

Technical Annex 12D Survey and Assessment of Bat Use
of North Quay and Riviere Towans, Hayle

**SURVEY AND ASSESSMENT OF
BAT USE OF NORTH QUAY AND
RIVIERE TOWANS, HAYLE**

July 2007

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**SURVEY AND ASSESSMENT OF BAT USE OF
NORTH QUAY AND RIVIERE TOWANS, HAYLE**
July 2007

O.S. Grid Ref: SW 554 379

Survey Dates: 18th July, 23rd July & 27th July 2007

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Report compiled by: J. Pilkington PhD

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Report No: 06-82T/TEP/NQHayle bats

1. SUMMARY

This survey has been undertaken by Spalding Associates (Environmental) Ltd; it is part of the investigations for environmental impact assessment of proposals for development of housing and parking on North Quay and the surrounding Towans areas on the north bank of the Hayle estuary. As part of the assessment of ecological impacts for this proposal, the potential for impact on bats is being examined.

The site is exposed and the vegetation is low-growing, providing little shelter. In less windy weather the site does offer a few relatively sheltered areas which are likely to support the flying invertebrates that bats feed on. The base of the cliff face and quarry, the shelter belts of pines, the hollows between the sand dunes and the hedges on the area of Riviere fields all offer potential foraging areas for bats. In good weather bats may find food over the more exposed areas. There are potential roosting sites in the buildings, cliff face and quarry.

The results of the two summer transects show low level use of the site by Pipistrelles and a single *Myotis* sp. Bats use the hedges on the Riviere fields and the track above the electricity sub-station as flightlines connecting roosts with foraging areas. Bats feed in the sheltered quarry, along the track on the Riviere fields and also around the sodium vapour light close to the house in the midst of the fields (Parkfield). A single Brown Long-eared bat has been previously recorded in October 2005 around the quarry.

More detailed survey of the various potential roost features is necessary to fully inform the proposed mitigation. Further visual and emergence surveys must be conducted to determine whether any of the buildings, cliff face and quarry are used as bat roosts. The low level of activity suggests there are no breeding roosts on the site. However, emergence surveys of the buildings need to be undertaken before firm conclusions can be made and the cliff face and quarry must be surveyed in detail for potential hibernation use as the vegetation may be obscuring hibernation sites from view. In addition, autumn transects are necessary to determine bat activity on site at that time of year; these transects, possibly combined with remote Anabat recordings, could pick up bats moving to hibernation sites.

2. INTRODUCTION

This survey has been undertaken by Spalding Associates (Environmental) Ltd; it is part of the investigations for environmental impact assessment of proposals for development of housing and parking on North Quay and the surrounding Towans areas on the north bank of the Hayle estuary.

The proposal will also entail the demolition of several buildings on the site, the renovation of occasional buildings of heritage value and loss of areas of sand dune, scrub, field and hedge habitat.

As part of the assessment of ecological impacts for this proposal, the potential for impact on bats is being examined. In order to assess the probable use of the site by bats, the buildings and the surrounding habitat that will be affected have been surveyed. A walkover survey was carried out in July 2007 to assess the habitat for its potential to support bats. Two walked transects were walked in July 2007, covering all areas on the site likely to be used by bats, to record bat activity. Visual inspections of the buildings have been undertaken to assess their potential as bat habitat, although access has been limited in some cases.

The information obtained so far will be used to inform requirement for further bat activity survey work and will also identify features requiring individual detailed survey. The results of survey work to date will inform a mitigation strategy that would avoid or fully mitigate potential impacts from the proposed work on bats using the site.

3. WALKOVER ASSESSMENT

3.1. Methodology

The area was walked over on 23rd July 2007 during daylight. All areas on the site to be developed were accessible although buildings were only surveyed from outside. A good overview was possible and landscape features of interest for commuting and foraging bats could be identified as well as potential roost sites in buildings and trees. The features of potential importance are mapped on Map 1 in this report.

3.2. Assessment

3.2.1. Habitat potential

The site is exposed and the vegetation is low-growing, providing little shelter. In less windy weather the site does offer a few relatively sheltered areas which are likely to support the flying invertebrates that bats feed on. The base of the cliff face and quarry, the shelter belts of pines, the hollows between the sand dunes and the hedges on the area of Riviere fields all offer potential foraging areas for bats. In good weather bats may even find food over the more exposed areas. There are potential roosting sites in the buildings both on and around the site.

However, this site is very unlikely to support large numbers of bats as conditions are often unsuitable here for feeding.

3.2.2. Flight lines

Flight lines are provided by the hedges on the Riviere fields, the cliff face and quarry, shelter belts of pine trees and, to a lesser extent, tracks on and around the site and the cricket pitch as a flight line/ foraging area connecting to other foraging habitats. The hedges in particular connect this site to further areas of sand dune, estuary edge and farmland habitat of potential value to bats. It is important that links/flightlines are retained with other neighbouring habitats if bats are found roosting on or around the site.

3.2.3. Foraging areas

This site is exposed but could offer opportunities to foraging bats in calm weather. Some sheltered areas exist in the hollows between higher sand dunes, amongst patches of scrub, alongside hedges and trees and also at the base of the cliff face and quarry.

The area is unlikely to provide enough regular foraging opportunities for large roosts of bats.

3.2.4. Buildings

The following buildings on the site were visually examined in July 2007 from the outside for their potential as bat roosts:

- **Shed on top of the cliff face** – this large concrete block shed has a corrugated asbestos/cement roof and is well used as a workshop with a large open door at the north end. There is no roof lining but bats could access the space on top of the walls beneath the corrugated roof. Most of the corrugations along the eaves were well sealed but there are occasional small gaps and an area covered by Ivy which could conceal possible bat access points. The building is situated on high ground and is therefore very exposed and uncongenial to bats. The potential for this building to be used by roosting bats is low. An emergence survey should be carried out prior to development.
- **OCTEL building** – this flat roofed concrete building on the quayside is located at the base of the shrubby cliff face. The roof is well sealed and does not offer any potential roost sites for bats. However, there is a broken window on the upper storey and a large hole above a doorway facing the harbour as well as slits along the sides of the large warehouse-type doors facing the shed to the northwest; these areas could be used by bats. This building will need an internal visual inspection as well as an emergence survey in summer and perhaps in autumn. It would also be advisable to carry out a hibernation survey.

- **Quayside café** – this concrete building has a well sealed flat roof and is located at the base of the shrubby cliff face. No access points for bats could be seen although the rear of the building could not be examined closely. The potential for this building to be used by roosting bats is low but an external examination of the rear of the building may reveal potential access points for bats.
- **House in Riviere fields (Parkfield)** – This fairly modern house has a tiled roof and all eaves/gable ends/ridge and soffits are well sealed and no access for bats was visible from the path. A fuller visual inspection is necessary to discover whether further survey work is necessary. The wooden shed in the garden has a buckled felted roof; bats such as Pipistrelle like to roost beneath roofing felt as it warms up quickly in the sun. An emergence survey is advised here. This house and shed are not believed to be directly affected by the proposed development but any bats roosting there would need hedges as flight lines between their roost and their foraging areas in the surrounding landscape.
- The electricity substation and a number of concrete block buildings with corrugated asbestos/cement sheeting roofs are situated in a hollow surrounded by sand dunes and scrub on three sides. This complex is not part of the development and has not been surveyed in detail. The relatively sheltered conditions in the hollow could attract bats to roost or forage and any roosting bats in the buildings would need access to other foraging areas.

Other building surveys

In November 2006 the harbour office building and the old stables on the quay were found to offer potential roost sites for bats during survey; further survey work including emergence surveys, was recommended.

A visual survey of Riviere Farm, just outside the site proposed for development, revealed no evidence for the presence of bats but emergence surveys would need to be undertaken if work were to be carried out on the buildings.

3.2.5. Trees

The only tree of any size is a large pine above the cliff face, just southeast of the large shed. No holes/crevices were seen and there is only a thin growth of Ivy on the trunk. The trunk did not appear damaged and the tree is healthy. It is considered to be of negligible potential for roosting bats.

There are few trees on this rather exposed site and these are generally young planted conifers (apparently *Pinus* sp.). These young trees do not possess any potential roosting sites for bats but do provide valuable shelter in a very exposed site. Such sheltered areas are likely to support flying invertebrates on which bats feed. Bats could also use the edge of the stands of conifers, particularly the conifer shelter belt on the south edge of the Riviere fields as flight lines.

3.2.6. Cliff face and quarry

The cliff face was closely examined from the base; no suitable bat roosting sites were seen on the exposed surfaces but the covering vegetation towards the southeast end may hide suitable deep crevices. Any crevices seen were shallow and unstable.

The quarry face is very well vegetated with scrub and Ivy and it was not possible to examine the cliff fully; however the vegetation could hide potential roost sites.

Both these areas should be covered on the activity surveys and remote detectors should be placed there in autumn to monitor hibernation activity.

4. TRANSECTS

Two transects were walked in July 2007 with digital detectors, recording all bat calls which, when combined with observations, gave an accurate picture of bat activity on this site in summer.

4.1. Methodology

Transects were walked on the evening of the 18th and 27th July 2007 by A. Spalding and C. Neil. An Anabat™ detector was used on the first survey and a Bat Box Duet™ on the second survey. Any observations of bat activity were mapped and the time noted as well as the type of activity; this was then correlated with the recordings to identify the species. The route followed for both transects is shown on Map 2 in this report.

Transect 1 (18th July 2007) – the transect started at 21.30 and continued until 23.30. The weather was calm and dry the temperature was 16° C.

Transect 2 (27th July 2007) – the transect started at 21.40 and stopped at 23.30. The weather was dry with a slight breeze and the temperature was 14° C.

4.2. Results

All recorded bat calls are listed in Tables 1 and 2 below. Bat activity for both transects is shown on Map 2, with the transect points.

Table 1: bat activity at North Quay and Riviere fields 18th July 2007

Transect 1 point	Time	Sonogram ref	Bat species	Notes
	North Quay dunes			
1	22.05	H7182205.47#	pip45	Bat flying along track
2	22.06	H7182223.06#	pip45	Bat flying out of conifer trees flying northwards
	22.40	H7182240.59#	pip45	Bat not seen

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3	22.42	H7182242.53#	pip45	Bat on edge of conifer plantation near electricity sub-station
	22.43	H7182243.18#	pip45	"
	22.46	H7182246.02#	pip45	"
4	22.55	H7182255.49#	pip45	Bat flying in quarry area
	22.56	H7182256.00#	pip45	"

Track between fields at Riviere

	23.04	H7182306.19#	Other	
5	23.08	H7182308.52#	pip45	Bat flying on field south of track
		H7182309.06#	?	Uncharacteristic call
5	23.1	H7182310.18#	pip45	Bat flying on hedge south of track
6	23.15	H7182315.12#	pip45	Bat flying along hedge on track going east
		H7182316.59#	?	Not enough data
7	23.17	H7182317.12#	Myotis sp.	Bat flying by house
8	23.19	H7182319.29#	pip45	Bat flying by sodium light
9	23.19	H7182319.47#	pip45	"
	23.19	H7182320.02#	pip45	"
	23.2	H7182320.17#	pip45	"
	23.21	H7182322.21#	pip45	Bat flying at bottom of track

Table 2: bat activity at North Quay and Riviere fields 27th July 2007

Transect	Time	Bat species	Notes
2 point North Quay dunes			
1	21.46	pip45	Behind shed on track
2	21.50	pip45	Top of cliff face on track - not seen
3	21.58	pip45	Foraging in shed hollow
4	22.12	pip45	Foraging on upper dune above power station
5	22.21-22.24	pip45	Under pylons near path down to sub-station
6	22.40	pip45	Over canoe club on quay - not seen.
7	22.52	pip45	Around sodium light at quarry
8	22.54	pip45	foraging
Road between fields at Riviere			
9	23.16.	pip45	Foraging at sodium light at shelter belt

Pipistrelle *Pipistrellus pipistrellus* bats were occasionally found on site. An unidentified *Myotis* species was heard close to the house in the midst of the Riviere fields on 18th July but the recording was not conclusive. Although several bat calls were recorded some could have been made by the same bat. Overall bat activity was sporadic on site and very few bats were present. Favoured areas were:

- The track above the electricity sub-station and the low-growing conifers there; 1-3 Pipistrelles were recorded/seen here.
- The sheltered quarry – 1 or 2 Pipistrelles foraging recorded/seen here.

- 1 Pipistrelle foraging along hedge to side of track on Riviere fields.
- 1 or 2 Pipistrelles using hedged track as a flight line travelling east.
- 1 *Myotis* sp. around house.
- 1 Pipistrelle foraging around sodium light close to house.

5. DISCUSSION

5.1. Flight lines and foraging

The site is fairly exposed to the weather but there are some sheltered areas that support populations of flying invertebrates on which bats feed. In calmer weather bats may feed over the more natural sand dune vegetation on higher ground. The results of the two summer transects show low level use of the site by Pipistrelles and a single *Myotis* sp.. Bats have been shown to use the hedges on Riviere fields and the track above the electricity sub-station as flightlines connecting roosts with foraging areas. Bats are feeding in the sheltered quarry, over the field south of the track on Riviere fields and also around the sodium vapour light close to the house at the midst of the fields.

A previous survey carried out in October 2005 revealed a Pipistrelle bat feeding in one area of the quarry face. An unidentified bat was seen to fly high and fast to the north across the site and a Brown Long-eared *Plecotus auritus* bat flew low along the southern end of the cliff face.

5.2. Bat roosts

Potential roost sites exist in the buildings, cliff face and quarry.

A previous transect carried out in October 2005 did not find bats emerging from the cliff/quarry face (although a Pipistrelle bat was seen and heard feeding in one area and an unidentified bat was seen to fly high and fast to the north across the site and a Brown Long-eared *Plecotus auritus* bat flew low along the southern end of the cliff face).

There do not appear to be breeding roosts on the site - suggested by the low level of summer activity here. However, emergence surveys of the buildings need to be undertaken before firm conclusions can be made.

Deeper holes/crevices in the cliff face and quarry could be obscured by vegetation and would provide good sites for hibernation.

NB: No evidence of bats was found on a visual survey at Riviere Farm (immediately to the north of the proposed development site) in winter 2004/5 but a summer emergence survey was recommended to establish whether bats used soffits etc.

6. FURTHER SURVEY WORK

Further visual and emergence surveys must be conducted to determine whether any of the buildings, cliff face and quarry are used as bat roosts.

6.1. Visual surveys

The following structures/buildings on North Quay should be subject to further detailed visual survey, following assessment in 2007:

- OCTEL building – an internal visual inspection is required
- Quayside café – an external survey of the rear of the building, plus an internal survey if necessary
- House (Parkfield) – an external survey initially and an internal survey if necessary.

6.2. Emergence surveys

Recommendations for survey of emerging bats, for buildings surveyed in 2005 and 2006, are given in the relevant reports (Spalding Associates 2005, Spalding Associates, 2006). Additionally the structures listed in 3.2.4. have been identified as requiring survey for emerging bats.

In summary, the following structures on North Quay and Riviere should be surveyed for emerging bats:

- Harbour Office - If work is planned on the roof then further surveys will be necessary. These should be emergence surveys at dusk in summer and autumn.
- Old Stables - If the lintels are to be disturbed or the joist holes filled in then emergence surveys are necessary in summer and autumn. If the Ivy is to be removed at a later date it should be cut at the base now and allowed to die back before removal. This will deter nesting birds and will enable any crevices in the wall (hidden at present) to be assessed for their suitability for roosting bats.
- Chimney – in summer
- Wooden shed at Parkfield House – in summer
- Depending on the results of more detailed visual surveys emergence surveys may need to be done on the OCTEL building, Quayside café and house (Parkfield).

These surveys should be carried out whilst bats are active between early May and October. On any emergence surveys it is important that the direction the bats take on emerging from the roost is noted. This will determine which flight lines are most necessary.

6.3. Autumn activity surveys

Two more activity surveys should be undertaken in September/October, in addition to those that have been undertaken in July (see section 4). These transects are necessary to determine bat activity on site at this time of year.

These activity surveys should monitor all bat activity along transects which include the quarry, cliff face (and buildings at the base), electricity sub-station, shed on top of the cliff face and the house surrounded by fields (Parkfield). The hedges between the fields should also be included.

The autumn transects, possibly combined with remote Anabat recordings, could pick up bats moving to hibernation sites.

6.4. Hibernation surveys

Hibernation surveys are required on the cliff face and quarry. This could include the use of remote detectors (such as an Anabat recorder) placed in a secure position on these two sites in autumn for at least a week or two, including a period of mild weather.

The results of detailed visual surveys will dictate which, if any, of the buildings require a hibernation survey.

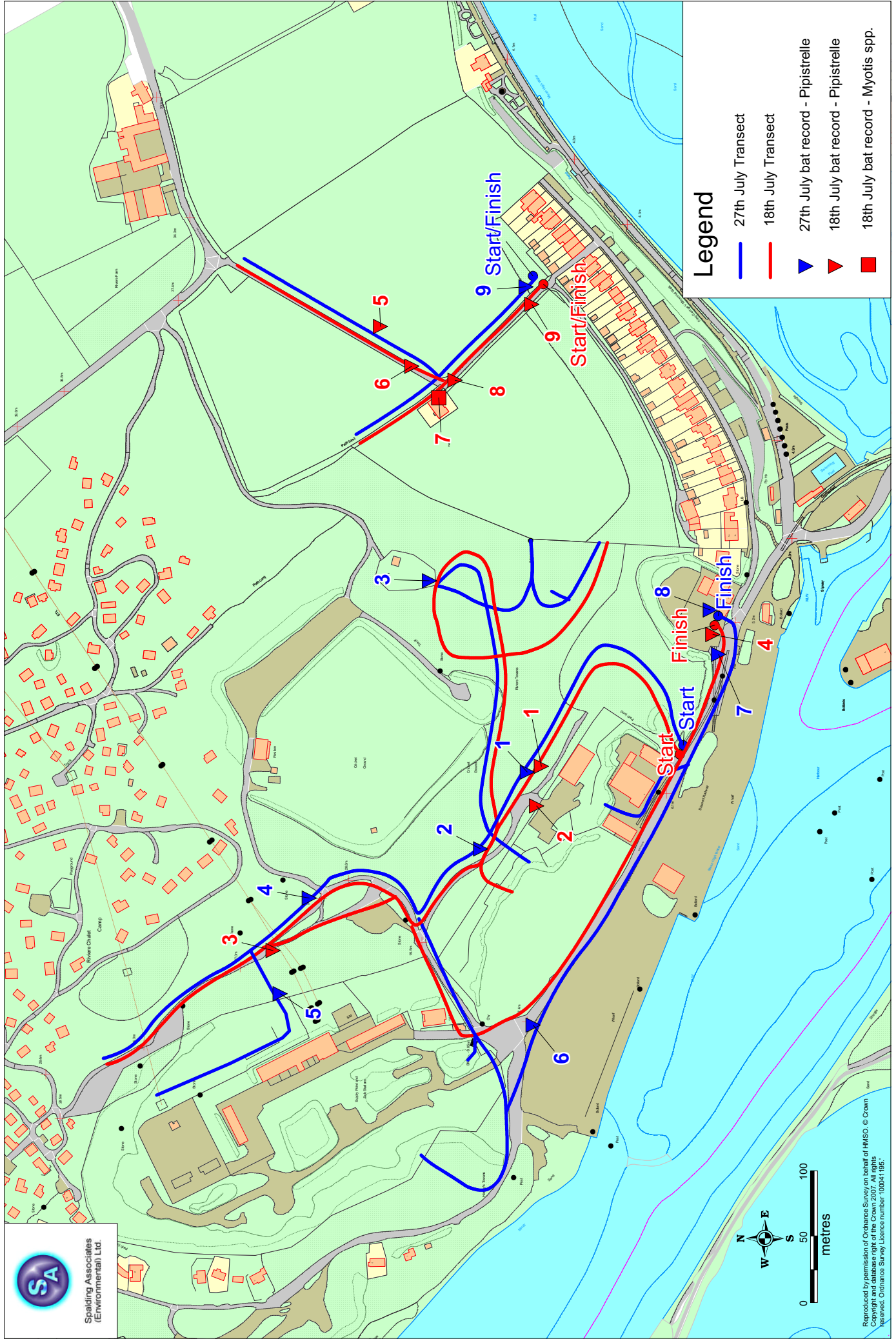
7. REFERENCES

Spalding Associates (Environmental) Ltd., *Bat and barn owl survey of buildings at Riviere Farm at Phillack, near Hayle* December 2004 & January 2005. Spalding Associates, Truro.

Spalding Associates (Environmental) Ltd 2005. *Bat survey of land at North Quay, Hayle, Cornwall* October 2005. Spalding Associates, Truro.

Spalding Associates (Environmental) Ltd Atkinson, A., 2006. *Bat and barn owl survey of buildings at Hayle* November 2006. Spalding Associates, Truro.

Map 2. Transects for bats on North Quay, Hayle, July 2007



Map 1. Features of potential importance to bats on North Quay and Riviere Towns identified during survey in July 2007

