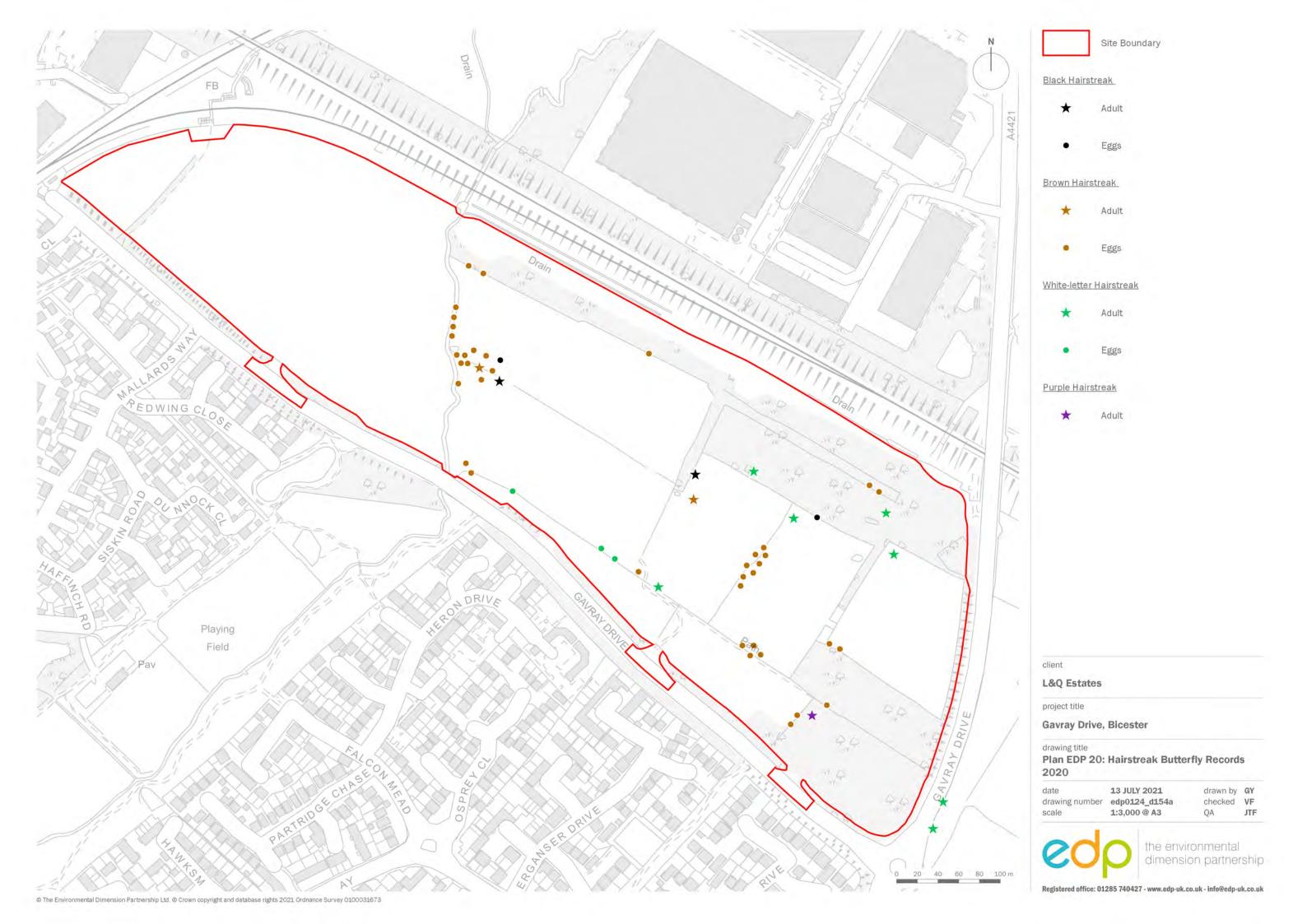




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CARDIFF 02921 671900

CHELTENHAM 01242 903110

CIRENCESTER 01285 740427

info@edp-uk.co.uk www.edp-uk.co.uk

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