



Persimmon Homes

Toddington Lane, North Littlehampton

Bat Emergence / Return Survey Report

October 2014

The Pavilion, 1st Floor, Botleigh Grange Office Campus, Hedge End, Southampton, Hampshire, SO30 2AF



Document Control

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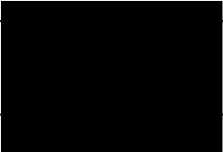
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Executive Summary

Contents	Summary
Site Context	The site is located at the North Littlehampton Nursery complex, Littlehampton, West Sussex, centred on Ordnance Survey Grid Reference TQ035039. The site comprises four plant nursery complexes and associated land totalling approximately 75 hectares. The majority of the site is dominated by greenhouses and warehouses associated with the nursery complexes interspersed with amenity grassland, mature trees, scrub and areas of non-native trees and shrubs. An area of floodplain, dominated by unimproved grassland, is present within the north part of the site. It is understood that the application site is to be split into 6 Parcels as outlined on the 'Area's Plan' drawing number: 10-1969-001). This report details findings of the bat emergence surveys in relation to Parcel A1 and B3.
Previous Reports / Surveys	Extended Phase 1 habitat surveys were completed at the site in 2006 and 2008. An update extended Phase 1 habitat survey was completed by WYG in April 2014 which highlighted the requirement for nocturnal bat emergence / return surveys.
WYG Survey	To determine whether bats were likely to be roosting within the building within Parcel A1 and the tree adjacent to Parcel B3, nocturnal (dusk and dawn) emergence / return surveys were carried out during August and September 2014. The surveys were carried out in suitable weather conditions as recommended within the Bat Conservation Trusts (BCT's) Bat Surveys: Good Practice Guidelines (Hundt, 2012).
Results	During the surveys, four species of bat comprising common pipistrelle, soprano pipistrelle, noctule and Leisler's bats were recorded using the site. No bats were recorded emerging from or returning to the building within parcel A1 or the tree adjacent to Parcel B3. Therefore, it is considered unlikely that the building or tree are currently used by bats for roosting. A low level of activity was noted during the surveys.
Further Survey Recommendations	The results of this survey will remain valid for 12 months. In the event that the building and the tree have not been removed by August 2015, it is recommended that update bat surveys are completed up to 12 months prior to the proposed works, to confirm the continued absence of these species from these features.
Mitigation and Enhancement Recommendations	As bats were not recorded using the building or the tree for roosting it is considered that the building can be demolished and the tree removed without further ecological work. • To enhance the habitat on site for bats, it is recommended that bat boxes are erected on retained trees or within new buildings around the site where possible and bat friendly planting is incorporated. • The avoidance of breathable roof membranes in new buildings is recommended, and lighting recommendations are detailed.



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1.0 Introduction

1.1 Background

WYG Planning and Environment was commissioned by Persimmon Homes to complete nocturnal bat emergence / return surveys of the building within Parcel A1 and the tree adjacent to Parcel B3 at Toddington Lane, North Littlehampton (hereon referred to as 'the site'). This follows recommendations made in the 2014 update extended Phase 1 habitat survey and bat roost assessment. A previous extended Phase 1 habitat survey was completed at the site in 2006 which was updated in 2008; however emergence / return surveys for this building and tree have not previously been completed.

1.2 Site Location and Description

The site as a whole is located at the North Littlehampton Nursery complex, Littlehampton, West Sussex, centred on Ordnance Survey Grid Reference TQ035039. The majority of the site comprises a nursery complex which is dominated by greenhouses and associated buildings, interspersed with amenity grassland, mature trees, scrub, semi-improved grassland and areas of ornamental planting. An area of floodplain, dominated by unimproved grassland, is present within the northern part of the site.

The site is bordered by hedgerows to the north, east and west and by Toddington Lane and the railway line to the south. Surrounding land to the north and east comprises further floodplain areas dominated by unimproved grassland, while surrounding land to the south and west of the site is dominated by residential development.

Parcel A1 is located at the western extent of the site, and Parcel B3 lies to the east of this.

1.3 Development Proposals

The proposed masterplan includes:

- ✦ A total of 1,260 dwellings;
- ✦ A local centre which will provide local convenience shopping together with other retail and food and drink uses and a health club;



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- ✦ Commercial uses comprising 10,000 sq m of employment floor space (including an Enterprise Centre) and a hotel;
- ✦ Community facilities including a primary school, a community centre, a youth facility with associated all-weather multi-use games area, sports pitches, a fitness trail, allotments and land for an extension to the household waste recycling centre;
- ✦ Highway improvements – most importantly, delivery of the southern section of the Lyminster Bypass from the site southwards to the A259 Worthing Road (which must bridge both Toddington Lane and the railway line) together with all other elements of the site access strategy including closure of the Toddington Lane level crossing to vehicular traffic;
- ✦ Transport – a new bus route to serve the site, linking it with the Wick shopping centre, Littlehampton town centre and the Academy;
- ✦ An extensive network of open space, providing for both formal sports and informal recreation, including a biodiversity area in the northern and eastern parts of the site.

1.4 Background Information regarding features surveyed

Parcel A1

This Parcel of land comprises a derelict two storey house (Building 12) and garden, a number of greenhouses / polytunnels and associated nursery buildings which appeared to have been subject to fire damage. The derelict house (Building 12) is considered to offer bat roosting potential as there are broken soffits with holes present and some hanging tiles missing. This building is considered to offer **low to moderate** bat roost potential. The remaining buildings within this parcel are not considered to offer suitable habitat for roosting bats.



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Photo 1. Northern elevation of derelict house



Photo 2. Southern elevation of derelict house

Parcel B3

This parcel comprises greenhouses, hardstanding, strips of semi-improved grassland, amenity grassland and some scattered trees. A bat roost assessment of the buildings and trees within this parcel was completed. The greenhouses were considered to offer **negligible** potential to roosting bats. A mature oak tree (T5) just beyond the southern boundary of B3 had a large cavity present and was considered to offer **moderate** bat roost potential.



Photo 3. Mature oak tree with cavity present

As a result of the above findings, further nocturnal bat emergence / return surveys were recommended to confirm the presence / likely absence of bats roosting within the buildings on site that are likely to be directly or indirectly impacted by the proposed works. This report outlines the results of those surveys and interprets the results in the context of the proposed development at the site.



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1.5 Background

All eighteen bat species resident in the UK are fully protected through their inclusion in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and in Schedule 2 of *The Conservation of Habitats and Species (Amendment) Regulations 2012* as European Protected Species.

Under the legislation, it is an offence to deliberately, recklessly or intentionally kill, injure or take a bat; to deliberately, intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat or to deliberately disturb an animal while it is occupying a structure or place which it uses for that purpose. It is also an offence to attempt any of the above acts.

Five species of bat are listed at Sussex BAP species including Barbastelle (*Barbastella barbastellus*), Bechstein's (*Myotis bechsteinii*), noctule (*Nyctalus noctule*), soprano pipistrelle (*Pipistrellus pygmaeus*) and brown long-eared bat (*Plecotus auritus*).



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2.0 Methodology

2.1 Data Search Methodology

In 2008 information was gathered from the Sussex Biodiversity Records centre (SxBRC), regarding the presence of nature conservation designations and protected and notable species within 2km of the proposed development site. Full results of the records of bats obtained from the records centre is presented in Appendix B. Readily available public data sources have also been searched for records of bats within 2km of the proposed development site.

2.2 Bat Roost Assessment Methodology

A bat roost assessment was completed from the ground only using binoculars to assess building and trees within the proposed development site boundary for their suitability to support breeding, resting and hibernating bats using survey methods based on those outlined in the Bat Conservation Trust's (BCT) *Bat Surveys: Good Practice Guidelines* (Hundt, 2012). No internal inspection was completed. Locations of the buildings and trees surveyed can be seen in Figure 1, Appendix B.

2.3 Nocturnal Survey Methodology

The bat roost assessment found the derelict building (Building 12) within Parcel A1 to offer **low to moderate** potential to support roosting bats. Therefore, in accordance with the Bat Conservation Trust (BCT) *Bat Surveys: Good Practice Guidelines* (2012), two nocturnal surveys were recommended to comprise one dusk and pre-dawn survey and a follow up dusk survey.

The mature oak tree (T5) which lies adjacent to Parcel B3 was considered to offer **moderate** potential to support roosting bats, as such one dusk and pre-dawn survey and a follow up dusk survey were recommended.

Two nocturnal bat surveys were carried out at the derelict building within Parcel A1 in August and September 2014. The nocturnal dusk / dawn survey was completed on 13th / 14th August using four surveyors. The follow up dusk survey was completed on 2nd September 2014 using 4 surveyors. Surveyors were positioned around the buildings so that all elevations could be viewed.



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The nocturnal dusk / dawn survey for the mature oak tree adjacent to Parcel B3 was completed by one surveyor on 2nd / 3rd September 2014, with a follow up dusk survey completed on 16th September 2014. The surveys were carried out in suitable weather conditions (i.e not during heavy rain, low temperatures or strong winds) as recommended within the Bat Conservation Trust (BCT) *Bat Surveys: Good Practice Guidelines* (Hundt, 2012).

In order to detect any bat activity each surveyor was equipped with a 'Bat Box Duet' detector with an MP3 recorder attached or a Batlogger. This allowed all ultrasonic frequencies to be monitored and recorded simultaneously for later analysis.

Dusk emergence surveys commenced approximately thirty minutes before sunset and lasted for approximately one and a half hours after sunset. During the dawn return survey, approximately one and half hours before sunrise, each surveyor returned to the positions used for the emergence surveys (from the previous night) and remained in position until after sunrise, to determine if any bats were returning to the building or tree.

2.4 Constraints

The results of these surveys will remain valid for one year. Beyond this period, if demolition works have not yet commenced, it is recommended that an update bat roost assessment of the buildings and subsequent nocturnal surveys are completed to ensure the information relating to bats is up to date.

Some of the surveys were completed in September which lies outside the optimal survey window for emergence / swarming surveys of trees which runs from May to August, however as weather conditions were still good in September and more bats were recorded than during the August surveys this is not considered to be a significant constraint to the survey findings.



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3.0 Results

3.1 Desk top Study

The data search returned records of up to eight species of bat recorded within 2km of the site, comprising an unidentified pipistrelle (*Pipistrellus sp.*), common pipistrelle (*Pipistrellus pipistrellus*), brown long-eared bat (*Plecotus auritus*), Natterer's bat (*Myotis Nattereri*), whiskered bat (*Myotis mystacinus*), barbastelle (*Barbastella barbastellus*), serotine (*Eptesicus serotinus*) and an unidentified bat species (*Chiroptera*). The nearest record is that of common pipistrelle, located approximately 1.2km south east of the site at Wallace Road, Rustington. This record is for an individual bat caught by a cat. Full details of bat records can be found in Appendix A.

Records from online public sources did not return any recent records of bats within 2 km of the proposed development site.

3.2 Bat Roost Assessment

The bat roost assessment of the buildings was conducted as part of the update extended Phase 1 habitat survey. Buildings and trees were inspected from the ground only. Information from these surveys is included in the summary of background information presented in Section 1.4. Based on the features present it was recommended that nocturnal emergence / return surveys were carried out for the derelict house (Building 12) in Parcel A1 and the mature oak tree (T5) adjacent to Parcel B3 as shown in Figure 1, Appendix B.

3.3 Nocturnal Survey Results

3.3.1 Weather Conditions, Timings and Limitations for Nocturnal Bat Survey

Table 1 shows the survey dates, times and weather conditions during each of the surveys. All weather conditions taken from the Met Office website (www.metoffice.gov.uk) and temperatures were taken using a thermometer at the start of each survey.



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Table 1. Weather conditions during nocturnal bat surveys

Date	Dusk / Dawn times	Survey Time(s)	Weather
13/08/2014 (dusk)	20:32	20:02 – 22:02	20°C; 70% cloud cover; still; no precipitation
14/08/2014 (dawn)	05:49	04:19 – 06:0	16°C; 95% cloud cover; still; no precipitation
02/09/2014 (dusk)	19:47	19:17 – 21:17	16.6°C; 0% cloud cover; still; no precipitation
03/09/2014 (dawn)	06:19	04:49 – 06:19	14°C; 5% cloud cover; very light breeze; no precipitation
16/09/2014 (dusk)	19:18	18:48 – 20:48	24°C; 5% cloud cover; still; no precipitation

The results from the dusk and dawn surveys are summarised below.

3.3.2 Building 12, Parcel A1

13/08/2014: Dusk Emergence, Building 12 in Parcel A1

During the emergence dusk survey completed on 13th August 2014, surveyor 1 focused on the north western corner of the building, surveyor 2 focussed on the south western corner, surveyor 3 on the south eastern corner and surveyor 4 on the north eastern corner. Locations of the surveyors can be seen in Figure 2.

Four species of bat were recorded during the survey including common pipistrelle, soprano pipistrelle, noctule and Leisler's. All of the bats recorded were heard but not seen, however none of the bats are considered to have come from within the building surveyed.

- Surveyors 1 and 2, located at the western extent of the building recorded a fairly low level of activity. Common pipistrelles were heard infrequently between 21:21 and 21:56. A soprano pipistrelle was heard by surveyor 1 and 21:28, followed by noctules at 21:56 and 21:58.
- Surveyor 3 did not record any bats during the survey.
- Surveyor 4 recorded the most bat activity during the survey with common and soprano pipistrelles recorded frequently between 21:20 and 22:03. A single Leisler's was heard but not seen at 21:55.



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Figure 2, Appendix B shows bat activity recorded during this survey.

14/08/2014: Dawn Return, Building 12 in Parcel A1

During the dawn return survey on 14th August surveyors returned to the same positions as those used for the dusk emergence surveys.

- ✧ Surveyors 1 and 2 again recorded a fairly low level of activity. Surveyors 1 and 2 recorded a noctule at 05:06, followed by another recorded by surveyor 1 at 05:07 and another at 05:11 recorded by surveyor 2.
- ✧ Surveyor 3 recorded noctules at 05:03 and 05:15, however these were heard but not seen. One noctule was seen commuting northwards along the eastern boundary of the site at 05:07. Common pipistrelles were recorded by both surveyors 3 and 4 at 04:26 and soprano pipistrelles were recorded by both surveyors at 04:57.
- ✧ In addition surveyor 4 recorded a common pipistrelle at 04:30 and a soprano pipistrelle at 04:59. Noctules were recorded frequently between 05:03 and 05:15.

No bats were seen to be returning to the building.

Figure 3, Appendix B shows bat activity recorded during this survey.

02/09/2014: Dusk Emergence, Building 12 in Parcel A1

There appeared to be a higher level of bat activity during the follow up dusk survey, however no bats were seen to be emerging from the building. Three species of bat were recorded comprising common pipistrelle, soprano pipistrelle and noctule. Common pipistrelle was the most frequently recorded species as this was recorded by all surveyors. The majority of the bats were heard but not seen however both common and soprano pipistrelles were seen flying over the garden at the south eastern corner of the site.

No bats were seen to be emerging from the building.

Figure 4, Appendix B shows bat activity recorded during this survey.



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3.3.3 Tree 5, Parcel B3

02/09/2014: Dusk Emergence, Tree 5 adjacent to Parcel B3

One surveyor completed the emergence survey of the tree on 2nd September. Two species of bat were recorded including common pipistrelle and soprano pipistrelle. The most frequently recorded species was soprano pipistrelle. This was seen flying between the trees at 20:24 and 20:56. The remaining bats recorded were heard but not seen however none were seen to be emerging from the cavity within the tree.

Figure 5, Appendix B shows bat activity recorded during this survey.

03/09/2014: Dawn Return Tree 5 adjacent to Parcel B3

During the dawn return survey there was a very low level of bat activity as there were only two bat passes recorded. These were both for common pipistrelles which were heard but not seen at 05:11 and 05:28. No bats were seen returning to the tree.

Figure 6, Appendix B shows bat activity recorded during this survey.

16/09/2014: Dusk Emergence, Tree 5 adjacent to Parcel B3

Three species of bat were recorded during the follow up bat emergence survey of T5 including common pipistrelle, soprano pipistrelle and noctule. All of the bats were heard but not seen. Common pipistrelles were heard at 19:53 and 19:58, soprano pipistrelles were heard at 19:39 and 19:52 and a single noctule was recorded at 20:46. No bats were seen to be emerging from the tree.

Figure 7, Appendix B shows bat activity recorded during this survey.



4.0 Interpretation and Recommendations

4.1 Summary of Survey Results

Four species of bat comprising common pipistrelle, soprano pipistrelle, noctule and Leisler's bats were recorded during the surveys. No bats were recorded emerging from or returning to the building or the tree surveyed, which were considered to hold potential for roosting bats. Areas where slightly higher levels of bat activity were recorded include the eastern side of the building within Parcel A1.

The surveys were carried out during highly favourable conditions for carrying out bat surveys, with temperatures only falling to 14°C overnight. There was a fairly low level of bat activity recorded which is an indication that the site is of low value to bats. Much of the wider site comprises mainly hardstanding which does not provide significant areas of bat foraging or commuting habitat for bats.

4.2 Recommendations

No bats were recorded roosting within either Building 12 within Parcel A1 or within the mature oak tree adjacent to Parcel B3. It is therefore considered unlikely that the building or tree support roosting bats. The demolition of the building and removal of the tree can proceed without any further ecological work. As stated previously, the findings of this report are valid only for one year and should demolition not occur within this period, then further bat assessment is recommended. In the unlikely event that a bat is encountered during the demolition of the building or removal of the tree, it is recommended that all works cease and a suitably qualified and licensed bat ecologist is contacted for advice.

4.2.1 Lighting

Emery (2008) states that the majority of British bat species will not fly in directly illuminated areas. If lighting is required within the proposed development, it is recommended that it comprise either low pressure sodium lamps or high pressure sodium lamps as recommended by the Bat Conservation Trust (undated) so as to reduce potential disturbance to bats to a minimum. It is also recommended that lighting be directed ground wards (where it is needed in areas such as along hedgerow features) to avoid light spillage by using light hoods / shields as necessary and to direct the light below the horizontal plane, at an angle of 70°.



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4.2.2 Avoidance of Breathable Roof Membranes

In new buildings, best practice should be considered and the use of Breathable Roof Membranes (BRM) avoided. Instead, Type 1F bitumen and hessian under-felt should be considered as an alternative. Ongoing research has confirmed that no BRM are bat-friendly and all pose a risk to bats. As the membranes wear over time the fibres in the membrane become loose. Bats become entangled in the fibres and, unable to escape, dehydrate, and starve to death. As well as posing a risk to bats, BRMs are also degraded by bats and the efficiency of the membrane is impaired (i.e. the use of BRMs in situations where bats are present is detrimental to the efficient functioning of the BRM as well as to bats. The research is summarized at <http://www.batsandbrms.co.uk/images.php>), further detail is provided in Waring *et al.* (2013).

4.3 Possible enhancement measures

In order to enhance the habitat on site, it is recommended where possible that bat boxes are erected on retained trees or new buildings to provide additional roosting features for bats, lighting should be directed away from these new roost sites. Details on bat boxes can be found in Appendix C. It is also recommended that bat friendly planting is incorporated within the landscaping design where possible (Appendix E).



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5.0 References

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- WYG (2006) North Littlehampton, West Sussex: Extended Phase 1 Habitat Survey Report
- WYG (2008) Phase 1 update of the main North Littlehampton development site (2008)
- WYG (2014): Toddington Lane, North Littlehampton – Update extended Phase 1 habitat survey, 2014



Appendices



Appendix B - Figures

Natrix natrix

Grass Snake

A widespread, but legally protected, snake with a normally olive body flecked with black and a distinctive yellow collar. Frequent in Sussex near places where its food, largely frogs, is readily available. Like most reptiles and amphibians, grass snakes have declined considerably and need protection wherever they occur.

REPTILE

UK BAP Priority Species

Grid Reference	Recorder	Date	Locality
TQ012067	SARG Sussex Amphibian & Reptile Grp	2002	West Sussex
TQ028038	Dennis Dey	01/01/1991	Sandfield House, Lymminster, West Sussex
TQ030063	Dennis Dey	01/01/1993	Convent of Poor Clares, Arundel, West Sussex
TQ0506	Dennis Dey	14/08/1993	Wepham Woods, West Sussex

Myotis mystacinus

Whiskered Bat

Very similar to Brandt's bat, *Myotis brandtii*, and only separated from that species in 1970. On average not quite as large and with small anatomical differences. Summer roosts are mainly in buildings and trees, while winter roosts, so far as has been established, are in tunnels and caves. Though somewhat scarcer than Brandt's bat, the whiskered bat is found throughout the British Isles apart from central and northern Scotland. The majority of records from our area are from West Sussex, with a few from East Sussex.

Like all bats, a legally protected species and listed on the Sussex Rare Species Inventory.

BAT

Grid Reference	Recorder	Date	Locality
TQ042062	Frank Greenaway	24/07/2006	Poling Copse, Poling Copse, Arundel

Myotis nattereri

Natterer's Bat

A medium-sized, long-eared bat of open woodland, wood pasture and mixed farmland, often flying near water. In summer it roosts in old buildings, barns and hollow trees and it hibernates in caves, mines and other underground places.

Found throughout much of the British Isles, but generally scarce. The UK population of Natterer's bats is probably of international importance (Roberts & Hutson, c. 1994) and it is widespread in Sussex. Like all bats, a legally protected species

BAT

Grid Reference	Recorder	Date	Locality
TQ042062	Frank Greenaway	24/07/2006	Poling Copse, Poling Copse, Arundel

Pipistrellus pipistrellus 45kHz

45 Khz Pipistrelle

Pipistrelles are often recorded as either 45 kHz or 55 kHz depending on the pitch of the echolocation calls picked up by bat detectors. Bats in this 45 kHz category are now simply *Pipistrellus pipistrellus* with the 55 kHz becoming *P. pygmaeus*. Pipistrelles are the commonest bats in the British Isles and are found in all types of countryside, except very exposed areas, as well as in towns and suburbs. Summer roosts are usually in buildings, though tree holes and bat boxes are also used. Winter roosts are in buildings, tree holes and caves.

BAT

Grid Reference	Recorder	Date	Locality
TQ054031	Recorder @ Sussex Bat Group	24/05/1998	12 Wallace Road, Rustington, West Sussex

- 2 Confidential records exist for this enquiry area. Please contact the record centre if you require further information.

Anguis fragilis

Slow-Worm

A legally protected legless lizard resembling a small snake. Slow-worms are widespread in southern England and found in open habitats such as rough grassland, heath and on road and railway embankments. They are often common in urban and suburban areas. Like most reptiles and amphibians they have declined considerably and need protection wherever they occur.

REPTILE

UK BAP Priority Species/W&CA Sch 5 Sec 9.1 (killing/injuring)/Wildlife & Countryside Act Sch5 Sec 9.5a/Wildlife & Countryside Act Sch5 Sec 9.5b

Grid Reference	Recorder	Date	Locality
TQ0102	SARG Sussex Amphibian & Reptile Grp	19/07/1996	Littlehampton By-Pass, West Sussex
TQ020027	Barry Kemp	25/06/2003	Lineside Way Industrial Park, Littlehampton, Littlehampton CP
TQ023025	Dennis Dey	23/04/1999	30 Harwood Road, Littlehampton, West Sussex
TQ024023	Dennis Dey	01/01/1993	45 Linden Road, Littlehampton, West Sussex
TQ026042	SARG Sussex Amphibian & Reptile Grp	17/04/1986	Lyminster (Nr. Pub), West Sussex
TQ029061	Dennis Dey	01/01/1993	Convent Of Poor Clares, Arundel, West Sussex
TQ0502	Dennis Dey	01/01/1993	56b Ash Lane, Rustington, West Sussex

Natrix natrix

Grass Snake

A widespread, but legally protected, snake with a normally olive body flecked with black and a distinctive yellow collar. Frequent in Sussex near places where its food, largely frogs, is readily available. Like most reptiles and amphibians, grass snakes have declined considerably and need protection wherever they occur.

REPTILE

UK BAP Priority Species

Grid Reference	Recorder	Date	Locality
TQ011066	Gaye Barns	1999-2000	Patch of land off Ford Rd, Arundel, West Sussex
TQ012066	Dennis Dey	15/07/2001	40 Penfolds Place, Arundel, Arundel
TQ012067	SARG Sussex Amphibian & Reptile Grp	2002	West Sussex
TQ028038	Dennis Dey	01/01/1991	Sandfield House, Lyminster, West Sussex
TQ030063	Dennis Dey	01/01/1993	Convent of Poor Clares, Arundel, West Sussex
TQ0506	Dennis Dey	14/08/1993	Wepham Woods, West Sussex

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BAT

Grid Reference	Recorder	Date	Locality
TQ042062	Frank Greenaway	24/07/2006	Poling Copse, Poling Copse, Arundel

Eptesicus serotinus**Serotine**

A large, short-eared bat that frequents parks and gardens as well as the wider countryside. It often has its summer roosts in buildings and it will also hibernate in these as well as in caves, tunnels and cellars. A widespread species, though often only present in small numbers, its British strongholds are in the south east and parts of the West Country. Widespread in Sussex.

Like all bats, a legally protected species.

BAT

Grid Reference	Recorder	Date	Locality
TQ042062	Frank Greenaway	24/07/2006	Poling Copse, Poling Copse, Arundel

Pipistrellus pipistrellus**Pipistrelle**

The commonest bat in the British Isles, this small species is found in all types of countryside, except very exposed areas, as well as in towns and suburbs. Summer roosts are usually in buildings, though tree holes and bat boxes are also used. Winter roosts are in buildings, tree holes and caves.

Pipistrelles were often recorded as either 45 kHz or 55 kHz depending on the pitch of the echolocation calls picked up by bat detectors. These are now separate species *Pipistrellus pipistrellus* being the 45 kHz animal and *P. pygmaeus* the 55 kHz.

Both are widespread in Sussex and, like all bats are a legally protected species

BAT

Grid Reference	Recorder	Date	Locality
TQ042062	Frank Greenaway	24/07/2006	Poling Copse, Poling Copse, Arundel

Barbastella barbastellus**Barbastelle bat**

A medium-sized long eared bat that is now very rare in Britain, and threatened with extinction over much of Europe. Causes of its decline are not well understood, but thought to be at least partly due to a parallel decline in its insect food. The barbastelle prefers wooded countryside and it appears to favour the larger river valleys. In winter it roosts in caves, mine tunnels, cellars and hollow trees.

Most records in our area are from West Sussex, but there are a few from East Sussex. Like all bats, a legally protected species and listed on the Sussex Rare Species Inventory.

BAT

UK BAP Priority Species/Habitats and species directive Annex 2np

Grid Reference	Recorder	Date	Locality
TQ042062	Frank Greenaway	24/07/2006	Poling Copse, Poling Copse, Arundel

Plecotus auritus**Brown Long-Eared Bat**

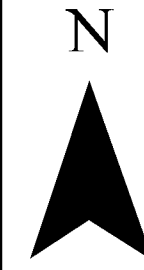
The second most common British bat, but difficult to distinguish from the much rarer grey long-eared bat, *Plecotus austriacus*. It frequents open woodland, wood pasture and orchards and has summer roosts in older buildings and trees. It usually hibernates in caves, tunnels and mines.

The brown long-eared has declined in the British Isles though it remains widespread. Like all bats, it is a legally protected species.

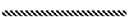
BAT

UK BAP Priority Species

Grid Reference	Recorder	Date	Locality
TQ042062	Frank Greenaway	24/07/2006	Poling Copse, Poling Copse, Arundel



Legend

-  Site boundary
-  Buildings assessed for bat potential
-  Building surveyed for bats
-  Trees assessed for bat potential
-  Tree surveyed for bats



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Botleigh Grange Office Campus
Hedge End
Southampton Tel: 02382 022800
Hants email: ecology@wyg.cor
SO30 2AF

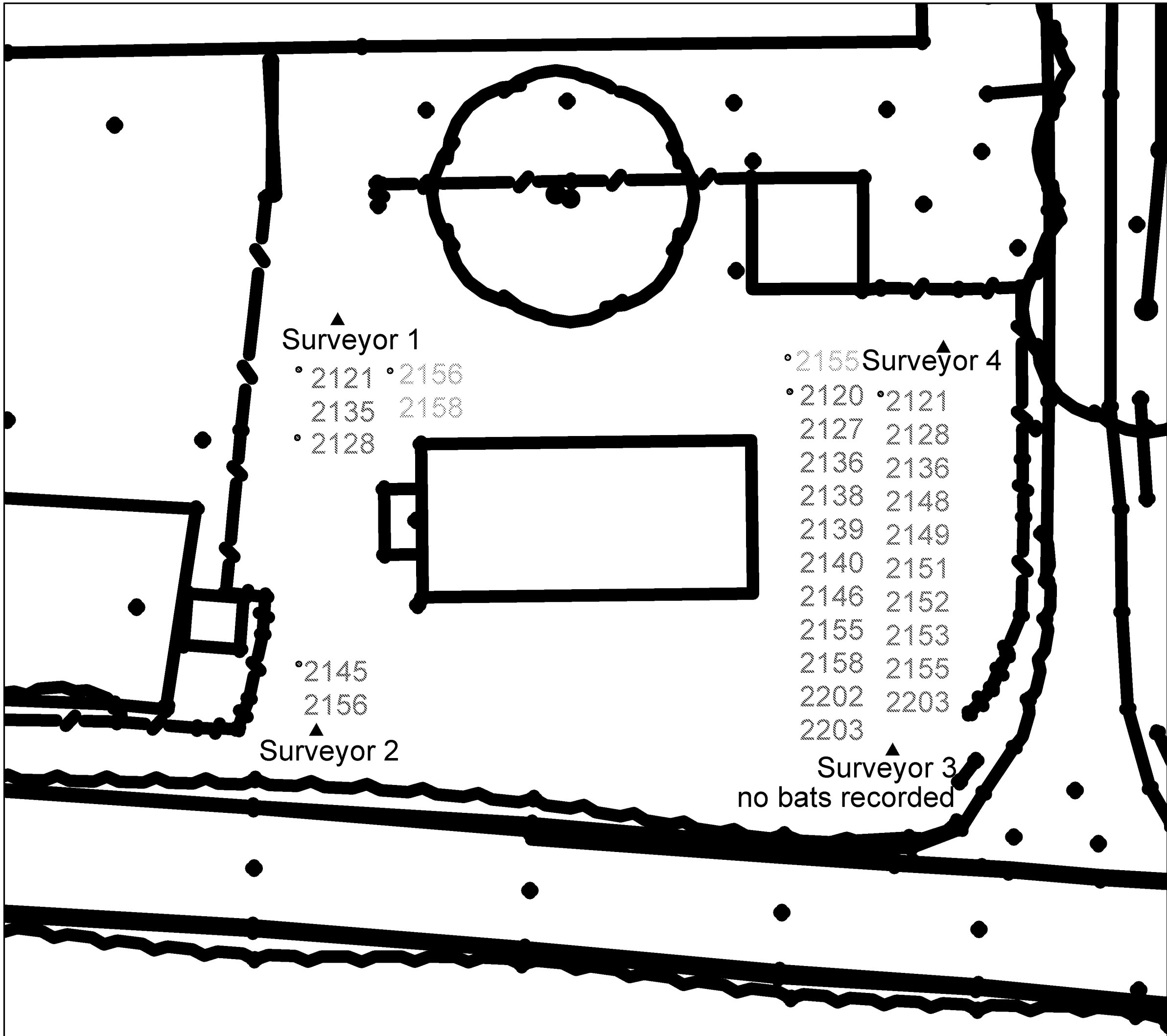
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Toddington Lane, North Littlehampton

Buildings and trees surveyed for bats

		Drawn by: Date:	Checked By: Date:	Approved By: Date:
		EH 07/10/14	VC 07/10/14	TC 14/10/14
Project No:	Office	Type	Drawing No.	Revision
A086068	45	94	Figure 1	

Base map provided by Persimmon Homes



Legend

- Leisler's heard not seen
- ▲ Surveyors
- Common pipistrelle heard not seen
- Noctule heard not seen
- Soprano pipistrelle heard not seen

0 2.5 5 10 Metres

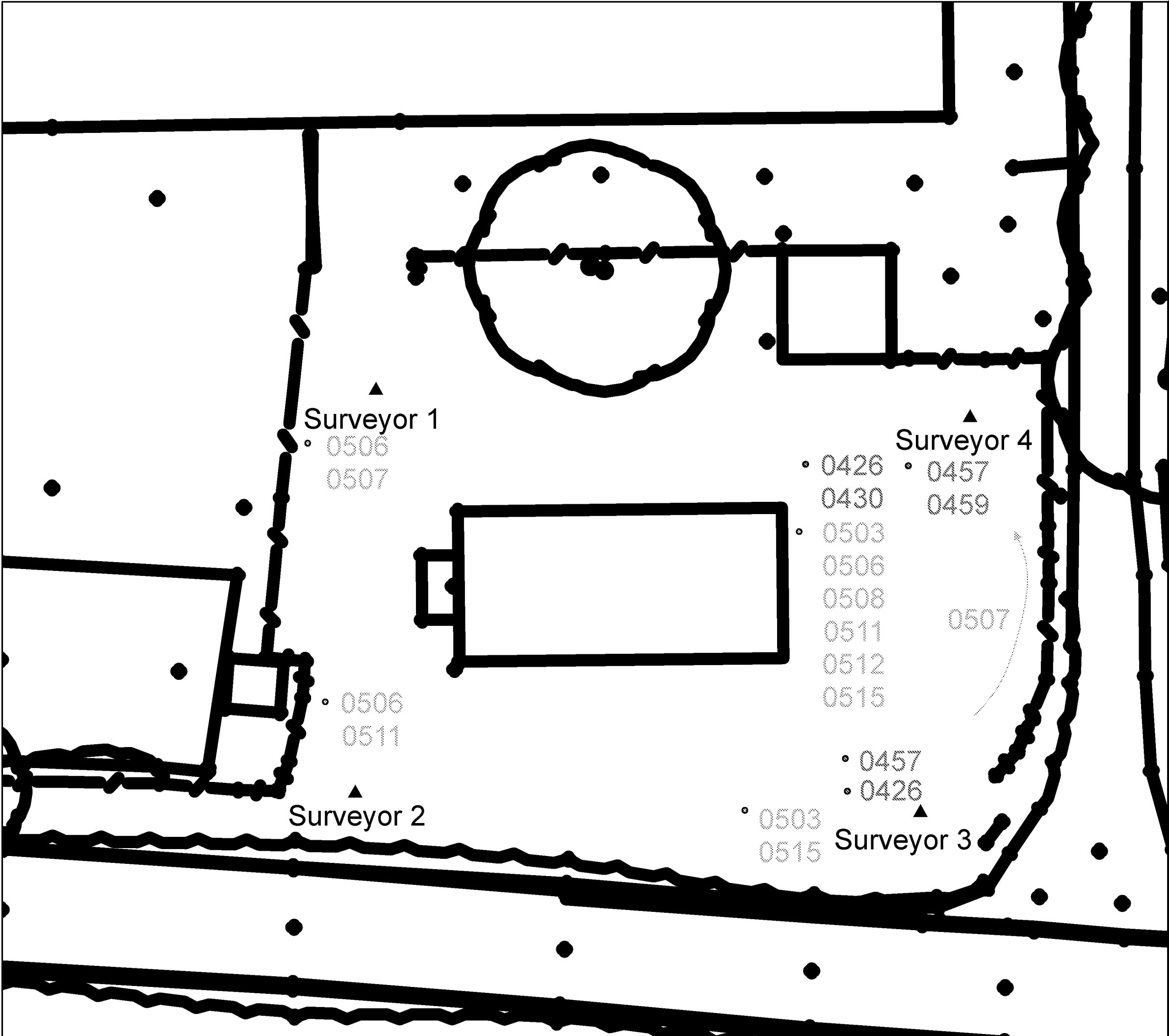
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Botleigh Grange Office Campus
Hedge End
Southampton
Hants
SO30 2AF
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email: ecology@wyg.cor
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Toddington Lane, North Littlehampton

Building 12 dusk emergence 13/08/2014

	Drawn by: Date:	Checked By: Date:	Approved By: Date:
	EH 08/10/14	VC 08/10/14	TC 13/10/14
Project No:	Office	Type	Drawing No.
A086068	45	94	Figure 2
			Revision

Base map provided by Persimmon Homes



N

Legend

- Common pipistrelle heard not seen
- Noctule heard not seen
- Soprano pipistrelle heard not seen
- ▲ Surveyors
- Noctule

0 2.5 5 10 Metres

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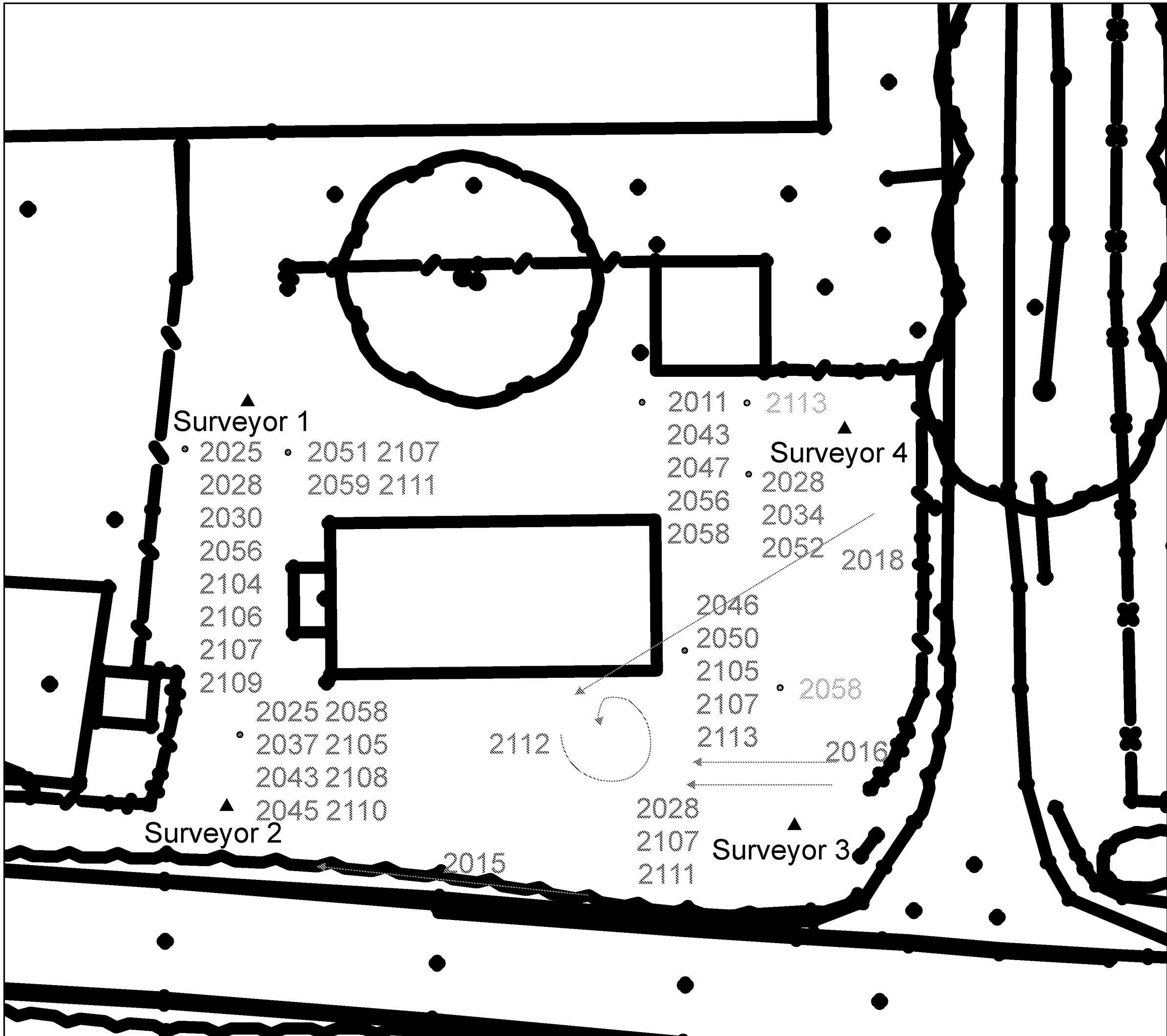
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Toddington Lane, North Littlehampton

Building 12 dawn return 14/08/2014

	Drawn by: EH	Date: 08/10/14	Checked By: VC	Date: 08/10/14	Approved By: TC	Date: 13/10/14
Project No: A086068	Office 45	Type 94	Drawing No. Figure 3	Revision		

Base map provided by Persimmon Homes



Legend

- Common pipistrelle heard not seen
- Noctule heard not seen
- Soprano pipistrelle heard not seen
- ▲ Surveyors
- > Common pipistrelle
- > Soprano pipistrelle

0 2.5 5 10 Metres

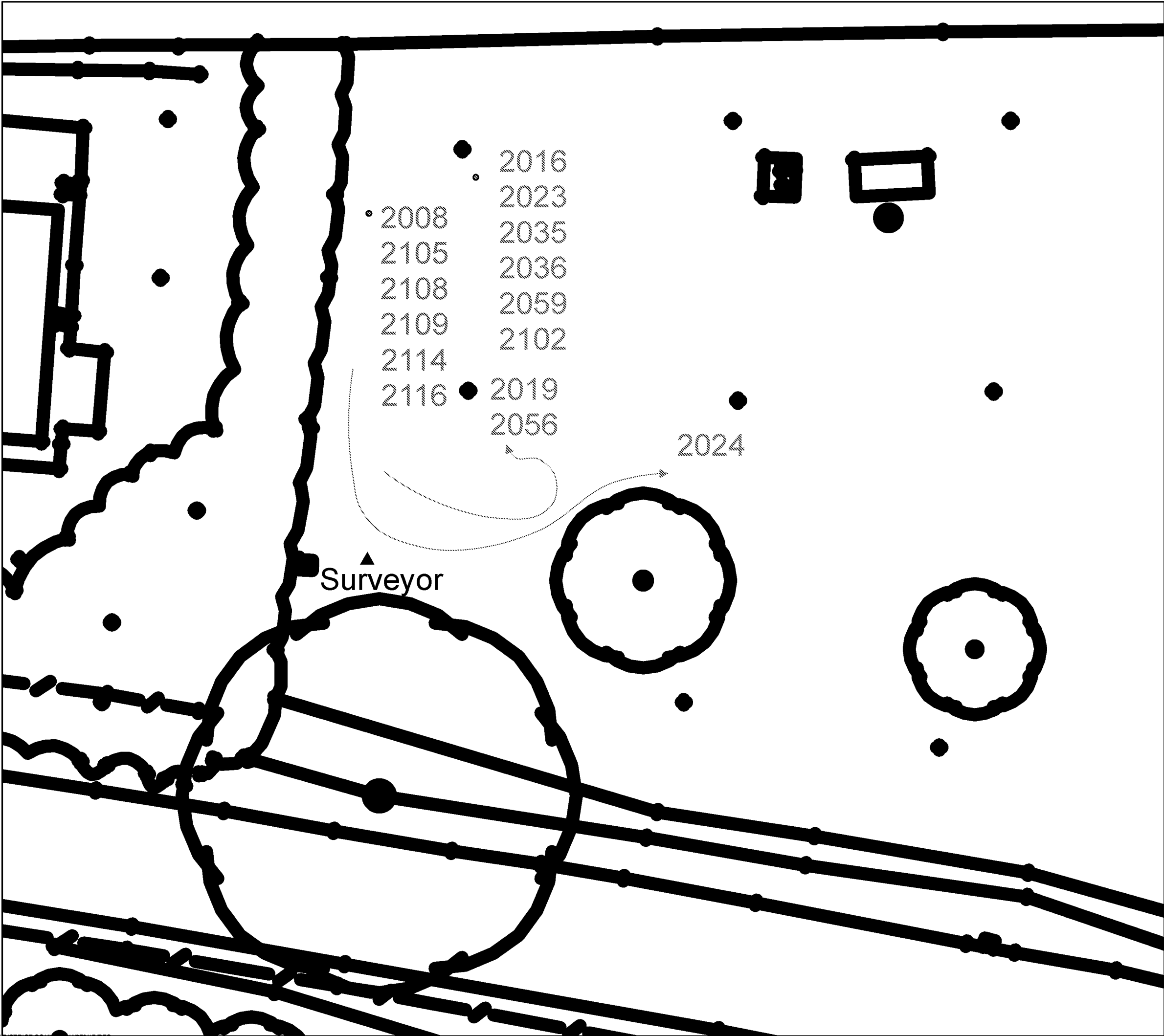
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Toddington Lane, North Littlehampton

Building 12 dusk emergence 02/09/2014

Project No:	Office	Type	Drawing No.	Revision
A086068	45	94	Figure 4	

Base map provided by Persimmon Homes



Legend

- Common pipistrelle heard not seen
- Soprano pipistrelle heard not seen
- ▲ Surveyor
- > Soprano pipistrelle

0 2.5 5 10 Metres

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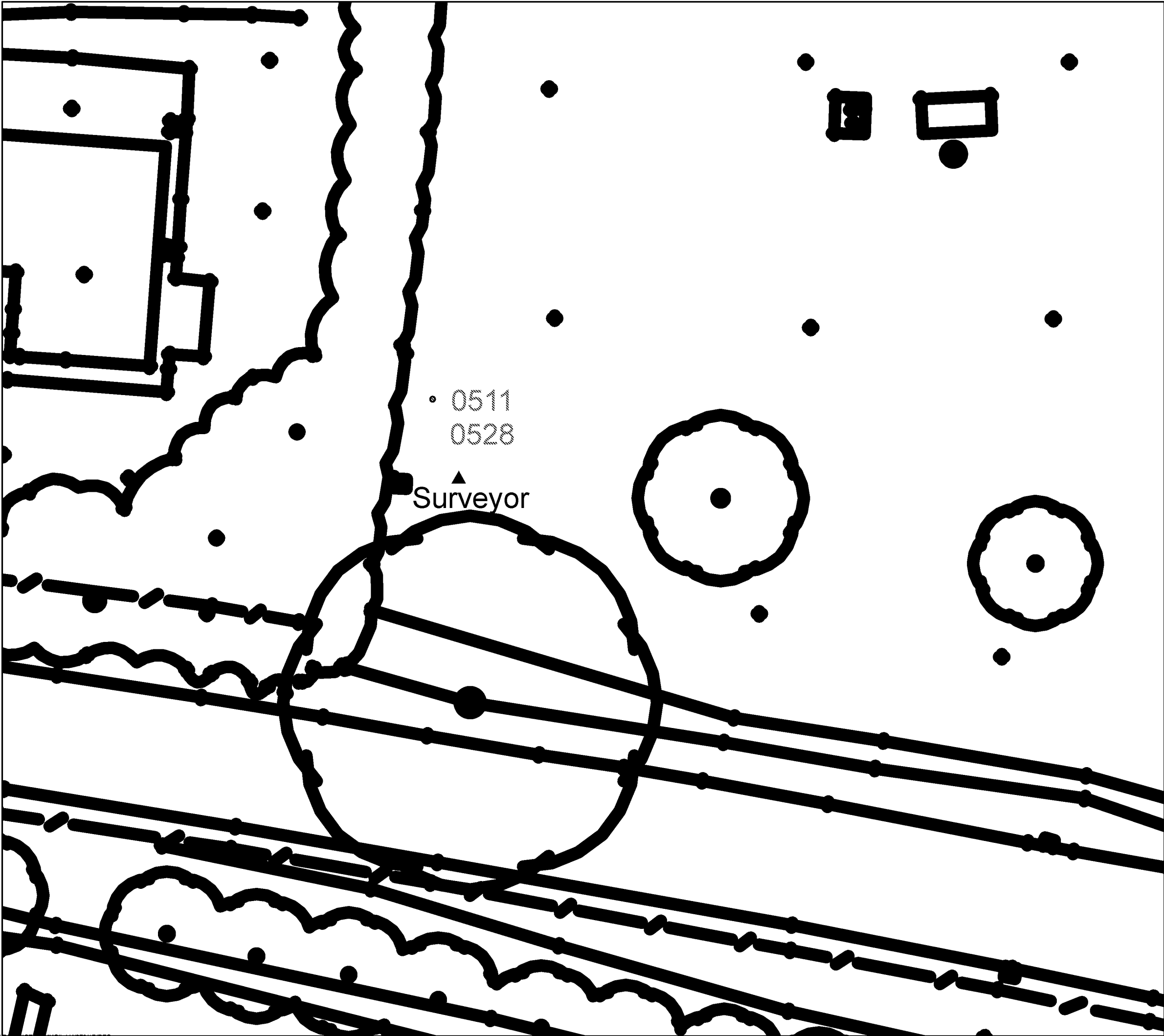


Toddington Lane, North Littlehampton

Tree 5 dusk emergence 02/09/2014

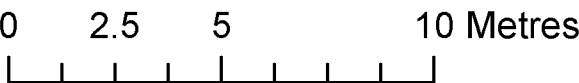
Project No:		Drawn by: Date:	Checked By: Date:	Approved By: Date:
A086068		EH 08/10/14	VC 08/10/14	TC 13/10/14
Office		Type	Drawing No.	Revision
45		94	Figure 5	

Base map provided by Persimmon Homes



Legend

- Common pipistrelle heard not seen
- ▲ Surveyor



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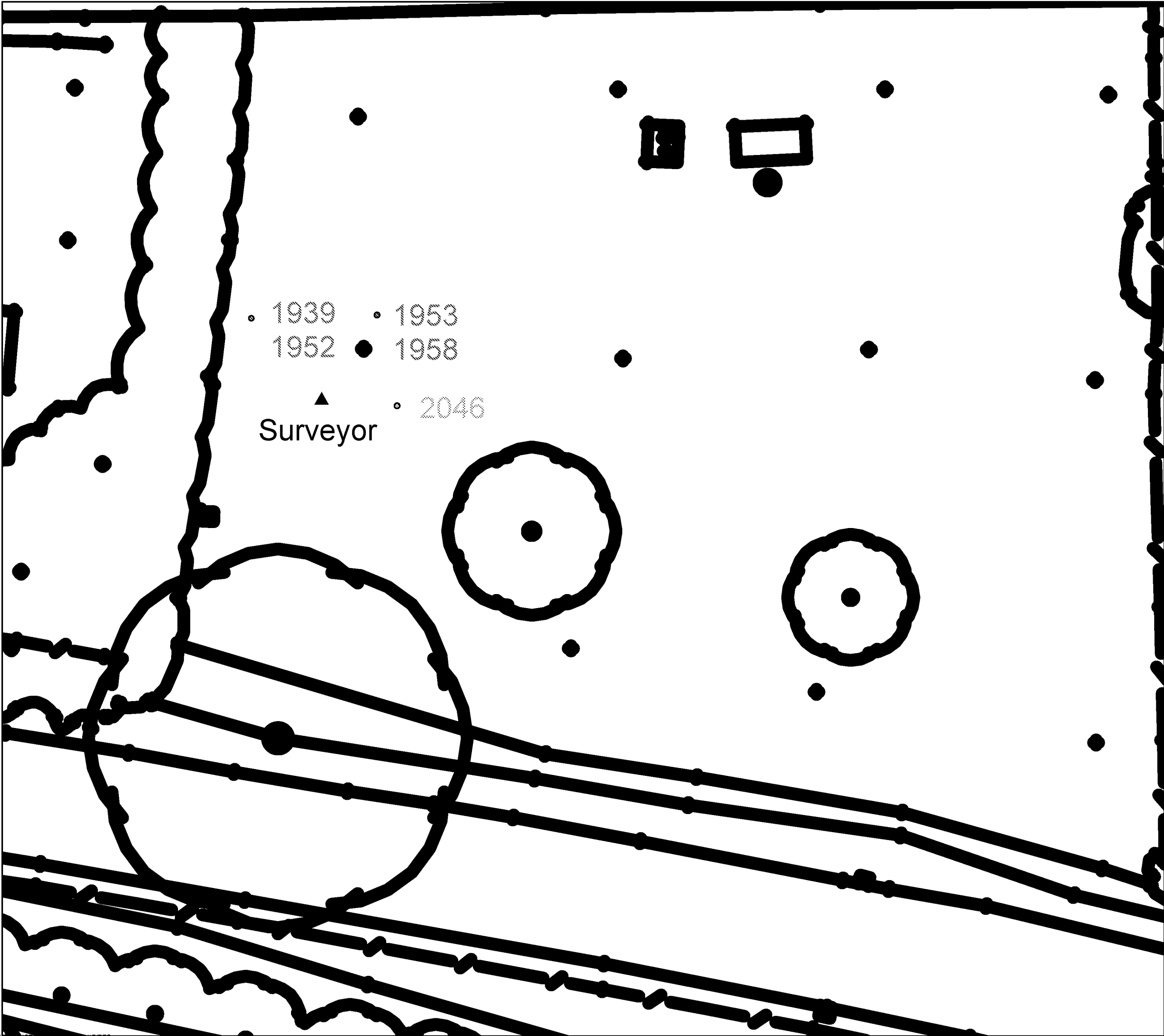
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Toddington Lane, North Littlehampton

Tree 5 dawn return 03/09/2014

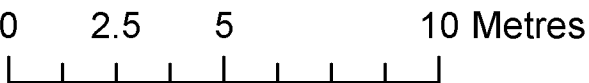
Project No:		Drawn by:	Date:	Checked By:	Date:	Approved By:	Date:
A086068		EH	08/10/14	VC	08/10/14	TC	13/10/14
Office		Type	Drawing No.		Revision		
45		94	Figure 6				

Base map provided by Persimmon Homes



Legend

- Common pipistrelle heard not seen
- Noctule heard not seen
- Soprano pipistrelle heard not seen
- ▲ Surveyor



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Toddington Lane, North Littlehampton

Tree 5 dawn return 03/09/2014

Project No:		Drawn by: Date:	Checked By: Date:	Approved By: Date:
A086068		EH 08/10/14	VC 08/10/14	TC 13/10/14
Office		Type	Drawing No.	Revision
45		94	Figure 7	

Base map provided by Persimmon Homes



Toddington Lane, North Littlehampton - Bat Emergence / Return Survey Report

Introduction

The information in this appendix relates to bat and bird boxes that can be easily incorporated into building and landscape plans. The information provided is not exhaustive and provides examples of some of the types of boxes available.

Including bat and bird boxes throughout the development site has a number of benefits:

- ✧ Any roosting or resting places lost as a result of the work will be replaced;
- ✧ The ecological value of the site will be enhanced;
- ✧ Priority species within the UK and local Biodiversity Action Plans (BAPs) will be encouraged.

Bats

For Buildings

The inclusion of a variety of bat bricks, tubes and boxes for buildings is recommended to encourage a diversity of bat species. Bat bricks and tubes require no maintenance.

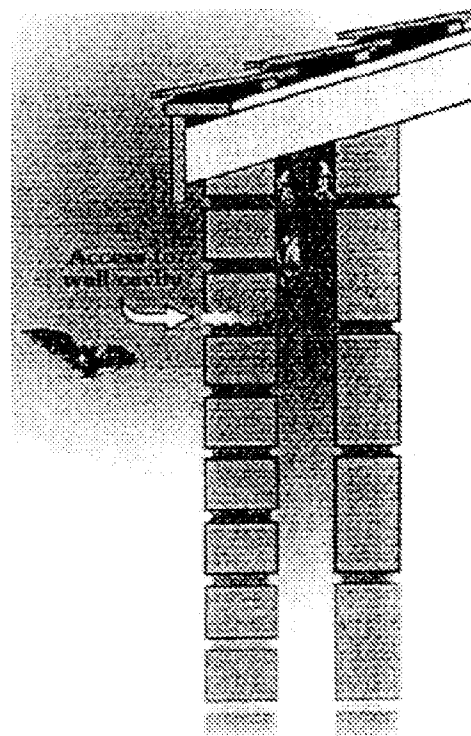


Toddington Lane, North Littlehampton - Bat Emergence / Return Survey Report

Bat Access and Roost Bricks

Source: Marshalls Clay Products (approved by the Bat conservation Trust)

'... Marshall Clay Products have been producing a Bat Access Brick specially designed to help the country's badly depleted bat population by provided access to wall cavities or roof spaces where most bat colonies tend to be (see diagram). In recent years bats have been declining at an alarming rate. Nearly all colonies tend to be on the outside of houses, in wall cavities, under slates, flashing or tiles, et c. ... Contrary to popular opinion, bats do not make pests and do absolutely no damage to buildings or roof timbers, indeed many people encourage bat colonies in their area because of the large number of insect pests, woodworm, et c. which they eat. Most colonises will use a house for only a few weeks in summer before dispersing in autumn.'



Marshall's Bat Access Brick, which is now also available in stone.

A Bat Brick should ideally be placed as high as possible at the gable apex or close to the soffit.

Marshalls Clay Products - Quarry Lane,
Howley Park, Woodkirk, Dewsbury, West
Yorkshire, WF12 7JJ

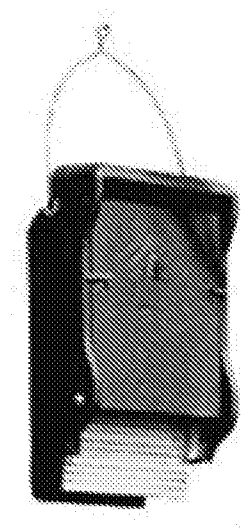


Toddington Lane, North Littlehampton - Bat Emergence / Return Survey Report

Bat Box

This type of box is made of woodcrete and is expected to last approximately 25 years. It has a narrow crevice-like internal space to attract Pipistrelle and Noctule bats. Woodcrete (75% wood sawdust, concrete and clay mixture).

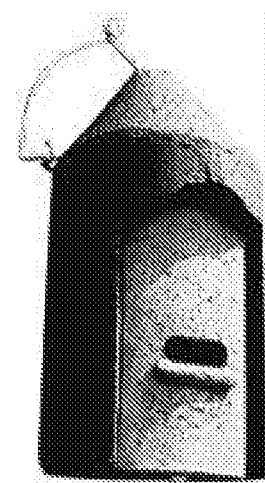
Width: 27cm; Height: 43cm; Weight: 8.3kg.



For Trees

Woodcrete boxes have the highest rates of occupation of all box types. The 75% wood sawdust, concrete and clay mixture allows natural respiration, stable temperature, and durability. They are long lasting (approx. 25 years) and are rot- and predator-proof. Hang from a tree branch near the trunk, or fix to a trunk with the supplied 'tree-friendly' aluminium nail. Attractive to smaller British bats.

Material: Woodcrete (75% wood sawdust, concrete and clay mixture); Diameter: 16cm; Height: 33cm; Weight: 4kg.





Toddington Lane, North Littlehampton - Bat Emergence / Return Survey Report

Report Conditions

Toddington Lane, North Littlehampton – Bat Emergence / return Survey

This report is produced solely for the benefit of Persimmon Homes, and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to WYG Environment. In time improved practices, fresh information or amended legislation may necessitate a re-assessment. Opinions and information provided in this report are on the basis of WYG using due skill and care in the preparation of the report.

This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

This report is limited to those aspects reported on, within the scope and limits agreed with the client under our appointment. It is necessarily restricted and no liability is accepted for any other aspect. It is based on the information sources indicated in the report. Some of the opinions are based on unconfirmed data and information and are presented as the best obtained within the scope for this report.

Reliance has been placed on the documents and information supplied to WYG Environment by others but no independent verification of these has been made and no warranty is given on them. No liability is accepted or warranty given in relation to the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report.

Whilst skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather related conditions.

Although care is taken to select monitoring and survey periods that are typical of the environmental conditions being measured, within the overall reporting programme constraints, measured conditions may not be fully representative of the actual conditions. Any predictive or modelling work, undertaken as part of the commission will be subject to limitations including the representativeness of data used by the model and the assumptions inherent within the approach used. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions.

The potential influence of our assessment and report on other aspects of any development or future planning requires evaluation by other involved parties. The performance of environmental protection measures, e.g. of buildings and other structures in relation to acoustics, vibration, noise mitigation, and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. WYG accept no liability for issues with performance arising from such factors.



Toddington Lane, North Littlehampton - Bat Emergence / Return Survey Report

Gardening for bats

Aim at having flowers in bloom through the year, including both annuals and herbaceous perennials. Below are some suggestions, but this is by no means an exhaustive list. See what grows well in YOUR garden, and what seems most attractive to insects. Flowering times are approximate, varying in different areas. Regular dead-heading extends flowering period in many flowers. A=annual, HA=half-hardy annual, HHA=half-hardy annual, P=perennial, W=wild flower.

Flowers for borders			
St John's Wort	<i>Hypericum</i>	P	March -
marigolds	<i>Tagetes</i>	H/A	March - Oct
aubretia	<i>A. deltoidea</i>	P	March - June
honesty	<i>Lunaria rediviva</i>	HB	March
forget-me-not	<i>Myosotis sp.</i>	A/P	March - May
elephant ears	<i>Begonia</i>	P	April
Wallflowers	<i>Erysimum</i>	B	April - June
Cranesbills	<i>Geranium sp.</i>	P	May - Sept
Yarrow	<i>Achillea</i>	P	May -
Poppies	<i>Papaver sp.</i>	A	May - July
Danish violet	<i>Hesperis matronalis</i>	P	May - August
Red Valerian	<i>Centranthus ruber</i>	P	May - Sept
Poached egg plant	<i>Limnatherum</i>	HA	June - Aug.
Knapweed	<i>Centaurus nigra</i>	P	June - Sept
Phacelia		HA	June - Sept
Ox-eye daisy	<i>Leucanthemum vulgare</i>	P	June - Aug.
Evening primrose	<i>Oenothera biennis</i>	B	June - Sept
Candytuft	<i>Iberia umbellata</i>	HA	June - Sept
Sweet William	<i>Elephantus barbatus</i>	B	June - July
Blanket flowers	<i>Gallardia</i>	P	June -
Verbena	<i>V. bonariensis</i>	HHA	June - Oct
Scabious	<i>Scabiosa arvensis</i>	P	July - Aug.
Night-scented stock	<i>Matthiola incana</i>	HA	July - Aug.
Pincushion flower	<i>Scabiosa sp.</i>	A/P	July - Sept
Cherry pie	<i>Helianthus</i>	HHA	July - Oct.
Mexican aster	<i>Cosmos sp.</i>	A/P	July - Oct.
Cone flower	<i>Rudbeckia sp.</i>	A/P	August - Nov.
Mallow	<i>Malva sp.</i>	P	August - Oct.
Michaelmas daisy	<i>Aster sp.</i>	P	August - Sept.
Ice plant 'Pink lady'	<i>Sedum spectabile</i>	P	Sept.
Herbs - both leaves and flowers are fragrant			
Fennel	<i>Foeniculum vulgare</i>		July - Sept.
Bergamot	<i>Monarda didyma</i>		June - Sept
Sweet Cicely	<i>Myrrhis odorata</i>		April - June
Hyssop	<i>Hyssopus officinalis</i>		July - Sept
Feverfew	<i>Tanacetum parthenium</i>		June - Sept.
Borage	<i>Borago officinalis</i>		May - Sept.

Trees, shrubs and climbers important to insects			
Rosemary	<i>Rosemaria officinalis</i>		March - May
Lemon balm	<i>Melissa officinalis</i>		
Coriander	<i>Coriandrum sativum</i>		June - August
Lavenders	<i>Lavandula sp.</i>		
Marjoram	<i>Origanum sp.</i>		
large gardens only			
Oak	<i>Quercus sp.</i>		
Silver birch	<i>Betula pendula</i>		
Common alder	<i>Alnus glutinosa</i>		Suitable for coppicing
Hazel	<i>Corylus avellana</i>		Suitable for coppicing
Elder	<i>Sambucus nigra</i>		Small
Pussy willow	<i>Salix caprea</i>		Suitable for coppicing
Hawthorn	<i>Crataegus monogyna</i>		Suitable for coppicing
Honeysuckle	<i>Lonicera sp.</i>		grow a variety for succession.
Dog rose	<i>Rosa canina</i>		Climber
Bramble	<i>Rubus fruticosus</i>		Climber
Ivy	<i>Hedera helix</i>		Climber
Buddleia	<i>Buddleia davidii</i>		shrub
Garden rose	<i>Rubus idaeus</i>		shrub
Gorse	<i>Ulex sp.</i>		shrub
Plants for pond edges and marshy areas			
Purple loosestrife	<i>Lythrum salicaria</i>	W	June - Aug.
Meadow sweet	<i>Filipendula ulmaria</i>	W	June - Sept.
Lady's smock	<i>Cardamine pratensis</i>	W	April - June
Water mint	<i>Monarda aquatica</i>	W	July - Sept.
Angelica	<i>Angelica sylvestris</i>	W	July - Sept.
Hemp agrimony	<i>Eupatorium cannabinum</i>	W	July - Sept.
Marsh marigold	<i>Caltha palustris</i>	W	March - May
Creeping Jenny	<i>Lysimachia nummularia</i>	W	May - August
Fringed water lily	<i>Najas pinnata</i>	W	June - Sept.
Water forget-me-not	<i>Myosotis scorpioides</i>	W	June - Sept.

Allow part of your lawn to grow long in summer and cut in autumn, removing the clippings. Avoid using fertilizers. Compost heaps are good producers of insects too.

Add a seat to watch your garden come to life!