

THE OTTER CONSULTANCY

PROPOSED DEVELOPMENT:

**ECO-POWER PROJECT
BLACKBRIDGE, MILFORD HAVEN.**

**FOLLOW-UP OTTER SURVEYS &
MITIGATION REPORT**

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A report for: EGNEDOL LTD

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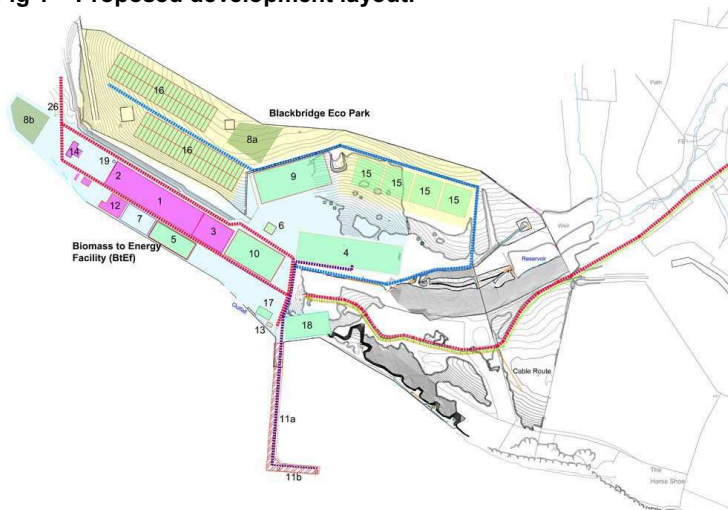
INTRODUCTION

As part of the ecological assessment for the proposal by Egnedol Ltd to develop an ecopower project at the former RNAD mine depot site at Blackbridge, an initial otter survey of the site was undertaken in 2015 (report: Geoff Liles, November 2015). The site lies alongside the Daugleddau estuary, part of the Pembrokeshire Marine/Sir Benfro Forol Special Area of Conservation (SAC); the otter (*Lutra lutra*) is a feature of the SAC.

Results from the 2015 otter survey indicated that otters utilize the reservoirs and stream at the eastern end of the site, and Castle Pill along the western boundary. Habitats that could provide otters with breeding & resting cover were identified at the two reservoirs. What could not be determined from the 2015 'one-off' survey was the otter travel route(s) between the stream & shoreline; frequency of use of the stream & reservoirs throughout the year; and whether the reservoirs support otter breeding.

Whilst otter travel through, and usage of, Castle Pill is unlikely to be affected by the proposed development, their use of the stream & reservoirs at the eastern end of the site could be significantly impacted by proposed developments. Major issues include the fact that the stream is channelled through a long culvert (approximately 116m) from its downstream end to the shoreline outflow so that it may be necessary for otters to cross open land to avoid the culvert; and that proposed developments (Fig 1) are likely to lie close to – and potentially create disturbance to – otters using the stream.

Fig 1 Proposed development layout.



For this investigation, follow-up surveys & mitigation proposals are concentrated on the stream / reservoirs and shoreline.

This report describes:

- A. Results of **follow-up surveys** to determine:
 - otter activity throughout the year;
 - otter travel routes to & through the site; and
 - usage of the potential breeding and resting site cover on the reservoirs.

- B. Otter **mitigation measures** based on these findings.

A. FOLLOW-UP SURVEYS

Otter surveys for the original 2015 investigation were carried out in the autumn. In order to determine frequency of otter activity throughout the year, and to further investigate likely otter travel routes, and usage of the potential breeding & resting site cover on the banks of the reservoirs, otter surveys were undertaken at intervals during winter (2015/16), spring & summer of 2016. Survey methodologies are described below. Surveys / investigations were carried out with great help from ExCal Ltd staff Laura Bowen, Alwyn Bowen & Mike Evans. Information collected during the survey was marked on a large scale map of the site and described in notes. Key sites were located using a hand-held GPS giving a ten figure grid reference, and photographs were taken using a digital camera.

A1 Methods

Otter Activity

Surveys for otter signs were concentrated on the two known areas frequented by otters (the stream & reservoirs, & Castle Pill) and the foreshore adjacent to the pier at Newton Noyes because otters are likely to travel along this stretch, and could get access to the site up the banks.

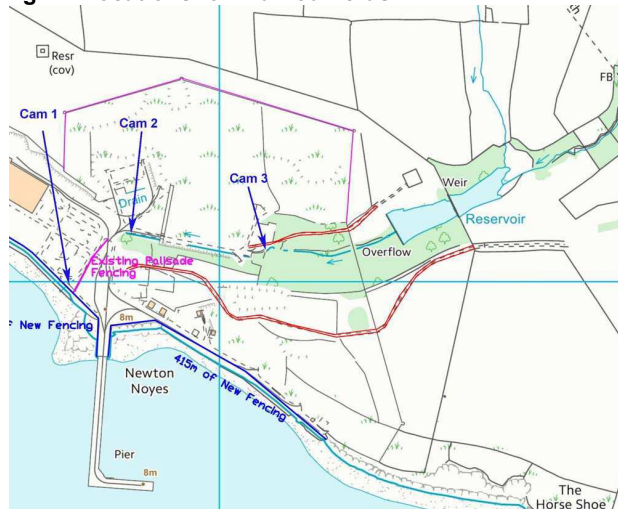
During surveys searches were made for: spraints & sprainting sites; footprints; rolling places; paths through vegetation; entry / exit points to & from water.

To give an indication of frequency of visits by otters to a sprainting site over time, spraints are categorised as:

- “Fresh” - wet & oily usually with a strong smell);
- “Recent” - compact & usually hard with some smell remaining);
- “Old” - dry, easily disintegrates & with little smell).

Trail cameras (Minox DTC 400 Slim) were positioned at key locations on the stream (Fig 2) where otter signs indicated regular usage.

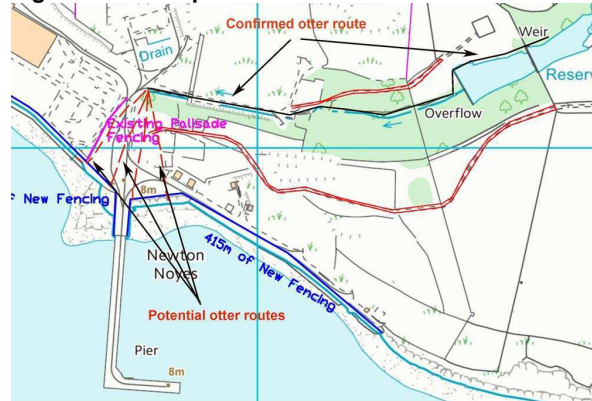
Fig 2 Locations for Trail Cameras.



Travel Routes

Confirmed & potential travel routes were identified in the 2015 survey (Fig 3).

Fig 3 Actual & potential otter travel routes



Standard otter surveys (for signs) were carried out along the confirmed route and the four potential, overland routes between the shoreline & downstream end of the stream, during every seasonal survey visit. The existing chain link fencing had been replaced with new fencing, but gaps were left at the fence bottom through which otters can travel.

To determine whether otters travel through the stream channel (as well as, or rather than along the bank top), a platform (to act as a sprainting site) with ramps was installed into the concrete stream channel (Plate 1).

Plate 1. Sprainting site installed into stream channel.



Potential Breeding / Resting site

At the time of writing the report surveys of the potential breeding / resting site (the dense scrub cover on the north bank of the reservoirs) have not been carried out to avoid potential disturbance if the cover is in use by otters.

The dense cover will be searched for evidence that it has been used as a resting or breeding site by otters (as described in Liles, 2003) when otter surveys along the stream indicate that otters are not present. To reduce damage to the bank-side cover the habitat will be approached from the water using a dry suit.

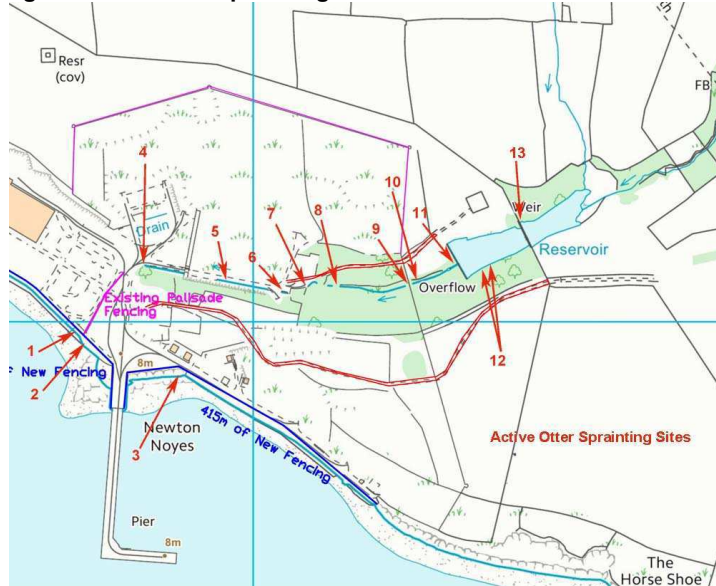
Liles, G. (2003). *Enhancing the Status of the Otter*. Conserving Natura 2000 Rivers Conservation Techniques Series No. 5. English Nature, Peterborough.

A2 Results

Otter Activity

Over the period of surveys (Sept 2015 to July 2016) a total of 13 sprainting sites (SS) were used by otters (Fig 4 for locations).

Fig 4 Active otter sprainting sites



Some sprainting sites (e.g. 7 & 10) were used frequently whilst others (e.g. 1, 2 & 4) had infrequent or seasonal use. SS 5 – the in-stream ramp – was installed on May 17th so was only available for otter use after that date (Fig 5).

Fig 5 Spraint 'ages' & numbers at sprainting sites (including results for 2015)

Date	Fresh	Recent	Old	Numbered Sprainting Sites												
				1	2	3	4	5	6	7	8	9	10	11	12	13
28/9/15	5	0	3				X		X	X		X		X		X
2/2/16	0	0	8				X			X	X	X		X		
10/2/16	1	1	8							X	X	X				X
3/3/16	0	2	6							X		X				X
6/4/16	5	3	11							X	X		X	X	X	X
14/4/16	6	4	2	X	X					X			X		X	X
21/4/16	0	4	2							X	X		X			
6/5/16	6	14	4	X	X	X				X			X		X	
4/7/16																
				Estuary						Reservoirs						

Fresh, recent and old spraints were found during each of the seasonal surveys.

At SS 4 (the grass tussock at the downstream end of the stream before it enters the long culvert to the foreshore) and site 6 (on top of the concrete stream wall) all sprainting activity ceased before the spring. Both of these sprainting sites are likely to have been used by otters when they travel along the stream bank rather than in the stream channel, because the height of the mainly vertical channel wall is 1m.

The foreshore sprainting sites (SS 1 & 2) close to the outflow were used by otters in the spring. Both sprainting sites are on large grass tussocks at the top of the sea defence wall close to the chain-link fence. Camera 1 recorded otter visits to these sites on April 30th & May 14th. By July the grass tussock sprainting sites were not being used. However, spraints were found instead on the stone sea defence wall immediately adjacent to the outflow pipe.

Travel Routes

a) Confirmed Route.

Throughout the survey period otters continued to travel along the reservoir & stream down to SS 7. The absence of spraints from the two bank-side sprainting sites downstream from Site 7 (SS 6 & 4) suggests that otters stopped using the bank top for travel from February onwards (Fig 5). The lack of otters seen at Camera 2 at SS 4 supports this.

The appearance of spraints on the in-stream ramp sprainting site (SS 5) as soon as it was installed in early May suggests that otters were then travelling in the stream channel between the foreshore & SS 7. However, it should be noted that there were no sprainting sites available to otters before the ramp site was installed.

b) Potential Routes

No evidence for otter travel along the three potential routes was found.

At one potential route – overland between the culvert outflow / SS 1 & 2 and the stream – Camera 1 caught images of an otter moving under the chain-link fence to/from the sprainting sites, but the otter did not appear to travel inland from there.

A3 Conclusions

Otters are active on the stream and reservoirs throughout the year.

When surveys started in autumn 2015 otter travel from the downstream end of the stream (SS 4) to the foreshore was probably overland. The cessation of sprainting activity at the two bank top sites (SS 4 & 6) & appearance of spraints on the in-stream sprainting site (SS 5) suggests that otters started using the long culvert for travel. This change in otter behaviour coincided with an increase in disturbance at the site (visits & habitat management).

The two foreshore sprainting sites close to the outflow were used by otters in April & May. In July, neither of these was in use, but spraint was found immediately adjacent to the outflow culvert. This pattern of usage suggests that otter use of the shoreline (for example for feeding & travel) is particularly important during the spring.

The proposed development is likely to have a significant potential impact on otter travel between the stream and the foreshore, primarily as a result of disturbance. No development or habitat management is planned for the stream and reservoirs upstream from Sprainting Site 7 so that resting sites, potential breeding sites and feeding areas will not be affected directly.

Although this is a major development that will create substantial changes to infrastructure and disturbance levels, otters should be able to continue to travel between the foreshore and stream / reservoirs if the scheme design includes appropriate mitigation measures to protect otters, otter habitats and travel.

B MITIGATION MEASURES

Please note – detailed designs for mitigation measures, or changes to designs / construction must be agreed with an otter ecologist.

Measures are needed to:

- B1** Provide **design features** that enable otters to continue use of the watercourse & reservoirs within the site;
- B2** Reduce disturbance to otters & damage to otter habitats during the **site clearance & construction phase**;
- B3** Ensure **long-term protection** for habitats associated with the watercourse & reservoir.

B1 Design Features for otters

New Culvert to outflow.

The new culvert connecting the stream to the outflow (approx 116m) must provide otters with easy and safe access. A suggested design is shown in Fig 6.

The main elements of the culvert design are:

1. Dimensions of the box culvert should be 1.5m wide x *at least* 1m high (and up to 1.5m if space allows);
2. A concrete otter ledge 600mm wide along one side, and approx 300mm high (or whatever height is needed to be above water level).
3. At the outflow end the culvert must slope down from inside the culvert at an angle of < 45° so that otter access to the ledge is straightforward;
4. Also at the outflow end, a metal grille or wide mesh fence can be installed (approx 1m inside the culvert) to prevent access to people & dogs;
5. A solid, 1.8m fence should be erected on the bank above the new culvert outflow to screen the outflow from the site;
6. At the upstream end where the stream enters the culvert it will be necessary to re-design the downstream section of the existing concrete channel to provide a wide section that can join the culvert;
7. Also at the upstream end, the otter ledge must slope down from inside the culvert at an angle of <45°;
8. At the upstream end the aim is to enable otters to either gain access to the stream, or to the bank top (via a ramp);
9. The culvert outflow & where the stream flows into the culvert must be devoid of lighting (including low-level over-spill lighting).

A proposed site layout includes two buildings (13 & 17) very close to the culvert outflow. To reduce the possibility of disturbance these buildings should be re-sited towards building 10.

Stream (SS4 to SS9)

Complete protection from disturbance must be provided for otters as they travel along the stream.

Protection from disturbance will be provided by:

1. Leaving a wide buffer zone between the stream and the new road. Drawing No EGW-01-009. December 2015 shows distances of 4.8m, 9.4m & 13.4m between stream and access road edge. To provide space for the re-designed stream channel where it meets the new culvert (see point 5 above) a space of more than the present 4.8m will be needed.
2. A solid fence of 1.8m high must be erected along the southern edge of the access road from west of the start of the new box culvert (SS4) up stream to the fence (adjacent to SS9).
3. The buffer zone area between the new fence and the stream should be left to develop as scrub.
4. The entire length of the stream must be devoid of lighting (including low-level over-pill lighting).

B2 Site Clearance & Construction Phase

All works to provide design features for otters (New Culvert to Outflow, and Stream) must be in place before site clearance & construction works begin.

Jetty Works

Construction works on the jetty are likely to impact otters through disturbance (noise, vibration & light) mainly because the culvert outflow, and SS1, SS2 and SS3 are close by.

Immediately before start of works on the jetty (including preparatory works) the culvert outflow and three sprainting sites must be checked for otter signs. If otters are active at these sites the start of work must be delayed for three days, after which the sites should be re-checked. If fresh signs are found after 3 days a further delay to start of works will be necessary until no fresh spraints are found.

Building 4

Because of the close proximity of this building & the proposed new road to the stream work in this area must be carried out during daylight hours.

Buildings 13 & 17

Because of the close proximity of these buildings to the culvert outflow & two shoreline sprainting sites, work in this area must be carried out during daylight hours.

B3 Long-term Protection for habitats associated with watercourse & reservoirs.

The design features for otters described above will provide the conditions for otters to continue to travel between the Daugleddau and the stream / reservoirs. So long as effective screens (solid, high fences) are placed at the critical sites (the culvert outflow, stream inflow into the culvert, and along the stream) otters will learn to tolerate noise and vibration during the normal operation of the Eco Park.

Stream & Reservoirs

Particular attention should be given to the long-term use and management of the stream, woodland and reservoirs.

Ideally these areas should be established as a Nature Reserve (with no or limited access) and a 10 year Management Plan drawn up to secure protection for otters and other wildlife.

Management Measures

A discussion on future management for the site with regard to otters will follow pending the results from the survey of the breeding site. Egnedol will be creating a management plan for the site and any management regarding the otters will be included in this plan.

C MONITORING

A comprehensive programme of monitoring will be required for the period during construction, and for five years following commencement of the operational phase of the development.

Monitoring must focus on an assessment of:

- Level & frequency of otter activity in each season;
- Otter use of the long otter culvert & outflow;
- Disturbance levels along the stream and foreshore between the jetty & outflow.

Results of monitoring should be assessed regularly and used to modify / improve mitigation measures where necessary.