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River Carron, Stonehaven - further ecological surveys

Final Report

October 2013

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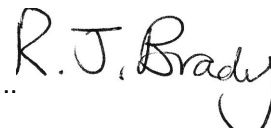
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Contract

This report describes work commissioned by William Murdoch, on behalf of Aberdeenshire Council, by a letter dated 3rd July 2013. Christopher Toop and Rachael Brady of JBA Consulting carried out this work.

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Abbreviations

BAP.....	Biodiversity Action Plan
BCT.....	Bat Conservation Trust
EA.....	Environment Agency
EPS.....	European Protected Species
MAGIC.....	Multi Agency Geographic Information for the Countryside
NBN.....	National Biodiversity Network
RSPB.....	Royal Society for the Protection of Birds

1 Introduction

1.1 Background

Stonehaven has undergone several recent and historical flooding events from the River Carron and JBA Consulting were appointed to develop plans to assist in flood alleviation. As part of this process ecologists from JBA carried out full ecology surveys on the Carron between the sea and the upstream side of the A90 culvert, and up the Burn of Glaslaw (Glaslaw Burn) to Glaslaw Bridge. This highlighted a small number of constraints and allowed some elements to be screened out of future assessments.

As proposals have started to develop a clearer design, further surveys of the main constraints already identified were required in order to determine the likely significant impacts of the proposals.

The initial 2011 survey highlighted the need for:

- Otter surveys throughout the affected length, plus an additional 500m upstream
- Bat surveys of trees on Carron Terrace which may need removal
- Mapping of invasive non-native species

1.2 Location



Figure 1-1 Location Map

The survey examined 1.65km of the River Carron from the sea to Deil's Kettle and 365m of the Glaslaw Burn in Stonehaven, Aberdeenshire.

1.3 Proposed Works

See main documents for details.

2 Survey Methodology

2.1 Desk-based Assessment

Prior to undertaking the site visit, searches of databases containing information on ecological records, important sites for nature conservation and biodiversity action plan (BAP) habitats were made. The following sources were included in these searches:

- National Biodiversity Network (NBN) database (<http://data.nbn.org.uk/>)
- MAGIC mapping service (www.magic.gov.uk)
- Nature on the Map (www.natureonthemap.org.uk)

Relevant ecological records from post-2000 and BAP habitats within 1km of the works site were noted. Statutory nature conservation sites with the potential to be affected by the works and within 5km were recorded.

2.2 Site Visit

2.2.1 Introduction

A site visit was made on 30th and 31st July 2013. This was undertaken by two ecologists with considerable experience in river corridor, protected species and invasive non-native species survey.

The weather had been settled and mostly dry up to the 31st; allowing good access into the watercourse and along the river corridor and evidence of aquatic protected species had not been washed away by high waters.

Original survey timetable was to carry out the full river survey on the 31st July and undertake a dawn bat survey of the trees on the morning of 1st August. As a result of a poor weather forecast for the night of the 31st July it was decided to undertake an additional/contingency bat survey at dusk on the 30th July. The weather forecast was very changeable; however, the rains arrived at midnight and were extremely heavy through to 07.30 on the 1st August. Bat surveys could not be carried out at dawn.

2.2.2 Species Surveys

Otter

The European Otter *Lutra lutra* is a European Protected Species (EPS) protected under the Conservation of Habitats and Species Regulations 2010, making it an offence to:

- deliberately capture, injure or kill an Otter,
- deliberately disturb an Otter such as to affect local populations or breeding success,
- damage or destroy an Otter holt, possess or transport an Otter or any part of an Otter,
- sell or exchange an Otter.

Otters also receive protection under the Wildlife and Countryside Act 1981 (as amended), this makes it an offence to:

- intentionally or recklessly disturb any Otter whilst within a holt,
- intentionally or recklessly obstruct access to a holt.

The Otter survey method was based on the standard works of RSPB (1994); Chanin (2003); and Strachan and Moorhouse (2006). This involved walking the survey section, examining banks and prominent features for spraints (droppings) and footprints. A search was also made for possible holt and couch (resting) sites. Otters are extremely difficult to observe, and this method provides the most effective and efficient means of investigating presence or absence.

Bats

All UK bat species are EPS under the Conservation of Habitats and Species Regulation 2010. It is an offence to:

- deliberately kill, injure or capture any bat,

- intentionally or recklessly disturb a bat, or deliberately disturb a group of bats,
- damage or destroy, or intentionally or recklessly obstruct access to, a bat roosting place,
- possess, or sell (living or dead) any bat or part of a bat.

Structures or trees likely to be impacted by the proposed works were inspected to determine their potential value for roosting bats, as specified in the Bat Conservation Trust (BCT) Bat Surveys - Good Practice Guidelines (BCT, 2007). This includes looking for cracks, crevices, loose bark, holes and splits and for evidence indicating bat presence including dark stains running below holes or cracks, bat droppings, odours, or scratch marks.

Trees are notably difficult to survey accurately, however at dawn, bats often congregate (swarm) around roost entrances making them more obvious. On emergence, bats often leave singly and drop before flying straight to foraging sites. It was planned to undertake dawn surveys to take advantage of lightening skies and this swarming behaviour.

Non-native Species

Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) lists 62 plant species, or groups of plants, and 69 animal species. It is an offence to release or cause to spread in the wild any of these species. Of particular note are Japanese Knotweed *Fallopia japonica*, Himalayan Balsam *Impatiens glandulifera*, Giant Hogweed *Heracleum mantegazzanum* and Signal Crayfish *Pacifastacus leniusculus*.

Any non-native species observed during the survey were recorded. For stand-forming plant species, the extents of such stands were noted.

2.2.2.1 Other Protected Species and Environmental Constraints

During the walkover survey, any signs or sightings of other protected species were also recorded. In addition, any environmental features that might constrain the works were also recorded (e.g. access restrictions, non-native species).

3 Results

3.1 Otter Survey

The original JBA ecology survey (2011) recorded only a single spraint located beneath the Bridgefield road bridge. Subsequent to this JBA staff observed an Otter in daylight feeding in pools around the Green Bridge cascade. The 2013 survey recorded several sprainting sites and two potential places of shelter.



Figure 3-1 Spraint Distribution

The sprainting sites were more heavily clustered at the downstream end of the river, with several sites below Bridgefield (Figure 3-1), under the Salmon Lane footbridge and along the rock armour protecting the river at the beach. Upstream of Bridgefield there were just three individual spraints discovered. These were:

- On a right bank small drain discharge structure to the rear of properties on Dunnottar Avenue (Figure 3-2),
- On rock armour at the base of the Glaslaw Burn and at the downstream end of the artificial island (Figure 3-3), and
- On a right bank rock upstream of the Red bridge at the point where river and road re-converge (Figure 3-4).



Figure 3-2 Spraints beneath Bridgefield



Figure 3-3 Spraint on old discharge structure



Figure 3-4 Spraints at base of Glaslaw Burn



Figure 3-5 Most upstream recorded spraint site

In addition to these territorial markings two potential places of shelter were also discovered. These were both on the bottom reaches of the river.

The rock armour protection between river and beach has settled considerably allowing several voids to form between the larger rocks. Many of these voids could be used by an Otter; however one hole in particular had several spraints of differing ages in prominent places around it. This strongly suggests that an Otter is using this site as a holt (see Figure 3-7).

The area around the Salmon Lane footbridge is heavily disturbed with people feeding bread to ducks also inadvertently supporting a large Brown Rat population. However, Otter spraints were observed beneath the bridge on both banks. An area of grasses and other ruderal vegetation beneath the right bank abutment had been flattened, and also had a spraint mark. This suggests that this site had also been used as a couch by an Otter lying up.



Figure 3-6 Site of probable holt in rock armour and associated spraints

Both of these sites are within the tidally-influenced section of the watercourse.

There was no evidence of Otter travelling up the Glaslaw Burn from the confluence.



Figure 3-7 Otter places of shelter

3.2 Bats

Certain elements proposed as part of the flood alleviation scheme would result in some of the riverside trees alongside Carron Terrace being felled. Bats had been recorded as being active around these trees and it was suspected that a roost may be present within one of the mature Beech *Fagus sylvatica* or Lime *Tilia x europaea* trees here.

As previously mentioned it is difficult to determine accurately the presence or absence of a bat roost in a tree. This is because tree roosts may be used very infrequently and emergence times vary, meaning that observing a bat against a darkening sky and against a backdrop of branches and leaves is extremely difficult. A simple method to avoid this is to undertake a survey at dawn. Returning bats are often visible as the sky lightens, but also many bat species will congregate around roost entrances before retiring. This is believed to fulfil a social function but allows an observer to attempt to identify an entrance hole.

The ecologists used a Batbox Duet heterodyne and frequency division detector and a Batbox Griffin which is a combined heterodyne, frequency division and time expansion detectors with a built in recorder. Unfortunately bat detectors have very sensitive microphones which can be damaged if wet. Therefore, as heavy rain fell on the night of the 31st July/1st August, the dawn survey was cancelled.

However as the heavy rain had been forecast a dusk survey had been undertaken on the evening of the 30th July as a contingency measure. This highlighted bat commuting along the whole river corridor, with early sightings of Soprano Pipistrelle *Pipistrellus pygmaeus* from the rear of Dunnottar Avenue and from around 'St. James The Great' Church. Foraging appeared to be taking place in three discrete locations as shown in Figure 3-8, with the majority of activity from around the Red Bridge. Here Daubenton's Bat *Myotis daubentonii*, and Soprano and Common Pipistrelle *Pipistrellus pipistrellus* bats were particularly active.

No bats were observed to definitively emerge from the trees alongside Carron Terrace, although there were Common Pipistrelle's flying over the river by the Green Bridge in the early part of the evening before full dark.

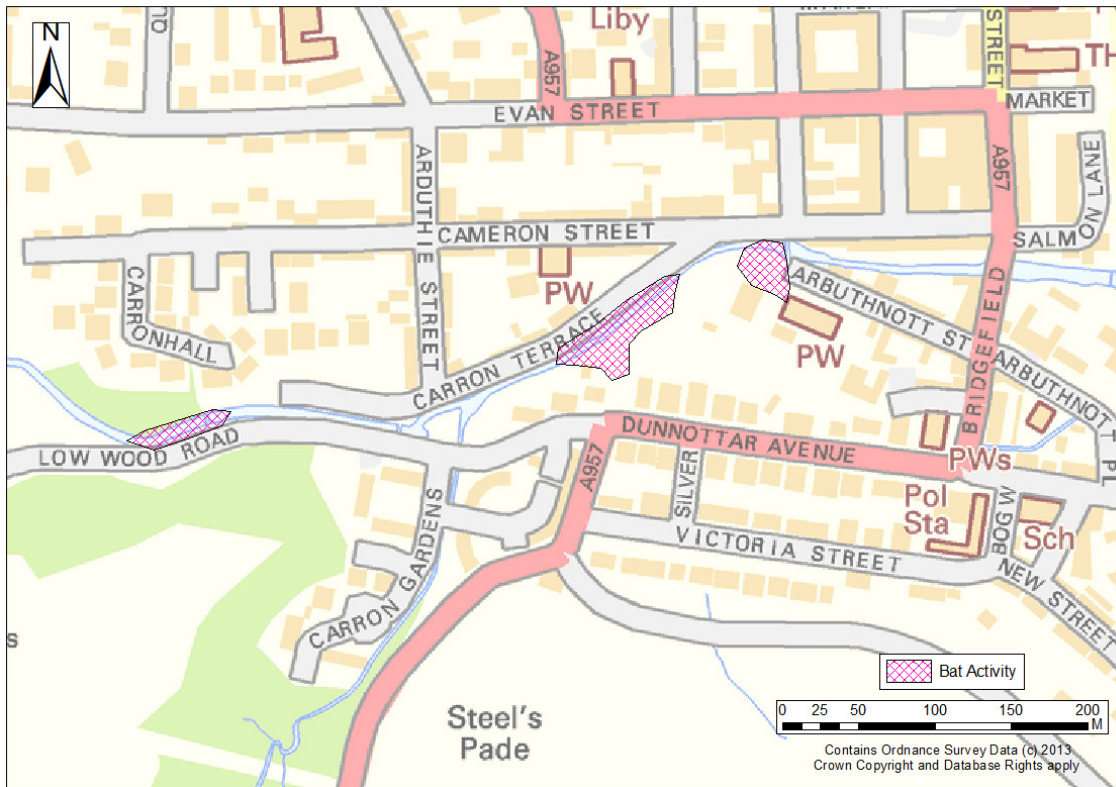


Figure 3-8 Bat activity hotspots



Figure 3-9 Line of Beech and Limes alongside upstream end of Carron Terrace

3.3 Non-native Invasive Species

There are scattered stands and some large infestations of Japanese Knotweed *Fallopia japonica*, Giant Hogweed *Heracleum mantegazzianum*, Himalayan Balsam *Impatiens glandulifera* and Montbretia *Crocsmia x crocosmiflora* present throughout the 1.65km length of river surveyed. All of these are listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to spread, or cause to spread, these plants in the wild.

Giant Hogweed in particular is prevalent, especially in the upper surveyed sections. This has formed considerable stands upstream of Woodcot Brae. Much of this is providing seed material to feed smaller patches and isolated plants developing downstream.

Himalayan Balsam is generally only present in small stands or as isolated single plants or groups of only a few plants. These are well distributed right along the river up to the tidal limits at the Salmon Lane footbridge.

Japanese Knotweed has been targeted by the local angling association over the years and riverside stands are restricted to a single infestation measuring approximately 20m in length, approximately 25m downstream of the Deil's Kettle. There is a further isolated stand at the crest of the steep right bank within the Woods of Dunnottar.

Montbretia appears as a well established group of plants between Bridgefield and Salmon Lane footbridge.

No Schedule 9 species were recorded in the Glaslaw Burn valley.

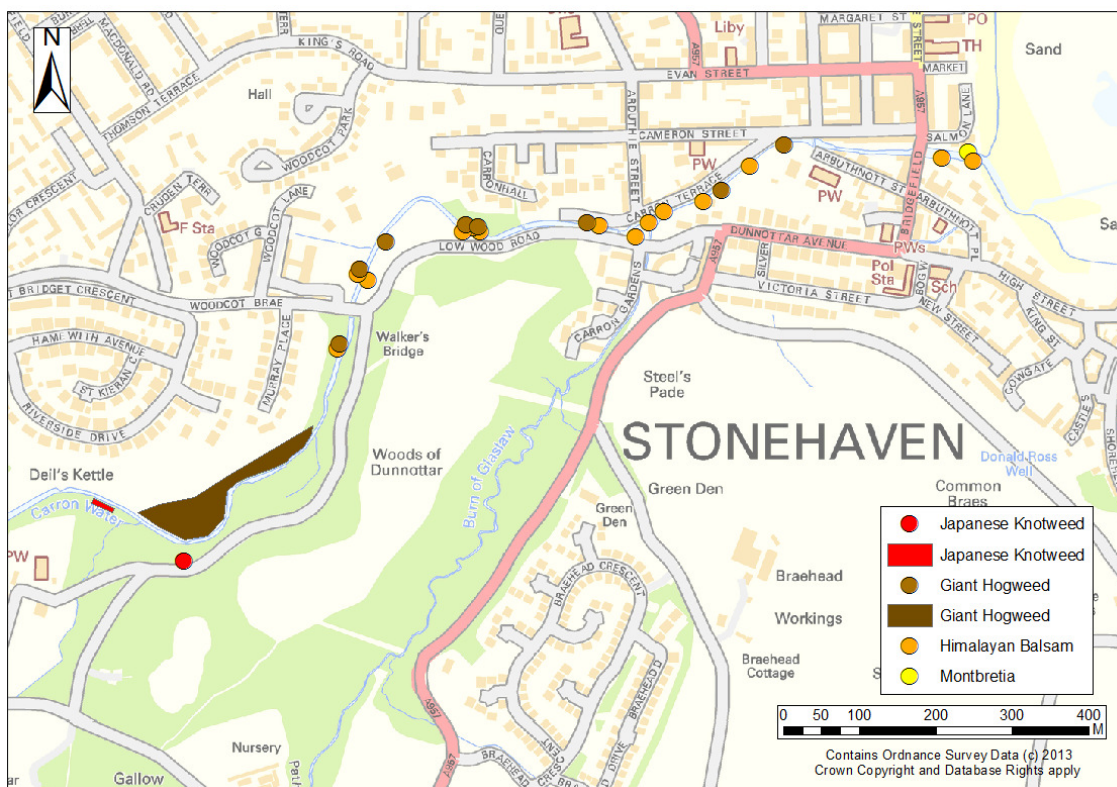


Figure 3-10 Schedule 9 invasive non-native species

4 Conclusions and Recommendations

4.1 Otter

Otter use of the River Carron appears to have increased since 2011 with activity being well-recorded in the downstream section of the river. The presence of places of shelter will require addressing should any scheme developments be proposed for downstream of Bridgefield in amongst the rock armour, or tying into the footbridge. The concentration of activity closer to the North Sea suggests that Otters foraging in the Carron are exploring from the coast and have not spread overland from other catchments.

There is no evidence to suggest that Otters are using places of shelter within the areas proposed for flood alleviation works and therefore currently no licences or additional mitigation for Otter is required.

It is recommended that the survey is repeated in advance of works commencing to ensure that Otters have not established territories in the intervening period. If Otter holts are discovered within 50m of proposed work sites, licences will be required from SNH to permit works likely to disturb Otter to take place. An application would need to be accompanied by detailed method statements and mitigation to show how impacts will be minimised.

It is considered unlikely that Otters would breed on the Carron within Stonehaven due to high levels of disturbance. It is recommended that design of flood defences includes retention of some natural bank habitat through the built-up, lower reaches of the river to encourage Otter to continue exploring the upstream habitat.

4.2 Bats

Bats are active over the river and throughout the length of river likely to be affected by the flood alleviation scheme. There are likely to be some impacts associated with the construction phase but these can be offset by undertaking works during daylight hours and not using floodlighting as security lights at site compounds. Any necessary lighting should be fitted with a directional cowl to prevent light-spill. No structures likely to support bat roosts will be affected by the proposals. However there is a risk of tree roosts being affected.

Precise bat use of the riverside trees cannot be determined without considerable survey effort. If trees can be retained without compromising the flood alleviation scheme then this option should be pursued. However, if removal of trees does prove essential, then surveys of individual trees must be carried out in advance of felling. This is likely to require considerable survey effort in order to make as robust a judgement of bat use as possible. Bat surveys can only be carried out when bats are fully active, and while bats may fly all year round, surveys should be timed for between May and September inclusive.

Should bat roosts be discovered in trees which need to be removed then SNH will have to agree mitigation measures and a method of felling which reduces the likelihood of bat disturbance or even fatalities. Only if satisfied that the scheme meets the three tests established by the Conservation (Natural Habitats &c) Regulations 1994:

- The first test is 'preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment. If the application does not meet this, or one of the other listed purposes, a licence cannot be issued.
- The second test is that there is no satisfactory alternative.
- The third test is that the action authorised will not be detrimental to the maintenance of the population of the species concerned at favourable conservation status in their natural range. (SNH, undated).

4.3 Schedule 9 Invasive Non-natives

The majority of large infestations of invasive species, including all incidences of Japanese Knotweed and the largest stands of Giant Hogweed occur upstream of the scheme. These do supply a seed or propagation material source throughout Stonehaven, but for the most part there

are only scattered small stands, or isolated plants within the area of the proposed scheme. These should be subject to a control programme prior to scheme commencement.

Himalayan Balsam can be easily controlled by pulling small stands by hand before flowering commences or by licensed application of herbicide during the growing season. Once plants have flowered it is still possible that viable seeds will be set and therefore if control is carried out after initial flowering then all material must not be removed from site. If removed prior to flowering then material can be composted and removed. If total eradication is proposed this is likely to require at least two seasons to allow the seedbank within the substrate to develop fully.

Giant Hogweed contains a phyto-toxic sap which can burn skin on contact and must therefore be treated with extreme care. Chemical treatment, under licence from SEPA, is therefore recommended. The use of an approved, translocated herbicide e.g. Roundup, is necessary to ensure that all plant material is killed including the roots. It is advised that this is carried out early in the growing season before the plants attain a great height. Again, to eradicate stands it will be necessary to repeat applications due to the presence of seeds within the ground developing in the second year.

There is a small infestation of the garden escape Montbretia adjacent to the Salmon Lane footbridge. Any arisings from the bank in this area must not be re-used as it will contain corms and other vegetative material which would spread. It is recommended that this stand is subject to herbicide application in advance of works.

Full discussion of control methods can be found in the Environment Agency: Guidance for the control of invasive weeds in or near water (EA, 2003) and within the Scottish Government's non-native species Code of Practice (2012).

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