



Tregarthens Hotel
St Mary's, Isles of Scilly

Ecological Appraisal
and Bat Surveys

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For:
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1. INTRODUCTION

The owners of Tregarthens Hotel are seeking planning permission to renovate the hotel. The proposals involve demolition of parts of the hotel, construction of new guest accommodation and internal renovations.

The address of the site is Tregarthens Hotel, St Marys, Isles of Scilly, TR21 0PP. The OS Grid ref is SV 90096 10674.

Bright Environment was commissioned by Scott & Co on behalf of the hotel owners in March 2015 to carry out an Ecological Appraisal of the hotel. During the walkover survey evidence of bats was identified, further bat surveys were therefore commissioned. This report details the results from both surveys.

The location of the site is shown on Map 1 (page 19) and the survey area is shown on Figure 1 (page 7).

2. AIM

The aim of the report is to undertake an Ecological Impact Assessment (EcIA) of the proposed development. This involves the following:

- Describe and evaluate the ecological baseline of the site.
- Identify ecological impacts of the development.
- Design mitigation measures for adverse impacts and identify any requirements for further survey.
- Identify any residual impacts following mitigation.

The assessment has been carried in accordance with the 'Guidelines for Preliminary Ecological Appraisal' and 'Guidelines for Ecological Impact Assessment' produced by the Institute of Ecology and Environmental Management (IEEM, 2006 & 2012). The assessment follows the guidance given in The Isles of Scilly Local Development Framework Supplementary Planning Document: Biodiversity and Geological Conservation.

During the initial walkover survey evidence of bats was found so further surveys were commissioned. The aim of these surveys was to establish whether the evidence found represents current bats use, and if so, establish numbers, species, type of roost and bat access points to inform the design of mitigation to minimise impacts on bats.

3. SURVEY METHODOLOGY

The ecological baseline of the site was assessed through a desk study and site surveys. The survey area is shown in Figure 1. A roof plan of the hotel is included as Figure 2.

3.1 Desk study

Biodiversity and ecological records for St Mary's Island were obtained from the Environmental Records Centre for Cornwall and the Isles of Scilly (ERCCIS). Information requested included the location and details of the following:

- Designated sites of nature conservation value (statutory and non-statutory).
- Records of protected and/or notable species, including UK and Cornwall Biodiversity Action Plan (BAP) Priority Species.

Information was also obtained from the following websites:

- www.nbn.org.uk – protected species distribution.



- www.cornwallwildlifetrust.org.uk – Cornwall BAP
- www.jncc.defra.gov.uk - UK BAP

3.2 Ecological walkover survey

A walk-over survey of the site was carried out on on 26th March 2015 to:

- identify the habitats present within the site according to the Phase 1 Habitat Survey methodology (JNCC, 1993) and compile a list of dominant and rare vascular plants. A full species lists was not compiled.
- undertake a preliminary faunal survey / habitat assessment to identify the presence or the potential of the site to support legally protected species or species of conservation importance.
- assess the ecological 'importance' of any hedges using the criteria in the Hedgerows Regulations 1997 (if applicable).
- Undertake a visual search of the hotel for bats. This included a detailed search of the interior and exterior of the hotel using a high powered torch to illuminate all areas thought suitable for bats. Any accessible cracks and crevices were investigated with the use of a torch and endoscope. The survey involved looking for bats and for evidence of their use, including droppings, staining and feeding remains.

An update walkover of the site was carried out on 27th June 2015 to identify any plants that may have been missed during the March 2015 survey.

3.3 Bat emergence survey

Two emergence surveys were carried out, on 26th and 28th June 2015, to record any bats emerging from the building and identify bat access points. The surveys commenced 15 minutes before sunset and continued until one hour after sunset. Three surveyors were employed. Surveyors used Bat Box Duet bat detectors, employing heterodyne and frequency division methods of detection. Bat calls were recorded (on a SongMeter SM2+) for computer analysis.

The survey area for the emergence surveys was informed by the visual survey and consideration of the proposed works. Surveyor's focus on the areas of the building that would be affected by the proposed works and either had features that had the potential to harbour roosting bats or areas of the building where evidence of bats was found.

3.4 Remote monitoring methodology

A remote monitoring survey was carried out from 26th June to 29th June 2015. A SongMeter (SM2+) detector was placed in the roof void of roof R5 (as indicated on Figure 2). This is the only roof void where there was a potential impact on any potential roosting bats. The detector was set to record bat calls from 1 hour before sunset until one hour after sunrise.

3.5 Baseline evaluation

Evaluation of the ecological baseline for the site was undertaken following the framework provided by IEEM (2006). The biodiversity value of ecological features is assessed according to various characteristics; including non-statutory designations, rarity, threat, diversity (species-richness), connectivity and size of populations. Each ecological feature is assigned a biodiversity value at the following geographical scale:

- International
- UK
- National (England)



- Regional (South West)
- County
- District
- Parish
- Within immediate vicinity of site

3.6 Identification of impacts and mitigation

Assessment of impacts was undertaken following the framework provided by IEEM (2006). The impacts magnitude, duration, reversibility, likelihood and nature (positive or negative) are described. Consideration to cumulative impacts is also given. Impacts are then assessed as being significant or not significant upon each valued ecological feature.

Mitigation measures to avoid or reduce impacts are included. To ensure proposed mitigation measures are adopted; Bright Environment consulted with the architect to agree achievable measures.

Any residual impacts, post mitigation are identified.

3.7 Limitations

The ecological surveys were carried out in March and June. In March it is possible that some plants may have been missed. However it is possible to assess the value of habitats and their potential to support notable floral species. This is not considered a notable limitation for a project of this size and the nature of the habitats present, however to mitigate any limitations an update walkover was carried out in June 2015 to identify any plant species that may have been missed.

Access within the site was good and there are no limitations to report.

As ecological features can change over time it is recommended that this report is valid until August 2016. This ecological appraisal does not include a search for Tree Preservation Orders (TPO's) or Conservation Area status.

Table 1 Survey details.

Date	Type of survey	Weather conditions
26.03.15	Visual survey and ecological walkover	Dry, breezy, clear, temp 9C
26.06.15	Emergence survey	Clear, calm, dry temp 16C
26.06.15 to 29.06.15	Remote monitoring	The temperature range recorded by the remote detector whilst in the building was 20C – 26C. Average day temp for the period ranged from 18-22C and it was warm, sunny and dry for the duration.
28.06.15	Emergence survey	Patchy cloud, calm, dry, temp 15C
27.06.15	Update ecological walkover	Clear, calm, dry temp 17C





Figure 1. Aerial photograph (from Google maps 2015) showing survey area (location of the site is shown on Map 1 at the end of this report).



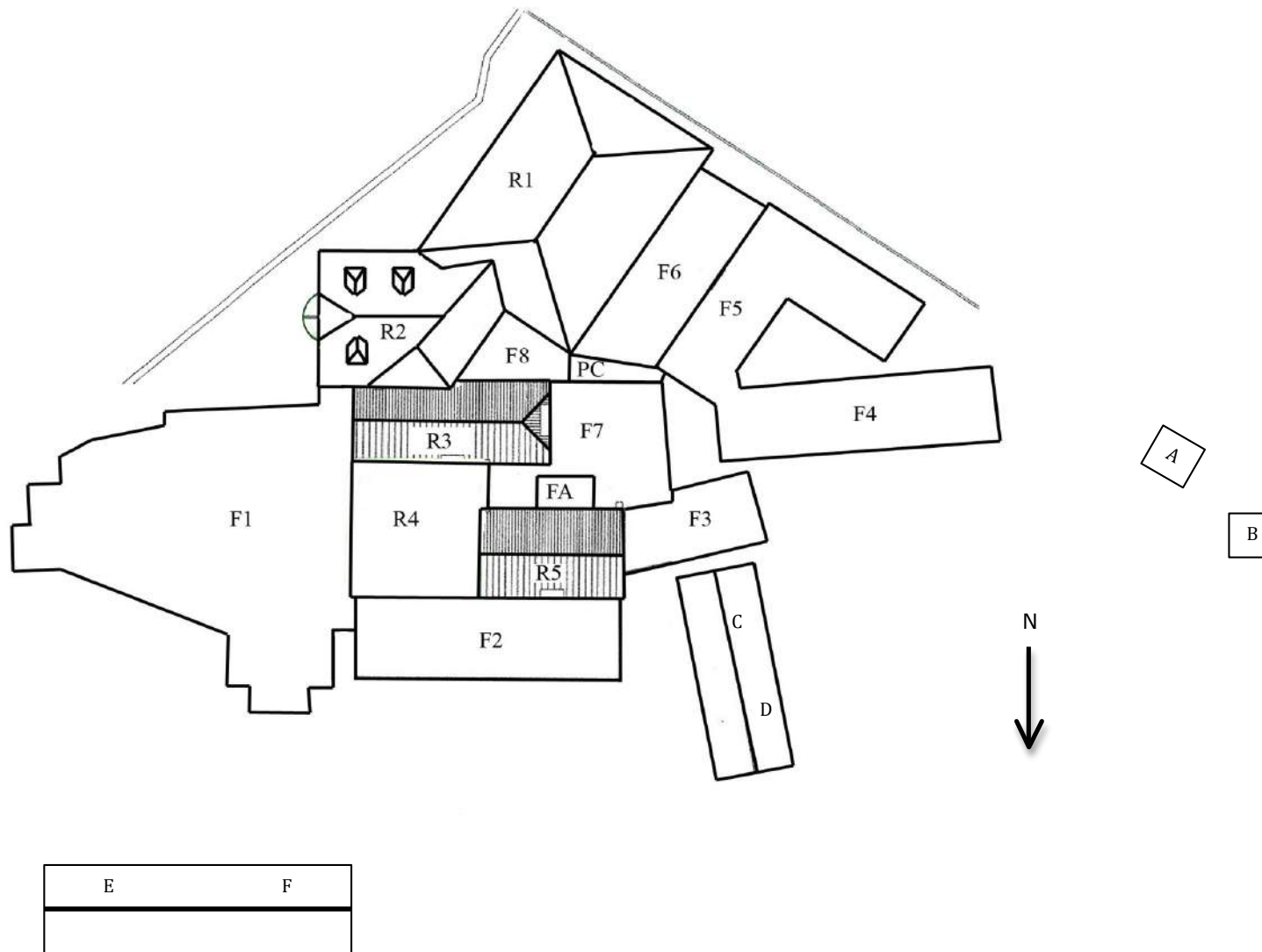


Figure 2. Roof plan of hotel (the location, shape and orientation of buildings labelled A, B, E and F are indicative and not to scale).



4. ECOLOGICAL BASELINE

4.1 Designated sites of nature conservation value

Tregarthens Hotel is not within a statutory designated site for nature conservation, however there are statutory sites nearby as follows.

The adjoining coastal (marine and intertidal) habitats are within the Isles of Scilly Special Area of Conservation (SAC). SAC's provide protected areas for certain key species and habitat types that are considered to be of European nature conservation importance, and are governed by the "Habitats Regulations" 1994 (HM Government, 1994). Formal consent from Natural England is a statutory requirement if a proposed project is likely to have a significant effect on the features for which a SAC was designated. It is important to note that operations outside of the SAC boundary may have a detrimental impact on the international feature of importance for which the site has been designated. The features for which the SAC was designated include sandbanks, mudflats, reefs, shore dock and grey seal.

There are five Sites of Special Scientific Interest (SSSI's) on St Mary's Island as follows:

- Lower Moors SSSI
- Peninnis Head SSSI
- Higher Moors & Porth Hellick Pool SSSI
- Porthloo SSSI
- Watermill Cove SSSI

Two are within 1km of the hotel. Lower Moors SSSI Lower Moors is located immediately to the east of Hugh Town and comprises a topogenous mire, exhibiting a range of wetland habitats. Penninis Head is located 1km to the southwest of the hotel and is designated for its geological value being particularly noteworthy for the prominent granite cliffs and tors but it also supports maritime heathland, maritime grassland and scrub habitats together with populations of a number of rare plant and lichen species. SSSI's are designated under s.28 of the Wildlife and Countryside Act 1981 to safeguard and enhance the characteristic plants, animals and physical features of our natural heritage (HM Government, 1981, 1985, 1989, 1991, 1992a, 1998, 2004). They are also protected under the Countryside and Rights of Way Act 2000 (HM Government, 2000). The designation covers important sites for nature conservation including those of national and international importance. As part of the planning process, Natural England is consulted over any proposed developments that may impact upon a SSSI. Natural England specify a list of operations likely to damage (OLDS) the special interest of a SSSI. Under the Acts, Natural England has to give written consent before any of these operations, or any other activities, which may affect the SSSI, can be carried out.

Parts of the southern coastline of St Mary's are within a Marine Conservation Zone (MCZ), designated under the Marine and Coastal Access Act 2009. MCZ's protect nationally important marine wildlife, habitats, geology and geomorphology in English inshore waters and offshore waters next to England, Wales and Northern Ireland.

It is also noteworthy to include that the Isles of Scilly is an Area of Outstanding Natural Beauty (AONB) and that the site lies within a Heritage coast area. This is a non-statutory designation whereby these sites are managed so that their natural beauty is conserved and where appropriate, the accessibility for visitors is improved. Also of note is that the Isles of Scilly Wildlife Trust cares for approximately 60% of the landmass of Scilly and includes all the uninhabited islands.

4.2 Habitat Description and Evaluation

This section describes the habitats present, according to the standard Phase 1 notation (JNCC, 2007b).



The survey area includes Tregarthens Hotel and associated buildings and grounds (see Figure 1). The hotel is a complex structure with single, two-storey and three storey sections. The roof-scape is also complex including flat roof sections, pitched roofs with voids and dormer sections. Also included within the hotel grounds are four semi-detached stone cottages, and concrete block outbuildings. A roof plan with references is included as Figure 2. Within the hotel grounds are small garden areas, flower borders and beds. The site is bound by an access road along the northern boundary, beyond this is a stone battery wall marking the back of the seashore (see Photograph 4). The western boundary is marked by a tall granite Garrison Wall. The road known as Garrison Hill marks the southern boundary.

The site does not contain any semi-natural habitats. Most of the site is built environment of buildings with concrete/tarmac between. Green landscape is limited to small areas of lawn and garden borders (see Figure 1).

Each of the habitats recorded during the Phase 1 Habitat Survey are described below. The dominant species recorded within each habitat are given together with any notable floral species observed.



Photograph 1. Front (north) elevation of Tregarthens Hotel

4.2.1 Amenity grassland and introduced shrub

The garden areas associated with the hotel are very small in extent. There are areas of lawn with perennial ryegrass, common bent grass, cock's-foot, daisy, white clover, common cat's-ear and ribwort plantain. The borders and flowerbeds support kitchen herbs and garden plants that are mostly non-native and common in the residential gardens of the island, including *Phormia* sp., *Agapanthus*, *Echium* sp. and acaves. Native species include alexander's and butterbur. No plant species of biodiversity value were observed within the gardens. The garden areas of the hotel are not considered to have notable biodiversity value.



Photograph 2. Kitchen garden



Photograph 3. Lawn and gardens



4.2.2 Buildings

The hotel is a complex structure including single, two and three-storey sections and semi-detached cottages and outbuildings. These structures are described in more detail in section 4.4.1 where their potential to support bats is assessed. The buildings do not have any biodiversity value.

4.2.3 Stone wall

The western boundary is marked by a tall granite Garrison Wall, there is a stone wall along the road known as Garrison Hill and a stone retaining wall is present between the access road and the seashore on the northern boundary (Photographs 4 & 5). The joints between these stones have tight cement mortar and there is little plant cover. *Aeonium* sp. were observed in the Garrison wall. There is also a stonewall with an earth core and without cement mortar between the northern access road and the kitchen garden (shown on Photograph 5). Sea spleenwort was noted here.

Due to a lack of earth and/or little/sparse vegetation cover the walls cannot be described as hedgerows and therefore would not be protected by the Hedgerow Regulations 1997 nor do they qualify as Biodiversity Action Plan (BAP) priority habitat. The Isles of Scilly Biodiversity Audit 2008 (Lewis *et al.*, 2008) states that there are virtually no true native hedgerows in the Isles of Scilly. Lewis *et al.* (2008) states that 'hedges' come in three main types, dry-stone walling (single leaved), 'Cornish hedges' (double leaved) and granite masonry (such as the Garrison walls). All three types are present within/along the boundaries of Tregarthens Hotel. Such boundary features can play a role in enabling species to move through the landscape by connecting semi-natural habitats. However those within the site are present within an urban setting and do not have connections with semi-natural habitat. The wall with the earth core shown on Photograph 5 may provide a refuge for invertebrates and small mammals. The walls may also support notable lichen populations. They are likely to be of value at the level of the site.



Photographs 4 & 5. Stone walls either side of access road on northern boundary

4.2.4 Bare ground

The bare ground within the Hotel is concrete or tarmac and of no biodiversity interest.

4.3 Floral Species Description and Evaluation

This section describes and evaluates the species of plants and animals found within the site based on the results of the field survey.

4.3.1 Higher Plants

The desk study identified that 91 notable plants species have been recorded on St Mary's. This is a very high number of notable records and reflects the value of the semi-natural habitats on St Mary's. The list was reviewed and none of the species listed were observed within the hotel grounds during the walkover surveys and none of the desk



study records relate to the hotel site. No notable higher plants were observed. The site does not contain any semi-natural habitats. Most of the site is built environment of buildings with concrete/tarmac between. Green landscape is limited to small areas of lawn and garden borders. The site is considered unlikely to be of value for higher plants.

4.3.2 Lower Plants

A specialised survey for non-vascular plants, bryophytes and lichens, was outside the scope of this study. However an assessment of the habitats potential to support notable assemblages was made during the site survey. It is possible that the stonewalls within and around the boundaries support notable lichens. However as mitigation has been designed to protect and reuse the stones, to avoid impacts on lichens, a specialist lower plant survey was not required.

4.3.3 Invasive non-native species

The small garden areas around the hotel support three invasive weed species that are included under Schedule 9 of the Wildlife and Countryside Act 1981; making it an offence to 'cause them to spread'. These are:

- Montbretia (*Crococsmia x crocosmiiflora*)
- Three cornered garlic (*Allium triquetrum*)
- Hottentot fig (*Carpobrotus edulis*)

Invasive species represent a significant threat to nature conservation. Not only do they directly compete with the native flora, but they also threaten native fauna indirectly through the displacement of their food plants.

4.4 Faunal Species Description and Evaluation

4.4.1 Lesser white-toothed shrew

The lesser white-toothed shrew (otherwise known as the 'Scilly shrew') is absent from mainland Britain but is found on the Isles of Scilly. It is mostly associated with the seashore and feeds on a variety of invertebrates including small crustaceans that live amongst rocks on the seashore. The desk study identified 29 records for lesser white-toothed shrew on St Mary's. One of the records was from Garrison Hill, which borders the site. The Scilly shrew is protected from being killed or taken by certain methods under Schedule 6 of the Wildlife and Countryside Act and is a Cornwall Red Data book species. They nest under logs, between boulders or in abandoned mouse burrows. It is therefore possible that the Scilly shrew is present in the stonewall with an earth core without cement mortar between the northern access road and the kitchen garden (shown on Photograph 5).

4.4.2 Badger

Badger is absent from the St Mary's Island. No evidence of badgers was observed and it is unlikely that any evidence was overlooked.

4.4.3 Otter

Otter is absent from St Marys' Island.

4.4.4 Dormice

Dormouse is absent from St Marys' Island.

4.4.5 Hedgehog

The desk study identified 27 records for hedgehog on St Marys' Island. None of the records relate to the hotel site although there are several records for the nearby Star Hotel on the Garrison. Hedgehogs are associated with garden habitats with dense leaf



cover and log piles. There is a small chance that they are present within the garden habitat onsite, although the garden areas are small, isolated from wider suitable habitat and are exposed to high levels of disturbance from human activity.

Hedgehogs are listed as a priority species for conservation on the UK BAP. They hibernate in log / leaf / rubble piles, at the base of Cornish hedges and under tree roots from October to March inclusive. They are listed on Schedule 6 of Wildlife & Countryside Act 1981 (as amended), which protects them from being killed or taken by certain methods under Section 11(1) of the Wildlife and Countryside Act 1981.

4.4.6 Invertebrates

The desk study identified a high number of notable invertebrates on St Mary's island. None of the records relate to the hotel site.

An assessment of the potential of the habitats present to support notable invertebrate assemblages has been made. None of the habitats within the site are considered to be of notable value to invertebrates.

4.4.7 Birds

The Isles of Scilly supports notable bird populations however these are associated with intertidal and marine habitats or semi-natural terrestrial habitats.

The site does not contain any semi-natural habitats. Most of the site is built environment of buildings with concrete/tarmac between. Green landscape is limited to small areas of lawn and garden borders. The site is considered very unlikely to be of value for birds. Common species may nest on the hotel in small none-notable numbers and the following legislation is relevant. The nests (while in use or being built) and eggs of all wild birds are protected against taking, damage and destruction under the Wildlife and Countryside Act 1981 (as amended). It is also an offence to kill, injure or take any wild bird.

4.4.8 Reptiles

Terrestrial reptiles are absent from St Marys' Island.

4.4.9 Amphibians

There are records for common toad and common frog on St Mary's Island. All of the frog records come from Lower Moors SSSI.

The site does not offer suitable breeding habitat for amphibians as there are no watercourses or water bodies present. It is possible that common frog and common toad use the garden habitat and the stonewall with the earth core during the terrestrial stages of their life cycle, however it is very unlikely that notable populations are present.

4.4.10 Bats

The desk study identified that two species of bat have been recorded on St Mary's Island. There are 132 records for common pipistrelle and one record for brown long-eared. The record for brown long-eared is from 1904 and this species is now thought to be absent from the island. Detailed bat surveys of the site were carried out. This involved visual and emergence surveys and remote monitoring. See sections 3.2, 3.3 and 3.4 for methodologies. The results of these surveys are detailed in section 4.5.

All British bat are European protected species and are afforded full protection under UK and European legislation, including the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species 2010. Together, this legislation makes it illegal to:

- Deliberately or intentionally capture, kill or injure a bat.
- Damage or destroy a bat roost; or intentionally or recklessly obstruct access to bat roosts.



- Deliberately, intentionally or recklessly disturb bats.

A bat roost is defined in the legislation as “any structure or place which a bat uses for shelter or protection”. Roosts are protected whether or not bats are present at the time.

Barbastelle (*Barbastella barbastellus*), Bechstein’s (*Myotis bechsteinii*), noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus*), greater horseshoe (*Rhinolophus ferrumequinum*) and lesser horseshoe (*Rhinolophus hipposideros*) bats are priority species for conservation on the UK BAP (BRIG, 2007). Barbastelle, pipistrelle, greater and lesser horseshoe bats are county priority BAP species (CBI, 2004).

4.5 Detailed bat survey results

4.5.1 Visual bat survey results

Figure 2 shows a roof plan of the hotel and associate buildings with references. The results of the visual bat assessment for each of these hotel areas is detailed below.

F1-7 and R4 are flat roof sections of the hotel. These have bitumen felt roofs. Some have wooden fascias and other have stone cornices. The fascia board on the western elevation of F2 has gaps that could potentially harbour roosting bats and could not be visually searched. This would be assessed by the emergence surveys at dusk. All other flat roof section of the hotel do not have the potential to harbour roosting bats due to lack of access or suitable roosting sites.

R1 is a large pitched roof in the southern part of the hotel. It has a covering of natural slate with an underlay (both traditional bitumen felt and plastic membranes are present). The fascias and soffits are gridded and would prevent bat access. However there are missing slates and holes in the roofing membrane that would allow bats to gain access into the roof space. The large roof void houses water tanks. A search within the void found <10 bat droppings, which appeared to be old.

R2 is a small pitched roof with a covering of natural slate. The void can be accessed from a hatch near room 43 or it is possible to gain access from the void of R1. No evidence of bats was found within the roof void of R2.

R3 is a small pitched roof over the original / oldest part of the hotel. It is accessed via a hatch in room 8. It has a covering of natural slate with an underlay (both traditional bitumen felt and plastic membranes are present). There is a small fireplace at the western end of the roof void. No evidence of bats was found within this roof void. It is possible that bats could roost unseen behind gaps in the fascia boards in this section of the hotel. This would be assessed by the emergence surveys at dusk.

R5 is a pitched roof of natural slate (with an plastic membrane underlay) over the tallest part of the hotel. A small amount of what appeared to be old bat droppings were found within the roof void (<10 droppings in total). Mouse droppings were also found. Large gaps were observed at the gables of the roof that would allow bats to gain access.

Building A is the bin store and is a single storey concrete block (single skin i.e. no cavity) building with a roof covering of corrugated sheets (asbestos and perspex). It is very light within and does not contain suitable roosting sites for bats within. Gaps behind fascias were thoroughly searched and no evidence of bats found.

Building B is a small workshop. It is a single storey concrete block (single skin i.e. no cavity) building with a roof covering of corrugated asbestos sheets. There are no fascias. No evidence of bats was found.

Building C is Gibbson Cottage and **Building D** is Hendra Cottage. The properties are semi-detached, two storey and constructed of stone a natural slate pitched roof (with a plastic membrane). A search within the roof voids found <10 old bat droppings in the void of Gibbson and approx. 40 old bat droppings within the roof void of Hendra. There is a large stone chimney between the two properties that has crevices that could not be thoroughly searched. This would be assessed by the emergence surveys at dusk. There



is also a stone and concrete block shed outside Gibbson. No evidence of bats was found here and it was possible to carry out a through search.

Building E is Star Board Light. This is a two-storey house with a pitched roof of natural slate with no membrane in the main part of the roof. The western section of the roof void is smaller (semi-vaulted ceiling below) and has bitumen felt membrane. A search within the roof voids found <10 old bat droppings in the eastern part of the house. It was noted that there are many gaps at the fascias that would allow bats to gain access.

Building F is Port light which is guest accommodation adjoining Building E. It has a pitched roof of pressed cement/asbestos tile with a bitumen underlay. The ceilings are semi-vaulted with no access to the small void above. A thorough search for bats was not possible.

4.5.2 Bat emergence survey results

26th June 2015 – One common pipistrelle was recorded flying along the Garrison wall south to north. Another common pipistrelle was recorded flying near to the southern boundary of the hotel. These bats did not emerge from the buildings within the hotel complex. Both were recorded at least 45 minutes after the expected time of emergence for this species (suggesting they commuted to the site from elsewhere).

28th June 2015 – One common pipistrelle was recorded flying near to the southern boundary of the hotel. It did not emerge from the buildings within the hotel complex and was recorded 25 minutes after the expected time of emergence for this species.

Although surveyor's focused on the areas of the building that had work proposals that had the potential to impact upon bats, good coverage of most of site was achieved. Building E and F (Star Board Light and Port Light) were not covered by the emergence surveys as work proposals here will not impact upon the potential bat roosting areas. As bat activity was very low; with only two bat passes during the first survey and one bat pass during the second survey (and the direction of flight of these bats was seen) it can be confidently concluded that no bats emerged from the rest of the hotel complex during the emergence surveys at dusk.

4.5.3 Remote monitoring bat survey results

No bats were recorded using the void of roof R5 during the remote monitoring period.

4.5.4 Conclusion of detailed bat surveys

The visual survey identified old bat droppings within the following parts of the hotel: R1, R5, Buildings C, D and E. R3, F2 and Building F, c and F had areas that could not be thoroughly searched but which could potentially harbour bats. Of these areas only R5 and F2 have work proposals that could potentially impact upon bats. F2 is not suitable for remote surveying (as it is a flat roof), but was covered by emergence surveys. Remote monitoring of R5 was undertaken as this was the only void where remote monitoring was suitable and which had work proposals that could potentially impact upon bats. No bats were recorded during the remote monitoring exercise.

The emergence surveys covered the entire hotel with the exceptions of Building E and F (Star Board Light and Port Light) as work proposals here will not impact upon the potential bat roosting areas. No bats emerged from the areas of the hotel surveyed during the emergence surveys at dusk.

The surveys have identified that the following areas of Tregathens Hotel do not support roosting bats; F1-8, R1, R2, R3, R5, Buildings A-D. Any droppings found were old and represent historic use. Old droppings were found in Building E and F but as proposed works will not affect the roofs of these buildings they were not investigated further as there is no potential for bat impacts.

Through assessment of the habitats present it is considered very unlikely that the site is of value to commuting or foraging bats. Foraging within the site is very limited and the



site does not link wider areas of suitable foraging. This assessment was confirmed by the low levels of bat activity recorded during the emergence surveys at dusk.

4.6 Overall Site Evaluation

The site is not a designated site of nature conservation importance. The adjoining coastal (marine and intertidal) habitats are within the Isles of Scilly Special Area of Conservation (SAC); there are five Sites of Special Scientific Interest (SSSI's) on St Mary's Island; and parts of the southern coastline of St Mary's are within a Marine Conservation Zone (MCZ).

The survey area includes Tregarthens Hotel and associated buildings and grounds (see Figure 1). The hotel is a complex structure with single, two-storey and three storey sections. The roof-scape is also complex including flat roof sections, pitched roofs with voids and dormer sections. Also included within the hotel grounds are four semi-detached stone cottages, and concrete block outbuildings. A roof plan with references is included as Figure 2. Within the hotel grounds are small garden areas, flower borders and beds. The site is bound by an access road along the northern boundary, beyond this is a stone battery wall marking the back of the seashore. The western boundary is marked by a tall granite Garrison Wall. The road known as Garrison Hill marks the southern boundary.

The site does not contain any semi-natural habitats. Most of the site is built environment of buildings with concrete/tarmac between. Green landscape is limited to small areas of lawn and garden borders. Of the habitats present only the stone walls have biodiversity value. Which is likely to be at the level of the site. The wall with the earth core (between the access road near the shore and the gardens as shown on Photograph 5) may provide a refuge for invertebrates and small mammals. It and the other boundary walls within the site may support notable lichen populations. As mitigation has been designed to protect and reuse the stones, to avoid impacts on lichens, a specialist lower plant survey was not required.

It is possible that hedgehog is present within the garden habitats of the hotel and that lesser white-toothed shrew is present in the stonewall with an earth core without cement mortar between the northern access road and the kitchen garden (shown on Photograph 5).

The surveys have identified that the following areas of Tregarthens Hotel do not support roosting bats; F1-8, R1, R2, R3, R5, Buildings A-D. Any droppings found were old and represent historic use. Old droppings were found in Building E and F but as proposed works will not affect the roofs of these buildings they were not investigated further as there is no potential for bat impacts.

The site is not of value to commuting of foraging bats.

The small garden areas around the hotel support three invasive weed species that are included under Schedule 9 of the Wildlife and Countryside Act 1981; making it an offence to 'cause them to spread'. These are Montbretia (*Crocsmia x crocosmiiflora*), Three cornered garlic (*Allium triquetrum*) and Hottentot fig (*Carpobrotus edulis*).

5. ECOLOGICAL IMPACTS, MITIGATION AND MONITORING

5.1 Details of proposed works

The owners of Tregarthens Hotel are seeking planning permission to renovate the hotel. The proposals involve demolition of parts of the hotel, construction of new guest accommodation and internal renovations. Detailed proposals have not been provided but a summary of the proposals is given below:

- F1-8 (flat roof sections) and Buildings A and B will be demolished.



- The roof of R5 may be extended and is likely to be re-roofed as part of the works. All other pitched roofs (R1, R2 and R3) will not be impacted.
- Buildings C, D, E and F will undergo internal renovations with no roof work planned. The porch of Building D (Hendra Cottage) may be demolished. There may be some chimney works at Building E.
- There will be internal renovations to the main hotel building.
- There will be landscaping work potentially effecting all garden areas.
- The Garrison wall and retaining wall bordering the beach will not be affected.

The likely ecological impacts of the proposed development are considered below, along with suitable mitigation and requirements for further survey and monitoring. An assessment of the residual impacts is given at the end of this section.

5.2 Impacts to designated sites

The proposed development will not impact upon any designated sites of nature conservation importance or the features for which they were designated. The Environment Agency's 'Pollution Prevention Guidelines for Works and maintenance in or near water (PPG5)' will be followed to ensure the works do not impact upon the adjoining SAC. These are included in Appendix 1. Works will be confined to the site boundary (defined in Figure 1) and all workers will be briefed that under no circumstances must works extend onto the seashore.

5.3 Loss of habitat

It is likely that most of the garden habitats will be lost to the renovation. These are of no biodiversity value and their loss does not require mitigation.

The stonewalls around the boundary of the site will be retained and mitigation measure to protect these will be implemented (see section 5.4). It is possible that the stonewall with the earth core (Photograph 5) between the access track and the kitchen garden will be disturbed by the proposed works. The following mitigation will be implemented.

- The stones from the wall will be carefully dismantled by hand and stored in a fashion that replicates their existing orientation so that any notable lichens present will remain undisturbed.
- The earth core from this stonewall will be carefully raked out by hand, stored and re-used in the replacement wall.
- The stones will be re-used in the scheme. Cement mortar will not be used to avoid contamination of the potential lichen flora. Care will be taken to ensure original orientation of the stones is restored.

5.4 Degradation of habitat

There is the potential for the Garrison Wall, which may support notable lichens, to be degraded during the construction phase by vehicle movements and storage of materials. Mitigation to protect boundary features will be implemented.

- Protective fencing will be placed 0.5m from the foot of the Garrison Wall and 0.5m south of the shoreline retaining wall before construction activities commence.
- This fencing will remain *in situ* until all construction activities are complete.

There is the potential to degrade neighbouring habitat through the spread of invasive weeds. The garden habitats support three invasive weed species that are included under Schedule 9 of the Wildlife and Countryside Act 1981; making it an offence to 'cause them to spread'. These are Montbretia (*Crococsmia x crocosmiiflora*), Three cornered garlic (*Allium triquetrum*) and Hottentot fig (*Carpobrotus edulis*). These species were observed across the Garrison invading semi-natural habitat. The proposed scheme



could exacerbate the spread of invasive species across the island by the movement of contaminated material off-site. Mitigation to avoid this will be implemented.

- Montbretia, Hottentot fig and three cornered garlic will be eradicated prior to works commencing onsite. Invasive plants (taking care to include roots and bulbs) will be dug up by hand. This material will be composted onsite. This is achievable as the infected areas are small.

5.5 Disturbance to species

The proposed works will not impact upon bats. If the scope of works for Buildings E and F alter to involve impacts to the roof then these need to be informed by bat emergence surveys at dusk. The proposals may involve repairs to the chimney of Building E. Chimney repairs will not adversely impact upon any bats that may be present nor will it result in the loss of a bat access point (potential bat access points in this building are at the fascias).

The proposed demolition works have the potential to disturb nesting birds. If demolition is to be carried out between March and October (inclusive) then a search for nesting birds will be carried out. If active nests are found the works will not proceed until dependant young have fledged.

Garden clearance and potential clearance of the stone wall will the earth core has the potential to disturb hibernating hedgehogs or cause injury to hedgehogs and lesser white-toothed shrew (Scilly shrew). To avoid these impacts once invasive weeds have been removed or treated the remaining garden foilage will be cleared to ground level by hand at least three days prior to earth movements. The cut material will be removed from the construction zone. The areas are small so this is achievable. This will degrade the habitat and allow hedgehog and lesser white-toothed shrew to move away from the site on their own. The stone wall will be dismantled by hand as detailed in section 5.3 to avoid impacts to shrews. If hedgehog and shrews do not move to safety on their own accord they may be transferred to a neighbouring garden.

5.6 Opportunities for ecological gain

Landscaping schemes should aim to compliment neighbouring coastal semi-natural habitats and where possible native species of local providence should be used.

There is an opportunity to provide permanent roosting and nesting sites for bats and birds within the completed building. Nest and roost boxes can be incorporated into the fabric of the building or bats can be given access to roof spaces by the inclusion of bat slates of gaps at the fascias.

5.7 Further Surveys

If the scope of works for Buildings E and F alter to involve impacts to the roof then these buildings need to be informed by bat emergence surveys at dusk.

If demolition is to be carried out between March and October (inclusive) then a search for nesting birds will be carried out. If active nests are found the works will not proceed until dependant young have fledged.

5.8 Monitoring

There are no monitoring requirements.

5.9 Residual Impacts

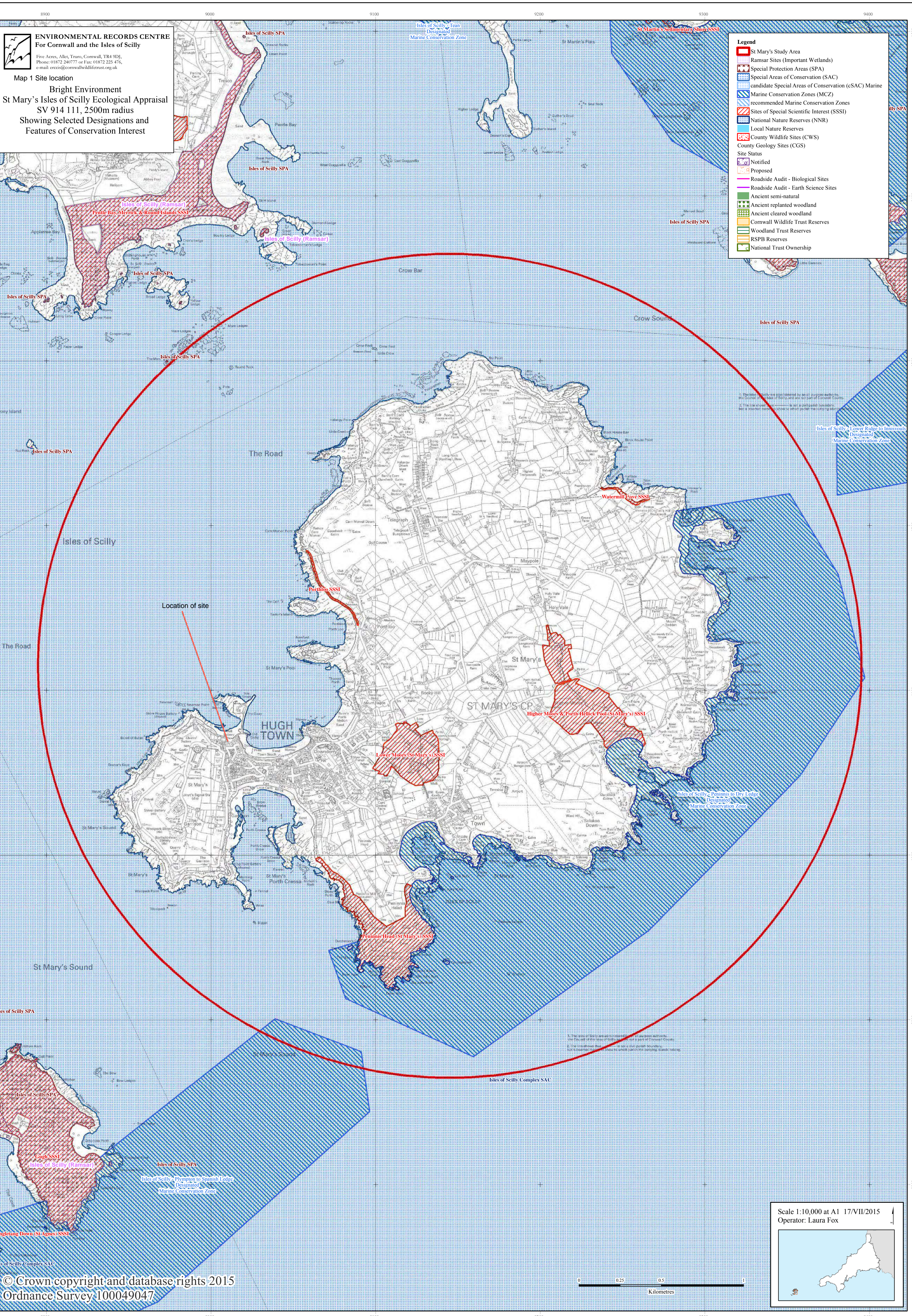
No residual impacts are anticipated.



ENVIRONMENTAL RECORDS CENTRE
For Cornwall and the Isles of Scilly
Five Acres, Allet, Truro, Cornwall, TR4 9DJ,
Phone: 01872 240777 or Fax: 01872 225 476,
e-mail: ercc@cornwallwildlifetrust.org.uk

Map 1 Site location
Bright Environment
St Mary's Isles of Scilly Ecological Appraisal
SV 914 111, 2500m radius
Showing Selected Designations and
Features of Conservation Interest

- Legend**
- St Mary's Study Area
 - Ramsar Sites (Important Wetlands)
 - Special Protection Areas (SPA)
 - Special Areas of Conservation (SAC)
 - candidate Special Areas of Conservation (cSAC) Marine
 - Marine Conservation Zones (MCZ)
 - recommended Marine Conservation Zones
 - Sites of Special Scientific Interest (SSSI)
 - National Nature Reserves (NNR)
 - Local Nature Reserves
 - County Wildlife Sites (CWS)
 - County Geology Sites (CGS)
 - Site Status
 - Notified
 - Proposed
 - Roadside Audit - Biological Sites
 - Roadside Audit - Earth Science Sites
 - Ancient semi-natural
 - Ancient replanted woodland
 - Ancient cleared woodland
 - Cornwall Wildlife Trust Reserves
 - Woodland Trust Reserves
 - RSPB Reserves
 - National Trust Ownership



Appendix 1 Environment Agency's Pollution Prevention Guidelines for Works and maintenance in or near water (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)

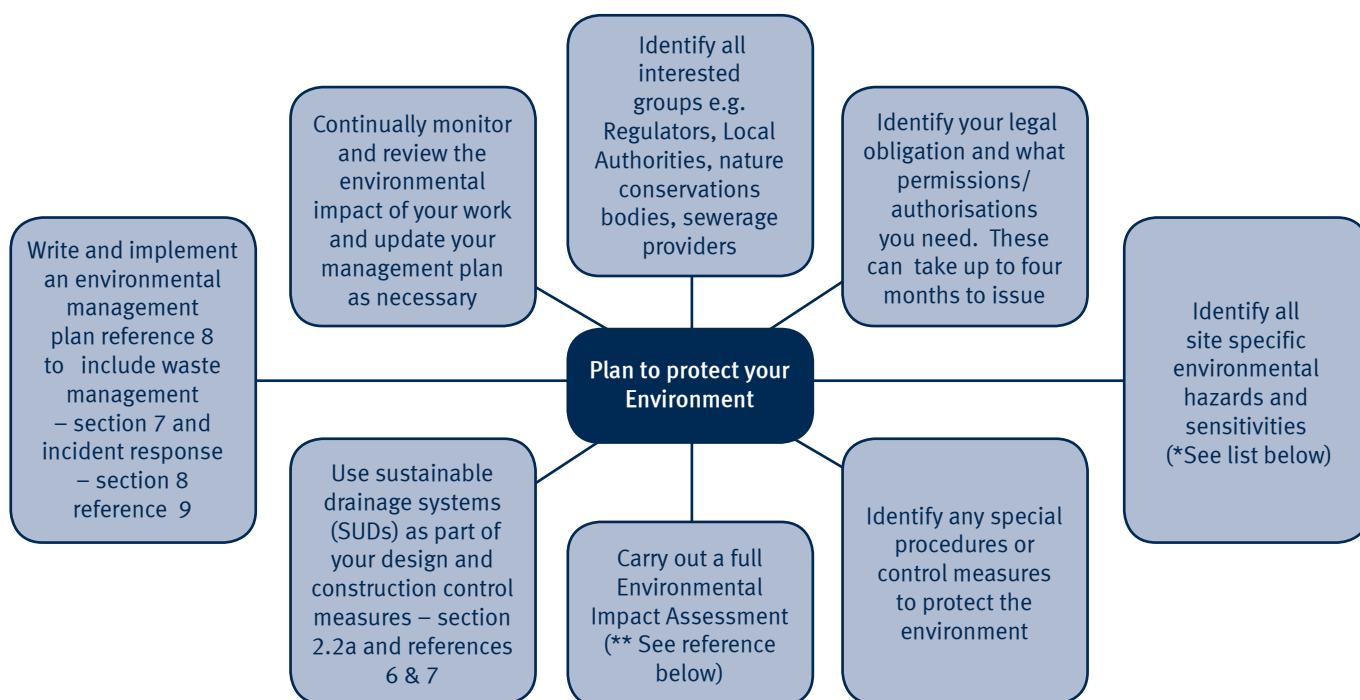
Types of activity that may remove water from sensitive parts of the water environment or affect other water users include:

- 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:

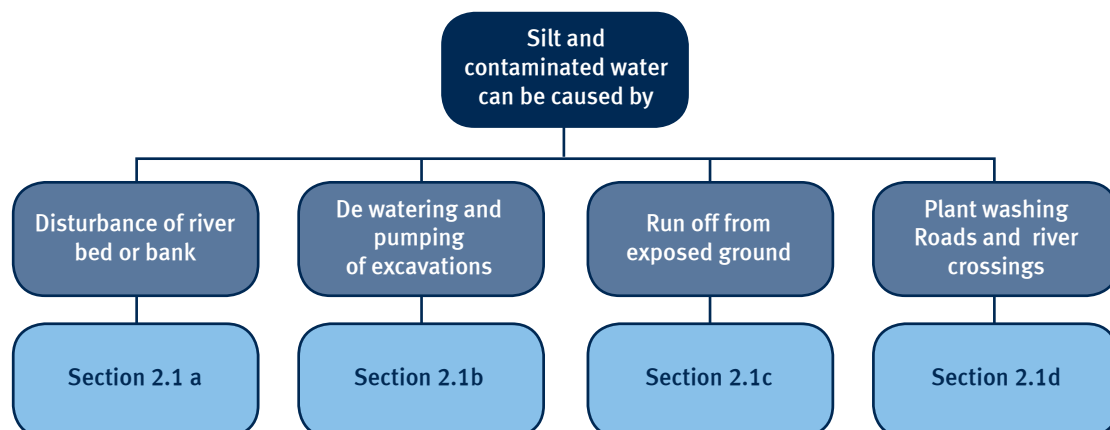
- silt - section 2
- cement and concrete - section 3
- chemicals and solvents -section 4
- bridge cleaning debris - section 5
- herbicides - section 6
- waste materials (including hazardous waste or special waste in Scotland) - section 7

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

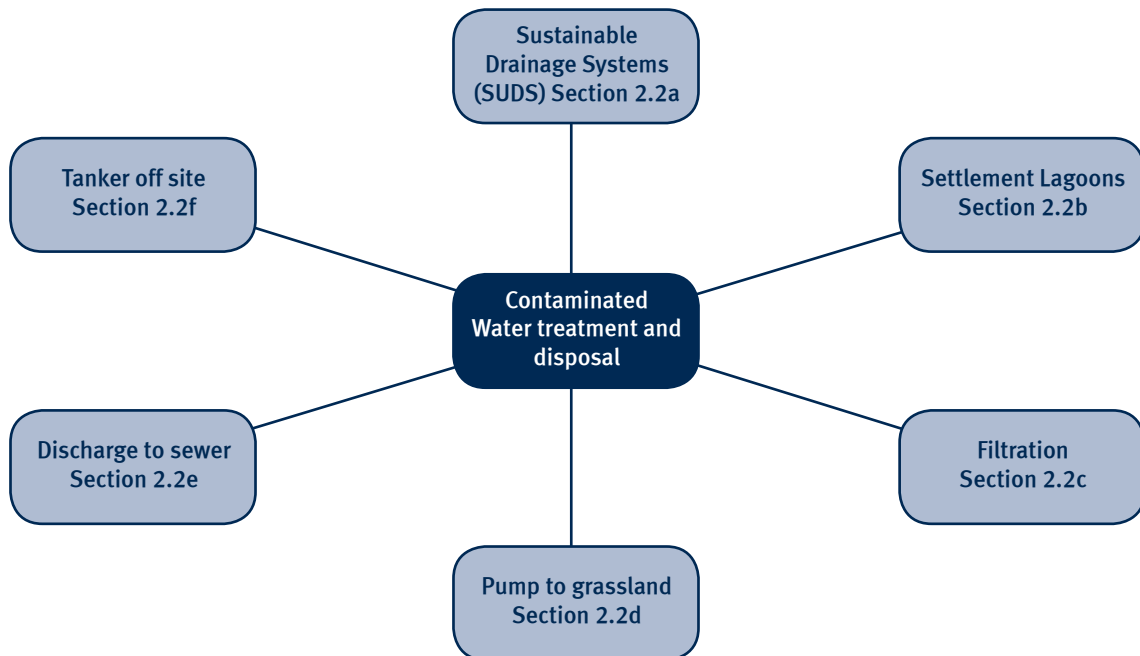
Where run off water is contaminated with silt or other pollutants such as oil this water must not be pumped or allowed to flow directly or indirectly in to surface waters or groundwater without treatment.

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"> • maintain a constant pumped inlet rate • minimise the inlet flow as much as possible by using energy dissipaters or rip rap • position inlet pipe work vertically to dissipate energy • provide lined inlet chamber to reduce velocity of flow • line the inlet chamber and outlet weir with materials like geotextiles , brickwork ,polythene or timber • have a long outlet weir to minimise disturbance • two or three lagoons in series will increase silt retention • clean inlet chamber regularly • monitor discharge quality frequently

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 bowzers 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) 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/)
- 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
- 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

Environment and Heritage Service for Northern Ireland: www.ehsni.gov.uk

Scottish Environment Protection Agency: www.sepa.org.uk

Department for Environment Food and Rural Affairs: 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

NetRegs: www.netregs.gov.uk

Construction Industry Research and Information Association : www.ciria.org.uk

Our contact details

Environment Agency
www.environment-agency.gov.uk

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

Scottish Environment Protection Agency
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

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 for details on any of the topics covered in this document.



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