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Badger bait-marking survey for proposed new prison on land adjacent to HMP Gartree, Gallow Field Road, Market Harborough, Leicestershire

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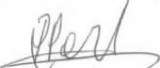

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1	27/04/2021	n/a
2	07/05/2021	MoJ document control info added. Table 1 sett coords corrected.
3	16/08/2021	Title change, document control corrections, updated drawings.
4	16/08/2021	Correct table title.

Non-technical summary

Introduction

CGO Ecology Ltd was instructed by Mace Ltd, on behalf of the Ministry of Justice, to conduct a badger bait-marking survey to the south of HMP Gartree, Market Harborough, Leicestershire. The Ministry of Justice proposes a development as part of its New Prisons Programme on a 25ha site (SP 7052 8873). The Local Planning Authority (LPA) is Harborough District Council.

Methodology

A PEA and subsequent badger survey by Ramboll identified seven setts and several latrines. Resurvey Dr Chris Gleed-Owen MCIEEM in February 2021 and then Amy Trewick ACIEEM in March 2021 identified two additional setts, enlarged another, and concluded that two of the Ramboll setts were tunnels under fences rather than setts. A new sett numbering system was introduced. On 8th March 2021, a mixture of peanuts, syrup, and coloured inert plastic pellets (bait) was placed in sett tunnel entrances, with a different pellet colour at each. Over 21 days between 9th March and 8th April 2021, all latrines were visited, the pellet colours visible in dung were recorded, and further bait was left at each sett.

Results

The setts are as follows: two main setts (S1 and S2, the latter which is arguable a main sett and three subsidiaries), a subsidiary sett (S3), and four outliers (S4-S7). The results showed uptake of bait at all seven setts, and wide movement of badgers in all directions across the site. S7 is just a tunnel under a fence, so only S1-S6 are technically habitable setts. Four of the six setts will be lost to the development. There was no evidence to suggest the presence of more than one territory. This confirms that a single clan territory is present on site. The territory appears to extend into arable fields beyond the south and east site boundaries, but it is largely contained within the 25ha site.

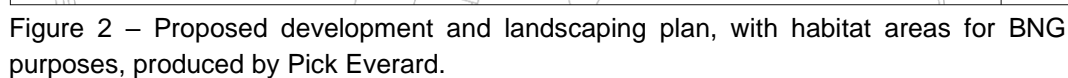
Mitigation recommendations

To accommodate the proposed development, a programme of licensed sett closure, badger exclusion, replacement sett construction, and habitat creation will be necessary over a period of at least one year. Sett closure can only take place between 1st July and 30th November, and replacement setts must be demonstrably in use beforehand. Only one clan territory is present, which simplifies the mitigation response in some respects. However, to replace four setts (two main, one subsidiary, and one outlier), it will be necessary to construct at least three replacement setts, including two large main setts. To replace lost hedgerow, grassland, scrub, and woodland, it will be necessary to provide sufficient compensatory habitat. The connectivity of the site must continue to cater for the clan and its movements across a large territory. The area of off-site compensatory habitat proposed north of Welland Avenue, which currently contains one outlier sett, may need to become a more significant part of the territory, possibly housing one of the replacement main setts. Mitigation provisions must be agreed with Natural England and LPA as soon as possible, to enable construction of the replacement setts in 2021, and ensure habitation well in advance of the 2022 sett-closure season.

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CGO Ecology Ltd was instructed by Mace Ltd, on behalf of the Ministry of Justice, to conduct a badger (*Meles meles*) bait-marking survey to the south of HMP Gartree, Market Harborough, Leicestershire. The Ministry of Justice proposes a development as part of its New Prisons Programme on a 25ha site (SP 7052 8873). The Local Planning Authority (LPA) is Harborough District Council.



Badgers and their setts (tunnel complexes) are protected by the Protection of Badgers Act 1992. Works that may harm or disturb them, or damage their setts, must be impact-assessed by an ecologist, and mitigated/compensated as necessary, under Natural England licence where necessary.

A Preliminary Ecological Appraisal (PEA) conducted by Ramboll (Molesworth, 2021a) identified three badger setts on site. A subsequent badger survey on 24th November 2021 (Molesworth, 2021b) revised this to six setts, comprising active main, annexe, and outlier setts, and three disused subsidiary and outlier setts.

A walkover conducted by CGO Ecology on 1st February 2021 identified two additional setts (one subsidiary, one outlier) and extended the annex sett to become a second main sett (three additional areas in the same soil-storage mound). A recording was made of badger cubs 'whickering' in the outlier, on the southern site boundary. It was concluded that two of the Ramboll setts were in fact simple tunnels under boundary fences, and did not constitute setts *per se* (although one of these is used in the bait-marking survey below).

Following feedback from the CGO Ecology walkover, Ramboll conducted another survey in February 2021 (Moleworth, 2021) in which they accepted most of the CGO Ecology additions, but rejected the outlier, arguing that it was a rabbit (*Oryctolagus cuniculus*) warren. A trailcam survey by CGO Ecology between 2nd to 9th March 2021 proved that the outlier is occupied by badgers. Given the presence of breeding badgers in this small sett, its importance is emphasised.

2. Methodology

An initial walkover was conducted by CGO Ecology on 2nd March 2021, with subconsultants Brindle & Green Ltd, to revisit all the setts, and conduct a comprehensive survey of foraging and latrining evidence. Further survey was conducted by Brindle & Green over the next week, to identify all active latrines, and orient survey staff with the survey routes.

On 8th March 2021, a mixture of peanuts, syrup, and coloured inert plastic pellets (bait) was placed in sett tunnel entrances, with a different pellet colour at each. Over 21 consecutive weekdays between 9th March and 8th April 2021, comprehensive walkover route was followed, and all latrines were visited. On each visit, the pellet colours visible in dung were recorded, and further bait was left at each sett.

The CGO Ecology walkovers and trailcam survey were conducted Dr Chris Gleed-Owen BSc (hons) PhD MCIEEM, Director & Principal Ecologist of CGO Ecology Ltd. He has been an ecological consultant since 2008 (13 years). He is trained in First Aid at Work, Fire Marshal, Asbestos Awareness, CDM Awareness, COSHH, Manual Handling, and Health & Safety Management. Survey licences: CL09 great crested newt (GCN, *Triturus cristatus*), sand lizard (*Lacerta agilis*), smooth snake (*Coronella austriaca*), natterjack toad (*Epidalea calamita*), Roman snail (*Helix pomatia*). Previous mitigation licence-holder for smooth snake and/or sand lizard (6), and badger sett closure (3). Experienced surveyor of Phase 1 habitats, National Vegetation Classification (NVC), flora (FISC level 4 botanist), vertebrates, and invertebrates.

The Brindle & Green walkovers and bait-marking survey were led by Amy Trewick BSc MSc ACIEEM who has a CL9 great crested newt (*Triturus cristatus*) licence, a CL18 bat survey licence, a CL29 barn owl (*Tyto alba*) licence, and extensive survey and mitigation experience. She has been an ecological consultant for five years.

The Phase 1 habitat maps were drawn by GIS technician Jack Parker of CGO Ecology.

There were no limitations to the survey.

3. Results

The sett classification is as follows:

Sett	Grid reference	Type	Entrances	Status	Notes
1	SP 70565 88865	Main	17+	Active	In open pasture. At least 17 active entrances, plus 2 wet/disused. Many prints, paths, foraging/latrining.
2	SP 70635 88820	Main	18+	Active	Could be viewed as a main sett with three annexes. Much bedding, latrining, numerous prints, snuffle-holes, well-worn paths between all areas.
3	SP 70669 88851	Subsidiary	4	Active	In scrub beside sheep pens.
4	SP 70497 88769	Outlier	2	Active	Former rabbit warren with 2 enlarged entrances.
5	SP 70357 88532	Outlier	3	Active	South boundary hedgerow. Cubs heard whickering on 01/02/2021. Trailcam survey proved in use by badgers.
6	SP 70077 88825	Outlier	2	Active	Hedgerow north of Welland Ave. Identified by Amy Trewick, March 2021.
7	SP 70419 88636	Outlier	2	n/a	Single tunnel under a fence, arguably not a sett. Wet on Nov-Feb visits.

Table 1 – Badger setts identified at Gartree 2. Numbering system proposed by CGO Ecology, replaces that used by Ramboll (2020a, 2021).

There are two main setts (S1 and S2, the latter which is arguable a main sett and three subsidiaries), a subsidiary sett (S3), and three outliers (S4-S6). S7 is just a tunnel under a fence, consistently wet; hence, only S1-S6 are technically habitable setts.

The results showed uptake of bait at all seven setts, and wide movement of badgers in all directions across the site. Four of the six setts will be lost to the development (setts 1-4). Two setts will be unaffected (setts 5 and 6). 'Sett' 7 will be lost.

There was no evidence to suggest the presence of more than one territory. This confirms that a single clan territory is present on site. The territory appears to extend into arable fields beyond the south and east site boundaries, but it is largely contained within the 25ha site.

The setts, latrines, and observed badger movements are presented in figures 3-23 below.





Figure 4 – Badger bait-marking survey results day 2.

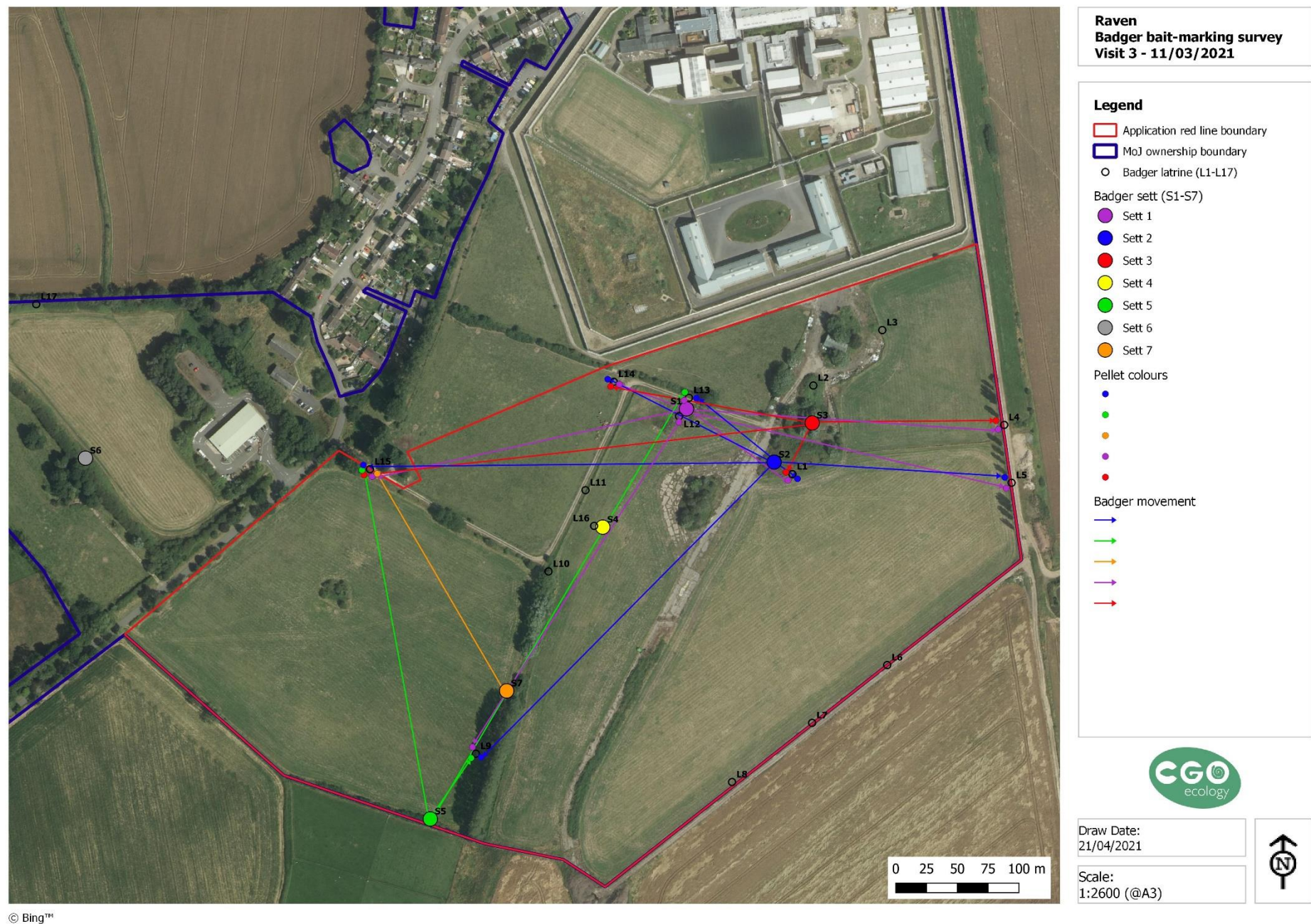


Figure 5 – Badger bait-marking survey results day 3.

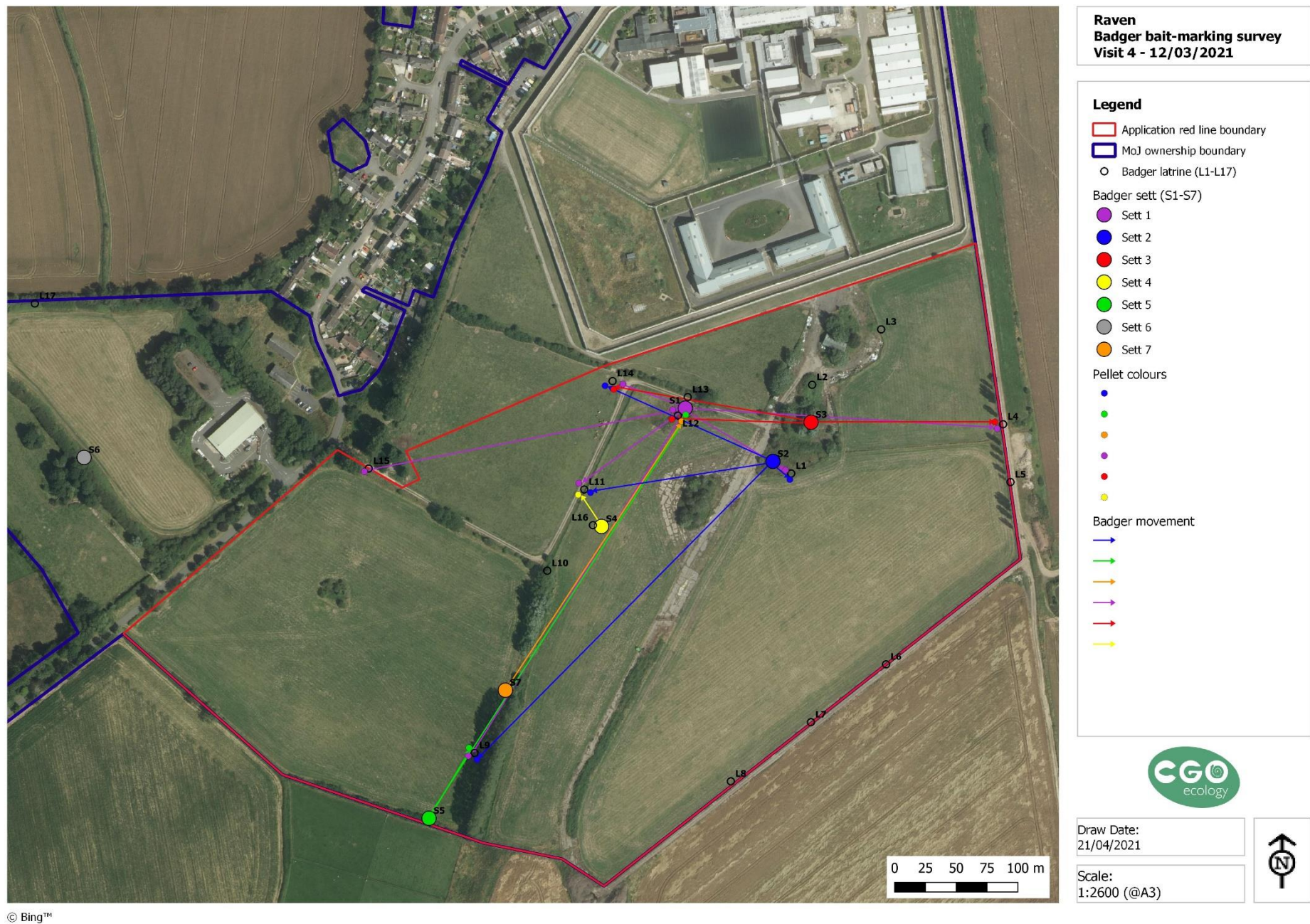


Figure 6 – Badger bait-marking survey results day 4.



Figure 7 – Badger bait-marking survey results day 5.

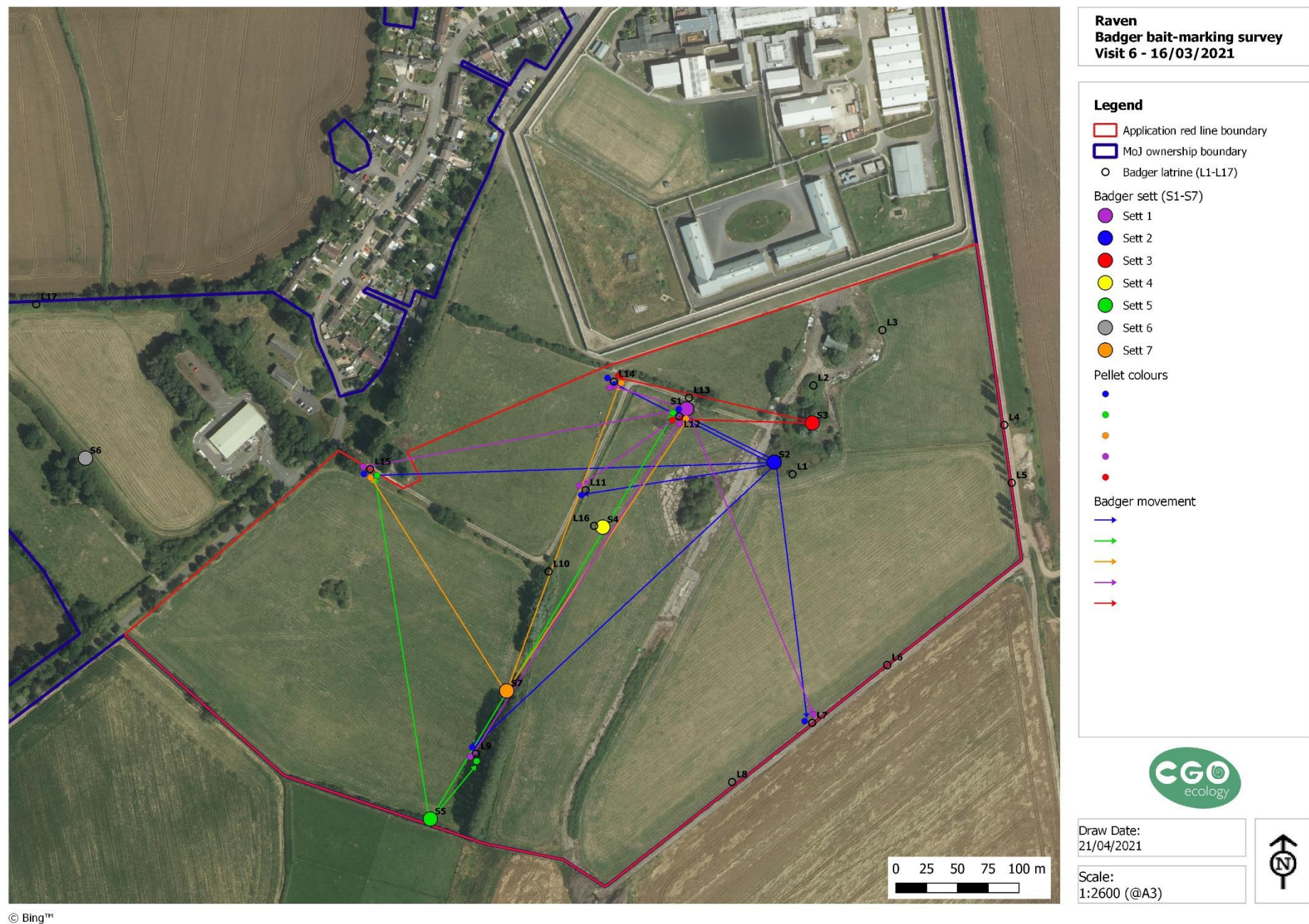


Figure 8 – Badger bait-marking survey results day 6.

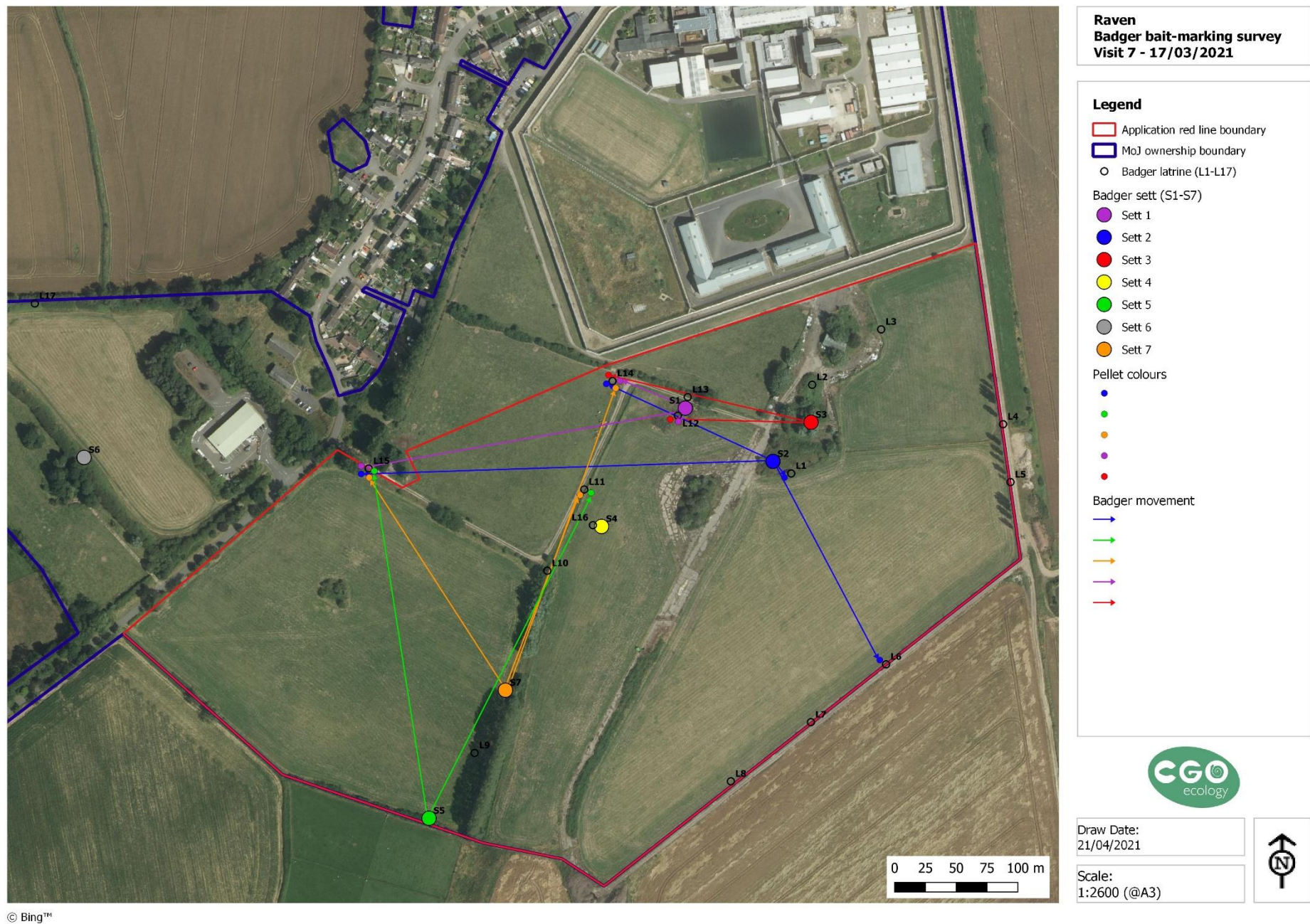


Figure 9 – Badger bait-marking survey results day 7.

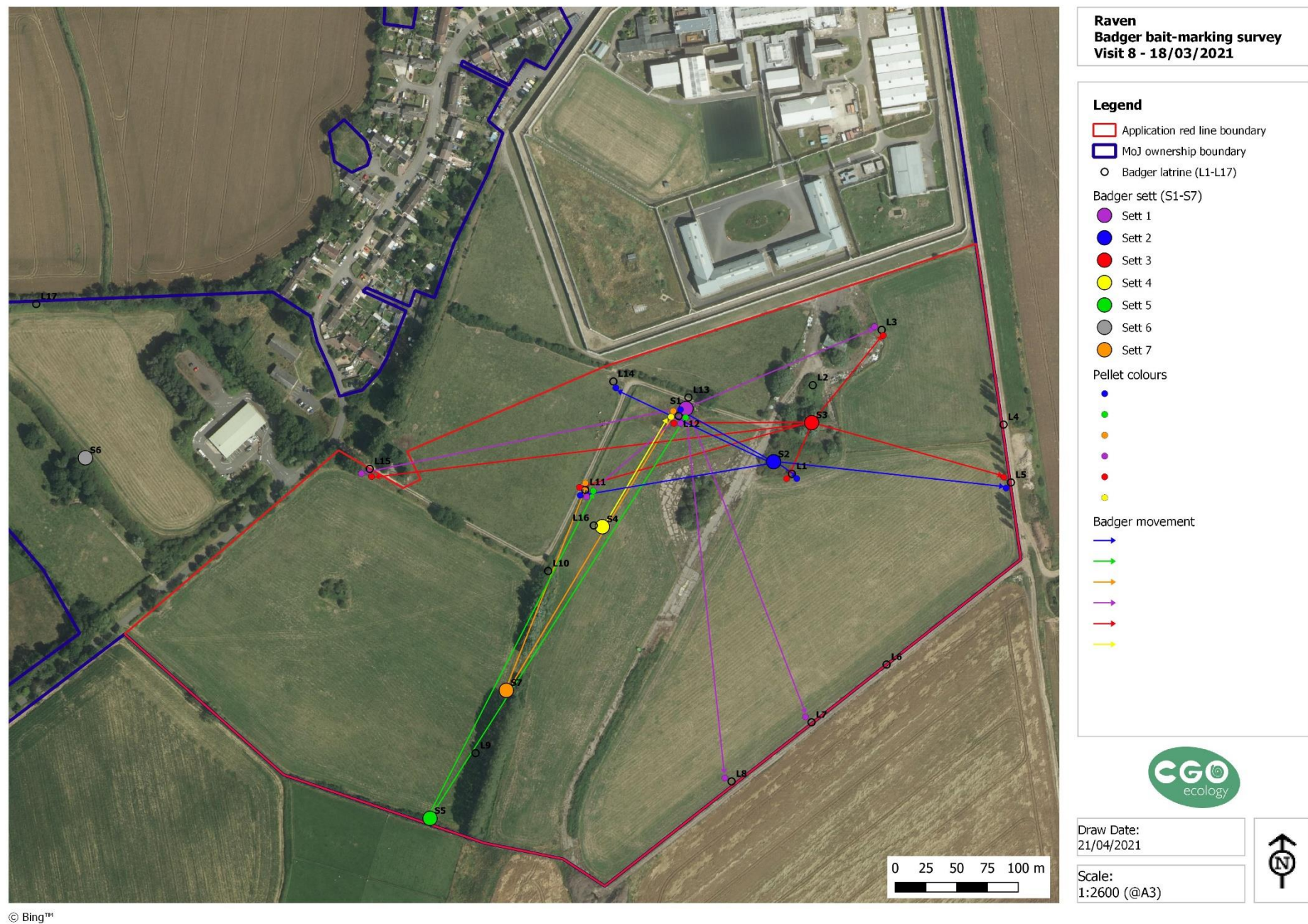


Figure 10 – Badger bait-marking survey results day 8.

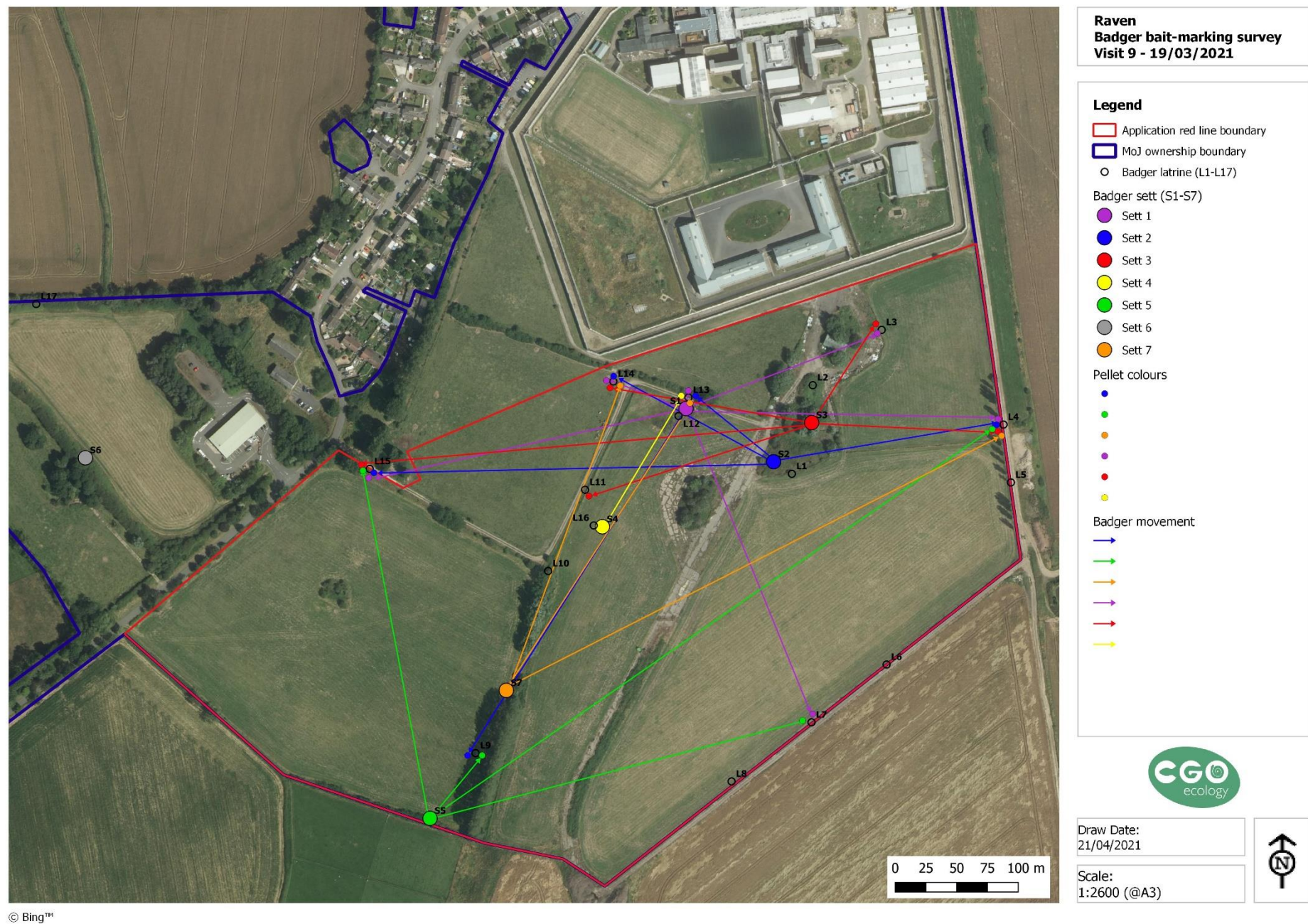


Figure 11 - Badger bait-marking survey results day 9.

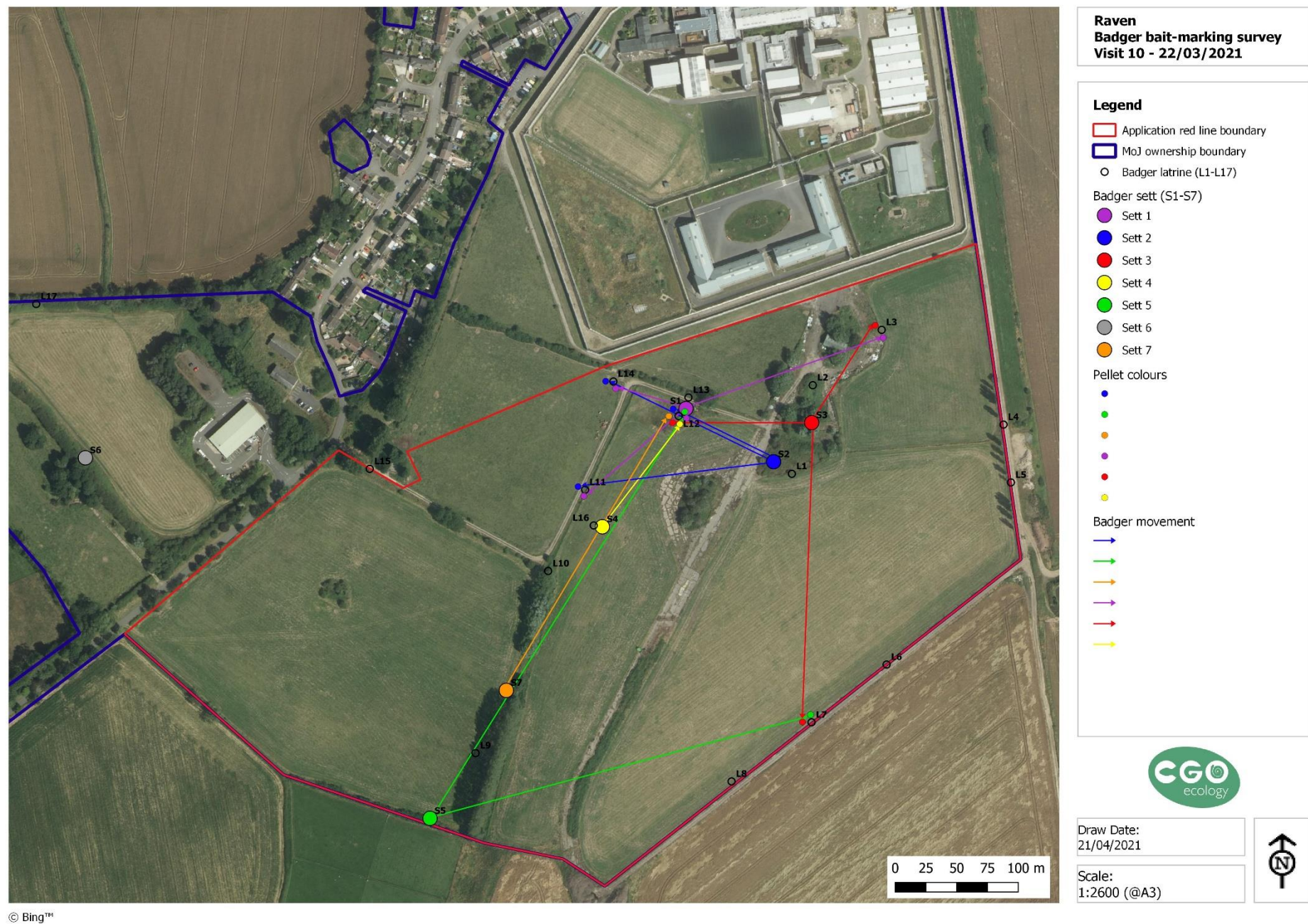


Figure 12 – Badger bait-marking survey results day 10.

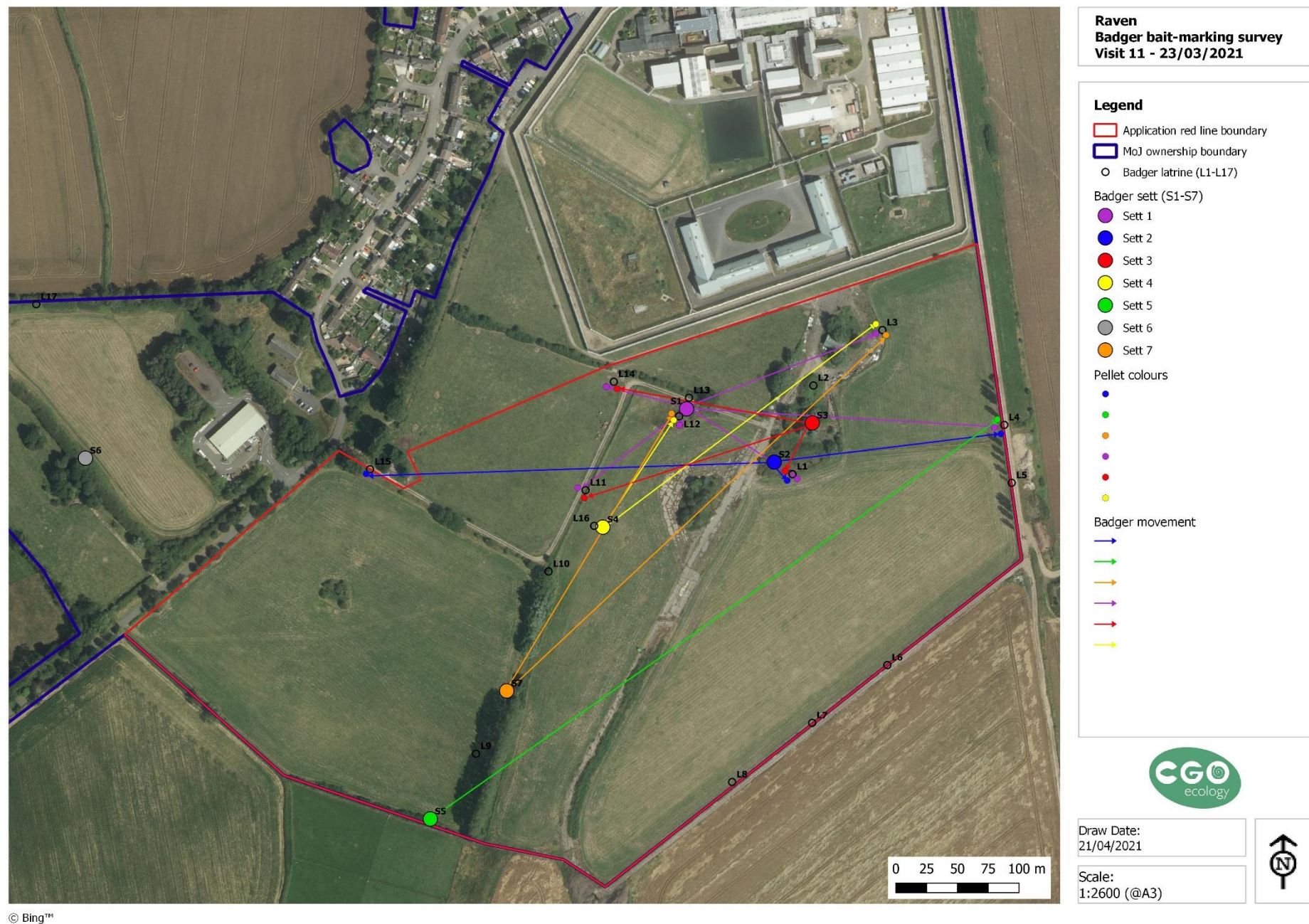


Figure 13 – Badger bait-marking survey results day 11.

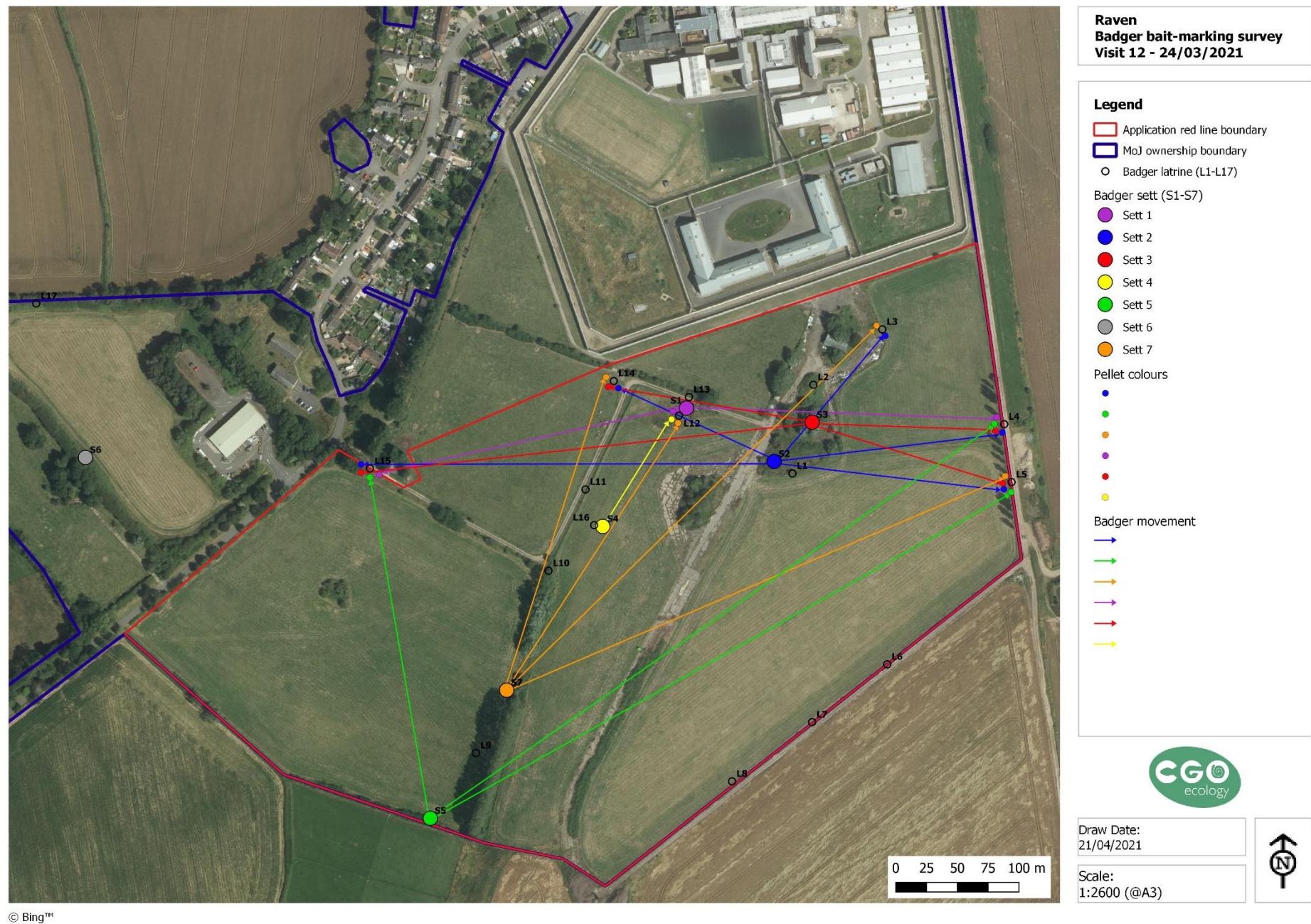


Figure 14 – Badger bait-marking survey results day 12.

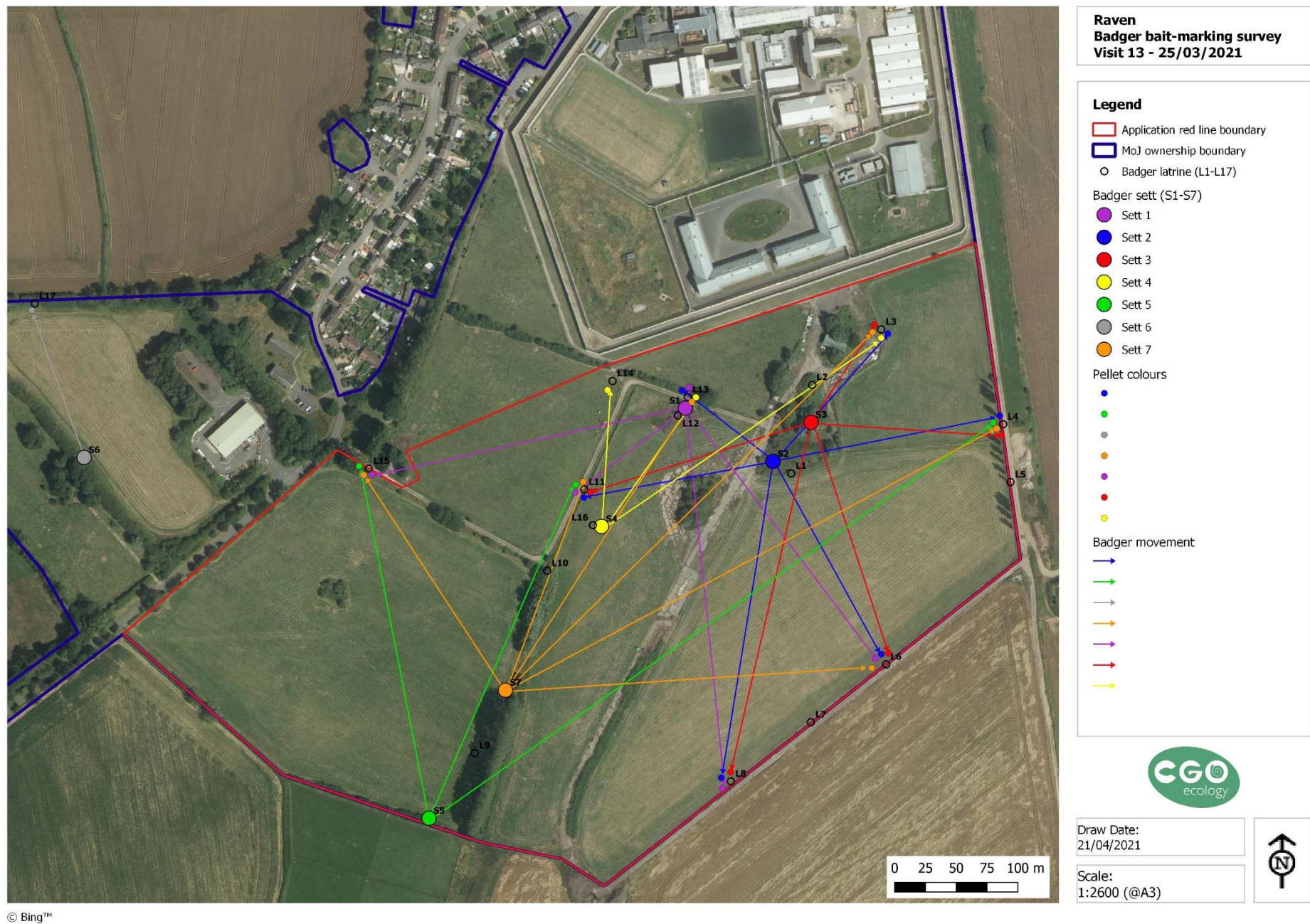


Figure 15 – Badger bait-marking survey results day 13.

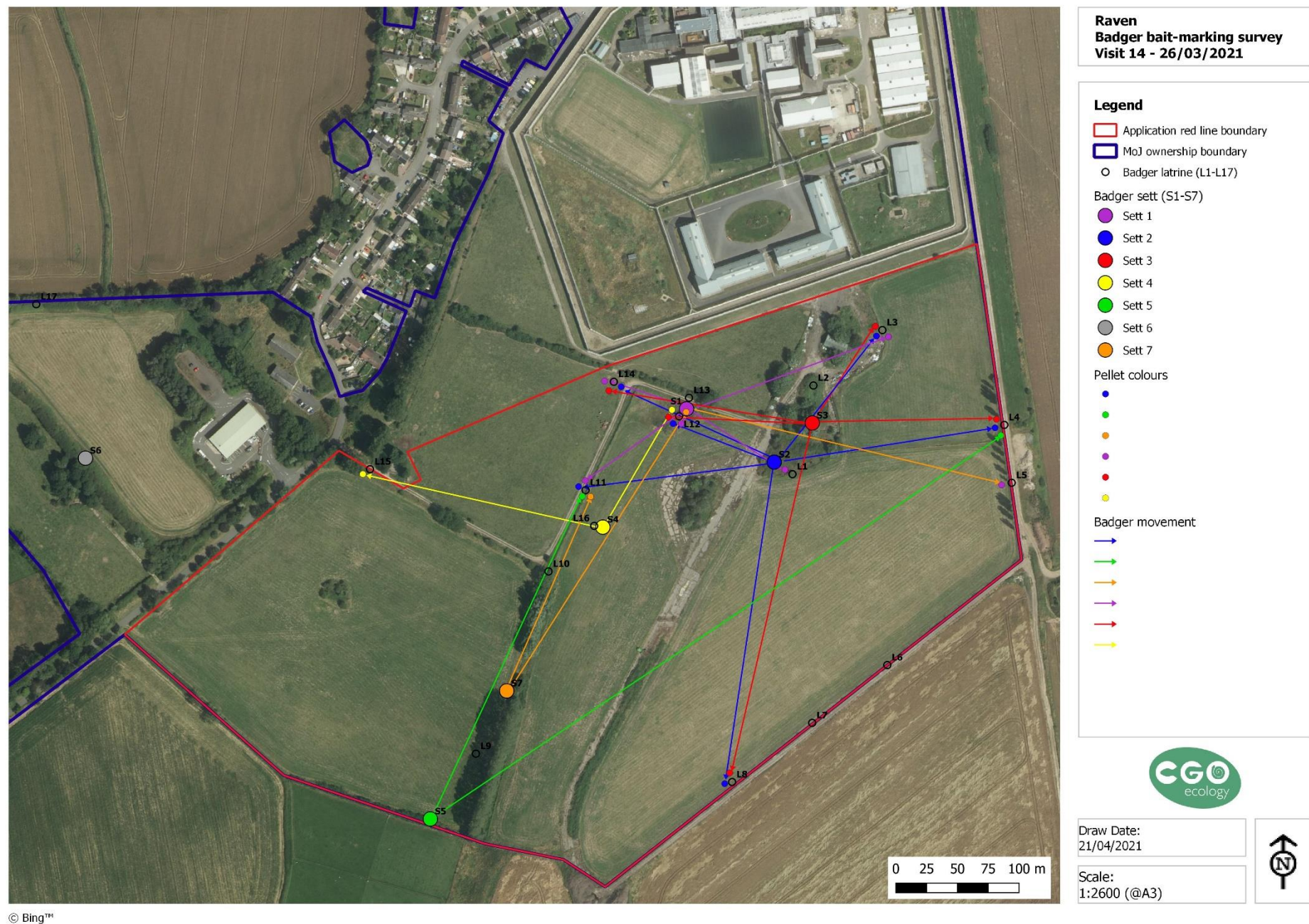


Figure 16 – Badger bait-marking survey results day 14.

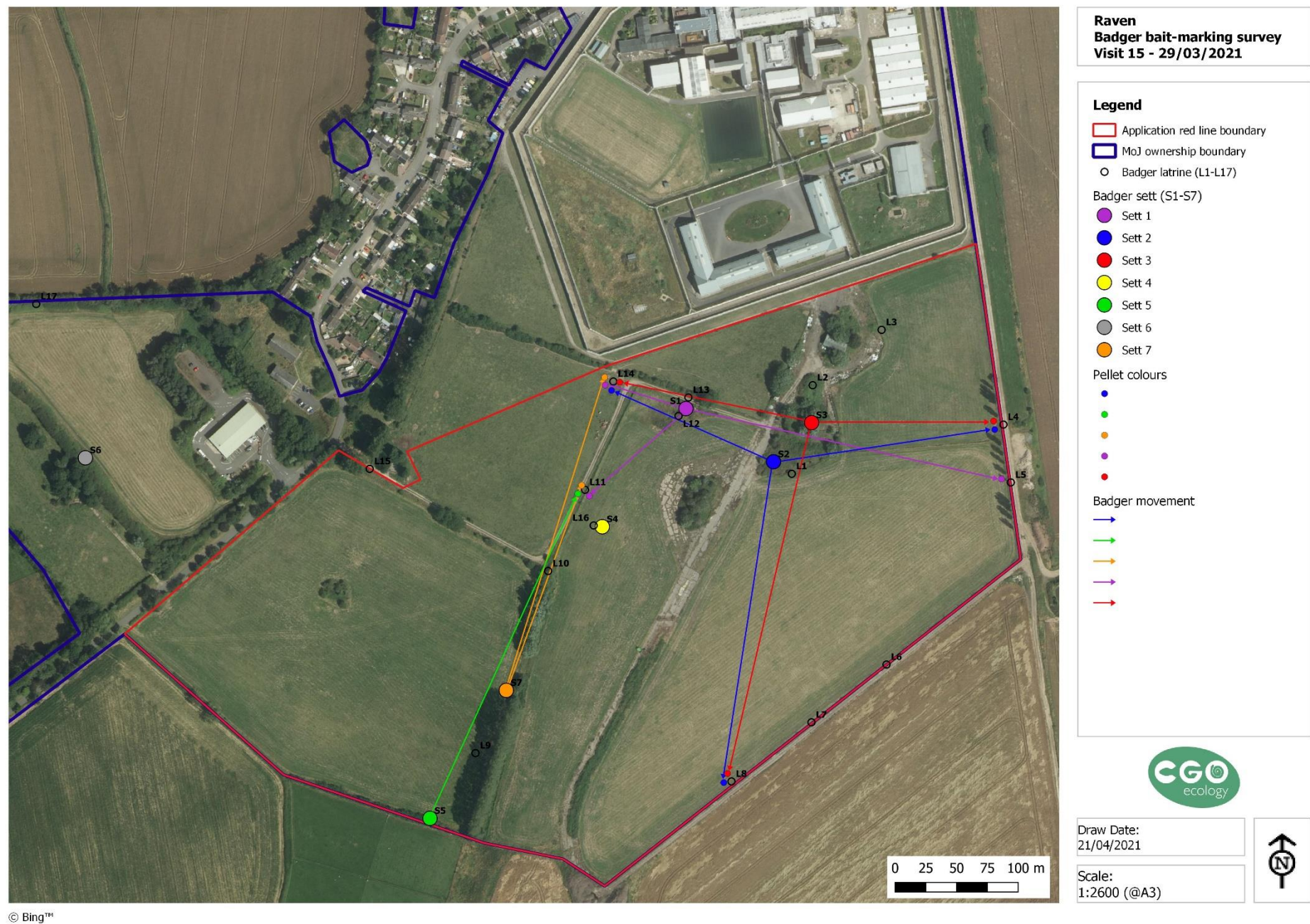


Figure 17 – Badger bait-marking survey results day 15.

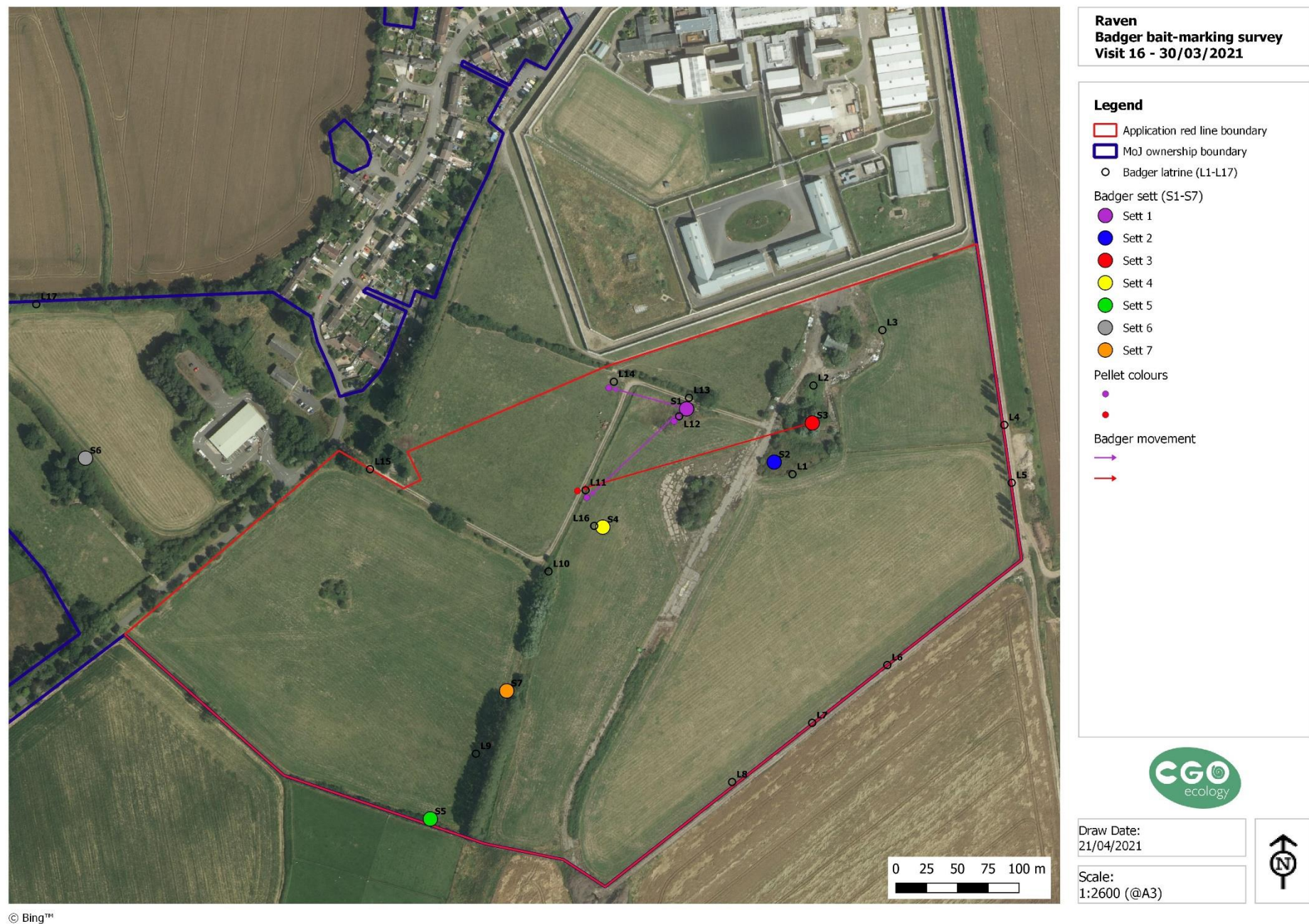


Figure 18 – Badger bait-marking survey results day 16.

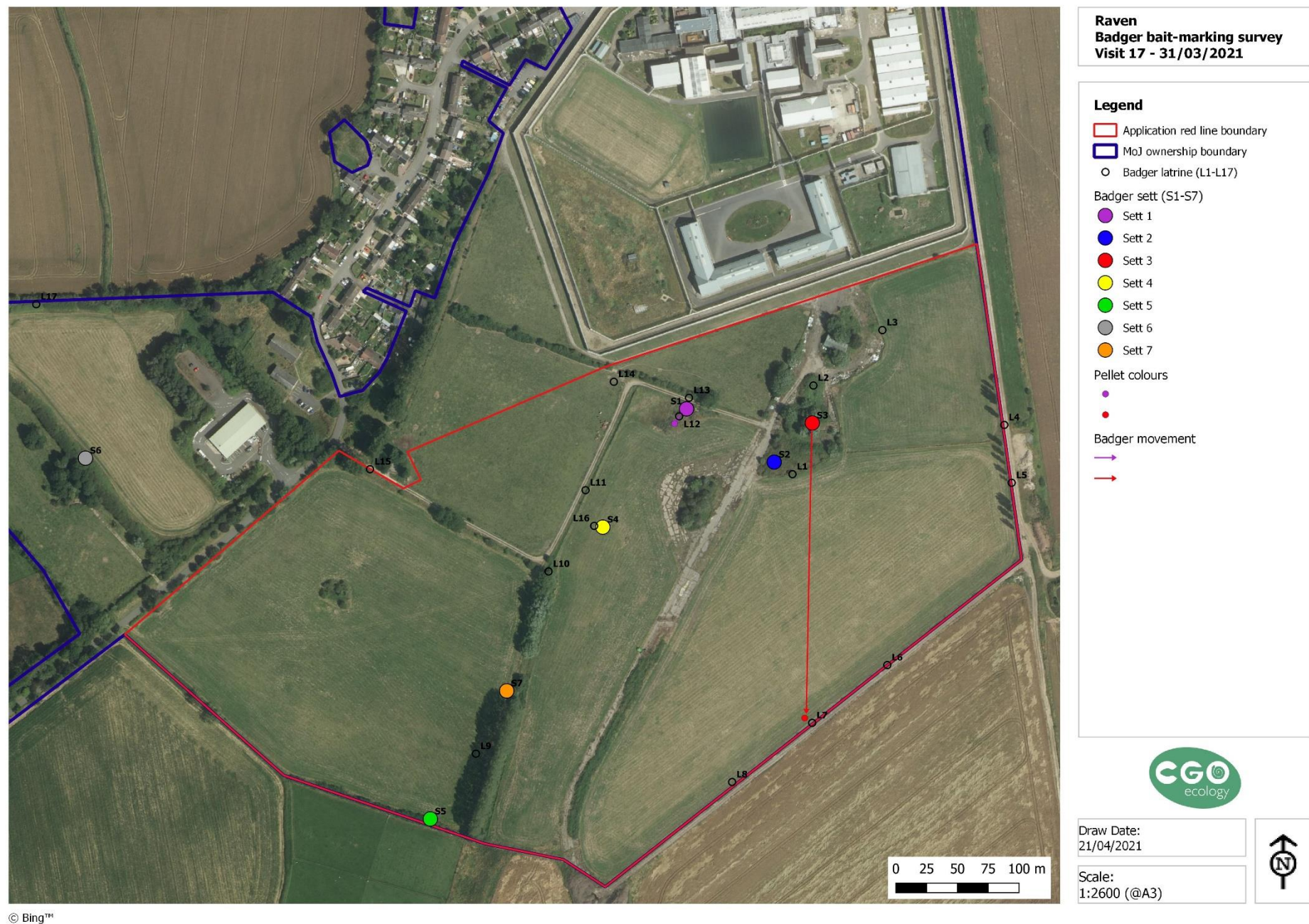


Figure 19 – Badger bait-marking survey results day 17.



Figure 20 – Badger bait-marking survey results day 18.



Figure 21 – Badger bait-marking survey results day 19.



Figure 22 – Badger bait-marking survey results day 20.

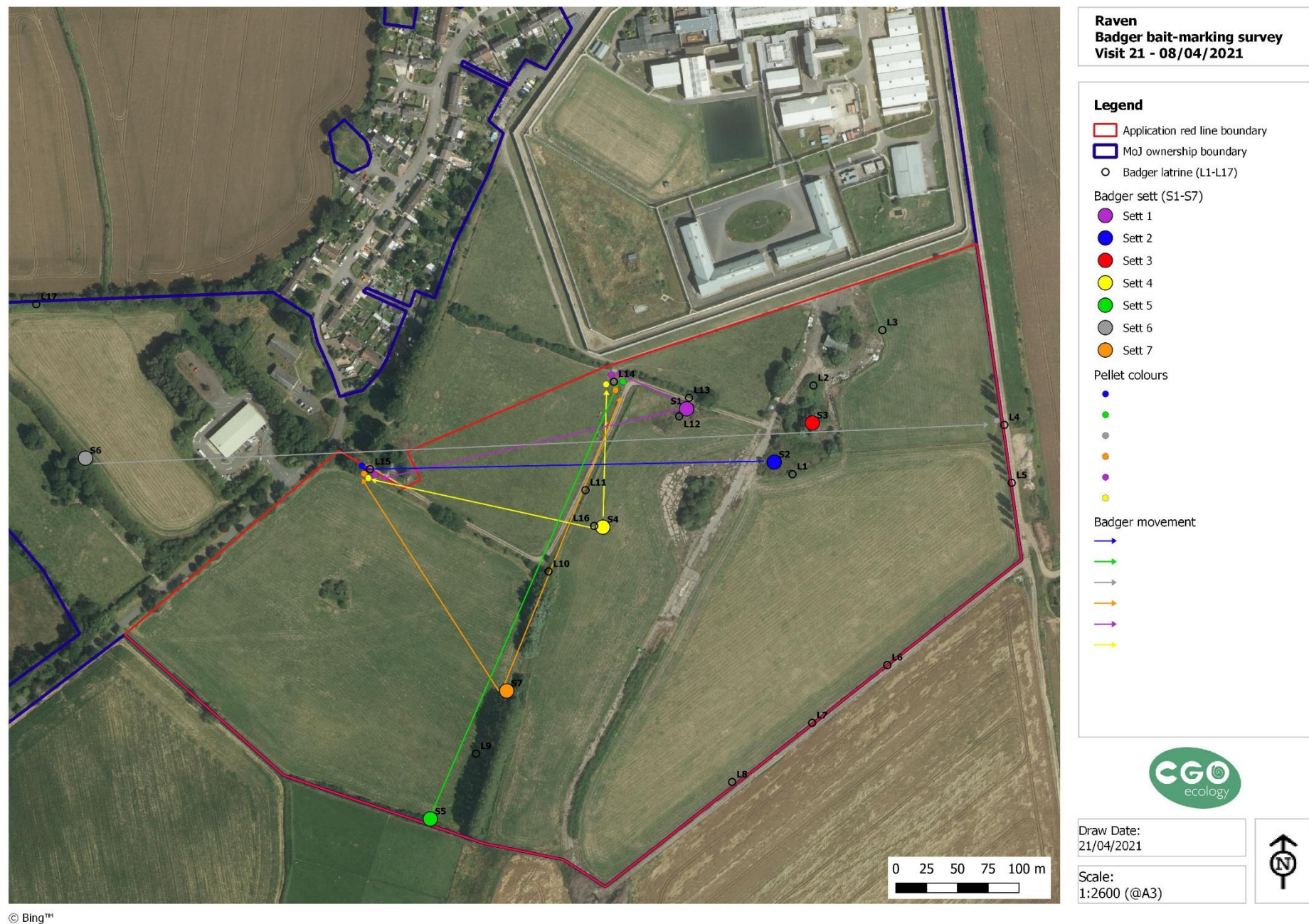


Figure 23 – Badger bait-marking survey results day 21.



Plate 1 – Badger dung in a dung-pit at a monitored latrine, containing blue, green, and purple coloured pellets, indicating badger movement between at least three setts.

4. Mitigation recommendations

To accommodate the proposed development, a programme of licensed sett closure, badger exclusion, replacement sett construction, and habitat creation will be necessary over a period of at least one year. Sett closure can only take place between 1st July and 30th November, and replacement setts must be demonstrably in use beforehand.

Only one clan territory is present, which simplifies the mitigation response in some respects. However, to replace four setts (two main, one subsidiary, and one outlier), it will be necessary to construct at least three replacement setts, including two large main setts. To replace lost hedgerow, grassland, scrub, and woodland, it will be necessary to provide sufficient compensatory habitat.

The connectivity of the site must continue to cater for the clan and its movements across a large territory. All retained and new setts must be well-linked by suitable linear habitats, and augmented by new planting of woodland and scrub, as well as new seeding of grassland, or if deemed more appropriate, allowing some existing grass areas to become rank. Close liaison with the LPA and Natural England will be necessary to agree acceptable mitigation provisions.

The area of off-site compensatory habitat proposed north of Welland Avenue, which currently contains one outlier sett, may need to become a more significant part of the territory, possibly housing one of the replacement main setts. As this area will be undeveloped, and it contains one small sett already, the existing sett could be enlarged by construction of adjacent new tunnels and chambers.

The second main sett should be within the main site (south of HMP Gartree and Welland Avenue). There is limited space for it under the current designs. It could be along the existing south or east boundary, but this would require a wider provision of woodland than the current hedgerows/boundaries allow. The west end of the site, close to Welland Avenue, is an alternative, as this is the only retained green area within the development boundary. The compensatory triangle of off-site land north of the development is the only other option, but this would offer poor connectivity with the rest of the undeveloped land in the area, and involve badgers crossing the new prison access road.

Replacement setts must aim to have at least as many chambers and entrances as the current setts which will be lost. The number of current chambers is difficult to gauge, but given the number of active entrances at the existing main setts (17 and 18 respectively), each new sett should have at least six chambers, and a similar number of entrances as those being lost.

It is recommended that at least one additional outlier sett be provided along the south and/or east boundary hedgerows, to allow continued connectivity and access to the arable fields south and east of the site. This would ensure the continued integrity of the territory as a whole, and reduce the risk of badgers dispersing north or west into another clan territory.

Mitigation provisions must be agreed with Natural England and the LPA as soon as possible, to enable construction of the replacement setts in 2021, and ensure their inhabitation well in advance of the 2022 sett-closure season.

5. References

Molesworth, J. (2020a) *Raven. Preliminary Ecological Appraisal*. Ramboll, Exeter.

Molesworth, J. (2020b) *Raven. Badger Survey*. Ramboll, Exeter.

Molesworth, J. (2021) *Raven. Badger Survey*. Ramboll, Exeter.