

Portishead Railway Project

Phase 2 Habitat and Protected Species Report

October 2011
North Somerset Council

Mott MacDonald

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Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
A	October 2011	S. Cottell	R. Frizler	A. Lawrance	Final

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Content

Executive Summary

Overview

Mott MacDonald Ltd has been commissioned by North Somerset Council to conduct Phase 2 Protected Species surveys along the disused railway track from Portishead (National Grid Reference ST 471, 765) to Pill, Bristol (National Grid Reference ST 520, 763). The proposed works are to clear vegetation so that there is a 4 m strip parallel with the disused railway line (i.e. 4 m including the railway line itself) so that the track, its sleepers and ballast are able to be viewed and assessed. The habitat consists mainly of scrub, woodland and grassland.

The phase 2 surveys included reptile, invertebrate, badger, water vole, bat and great crested newt. The results and conclusions of the surveys are detailed in the following table.

Species	Results	Conclusions	Recommendations
Bats	Pipistrelle bats were heard on all surveys along the railway commuting and foraging. Foraging activity was particularly high adjacent to bridges.	Pipistrelle bats are using the disused railway line for commuting and foraging adjacent to bridges.	If mature or ivy covered trees are to be removed during the vegetation clearance they should be inspected for bat roost potential first. If any structural work is to occur to bridges they should be inspected for hibernation roosts.
Reptiles	1 juvenile grass snake was found within the site extents and on one day 4 adult slow worms were found, on another day 16 juvenile slow worms were found.	A low population of grass snakes and slow worms are present within the area. Both are breeding populations.	As the vegetation clearance is to occur within winter it is advised that any structures that reptiles could use for hibernation (such as log piles, rock piles and bunds) should have a 10 m buffer so that no disturbance will occur. The structures can then be dismantled next spring by a qualified ecologist.
Badgers	An inactive outlier, an active outlier and a worn badger path were found during the phase 2 surveys. During previous surveys an active and a disused sett were found but could not be surveyed again due to dense scrub and the lack of land owner's access.	Badgers are using the area but it is not known whether there are active setts with in the dense vegetation along the railway track.	In high risk areas of badger activity it is advised to use phased clearance and have an on-site ecologist to search for badger setts as the vegetation clearance occurs. If any further construction is to occur at a later date further badger surveys will be necessary.
Water Voles	No water vole evidence was found within the water courses surveyed. Access to banks and sightlines was however restricted due to dense vegetation and steep banks.	It is unlikely that a water vole population exists within the site extents of the disused railway as no evidence was found.	As no evidence was found and the railway line is not within 4 m of the watercourses no impact is predicted to occur so no mitigation needs to be taken.

Species	Results	Conclusions	Recommendations
Great Crested Newts (GCN)	No GCN were found in ponds 17 and 46. In pond 47 1 male and 2 female GCN were found through torching.	Pond 47 has a low population of GCNs. Pond 53 could not be surveyed due to the lack of land owners access so is treated as if GCNs were found to be present.	It is recommended that phased clearance is used where an on site ecologist is able to check areas for hibernating GCNs before the vegetation clearance occurs. Bunds, log piles and rock piles should also not be disturbed. If any of these structures are found they should be left undisturbed with a 10 m buffer. Next spring if they require dismantling and GCN are known to have used the structures, and they are required to be removed at this stage of the GRIP process, a Natural England licence may need to be applied for to dismantle the structures by a qualified ecologist. The width of vegetation clearance in these areas should be reduced to the width of the track only.
Breeding Birds	A number of species including blackbird, robin and swallows were heard and seen within the vicinity.	Typical edge woodland and hedge species of bird use the railway corridor.	As breeding birds are present between March and September inclusive, and the vegetation clearance is occurring in the winter, no mitigation is required.
Invertebrates	A large number of invertebrates were found using the vegetation of the disused railway line. 82 species were observed, 5 were considered key species. 4 of these key species are known to be doing well locally and are not of conservation concern.	Of the 5 key species 1 is of conservation concern.	As only a maximum of 4 m vegetation is to be removed no mitigation is required as a substantial amount of habitat will be retained for the invertebrates.

1. Background

1.1 Proposed Development

Mott MacDonald Ltd has been commissioned by North Somerset Council to conduct Phase 2 Protected Species surveys for the Portishead Railway Project. The site begins in Portishead (National Grid Reference ST 471, 765) and ends in Pill, Bristol (National Grid Reference ST 520, 763). The disused railway track was closed in the 1960's, and up until this time was used to transport passengers from Portishead to Bristol Temple Meads. It runs through the areas of Portishead, Sheepway and Portbury and connects to an active freight line in Pill. The proposed works are to clear vegetation up to 4 m from the disused railway line so that the track, its sleepers and ballasts are able to be viewed and assessed. The habitat consists mainly of scrub, woodland and grassland.

1.1.1 Scope of the Report

A Phase 1 Habitat survey was conducted in March 2011 by Halcrow. This recommended that Phase 2 protected species surveys should be conducted focussing on bats, water voles, great crested newts, badgers, breeding birds, invertebrates and reptiles. Species-specific Phase 2 surveys were then undertaken by Mott MacDonald in summer 2011, with the following main aims:

- Confirm presence or absence of protected, notable and priority species within the site footprint and adjacent to the disused railway line;
- Identify key habitats for these species within and adjacent to the site footprint and how these areas will be impacted by the proposed works;
- Develop appropriate site specific recommendations and mitigation to ensure compliance with environmental legislation and planning policy and to maintain and enhance biodiversity in the local area.

1.1.2 Legislation

The Wildlife and Countryside Act 1981 provides legal protection for bat species, water voles, reptiles, great crested newts, breeding birds and some species of invertebrates from being intentionally injured or killed. The Conservation of Habitats and Species Regulations 2010, derived from European law also protects certain European species, including bat species and great crested newts (amongst others) from deliberate capture, injury and killing and their habitats from being destroyed.

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 41 of the Act includes a list of habitats and 943 species which are of principal importance for the conservation of biodiversity in England. This includes many species of bats and birds, great crested newts, species of reptile and many mammals such as water vole and hedgehogs. Further details of protected species legislation can be found in Appendix A.

Priority species and habitats are those that have been identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan (UK BAP), or are listed under local BAP's such as North Somerset LBAP. Biodiversity Action Plans outline specific actions required to protect the species or habitat. Copies of the BAP plans relevant to this report can be found in Appendix B.

1.1.3 Desk Based Study

The desk study information in this report is derived from the National Biodiversity Network (NBN) gateway and the Phase 1 Report. Records from NBN gateway indicate that slow worm (*Anguis fragilis*), grass snake (*Natrix natrix*), adder (*Vipera berus*), water vole (*Arvicola amphibious*), great crested newt (*Triturus cristatus*) and badger (*Meles meles*) have been recorded within 1 km of the disused railway line. All records are from the last five years except the adder which is from more than 10 years ago.

In addition the Phase 1 Report stated that badger records are particularly prevalent in the Portbury Wharf area. Recent water vole records indicate their presence in Drove Rhine which is approximately 750 m north of the site, and water vole reintroductions have occurred at Portbury Wharf Reserve which extends adjacent to a section of the railway in Sheepway.

Within 5 km of the railway line a large number of bat species have been recorded on NBN gateway including; barbastelle (*Barbastella barbastellus*), noctule (*Nyctalus noctula*), serotine (*Eptesicus serotinus*), common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*P.pygmaeus*), brown long eared bat (*Plecotus auritus*), leisler (Nyctalus leisleri), greater horseshoe bat (*Rhinolophus ferrumequinum*), lesser horseshoe bat (*R.hipposideros*) and *Myotis* species including natterers (*M.nattereri*). Most records were provided by the Bristol Regional Environmental Records Centre (BRERC). In addition the Phase 1 report states that many of these species have summer or hibernation roosts within 1 or 2 km of the disused railway line including the lesser horseshoe, common and soprano pipistrelle, greater horseshoe, serotine and the brown-long eared bat.

1.1.4 Initial Site Observations

The Phase 1 Habitat Survey and Report noted a number of trees with bat roost potential, a few locations where water vole could be present and an active badger sett which was recorded at the western end of the survey area, concealed beneath hawthorn scrub. A further possible single-holed badger sett was recorded and the location of a potential badger sett, however it was inaccessible due to the dense scrub. Further to this, a disused sett was found with a number of mammal paths.

Reptile fencing was also observed from another development adjacent to the western end of the site. This would indicate that mitigation has been undertaken previously and that there is a reptile population. Due to the dense amount of scrub interspersed with grassland it is also ideal habitat along the length of the disused railway line.

2. Phase 2 Habitat and Protected Species Survey

Following the previous Extended Phase 1 Habitat Survey and their recommendations, further surveys were undertaken for the following species, and are described in subsequent sections:

1. Bats
2. Reptiles
3. Badgers
4. Water Voles
5. Great Crested Newts
6. Breeding Birds
7. Invertebrates

2.1 Bats

Bat surveys were undertaken along the disused railway line to asses the activity of species along and across the route corridor.

2.1.1 Methods

All bat surveys were undertaken in accordance with the Bat Conservation Trust 'Bat Surveys Good Practice Guidelines'. Dusk surveys were undertaken along the disused railway line. Surveys were either undertaken at fixed points or walking transect surveys were used.

Fixed point surveys occurred on 24th August and 8th September 2011 at dusk by two suitably qualified ecologists. They commenced 30 minutes before sunset until an hour and a half after sunset. The surveys were undertaken during 'good' weather conditions, meaning that cloud ranged from clear to half cover, the minimum survey temperature was 10°C and there was no rain during the survey.

The walking transect method is where pre-planned stops were made along the site so that activity could be monitored. Around ten minutes was spent at each point and activity was continued to be monitored when moving between points. Two transects were walked, these were at the beginning and the end of the railway line and the surveys would last around 150 minutes, beginning thirty minutes before sunset until approximately an hour and a half after sunset. They took place on 23rd August, 7th September, 4th October and 11th October 2011 by two suitably qualified ecologists. The surveys were undertaken during 'good' weather conditions.

BATBOX duet bat detectors were used for both methods of surveys and recordings were made of the bat activity on minidisk or mp3 player. Bat calls were analysed using BatSound software

2.1.2 Results

There was a high level of bat activity, with mostly foraging behaviour, below bridges within the middle of the line at Sheepway and at the end of the line, to the east of the site extents from the Portbury area to Pill. At the west of the site (the beginning of the railway line) commuting behaviour was recorded with low levels of foraging and with overall lower numbers of bats than the rest of the railway line. All calls recorded were pipistrelles. Most activity was found underneath or adjacent to bridges such as the M5, Sheepway and the bridge on Royal Portbury Dock road where one or more bats were observed to fly in circles underneath the bridges and in linear lines adjacent to the bridges (Appendix C).

2.1.3 Conclusions

It is concluded that pipistrelle bats are using the disused railway line for foraging and commuting. As the maximum vegetation clearance is 4 m this will leave linear lines of vegetation allowing bats to still forage and commute in the area.

2.1.4 Recommendations

Under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Species and Habitats Regulations 2010, individual bats are protected from killing and disturbance and their roosts are protected. Their commuting routes are not strictly protected.

The surveys did not record significant activity to suggest roosts in close proximity to the route corridor, and where activity was higher, such as beneath bridges, access was limited to undertake further investigations. As the works will involve the removal of vegetation, any roosts that are potentially within the bridge structures will not be significantly disturbed by the works and therefore at this stage are not considered to be a critical factor or risk to the winter vegetation clearance.

It is recommended, however, that if any trees with bat roost potential are required for removal they should be inspected prior to removal by a suitably qualified ecologist for bat roost signs. Bat-potential trees are usually mature trees, which have cracks or broken branches and may be ivy covered, which could be used for shelter.

As ecological mitigation bat boxes could be erected on structures such as railway bridges or trees that are to be left intact throughout the whole construction process.

2.2 Reptiles

2.2.1 Methods

On 15th July 2011, 40 artificial refugia (roofing felt and carpet tiles) were placed a long the disused railway line, where access was possible and suitable habitat was identified. At the west of the site 35 tiles were placed, at Sheepway 2 tiles were placed and at the east of the line 3 tiles were placed. The tiles were checked between 0830 and 1100 or 1600 and 1830 on seven visits during September. Tile checks were performed during 'good' weather conditions, with air temperatures between 9° and 18° Celsius. The tiles were collected after the seventh check. The optimal survey period for reptile surveys is April-June and September. Surveys were undertaken in accordance with the Froglife Reptile Survey (1999) method, which also recommends that seven surveys are completed in the optimal period. Tiles were located with relation to aspect and disturbance. Fewer tiles were placed towards the east of the line due to dense scrub which

did not allow access or suitable habitat; adjacent to this habitat was either inaccessible or had high levels of disturbance due to a cycle path. Full locations are shown in Appendix D.

2.2.2 Results

6 reptile checks were performed during the morning and one in the afternoon, as recorded below:

Table 2.1: Reptile Survey Data

Check date	Tile Number	Species and other Observations
5/9/11 (pm)	20	1 juvenile grass snake
	27	1 female slow worm
		Mats 15–19 missing due to creation of a foot path
		Mats 32 and 33 missing
9/9/11 (am)	4, 37, 39	1 female slow worm
	12	4 juvenile slow worms
	25	1 juvenile slow worm
	35	3 juvenile slow worms
	8, 22, 26, 27	Ant nest
12/9/11 (am)	8	1 vole
	12	3 juvenile slow worms
	13	2 juvenile slow worms
	27	2 male slow worms
	29	1 juvenile slow worm
	35	10 juvenile slow worms
16/9/11 (am)	4	1 male slow worm
	12, 37	3 juvenile slow worms
	27	2 male and 1 female slow worms
	35	1 juvenile slow worm
	38	5 juvenile slow worms
23/9/11 (am)	27	1 dead male slow worm
	30	1 female slow worm and 1 shrew
	35	1 Juvenile slow worm
26/9/11 (am)	2	1 shrew
	10	1 male slow worm
	13	1 juvenile slow worm
	30	1 female slow worm
27/9/11 (am)	6	1 male slow worm
	13, 40	1 juvenile slow worm

2.2.3 Conclusions

A single juvenile grass snake and a low population of slow worms were found within the site extents with up to 4 adults being found within one day. The grass snake was found at the west of the site, however slow worms were found along the whole of the disused railway and a large number of juveniles were recorded with up to 16 recorded in one day.

The Reptile Habitat Management Handbook considers a medium population of reptiles as 5 – 20 adults being found within one day by one surveyor under roofing felt or by eye. An exceptional population would be over 20 individuals identified within one day by one surveyor. As the maximum count was 4 adult slow worms and 1 grass snake both are considered low populations within the site extents.

It is likely that there is a higher population of grass snakes as the individual found was a juvenile on a cold day, therefore its movement was slow and it was unable to flee quickly. Grass snakes are more sensitive to vibrations of an approaching surveyor than slow worms and are often wary and quick to flee, therefore they are less likely to be found underneath the roofing felt. Grass snakes are also more mobile than other reptile species and can move over several kilometres over the course of the active season and may therefore have not always been in the areas where the reptile mats have been placed (taken from the Reptile Habitat Management Handbook).

2.2.4 Recommendations

Under the Wildlife and Countryside Act 1981, it is illegal to intentionally kill or injure reptile species. As there is a low population of slow worms and grass snakes present within the site extents it is recommended that minimal clearance occurs within particularly reptile sensitive areas (the west of the site). If equipment is to be brought through the west of the site care is to be taken so that structures such as log piles, rock piles and bunds are not disturbed. These structures should also be avoided during vegetation clearance, and if found on the railway line an ecologist called immediately. The structures should be left with a 10 m buffer and can then be dismantled next spring/summer when reptiles will no longer be using them for hibernation.

As ecological mitigation hibernacula could be put in place adjacent to the railway line such log or rock piles or bunds. These would need to be located where they would not be disturbed in the future by the public, the railway or further construction work.

2.3 Badgers

2.3.1 Methods

Badger surveys consisted of walking the entire length of the disused railway (where access allowed) and noting in detail evidence of badgers, such as setts, mammal paths, fur, snuffle holes, scratching posts, day nests, footprints, faeces and latrines. If any holes were found it was noted how many and whether they appeared to be inactive or active. The surveys were undertaken within an area of search extending 1 km from the proposed route corridor, where access was available. As the railway is predominantly scrub with woodland this is ideal habitat for badgers, therefore the entire line has the potential to be used by badgers. Small scale cutting of vegetation was used in places to allow further access into the scrub on the railway line so that mammal paths were able to be followed. The method of survey was carried out following Harris *et al* (1989) guidelines.. The survey was carried out on 13th and 14th July 2011.

2.3.2 Results

The active sett target noted within the original Phase 1 Habitat Survey was not found during the badger survey. As the Phase 1 survey was conducted in March and the sett was recorded underneath scrub, it is possible that the sett is obscured due to extensive vegetation growth. The possible disused sett also target noted within the Phase 1 Habitat Survey could not be accessed during the survey due to lack of landowner access.

In Portbury an inactive badger hole was found a couple of metres west of an active badger hole with bedding (Photo 1 in Appendix E). In addition a well-used mammal path was located behind the active hole.

Worn badger tracks were located in Sheepway, adjacent to the Avon Wildlife Trusts Portbury Wharf Reserve (Photo 2 in Appendix E). Further access to locate a possible sett was not possible due to dense scrub.

The information gathered represents the badger activity within the area at the time of the survey.

2.3.3 Conclusions

Badger tracks, an inactive outlier hole and an active outlier hole were identified during the survey within 15m of the disused railway in Portbury. As no further holes or any badger paths could be seen in the area it was concluded these were outlier holes, however scrub limited access and observation so there could be more badger activity in this area. Worn badger tracks were also noted in Sheepway adjacent to the Portbury Wharf Nature Reserve owned by the Avon Wildlife Trust. At neither site was further information available due to dense scrub being present and limited access. In the previous Phase 1 Habitat Survey an active sett and a possible used sett were noted. Neither of these setts was accessed due to the landowner's permission being required or over grown scrub.

2.3.4 Recommendations

Where badger activity has been identified in close proximity to the railway line phased vegetation clearance will need to be implemented so that if setts are present within the scrub disturbance does not occur. An ecologist will need to be on site to competently carry out these checks and to assess whether the holes previously found are active. Vegetation clearance should also be minimised to the width of the rail track if areas adjacent to the railway track are found to have badger activity. If further work is to occur at a later date badger surveys should be re-conducted as the location of badger setts is highly mobile.

2.4 Water Voles

2.4.1 Methods

Water vole surveys involved a search of watercourses identified from the Phase 1 as being potentially suitable for water voles. These were:

- A large drain to the west of the site (target note 5 in the Phase 1 Report); and
- Pond 47 around half way along the disused line.

The watercourses were searched for evidence such as droppings, runs, burrows, feedings stations, grazed lawns, nests and footprints. Methods were undertaken in accordance with the 'Water Vole Conservation Handbook' printed by the Environment Agency.

The survey was carried out on 11th August 2011 by two suitably qualified ecologists.

2.4.2 Results

No evidence of water vole was found at either of the watercourses within the site extents of the disused railway line. Some access to banks and sight lines were restricted due to vegetation growth but a proportion of the large drain to the west of the site had concrete covering the river banks. The pond in the middle of the line was heavily vegetated (Photo 3 in Appendix E) and therefore was hard to search thoroughly. There was no area of open water due to the dense vegetation and therefore the habitat is sub optimal and it is unlikely that a viable water vole population would be supported.

A significant water vole population was reported within the Phase 1 Report from BRERC records, 2007 in Drove Rhine, which is 0.75 km north of the site. The Phase 1 also states that water vole reintroductions have occurred at Portbury Wharf Reserve which is adjacent to part of the railway line, however not adjacent to either of the watercourses surveyed for water vole potential and there are no water courses to act as corridors.

2.4.3 Conclusions

As the pond is very overgrown and the large drain had steep banks, it is possible that a water vole population could be established at either site without being discovered on the survey. However, as no evidence was found when both water courses were searched this is unlikely.

2.4.4 Recommendations

No mitigation is necessary as the works are not on the banks of the watercourses which hold the potential for water voles. If water voles were found to be present the impact would be low as the large drain is located before the railway line begins and pond 47 is more than 4 m away from the line so would not be in the area that is to be cleared of vegetation. This means that the water vole would not be injured, killed or disturbed when occupying a structure or place, or for damage, destruction or obstruction of access to any structure or place used by water voles should water vole be present and thus complying with legislation.

2.5 Great Crested Newts

2.5.1 Methods

Four methods were used to establish whether great crested newts (GCN) were present in ponds a long the length of the disused railway corridor; torching, bottle trapping, sweep netting and egg searching. Four visits to each pond occurred for each method. If GCN were found a further two surveys were conducted to ascertain the size of the breeding population. Surveys were undertaken in accordance with the 'Great Crested Newt Conservation Handbook' where it recommends that at least three different survey methods are used. Egg searching, netting and torching are recommended to investigate the absence or presence of GCN and netting, torching and bottle trapping are recommended to show the abundance of the populations present. The methods used are:

- Torching consists of walking around the perimeter of the ponds once and shining a powerful torch on to the pond so that newts are visible within the water, identifying species and counting the number of each species;

- Bottle trapping is where bottles are placed in the water column at the perimeter of the pond. The next morning bottle traps are checked for any newts trapped inside. They are then identified by species, gender and age, counted and released;

- Netting is where a sturdy dipnet with a 2-4mm mesh is pulled through the water to catch any larvae or eggs that may be present within the pond, these are then identified and released; and

- Egg searching is where suitable habitat around the pond perimeter is searched for eggs that have been laid.

Great crested newts are protected by the Wildlife and Countryside Act 1981 and The Conservation of Habitats and Species Regulations 2010. This makes it an offence to intentionally kill, injure, capture or posses a great crested newt, to intentionally disturb them whilst occupying a place used for shelter or protection, the destruction of these places and selling, bartering, exchanging, advertising to sell or buy them and transporting them for sale.

2.5.2 Results

	Visit 1			Visit 2			Visit 3			Visit 4		
Pond no.	**Torching**	**Bottle Trapping**	**Sweep netting/ egg searching**	**Torching**	**Bottle Trapping**	**Sweep netting/ egg searching**	**Torching**	**Bottle Trapping**	**Sweep netting/ egg searching**	**Torching**	**Bottle Trapping**	**Sweep netting/egg searching**
17	3 male & 3 female smooth newts (1 gravid) 1 male and 6 female palmate newts (1 gravid)	Not done	Egg search – none found	1 male and 2 female smooth newts 1 male palmate newt	8 bottles – 2 male smooth newts	Egg search - None found	1 female smooth newt	12 bottles – 8 males and 5 female smooth newts	Egg search - None found	1 female smooth newt	8 bottles – 7 male and 1 juvenile female smooth newt	Nothing found
46	Not possible as entire surface covered in weed	3 bottles – 1 male palmate newt	Not possible as too much debris	Not undertaken as entire surface covered in weed	2 bottles – 4 male and 4 female palmate newts	Egg search - None found	Not done as entire surface covered in weed	3 bottles – nothing found	Egg search - None found	Not possible as entire surface covered in leaf litter	3 bottles – nothing found	Nothing found
47	1 male great crested newt 2 male smooth newts 3 male and 4 female palmate newts	Not possible as pond too shallow	No eggs found and limited suitable vegetation	1 male and 2 female great crested newts	2 bottles – none found	Egg search - None found	1 female great crested newt 1 male and 2 female palmate newts	2 bottles – nothing found	Egg search - None found	None were observed	3 bottle – nothing found	Nothing found

As great crested newts were found within pond 47 a further two surveys were conducted to ascertain the size of the breeding population. Access was also granted to a further two ponds, one located between residential housing and to the left of the depot (Pond 1) and one to the bottom of the depot, adjacent to the railway line (Pond 2).

Pond Number	Visit Number	Methods used	Results
47	5	Torching, bottle trapping (3 bottles)	Nothing found
47	6	Torching, bottle trapping (3 bottles)	Nothing found
Pond 1	1	Torching, bottle trapping (20 bottles)	Nothing found
Pond 1	2	Torching, bottle trapping (20 bottles)	Nothing found
Pond 2	1	Torching, bottle trapping could not occur	Nothing found
Pond 2	2	Torching, bottle trapping could not occur	Nothing found

2.5.3 Conclusions

Pond 47 has a low population of great crested newts found during torching. Great crested newts could therefore be using the disused railway line within 500m of pond 47 as scrub and intermittent grassland is ideal habitat for foraging and hibernating and these habitats are present a long the majority of the railway line.

The 'Great Crested Newt Conservation Handbook' states that a low population of great crested newts is where less than 5 individuals are seen through netting in the day, or less than 10 at night. A good population is where 5 – 50 individuals are found in the day or 10 – 100 at night and an exceptional population is where over 50 individuals are found during the day or over 100 at night. As 3 individual great crested newts were found in pond 47 in one evening it has a low population, the works are therefore considered to have a low impact and a licence is not considered necessary in this phase of the GRIP process.

As great crested newts' ideal habitat conditions include a number of ponds, pond 53 will be treated as if the presence of great crested newts was found as it could not be accessed due to land owner permission but is in close proximity to pond 47.

2.5.4 Recommendations

Great crested newts are only water bound in the breeding season (March to July) and spend the rest of the year, including hibernation, in terrestrial habitat; the disused railway line could therefore potentially support a population. As the railway corridor is within 250 m of pond 47 and there is suitable habitat within this range, it is recommended that the vegetation clearance has a restricted width of the rail track that phased vegetation clearance occurs where an ecologist is present to check for hibernating newts before and during the vegetation clearance every 5 m.

Log piles, rock piles and bunds should also not be destroyed as these are likely structures to support hibernating great crested newts. In the unlikely event that any great crested newts are found during the vegetation clearance, works would need to stop immediately in this area and an ecologist would need to liaise with Natural England to determine whether a licence would be required to continue. It is likely that the

structure would need to be avoided with a buffer in place and the structure could be dismantled in the following spring/summer by a suitably qualified ecologist under a Natural England licence if this area is required to be cleared at this stage of the GRIP process.

As ecological mitigation hibernacula could be put in place adjacent to the railway line such log or rock piles or bunds. These would need to be located where they would not be disturbed in the future by the public, the railway or further construction work.

2.6 Breeding Birds

2.6.1 Methods

A survey was conducted along the length of the railway corridor using the transect method where the surveyor walks along the disused railway (where access allows) and all birds seen or heard within the survey are recorded providing a species list. The method is taken from 'Breeding Bird Survey 1999'.

Breeding birds are protected by the Wildlife and Countryside Act 1981 which prohibits the intentional killing, injuring or taking of any wild bird, and the taking, damaging or destroying of the nest (whilst being built or in use) or eggs. It prohibits possession of wild birds (dead or alive) or their eggs.

2.6.2 Results

The following birds were seen or heard along the disused railway:

Species (English name)	Species (Latin name)
Great tit	*Parus major*
Blue tit	*Cyanistes caeruleus*
Blackbird	*Turdus merula*
Robin	*Erithacus rubecula*
Pied wagtail	*Motacilla alba*
Magpie	*Pica pica*
Wood pigeon	*Columba palumbus*
Starling	*Sturnus vulgaris*
Carrion crow	*Corvus corone*
Swallow	*Hirundo rustica*
Collared dove	*Streptopelia decaocto*
Jackdaw	*Corvus monedula*
House sparrow	*Passer domesticus*
Jay	*Garrulus glandarius*
Song thrush	*Turdus philomelos*

2.6.3 Conclusions

A number of species of bird were seen or heard within the disused railway line corridor. As the vegetation clearance is to occur in the winter, and breeding birds are present between March and September, no disturbance will occur.

2.6.4 Recommendations

As vegetation clearance is to occur in winter no mitigation with respect of breeding birds needs to be taken.

As ecological mitigation bird boxes could be erected on railway bridges or trees that are not to be affected in future construction work.

2.7 Invertebrates

A copy of the invertebrate report is included in Appendix F.

3. Summary of Recommendations

The following recommendations are made in this report to ensure the proposed development complies with environmental legislation. The drawings relating to the constraints are found in Appendix G.

3.1 Bats

- If any trees which have bat potential are to be removed they should be inspected by a suitably qualified ecologist before hand, alternatively these should be retained and not removed at this stage in the development process.
- If any disturbance is to occur around bridges, such as physical works to the bridge structure, the bridges should first be inspected for signs of hibernation roosts.
- As ecological mitigation bat boxes could be erected on railway bridges or trees that are not to be affected in future works.

3.2 Reptiles

- As there is a population of slow worms present within the site extents it is recommended that a reptile sensitive methodology is used for the length of the line with particular care taken at the west of the site.
- If heavy tracked equipment is to be brought through the west of the site, care should be taken not to disrupt any bunds, log piles or rock piles.
- If any structures should be found on the railway line such as log or rock piles, these should be avoided with a buffer put in place. They can then be dismantled in spring of the following year by a suitably qualified ecologist when reptiles will no longer be using them for hibernation.
- Should further clearance works be required in the future for the track to become operational, it is likely that a reptile trapping programme will need to be implemented to prevent them from being injured or killed during the construction and operational phases. This will require a suitable site to support the translocated reptiles.
- As ecological mitigation, hibernacula could be created such as log or rock piles or bunds. These would need to be located where no disturbance should occur in the future.

3.3 Badgers

- Where badger evidence has been identified previously, or is considered a high risk for badger activity, phased vegetation clearance under supervision of an ecologist should occur due to the potential that setts are discovered hidden beneath the vegetation.
- Outlier setts within 30 m of the clearance area, found on previous surveys should be checked for their level of activity prior to the works commencing in these areas.

- Should any construction works occur in the future badger surveys should be conducted as badger setts are highly mobile.

3.4 Water Voles

- Due to the distance from water vole potential water bodies no mitigation needs to be taken.

3.5 Great Crested Newts

- Vegetation clearance should be restricted to a width of 2.5 m within 250 m of ponds 47 and 53.
- Phased vegetation clearance should be implemented within 250 m of ponds 47 and 53 with an on site ecologist to check areas for hibernating great crested newts.
- No destruction of log and rock piles is to occur. If one of these structures is found on the railway line and great crested newts are known to be present a licence will need to be applied for so that the structure can be dismantled the following spring.
- Should any construction works occur in the future GCN surveys should be conducted as not all areas were available to survey this season.
- As ecological mitigation hibernacula could be created such as log or rock piles or bunds. These would need to be located where no disturbance should occur in the future.

3.6 Breeding Birds

- As the vegetation clearance is to be undertaken in winter and breeding birds are present between March and September inclusive no mitigation is required.
- As ecological mitigation bird boxes could be erected on railway bridges or trees that are not to be affected by future works.

3.7 Invertebrates

- As the maximum vegetation clearance is 4 m there will be a large amount of habitat still retained for the invertebrates therefore no mitigation is required.

4. References

- Bat Conservation Trust (2007). Bat Surveys – Good Practice Guidelines. Bat Conservation Trust, London.
- Edgar, P., Foster, J., Baker, J. (2010) Reptile Habitat Management Handbook, Amphibian and Reptile Conservation, Bournemouth.
- Froglife (1999) Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10. Froglife, Halesworth.
- Harris, S., Cresswell, W., & Jeffries, D. 1989. *Surveying Badgers*. The Mammal Society
- Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001), Great Crested Newt Conservation Handbook, Froglife, Halesworth.
- Nobel DG, Bashford RI and Baille SR (2000). Breeding Bird Survey 1999. British Trust for Ornithology.
- Scottish Natural Heritage (2003). Best Practice Guidance - Badger Surveys. Inverness Badger Survey 2003. Commissioned Report No. 096.
- Strachan, R. and Moorhouse, T. (2006). Water Vole Conservation Handbook (2nd edition). Wildlife Conservation Research Unit, University of Oxford.

Appendices

Appendix A. Legislation

The proposals should comply with International, European and UK legislation. The following EC Directives and international conventions are relevant to the ecological assessment:

- EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitat Directive 1992) as amended (92/43/EEC);
- EC Directive on the Conservation of Wild Birds (Birds Directive 1979) as amended (79/409/EEC);
- Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) and;
- Convention on Biological Diversity (1992).

The key UK piece of legislation is the Wildlife and Countryside Act 1981 (WCA 1981) which consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive) in Great Britain. It is complemented by the Conservation (Natural Habitats, etc.) Regulations 1994 (as amended), which implements Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive). The Regulations provide for the designation and protection of 'European sites', and the protection of 'European protected species'.

- The key policies which influence the ecology and nature conservation assessments are the:
- PPS9 guidance on Planning for Biodiversity and Geological Conservation;
- Working with the grain of nature - A biodiversity strategy for England (Defra 2002 & 2006); and
- UK Biodiversity Action Plan (UKBAP).

The Natural Environment and Rural Communities Act (2006) states:

> *Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.*

The consequences of the presence of habitats and species of principal importance for biodiversity in England are set out in the NERC Act and this is amplified in Planning Policy Statement 9 which explicitly affords protection to valued ecological resources.

The PPS9 guidance on Planning for Biodiversity and Geological Conservation sets out the government's national planning policy on the protection of biodiversity. PPS9 clearly states that development should be sustainable, have minimal impact on biodiversity and encourages enhancement:

Plan policies and planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests. In taking decisions, local planning authorities should ensure that appropriate weight is attached to designated sites of international, national and local importance; protected species; and to biodiversity and geological interests within the wider environment.

Appendix B. Biodiversity Action Plans

Species future management and protection in Biodiversity Action Plans (BAP) can be found at: http://webarchive.nationalarchives.gov.uk/20110303145213/http://ukbap.org.uk/ A summary of the key points is provided below.

Bats

- Each species of bat has its own individual plan, however the common goals include ensuring the long term protection of breeding and hibernation roosts and insect foraging grounds.

Reptiles

- Target agri-environment policies and practices (restoration and/or installation of hedgerows, dry stone walls, buffer strips, etc).
- Habitat management that provides suitable basking, feeding, breeding and hibernation sites in a connected landscape for *Natrix natrix*, *Anguis fragilis* and *Zootoca vivipara* should be incorporated into agri/env schemes, highways schemes, brownfield development plans and land management by public bodies.

Water voles

- Maintain and, where appropriate, extend the area of suitable water vole habitat in National and Regional Key Areas.
- Reduce the impact of mink predation, prioritising action in Regional Key Areas.

Great Crested Newt

- Encourage the natural dispersal of the species to new sites through habitat management and re-creation and, if necessary, consider establishing a translocation or re-introduction programme to restore populations to previously occupied or appropriate new sites.
- Target agri-environment strategies that will protect and restore breeding ponds and enhance terrestrial habitat.

North Somerset Biodiversity Action Plan

The North Somerset Biodiversity Action Plan focuses on habitats and species such as great crested newts, bat species including greater horseshoe bats, pipistrelle's, badgers and bird species such as swallows, swifts and robins. The full BAP can be found at: http://www.n-somerset.gov.uk/NR/rdonlyres/C35887AE-0664-4215-B4B3-B35CC2589D0B/0/strategy_BiodiversityActionPlan.pdf

Appendix C. Bat Activity

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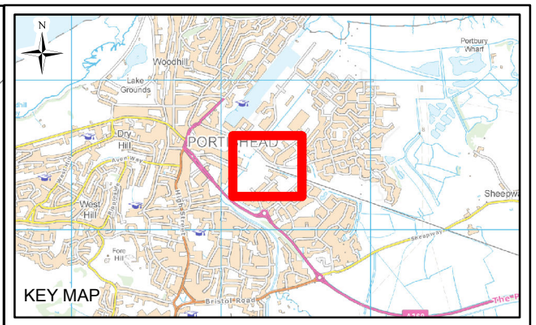

Legend

- Listening station
- Pipistrelle commuting
- Pipistrelle foraging

Mott MacDonald
Prince House
43 - 51 Prince Street
Bristol
BS1 4PS
Tel +44 (0) 117 906 9500
Fax +44 (0) 117 906 9501
Web www.mottmac.com

Title: Portishead Disused Railway Line
Bat Survey
map 1 of 8

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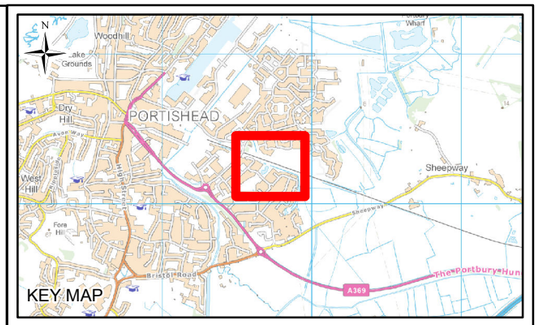

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Title: Portishead Disused Railway Line
Bat Survey
map 2 of 8

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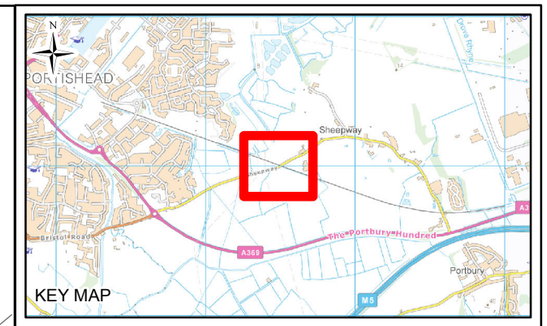

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Title: Portishead Disused Railway Line
Bat Survey
map 3 of 8

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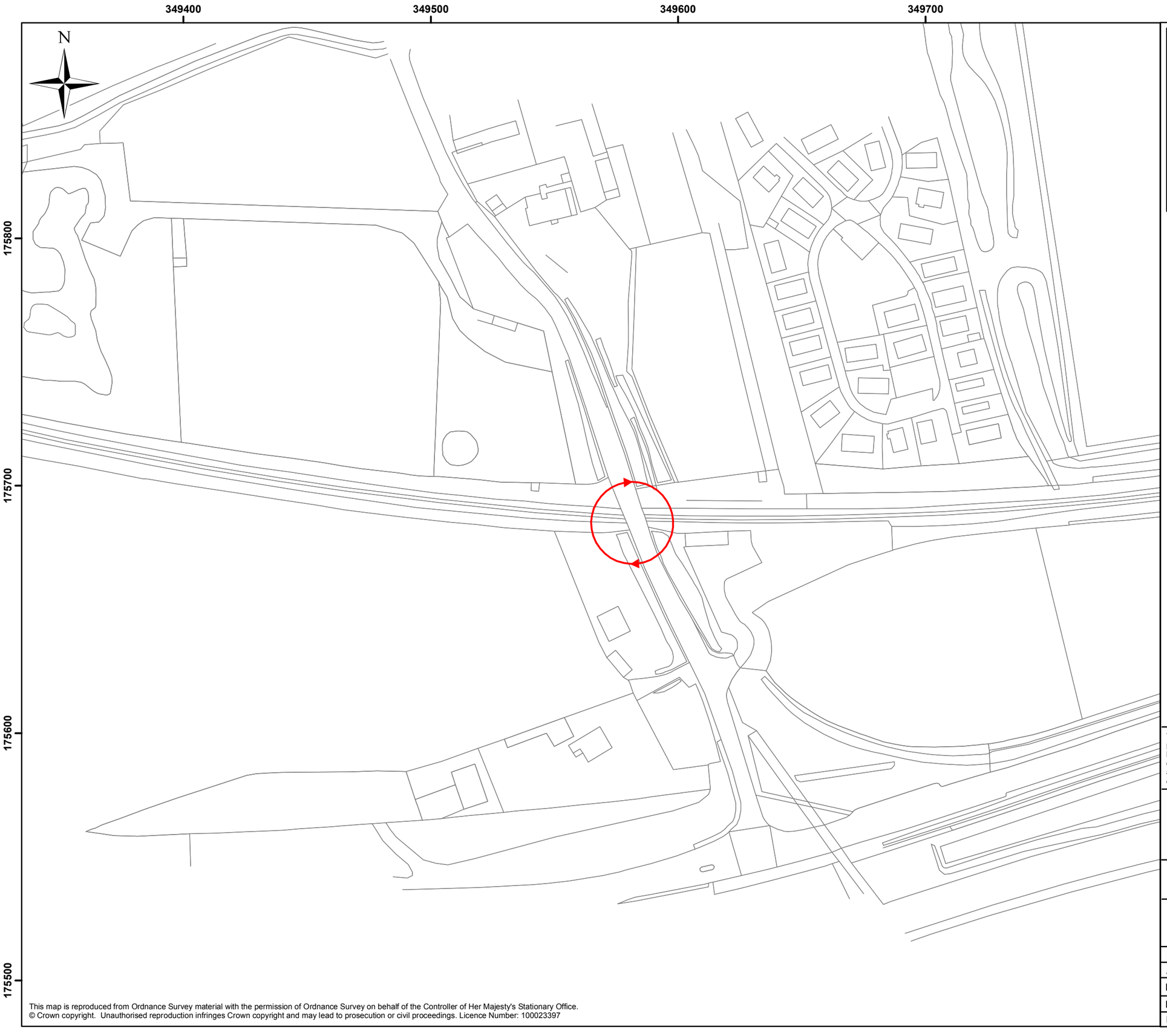

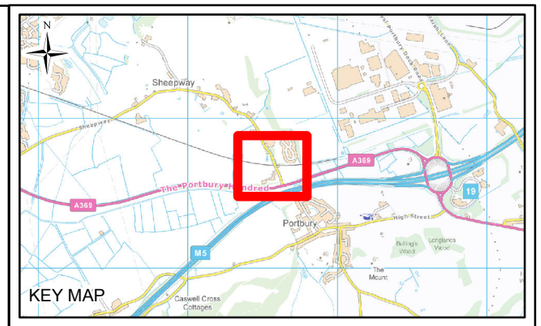

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Title: Portishead Disused Railway Line
Bat Survey
map 4 of 8

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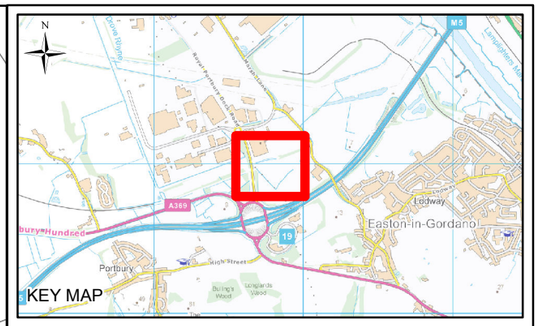

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- Pipistrelle foraging

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Title: Portishead Disused Railway Line
Bat Survey
map 5 of 8

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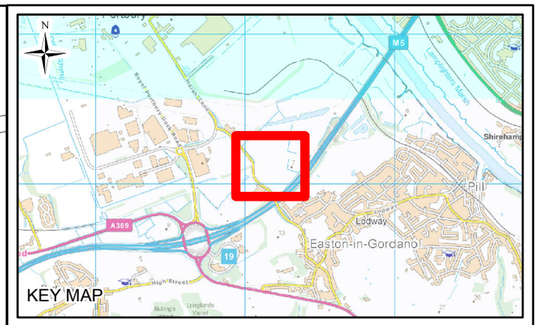

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- Pipistrelle commuting
- Pipistrelle foraging

Mott MacDonald
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Bristol
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Title: Portishead Disused Railway Line
Bat Survey
map 6 of 8

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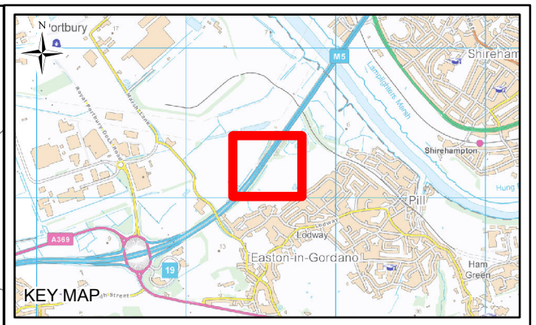

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- Pipistrelle commuting
- Pipistrelle foraging

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Title: Portishead Disused Railway Line
Bat Survey
map 7 of 8

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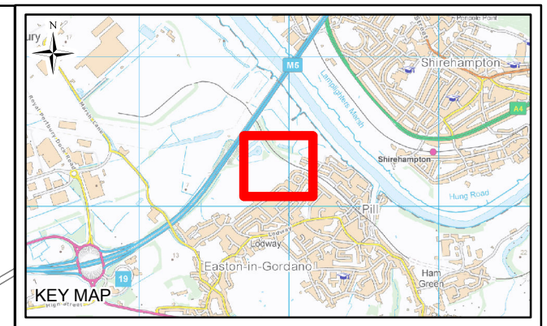

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- Pipistrelle commuting
- Pipistrelle foraging

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Title: Portishead Disused Railway Line
Bat Survey
map 8 of 8

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Appendix D. Reptile Mat Locations

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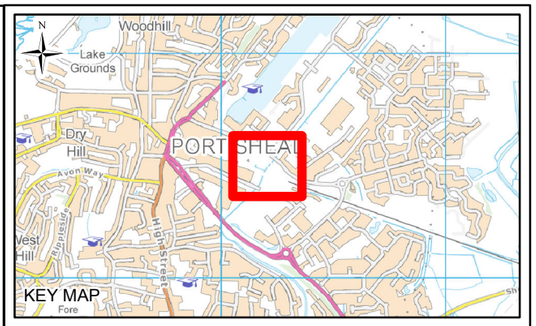

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Reptile Mat Location

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Prince House
43 - 51 Prince Street
Bristol
BS1 4PS
Tel +44 (0) 117 906 9500
Fax +44 (0) 117 906 9501
Web www.mottmac.com

Title: Portishead Disused Railway Line
Reptile survey mat locations
map 1 of 4

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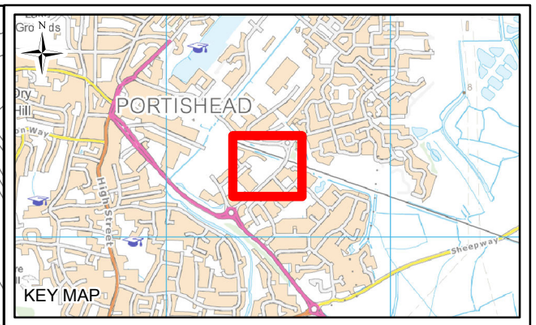

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Reptile Mat Location

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43 - 51 Prince Street
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BS1 4PS
Tel +44 (0) 117 906 9500
Fax +44 (0) 117 906 9501
Web www.mottmac.com

Title: Portishead Disused Railway Line
Reptile survey mat locations
map 2 of 4

Scale: 0 12.5 25 50 Metres

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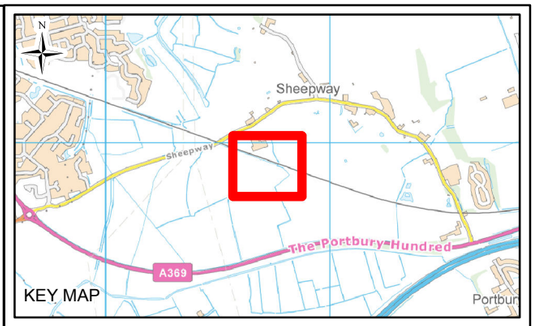

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Reptile Mat Location

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BS1 4PS
Tel +44 (0) 117 906 9500
Fax +44 (0) 117 906 9501
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Title: Portishead Disused Railway Line
Reptile survey mat locations
map 3 of 4

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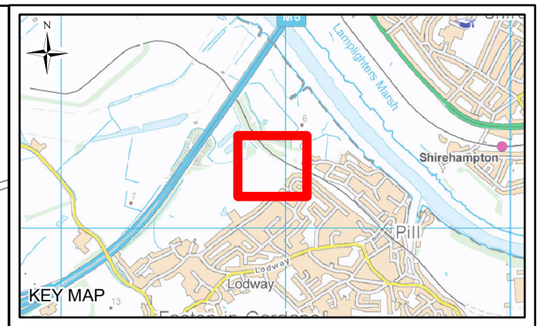

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Reptile Mat Location

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Reptile survey mat locations
map 4 of 4

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Date: 19/10/2011		Scale: 1: 1000 @ A3	

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Filepath:

Appendix E. Photo's

Photo 1: Active badger sett found in Portbury.

Photo 2: Badger path found adjacent to Portbury Wharf Nature Reserve leading towards the railway line from the boundary fence.

Photo 3: Highly vegetated pond in the middle of the disused railway line.

Appendix F. Invertebrate Report

AN INVERTEBRATE SURVEY OF PORTISHEAD BRANCH LINE

David J. Gibbs

24 October 2011

This report was produced for Mott MacDonald

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Redfield
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This report should be quoted as:

Gibbs, D.J (2011). *An invertebrate survey of Portishead branch line.* Report to Mott MacDonald

Contents

List of Figures

List of Tables

1 Summary

- This survey identified 82 species of invertebrates from a broad range of groups.
- Of these, five (6.1%) are considered here as Key Species.
- No species of RDB or equivalent status were found.
- Four of the five key species are known to be doing well locally so not of great conservation concern.
- The assemblage of "grassland & scrub matrix" species was the only one well represented in the data collected for this survey, with 18 associated species.
- A very long narrow site, not all of which could be covered in a single day, much of it difficult to access.
- The relatively small dataset that could be collected in one day cannot provide robust conclusions so the results are provisional.
- There is reason to believe that the grassland areas in compartments 1, 2 and 10-12 have some local conservation value and require further survey.
- There is no evidence that the densely scrubbed-over areas have any significant conservation value, indeed re-establishing open areas is likely to enhance the habitat.
- If the grassland in compartments 1, 2 and 10-12 is substantially damaged then further survey to develop a mitigation plan will be required.

2 Introduction

The abandoned and overgrown Portishead branch-line runs about 5.5km from Pill to Portishead. Some parts have been converted to a cycle track which usually runs alongside the remaining rail lines. Additionally some grassland areas adjacent to the line in Portishead were included in the survey area. Large parts of the line are now dense thicket and thus inaccessible, and even the few areas that could be reached could not be sampled readily with a sweep-net because of the nature of the scrub.

3 Survey Methodology

3.1 SAMPLING TECHNIQUES

Surveying involved searching flowers for larger species, notably hoverflies, bees and wasps and examining plants for signs of larvae. Most specimens were taken by sweeping with a 14 inch diameter white-bag net through the grass, herbage, under storey vegetation, over dead wood, along the boles of trees and from overhanging branches. Specimens were extracted from the net with a pooter or, in the case of larger specimens, individually potted in 30ml soda glass tubes. When sampling was completed or the pooter became too full the contents were killed with ethyl acetate then transferred to 30ml soda glass tubes together with a data label. Samples were preserved in a deep freeze until time was available to identify them.

With just a single day available it was not possible to reach all parts of the line so time was concentrated on those areas where access was relatively easy and there was some open grassland or glades within the scrub. Most sampling was done at the eastern end where the cycle track gave access, and at Portishead, concentrating on two significant grassland "brown-field" areas of habitat. For the purposes of

invertebrate sampling the site was divided into six sample compartments (see map Figure 1).

Figure 1 Map showing sample compartments

3.2 SAMPLE TIMING

The site was visited on just one day in late summer so the numerous invertebrates that are found in spring and early summer will not have been sampled. The visit on 9 August 2011 was at a time when invertebrate numbers and diversity is still high but decidedly past its peak, especially for the open grassland habitats that were most intensively sampled.

3.3 CONSTRAINTS

The weather on 9 August 2011 was warm and sunny with little wind, just about ideal for a sweep-net survey. The two significant constraints on this survey were the time available and the timing. A single day to cover the whole length at a pace that allows close examination of all the small habitat patches is insufficient. Even given that much of the length is dense thicket so not worth sampling, still the remaining grassland habitats are sufficiently scattered that some will have been missed. As intimated above, a single day misses some very important periods of invertebrate activity so any conclusions drawn must take this into account.

3.4 IDENTIFICATION

Where practical, invertebrates were identified in the field but wherever the slightest doubt existed, one or more specimens were collected for more detailed scrutiny. To achieve rigorously accurate identifications, specimens were identified using my own

library and entomological collection. Where these proved insufficient, specimens were submitted to relevant experts. Selected specimens have been retained in my personal collection as vouchers.

3.5 TAXONOMIC COVERAGE

It is desirable that as wide a taxonomic range as possible is identified, in order to sample numerous ecological types, i.e. invertebrates with widely differing natural histories. As there was only a limited amount of time available for identification, it was important to name the more readily identified groups which do not require very time consuming techniques or are out with the experience of the worker.

The following orders and families of invertebrates were named to species.

Coleoptera – **Beetles** (all except Meligethes, small Aleocharine rove beetles and other very small obscure families)

Diptera - **True Flies** (except, Cecidomyiidae, Chironomidae, Ceratopogonidae, Simulidae, Phoridae, Sphaeroceridae, and females of some groups which are not identifiable).

Hemiptera, **Heteroptera - True Bugs** (excluding smaller Miridae)

Hymenoptera, Aculeata - Ants, wasps and bees

Lepidoptera – Butterflies and Moths

Odonata - Dragonflies and Damselflies

Neuroptera - Lacewings

Orthoptera – Grasshoppers and crickets

Dermaptera – Earwigs

3.6 ANALYSIS

A system of British conservation statuses has been in use since the Red Data Book for insects (Shirt 1987), amended and supplemented by a series of JNCC Nature Conservation reviews (e.g. Falk 1991a; Falk 1991b). By this system, the rarest and most threatened species are given one of the Red Data Book (RDB) statuses. Species which do not qualify as RDB but are nonetheless uncommon are given one of the Nationally Scarce statuses. The status categories and criteria relevant to this report are defined in Appendix 1.

'Key Species' are here defined by the following categories:

- British Red Data Book (RDB) and Nationally Scarce species (including statuses from JNCC texts which are published, 'in press' or 'in prep.'); and
- Species formerly regarded as either RDB or Nationally Scarce but recently downgraded.

For site assessment, the percentage of Key Species is a useful guide to the overall quality of the site for invertebrates, in comparison to other sites surveyed by the authors using similar techniques. Higher quality sites support higher percentages of Key Species. To enable a fair comparison to survey data accumulated by the authors over many years, species formerly regarded as either RDB or Nationally Scarce but recently downgraded are still treated as Key Species.

There are numerous examples of invertebrates which have been listed as either RDB or Nationally Scarce and have subsequently been found to be more widespread and abundant, either as a result of actual increase in range size or population size, or as a result of improved understanding by entomologists of how to find or identify them.

Where the authors regard the official conservation status to be out of date, this will be indicated in the Key Species accounts (section 5).

3.7 ISIS

Natural England's ISIS application was used to assess the invertebrate assemblages (Broad Assemblage Types (BATs)) present overall and from each trap and to calculate a comparative measure of the conservation importance of the assemblage (the "ISIS Rarity Score").

The ISIS system still needs further development in several areas and some of its output requires specialist interpretation.

4 Results

4.1 Overall Results

The survey identified 82 species of invertebrate (Appendix 2). A broad range of invertebrate groups was covered to a greater or lesser extent and the species list includes representatives of the following groups: dragonflies, crickets, grasshoppers, earwigs, lacewings, true bugs, moths, butterflies, beetles, true flies, and bees. The sampling techniques were most efficient at catching Diptera, and the greatest identification effort was effort was concentrated on flies (31 species, 38%). The second largest group found was Lepidoptera (24 species, 29%), eight of them butterflies, the majority of the remaining micromoths. Hymenoptera were represented by 9 species (11%).

Of the 82 species identified by this survey, 5 (6.1%) are considered here as Key Species (defined in section 3.6). While this is not particularly exceptional, it is certainly indicative of habitats of interest. Any result over 5% Key Species suggests that the site has some conservation value. No species of RDB or equivalent status were found, but given the limited nature of this survey this cannot be used to conclude that no such exist on the site.

4.2 ISIS Results

ISIS covers 65 of the 82 species identified from this survey, 17 species being returned as "errors", i.e. not included in the ISIS table. Within that subset, just one Broad Assemblage Type (BAT) was well represented with another six being recognised but with too little data to be sure these communities are important (Table 1).

Table 1 The broad assemblage types along Portishead branch-line

BAT code	BAT name	Representation (1-100)	Rarity score	Condition	BAT species richness
F21	grassland & scrub matrix	34	154		18
F11	unshaded early successional mosaic	18	100		7
A11	arboreal canopy	7	125		4
W31	permanent wet mire	5	233	fav	3
F31	shaded field & ground layer	14	250	fav	4
A21	wood decay	4	100		2
W21	mineral marsh & open water	3	150		1

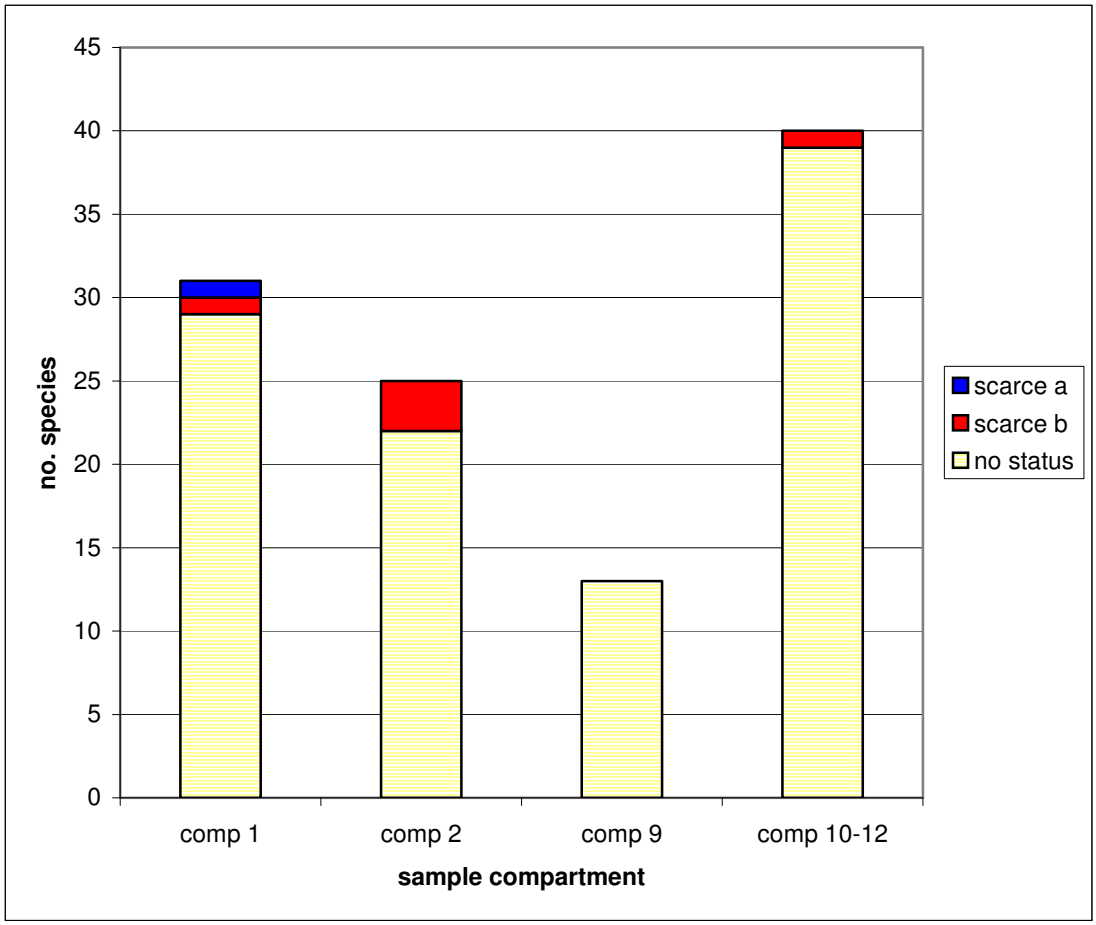
The assemblage of "grassland & scrub matrix" species was the only one well represented in the data collected for this survey, with 18 associated species. This is

expected given the nature of the site. The rarity score for this BAT is reasonably good but not exceptional indicating that this invertebrate community, while diverse, is of recent origin and yet to include many scarce species. None of the remaining communities achieved the "visibility threshold" of 15 species, possibly because this is too small a survey to bring out the less well-represented communities in the survey area. "Unshaded early successional mosaic", (i.e. open habitats with an element of disturbance) is the best represented of these, with just seven associated species, but a low rarity score. No conclusions can be drawn from these poorly represented BAT's other than as an indication of the potential of the site.

4.3 COMPARISON OF COMPARTMENTS

The six sampling compartments were very different in the amount, type and quality of habitat present. The largest block of habitat was compartment 1 at the western end with coarse grassland, a good floral diversity and surrounding scrub. At the other end compartment 10-12 received most attention being long and narrow with some areas of good habitat. A couple of areas walked (compartments 3 and 7-8) were either very poor or access to the line was not possible so no invertebrates were found in the short amount of time available to search them.

Figure 2 Results per sample compartment



Compartment 10 to 12, the cycle track and adjacent habitats from Pill to Church Road was the most diverse area. Partly this is due to the amount of time spent here, more than any other area, but it does have a good mix of open grassland, ruderal areas and scrub. Compartment one was nearly as diverse despite not having much time to sample. Compartment 2 is a small area where only a short time was spent but

it produced a good list of species. Compartment 9 is largely scrub and few species could be found.

5 Key Species

5.1 NATIONALLY SCARCE

5.1.1 *Conocephalus discolor* Nationally Scarce a

The Long-winged cone-head, once such an uncommon species of the south coast west to the New Forest, has shown a remarkable spread in recent years. In Somerset its arrival is relatively recent but is now well established, at least in the north of the county. In the Bristol region it seems to be doing well with numerous sites located in the last few years so it is clear that this species is no longer of conservation concern. Occurs in coarse, mainly ungrazed vegetation in warm places such as downland, coastal reedbeds, heath, bogs and disturbed areas. Nymphs emerge in May maturing in August sometimes surviving until November (Haes & Harding 1997). Noted in compartment 1.

5.1.2 *Forficula lesnei* Nationally Scarce b

Lesne's Earwig is very similar to its much commoner congener Common Earwig *Forficula auricularia* but lacks functional wings and is a little smaller and paler. In Britain this species is on the northern edge of its range and largely confined to southern counties favouring base-rich soils. In Somerset it has recently been found to be quite frequent but most records are confined to the south of the county (Haes & Harding 1997) and is previously recorded at Tucking Mill. Although it is likely to have been under recorded due to its superficial resemblance to the Common Earwig, it appears to be restricted to particularly favourable locations which have not yet been characterised (Haes & Harding *op.cit*.). It is frequently found in scrub and amongst common weeds, habitats which are ubiquitous in the country, so its absence from most areas suggests that very subtle habitat and environmental conditions, no doubt readily disturbed, are essential for its survival. Adult insects can be found from May to October. Swept from herbage in area 10-12 and from sallows in area 1.

5.1.3 *Homoneura thalhammeri* (Nationally Scarce)

This small yellowish fly has a scattered distribution over south England north to Yorkshire and in south Wales. It does not have official national status because it was not known in Britain when the relevant review was published; at the time it was confused with another species which was given Nb status. There are about 20 post-1960 records including about six sites in Somerset and Bristol (pers obs). Where recording has been intensive this species has been found more frequently so is no doubt over looked and perhaps no longer deserving its national status. Most often found by sweeping scrub, isolated shrubs, trees and adjacent tall herbage or coarse grasses. Its biology is unknown but larvae of this genus are generally believed to develop in decaying vegetable matter including fallen leaves. Adults recorded from June to September (Falk & Ismay in prep.). Swept from a sallow in area 2.

5.1.4 *Tetanocera punctifrons* Nationally Scarce

One of the larger snail-killing flies which is widely distributed in Britain but local with about 20 post 1960 sites (Falk 1991b). In the Bristol region it is only known from Batheaston, Hengrove in Bristol and Yanley (pers obs.). It is becoming increasingly frequent and perhaps no longer merits its national status. Inhabits damp woodland, riparian situations, damp heathland and coastal marshes. The larvae probably develop as predators or parasitoides of snails; adults are recorded from June to August (Falk *op.cit.*). Swept from *Juncus* in area 2.

5.1.5 *Athrycia curvinervis* (Nationally Scarce)

This rather typical looking parasitoid fly has a widespread but sparse distribution throughout England north to Yorkshire and in South Wales. There are recent records from Gloucestershire (1972) but in Bristol and Somerset there are only old records, Bristol and Walton Moor in 1948 and Coombe Dingle and Filton in 1949 (Audcent 1950). Found along hedgerows and in cultivated areas and gardens. The larvae are parasitoids of a variety of night-feeding noctuid caterpillars (Lepidoptera), several of which are pests of cultivated vegetables and garden plants. Adults from June to August (Falk & Pont in prep.). A single male swept in compartment 2.

5.2 UK BAP SPECIES

5.2.1 *Scotopteryx chenopodiata* Shaded Broad-bar

A geometrid moth of a wide range of habitats including sandhills, downland, waste ground and grassland. The larvae feed on vetches and clovers. It was described by Skinner (1984) as 'widespread and moderately common throughout the British Isles including Orkney and the Inner Hebrides' and as 'common' by Waring & Townsend (2003). However, Fox *et al.* (2006) reported a decline of 73% over 35 years for this species leading to its BAP status. The indications are that action for this species will cover national monitoring and research programmes, and action through national agricultural and forestry policy measures. In Somerset it is particularly well recorded (NBN). Swept in area 2.

5.2.2 *Tyria jacobaeae* Cinnabar

This very attractive and well known day-flying moth that has recently been added to the Priority List of UK Biodiversity Action Plan Species. In Somerset it is still quite common and well recorded (NBN). Its addition is due to concern that the species is suffering a significant decline and probably that its food plant is in jeopardy due to new legislation. The larvae feed on Ragwort, a plant much persecuted by many landowners. Ragwort supports many insect species other than Cinnabar so this moth acts as a flagship for the whole Ragwort dependant fauna. Recorded as larvae in areas 1, 2 & 10-12.

6 Site Evaluation

This long, linear site with a couple of larger blocks of habitat at the Portishead end was only sampled on one day and is a large area with many parts difficult to access so the following assessment must be treated as provisional. Although such a small dataset can be used to assess the quality of a site, and through experience limited extrapolations can be made, the confidence in any conclusions drawn are necessarily low.

Of the five nationally scarce species found the Long-winged conehead *Conocephalus discolor* has undergone a remarkable expansion of range and can no longer be considered of conservation significance. Lesne's Earwig *Forficula lesnei*, while still rather uncommon in the Bristol area, is certainly more common than it was so is not of great concern. The small yellow fly *Homoneura thalhammeri* and the snail killing fly *Tetanocera punctifrons* are both not infrequent locally so their loss here would not be significant for local biodiversity. The two BAP species Shaded Broad-bar *Scotopteryx chenopodiata* and Cinnabar *Tyria jacobaeae*, despite concerns over their decline, are still relatively common locally so, while it would be good to retain them on the site, if their habitat was lost there would be little justification to require mitigation.

The only species found with National Status for which this site might be important is the Parasitoid fly *Athrycia curvinervis*. Although there are old records for the region, this is the only place locally where it has been found for over 60 years. However,

these are rather under-recorded flies not easy to identify so few records come to light from casual observations. While this single observation from compartment 2 is inadequate to require mitigation, it is indicative of the presence of an interesting invertebrate community persisting in a relatively unusual habitat which is likely to harbour many more interesting species.

Compartment 2 also produced the Tortix moth *Pammene gallicana* which is relatively scarce locally while compartment 10-12 yielded the tiny micromoth *Ectoedemia louisella* with no recent records listed in Barnett *et al*. (2008) although it is known from a few sites and is presumably overlooked (pers. obs.).

7 Recommendations

This very brief scoping survey is far from ideal when making recommendations so the following must be tentative. The data collected on this survey suggests that some parts, notably the open areas of compartment 1 and 2 (especially the latter) have sufficient potential to require further survey. The same is also likely to be true of compartment 10-12 although this brief survey did not find much evidence of valuable communities of invertebrates here.

If compartments 1 and 2 and the open areas of compartment 10-12 are to receive any significant development resulting in the loss of open habitats, then it is recommended that a more thorough survey be undertaken to discover how damaging this might be to local biodiversity and what mitigation is required.

There is no good evidence to suggest that the densely scrubbed-over areas have any significant invertebrate interest. Indeed, it is likely that the opening up of the line will provide many opportunities to enhance the habitat and such habitat creation could even be used as mitigation for the loss of any good semi-natural habitat in compartments 1, 2 and 10-12.

If better access can be found then there might be a few small areas along the central part of the line that are worth surveying and if any are found then they should be included in a future survey. Further survey should ideally be three days of field work (2 at least if 2011 survey is incorporated into the data set) and include the spring (early May) and one sample in June to cover those species that would have been missed in 2011. The rough grassland areas and tall herbage are clearly the more important and should be the focus of further survey.

8 References

Audcent, H.L.F. 1950. Bristol Insect Fauna, Diptera (continued). *Proceedings of the Bristol Naturalists Society* **28**(1) 45-132.

Barrett, R.J., Andrews, R.M., Bailey, M.A., Corner, T., Higgins, R.J. & Martin, J.P. 2008 *Moths of the Bristol region*. BRERC.

Falk, S. 1991b. A review of the scarce and threatened flies of Great Britain Part 1. No 39. NCC.

Falk, S. & J. Ismay in prep. A review of the scarce and threatened flies of Great Britain; Acalypterates. JNCC.

Falk, S.J. & A.C. Pont in prep. A review of the scarce and threatened flies of Great Britain Part X: Calyptratae. No. XX JNCC.

Fox, R., K.F. Conrad, M.S. Parsons, and I.P. Woiwod 2006. *The state of Britain's larger moths*. Wareham: Butterfly Conservation and Rothamsted Research.

Haes, E.C.M. & P.T. Harding 1997 *Atlas of grasshoppers, crickets and allied insects in Britain and Ireland*. Biological Records Centre, Huntingdon.

Hyman, P.S. (revised Parsons, M.S.) (1992). *A review of the scarce and threatened Coleoptera of Great Britain. Part 1.* U.K. Nature Conservation: 3. Peterborough: Joint Nature Conservation Committee.

Hyman, P.S. (revised Parsons, M.S.) (1994). *A review of the scarce and threatened Coleoptera of Great Britain. Part 2.* U.K. Nature Conservation: 12. Peterborough: Joint Nature Conservation Committee.

Shirt, D.B. (ed.) (1987). *British Red Data Books: 2. Insects*. Peterborough: Nature Conservancy Council. Skinner, B. 1984. *Colour identification guide to moths of the British Isles*. Viking.

Waring, P. & M. Townsend. 2003. *Field guide to the moths of Great Britain and Ireland*. Hook: British Wildlife Publishing.

9 Appendix 1: British conservation status categories – definitions.

These status categories and criteria were introduced for British insects by Shirt (1987) and received some modifications by later authors (e.g. Hyman and Parsons (1992, 1994)).

Red Data Book category EXTINCT

Definition Species which were formerly native to Britain but have not been recorded since 1900.

Red Data Book category 1, Endangered

Definition Species in danger of extinction and whose survival is unlikely if causal factors continue to operate. Endangered species either (a) occur as only a single population within one 10-km square, or (b) only occur in especially vulnerable habitats, or (c) have been declining rapidly or continuously for twenty years or more to the point where they occur in five or fewer 10-km squares, or (d) may already have become extinct.

Red Data Book category 2, Vulnerable

Definition Species which are likely to move into the Endangered category in the near future if causal factors continue to operate. Vulnerable species are declining throughout their range or occupy vulnerable habitats.

Red Data Book category 3, Rare

Definition Species which occur in small populations and although not currently either Endangered or Vulnerable are at risk. Rare species exist in 15 or fewer 10-km squares, or are more widespread than this but dependent on small areas of especially vulnerable habitat.

Red Data Book category I, Indeterminate

Note: Best written as ‘RDBi’ rather than ‘RDBI’ as the latter is easily confused with ‘RDB1’ (Endangered).

Definition Species considered to be either Endangered, Vulnerable or Rare but with insufficient information to say which.

Red Data Book category K, Insufficiently Known

Definition Species suspected to merit either Endangered, Vulnerable, Rare or Indeterminate status but lacking sufficient information. Species included in this

category may have only recently been discovered in Britain, or may be very poorly recorded for a variety of reasons.

Nationally Scarce Category A, Na.

Definition Species which do not fall within Red Data Book categories but which are nonetheless uncommon in Great Britain and thought to occur in 30 or fewer (typically between 16 and 30) 10-km squares of the National Grid, or for less well-recorded groups, in seven or fewer vice-counties.

Nationally Scarce Category B, Nb.

Definition Species which do not fall within Red Data Book categories but which are nonetheless uncommon in Great Britain and thought to occur in between 31 and 100 10-km squares of the National Grid, or for less well-recorded groups, between eight and twenty vice-counties.

Nationally Scarce, N.

Definition Species which do not fall within Red Data Book categories but which are nonetheless uncommon in Great Britain. This status category has been used where information has not been sufficient to allocate a species to either Na or Nb. These species are thought to occur in between 16 and 100 10-km squares of the National Grid.

10 Appendix 2: Species list by sample compartment.

Order: Family	Taxon	Vernacular	National Status	1	2	9	10-12
Odonata: Aeshnidae	*Aeshna mixta*	Migrant Hawker				1	
Odonata: Libellulidae	*Sympetrum striolatum*	Common Darter				1	
Orthoptera: Meconematidae	*Meconema thalassinum*	Oak Bush Cricket					1
Orthoptera: Tettigoniidae	*Pholidoptera griseoaptera*	Dark Bush Cricket		1			1
Orthoptera: Conocephalidae	*Conocephalus discolor*	Long-winged Conehead	Nationally Scarce a	1			
Orthoptera: Acrididae	*Chorthippus brunneus*	Common Field Grasshopper		1			1
Orthoptera: Acrididae	*Chorthippus parallelus*	Meadow Grasshopper			1	1	1
Dermaptera: Forficulidae	*Forficula auricularia*	Common Earwig				1	1
Dermaptera: Forficulidae	*Forficula lesnei*	Lesne's Earwig	Nationally Scarce b	1			1
Neuroptera: Hemerobiidae	*Hemerobius humulinus*						1
Hemiptera: Pentatomidae	*Dolycoris baccarum*			1			
Lepidoptera: Nepticulidae	*Ectoedemia louisella*						1
Lepidoptera: Nepticulidae	*Ectoedemia albifasciella*						1
Lepidoptera: Zygaenidae	*Zygaena filipendulae*	Six-spot Burnet					
Lepidoptera: Gracillariidae	*Caloptilia semifascia*						1

Lepidoptera: Yponomeutidae	*Acrolepia autumnitella*						**1**
Lepidoptera: Gelechiidae	*Apodia bifractella*				**1**		
Order: Family	**Taxon**	**Vernacular**	**National Status**	**1**	**2**	**9**	**10-12**
Lepidoptera: Momphidae	*Mompha raschkiella*			**1**			
Lepidoptera: Tortricidae	*Epiblema sticticana*				**1**		
Lepidoptera: Tortricidae	*Grapholita compositella*			**1**			
Lepidoptera: Tortricidae	*Cydia nigricana*	Pea Moth		**1**			
Lepidoptera: Tortricidae	*Pammene gallicana*				**1**		
Lepidoptera: Pterophoridae	*Adaina microdactyla*			**1**	**1**	**1**	
Lepidoptera: Pieridae	*Pieris rapae*	Small White					**1**
Lepidoptera: Lycaenidae	*Polyommatus icarus*	Common Blue		**1**	**1**		**1**
Lepidoptera: Nymphalidae	*Vanessa atalanta*	Red Admiral					**1**
Lepidoptera: Nymphalidae	*Inachis io*	Peacock				**1**	
Lepidoptera: Nymphalidae	*Polygonia c-album*	Comma					**1**
Lepidoptera: Satyridae	*Pararge aegeria*	Speckled Wood				**1**	**1**
Lepidoptera: Satyridae	*Pyronia tithonus*	Gatekeeper		**1**	**1**		**1**
Lepidoptera: Satyridae	*Maniola jurtina*	Meadow Brown					**1**
Lepidoptera: Geometridae	*Timandra comae*	Blood-vein					**1**
Lepidoptera: Geometridae	*Scotopteryx chenopodiata*	Shaded Broad-bar	**BAP**		**1**		
Lepidoptera: Notodontidae	*Phalera bucephala*	Buff-tip		**1**			**1**
Lepidoptera: Arctiidae	*Tyria jacobaeae*	Cinnabar	**BAP**	**1**	**1**		**1**
Coleoptera: Coccinellidae	*Propylea*	14-spot Ladybird					**1**

	quattuordecimpunctata						
Coleoptera: Coccinellidae	*Harmonia axyridis*	Harlequin Ladybird		**1**			
Coleoptera: Coccinellidae	*Coccinella septempunctata*	7-spot Ladybird		**1**			
Coleoptera: Oedemeridae	*Oedemera nobilis*	Swollen-thighed Beetle					**1**
Order: Family	**Taxon**	**Vernacular**	**National Status**	**1**	**2**	**9**	**10-12**
Coleoptera: Cerambycidae	*Rutpela maculata*			**1**			
Diptera: Bibionidae	*Dilophus febrilis*						**1**
Diptera: Mycetophilidae	*Cordyla crassicornis*						**1**
Diptera: Rhagionidae	*Chrysopilus asiliformis*					**1**	
Diptera: Hybotidae	*Platypalpus longiseta*						**1**
Diptera: Syrphidae	*Paragus haemorrhous*				**1**		
Diptera: Syrphidae	*Chrysotoxum bicinctum*				**1**		
Diptera: Syrphidae	*Epistrophe grossulariae*						**1**
Diptera: Syrphidae	*Episyrphus balteatus*						**1**
Diptera: Syrphidae	*Sphaerophoria scripta*						**1**
Diptera: Syrphidae	*Cheilosia illustrata*						**1**
Diptera: Syrphidae	*Riponnensia splendens*						
Diptera: Syrphidae	*Eristalis pertinax*					**1**	
Diptera: Syrphidae	*Myathropa florea*					**1**	
Diptera: Syrphidae	*Syritta pipiens*			**1**			**1**
Diptera: Pipunculidae	*Tomosvaryella sylvatica*			**1**			
Diptera: Lonchaeidae	*Setisquamalonchaea fumosa*						**1**
Diptera: Ulidiidae	*Herina lugubris*				**1**		

Diptera: Tephritidae	*Merzomyia westermanni*				**1**		**1**
Diptera: Tephritidae	*Sphenella marginata*			**1**	**1**	**1**	
Diptera: Tephritidae	*Euleia heraclei*					**1**	
Diptera: Lauxaniidae	*Homoneura thalhammeri*		**Nationally Scarce**		**1**		
Order: Family	**Taxon**	**Vernacular**	**National Status**	**1**	**2**	**9**	**10-12**
Diptera: Lauxaniidae	*Minettia tabidiventris*				**1**		
Diptera: Lauxaniidae	*Minettia fasciata*						**1**
Diptera: Lauxaniidae	*Sapromyza quadripunctata*			**1**	**1**		
Diptera: Chamaemyiidae	*Chamaemyia polystigma*			**1**			
Diptera: Sciomyzidae	*Pherbellia cinerella*			**1**	**1**		
Diptera: Sciomyzidae	*Pherbina coryleti*				**1**		
Diptera: Sciomyzidae	*Tetanocera punctifrons*		**Nationally Scarce**		**1**		
Diptera: Agromyzidae	*Agromyza flaviceps*						**1**
Diptera: Anthomyzidae	*Anthomyza gracilis*			**1**			
Diptera: Anthomyiidae	*Botanophila brunneilinea*			**1**			
Diptera: Tachinidae	*Athrycia curvinervis*		**(Nationally Scarce)**		**1**		
Diptera: Tachinidae	*Eriothrix rufomaculata*			**1**	**1**		
Hymenoptera: Apidae	*Andrena flavipes*	Yellow Legged Mining Bee		**1**			
Hymenoptera: Apidae	*Apis mellifera*	Honey Bee					**1**
Hymenoptera: Apidae	*Bombus lapidarius*	Large Red Tailed Bumble Bee		**1**	**1**		**1**
Hymenoptera: Apidae	*Bombus lucorum sens. lat.*	White-tailed Bumble Bee			**1**	**1**	

Hymenoptera: Apidae	*Bombus pascuorum*	Common Carder Bee			**1**		**1**
Hymenoptera: Apidae	*Lasioglossum calceatum*	Slender Mining Bee		**1**			**1**
Hymenoptera: Apidae	*Lasioglossum morio*	Brassy Mining Bee		**1**			
Hymenoptera: Apidae	*Lasioglossum villosulum*	Shaggy Mining Bee		**1**			**1**
Hymenoptera: Apidae	*Sphecodes ephippius*	a cuckoo bee		**1**			
		total diversity	**82**	**31**	**25**	**13**	**40**
		total scarce	**5**	**2**	**3**	**0**	**1**
		Nationally Scarce b	**4**	**1**	**3**	**0**	**1**
		Nationally Scarce a	**1**	**1**	**0**	**0**	**0**
		BAPs	**2**	**1**	**2**	**0**	**1**
		% scarce	**6.1**	**6.5**	**12**	**0**	**2.5**
		%BAPs	**2.4**	**3.2**	**8**	**0**	**2.5**

Appendix G. Vegetation Clearance Constraints Maps

347200 347300 347400 347500 347600

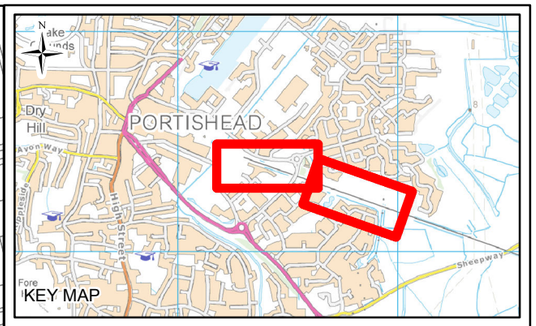
176400

176300

176200

347600 347700 347800 347900 348000

N



Legend

Railway line

Clearance Methods:

- Reptile Sensitive (3.5 metre vegetation clearance)
- Badger Sensitive (3.5 metre vegetation clearance)
- Great Crested Newt Sensitive (2.5 metre vegetation clearance)
- Great Crested Newt and Badger Sensitive (2.5 metre vegetation clearance)

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Title: Portishead Disused Railway Line
Working method maps
map 1 of 6

Scale: 0 25 50 100 Metres

Drawn	CW	Checked	XX
Approved	XX	Rev No	P1 INF
Date: 18/10/2011		Scale: 1: 1500 @ A3	

Drawing No: MMD-293899-L-DR-Working Methods-XX-001

Filepath:

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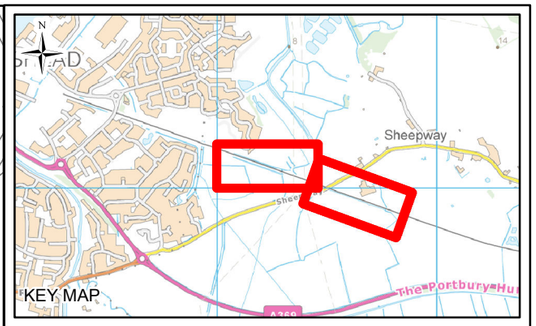
176200 176100 176000 175900

N



Legend

Railway line

Clearance Methods:

- Reptile Sensitive (3.5 metre vegetation clearance)
- Badger Sensitive (3.5 metre vegetation clearance)
- Great Crested Newt Sensitive (2.5 metre vegetation clearance)
- Great Crested Newt and Badger Sensitive (2.5 metre vegetation clearance)

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Title: Portishead Disused Railway Line
Working method maps
map 2 of 6

Scale:
0 25 50 100 Metres

Drawn	CW	Checked	XX
Approved	XX	Rev No	P1 INF
Date: 18/10/2011		Scale: 1: 1500 @ A3	

Drawing No: MMD-293899-L-DR-Working Methods-XX-002

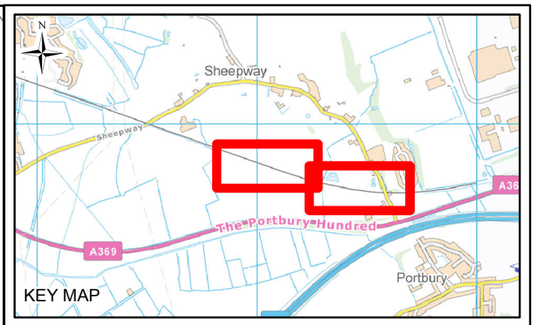
Filepath:

348500 348600 348700 348800

348900 349000 349100 349200

175900 175800 175700

N



Legend

Railway line

Clearance Methods:

- Reptile Sensitive (3.5 metre vegetation clearance)
- Badger Sensitive (3.5 metre vegetation clearance)
- Great Crested Newt Sensitive (2.5 metre vegetation clearance)
- Great Crested Newt and Badger Sensitive (2.5 metre vegetation clearance)

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Title: Portishead Disused Railway Line
Working method maps
map 3 of 6

Scale: 0 25 50 100 Metres

Drawn	CW	Checked	XX
Approved	XX	Rev No	P1 INF
Date: 18/10/2011		Scale: 1: 1500 @ A3	

Drawing No: MMD-293899-L-DR-Working Methods-XX-003

Filepath:

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175800 175700 175900 175800

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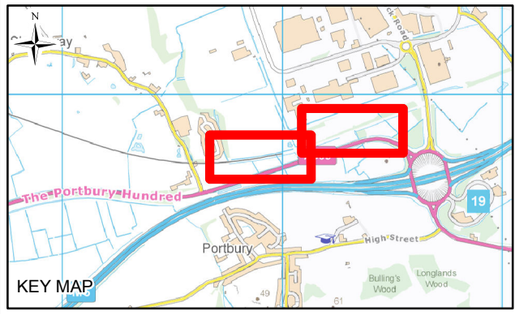

Legend

Railway line

Clearance Methods:

- Reptile Sensitive (3.5 metre vegetation clearance)
- Badger Sensitive (3.5 metre vegetation clearance)
- Great Crested Newt Sensitive (2.5 metre vegetation clearance)
- Great Crested Newt and Badger Sensitive (2.5 metre vegetation clearance)

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Title: Portishead Disused Railway Line
Working method maps
map 4 of 6

Scale: 0 25 50 100 Metres

Drawn	CW	Checked	XX
Approved	XX	Rev No	P1 INF
Date: 18/10/2011		Scale: 1: 1500 @ A3	

Drawing No: MMD-293899-L-DR-Working Methods-XX-004

Filepath:

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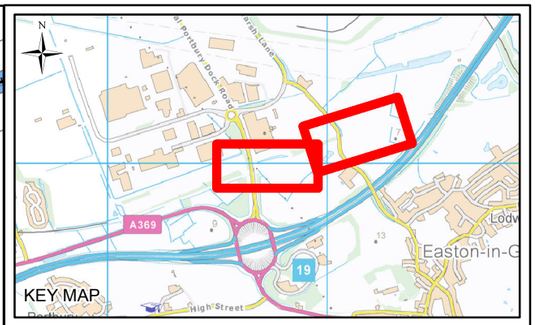
350500 350600 350700 350800 350900

176000 175900 176200 176100

N



Legend

Railway line

Clearance Methods:

- Reptile Sensitive (3.5 metre vegetation clearance)
- Badger Sensitive (3.5 metre vegetation clearance)
- Great Crested Newt Sensitive (2.5 metre vegetation clearance)
- Great Crested Newt and Badger Sensitive (2.5 metre vegetation clearance)

351000 351100 351200 351300

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Title: Portishead Disused Railway Line
Working method maps
map 5 of 6

Scale: 0 25 50 100 Metres

Drawn	CW	Checked	XX
Approved	XX	Rev No	P1 INF
Date: 18/10/2011		Scale: 1: 1500 @ A3	

Drawing No: MMD-293899-L-DR-Working Methods-XX-005

Filepath:

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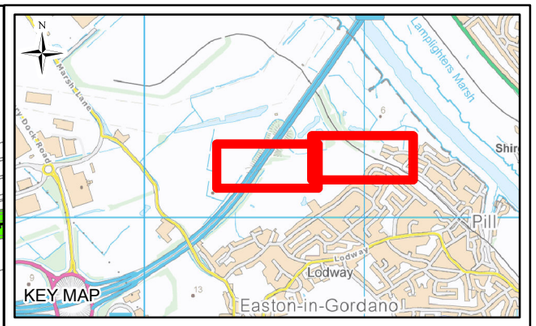
176300

176200

N



Legend

Railway line

Clearance Methods:

- Reptile Sensitive (3.5 metre vegetation clearance)
- Badger Sensitive (3.5 metre vegetation clearance)
- Great Crested Newt Sensitive (2.5 metre vegetation clearance)
- Great Crested Newt and Badger Sensitive (2.5 metre vegetation clearance)

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Title: Portishead Disused Railway Line
Working method maps
map 6 of 6

Scale: 0 25 50 100 Metres

Drawn	CW	Checked	XX
Approved	XX	Rev No	P1 INF
Date: 18/10/2011		Scale: 1: 1500 @ A3	

Drawing No: MMD-293899-L-DR-Working Methods-XX-006

Filepath:

176300

176200

351800 351900 352000 352100 352200