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ECOLOGICAL CONSULTANTS
Limited Liability Partnership

Macclesfield Old Road, Buxton
Further Survey Work

August 2008

Final

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Report Contents

1 Introduction

1.1 Site Description

The site is located in the Burbage area of Buxton in Derbyshire, at Ordnance Survey grid reference SK 043 729. The site is an area comprising private dwellings and gardens, roads, a churchyard, semi-improved grassland and improved grassland bounded by dry-stone walls and fences.

1.2 Proposed Works

Severn Trent Water proposes to undertake maintenance works to the existing sewer system, using one of two methods:

- Relining, which is a trenchless technique, and will rehabilitate the structural integrity of the sewers;

- Relaying, this will involve the excavation of open trenches, in order to replace the sewers.

At present, the method to be used has not been confirmed. The results included within this report will influence the method to be adopted for these works, in order to reduce ecological impact in the site.

1.3 Aims of Study

Baker Shepherd Gillespie was originally commissioned to undertake the Phase 1 Survey of the site in November 2007 (BSG ref: 3207_002_rep_sm_gm). As a result of this survey recommendations for further survey work were made in relation to the semi-improved grassland and white-clawed crayfish *Austropotamobius pallipes.*

The stream at the north of the survey site was identified to be in the same catchment as rivers that have historical records for crayfish, as well as semi-improved grassland within the survey site that was identified as having the potential to be a valuable habitat.

Baker Shepherd Gillespie was subsequently commissioned by Grontmij in July 2008 to carry out the further survey work:

- to determine the potential of the areas of stream to be affected for white-clawed crayfish,

- and a Phase 2 vegetation survey to assess the value of the grassland to be affected by the proposed works.

2 Methodology

2.1 Desk Study

A desk study was undertaken in November 2007 as part of the original survey work with Derbyshire Wildlife Trust (the results of this desk study are included in Appendix 1). No further desk study was undertaken as the results from the previous study are still considered to be valid.

2.2 Field Survey

Ecologist Kelly Clark and Assistant Ecologist Samantha Mellor undertook the Phase 2 vegetation survey and the crayfish habitat survey on 31st July 2008. The weather was cloudy with rain showers.

A more detailed botanical survey was carried out of the areas of grassland identified on the plan to be affected by the proposed works. Detailed species lists were made for these sections, and for a 2m x 2m quadrat. The abundance of species was recorded for the quadrat area using percentage cover (the Domin scale).

An appraisal of three sections (Target Notes 1, 2 and 3, Appendix 2) of the stream for their suitability to support white-clawed crayfish was undertaken in accordance with Natural England guidelines[1].

3 Results

3.1 Desk Study

3.1.1 White-clawed crayfish

Derbyshire Wildlife Trust provided three records for white-clawed crayfish in the original data trawl, carried out in November 2007, set out in the table below.

Table 1: White-clawed crayfish data trawl results

Common Name	Latin Name	Date	Grid Ref.	Location	Distance from site
White-clawed crayfish	*Austropotamobius pallipes*	2000	SK054733	Ponds in Pavilion Gardens, Buxton	1.1 km
White-clawed crayfish	*Austropotamobius pallipes*	1999	SK040746	Tributaries of the River Wye	1.7 km
White-clawed crayfish	*Austropotamobius pallipes*	1998	SK039747	Pond near Buxton	1.8 km

3.2 Field Survey

3.2.1 Phase 2 Vegetation Survey

The two areas of grassland which could be affected by the proposed works to the pipeline are shown in Appendix 2. The first (Target Note 3, Appendix 2) is an area of amenity managed grassland within a garden. The second is an area of semi-improved neutral grassland (Target Note 4, Appendix 2), and was identified to support a valuable habitat.

[1] Peay, S. (2000) Guidance on Works Affecting White-Clawed Crayfish English Nature

The area surveyed is an area of neutral grassland. The ground is undulating with rocky outcrops in the vicinity. Yorkshire fog *Holcus lanatus* and common bent grass *Agrostis capillaris* are dominant in the area, with other species in the sward including red fescue *Festuca rubra*, white clover *Trifolium pratense*, and occasional common vetch *Vicia sativa* and greater birds-foot trefoil *Lotus pedunculatus*. The full species list of the area, including the level of abundance of each species, is given in Table 2 (below). Photographs 1 and 2 show the area where the 2m x 2m quadrat was surveyed, with Photograph 2 showing the location of the inlet to the pipeline.

Photograph 1: Area of semi-improved grassland

Photograph 2: Location of pipieline inlet

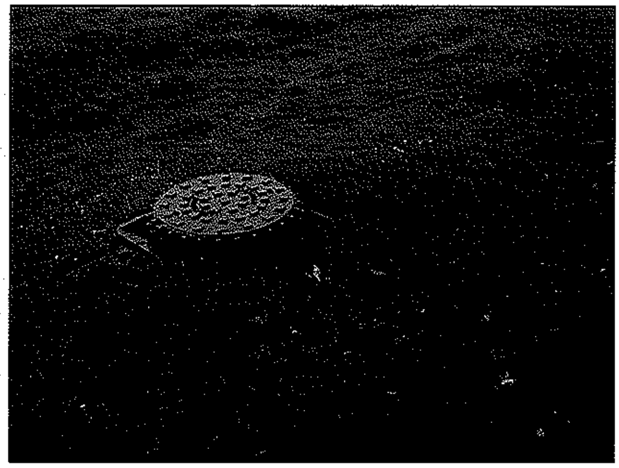

Table 2: Quadrat Species List and Species Abundance

Species common name	Species latin name	Domin scale
Dandelion	*Taraxacum officinalis agg.*	2
Creeping buttercup	*Ranunculus repens*	4
Harebell	*Campanula rotundifolia*	1
Ribwort plantain	*Plantago lanceolata*	4
Soft rush	*Juncus effusus*	4
Yorkshire fog	*Holcus lanatus*	5
White clover	*Trifolium pratense*	6
Yarrow	*Achillea millefolium*	4
Crested dogs-tail	*Cynosurus cristatus*	3
Lady's mantle	*Alchemilla mollis*	3
Perennial rye-grass	*Lolium perenne*	5
Common sorrel	*Rumex acetosa*	3
Greater birds-foot trefoil	*Lotus pedunculatus*	1
Meadow buttercup	*Ranunculus acris*	1
False oat-grass	*Arrhenatherum elatius*	3
Common bent	*Agrostis capillaris*	7
Common vetch	*Vicia sativa*	2
Red fescue	*Trifolium repens*	4
Field woodrush	*Luzula campestris*	2

3.2.2 White-Clawed Crayfish Habitat Appraisal

The stream is considered to be an optimal habitat for crayfish, with the boulders and pebbles (refer to Photograph 3) providing refugia for the crayfish, and the overhanging banks with dense vegetation cover potentially providing opportunities for the crayfish to burrow (refer to Photograph 4).

Photograph 3: View of the stream, showing pebbly substrate.

Photograph 4: View south over the stream.

4 Assessment

4.1 Potential Impacts

4.1.1 Semi-improved grassland

The Phase 2 survey of the area of grassland revealed that the area is quite species rich. It is considered that the option to reline the existing sewer would cause minimal damage to the grassland habitat, as it would not involve digging trenches. However, if the option to relay the sewer was taken, it is anticipated that there will be an adverse impact on this habitat as a result of the proposed works.

4.1.2 White-clawed crayfish

White-clawed crayfish is protected under Wildlife and Countryside Act 1981 (as amended by the CRoW Act 2000).This makes it illegal either to take it from the wild or sell it without an appropriate licence from the appropriate nature conservation agency.

In addition, white-clawed crayfish is a UK Biodiversity Action Plan Priority Species and is listed as a Species of Principal Importance under the provisions of the NERC Act 2006.

The data trawl conducted by Derbyshire Wildlife Trust in November 2007 revealed records of white-clawed crayfish for other tributaries of the River Wye within the same catchment area as the stream surveyed. It is considered that the stream is optimal habitat for white-clawed crayfish, and that any works within the stream or to the lower banks could have an adverse impact on any white-clawed crayfish, should they be present in the stream.

5 Recommendations

5.1 Semi-improved grassland

It is recommended that the relining technique is used in order to prevent any loss to the neutral grassland habitat.

If the relaying technique is used, and trenches are to be excavated, it is recommended that in order to retain the grassland habitat the area should be turf stripped, the turfs stored and re-established after works have been completed. It is recommended that a specialist contractor is commissioned for this task.

In selecting a turf storage site, the drainage and topographical characteristics must be very similar to those of the existing site. Ready access to a water supply for irrigation must be available. Storage of turfs on top of other habitats, even grassland, is unacceptable.

The whole of the existing habitat, including vegetation and associated soil horizons would need to be translocated. All segments of the habitat, include the soil horizons should be translocated and stored. This means that there is a better chance of successful re-establishment once the turfs are restored to their original positions. Most of the invertebrate communities within the soil are also translocated during this process.

The dimensions of the turfs taken should be as large as possible. This reduces edge effects such as drying out and weed invasion and increases the chance of transferring terrestrial and soil invertebrates. Turfs need to be cut out using a machine fitted with a guillotine to ensure that edges are cut cleanly. Cutting out turfs with standard plant buckets is unacceptable.

Care needs to be taken when replacing turfs, following completion of the water storage facility, to ensure a high success rate. Turfs need to be placed in the same relative positions as they were when originally cut out. This preserves any micro-habitats and subtle changes in the vegetation community. This can be achieved by suitably labelling the turfs when they are cut out. Placed turfs need to be tightly butted together to prevent drying out of edges and they need to be fully in contact with the subsoil across the whole of the base to avoid air pockets. Machinery must not run over placed turfs and care should be taken to prevent excessive movement over excavated sub-soils to avoid compaction and water logging.

Success depends on good post translocation management. Over watering of replaced turf should be avoided unless very dry conditions are encountered. Translocation should be undertaken between November and February.

Gaps within the grassland sward after translocation can be easily re-established by sowing a suitable wildflower seed mix after the proposed development is completed. The seed mix should be sourced locally and contain a diverse mix of species.

5.2 White-clawed crayfish

The habitat suitability assessment for white-clawed crayfish revealed that the watercourse within the site is optimal habitat for crayfish. If the works are to affect the watercourse directly, it is recommended that further survey work involving a manual daytime search for crayfish is carried out to determine the presence of crayfish in the stream, prior to the start of works. A torchlight survey for crayfish is also recommended, and would take place two hours after sunset using high powered torches. This further survey work would need to be undertaken before November, and in suitable weather conditions.

6 Appendix 1: Data Trawl Results

Water vole records

OS Grid Ref	Location	Date	Watercourse
SK046735	Stream that runs through Burbage Golf Course, Buxton.	1997	Un named stream
SK0473	Stream that runs through Cavendish Golf Course, Buxton	1997	Un named stream

Bat records

OS Grid Ref	Location	Date	Species
SK060722	44 White Knowle Road	1998	pipistrelle from owners description
SK048736	6 The Paddock	1999	Pipistrelle
SK060722	44 White Knowle Road	2000	Pipistrelle
sk055735	20 St John's Road	2003	Pipistrelle bat

Fresh water crayfish records

OS Grid Ref	Location	Date
SK054733	Ponds in Pavilion Gdns, Buxton	2000
SK040746	Trib of R.Wye d/s pond nr Buxton	1999
SK039747	pond nr Buxton	1998

CROW Act 2000 S74/ UK BAP Species

Song thrush	Location	Habitat	Date	OS Grid Ref
	Buxton.	Garden.	2001	SK055725
	Buxton.	Garden.	2001	SK052736

CROW Act 2000 S74/ UK BAP Species

Brown Hare	Location	Habitat	Date	OS Grid Ref
	Solomone Temple	Farmland	2001	SK055716

County Scarce plant species

Latin	Common	Location	OS Grid	Date
Antennaria dioica	Mountain Everlasting	Grin Plantation, Pooles Cavern and Grinlow Wood SSSI	SK0525718	1996
Antennaria dioica	Mountain Everlasting	Grin Plantation, Top glade, Pooles Cavern and Grinlow Wood SSSI	SK056723	15-Jun-05
Huperzia selago	Fir Clubmoss	Solomon's Temple (monad)	SK0540718	1996
Huperzia selago	Fir Clubmoss	Solomon's Temple (monad)	SK0538718	1996
Juniperus communis	Juniper	Grin Plantation	SK056723	15-Jun-05
Juniperus communis	Juniper	Unspecified	SK050719	1990
Juniperus communis	Juniper	Unspecified	SK051720	1989
Juniperus communis	Juniper	Unspecified.	SK054719	1997
Juniperus communis	Juniper	Pooles Cavern and Grinlow Wood SSSI	SK054717	1987
Juniperus communis	Juniper	Grin Wood, Pooles Cavern and Grinlow Wood SSSI	SK052719	1990
Juniperus communis	Juniper	Grin Wood, Pooles Cavern and Grinlow Wood SSSI	SK053727	1990
Juniperus communis	Juniper	Grin Wood (1), Pooles Cavern and Grinlow Wood SSSI	SK0519719	1991
Salix repens	Creeping Willow	Grin Plantation, Pooles Cavern and Grinlow Wood SSSI	SK056723	1993
Juniperus communis	Juniper	Grin Plantation	SK0572	2000
Salix repens	Creeping Willow	Grin Plantation	SK0572	2000
Fumaria muralis	Common Ramping-fumitory	Safeway & South (monad)	SK0673	1996

SSSI

Goyt Valley
Leek Moors
Poole's Cavern & Grin Low Wood

SPA

Peak District Moors (South Pennine Moors Phase 1)

SAC

South Pennine Moors

THE wildlife TRUSTS

RIGS (Regionally Important Geological Sites)

Name	Interest
Otter Hole Farm RIGS	Rare, comples and little understood Hydrology. Powerful Stream Resurgence. Dye tested connections with Stanley Moor Swallets, Shay Lodge Sinks? etc

Local Wildlife Sites

Name	Ref No	Area (ha)	Ecological feature	Easting	Northing
Stanley Moor Complex	HP074	41.63	Upland mire	809146	742496
Grin Low Grassland	HP099	22.5226	Unimproved calcareous grassland	404971	372031
COUNTESS CLIFF GRASSLAND	HP119	10.7998	Unimproved calcareous grassland	405542	371057
Beet Wood and the Beet	HP170	4.1688	Secondary broad-leaved woodland	403556	373991
Stanely Moor Reservoir	HP076	9.3932	Unimproved acid grassland	404376	371078
Otterhole Farm Fields	HP187	1.2392	Unimproved neutral grassland	404597	373235
Dale Road Grassland	HP188	0.7639	Unimproved neutral grassland	406264	372997
Cutting Area H	HP194		Fungi assemblage		

Semi natural grassland sites

Name	Ref No	Area (ha)	Ecological feature	Easting	Northing
Grin Low South	HP CWS	16.2357	Unimproved neutral grassland	405352	371558
Dale Road Grassland	HP CWS	0.7639	Unimproved neutral grassland	406264	372997
Anncroft Meadows and Stream	HP182	1.6515	Unimproved neutral grassland	403711	372212
Otterhole Farm Fields	HP CWS	0.2481	Unimproved neutral grassland	404597	373235
Grin Low Grassland	HP Grassland	9.6494	Unimproved neutral grassland	405357	371871
Stanley Moor	HP074	20.9013	Semi-improved calcareous grassland	404628	371149

Potential Local Wildlife Sites (Potential Local Wildlife Sites are sites that have been identified as having nature conservation interest, but where that interest has not been fully assessed against the Wildlife Site Selection Guidelines.)

Name	Ref	Area (ha)	Ecological feature	Easting	Northing
Grin Low South	HP CWS	13.31	Unimproved neutral grassland	405352	371558
Turncliff Common	HP CWS	66.27	Rush-pasture	404066	370761
Anncroft Meadows and Stream	HP182	1.65	Rush-pasture	403701	372270

Other recorded sites of interest

Name	Ref No	Area (ha)	Easting	Northing
Fern Wood	HP059/3	1.7	405890	371590
Corbar Woods	HP019/3	8.09	405242	374085
Burlington Road Garden Pond	HP097/3	0.30ha	405400	373083
London Road Factory Site	HP083/3	1.70ha	405821	372481
Grin Quarry Tip	HP136/3	1064ha	404342	372480
Sherbrook Plantation	HP058/3	3.29	406094	372092
Burbage Edge Plantation	HP077/3	32.37	403238	373440
Grin Low Pond	HP098/3	0.08	405143	371893

Ancient Woodland Site from the Ancient Woodland Inventory

Ancient & Semi-Natural Woodland

7 Appendix 2: Survey Area Location Map