

NORTH WEST TAUNTON TRANSPORT PACKAGE (NWTTP) OTTER MONITORING

Final Report September 2006

NORTH WEST TAUNTON TRANSPORT PACKAGE (NWTTP) OTTER MONITORING

Final Report September 2006

*Produced for Somerset County Council by the Somerset Environmental Records Centre
Tonedale Mill, Wellington, Somerset. TA21 0AW
Tel: 01823 664450 Fax: 01823 664441
Email: info@somerc.com*

*Emma Koblizek, Jodey Peyton, Rebecca Johnson
September - 2006*

Authorised by Elizabeth Biron, September -2006



*Further Copies can be obtained from Somerset Environmental Records Centre
Tonedale Mill, Wellington, Somerset. TA21 0AW*

File saved as 'NWTTP Otter Monitoring'

SERC Document Number = '2420'

CONTENTS

Introduction.....	4
Map 1. Locations of monitoring sites.....	5
Background to study.....	6
Otter Records from the River Tone catchment	6
Map 2. Otter records held by SERC (1970 to September 2005).....	8
Methods.....	9
Results.....	10
Discussion.....	12
Conclusion	13
Acknowledgements.....	14
Bibliography	15

INTRODUCTION

Somerset County Council (SCC) commissioned Somerset Environmental Records Centre (SERC) to monitor otter activity in relation to the North West Taunton Transport Package (NWTTP), also known as the Silk Mills development. The development area is known to support an established otter population (SERC records), which could potentially be adversely affected by the works

The development was centred on Silk Mills Lane (A3065), which links the A358 (northern end) to the A38 (southern end). The road passes through a light industrial area, residential areas and a central area of agricultural land. The River Tone lies 400m to the south of the development, and one of its northern tributaries, Back Stream, lies directly on the western edge of the development area. Refer to Map 1.

Work on the Silk Mills development began in October 2004 and was scheduled for completion by December 2005. The major construction works were completed by December 2005, however minor works, including landscaping, continued into April 2006. The main works being:

- road improvements to Silk Mills Lane, A3065, principally construction of a bridge over the railway line;
- a park & ride development directly to the east of Silk Mills Lane and south of the railway line; and
- two flood attenuation ponds/wet grassland areas adjacent to and connecting with the Back Stream and two flood attenuation ponds/wet grassland areas to the east of the park and ride, the eastern most one connected to the River Tone.

(Extract from pre-development survey report by WS Atkins Consultants Limited, November 2003)

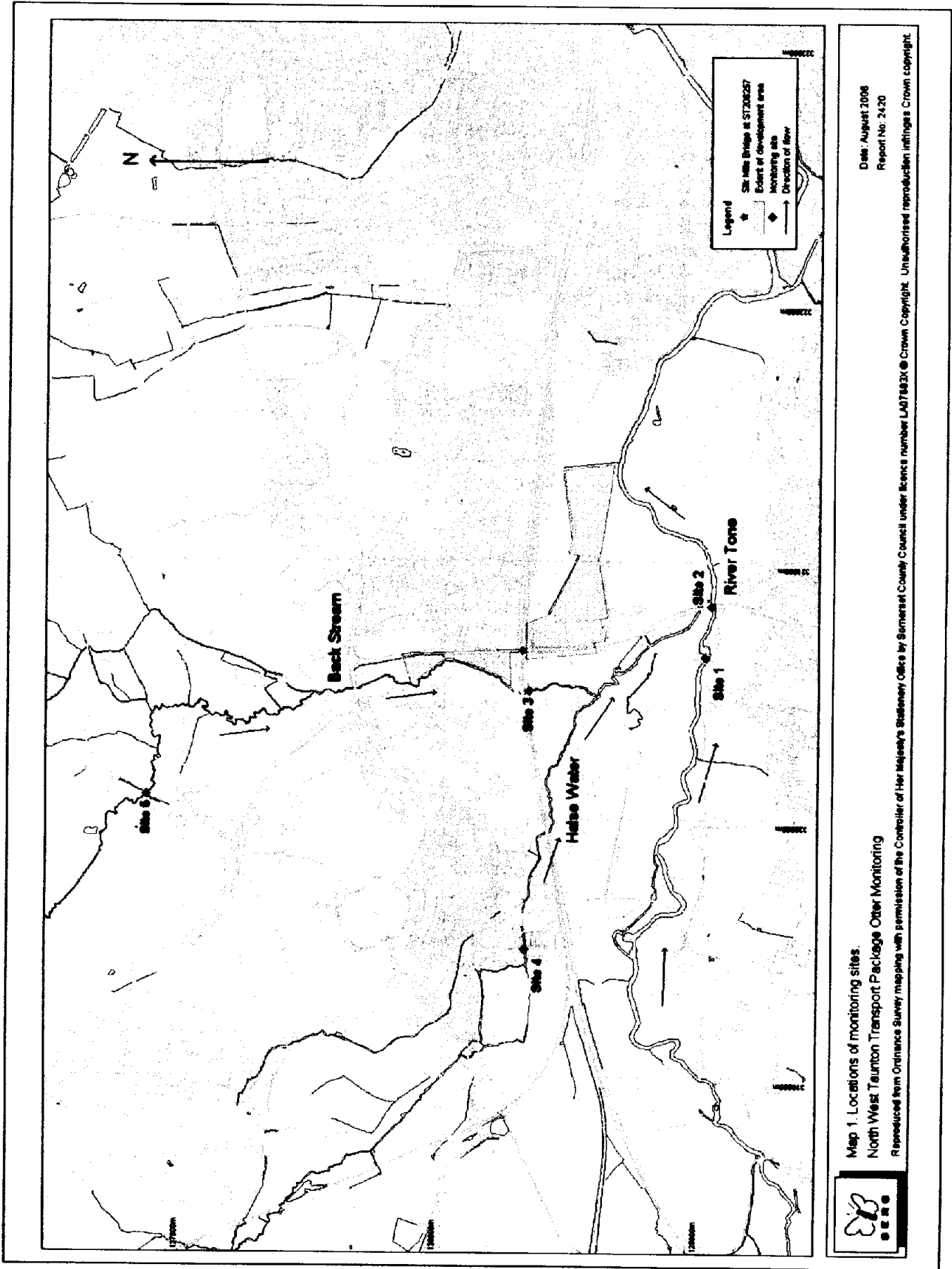
The study started on the 21 April 2004, five months prior to work commencing, and concluded on 21 April 2006. The five monitoring sites were located on the River Tone and on two of the river's northern tributaries, Back Stream and Halse Water, all within 1.6 kilometres of the development site. Refer to Map 1.

Monitoring of otter activity was based on the presence or absence of spraints and anal jelly (subsequently referred to as signs), which were recorded on a twice-weekly basis. Signs were taken to equate to otter activity, with the absence of signs being taken to indicate an absence of otter activity at a site between visits, and therefore from that particular stretch of water.

The road development was expected to have greatest impact on the otter(s) using the section of the Back Stream closest to the development site (Site 3). If disturbance caused by the development had an adverse effect on the otter(s) it was expected that otter activity, and therefore presence of signs, would decrease in this area. Correspondingly activity might increase upstream of the development on Back Stream (Site 5) and Halse Water (Site 4), or downstream on the River Tone (Sites 1 and 2), reflecting a preference by the otter(s) to use undisturbed parts of the home range(s). Displacement of otters from at least part of their home range would very likely increase interaction with neighbouring otters, which could be reflected in an increase in signs. It was expected that otter activity on the nearby section of the River Tone would not decrease as it was assumed otters would continue using the River Tone regardless of the development work. However detecting such changes in distribution from signs alone is difficult unless the changes in marking frequency are large and prolonged; there are many separate factors that can affect marking activity of otters and successful detection of signs by surveyors.

Otter records held by SERC were examined to provide additional background information of the otter population within 10km of the study area. Most of these records were collected by Somerset Otter Group (SOG), as part of their monthly countywide monitoring programme.

Map 1. Locations of monitoring sites



Background to study

The Silk Mills development scheme was given full planning permission on 11 November 2002, subject to various planning conditions issued by the Somerset County Planning Authority, including survey for otters and consideration of any necessary mitigation measures. WS Atkins Consultants Limited conducted an environmental impact assessment for otters, which included a survey on the 19 August 2003 covering a 500m section of Back Stream adjacent to the proposed flood attenuation lagoons/wet meadows. Abundant signs were found along the tributary as were a number of sheltered spots suitable for otters to lie-up during the day.

A recommendation of Atkins report was for SCC to commission Somerset Otter Group (SOG) to monitor otter activity levels along the Back Stream and River Tone to assess the impact prior, during and after all the various development schemes proposed in the general area. Temporary disturbance of otters that use the location for lying up and feeding was outlined in the report as a potential impact of the construction of the flood attenuation lagoons/wet grassland areas, adjacent to the Back Stream and the River Tone. SERC worked closely with the chairman of the Somerset Otter Group, James Williams, in setting up the monitoring program and throughout the course of the study.

Disturbance caused by human activities is thought to have only limited effect on otter activity and may have not significant effect on their distribution unless combined with loss of suitable habitat (Mason and MacDonald, 1986). Otters do regularly make use of watercourses in many cities and towns, locations where high levels of human disturbance would be expected (Channin, 2003a). In Taunton otter signs are regularly recorded on both the River Tone and the Bridgwater to Taunton canal where they flow through the town centre.

Otter records from the River Tone catchment

Consistently high levels of otter signs have been regularly recorded by members of Somerset Otter Group on the River Tone and its tributaries since at least 1997; watercourses are usually checked once every month, and absences of signs are recorded as well as signs. These records reflect a healthy recovery of the population from the dramatic decline that culminated in otters apparently being completely absent from the area from 1980 to 1986.

It is not known how many otters were frequenting the monitoring sites during the course of the Silk Mills study. There is the possibility that the five sites are only being visited by a single otter, as the area involved in this study is not large. However this is viewed as unlikely by James Williams, who suggested that at least two different otters use the sites, including a female who has in the past given birth to cubs (James Williams *pers comm.*).

During 1997 and 1998 a study was carried out, using DNA fingerprinting on samples of spraint and anal jelly collected from the Tone catchment, which identified 22 individuals, 12 males and 10 females (Coxon *et al*, 1999). This is the minimum number of otters active in the Tone catchment at that time; other otters may have been present but not sampled. The study found that different otters were present on the Halse Water to those on Back Stream. The DNA study also established maximum known ranges as 10 km for males and 9 km for females within the River Tone catchment (Coxon *et al*, 1999). To put this in context the River Tone catchment stretches over 35km east west and 20km north south.

Otter records held by SERC were examined to provide additional information about otter activity within a 10 km radius of the Silk Mills development, prior to and during the first three phases of the study: records from 1970 to September 2005 (refer to Map 2). The choice of a 10 km buffer was based on the findings of the DNA report for home range sizes in the River Tone catchment. For each watercourse records from the 10 km stretch closest to the development site were examined.

There are records of signs on the stretch of the River Tone between Site 1 and Site 2 from 1988 to August 2004. Site 2 was covered by the SOG monthly monitoring from May 1998 to March 2004, during that time thirty-nine monthly visits were carried out and on only seven occasions were no signs found. On the Back Stream neither Site 3 nor Site 5 is covered by SOG monthly monitoring, however there are some previous records for both sites. The survey carried out by WS Atkins Consultants Limited in 2002, reported abundant signs at Site 3 (WS

Atkins Consultants Ltd, 2003). At Site 5 signs were recorded in 1998. There are no previous records for Site 4 on Halse Water.

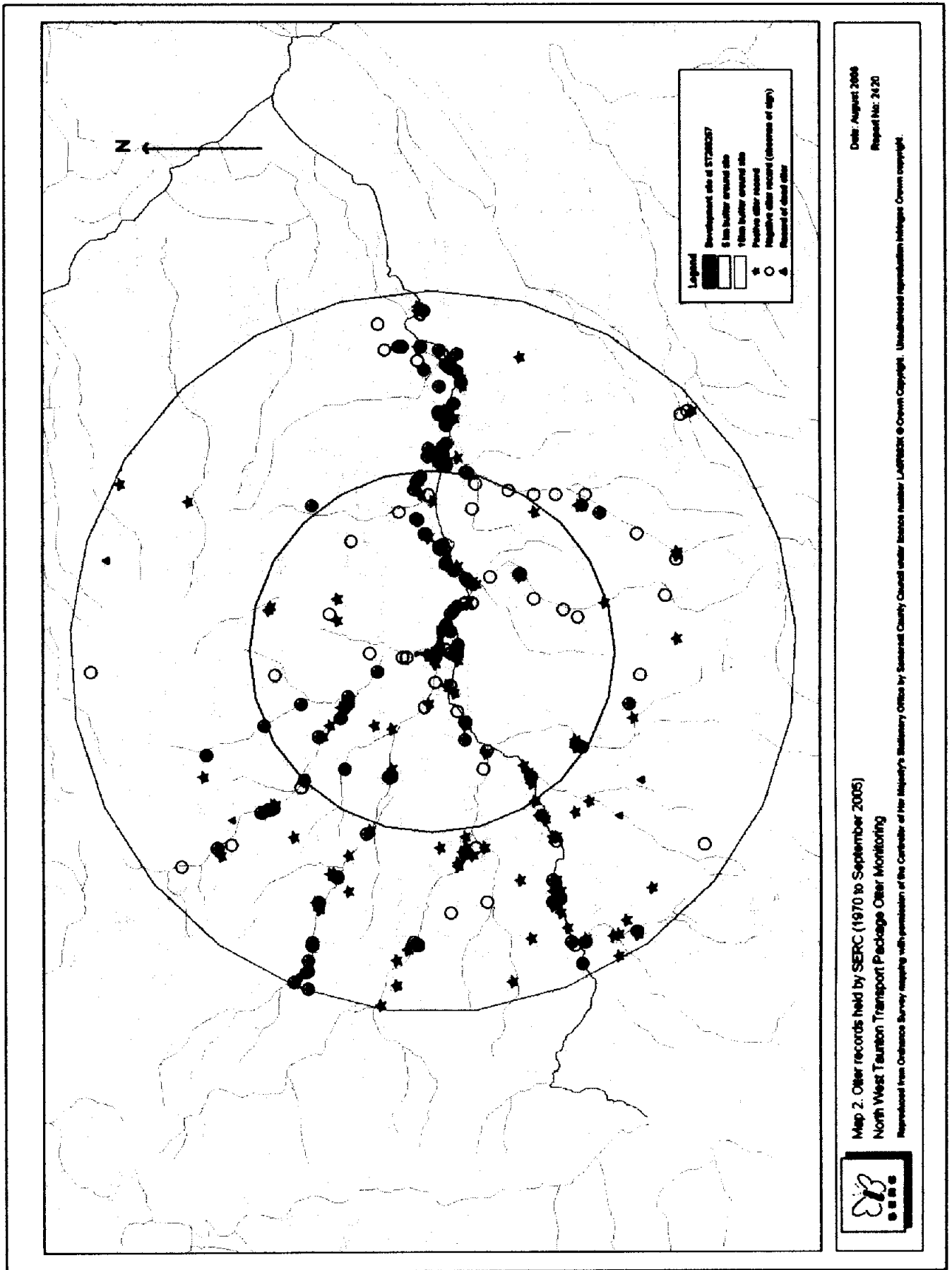
Due to differences in the recording effort on each watercourse over the years, three time periods were chosen from which a reasonable comparison could be made of the records obtained from the SOG monthly monitoring. The results are summarised in table 1. below. It can be seen that there are consistently fewer records of otter signs from the River Tone. Two different recorders surveyed this stretch of water; one checked sites upstream of Site 2 and consistently recorded a high number of absence records at all sites, compared to the other recorder who checked sites downstream of Site 2 during the same time period and recorded signs almost every visit. This either reflects a major difference in recording effort between the two recorders or that the upstream sites are frequented much less often than the downstream sites. Records from earlier years comparing data collected from the downstream sites by other recorders suggest that the former explanation may be correct. Between years levels of signs recorded are fairly consistent for each watercourse. These figures imply that otters regularly used all three watercourses prior to and during the Silk Mills development.

Table 1. Summary of otter records held on SERC database, within 10km of the Silk Mills development

Start date	End Date	Watercourse	No. of sites	Monthly visits		% Positive records	
				Mean	s.d	Mean	s.d
Jan-03	Dec-03	River Tone	6	11	1	37	30
Pre-development		Back Stream	3	7	5	75	43
		Halse Water	5	12	0	95	5
Jan-04	Sep-04	River Tone	7	8	1	50	40
Phase 1		Back Stream	8	7	2	86	19
		Halse Water	5	9	0	91	14
Oct-04	Sep-05	River Tone	7	10	2	48	37
Phases 2 and 3		Back Stream	8	11	0	67	27
		Halse Water	0	0	0	0	0

Disturbance over several months could potentially have a detrimental effect on the breeding success of females whose core home range lie within the development area. However, there is no evidence that this was relevant to the Silk Mills development. The Atkins survey found no conclusive otter holts close to the development site, and there are no other records of current breeding sites within the development area. However a 30m stretch with mature bank side trees, directly north of the railway line was identified in the report as having considerable potential for the establishment of an otter holt in the future.

Map 2. Otter records held by SERC (1970 to September 2005)



METHODS

Communication between the SERC survey team and James Williams (SOG) established five bridges suitable for monitoring otter activity close to the Silk Mills development site, on the River Tone and its tributaries. Sites 1 and 2 were situated on the River Tone, Sites 3 and 5 on Back Stream, and Site 4 on Halse Water. Map 1. shows the position of the five sites in relation to the development.

- Site 1, Tytherleigh Bridge on the River Tone (ST206250)
- Site 2, Silk Mills Bridge on the River Tone (ST208250)
- Site 3, Sewage Works Bridge on Back Stream (ST205256)
- Site 4, Station Road Bridge on Halse Water (ST194256)
- Site 5, Barnhams Bridge on Back Stream (ST200271)

The monitoring period was separated into four phases outlined below.

1. Baseline survey before start of construction: 21 April 2004 – 9 July 2004
2. Survey shortly after start of construction: 11 January 2005 – 7 April 2005
3. Survey part way through development works: 31 May 2005 – 19 August 2005
4. Post-development survey after completion of the major bridge works: 31 January 2006 – 21 April 2006

An additional fifth phase may be carried out from September to November 2006, to assess otter activity after full completion of the development.

The study period thus ranges from April 2004 to April 2006. Each phase lasted twelve weeks, with each site being visited twice per week, and each site being surveyed twenty four times in each phase. The sites were visited on Tuesdays and Fridays to allow an equal and consistent time period between visits.

Otter activity at each site was recorded as either positive or negative. This was determined by the presence of spraints or anal jelly (signs) beside the watercourse. Search for signs was confined to within twenty metres of each bridge, and signs were always deposited in a particular spot i.e. under the bridge itself or on a specific feature i.e. on a bank side stone. On occasion the favoured 'marking place' was inaccessible, due for instance to high water levels; on these occasions a thorough search was made for signs up to twenty metres of the bridge. Within this distance other suitable marking places were available. Absence of signs at a site was taken to correspond to an absence of otter activity on that particular stretch of water between visits.

The number of otter signs at a site was not analysed in this study, although the data is available. Any signs seen were, after being recorded, broken up to avoid being double counted but left in situ as removal might have affected scent marking by individual otters. Footprints and castling were also recorded, although this additional data was not used in this study. All the data collected during the study will be fed into the wider monitoring programme of otter activity in Somerset carried out by SOG and collated by SERC. The recording form used was based on the standard form used by SOG.

RESULTS

Otter activity has been recorded as either the presence or absence of signs, not the number of signs at each site. It should be noted from table 2. (below) that Site 3 does not have records for Phases 2 and 3. This is because access permission whilst construction work was taking place could not be established. Permission was granted after the major works were completed allowing the site to be included in Phase 4. Data from Site 4 is missing from about halfway through Phase 2 and the whole of Phase 3, as the favoured marking place, a rock in the river which can only be viewed from the bridge above, was completely obscured by vegetation; search for signs was conducted along the river bank on the other side of the bridge, up to twenty metres away, but thick bank side vegetation made it an unsuitable location for otters to leave signs and also made survey difficult. During Phase 4 the same stone was again obscured by high water levels over several weeks, however during this time the bank side vegetation was much shorter and signs were regularly found on tussocks of grass at the top of the bank. The cross in the table indicates that survey was not possible at that site rather than an absence of otter activity.

From table 2. it can be seen that Site 5 on the Back Stream, furthest away from the development, yielded a consistently high number of positive records throughout the study. The number of positive records from Site 2, Silk Mills bridge on the River Tone, was also high, although more variable. Missing records from Site 3 and Site 4 make it impossible to determine otter activity during the main construction period. However it can be seen from both table 2. and table 3. that both sites were being visited regularly by otters during Phase 4, after the main construction work had ended, with an increase in positive records at both sites from pre-development levels.

Table 2. Total number of positive records at each site over all four survey phases

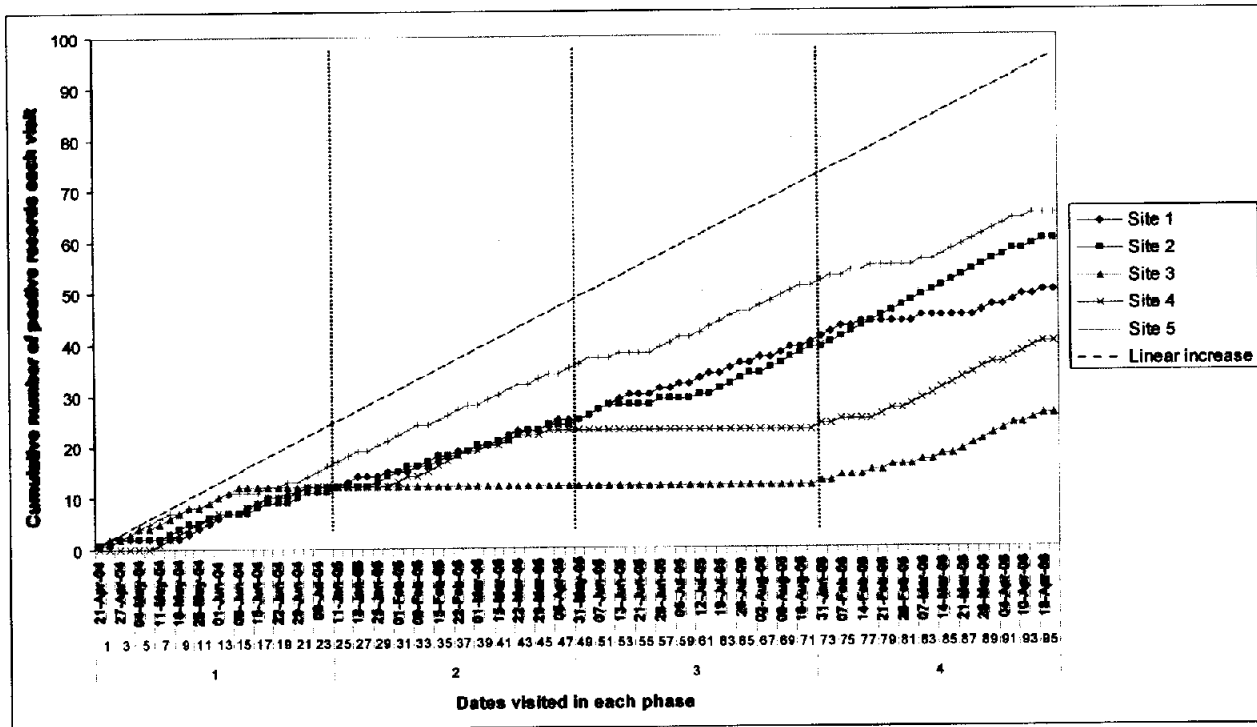
	Site				
	1	2	3	4	5
Phase 1	12	11	12	12	16
Phase 2	13	13	x	11	19
Phase 3	14	14	x	x	15
Phase 4	10	21	14	17	14
Total number of phases surveyed (n)	4	4	2	3	4
Mean number of positive records	12.25	14.75	13.00	13.33	16.00
Standard deviation	1.71	4.35	1.41	3.21	2.16

Table 3. Percentage of positive records for each phase, total of 24 visits each phase.

	Site				
	1	2	3	4	5
Phase 1	50	46	50	50	67
Phase 2	54	54	x	46	79
Phase 3	58	58	x	x	67
Phase 4	42	88	58	71	58

Figure 1. (below) shows the cumulative number of positive otter records for all of the sites over each phase, providing a graphical representation of the data in table 2. For clarity the time periods between phases, when no recording was carried out, are not shown; between Phases 1 and 2 there is a gap of just over six months, between Phases 2 and 3 there is a two-month gap, and there is a five and a half month gap between Phases 3 and 4. A linear increase over each phase would indicate that there were new signs each time a site was visited. Any levelling off of the slope indicates that there has been an absence of recorded activity at the site on at least some visits. For Site 3 (closest to the development; orange triangle) and Site 4 (on Halse Water; blue cross) the levelling off of positive records is due to the fact that survey was not possible at either site during Phase 3, and of Site 3 during Phase 2.

Figure 1. Cumulative graph of positive otter records at all five sites during each phases.



DISCUSSION

Any changes to the amount of otter activity in the development area could only be picked up from a corresponding change in the frequency at which signs were left at the monitoring sites. Whether an increase or a decrease in the number of positive records, the degree of change would need to be quite large and to have occurred over several weeks for it to be safely concluded that a otter activity had decreased or increased to any significant degree at a particular site.

An absence of signs over several weeks from a previously regularly marked site, which remains accessible, would most likely indicate the absence otter(s) from a particular stretch of water course. Otters favour particular places for leaving signs and these will be used by all otters using that particular stretch of water, and are often used by several generations of otters (Mason and Macdonald, 1986). However a number of factors other than disturbance could have an impact on otter activity on a particular stretch of water and on the distribution of otters within the development area, so such findings would need to be interpreted with caution.

Drawing accurate conclusions of the dynamics of a particular otter population from signs alone is not possible. There can be several reasons why signs are not recorded at a site; for instance heavy rainfall can wash away signs and high water levels can submerge marking places. In addition the movements of individuals can not be tracked from signs alone; for instance it would be possible for a resident otter to have been displaced by disturbance from the development and for whole or part of its former range to be taken over by another individual, with levels of signs remaining consistent. Transitory individuals such as dispersing youngsters or other subordinate animals without an established home range will be present within a population and will range more widely than resident otters (Mason and Macdonald, 1986). Such individuals could possibly move into a vacated area even if it is less than ideal.

Without data from Site 3 (situated on the Back Stream adjacent to the main of the construction area) it is not possible to know whether otters have been continuously using the watercourse most directly affected by the construction of the bridge and the northernmost flood attenuation pond. What can safely be concluded from the results is that the regular and consistent use of Sites 1 and 2 (on the River Tone) and Site 5 (on Back Steam) indicates the continuous presence of the otter(s) on these stretches of watercourse. The results suggest that noise disturbance from the construction works, had no or very limited effect on otters using the watercourses close to the development area. The findings also imply that key limiting factors, such as the availability of prey and of suitable resting sites, remained fairly consistent throughout the study period, and certainly did not decline significantly.

CONCLUSION

The aim of the study was to ascertain whether development work adversely affected otter activity in the Silk Mills area.

With otters apparently being so tolerant of high levels of human activity it was expected that the Silk Mills development would only have a temporary effect, if any, on otter activity in the area. It was found that otter activity was sufficiently high at all sites during phase 4, after the major works had been completed, to match pre-development levels. Also the levels of positive records at the three sites that were continuously monitored remained fairly constant throughout the development work. The results of the study therefore suggest that otter activity was not affected in any significant way, if at all, by the development.

The other development works planned in this area in the near future need to be taken into account, however, when considering the findings of this study. The combined effect of these works could amount to a significant impact on the otter population of this area. Any adverse effects on the local environment, such as long-term declines in water level and quality, loss or degradation of waterside habitat etc., could impact on otters through loss or decline of prey species, and/or loss of suitable breeding and resting sites. A direct threat to otters from an increased risk of road traffic accidents could also potentially result from development in the area. In the case of the Silk Mills development mitigation measures were put in place to prevent otter road casualties; culverts were installed beneath Silk Mills Lane and the new Wessex Water service road and otter-proof fencing erected along Silk Mills Lane (this was also designed to be badger-proof).

Adequate pre-development assessment and implementation of necessary mitigation measures should prevent any adverse effects of these future developments on the local otter population. It is important that this is combined with on-going monitoring of the local population. In particular any otter deaths in the immediate area would need to be fully investigated.

ACKNOWLEDGEMENTS

The authors would like to thank James Williams for his invaluable advice and training; Karen Coxon for advice on interpreting the results of the DNA study; and all the surveyors from Somerset Environmental Records Centre who were involved in the project.

BIBLIOGRAPHY

Mason, C. F. and Macdonald, S. M., 1986. Otters, Ecology and Conservation. University Press, Cambridge. Pages 28; 125-128; 27.

Chanin, P., 2003a. Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough. Page 38.

Coxon, K., Chanin, P., Dallas, J., and Sykes, T., 1999. The Use of DNA Fingerprinting to Study the Population Dynamics of Otters (*Lutra lutra*) in Southern Britain: A Feasibility Study. Environment Agency, Bristol. Pages 21-24.

WS Atkins Consultants Limited, November 2003. Somerset County Council, North West Taunton Transport Package (Silk Mills): Otter Survey and Mitigation Proposals. WS Atkins Consultants Limited, Bristol.