

# Appendix 9.6

## Great Crested Newts



Hallam Land Management Ltd

**Great Wilsey Park, Haverhill, Suffolk**

**Great Crested Newt Survey Report**

**Appendix 9.6**

August 2015

**FPCR Environment and Design Ltd**

Registered Office: Lockington Hall, Lockington, Derby DE74 2RH

Company No. 07128076. [T] 01509 672772 [F] 01509 674565 [E] [mail@fpcr.co.uk](mailto:mail@fpcr.co.uk) [W] [www.fpcr.co.uk](http://www.fpcr.co.uk)

This report is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without the written consent of FPCR Environment and Design Ltd. Ordnance Survey material is used with permission of The Controller of HMSO, Crown copyright 100018896.

Rev	Issue Status	Prepared / Date	Approved/Date
-	Draft 1	TJL 15.01.2015	
	Final	MJ 09.06.2015 REH 09.06.2015	DAH 22.08.15

**CONTENTS**

1.0 INTRODUCTION .....	1
2.0 LEGISLATION .....	1
3.0 METHODOLOGY .....	3
4.0 RESULTS .....	7
5.0 DISCUSSION & RECOMMENDATIONS.....	10
6.0 MITIGATION & ENHANCEMENTS .....	10

**TABLES**

Table 1: Habitat Suitability Index Scores and Waterbody Suitability

Table 2: Survey Dates and Weather Conditions 2014 & 2015

Table 3: Determining Population Size Class (Great Crested Newt Mitigation Guidelines, 2001)

Table 4: Summary of HSI Scores 2014 & 2015

**FIGURES**

Figure 1: Waterbody Location Plan

**APPENDIX**

Appendix A: Habitat Suitability Assessment

Appendix B: Aquatic Survey Results 2014

Appendix C: Aquatic Survey Results 2015

Appendix D: Water body Descriptions

Appendix E: Pollution Prevention Guidelines (PPG5)

## 1.0 INTRODUCTION

- 1.1 The following report has been prepared by FPCR Environment and Design Ltd on behalf of Hallam Land Management Ltd. It provides details of the results of Great Crested Newt (GCN) *Triturus cristatus* surveys which were undertaken at Great Wilsey Park, Haverhill, Suffolk (central OS grid ref: TL 689461) hereafter referred to as “the site”.
- 1.2 This document provides the results of aquatic GCN presence/absence surveys, to inform a planning application for a residential development which would include residential dwellings, associated infrastructure, public and community space with retail, health and education facilities. This report provides the results of the aquatic GCN surveys completed during April and May in 2014 and 2015, on waterbodies within a 500m radius of the site.

### Site Context & Location

- 1.3 The site is located within an arable landscape, on the north-eastern outskirts of the town of Haverhill and can be accessed via a number of points from the A143 to the north-west, Chalkstone Way at the south and Sturmer Road, Kedington to the east. Arable land continues northwards beyond the site with roads, residential housing and gardens to the south and east. The site can be accessed via a network of public footpaths that crisscross the site.
- 1.4 The site is dominated by arable and pasture fields with species rich field margins and hedgerows. Mixed and broad-leaved plantation woodland are present as well as areas of new and established tree planting. Small copses and tree lines are present at field boundaries, with field margins comprising of semi-improved neutral grassland.
- 1.5 The initial development boundary in 2014 extended approximately 54ha, however at the end of May 2014 a new site boundary was produced which expanded the size of the site to 168.34ha. This subsequently meant that the surveys undertaken in 2014, would need to be redone with a large catchment area of ponds in 2015. The document records the results of both these surveys, with focus on the 2015 data.
- 1.6 Two waterbodies were present inside the site boundary (P3 and P3a, Figure 1), with a further twenty within 500m of the site boundary.

## 2.0 LEGISLATION

- 2.1 Great crested newts are afforded full protection under the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010 (as amended). They are also a Species of Principal Importance in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and are listed as a priority species within Suffolk.
- 2.2 Under Regulation 41 of the Conservation of Habitats and Species Regulations 2010 (as amended) it is illegal to:
- Deliberately capture, injure or kill any wild animal of a European Protected Species (EPS),
  - Deliberately disturb wild animals of an EPS (affecting ability to survive, breed or rear young) – disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young,

- Deliberately disturb wild animals of an EPS (impairing ability to migrate or hibernate) – disturbance of animals includes in particular any disturbance which is likely to impair their ability in the case of hibernating or migratory species to hibernate or migrate,
- Deliberately disturb wild animals of an EPS (affecting local distribution and abundance) – disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong,
- Deliberately disturb wild animals of an EPS (whilst occupying a structure or place used for shelter or protection) – intentionally or recklessly disturb any wild animal while it is occupying a structure or place which it uses for shelter or protection,
- Damage or destroy a breeding site or resting place of a wild animal an EPS.

2.3 Under the Wildlife and Countryside Act 1981 (as amended) it is legal to:

- Recklessly or intentionally kill, injures or take any wild animals included in Schedule 5.
- Recklessly or intentionally damage or destroy, or obstruct access to any structure or place which any wild animal included in Schedule 5 uses for shelter or protection,
- Recklessly or intentionally disturb any such animal while it is occupying a structure or place which it uses for shelter or protection.

### 3.0 METHODOLOGY

#### Desk Study

- 3.1 In order to compile existing baseline information, relevant ecological information was requested from Suffolk Biological Records Centre for records of GCN within 1km of site.
- 3.2 Further inspection, using colour 1:25,000 OS base maps ([www.ordnancesurvey.co.uk](http://www.ordnancesurvey.co.uk)) and aerial photographs from Google Earth ([www.maps.google.co.uk](http://www.maps.google.co.uk)), was also undertaken in order to provide additional context and identify any water bodies within 500m of the site boundary.

#### Habitat Suitability Index (HSI)

- 3.3 Where access was granted and where there were no barriers to dispersal, waterbodies within a 500m radius of the site were assessed, using the HSI for their potential suitability for great crested newts.
- 3.4 The Habitat Suitability Index provides a measure of the likely suitability that a waterbody will support newts (*Evaluating the suitability for the Great Crested Newt*, Herpetological Journal 10(4); Oldham *et al*). In general, waterbodies with a higher score are more likely to support great crested newts than those with a lower score and there is a positive correlation between HSI scores and waterbodies with newts recorded. Ten separate attributes are assessed for each waterbody:
- Geographic location
  - Pond area
  - Pond drying
  - Water quality
  - Shade
  - Presence of waterfowl
  - Presence of fish
  - Number of linked ponds
  - Terrestrial habitat
  - Macrophytic coverage
- 3.5 A score is assigned according to the most appropriate criteria level set within each attribute and a total score calculated of between 0 and 1. Waterbody suitability is then determined according to the following scale:

**Table 1: Habitat Suitability Index Scores and Waterbody Suitability**

HSI Score	Waterbody Suitability
<0.5	Poor
0.5 - 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

- 3.6 An assessment of the suitability of the terrestrial habitats to support great crested newts was completed within the subject site. Suitable terrestrial habitat includes shelter habitat such as scrub and rank vegetation and habitat that could provide suitable hibernation sites such as rubble piles or tussock grassland.

### **Aquatic Surveys**

- 3.7 Survey methods follow those recommended by Natural England as detailed in the Great Crested Newt Mitigation Guidelines (English Nature, 2001). To determine the presence or absence of GCNs, four survey visits were undertaken between April and May 2014 and 2015. On each survey occasion three of a possible four different survey techniques were employed (egg searches, sweep netting, bottle trapping and torching). A summary of these techniques is detailed below.

#### Bottle Trapping:

- 3.8 Bottle traps are set within the waterbody in the evening at densities of one trap per two meters of shoreline (where feasible) and left overnight for inspection in the morning. Traps are partially submerged in the water leaving an air bubble in the bottle and secured by a cane marked with a high visibility tape to ensure relocation the following day. Care is taken to ensure that trapping does not occur during excessively warm weather, when the temperature inside the trap could rise considerably, reducing oxygen levels and potentially suffocating the newts.

#### Sweep Netting:

- 3.9 Long handled sweep-nets are used to sample the margins of the waterbody for GCNs with approximately 15 minutes of netting per 50m of shoreline.

#### Torching:

- 3.10 Torching involves searching the waterbody after dusk using high-powered torches to scan the margins and potential display areas for newts. The perimeter of the waterbody are walked slowly spending approximately 15 minutes torching each 50m of shoreline recording any newts observed. Torch surveys are unsuitable within heavily vegetated and/or turbid Waterbody or after periods of heavy rain as visibility is diminished.



Egg Searching:

- 3.11 Newts lay single eggs on leaves of aquatic plants or other suitable pliable material, after which the material is folded over the egg to protect it. GCN eggs can be distinguished from those of other newts by their size, shape and colour. Submerged vegetation was examined for newt eggs and folded leaves gently opened to check for eggs. Once a GCN egg is identified, no further leaves need to be examined to minimise any further potential disturbance.
- 3.12 Appropriately licenced ecologists from FPCR completed all of these surveys during suitable conditions i.e. when the ambient air temperature exceeds 5°C, with little/no wind and no rain.

**Table 2: Survey Dates and Weather Conditions 2014 & 2015**

Survey Dates	Weather Conditions
2 <sup>nd</sup> April 2014	Rain prior to and during survey, with a medium wind. Temperature at 11.5°C.
24 <sup>th</sup> April 2014	No rain with slight breeze. Temperature at 16°C.
29 <sup>th</sup> April 2014	Rain prior to and during survey, with a medium wind. Temperature at 14 °C.
27 <sup>th</sup> May 2014	Rain prior to and during survey, with a medium wind. Temperature at 11 °C.
2015	
13 <sup>th</sup> April 2015	Sunny during survey, with a medium wind. Temperature at 13°C.
23 <sup>rd</sup> April 2015	No rain with slight breeze. Temperature at 15°C.
07 <sup>th</sup> May 2015	Rain prior to and during survey, with a slight breeze. Temperature at 16 °C.
11 <sup>th</sup> May 2015	Sunny during survey, with a slight breeze. Temperature at 21 °C.

**Population Size Class Assessment**

- 3.13 Population size class assessments are based on the highest maximum, (peak) count of adult GCNs observed on any one survey occasion. The below table details the population size class assessment.

**Table 3: Determining Population Size Class (Great Crested Newt Mitigation Guidelines, 2001)**

<b>Population Size Class</b>	<b>Peak counts</b>
Low Population	0 – 10 animals
Medium Population	11 – 100 animals
High Population	> 101 animals

**Limitations**

- 3.14 Over the survey period it was not possible to survey all of the ponds identified within 500m of the site boundary. This was due to either access being refused by land owner or the land owner of the pond was not registered with the Land Registry. Where land owner were unknown surveys of ponds to confirm the presence / absence of GCN was not completed due the potential legal implications of 'trespass'. The above restriction resulted in ponds 7, 9, 10, 11, 13 and P17 not being surveyed during 2015. Whilst surveys were not completed in these ponds the level of survey effort applied across the search area is considered to be reasonable within accessible ponds. In addition overcompensation of suitable habitat for GCN has been provided. Consequently, the restrictions to survey third party ponds has not been identified as a significant constraint to the assessment of potential effects or the mitigation provided.
- 3.15 Access to pond P1 could only be gained along the southern bank due to steep sides and the pond had a concrete base which made bottle trap installation difficult. Bottle trapping beyond the shallows of P2 was also difficult due to the gravelly nature of the base and steep banks, in addition torching of this pond as limited due to the cover of duck weed.

## 4.0 RESULTS

### Desk Study

#### Desk Study

- 4.1 No GCN records were returned from Suffolk Biological Records within the site boundary or within 1km of the site boundary.

### Field Surveys (Figure 1)

- 4.2 Twenty two water bodies were identified in total within 500m of the site boundary. Two water bodies occur within the site boundary and a further twenty are located off-site within 500m of the site boundary. No surveys were completed on ponds P18, P19 and P20 as these water bodies were present to the northwest of the site across Haverhill Road (A142) which is considered to be a barrier to dispersal, these ponds are therefore not considered further within this report. Pond P21 identified upon the OS map is no longer present.

### Habitat Suitability Assessment (Appendix 1)

- 4.3 A HSI was calculated for accessible ponds P1, P2, P3, P3a, P4, P5, P6, P8, P12, P14, P15 and P16. Table 4 below presents a summary of the results of this assessment.

Table 4: Summary of HSI Scores 2014 & 2015

Waterbody	Score	Suitability
<b>2014</b>		
P1	0.43	Poor
P2	0.62	Average
P3	0.74	Good
P3a	0.52	Below Average
P4	0.42	Poor
<b>2015</b>		
P1	0.67	Average
P2	0.49	Poor
P3	0.59	Below Average
P3a	0.45	Poor
P4	0.59	Below Average

P5	0.21	Poor
P6	0.62	Average
P7	No Access	
P8	0.63	Average
P9	No Access	
P10	No Access	
P11	No Access	
P12	0.42	Poor
P13	No Access	
P14	Dry	
P15	0.42	Poor
P16	Dry	
P17	No Access	

- 4.4 Pond P5 was located 500m from the proposed development site boundary. This pond was a manmade water feature with a concrete base and steep vertical sides, paved margins holding approximately 6 inches of water. The Habitat Suitability Assessment of this pond was poor. Consequently due to the distance of the pond from the site and pond suitability no further survey was carried out on this water body.

#### **Water body Descriptions**

- 4.5 A full description of the water bodies can be found in Appendix D.

#### **Terrestrial Habitats on Site**

- 4.6 The majority of the site comprised of arable land, unsuitable terrestrial habitat for great crested newts. However suitable terrestrial habitat for great crested newts were present within the improved grassland compartments, woodland, as well as hedgerows/ dry ditches around the fields and the narrow field margins which were not subjected to as intense cutting regimes. A small watercourse runs through the centre of the site, although this was dry the majority of the survey period, the steep vertical bank side in some sections could provide a barrier to dispersal. For a more detailed habitat description please refer to the FPCR Ecological Appraisal (Appendix 9.1).

#### **Aquatic Presence/Absence Surveys**

- 4.7 During 2014 five water bodies (P1, P2, P3, P3a and P4) were granted access to undertake aquatic surveys. In 2015 a total 11 ponds were granted access to undertake aquatic surveys (P1,

P2, P3, P3a, P4, P6, P8, P12, P14, P15 and P16. During the 2014 and 2015 survey season a total of four aquatic surveys were completed on these ponds. No great crested newts were recorded in any of the ponds. Ponds P12, P14, P15 and P16 were completely dry or dried during the survey period. Full survey results can be found in Appendix 2 and 3.

- 4.8 As an incidental result of the aquatic surveys a medium population of smooth newts *Lissotriton vulgaris* were confirmed within water bodies P2, P3, P3a and P4 during 2014. During 2015 smooth newts were identified within ponds P2 (peak count of 5 on 7<sup>th</sup> May 2015), P3 (peak count of 13 on the 23<sup>rd</sup> April 2015), P4 (peak count of 12 on the 13<sup>th</sup> April 2015), P6 (peak count of 8 on the 7<sup>th</sup> May 2015) and P8 (peak count of 2 on the 13<sup>th</sup> April 2015, again an overall medium population).
- 4.9 In addition a population of stickleback *Gasterosteus aculeatus* present during the aquatic surveys of 2015 within P4 and P8.
- 4.10 During the 2015 surveys common toad *Bufo bufo* and common frog *Rana temporaria* were identified within P1, P4, P6 and P8. Additionally frog spawn was identified within P2.

## 5.0 DISCUSSION & RECOMMENDATIONS

- 5.1 Suitable terrestrial foraging and commuting habitat for great crested newts was present within the site but limited to areas of improved grassland, field margins, hedgerows and woodland. From the complete survey work no great crested newts were identified during the 2014 and 2015 aquatic surveys within the accessible ponds.
- 5.2 Access to P7, P9, P10, P11, P13 and P17 was not permitted by the owners. However, P7, P9, P13 and P17 all occur over 280m from the development site boundary. Research conducted by English Nature (now Natural England) in 2004 (*English Nature Research Report Number 576*) to assess the value of different habitats for GCN states that a “maximum migratory range has been estimated as 250m from a pond (Franklin, 1993; Oldham and Nicholson, 1986; Jehle, 2000), although one study has estimated this range to be only approximately 150m (Jehle and Arntzen, 2000).” Consequently, due to the distance of the site from these ponds it is not considered if GCNs were present with these ponds that they would travel to the proposed development site to utilise the suitable areas of terrestrial habitat as better quality suitable terrestrial habitat occurs within 100m of these ponds which would more likely to be utilised by GCNs if they were present within these ponds.
- 5.3 P10 and P11 occur 50m from the development site, however these are present across the B1061 which is considered to be a barrier to dispersal. Consequently it has been concluded that GCN would be unlikely to utilise the habitats within the proposed site boundary if present within these water bodies.
- 5.4 In conclusion great crested newts are not considered a statutory constraint to the development.

### Other Species

- 5.5 Smooth newts were identified during P2, P3, P3a, P4, P6 and P8. This species is afforded protection from sale only under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). As such, there is no statutory constraint to development in relation this species.
- 5.1 Common toad (a Species of Principal Importance) was identified off-site within P1, P4, P6 and P8. Mitigation and enhancement measure for this species are proposed below.

## 6.0 MITIGATION & ENHANCEMENTS

- 6.1 Construction works and pollution of surface water run-off could result in pollution of the ponds, field ditches and water course. To ensure there are no potential negative effects to the quality of the water all operations will be undertaken in accordance with standard guidance provided in the Environmental Agency Guidelines PPG5 Pollution Prevention Guidelines, see Appendix D. In addition the drainage strategy should be designed to ensure that surface water run-off is suitably treated prior to discharge.
- 6.2 National Planning Policy Framework NPPF – NPPF places emphasis on sustainable development, and minimising impacts on biodiversity whilst providing net gains in biodiversity where possible, contributing to the Government’s commitment to halt the overall decline in biodiversity. Opportunities to incorporate biodiversity in and around developments should be encouraged.
- 6.3 The proposed development will include strong green linkages across the site. Within the green infrastructure additional ponds, species rich grassland and woodlands will be created this will

increase the habitats available and increase the potential range by increasing connectivity for amphibians and other species across the site. To increase the biodiversity potential of the ponds they should be designed where possible to incorporate; a shallow sloping gradient, marginal shelves, aquatic planting, and seeding of the banks with species rich grassland. The implementation of these habitat enhancements will increase potential diversity of insects using the site and in turn will provide a significant foraging resource for amphibians and many other species such as reptile and mammal species. These areas should be managed in an ecologically sensitive manner to enhance the nature conservation value.

- 6.4 Additional habitats suitable for use by invertebrate and amphibian species can be provided by creating log piles which could be located within the green linkages at the base of hedgerows/ areas of woodland planting and grassland. The piles can be created with the wood generated through maintenance of trees / woodlands within the site. These structures would benefit amphibians by providing places of shelter and or rest and potential hibernation opportunities along with increasing habitat for invertebrates.
- 6.5 It is also recommended that dropped curbs are installed within the residential development in order to aid the movement of this species across the site.

**APPENDIX A: HABITAT SUITABILITY ASSESSMENT**

Pond Number	SI-1		SI-2		SI-3		SI-4		SI-5		SI-6		SI-7		SI-8		SI-9		SI-10		HSI Score	
	Geographical Location		Pond Area		Pond Drying		Water Quality		Shade (perimeter)		Fowl		Fish		Ponds		Terrestrial Habitat		Macrophytes		HSI score	Pond suitability
	Field result (A,B,C)	SI score	Field result (m2)	SI score	Field result	SI score	Field result	SI score	Field result (% cover)	SI score	Field result	SI score	Field result	SI score	Field result	SI score	Field result	SI score	Field result	SI score		
2014																						
1	A	1	800	0.98	Never	0.9	Poor	0.33	25	1	Minor	0.67	Major	0.01	9	0.91	Poor	0.33	5	0.35	0.43	Poor
2	A	1	160	0.3	Never	0.9	Poor	0.33	5	1	Absent	1	Absent	1	9	0.91	Poor	0.33	2	0.3	0.62	Average
3	A	1	150	0.3	Sometimes	0.5	Moderate	0.67	30	1	Absent	1	Absent	1	7	0.85	Moderate	0.67	60	0.9	0.74	Good
3a	A	1	6	0.05	Sometimes	0.5	Poor	0.33	0	1	Absent	1	Absent	1	5	0.72	Moderate	0.67	5	0.35	0.52	Below Average
4	A	1	360	0.7	Never	0.9	Poor	0.33	0	1	Minor	0.67	Major	0.01	4	0.67	Poor	0.33	30	0.6	0.42	Poor
2015																						
1	A	1	300	0.6	Never	0.9	Moderate	0.7	30	1	Minor	0.7	possible	0.7	9	0.9	Moderate	0.7	15	0.5	0.73	Good
2	A	1	50	0.1	Rarely	1	Poor	0.3	30	1	Absent	1	possible	0.7	9	0.9	Moderate	0.7	15	0.5	0.56	Below Average
3	A	1	120	0.2	Rarely	1	Moderate	0.7	80	0.6	Absent	1	Absent	1	7	0.9	Good	1	60	0.9	0.76	Good
3a	A	1	6	0.1	Rarely	1	Poor	0.3	5	1	Absent	1	Absent	1	5	0.7	Moderate	0.7	2	0.3	0.55	Below Average
4	A	1	420	0.8	Rarely	1	Moderate	0.7	0	1	Absent	1	Minor	0.3	4	0.7	Moderate	0.7	45	0.8	0.75	Good
5	A	1	0.1	0.1	Never	0.9	Poor	0.3	0	1	Absent	1	Absent	1	5	0.7	Bad	0	0	0.3	0.36	Poor
6	A	1	160	0.3	Sometimes	0.5	Moderate	0.7	50	1	Absent	1	Absent	1	7	0.9	Moderate	0.7	50	0.8	0.73	Good
7	No Access																					
8	A	1	200	0.4	Never	0.9	Moderate	0.7	10	1	Minor	0.7	Absent	1	6	0.8	Moderate	0.7	15	0.5	0.72	Good
9	No Access																					
10	No Access																					
11	No Access																					
12	A	1	20	0.1	Rarely	1	Poor	0.3	100	0.2	Absent	1	Absent	1	5	0.7	Moderate	0.7	75	1	0.53	Below Average
13	No Access																					
14	Dry																					
15	Dry																					
16	Dry																					
17	No Access																					



**APPENDIX B: AQUATIC SURVEY RESULTS 2014**

Survey Date	Pond Reference	Bottle trapping	Torching	Netting	Egg Search	Incidental Results
02/04/2014	P1	N/A	0	N/A	N/A	5 common toad, 20 common frog, fish
	P2	0	N/A	N/A	None	12 male & 4 female smooth newts (bottle trapping)
	P3	0	0	N/A	None	7 male & 4 female smooth newts (bottle trapping), 23 unknown smooth newt (torching), 5 common toad, 10 common frog
	P3a	0	0	N/A	None	1 female smooth newt
	P4	0	0	N/A	None	6 male & 9 female smooth newt (bottle trapping), 7 unknown smooth newts (torching), 101 common frog, 20 common toad, fish
24/04/2014	P1	0	0	N/A	None	Fish and common frogs seen
	P2	0	0	N/A	None	5 male smooth (bottle)
	P3	0	0	N/A	None	3 male and 10 female smooth (torching); 3 male and 9 female smooth (bottle)
	P3a	0	0	N/A	None	
	P4	0	0	N/A	None	8 male & 5 female smooth (torch); 5 male & 4 female smooth. Fish seen
29/04/2014	P1	0	0	N/A	None	3 common frog
	P2	0	0	N/A	None	
	P3	0	0	N/A	None	3 male and 3 female smooth (bottle trapping) and 3 male & 17 female smooth.
	P3a	0	0	N/A	None	Invertebrates seen

Survey Date	Pond Reference	Bottle trapping	Torching	Netting	Egg Search	Incidental Results
	P4	0	0	N/A	None	7 male and 5 female smooth (Bottle), 5 male and 3 female smooth (Torch)
27.05.2014	P1	0	0	N/A	None	1 common frog
	P2	0	0	N/A	None	11 smooth male & 2 female smooth(Bottle trapping).
	P3	0	0	N/A	None	1 male & 3 female smooth newt
	P3a	0	0	N/A	None	
	P4	0	0	N/A	None	3 male & 1 female smooth newt during bottle trapping, and 3 male and 7 female smooth during torch survey. 2 common frog.

**APPENDIX C: AQUATIC SURVEYS RESULTS 2015**

Survey Date	Pond Reference	Bottle trapping	Torching	Netting	Egg Search	Incidental Results	
13/04/15	P1	0	0	N/A	None	1 common frog, 1 common toad	
	P2	0	N/A	0	None	Frog spawn	
	P3	0	0	N/A	None	6 male, 1 female smooth newt (bottle trapping), 5 male, 2 female smooth newt (torching)	
	P3a	0	0	N/A	None	None	
	P4	0	0	N/A	None	2 male, 2 female smooth newt (bottle trapping), 3 male, 7 female, 3 unknown smooth newt (torching), 1 common frog	
	P6	0	0	N/A	None	1 male, 3 female smooth newt (torching), 2 common toad, stickleback	
	P8	0	0	0	N/A	2 female smooth newt (torching), 3 common frog	
	P12	0	0	0	N/A	None	
	P14	Dry					
	P15	0	0	0	N/A	None	
	P16	Dry					
23/04/2015	P1	0	0	N/A	None	None	
	P2	0	0	N/A	None	None	
	P3	N/A	0	N/A	N/A	3 male, 9 female, 1 unknown smooth newt (torching)	
	P3a	0	0	N/A	None	None	

Survey Date	Pond Reference	Bottle trapping	Torching	Netting	Egg Search	Incidental Results	
	P4	0	0	N/A	None	1 male smooth newt (bottle trapping), 2 male, 6 female smooth newt (torching), 2 common toad, stickleback	
	P6	0	0	N/A	None	3 male, 4 female smooth newt (bottle trapping), 3 male, 3 female smooth newt (torching)	
	P8	N/A	0	N/A	N/A	1 female smooth newt (torching), 2 common frog, stickleback	
	P12	Dry					
	P14	Dry					
	P15	Dry					
	P16	Dry					
07/05/2015	P1	0	0	N/A	None	4 common toad	
	P2	0	0	N/A	None	None	
	P3	0	0	N/A	None	4 male smooth newt (bottle trapping), 3 male, 7 female smooth newt (torching)	
	P3a	0	0	N/A	None	None	
	P4	0	0	N/A	None	3 male, 4 female smooth newt (bottle trapping), 2 female smooth newt (torching), 200 common frog	
	P6	0	0	N/A	None	4 male, 4 female smooth newt (bottle trapping), 3 male, 5 female smooth newt (torching)	
	P8	0	0	N/A	None	None	
	P12	0	0	N/A	None	None	
	P14	Dry					
	P15	Dry					

Survey Date	Pond Reference	Bottle trapping	Torching	Netting	Egg Search	Incidental Results	
	P16						
11/05/2015	P1	0	0	N/A	None	None	
	P2	0	0	N/A	None	2 male, 3 female smooth newts (torching)	
	P3	0	0	N/A	None	4 male, 1 juvenile smooth newt (bottle trapping), 2 male, 3 female smooth newt (torching)	
	P3a	0	0	N/A	None	None	
	P4	0	0	N/A	None	5 male, 5 female smooth newt (bottle trapping), 3 male, 4 female smooth newt (torching), 3 common toad, 3 common frog	
	P6	0	0	N/A	None	1 male smooth newt (bottle trapping), 2 common toad, 3 common frog	
	P8	0	0	N/A	None	2 common frog, 2 common toad	
	P12	0	0	N/A	None	None	
	P14	Dry					
	P15	Dry					
	P16	Dry					

## APPENDIX D: WATERBODY DESCRIPTIONS

### Waterbody P1

- 6.6 This waterbody was a moat located in the garden connected to Great Wilsey Farm. The habitat immediately around that moat consisted of amenity grassland, which had been intensively managed and tree planting surrounding the waterbody. Habitat within the island at the centre was similar to that surrounding the waterbody, with amenity grassland bounded by trees on the water edge. The moat was approximately 65m from site, and was separated by a further compartment of amenity grassland, arable field and farmhouse driveway.

### Waterbody P2

- 6.7 P2 was a pond located within the grounds of Great Wilsey Farm approximately 12m from site across a dirt track. A stone wall was present on the southern bank of the pond. Located within close proximity were buildings associated with agricultural activities and also served as housing for ponies. A gaggle of geese was present in the area throughout visits, however these were not observed utilising the pond during times of survey.

### Waterbody P3 (on-site)

- 6.8 P3 was a pond located within the site boundary on the southern edge of the woodland compartment at the centre of site. It was heavily shaded by trees, with vegetation including soft rush *Juncus effusus*, pendulous sedge *Carex pendulas* and brooklime *Veronica beccabunga* present. The level of the pond varied throughout the surveys. The wider habitat was dominated by woodland north of the pond, with an improved grassland compartment located to the south.

### Waterbody P3a (on-site)

- 6.9 Pond 3a occurs within the site boundary. The pond is part of a ditch that was dry at the time of survey running towards the north. Water had collected at the base of this feature in a pool. Little aquatic vegetation was present.

### Waterbody P4

- 6.10 P4 occurs immediately adjacent to the site boundary. This is a manmade pond with a housing estate present to the south and a young plantation to the east and west within arable land to the north. The pond was fringed with common reed-mace *Typha latifolia* and aquatic vegetation including broad-leaved pond weed *Potamogeton natans* was observed. Detritus associated with the residential estate was also present.

### Waterbody P6

- 6.11 P6 was located 340m from the northern boundary of the site, with marginal vegetation and invertebrates present. The pond was fringed with aquatic vegetation and was surrounded by a small amount of broadleaved trees.

### Waterbody P7- (No access)

- 6.12 Pond 7 was located 340m from the northern boundary. No access was permitted to this pond.

Waterbody P8

- 6.13 P8 was located 185m from the southern boundary of the site, located within the Haverhill Golf Club. The pond was approximately 200m<sup>2</sup> surrounded with heavily managed grassland associated with golf courses.

Waterbody P9 – (No access)

- 6.14 Pond 9 was located 280m from the southern boundary to the south of Haverhill Golf Club. Access was not permitted to survey this pond.

Waterbody P10 & P11 – (No access)

- 6.15 P10 and P11 were located 50m to the east of the site boundary across the B1061 within Calford Green village. Access was not permitted to survey this pond.

Waterbody P12

- 6.16 A small pond located within Calford Green village. The pond is located adjacent to the north eastern boundary of the site and regularly dries.

Waterbody P12 – Dry

- 6.17 Pond P12 was located approximately 25m from the north eastern corner of the site boundary adjacent to track leading towards Calford Green village, on the boundary of an open field. The pond water level varied greatly throughout the survey season drying on occasion.

Waterbody P13 – (No access)

- 6.18 Pond P13 was located 350m from the south west boundary. No access was permitted to survey this pond.

Waterbody P14 – Dry

- 6.19 Pond 14 was not identified during desktop studies of 2014 but was identified as an incidental result of bat tree assessments during March 2015. The pond was located approximately 35m from the northern boundary within a small broadleaved plantation woodland. The pond was 10m<sup>2</sup> and annually dries. There was little aquatic vegetation present but dead decomposing leaves were present in the base.

Waterbody P15

- 6.20 Pond P15 was located 395m east of the site boundary, and consisted of a 10m<sup>2</sup> ditch that annually dries. The ditch was dry during the survey period.

Waterbody P16 – Dry

- 6.21 Pond P16 was located 100m from the eastern boundary on the edge of Mary Cole's Grove, a small corpse of broadleaved woodland. The pond annually dries and during the peak survey period was dry.

Waterbody P17 (No access)

- 6.22 Pond 17 occurs 345m from the northern site boundary. No access was permitted to survey this pond.

## **APPENDIX E: PPG5**



Environment Alliance - working together

## Pollution Prevention Guidelines

### Works and maintenance in or near water: PPG5

These guidelines are produced jointly by the Environment Agency for England and Wales, the Environment and Heritage Service for Northern Ireland and the Scottish Environment Protection Agency, referred to here as we or us.

These guidelines cover construction and maintenance works in, near or liable to affect surface waters and groundwaters.

Surface waters include rivers, streams/burns, dry ditches, lakes/lochs, loughs, reservoirs, ponds, canals, estuaries and coastal waters.

Groundwater is all water below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

You should consider these guidelines on a site by site basis, and we advise you to consult us for help. You can find contact details at the end of these guidelines.

Pollution Prevention Guidelines (PPGs) are based on relevant legislation and good practice. They will help you manage your environmental responsibilities and protect the environment.

Following these guidelines doesn't remove your responsibility to comply with the law and prevent pollution. If you cause or allow pollution you may be committing a criminal offence. It is in the operator's interest to follow the PPGs because they constitute current best practice and following them will minimise threat to the environment.

## 1. Introduction

### 1.1 Legal requirements

Your construction and maintenance activities in or near water have the potential to cause serious pollution or impact on the bed and banks of a watercourse and on the quality and quantity of the water. Some activities with the potential for affecting watercourses or groundwater may require either consent in England and Wales under the Water Resources Act 1991 or an authorisation in Scotland under the Water Environment (Controlled Activities) (Scotland) Regulations 2005 (also referred to as CAR) - see reference 1. In Scotland depending on the nature of the activity there are three levels of authorisation.

Types of activity that may impact upon the bed and banks of a watercourse or of a wetland include:

- repairs, maintenance or improvements to any structure in, over or above main river (as defined in the Water Resources Act 1991)
- erection or construction of any structure, either permanent or temporary, in, over or above main river
- diversion of flows
- works within the river channel or a lake/loch
- works within the vicinity of a river, or loch or wetland (in Scotland)
- any works likely to increase the risk of flooding
- works within 10.0 metres of a Main River watercourse or flood defence (in England, Northern Ireland and Wales). There may be local variations in this distance e.g. in Environment Agency Midlands region it is 8.0 metres. Contact us at the planning stage of your project to confirm this.

Types of activity that have the potential to cause pollution of groundwater include:

- use of potentially polluting substances near groundwater abstraction boreholes (within Source Protection Zones in England and Wales, and within 50 metres in Scotland)
- use of potentially polluting substances near wells and springs
- use of potentially polluting substances in areas where groundwater is vulnerable, e.g. high groundwater table and thin covering soil
- sub-water table construction using materials containing potential pollutants (in Scotland)

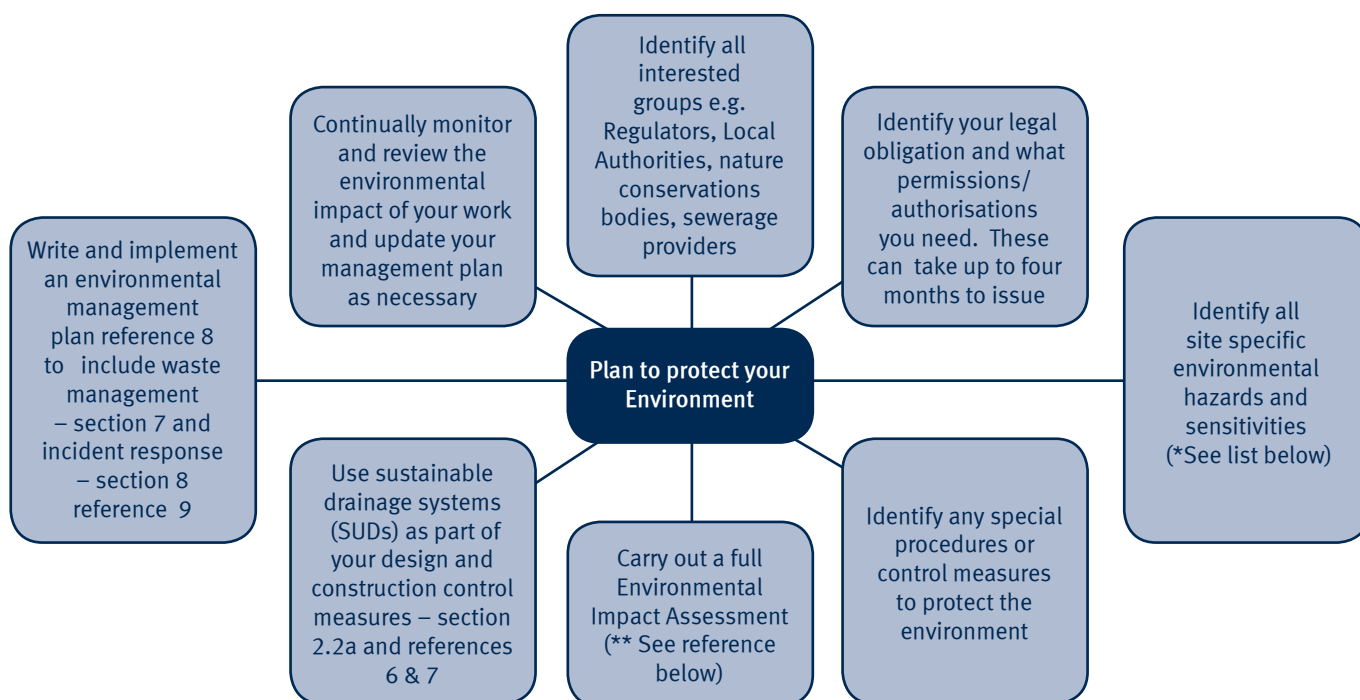
Types of activity that may remove water from sensitive parts of the water environment or affect other water users include:

- dewatering of excavations, particularly abstraction of large amounts of groundwater

You should contact us early on in your project as the time-scale for obtaining consent or authorisation for these activities can take up to four months from receipt of the application. Check the NetRegs website - see web site list- for information on your legal environmental obligations; in Scotland, read also references 2 and 3.

## 1.2 Planning

Most pollution incidents are avoidable. With careful planning you can reduce the risk of your work causing pollution. Most of the measures needed to prevent pollution cost very little, especially if they are included at the planning stage of any scheme or project. We suggest the following framework for managing environmental hazards on your site; some of the items may be legal requirements.



\* Some examples of site specific environmental hazards and sensitivities:

- oil or chemical pipelines
- mains water supply pipelines
- high voltage fluid filled cables
- downstream abstractors
- high amenity areas
- fish farms
- sensitive habitats e.g. wetlands

\*\* Environmental impact assessments may be a legal requirement of your project as part of the planning process. You should contact your Local Authority planning department for advice on this part of your project. In England

see the Communities and Local Government web site and reference 4; in Scotland see reference 5 or it's update and Appendix 8 of reference 4

Reference 8 covers many of the above points in detail.

You can get information on local surface and groundwater water sensitivity from us before you start any work. In addition to preventing pollution of surface waters and groundwaters you should take precautions to prevent blocking of channels and culverts, and erosion of the riverbank or bed. This information should form part of the environmental impact assessment and site management plan.

### 1.3 Pollution prevention

If you cause pollution you will be responsible for the cost of the clean up. This can be expensive particularly if groundwater has become contaminated. There may be additional costs associated with our incident response and/or fines through the criminal courts or civil claims.

Following these good practice guidelines will help you reduce the likelihood of an incident. If one does occur contact us immediately on our hotline number 0800 80 70 60. A rapid response to incidents will help to minimise the environmental impact and could reduce your overall costs - see section 8 and reference 9.

Potential pollutants from your type of works could include:

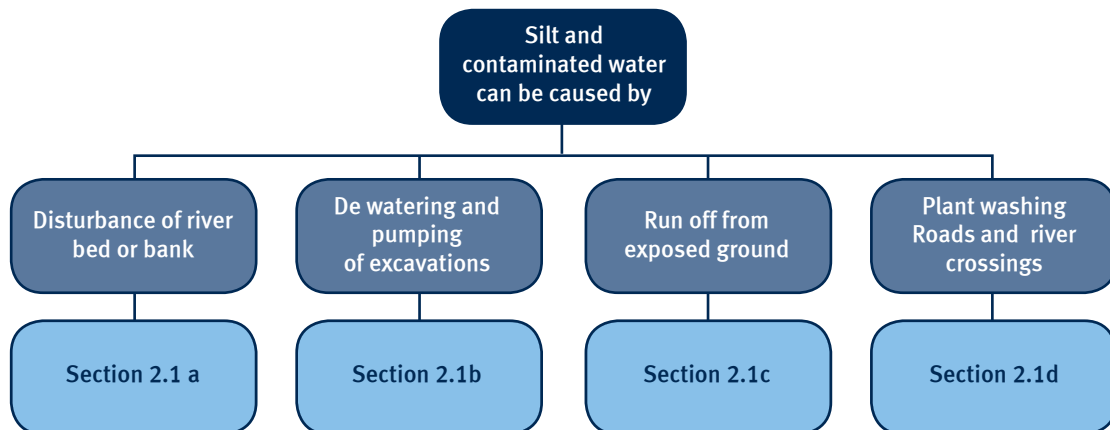
- silt - section 2
- cement and concrete - section 3
- chemicals and solvents -section 4
- bridge cleaning debris - section 5
- herbicides - section 6
- waste materials (including hazardous waste or special waste in Scotland) - section 7

Our PPG6 guidance document covers construction and demolition sites -reference 10. Also, the NetRegs website - web site list - has guidance, specific for the Construction sector, on environmental regulations and good practice. You should check these references to find the information that applies to your project.

## 2. Silt

Silt pollution is a major cause of environmental incidents. It can damage and kill aquatic life by smothering and suffocating and can cause flooding by blocking culverts and channels.

### 2.1 Activities that can cause silt pollution



If you can prevent water becoming contaminated in the first place, then it reduces the risk of pollution and the overall cost of your control measures. To avoid silt pollution you should, wherever possible, use methods of work that reduce or eliminate working in the channel and that do not contaminate surface water.

## 2.1a Disturbance of the river bed / working in the river channel

When you have considered all other options and working in the channel is still necessary, such as in dredging operations, contact us as early as possible in your planning stages to discuss appropriate pollution control measures. Permission for this type of work may take up to four months to obtain. The risk of silt pollution causing an incident will depend on many factors including: -

- likelihood of silt being disturbed
- what the river bed is made of, e.g. silt or gravel
- the conditions in which the work is carried out, e.g. hot weather and low flows

Silt pollution caused by working in surface waters can be minimised or prevented by keeping water out of the works area using appropriate isolation techniques, such as coffer dams and by-pass channels.

## 2.1b Disposal of water from excavations, dewatering and pumping

Problems with disposal of water from the above activities may be minimised or avoided by:

- preventing water from entering excavations, by using cut off ditches
- considering the impact on groundwater if you use well point dewatering or cut off walls
- using pump sumps in excavations
- supporting inlet hoses above the bed
- discharging on to hard surfaces (concrete slabs/gravel) in to surface waters
- use of appropriate pump rates – to avoid disturbance of bed or bank the maximum rate should be set after consideration of the flow of the river, the location of the discharge and the risk of erosion
- protection of the pump inlet to avoid drawing in aquatic life and other debris
- minimising disturbance of standing water

## 2.1c Exposed ground and stockpiles

Soil stripping and vegetation removal at the start of a project can increase the volume of contaminated surface water run-off. It can also reduce the area of vegetated land available for disposal of silty water.

You should:

- minimise the amount of exposed ground and soil stockpiles from which the water drains and the period of time such water drains – this is also a legal requirement in Scotland (see General Binding Rules in reference 1)
- only remove vegetation from the area that needs to be exposed in the near future
- seed or cover stockpiles
- use silt fences at the toe of the slope, made from geotextiles, to reduce silt transport
- collect run-off in lagoons and allow suspended solids to settle before disposal - reference 3

## 2.1d On-site working

The movement and maintenance of plant on site can generate silt and oil contaminated water. Sources of silt such as plant and wheel washing and site roads and river crossings carry a high risk of causing pollution.

### Plant and wheel washing

To reduce the pollution risk make sure that:

- plant and wheel washing is carried out in a designated area of hard standing at least 10 metres from any watercourse or surface water drain
- run-off is collected in a sump - recycle and reuse water where possible
- settled solids are removed regularly
- discharge of contained water goes to foul sewer (if possible) with prior permission from your local sewerage provider – section 2.2e - or
- tanker off site for authorised disposal – section 2.2f

## Site roads and river crossings

Run off from site roads and river crossings can contain high levels of silt. Reduce the pollution risk by:

- brushing or scraping roads to reduce dust and mud deposits
- putting small dams in artificial roadside ditches to retain silt
- using existing permanent bridges or pipe crossings for river crossing
- if necessary building temporary bridges - but not fording rivers
- working from the bank where possible – not in the river

## 2.2 Disposal of contaminated water - treatment and disposal methods

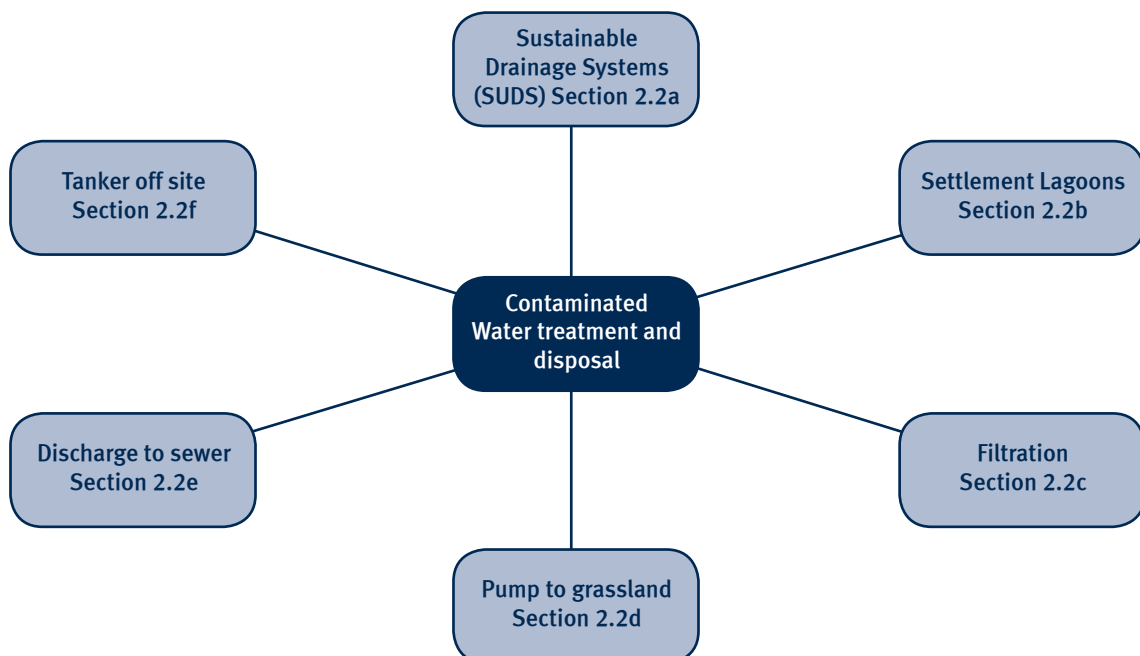
Where run off water is contaminated with silt or other pollutants such as oil this water must not be pumped or allowed to flow directly or indirectly in to surface waters or groundwater without treatment.

If a discharge to surface waters, groundwater, soakaways or surface water sewers is necessary it may require consent or authorisation from us. Contact us early in the planning stage of your project as a consent or authorisation could take up to four months to issue. If we issue a consent or authorisation it will limit volume, amount of silt and the presence of any oil in the discharge, and may have conditions for additional substances.

The choice of method for the treatment and disposal of contaminated water will depend on:

- the volume of water
- the area of land available for storage, treatment or discharge
- the amount and type of silt
- the presence of other substances in the water
- the conditions of any consent or authorisation

Treatment and disposal methods include:



## 2.2a Sustainable Drainage Systems (SUDS)

Sustainable drainage is the practice of controlling surface water runoff as close to its origin as possible by slowing flows, allowing adequate settlement and biological action to take place before water is discharged to a watercourse or to ground. It uses softer engineering solutions to imitate natural drainage rather than traditional piped drainage solutions. Sustainable drainage methods used both in the construction phase and in the design of the project will:

- reduce flood risk from development within a river catchment
- minimise diffuse pollution arising from surface water runoff
- minimise the risk of pollution to groundwater
- minimise environmental damage, such as bank erosion and damage to habitats
- maintain or restore the natural flow regime of the receiving watercourse
- maintain recharge to groundwater
- achieve environmental enhancements, improvement to wildlife habitats, amenity and landscape quality

Some examples of source control methods are shown in the following list:

### Examples of source control sustainable drainage systems

**Porous surface pavements** – water permeates through in to the soil or sub-surface reservoir which can then be allowed to discharge slowly rather than directly running off. This will minimise the volume of water that you might need to treat and can also recharge groundwater. Porous pavements need to be protected during installation from blocking by excessive silt contaminated water.

**Infiltration trenches** – a shallow excavated trench backfilled with stone to make an underground reservoir. Run off is diverted in to the trench and then filters in to the subsoil. The closer to the source the more effective this method will be.

**Infiltration basins** – a shallow surface impoundment where water is stored until it gradually infiltrates in to the soil of the basin floor. The performance of the basin depends largely on the permeability of the soil and the depth of the water table

**Filter drains or French drains** - these are similar to infiltration trenches but also allow movement of run off slowly towards a watercourse allowing time for filtration, storage and some loss of water due to evaporation / infiltration.

**Swales** – grassed wide shallow depressions which lead water overland from a drained surface in to storage or discharge system. They provide temporary storage for run off reducing high flows. Solids are retained and oily residues and organic matter broken down in the top layer of the soil and vegetation.

**Filter strips** – vegetated sections of land designed to accept run off as an overland sheet flow. To be effective they should be 5 – 15 metres wide and are best employed on the upstream end of a drainage system. They are most effective at removing excess solids and pollutants before discharging to downstream system.

Other SUDS can be considered including ponds, detention basins (dry ponds) and wetlands.

At the planning stage of your project consider how your drainage can be managed by using SUDS. Pollution removal by these methods is achieved by sedimentation, adsorption, absorption, filtration and microbial action.

In Scotland, discharges of water run-off from construction sites are required to be treated by either a Sustainable Urban Drainage System (SUDS) or an equivalent equipped to avoid pollution. However, the final SUD System cannot be an equivalent and must be a recognised SUD System (see General Binding Rule 10 in reference 1).

For more information on SUDS see the CIRIA website in the websites list and references 6 and 7.

## 2.2b Settlement lagoons or tanks

To be effective a settlement lagoon or tank should retain contaminated water long enough for silt to settle out. The length of time will depend on the type of silt, with finer clay solids taking longer to settle. If you use flocculants to aid settlement you must discuss this option with us before use. Flocculants can themselves be polluting and/or toxic and need careful use and monitoring to be effective. The checklist below gives guidance on lagoon/tank operation.

Table 1 gives guidance on the volume of lagoon or tank needed for a three-hour settlement at a defined rate of inlet discharge.

Typical dimension of a settlement lagoon / tank for a three hour settling time			
Pump Diameter	Discharge rate in to the lagoon	Length	Width
6 inch pump	3000 l/min	60m	20m
	6000 l/min	80m	27m
4 inch pump	1000 l/min	30m	10m
	2500 l/min	50m	17m
Assuming a tank / lagoon depth of 1 m , where length = three times the width			

Table 1: Settlement pond dimensions - the size of the tank/lagoon is determined by the rate of introduction of water .

Settlement lagoon / tank – a checklist
<ul style="list-style-type: none"> <li>• maintain a constant pumped inlet rate</li> <li>• minimise the inlet flow as much as possible by using energy dissipaters or rip rap</li> <li>• position inlet pipe work vertically to dissipate energy</li> <li>• provide lined inlet chamber to reduce velocity of flow</li> <li>• line the inlet chamber and outlet weir with materials like geotextiles , brickwork ,polythene or timber</li> <li>• have a long outlet weir to minimise disturbance</li> <li>• two or three lagoons in series will increase silt retention</li> <li>• clean inlet chamber regularly</li> <li>• monitor discharge quality frequently</li> </ul>

See reference 8 for more detail.

## 2.2c Filtration

If you do not have the space for lagoons and the water is contaminated with coarse silt you may be able to use tanks filled with filter material. Single sized aggregates 5–10 mm, geotextiles or straw bales can be used as a filter. You must monitor carefully the inlet pump rate and discharge quality.

## 2.2d Pump to grassland

You must have our permission and the landowners' before planning to use this method of disposal. The discharge rate must match the rate of infiltration in to the soil which will vary with the type soil, amount of vegetation cover and the gradient.

## 2.2e Discharge to sewer

If discharge to a foul sewer is possible you will require the permission of the local sewerage provider. You should approach them at an early stage in the project. They may issue a consent/authorisation limiting the volume and content of the discharge.

## 2.2f Tanker off site

If no other disposal routes are available then contaminated water can be collected and disposed off site by tanker. This may be a costly option and must be discussed with us at the planning stage of your project.

## 3. Concrete and cement

Fresh concrete and cement are very alkaline and corrosive and can cause serious pollution. Concrete and cement mixing and washing areas should:

- be sited 10 metres from any watercourse or surface water drain to minimise the risk of run off entering a watercourse
- have settlement and re-circulation systems for water reuse, to minimise the risk of pollution and reduce water usage
- have a contained area for washing out and cleaning of concrete batching plant or ready mix lorries; see section 2.1d above
- collect wash waters and, where necessary, discharge to the foul sewer (you must have permission from the local sewerage undertaker for this), or contain wash water for authorised disposal off site

Wash waters from concrete and cement works should never be discharged in to the water environment.

## 4. Oil and chemicals

In England, oil storage containers (e.g. tanks, IBCs, drums and mobile bowsers) greater than 200 litres must comply with the Control of Pollution (Oil Storage) (England) Regulations 2001 - reference 11. Similar legislation is expected in Northern Ireland.

In Scotland, storage must be compliant with the Water Environment (Oil Storage) (Scotland) Regulations 2006 - reference 12 -; these regulations apply to the storage of any volume of any kind of oil, with more prescriptive requirements applying to industrial, commercial and institutional sites storing over 200 litres of oil.

### 4.1 Storage - general

Make sure fuel, oil and chemical storage on site is secure. Site the storage on an impervious base within a secondary containment system such as a bund. The base and bund walls should be impermeable to the material stored and able to contain at least 110% of the volume stored. Site the storage area above any flood water level and where possible away from high-risk locations (such as within 10 metres of a watercourse or 50 metres of a well, borehole or spring), to minimise the risk of a spill entering the water environment. Detailed guidelines concerning above ground oil storage tanks can found in our guidance PPG2 - reference 13 - and in PPG 26 -reference 14.

Keep a spill kit with sand, earth or commercial products that are approved for your stored materials, close to your storage area. Train staff on how to use these correctly.

Remove damaged leaking or empty drums from site immediately and dispose any drums via a registered waste disposal contractor



## 4.2 Security

You should secure your site against theft and vandalism. Statistics show that damage from vandalism is a common cause of pollution. You can't use vandalism as a defence if you are taken to court because of a pollution incident

Therefore take action to secure your site by

- fitting lockable valves and trigger guns on pipework from storage containers
- installing anti siphon valves in pipework between containers and pumps
- installing armoured hoses
- storing tanks drums and mobile bowser in a locked container or compound when not in use
- considering lighting, alarm or CCTV systems for your site or compound
- installing lockable fencing around the site or employing security staff

## 4.3 Refuelling

The risk of spilling fuel is at its greatest during refuelling of plant. To minimise this risk:-

- refuel mobile plant in a designated area, on an impermeable base away from drains or watercourses
- use a bunded bowser
- supervise all refuelling and bulk deliveries
- check the available capacity in the tank before refuelling
- don't jam open a delivery valve
- check hoses and valves regularly for signs of wear
- turn off valves after refuelling and lock them when not in use
- position drip trays under pumps to catch minor spills
- keep a spill kit with sand, earth or commercial products for containment of spillages
- provide incident response training to your staff and contractors

## 4.4 Biodegradable oils

If possible use biodegradable chainsaw chain bar lubricant and biodegradable hydraulic oil in plant when working in or near watercourses. The Environment Agency and its contractors use biodegradable oils for their own operations. Biodegradable oils are less toxic than most of the synthetic oil but should still be stored and used to the same standards as other oils.

## 4.5 Trade materials

Sealant, coatings, adhesives and glazings can be toxic to plants and animals if released in to the environment. Select, store and use these materials carefully to save resources and protect the environment. You must not use sealant and glazing compounds containing asbestos. You should

- use water based or low solvent products
- avoid products containing lead as a drying agent and those containing hazardous solvents (toluene or chlorinated hydrocarbons)
- provide safe and secure storage

For guidance on general storage see our 'Pollution Prevention Pays. Getting your site right' pack and DVD - reference 15.

## 5. Bridge maintenance and structures over water.

Work to maintain bridges or other structures over or next to watercourses has a high risk of causing pollution. The maintenance work itself may require authorisation from us and you should contact us at an early stage in your plans to agree the most appropriate method of working and to agree an environmental management plan.

You may need authorisations if the bridge crosses a main river. Contact us prior to starting your work to confirm this.

### 5.1 Pollutant containment

Dust, debris and wastewater are the most common pollutants produced by structure maintenance. You should choose a containment system designed to reduce the risk of pollution from your work. The system should take account of the sensitivity of the environment. The type of containment you need will depend on the sensitivity of the site.

Methods of containment include:

- air or water impenetrable walls
- rigid or flexible framing lined as necessary
- fully sealed joints
- airlocks or resealable entryways
- negative air pressure (achieved by forced or natural air flow) and
- exhaust air filtration

In sealed containment areas you should provide filtered ventilation to prevent the build-up of dust and minimise the possibility of air escaping through breaches of the containment.

Use physical cleaning instead of liquid chemicals such as caustic and acid solutions. Contain wastewaters from surface washings and agree the disposal method with us as part of the environmental management plan before you start work. In some circumstances, you may be able to use a barge with a wastewater containment facility for working over water, or dispose to foul sewer with prior permission of the local sewerage undertaker. You should contact us early on in the planning stages of the project so we can advise on pollution prevention methods.

The containment facility must be designed so that the structure does not obstruct the river flow beneath it to such an extent that it increases the risk of flooding to an unreasonable level.

### 5.2 Paint removal

Paint removal methods include:-

- abrasive blast cleaning
- blasting in a closed circuit
- preparation by various types of wet abrasive blasting or water jetting
- chemical stripping and
- hand or power tool cleaning

Abrasive blasting produces the greatest level of dust and debris. The use of vacuum attachments on power tools can reduce dust generation. Water cleaning methods produce less debris, but generate run-off, which needs to be contained and treated. We can advise you on the best method of treatment.

Sample existing coatings for hazardous materials (e.g. lead) before starting to remove them. This can help determine the level of containment you will need. The level of containment needed depends on:

- the amount of paint to be removed
- the type and concentration of the hazardous materials
- the sensitivity of the surrounding environment

### 5.3 Surface cleaning

If you are using high-pressure water or steam cleaners see our guidance in PPG 13 - reference 16 - before starting work. You should avoid using grit blasting with slag-derived grit as they can contain significant levels of heavy metals such as copper. These can be toxic if they get in to the water environment. Reduce the potential for contamination by using garnet, low silica abrasive or recycled glass media with vacuum attachments.

### 5.4 Painting

Our advice for painting is much the same as for paint removal although the volume of waste and size of operations will be less. Remove dust and debris by sweeping or vacuum cleaning before painting. Paints can be applied on-site using brush, conventional spray or airless spray. Consider using electrostatic spray units to reduce the loss of product by over-spraying.

Carefully consider the type of paint you use. Although water based solvent free paints have lower environmental impact they may require more frequent application. Solvent-based paints could have a higher environmental impact but will last longer and require less maintenance. The decision to use water or solvent-based paints should be based on the environmental sensitivity of the area/surrounding environment and ease of access to the structure.

## 6. Herbicide use

In England, Northern Ireland and Wales you must have our written approval to use herbicides in or near waters. This takes two weeks from the date we receive the application. Only approved herbicides may be used, and only by authorised contractors. If approval is given you, as the applicant, and the contractor are responsible for ensuring that the interests of other river users are not adversely affected.

In Scotland, aerial application of herbicides in or near the water environment needs approval from us; also, you should consult with us on any other application of herbicide in or near the water environment, as pollution caused by such herbicide use will be deemed an unauthorised activity and enforcement action may be taken against the person responsible.

## 7. Waste management

Legal waste storage and disposal are essential for effective pollution prevention.

Under the Duty of Care - reference 17 - you have a legal duty to make sure any waste you produce does not escape from your control. Waste must be transferred to an authorised registered or exempt waste carrier or waste manager. It must be accompanied by a full description of the waste and a waste transfer note and be disposed of lawfully.

Hazardous wastes, or special wastes in Scotland, such as oily wastes, acids, solvents and solvent-based products, have particular legal requirements and their movement must be accompanied by a consignment note - reference 18. Everyone involved in the transfer of the waste, including us, must keep copies of the consignment notes for proof of legal disposal.

If you are a hazardous waste producer located in England or Wales you must register with the Environment Agency as a Hazardous Waste Producer. For further advice contact us on 08708 502 858 or go to our web site. There is no such requirement in Northern Ireland or Scotland.

Find out how these waste regulations affect your site. Check the Guidance by Environmental Topic section of the NetRegs website (in web site list) for information on waste legislation and how you can comply. In Scotland see also reference 19.

Draw up a site waste management plan.

### Site waste management plan checklist

- Carry out a waste minimisation audit to identify where you can reduce the volume of waste you produce - contact Envirowise for free advice, on 0800 585794 or using its website (see websites list below)
- Reuse materials or use products that can be reused many times
- Substitute materials for less hazardous ones – e.g biodegradable lubricants and water based paints
- Recycle waste where possible – In England, Northern Ireland and Wales contact your local council or waste contractor for recycling facilities. In Scotland in the first instance check the Waste Awareness website ([www.wasteawarebusiness.com](http://www.wasteawarebusiness.com)) to identify waste recycling facilities in your area. Also contact your local council, waste contractor, or the Scottish Industrial Symbiosis Programme ([www.nisp.org.uk/](http://www.nisp.org.uk/))
- Segregate different wastes for recycling, hazardous waste and general waste and label them. Do not mix or dilute hazardous wastes
- Store waste in suitable containers of sufficient capacity to avoid loss, overflow or spillage
- Store waste in designated areas, isolated completely from surface water drains and areas which discharge directly to the water environment.
- Cover or enclose skips unless they are stored undercover or within a building.
- Take waste off your site frequently; do not allow large quantities to accumulate.

## 8. Incident response

You should immediately report to us any incidents that have had or that could have had an environmental impact. Use our hotline number 0800 80 70 60 to report all incidents.

Incidents include spillages (oils and chemicals), contaminated run-off, flooding, riverbed disturbance, damage to underground services, damage to habitats, poor waste disposal and storage. If in doubt report it.

You should produce an Incident Response Plan as part of the environmental impact management of your work. Include the following: -

- list of key external and internal contacts
- reporting procedures
- site plan including drainage and location of storage/refuelling areas
- list of stored materials
- details of local environmental sensitivities, e.g. abstractors, high amenity areas and fish farms
- location of spill equipment
- procedures for spill containment and remediation

Train your staff and contractors in the use of spill equipment and how to manage and dispose of waste materials legally.

If you are using oil and chemicals in close proximity to a watercourse, store a suitable spill kit or absorbent materials nearby. Provide appropriate temporary storage for any oils and chemicals. Contain all spillages using absorbents such as sand, soil or commercially available booms or pads and notify us immediately, using the emergency hotline number above.

For full guidance on Incident Response planning use our PPG 21 - reference 9.

## 9. References

All the Pollution Prevention Guidance notes (PPGs) are available at:

- [www.environment-agency.gov.uk/ppg](http://www.environment-agency.gov.uk/ppg)
- [www.sepa.org.uk/guidance/ppg](http://www.sepa.org.uk/guidance/ppg)

You can also order the Pollution Prevention Pays pack at the first of these sites.

1. The Water Environment (Controlled Activities) (Scotland) Regulations 2005 A Practical Guide. SEPA 2007 – in SEPA website and in print version obtainable from SEPA.
2. Prevention of Pollution from Civil Engineering Contracts; Special Requirements (SG 31). SEPA 2006 - in SEPA website.
3. Prevention of Pollution from Civil Engineering Contracts Guidelines for Special Requirements (SG-32). SEPA 2006.
4. Environmental Impact Assessment: Guide to Procedures. Department for Communities and Local Government. ISBN 0 72 772960 8
5. The Environmental Impact Assessment (Scotland) Regulations 1999, Circular 15/1999 – in Scottish Government website.
6. The SUDS Manual. CIRIA C697. ISBN 0 86017 697 5
7. Site Handbook for the Construction of SUDS. CIRIA C698. ISBN 0 86017 698 3.
8. 'Environmental Good Practice on Site'. CIRIA C502 1999. ISBN 0 86017 502 2
9. PPG21: Pollution Incident Response Planning.
10. PPG 6: Working at Construction and Demolition sites.
11. Guidance note for the Control of Pollution (Oil Storage) (England) Regulations 2001 – in Defra website and in print.
12. Guidance note for the Water Environment (Oil Storage) (Scotland) Regulations 2006 – Scottish Government – in Scottish Government website and in print.
13. PPG2: Above Ground Oil Storage Tanks.
14. PPG26: Storage and Handling of Drums and Intermediate Bulk Containers.
15. Pollution Prevention Pays. Getting your Site Right – Industrial and Commercial Pollution Prevention. – in Environment Agency website.
16. PPG 13: Vehicle Washing and Cleaning.
17. Waste Management, The Duty of Care, A Code of Practice (Revised 1996). The Stationary Office. ISBN 0 – 11- 753210X.
18. Hazardous Waste (England and Wales) Regulation 2005 Statutory Instrument 2005 No 894. ISBN 0 110726 855  
Hazardous Waste (Northern Ireland) Regulations 2005, SR 300. ISBN 0 33796 064 X  
Special Waste Regulations 1996, SI972. ISBN 0 11 054565 6  
Special Waste Amendment (Scotland) Regulations 2004, SSI 112. ISBN 0 11069 0303

19. The Small Environmental Guide for Construction Workers. SEPA and CIRIA 2006 – in SEPA website and in paper version obtainable from SEPA

## Websites

Environment Agency: [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

Environment and Heritage Service for Northern Ireland: [www.ehsni.gov.uk](http://www.ehsni.gov.uk)

Scottish Environment Protection Agency: [www.sepa.org.uk](http://www.sepa.org.uk)

Department for Environment Food and Rural Affairs: [www.defra.gov.uk](http://www.defra.gov.uk)

Communities and Local Government (England and Wales): <http://www.communities.gov.uk/>

Scottish Government: <http://www.scotland.gov.uk/>

Envirowise: [www.envirowise.gov.uk](http://www.envirowise.gov.uk)

NetRegs: [www.netregs.gov.uk](http://www.netregs.gov.uk)

Construction Industry Research and Information Association : [www.ciria.org.uk](http://www.ciria.org.uk)

## Our contact details

**Environment Agency**  
[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

HEAD OFFICE  
Rio House  
Waterside Drive  
Aztec West  
Almondsbury  
Bristol BS32 4UD  
Tel: 01454 624 400  
Fax: 01454 624 409

**Scottish Environment Protection Agency**  
[www.sepa.org.uk](http://www.sepa.org.uk)

CORPORATE OFFICE  
Erskine Court  
The Castle Business Park  
Stirling FK9 4TR  
Tel: 01786 457 700  
Fax: 01786 446 885

**Environment and Heritage Service**  
[www.ehsni.gov.uk](http://www.ehsni.gov.uk)

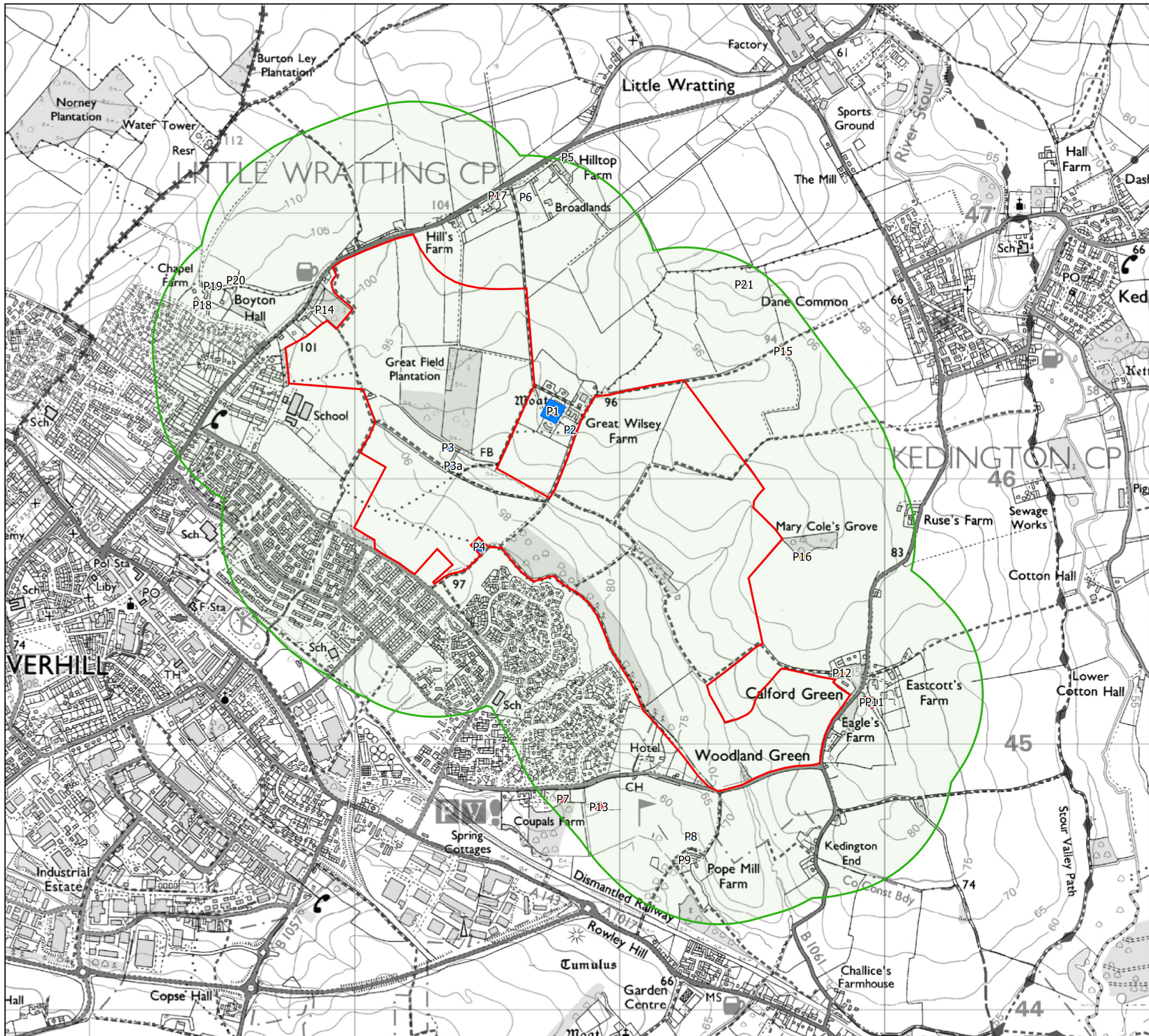
HEAD OFFICE  
17 Antrim Road  
Lisburn  
County Antrim BT28 3AL  
Tel: 028 9262 3100  
Fax: 028 9267 6054

In England and Wales please contact your Local Development Control team through National Customer Contact Centre (NCCC) on 08708 506 506 or at [enquires@environment-agency.gov.uk](mailto:enquires@environment-agency.gov.uk) for details on any of the topics covered in this document.



**Environment first:** This publication is printed on paper made from 100 per cent previously used waste. By-products from making the pulp and paper are used for composting and fertiliser, for making cement and for generating energy.





This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material is used with the permission of the Controller of HMSO,

'Contains Ordnance Survey data © Crown copyright and database right 2011'.  
Crown copyright 100018896

**Key:**

Site Boundary

**Waterbodies**

Dry

No Access

Normal

Hallam Land Management

Great Wilsey Park,  
Haverhill, Suffolk



Water Body Plan



Scale: 1:15,000

REH

24/6/2015

**Figure 1**

**5055-E-01**