LINDSAY CARRINGTON ECOLOGICAL SERVICES

BIODIVERSITY MITIGATION STRATEGY

TALBOT CAMPUS
BOURNEMOUTH UNIVERSITY

APRIL 2017

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The contents of this report were correct at the time of the last survey visit. The report is provided for the sole use of the named client and is confidential.

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SUMMARY

1. Lindsay Carrington Ecological Services Limited were commissioned by Bournemouth University to produce a biodiversity mitigation strategy at Talbot Campus, Fern Barrow, Poole, Dorset (Grid ref: SZ 076 936).

2. The biodiversity mitigation strategy is required to discharge condition 12 of planning permission APP/16/00803/F for the demolition of Tolpuddle House, the removal of TPO trees and the construction of a fourth arm off Boundary Road roundabout connecting to Gillett Road, car park extension and car park re-organisation.

3. The site currently comprises hardstanding, buildings, ornamental, semi-improved grassland, improved grassland, bare ground, broadleaved woodland, scattered trees and hedgerows.

4. An inactive badger sett is present within ten metres of the site boundary. Best practice mitigation measures for foraging badgers are outlined in section 3.2.1.

5. A tree assessment for bats was undertaken looking for signs and/or evidence of bats within any potential cavities using an endoscope. Tree 17 was assessed as holding low potential to support roosting bats. Best practice mitigation measures for felling the tree are outlined in section 3.2.2.

6. The hedgerows, broadleaved woodland and scattered trees provide potential bird nesting habitat. In addition birds' nests were observed in a number of trees to the east of the site. Mitigation measures for nesting birds are outlined in section 3.2.3.

7. Low populations of slow worms and grass snakes were recorded around the boundaries of the tussocky semi-improved fields during the initial survey work in 2015, with no reptiles recorded within the proposed areas of works during surveys undertaken spring 2017. Populations of slow worm and common lizard were recorded in the proposed receptor areas indicating these areas provide good habitat for reptiles. Mitigation measures for reptiles have been outlined in section 3.2.4.

8. A selection of management prescriptions have been outlined in section 4 to enhance the ecological value of site, including planting of native trees, and proposals for wildflower planting included within the site.

1.0 INTRODUCTION

Lindsay Carrington Ecological Services Limited were commissioned by Bournemouth University to produce a biodiversity mitigation strategy at Talbot Campus, Fern Barrow, Poole, Dorset (Grid ref: SZ 076 936).

The biodiversity mitigation strategy is required to discharge condition 12 of planning permission APP/16/00803/F for the demolition of Tolpuddle House, the removal of TPO trees and the construction of a fourth arm off Boundary Road roundabout connecting to Gillett Road, car park extension and car park re-organisation, see appendix I.

The site currently comprises hardstanding, buildings, ornamental, semi-improved grassland, improved grassland, bare ground, broadleaved woodland, scattered trees and hedgerows.

Baseline ecological information for the site is provided in section 2 of this report, section 3 details the mitigation and habitat enhancements, section 4 covers management prescriptions and section 5 details the timetable of works.

2.0 BASELINE INFORMATION

A detailed walkover survey was undertaken on the 25th June 2015 by Becci Smith, directly searching for legally protected and invasive species of plant and categorising any habitats of ecological value that were encountered.

2.1 Habitats

Semi-improved grassland

Tussocky semi-improved grassland is present in the eastern section of the site comprising locally dominant Yorkshire-fog (*Holcus lanatus*), perennial rye-grass (*Lolium perenne*) and smooth meadow-grass (*Poa pratensis*), locally abundant cock's-foot (*Dactylis glomerata*) and red fescue (*Festuca rubra*), frequent cat's-ear (*Hypochaeris incana*) and gorse (*Ulex europaeus*), locally frequent sweet vernal-grass (*Anthoxanthum odoratum*), soft brome (*Bromus hordeaceus*) and crested dog's-tail (*Cynosurus cristatus*), occasional cut-leaved crane's-bill (*Geranium urbanum*), common bird's-foot trefoil (*Lotus corniculatus*), ribwort plantain (*Plantago lanceolata*), creeping buttercup (*Ranunculus repens*), curled dock (*Rumex crispus*), common ragwort (*Senecio jacobaea*), smooth sow-thistle (*Sonchus oleraceus*), red clover (*Trifolium pretense*) and common vetch (*Vicia sativa*), locally occasional barren brome (*Anisantha sterilis*), spear thistle (*Cirsium vulgare*), wood avens (*Geum urbanum*), hawkweed sp. (*Hieracium sp.*), hoary mustard (*Hirschfeldia incana*) and common nettle (*Urtica dioica*), and rare common mallow (*Malva sylvestris*) and hogweed (*Heracleum sphondylium*).

Improved grassland

Short sward improved grassland is present around the main Talbot Campus. The improved grassland comprises locally dominant common bent (*Agrostis capillaris*), locally abundant lesser trefoil (*Trofolium dubium*), red clover and white clover (*Trifolium repens*), frequent cat's-ear, ribwort plantain and selfheal (*Prunella vulgaris*), locally frequent daisy (*Bellis perennis*), cock's-foot, red fescue, Yorkshire-fog and perennial rye-grass, occasional yarrow (*Achillea millefolium*), common mouse-ear (*Cerasium fontanum*), buck's-horn plantain (*Plantago coronopus*), meadow buttercup (*Ranunculus acris*) and dandelion (*Taraxacum agg.*), locally occasional false oat-grass (*Arrhenatherum elatius*), soft brome, cut-leaved crane's-bill, smooth sow-thistle and germander speedwell (*Veronica chamaedrys*), rare creeping thistle (*Cirsium arvense*), nipplewort (*Lapsana communis*), common bird's-foot trefoil, black medick (*Medicago lupulina*), curled dock (*Rumex crispus*), common ragwort, common vetch and locally rare scarlet pimpernel (*Anagallis arvensis*).

Trees

Trees are scattered across the site and comprise locally frequent cherry laurel (*Prunus laurocerasus*) and lime (*Tilia x europaea*), occasional hawthorn (*Crataegus monogyna*)

and pine sp. (*Pinus sp.*), locally occasional field maple (*Acer campestre*), silver birch (*Betula pendula*), holly (*Ilex aquifolium*), wild cherry (*Prunus avium*), pedunculate oak (*Quercus robur*) and rowan (*Sorbus aucuparia*) and rare sycamore (*Acer pseudoplatanus*) and ash (*Fraxinus excelsior*).

Hardstanding

Hardstanding colonised by locally occasional groundsel (*Senecio vulgaris*), cat's-ear, lesser trefoil, buck's-horn plantain, rare daisy, common mouse-ear and willowherb species (*Epilobium sp.*) forms the footpaths and car parks.

Hedgerow

A species-poor hedgerow is present along the northern boundary with locally dominant bramble (*Rubus fruticosus agg.*) and Leyland cypress (*Cupressus leylandii*), locally abundant gorse, cherry laurel, locally frequent hazel (*Corylus avellana*), elder (*Sambucus nigra*), beech (*Fagus sylvatica*), ash, cleavers (*Galium aparine*), perennial rye-grass and pine, locally occasional alder (*Alnus glutinosa*), spear thistle, nipplewort and pedunculate oak, hawthorn, blackthorn (*Prunus spinosa*) and rare poplar (*Poplus sp.*).

Bareground

A small area of bare ground is present near one of the buildings comprising locally frequent cat's-ear and buck's-horn plantain, locally occasional common ragwort, rare scarlet pimpernel, daisy, shepherd's-purse (*Capsella bursa-pastoris*) and pineappleweed (*Matricaria discoidea*).

Ornamental planting

Ornamental planting is present across the site within car parks comprising locally frequent common poppy (*Papaver rhoeas*), locally occasional sycamore, scarlet pimpernel, hedge bindweed (*Calystegia sepium*), cotoneaster (*Cotoneaster horizontalis*), petty spurge (*Euphorbia peplus*), ivy (*Hedera helix*), annual meadow-grass, smooth sow-thistle, rare barren brome and dandelion.

Semi-natural mixed woodland

An area of semi-natural mixed woodland is present in the north east of the site. The woodland comprises abundant ivy, holly, frequent pedunculate oak, locally frequent holm oak (*Quercus ilex*), occasional sycamore, beech, pine, wild cherry, rowan, bramble, locally occasional annual meadow-grass and rare ash.

2.2 Species

Badgers

A series of ten holes are present within fifteen to twenty metres of the north eastern boundary of the site, with five of the tunnels leading towards the development area. In addition a potential badger (*Meles meles*) scat was recorded in the semi-improved grassland in the north east of the site. Numerous mammal tracks are present throughout the semi-improved grassland in the north, east and south east of the site, however it is uncertain whether it is badgers creating these mammal tracks. Foxes (*Vulpes vulpes*) were recorded within the fields at the north east of the site during an update badger survey on the 12th January 2017.

A survey was conducted in 2015 by placing sticks over the ten entrance holes and none of these were dislodged (LCES 2015). Further surveys were conducted in January 2017 carried out by placing sticks over the ten entrance holes, and through the use of camera traps. None of the sticks were dislodged during the survey and no badgers were recorded on the camera traps, therefore the potential badger sett is currently identified as inactive. Foxes were recorded on the camera traps and are considered to be the main source of the mammal tracks across the field. A diagram of the inactive badger sett is presented in appendix III.

Bats

The site supports semi-improved grassland, species-poor hedgerows, scattered trees, with moderate levels of baseline ambient light levels from road and security lights. The habitat on site has been assessed as holding potential to provide foraging and commuting routes for bats in the local area, such as pipistrelle bats (*Pipistrellus* sp.). During an emergence survey of Tolpuddle House conducted in July 2016 low levels of bat activity were recorded on site with a single pass by a noctule (*Nyctalus noctula*) and common pipistrelle (*Pipistrellus pipistrellus*) (LCES 2016).

A tree assessment for bats was undertaken looking for signs and/or evidence of bats within any potential cavities using an endoscope in December 2015 (LCES 2016). Bat boxes were recorded in the northern tree line and semi-natural mixed woodland. Tree 17 was assessed as holding low potential to support roosting bats due to the presence of a small rot hole approximately 5 metres high, however no evidence of use by bats was recorded. A map detailing the location of Tree 17 is provided in appendix IV. Best practice mitigation measures for felling the tree are outlined in section 3.2.2.

Reptiles

Areas of tussocky semi-improved grassland provide suitable reptile habitat for common species of reptiles such as slow worms (*Anguis fragilis*) and common lizards (*Zootoca vivipara*). In addition, the site is well connected to the wider landscape allowing for the movement of reptiles. A targeted reptile survey was conducted in 2015, the full results

are present in table 1 below. To summarise, a population of slow worm and grass snake was recorded with a peak count of 1 during any one survey indicating a low population (Froglife, 1999). These reptiles were recorded around the boundaries of the site. Due to the presence of reptiles on the site an update survey was undertaken to establish population levels on the site in 2017 with results shown in table 2. This survey comprised placing 200 felts on site and conducting twenty visits after the mats had been left to bed in for ten days. These surveys recorded no reptiles within the works area which no longer includes impacting boundary features. The proposed receptor site was also surveyed to ascertain the current reptile populations on site with results shown in table 3. Reptiles recorded on the receptor site included a peak count of nineteen adult slow worms and two common lizards.

Table 1: Reptile survey results in 2015

Date	**Time**	**Weather**	**Temp (°C)**	**Reptiles**			
				CL[1]	**SW[2]**	**GS[3]**	**A[4]**
17.08.15	10.00	Wind 1/12, cloud cover 4/8	16				
19.08.15	9.30	wind 2/12, cloud cover 7/8	17			1J[5]	
21.08.15	9.00	Wind 2/8, cloud cover 7/8	18			1J	
25.08.15	9.45	Wind 3/12, cloud cover 7/8	16				
26.08.15	9.30	Wind 1/12, cloud cover 7/8	16				
27.08.15	12.45	Warm, bright, muggy	16		1J		
28.08.15	09.30	Wind 1/12, cloud cover 2/8 warm	15		1J		

Table 2: Reptile survey results in 2017 on site

Visit number	**Date**	Time	Weather	Temp (°C)	Reptiles			
					CL	SW	GS	A
1	9/3/17	10:00	Sunny spells, 6/8 cloud cover,	12				

[1] CL: Common lizard
[2] SW: Slow worm
[3] GS: Grass snake
[4] A: Adder
[5] J: Juvenile

			2/12 wind					
2	9/3/17	13:15	Clear and sunny, 1/8 cloud cover, 2/12 wind	12				
3	13/3/17	9:30	Clear and sunny, 1/8 cloud cover, 2/12 wind	10				
4	13/3/17	11:45	Clear and sunny, 1/8 cloud cover, 2/12 wind	14				
5	14/03/17	11.00	Overcast 8/8, (with some breaks) 2/12 wind	12.5				
6	15/03/17	10:15	Overcast,8/8 cloud cover, 0/8 wind	9				
7	15/03/17	13:45	Sunny, 1/8 cloud cover, 1/8 wind	11				
8	17/03/17	09:15	Sunny,1/8 cloud cover, 1/12 wind	13				
9	17/03/17	12:15	Sunny spells, 5/8 cloud cover, 3/12 wind	12				
10	21/03/17	09:12	Sunny, 1/8 cloud cover, 1/12 wind	13				
11	21/03/17	13:00	Sunny, 1/8 cloud cover, 2/12 wind	13				
12	24/03/17	14:40	Sunny, 1/8 cloud cover, 2/12 wind	14				
13	27/03/17	11:15	Clear and sunny, 0/8 cloud cover, 1/12 wind	18				
14	27/03/17	15:00	Clear and sunny, 0/8 cloud cover,	20				

			1/12 wind					
15	28/03/17	12:15	Sunny spells, 5/8 cloud cover, 2/12 wind	17				
16	28/03/17	12:15	Sunny spells, 5/8 cloud cover, 2/12 wind	17				
17	30/03/17	10:10	Sunny spells, 6/8 cloud cover 1/12 wind	16				
18	30/03/17	14:15	Sunny spells, 5/8 cloud cover, 1/12 wind	17				
19	31/03/17	14:10	Sunny spells, 5/8 cloud cover,1/12 wind	15				
20	03/04/17	14:00	Sunny spells, 6/8 cloud cover, 1/12 wind	19				

Table 2: Reptile survey results in 2017 on proposed receptor sites

Number visit	**Date**	Time	Weather	Temp (°C)			
					CL	SW	Area recorded
1	09/03/17	11:10	Sunny spells, 6/8 cloud cover, 2/12 wind	12			
2	09/03/17	14:30	Clear and sunny, 1/8 cloud cover, 2/12 wind	12			
3	13/03/17	10:45	Clear and sunny, 1/8 cloud cover, 2/12 wind	10		2 adult F 1 Juv	NE corner area 2, Along N boundary of area 3
4	13/03/17	13:30	Clear and sunny, 1/8 cloud cover, 2/12 wind	14		2 adult F 1 Juv	NE corner area 2, Along N boundary of area 3
5	14/03/17	12.30	Sunny spells, 6/8 cloud cover, 2/12 wind	14		3 adult (2 M, 1F) 1 sub	NE &SE corner area 2, along northern boundary of

						1 juv	
6	15/03/17	11:15	Sunny spells, cloud cover 5/8, wind 0/8	10		2 adult (1M, 1F), 2 sub	NE corner of Area 2 and northern point of Area 3.
7	15/03/17	14:00	Sunny and clear, 1/8 cloud cover, 1/8 wind	11		3 adults (1F, 2M) 1 sub	NE of Area 3 on the boundary and NE corner of Area 2.
8	17/03/17	10:40	Sunny, 4/8 cloud cover, 2/12 wind	13	2 adults (without tail)	2 juv 2 adults (2F)	N of area 2 next to access point (2 juv) NW of Area 3 near the access point (2 SW-F)
9	17/03/17	12:15	Sunny spells, 5/8 cloud cover, 2/12 wind	12		2 adults (2 F)	NW of area 2 next to the access point (2 CL), in the eastern corner of area 2 (1SW-F) and NW of Area 3 along the gorse (1SW-F)
10	21/03/17	10:40	Sunny, 2/8 cloud cover, 1/12 wind	14		4 adults (4F)	N of area 2 next to the access point (1 SW-F) N of area 3 along northern boundary (3 SW-F)
11	21/03/17	14:10	Sunny spells, 4/8 cloud cover, 2/12 wind	13		3 adults (3F), 1 juv	N of area 2 next to the access point(SW-F), N of area 3 along northern boundary (2 SW-F, 1 Juv)
12	22/03/17	14:55	Sunny spells, 4/8 cloud cover,1/12 wind	10		2 sub F, 1sub M, 1 juv, 3 adults (2 M, 1F)	N bank of area 2 (1 juv, 1 sub M), NE corner of Area 2 (A F), area 3 northern bank (1 sub F and 2 adult M), NE near path between the two areas (1 AF),
13	24.03.17	15:40	Clear and sunny, 0/8	16	1 adult	6 adults (5 F,	N of area 2 next to the access point

			cloud cover, 0/12 wind			1M), 2 juv	(1 SW-M+2 juv), NE of area 2 along the northern boundary (SW-F), NW of area 3 along the gorse (SW-F), SE of area 3 (SW-F), NW of area 3 along to the gorse (SW-F), NW of area 3 next to access point (SW-F)
14	27.03.17	12:30	Clear and sunny, 0/8 cloud cover, 1/12 wind	19	1 adult witho ut tail	3 adults (2M,1F)	N of area 2 next to access point (right side) (SW-M) N of area 3 next to access point (right side) (SW-M), SE of area 3 along to the gorse (CL) NW of area 3 near gorse (SW-F)
15	27.03.17	15:00	Clear and sunny, 0/8 cloud cover, 1/12 wind	19	2 adults	4 adults (2M, 2F), 1juv	N of area 2 next to access point (right side) (SW-M), N of area 2 next to access point along to the gorse (SW-F), N of Area 3 near access point on the right side (CL), W of area 3 along to the gorse (SL juv), W of area 3 near gorse (SW-F), N of area 3 near access point on the left side (SW-F)
16	28.03.17	13:30	Sunny spells, 5/8 cloud cover,	17	1 adult	19 adults (17F, 2M)	N of area 2 next to access point along northern

			2/12 wind			4 juv	boundary (6 adults SW- 6F, 2M, 2juv), area 2 in the eastern corner (SW-F+1juv), E of area 2 next to the path between area 2 and 3 (SW-F), N of area 3 next to access point and along to northern boundary (NE direction) (4SW-F) and NW next to the access point (2SW-F), NE of area 3 along to the gorse boundary (CL, SW-F), E of area 3 along to the boundary (SW-F), eastern corner of area 3 (CL, SW-juv), W of area 3 next to the gorse (2 SW-F)
17	30/03/17	11:25	Sunny spells, 6/8 cloud cover, 1/12 wind	16		13 adults SW (10F, 3M), 7juv	N of area 2 next to the access point (2 SW-F, 3SW-M, 3SW-juv), in the eastern corner of area 2 (SW-juv), ES of area 2 (2SW-F), in the western corner of area 2 next to access point (SW-F), N of area 3 next to access point (3SW-F, 2SW-juv), SE of Area 3 (SW-F, CL),

							W of area 3 (SW-F, SW-juv)
18	30/03/17	15:10	Sunny spells, 5/8 cloud cover, 1/12 wind	17		14 adults SW(11F, 3M) , 6 juv	N of area 2 next to the access point on the right side (3SW-F, 2SW-M, 4SW-juv) ES of Area 2 (3SW-F), in the western corner next to the access point (SW-F), N of area 3 next to access point on right side (3SW-F) in the eastern corner of area 3 (SW-M), W of area 3 (SW-F, SW-juv) N of area 3 next to access point on the left side (SW-F, SW-juv)
19	31/03/17	15:10	Sunny, 3/8 cloud cover, 2/12 wind	15	2 adults	12 SW(10F, 2M), 3 juv	N of area 2 left side of access point (SW-F), N and NE of area 2 (3SW-F, SW-M, SW-juv), N of area 3(4 SW-F), W of area 3(SW-F, SW-juv), NW of area 3 (SW-F, SW-juv)
20	03/04/17	16:30	Sunny spells, 4/8cloud cover, 1/12 wind	20			

Low populations of slow worms and grass snakes were recorded during the initial survey work in 2015 with no reptiles recorded within the proposed areas of works during 2017. Populations of slow worm and common lizard were recorded in the proposed receptor

areas indicating these areas provide good habitat for reptiles. Mitigation measures have consequently been provided in section 3.2.4.

3.0 MITIGATION AND ENHANCEMENTS

A number of mitigation strategies will be implemented to prevent harm to badgers, bats, nesting birds and reptiles. These measures are outlined below. Ecological enhancements are shown on the figure given as appendix II.

3.1 Habitats

3.1.1 Tree and scrub planting

Native trees will be included within the landscape design and will be situated around the new parking area. Suitable tree and shrub species include hawthorn (*Crataegus monogyna*), goat willow (*Salix caprea*), dogwood (*Cornus sanguinea*), spindle (*Euonymus europaeus*), blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*), beech, rowan, guelder-rose (*Viburnum opulus*), oak, field maple, damson and hazel. Shrubs will be planted in the winter when they are dormant. Planting of the trees and shrubs will take place using the hole planting method by contractors. Each plant will be supported by stakes and protected using tubex shelters. Subsequent aftercare will ensure they survive in the long-term, thus providing nesting and foraging habitat for birds and bats.

3.1.2 Wildflower planting

The scheme will provide areas of wildflower planting and will be sown with an EM1 general purpose meadow mixture. Soil analysis has shown that the soil has a phosphorus content of 52 mg/l which is a high content and prior to the establishment of a wildflower grassland this will need to be reduced to prevent the sward becoming dominated by grass species.

The topsoil will be removed to expose the more nutrient poor subsoil, which is in the top 20cm of the soil. The nutrient load of the soil will then be further reduced by sowing the ground with a perennial rye-grass crop and then cutting and disposing yearly. This will work to lower the nutrient load of the soil over the course of a couple of years. Once the nutrient load in the soil has been depleted the perennial rye crop will be stripped and the area rolled.

An EM1 meadow mixture will then be sown which is suitable for a range of types. Species in this mix include common knapweed (*Centaurea nigra*), lady's bedstraw (*Galium verum*) and crested dogstail (*Cynosurus cristatus*). A list of species is provided in table 3.

Table 3: Species included in the EM1 meadow mixture

Common name	Latin name	%
Yarrow	*Achillea millefolium*	0.5
Common knapweed	*Centaurea nigra*	4.5

Wild carrot	*Daucus carota*	1
Lady's bedstraw	*Galium verum*	3
Oxeye daisy	*Leucanthemum vulgare*	1
Selfheal	*Prunella vulgaris*	3
Meadow buttercup	Ranunculus acris	5
Common Sorrel	*Rumex acetosa*	0.5
Red campion	*Silene dioica*	1.5
Common bent	*Agrostis capillaris*	8
Crested dogstail	*Cynosurus cristatus*	40
Slender-creeping red fescue	*Festuca rubra*	28
Smaller Cat's-tail	*Phleum bertonii*	4

Seed is best sown in the autumn or spring and will be surface sown and then will be firmed in by rolling or by treading to give good soil/seed contact. The seed will be sown at a rate of 4 g/m^2.

3.2 Protected Species

3.2.1 Badgers

The badger setts to the north east of the site boundary have been assessed as inactive. Badgers are known to be present in the area surrounding the construction area at Talbot Campus, Bournemouth University. Due to this knowledge best practice will be implemented to ensure that badgers are not injured or killed during development works.

Mitigation prior to construction

Inactive badger sets are present on the eastern boundary of the proposals which will be closed using badger gates to ensure badgers in the local area do not move into these holes prior to the works commencing. This will be carried out with the following methodology:

- Following three weeks of monitoring once the sett has been confirmed as inactive the holes will be closed with the use of one-way gates. Should the sett be recorded as active a licence from Natural England will be required along with a full mitigation strategy for disturbance of the sett during works. Full closure of the sett is considered unnecessary due to the distance of the sett from the proposed works area.
- The one way gates will be fitted to all holes leading towards the development site prior to the works commencing ensuring no badgers move into the sett. The gates will remain in place for the duration of the works.
- Following the completion of the works the badger gates will be removed to maintain the sett on the boundary.
- Any trenches during the construction will be backfilled nightly, boarded over or will have a ramp installed in order to prevent any wildlife becoming trapped

overnight. Exit ramps will involve either earth being slopped at one end or a plank fitted.
- Prior to works commencing the working area will be fenced with heras fencing to dissuade badgers from entering the site during the construction period, and to prevent construction traffic driving and storing materials close to the existing badger setts.

Enhancement

The development will result in the loss of foraging habitat for badgers with the loss of the semi-improved grassland. The following enhancement will be included within the scheme to mitigate for this loss.

- Planting of native species within the landscape design will provide additional foraging resources for the local badger population. The mitigation scheme planned for the bats will include the planting of native species detailed in table 4 below.
- Badgers will also be able to freely move along the boundaries of the site to adjacent setts and foraging areas.
- Wildflower meadows will be included in the scheme of the development providing additional foraging for the badgers.

3.2.2 Bats

Mitigation

Trees

Tree 17 on the felling plan has been identified as holding low potential to support bats due to a small rot hole on the trunk. Prior to felling the tree suitable roosting features will be inspected with an endoscope to check for the presence of bats where possible by a licensed tree climber. If bats are present a European Protected Species Licence will be required from Natural England before the tree can be felled. This will also involve carrying out further surveys in May and August. If bats are recorded as present the tree will be retained on the site until a licence has been obtained from Natural England. A root protection zone will be implemented around the tree to ensure it is not damaged during the works.

If no evidence of bats is recorded sections of the tree will be felled using a soft felling method. This will be achieved by cutting the tree into sections and gently lowering these to the ground, while preserving the integrity of features suitable for roosting bats (such as cavities, hollows and fissures). Sections with any features will be left overnight with any holes and potential roost features facing upwards. The felled sections of trees will be used to enhance the reptile receptor site providing refugia habitat.

Lighting

Lighting will be required around the new roads and car park for both visual and security needs. The following will therefore be required:

- The lighting specification will be that 1 lux (bright moonlight) will be reached within 7.5 metres of the column, therefore there will be little light spill into the surrounding area.

- Lighting will be directed to where it is needed (away from surrounding habitat and boundary features where possible) through the design of the luminaire and by using accessories such as cowls or hoods.

- The lighting in the car park extension will be turned off between 23:00 hours and 06:00 hours every day. This will allow the southern boundary to remain dark, enabling foraging and commuting bats to utilise the southern edge.

- Light sources will emit minimal ultra-violet light, peak higher than 550nm and be of a warm/neutral colour <4,200 kelvin.

Enhancement

Potential foraging habitat is to be removed to facilitate the new development. To provide suitable foraging habitat for bats, existing trees within the development zone will be retained where possible, the following will also be implemented.

- Tree and shrub landscape planting in the new landscape design will comprise native species of UK origin. Table 4 below provides a list of suitable species.

Table 4: Tree and shrub species

Common name	Scientific name
Field maple	*Acer campestre*
Hazel	*Corylus avellana*
Hawthorn	*Crataegus monogyna*
Spindle	*Euonymus europaeus*
Crab apple	*Malus sylvestris*
Blackthorn	*Prunus spinosa*
Pedunculate oak	*Quercus robur*
Goat willow	*Salix caprea*
Elder	*Sambucus nigra*

Provision of woodcrete bat boxes on the trees and buildings will help increase the available roosting opportunities for bats on the site, see the figure presented as appendix II for locations. Bat boxes are already present within the northern woodland strip. Boxes

such as the following can be erected within the site and can be purchased from websites such as www.jacobijayne.co.uk:

- Four Schwegler 1FF bat boxes will be hung from retained trees within the development. Suitable for pipistrelle species of bats.

- Four Schwegler 2F bat boxes will be hung from retained trees within the development. Suitable for long-eared (*Plecotus* sp.) species of bats.

3.2.3 Nesting birds

Mitigation

The mature trees and hedgerows around the site, provide foraging and nesting habitat both for common and widespread species of bird such as blue tit (*Cyanistes caeruleus*) and wren (*Troglodytes troglodytes*) as well as birds listed as amber on the BoCC (Birds of Conservation Concern) list such as dunnock (*Prunella modularis*), and Biodiversity Action Plan (BAP) species such as song thrush (*Turdus philomelos*). The following precautions should negate risk of harming, injuring or contributing to the demise of these species:

- All vegetation clearance should be conducted outside of the bird nesting season which is considered to run from March to September. Where this is not possible a suitably qualified ecologist should check potential nesting habitat immediately prior to clearance. Where nesting birds are encountered clearance must be postponed until the nestlings have fledged.

Enhancement

Provision of woodcrete bird boxes on the trees and buildings will help increase the number of bird species within the site, see the figure presented as appendix II for locations. Boxes such as the following will be erected within the site and can be purchased from websites such as www.jacobijayne.co.uk:

- 1B official nest box – can be hung from building walls or trees. Suitable for species including great tit (*Parus major*), blue tit (*Cyanistes caeruleus*), marsh tit (*Poecile palustris*) and coal tit (*Periparus ater*); nuthatch (*Sitta europaea*); wren (*Troglodytes troglodytes*); and house sparrow (*Passer domesticus*). Four nest boxes will be provided.

- 1SP Sparrow Terrace – designed for fixing to outside of walls or within brick walls. Suitable for house sparrows; and spotted flycatcher. Four nest boxes will be provided.

3.2.4 Reptiles

Mitigation

The reptile surveys found a low population of slow worm with a low population of grass snake during the surveys in 2015. The reptiles were found predominantly around the boundaries of the site which are not in the footprint of the works. An update survey conducted in 2017 comprising 20 visits established that no reptiles are present within the working area. A mitigation strategy to ensure no reptiles are killed or injured during the site clearance works is presented below.

Exclusion

An exclusion exercise with the use of specialist drift fencing will be adopted. This will involve erecting specialist drift fencing around the working area. Drift fencing essentially forms a barrier which prevents movement of reptiles. This will ensure that no reptiles can enter the working area from the surrounding habitat. The fencing will remain in place for the duration of the works between the retained meadow and the works area. Prior to works a destructive search will be carried out as a precautionary measure. This involves a suitably qualified ecologist working alongside construction plant, and conducting a destructive search for reptiles. Any reptiles found will be safely re-located to the receptor site on the TVT land.

The fence will be removed once construction is complete. The design of the fence is shown in appendix VII.

Receptor site

The receptor sites are located around the edges of current fields. The areas comprises open areas of grassland with gorse and bracken scrub across embankments which form part of Bourne Valley SSSI, Dorset Heathlands SPA and Ramsar, and Dorset Heaths SAC. The edges of the fields provide basking opportunities for reptiles with areas of scrub providing sheltering opportunities. These areas currently support an exceptional population of slow worms and a low population of common lizards and therefore provide good habitat for reptiles. As no reptiles have been recorded on the site this area is considered suitable to provide habitat for any reptiles that may be encountered during the destructive search as this will only be low numbers of individuals.

Enhancements

A wildflower grassland has been incorporated into the landscape designs along the eastern boundary of the link road. Once this grassland has been established it will provide foraging habitat for the local reptile population and will include a reptile hibernacula.

4.0 PROPOSED MANAGEMENT PRESCRIPTIONS

The annotated plan in appendix II summarises the enhancement and mitigation described below for site at Talbot Campus, Bournemouth University. Prior to any habitat creation works the landscape team will be briefed on the presence of protected species.

4.1 Tree planting

Management of the native tree planting will maintain botanical diversity thus providing a valuable habitat for birds, butterflies, and small mammals.

- The dead wood on trees will be retained where possible and tree surgery works will only take place where there is an over-riding risk to public safety on existing public rights of way or agricultural requirements.
- Ivy on trees will be maintained as foraging habitat for butterflies and birds.

4.2 Wildflower grassland

In the first year most of the sown meadow species are perennial and will be slow to germinate and grow and will not usually flower in the first growing season. There will often be a flush of annual weeds from the soil in the first growing season. This weed growth is easily controlled by topping or mowing.

The grassland mix will be allowed to flower and in mid-summer cut and all arisings will be removed from the site. Staff undertaking the cutting will be given a toolbox talk about the potential presence of reptiles in the area and grassland will be cut in one direction to ensure reptiles in the area can move away from the working area and not become trapped in areas of uncut grass. The grassland cut will only be carried out in temperatures above 10°C when reptiles are active.

4.3 Reptile receptor site

Talbot Village Trust meadows

These areas of land are currently managed by TVT and Natural England. These are designated sites and are currently managed to maintain the heathland which will provide suitable management for the reptiles in the long term.

4.4 Bat and bird boxes

The bat and bird boxes will be annually inspected to ensure they have not been damaged and replaced where necessary. The bird boxes will be maintained with old nest material removed during the winter months outside the bird nesting season. Bat boxes will be

visually inspected from the ground and should further investigations be required this will be carried out by a licensed bat worker.

5.0 Timetable of works

The proposed timetable of works is presented below in table 5 below.

Table 5: Proposed timetable of works

Management	Prescription	Timing	Time limit
Tree planting/management	Planting of whips with spiral guards	Winter	To be completed by Spring
	Inspection of whips and replacement of any that have not established	N/A	Ongoing – annually
	Trees will be watered throughout the summer months	Summer	The first year after planting
Wildflower grassland	Prepare soil by decreasing nutrient load with a *Lolium* lay and grass cutting regime.	Over a course of 2 years and prior to sowing of seeds	Years 1 + 2
	Strip *Lolium* lay and roll to bare soil	Spring	Year 3
	Sowing of seeds by surface sowing	Spring or Autumn	Year 3
	Water in seeds and ensure areas are watered during dry periods	During periods of no rain	Year 3
	Weed control by mowing	Summer	Year 3 until established
	Cutting regime	Late summer	Year 3 until established
Bat roosting habitat	Bat boxes erected on mature trees	Summer	To be completed by autumn
	Replacement of damaged boxes	When required	N/A
Bird boxes	Bird boxes erected on mature trees	Winter	To be completed by spring
	Maintenance of bird boxes	Annually during the winter	Ongoing
Hibernacula creation	Construction of hibernacula	Spring	Year 1

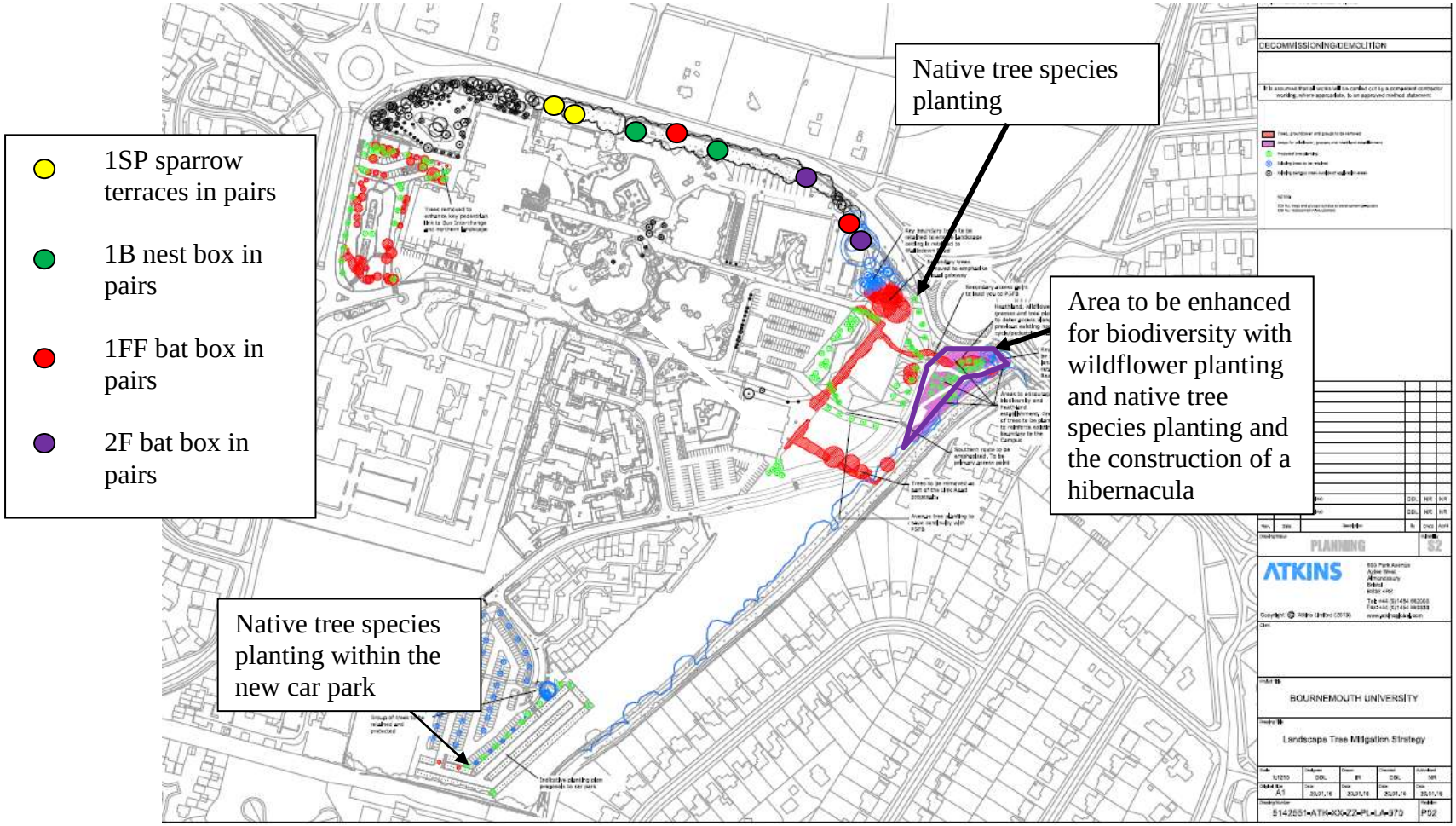
6.0 REFERENCES

LCES (2016) Ecological appraisal and phase 1 bat survey

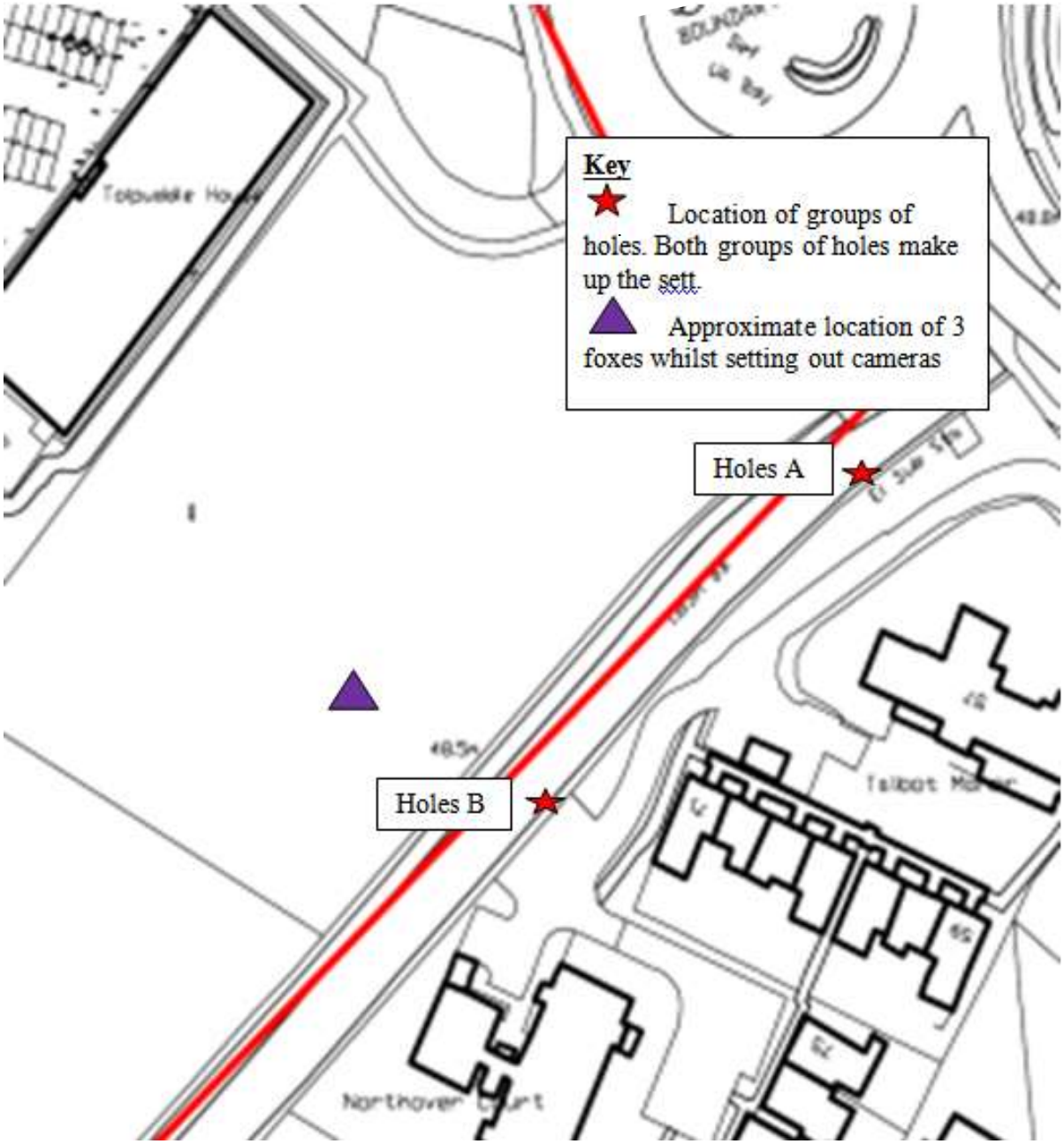
Mitchell-Jones, A. J. (2004), Bat Mitigation Guidelines, English Nature.

APPENDIX I: Proposed development

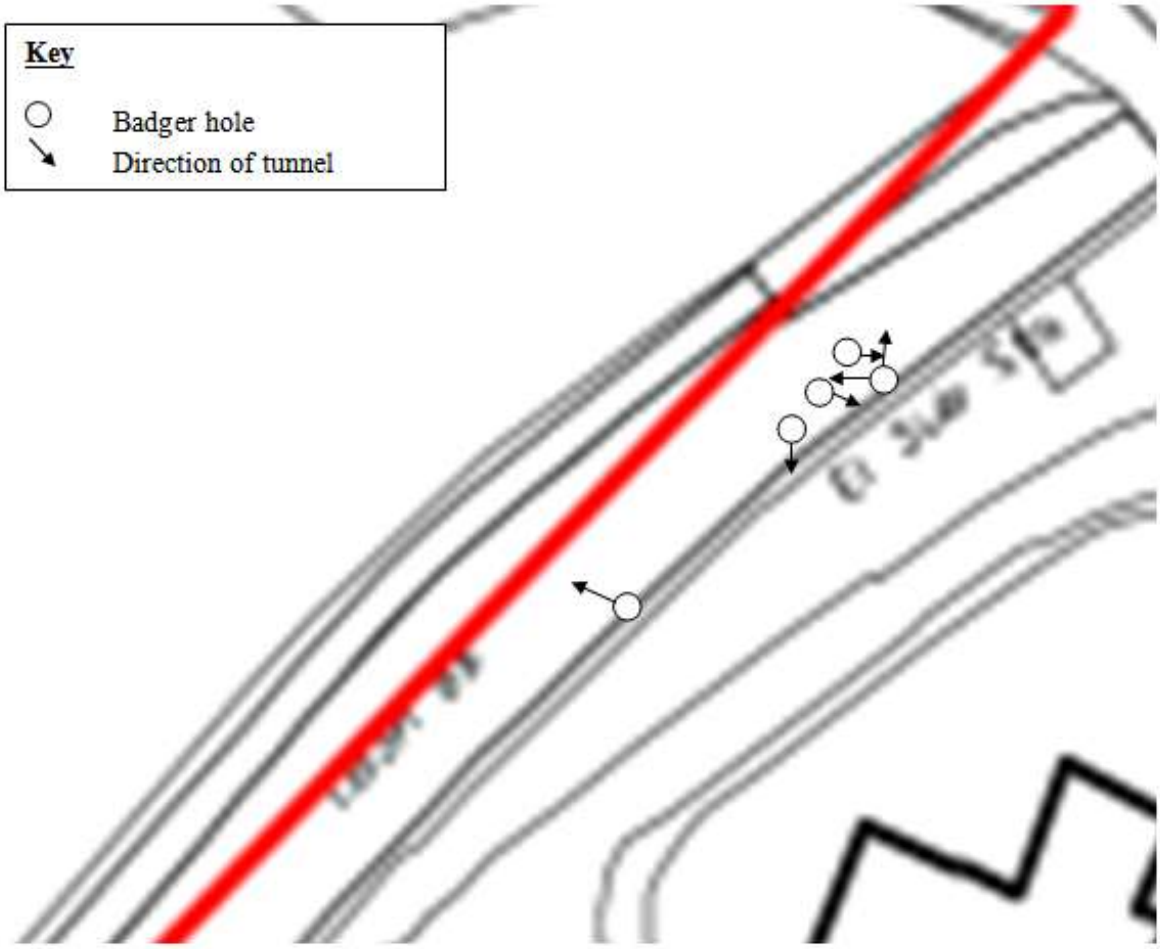
APPENDIX II: Proposed enhancements



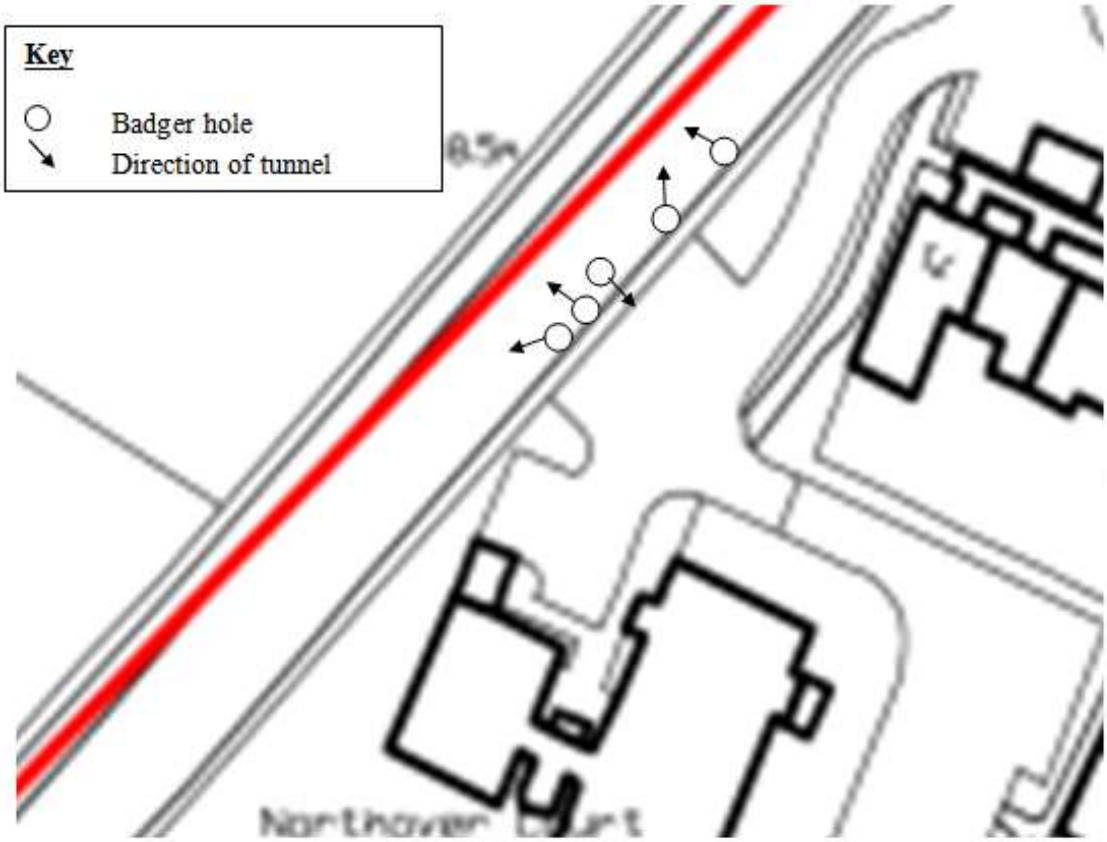
APPENDIX III: Badger hole locations



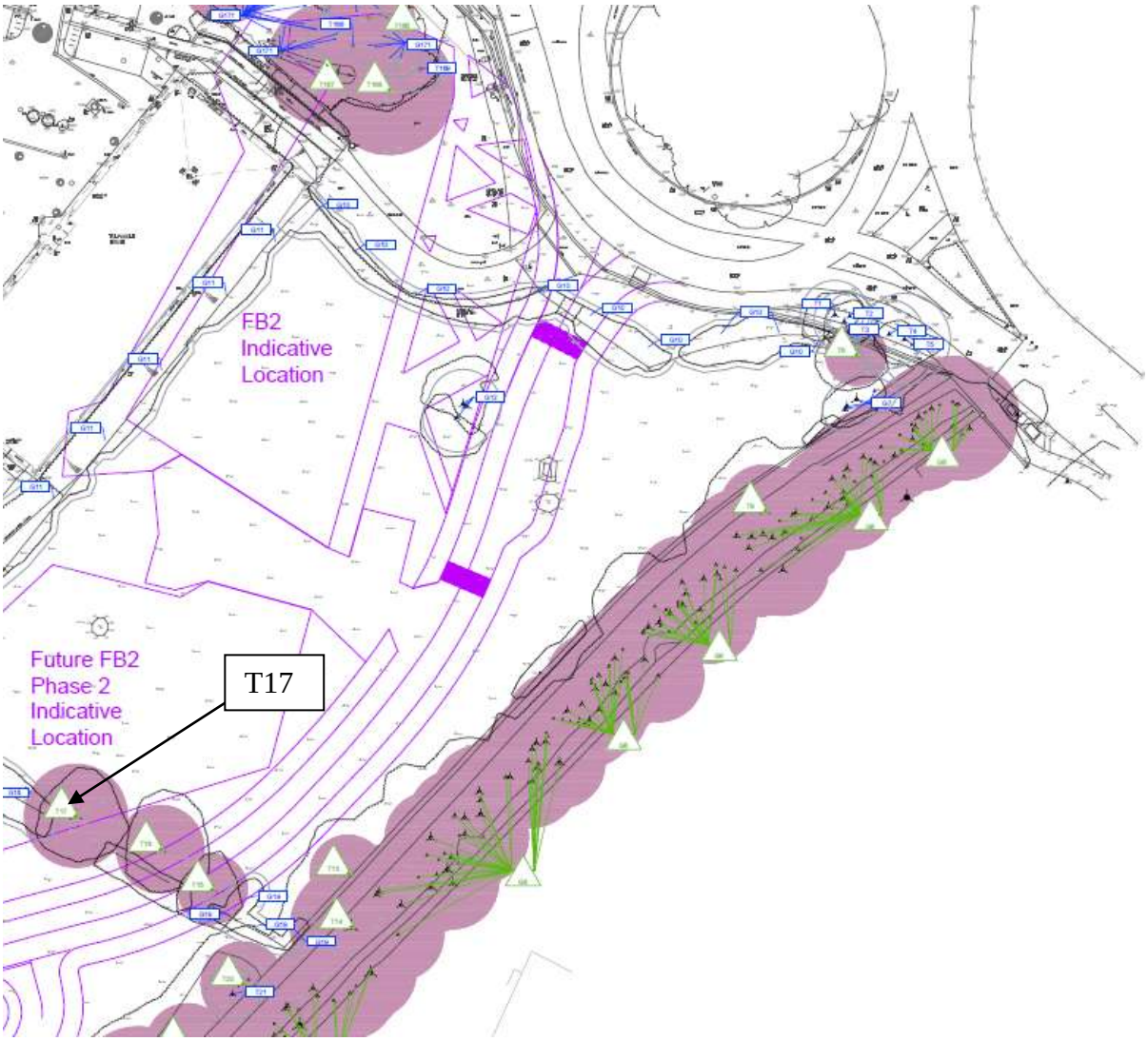
Holes A



Holes B

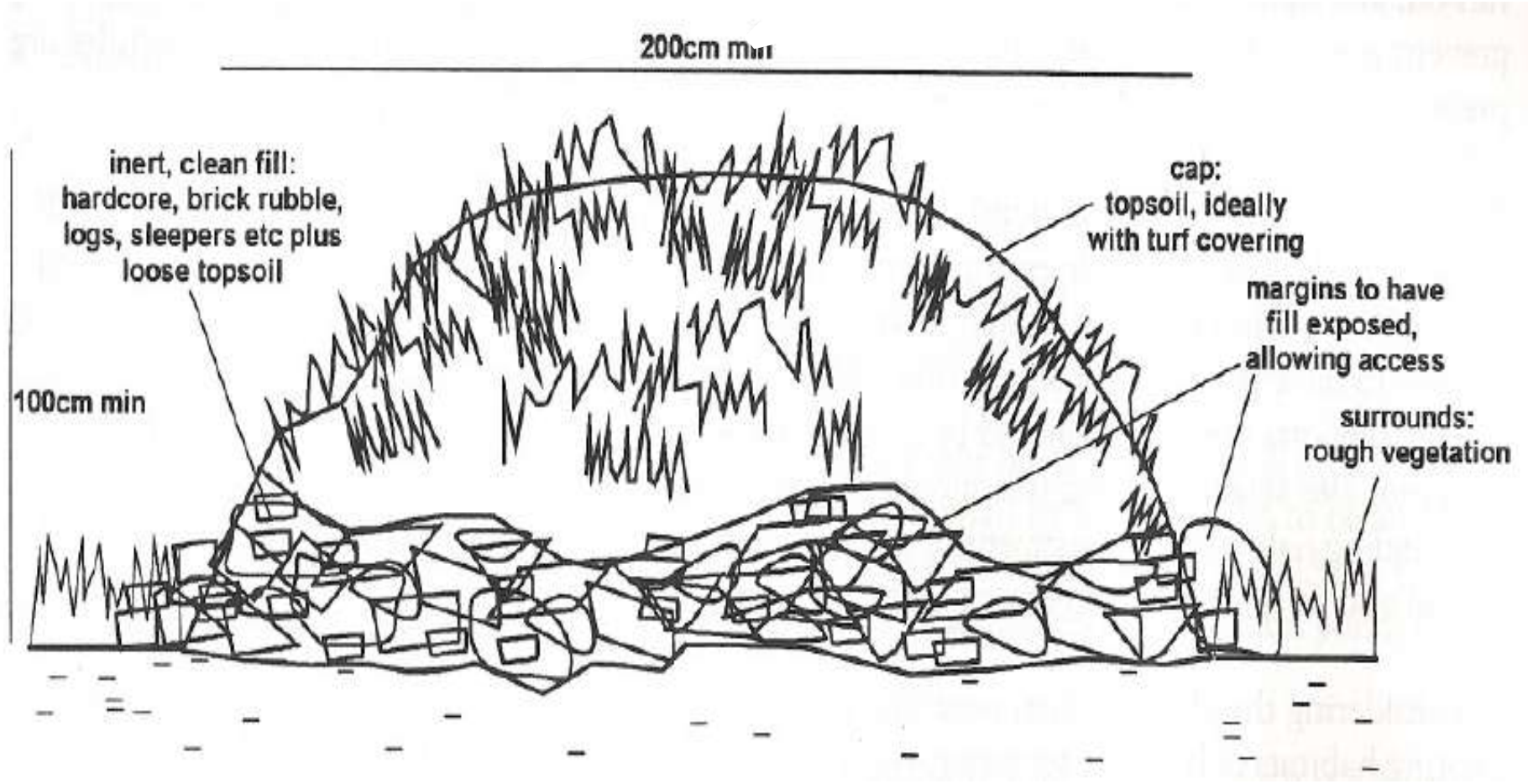


APPENDIX IV: Location of T17

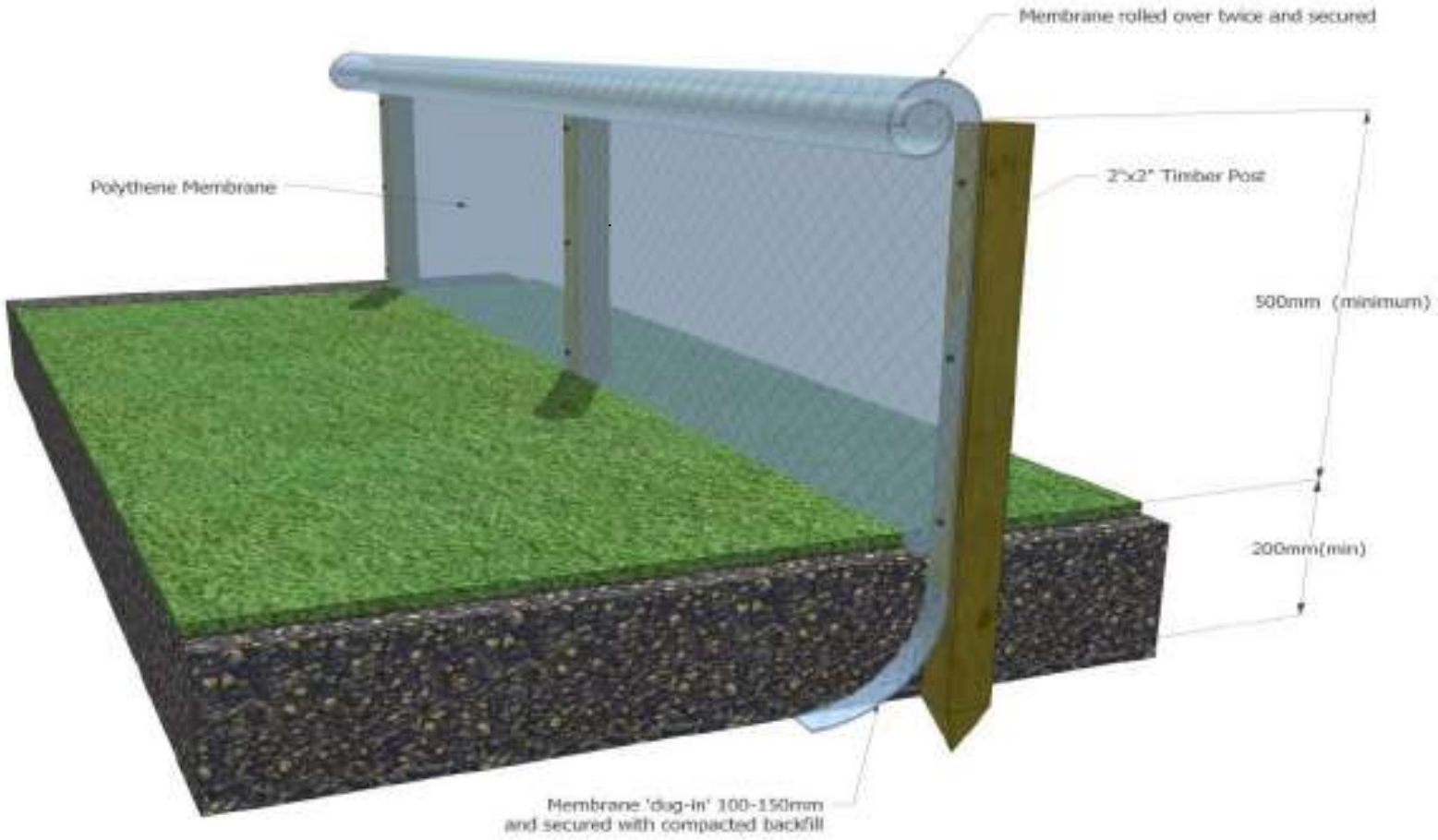


APPENDIX V: Locations of reptile mats during 2015 survey

APPENDIX VI: Diagram of hibernacula



APPENDIX VII: Reptile fence design



APPENDIX VIII: Reptile receptor sites