

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

UNION CHAIN BRIDGE



DECEMBER
2018

CLIENT Northumberland County Council
PROJECT NAME Union Chain Bridge
PROJECT NUMBER 5490

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Report Version	Status	Date	Changes	Author	Proof Read	Approved
R01	Draft	30.01.18	Preliminary draft	HN	RJW	JS

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A. INTRODUCTION

E3 Ecology Ltd was commissioned by Northumberland County Council to produce a Construction Environmental Management Plan (CEMP) for works at Union Chain Bridge, Berwick. The plan seeks to outline all required steps to be taken to ensure adherence to all relevant environmental legislation and protection of wildlife during construction works and to facilitate delivery of the agreed mitigation strategy. Further finalisation of this CEMP will be required once additional survey work and the detailed methodology and timescales of the work are confirmed.

It is proposed to carry out structural refurbishment works to the Union Chain Bridge, Berwick. This will require the establishment of temporary site compounds on each bank along with the clearance of a small area of trees and vegetation around existing mason towers to allow access of heavy machinery to the towers. Working methods will include the installation of a Unifloat pontoon system¹ with retractable legs used to position the pontoon under the bridge. From this system the decking and handrail elements of the bridge will be removed. These will subsequently be refurbished offsite and then reinstalled from the pontoon system.

Consultation with the MAGIC website² indicated that the site is located within the River Tweed Special Area of Conservation (SAC) and the Tweed Catchment Rivers (England) and River Tweed (Scotland), Sites of Special Scientific Interest (SSSI).

The table below lists the notified/qualifying features of these sites:

TABLE 1: NOTIFIED AND QUALIFYING FEATURES OF DESIGNATED SITES		
TWEED CATCHMENT RIVERS - ENGLAND LOWER TWEED AND WHITEADDER SITE OF SPECIAL SCIENTIFIC INTEREST (ENGLAND)	RIVER TWEED SITE OF SPECIAL SCIENTIFIC INTEREST (SCOTLAND)	RIVER TWEED SPECIAL AREA OF CONSERVATION
Estuaries	Trophic range river/stream	Watercourses of plain to montane levels with <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation
Flowing waters - Type I: naturally eutrophic lowland rivers with a high base flow	Vascular plant assemblage	Otter
Flowing waters - Type V: principally a lowland type, widespread over resistant rocks in England and Wales	Atlantic salmon	Sea, Brook and River lamprey
Invertebrate assemblage	River, sea and brook lamprey,	Atlantic salmon
Sheltered muddy shores (including estuarine muds)	Beetle and fly assemblage	
Atlantic salmon	Otter	
Otter		
Sea, Brook and River Lamprey		
Breeding population of nationally rare fish species - <i>Allis shad</i> , <i>Alosa alosa</i>		
Aggregations of non-breeding Goldeneye, <i>Bucephala clangula</i> and Mute Swan, <i>Cygnus olor</i>		

Survey of habitats within the site was undertaken in 2018 and included bat activity survey, aerial tree inspection, badger, otter, invasive botanical species survey and red squirrel survey. Full details of this survey work can be found within the separate ecology report, 5490 Union Chain Bridge R01.

¹ <https://www.jenkinsmarine.co.uk/unifloat-pontoons.html>

² MAGIC website: www.magic.gov.uk

B. RESPONSIBILITIES

It will be the responsibility of the site manager and main contractor to adhere to the requirements of this document as well as all wildlife legislation. An Ecological Clerk of Works (ECoW) will be employed throughout the development process to provide support in this regard.

The site manager will be responsible for ensuring that the information required to protect wildlife and the local environment from harm and disturbance forms part of the induction process for all contractors on site.

C. TIMING OF WORKS

The timing of works on site will be completed in line with wildlife legislation. For this phase of the development, key receptors include notified/qualifying fish species and nesting birds. As a result, the following timing restrictions will apply:

- No vegetation removal will take place on the site within the nesting bird season (March to August inclusive) unless a suitably qualified and experienced ecologist has confirmed the absence of active nests.
- Tree removal will only take place after trees 3 and 4 have been climbed prior to felling, once the overhead cable has been disconnected, in order to check for any potential roosting features which have not been previously recorded. Should potential roost sites be identified an appropriate mitigation strategy will be designed and implemented.
- Repointing works to the mason towers will be undertaken only after an endo-scoping check of any suitable crevices by the ECoW.
- No works on site are to be undertaken until the following checking surveys have been completed:
 - Badger
 - Otter
 - Red squirrel
 - Invasive species
- Should the above checking surveys identify a requirement for any mitigation or compensation in addition to that detailed within this document, this will be agreed with the local authority and implemented in full.
- **Key timings relating to fish species will be confirmed following further survey work.**

D. SPECIFIC WORKING METHODS - PROTECTED SPECIES AND HABITATS

D.1 GENERAL WORKING PRACTICES

In order to reduce the risk of pollution entering the nearby ecosystems the following measures will be put in place on site:

- Plant and wheel washing is carried out in a designated area of hard standing at least 50 metres from any watercourse or surface water drain.
- Any waste water is disposed of appropriately within the foul sewage drain with permission from Northumbrian Water as needed.
- Any polluted water is dealt with based on the pollution and in line with current best practice. It will not be disposed of into the surface or foul water system.
- Lighting will not be located within 50m of the River Tweed corridor.
- The roots and crowns of retained trees will be protected throughout the development through the provision of adequate construction exclusion zones in accordance with the guidance given by BS5837:2012. Tree protection fencing will be installed around these zones in order to prevent accidental damage by construction traffic.

D.2 INVASIVE SPECIES

Himalayan balsam and Japanese Knotweed, both listed as invasive on Schedule 9 of the Wildlife and Countryside Act (1981), were recorded within the survey area. Giant hogweed and montbretia, also listed as invasive, were recorded previously during survey carried out by Total Ecology in 2017 however no evidence of either species was recorded in 2018. Both giant hogweed and Japanese knotweed are listed in the reasons for the currently unfavourable condition of parts of the SSSI. Strict working measures will be put in place to ensure that no spread of any of the above invasive species occurs as a result of work (See Appendix 5).

D.3 EXCAVATIONS

Any excavations on site will have a means of escape for wildlife with the provision of a 45 degree ramp in at least one location, ideally one end of the excavation being designed to have this slope. If this is not possible, at least two timber planks or similar will be positioned at opposite ends of the excavation to provide animals with an escape route. In addition to this, should excavations be left overnight, they will be visually searched for wildlife prior to works recommencing the following day.

Excavations will not be left in situ should they not be worked on for more than 48 hours. If this is the case, they will be covered or filled until required.

D.4 STORAGE

All materials will be stored at least 100m from the River Tweed. This includes any material storage as well as fuel and soils.

All fuel and vehicle storage areas will have sufficient bunding (110% of the volume being stored) around them to contain any spills in order to prevent these materials from entering the nearby watercourses. All storage areas over 200 litres will conform with the Control of Pollution (Oil Storage) (England) Regulations 2001. All fuel, oil and chemical storage on site will be made secure. No storage of these materials will be located within the flood zone from the River Tweed.

A spill kit with sand, earth or other specific products that are approved for the materials, will be kept in close proximity to these areas. Contractors using these facilities will have training on how to use these correctly.

Should a pollution event occur the Environment Agency must be informed immediately.

D.5 WORKS FROM WITHIN THE RIVER CHANNEL

Sea, brook and river lamprey, Atlantic salmon are listed as notified and qualifying features for the statutory designated sites that are associated with this stretch of the River Tweed. In addition breeding populations of nationally rare fish species Allis shad *Alosa alosa*, are notified for the Tweed Catchment Rivers: Lower Tweed and Whiteadder SSSI (England). Floating vegetation including *Ranunculus fluitantis* is also listed as a qualifying features for the River Tweed SAC.

Works to dismantle and reassemble components of the bridge decking will be undertaken from a Unifloat pontoon system³ which uses retractable legs to hold it in position. This will result in potential damage to the river bed resulting in increased silt release into the water column. Damage and disturbance of the river bed also has the potential to impact on key fish species such as salmon and lamprey that are listed as qualifying/notified species within the internationally designated sites. Use of the barge also has the potential to cause displacement and damage to the small amount of floating water crowfoot that is present within the working area.

Further survey work of the river bed is required in order to access the potential impacts on these key fish species. Following further survey a specific method statement will be produced in relation to fish protection and minimise silt release. Working methods are likely to include the following:

- Pre work commencement check will map out any areas of Callitricho-Batrachion vegetation present within the working areas and design, if necessary a translocation scheme.
- Lighting will be minimised so that there is no additional light spill on to the river.
- Timings of work will be designed to avoid key fish spawning periods.

E. ECOLOGICAL CLERK OF WORKS

An ecological clerk of works will be employed for the construction period to provide ongoing advice and support. The ECoW will have the following responsibilities:

- Provide a tool box talk to site managers on the ecological sensitivities of the site.
- Provide input into the site induction process such that it includes ecology as a topic.
- Provide advice on and monitor the protection of sensitive and designated sites, habitats, and protected species.
- Monitor construction exclusion zones and construction methods in sensitive areas.
- Provide advice on construction methods where there may be conflicts between the development and the environment.
- Monitor the success of measures and provide feedback to the local authority.
- Ensure that the developer conforms with wildlife legislation and best practice.
- Keep records on a fortnightly basis of site visits, incidents and near misses and remedial action which has been taken.

³ www.jenkinsmarine.co.uk/sg_userfiles/Unifloats.pdf

F. SPECIES SPECIFIC METHOD STATEMENTS

All works on site are to adhere to the following method statements which are appended to this report:

- Badger Method Statement
- Otter Method Statement
- Reptile Method Statement
- Bat Method Statement
- Invasive Species Method Statement
- Fish Protection Method Statement (Produced following further survey work).

These will be updated following pre works commencement checks as detailed in section C. Should checks identify a requirement for licencing to be obtained prior to the start of works, a full mitigation stagey will be agreed with the Local Planning Authority. The implementation and adherence to these method statements will be monitored during fortnightly visits by the ECoW.

APPENDIX 1. BADGER METHOD STATEMENT

INFORMATION FOR CONTRACTORS

Badger survey recorded no setts within the survey area however evidence of badger activity including a well-used latrine was recorded. Badger are likely to be resident within the wider landscape and it is likely that badger will forage within the site at times. The river banks and woodland areas provide a good quality foraging resource with opportunities for sett creation.

Relevant Legislation

Badgers are a high profile species, fully protected by law, mainly as a result of badger baiting. Under the Protection of Badgers Act 1992 the law offers considerable protection to both badgers and badger setts. It is an offence to kill or take badgers or cause a dog to enter an occupied sett and also to intentionally or recklessly:

- Damage a badger sett or any part of it
- Destroy a badger sett
- Obstruct access to, or any entrance of a badger sett
- Disturb a badger whilst it is occupying a badger sett

In addition, the Wild Mammals (Protection) Act 1996 makes it illegal to subject badgers to any wilful act of cruelty or abuse.

Species Ecology

The European Badger (*Meles meles*) is one of the larger British mammals, weighing around 10kg. Although comparatively common, its distribution is uneven, with about one third of the national population being found in the south west of England. They are rarely seen due to their nocturnal lifestyle.



Badgers rely upon a variety of types of habitat for food and shelter. The majority of setts are found within woodland, though they can occur within scrub, on hedgebanks, or other areas with well-drained soils, a lack of disturbance and suitable foraging areas in the vicinity. Typical badger habitat is in the lowlands, below 1000m AOD, including old woodland on sloping ground, a network of pastures and hedgerows and perhaps other food sources such as arable fields and old orchards. Permanent pasture is particularly important, as it supports high earthworm populations, one of their key food sources. Other food sources are small mammals, insects, fruits, nuts and crops.

Field Signs

Badger holes are usually at least 250mm in diameter and entrances form a semi-circular shape with a flattening base and dome shaped roof and sides. Entrances commonly have large spoil heaps outside the entrance of earth and old bedding and there may be hairs in the soil that can be identified as badger. Other field signs include the presence of latrines, broad well-flattened trails and footprints.



If the entrance hole is only partially used it is likely to have debris such as leaves or twigs in the entrance and have vegetation growing around the entrance. If the hole is disused it is

likely to be partially or completely blocked. The remains of old spoil heaps may be covered by moss or plants.

Working Methods

Survey has indicated that there is a risk that badger may enter the footprint of the proposed development. To minimise the risk of harm, and to help ensure that conservation status is maintained, the following procedures must be implemented:

- No fires will be permitted as part of the works and any chemical stores will be secure.
- Wherever possible, works within open trenches will be completed and the hole refilled within one day, to minimise the risk of badger, or other animals, falling into any open trenches.
- Any excavations that are left overnight will include a ramp of 45° or less on one face to allow badgers and other wildlife to climb out should they fall into the excavation.
- If badger or signs of badger are found during works, stop construction in that area and contact the Ecological Clerk of Works.

APPENDIX 2. OTTER METHOD STATEMENT

INFORMATION FOR CONTRACTORS

Otter are a notified and qualifying feature for the statutory designated sites, within which the bridge and associated working areas fall. Detailed survey of the river banks recorded no evidence of otter activity however overhanging and woodland vegetation on the eastern side of the river will provide good potential opportunities for laying up areas or holt creation with vegetation providing good shelter and potential runs. Otter are known to be present on the river and it is highly likely that otter will forage within the river and commute through the survey area on occasion.

Relevant Legislation

Otter and their places of refuge are protected at a European level under the (as amended 2017) and have full protection under Schedules 5 and 6 of the Wildlife and Countryside Act (1981) as amended.

Under this act it is a criminal offence to:

- kill, take or injure an otter
- intentionally disturb an otter in its place of shelter, or
- intentionally damage, destroy or obstruct access to a place of shelter

It is illegal to:

- deliberately or recklessly kill, injure or take (capture) an otter
- deliberately or recklessly disturb or harass an otter
- damage, destroy or obstruct access to a breeding site or resting place of an otter (i.e. an otter shelter)

If an offence under the above acts is committed then prosecution can lead to fines and/or imprisonment.

Species Ecology

Otters are large members of the weasel family, males being about 9kg in weight and around 1.1m long, females being slightly smaller. Inland otters are generally crepuscular/nocturnal, feeding, moving mostly at dusk and dawn. They are solitary unless a female has dependent cubs when 3 or unusually 4 otters may be seen together. They are semi-aquatic, obtaining most of their food from the water, including fish, eels and crustaceans. Other food sources include frogs, young rabbits and young birds. In urban areas, rats may be taken occasionally.

Shelters are broadly split into underground holts and above ground couches. These are usually on or in close proximity to the riverbank. However, natal holts (where females give birth to their young) may be located up to 500m away from the nearest watercourse. Holts are pre-existing features such as tree root systems or gaps between boulders. The otter does not excavate a holt site and therefore there are a limited number of suitable features along a given stretch of riverbank. Access may be above or below the water. A couch may simply be a sheltered depression within vegetation. Animals will use a number of holts and couches across their territory.

All shelters are protected however, and it is essential that any shelters that may be affected by a proposed development are identified both to protect the animals themselves and to comply with the relevant legislation.

Field Signs

The most obvious field sign is spraint (otter faeces). Spraint are usually green/brown in colour, sweet/fishy smelling, between 1-5cm in length and can be hard or soft. Fish bones and scales can be seen within the spraint. They are used as markers and signals and a single otter may deposit up to 20 spraint per night. Features where spraint can be found include: rocks and boulders within the stream, beneath bridges and on overhanging tree limbs. Otter will also use novel objects such as tyres and rubbish bags. Other field signs include a 5-toed footprint, feeding remains such as crayfish claws or fish remains and well-worn pathways leading down to the water.



Spraint



5-toed footprint

Working Methods

The following working methods and constraints will be implemented:

- To help maintain the value of the watercourse, best practice will be followed at all time to ensure no pollution or littering of the watercourse or surrounding area. The area will be litter picked on a weekly basis, and all construction related materials removed on completion of works.
- The use of high intensity lighting which would illuminate the river will not be permitted during hours of darkness, both during the works period and following on from the completion of the project, to ensure that suitable habitat for otter is maintained adjacent to the site.
- No works within 30m of the river will be undertaken after dusk.
- Otter are naturally inquisitive. Any excavations that are left overnight will include a ramp of 45° or less on one face to allow otter and other wildlife to climb out should they fall into the excavation.
- Best practice working methods as layout within the main body of the CEMP will be implemented at all times.

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- If otter or possible signs of otter are found during works, stop construction in that area and contact the Ecological Clerk of Works.

APPENDIX 3. REPTILE METHOD STATEMENT

INFORMATION FOR CONTRACTORS

Relevant Legislation

Slow worm, common lizard, adder and grass snake are partially protected by the Wildlife and Countryside Act 1981. It is an offence to intentionally kill, injure or sell an individual of these species. Slow worm and/or common lizard may be present at this site.

In order to minimise the risk of breaking the law it is essential to work with care to avoid harming reptiles, to be aware of the procedures to be followed if individuals of any species are found during works, and to commission surveys and expert advice as required to minimise the risk of reckless harm to those species offered full protection under the Wildlife and Countryside Act.

If appropriate measures have been taken to minimise the risk of reckless harm or disturbance to these species and work is being undertaken as part of a legal development with planning permission then prosecution is very unlikely if animals are accidentally harmed. This would be taken as an incidental result of a lawful operation.

Species Ecology

The most favoured habitat for most reptile species are heathland, scrub, rough grassland, coastal dunes and moorland. Typically they will only range over 10s of metres giving a home range of below 1000 square metres. Between October and March, most reptiles hibernate below ground, often in large mammal burrows or other refuges both natural and man-made.

Particularly high-risk areas of habitat for reptiles are:

- Dry, undisturbed open habitat with a mix of sparse and dense vegetation.
- Areas of coarse grassland adjacent to bare ground and hedgerow.
- Any piles of old timber, rubble or refuse.

Working Methods

For this site, survey has indicated that there is low risk that very small numbers of reptiles may be present at some times of the year. To minimise the risk of harm, and to help ensure that conservation status is maintained, the procedures to be followed include:

- Areas identified by the ECoW such as tall grassland and scrub are to be strimmed and cleared with hand tools to remove cover. These areas will then be left to allow reptile to move from them for at least 24 hours
- Logs from felled material can be stacked to create habitat piles within areas of retained scrub and branches chipped to mulch areas of retained scrub.
- Any areas of rocks, brick rubble or fallen timber that have been present for over 1 months are to be destructively searched before the start of construction works in that area, to help protect wildlife.
- If reptiles are found during works, stop construction in that area and contact the Ecological Clerk of Works. If animals are likely to be harmed without immediate action handle them with care, place in a cool and shaded receptacle and release them in tall grassland/scrub outwith the construction area in a location that will not be disturbed in the future. Should grass snake be found and require handling, thick gloves will be worn.

APPENDIX 4. BAT METHOD STATEMENT

INFORMATION FOR CONTRACTORS

Both towers are considered to be of moderate suitability for use by roosting bats whilst the remaining bridge structure is considered to be of low suitability. Dusk and dawn bat activity survey of the bridge structures recorded no evidence of roosting bats however there remains a low residual risk that the bridge is used by small numbers of bats.

All bat species are specially protected. The Wildlife and Countryside Act (1981) and Habitat Regulations (2017) make it an offence to:

- intentionally kill, injure, or take any species of bat
- intentionally or recklessly disturb bats
- intentionally or recklessly damage destroy or obstruct access to bat roosts

Fines of up to £5000 for each individual bat affected and confiscation of vehicles/equipment used can be imposed for deliberate or reckless disturbance of bats or damage to a roost site.

Under these regulations Natural England licenses are required for works that may adversely affect bats.

Bat roost sites in buildings and stone structures can be difficult to locate. British bats vary in size, the smallest being the crevice roosting Pipistrelle with a body the size of a matchbox. The small size of these animals means that they can roost within the smallest cracks or crevices.

Common locations for crevice roosting bats within buildings include beneath slates or tiles, within mortise joints, rubble fill and cavity walls and between loose stones (see photos). It is possible that small colonies may be present within the fabric of a building yet no external signs are visible. Therefore care is needed when works affect such features.



Working Methods

Survey work has been carried out at this site with no evidence that bat roosts are present. There is a residual risk that bats may use the bridge structures at times, so works are to follow this method statement to minimise the risk of harming wildlife.

The following working methods to minimise the risk to bats and avoid causing reckless damage or disturbance must be followed:

- **The site manager will be inducted by the ECoW prior to the commencement of works.**
- No re-pointing of stonework will be undertaken during the hibernation period.
- Prior to re-pointing works of the mason towers, the structures will be inspected by the ecological clerk of works and any crevices with the potential to support bats will be marked out. These will be inspected with an endoscope prior to re-pointing to ensure that no bats are present.
- Should works be carried out within the small tower voids, these will first be inspected by the ecological clerk of works to ensure that no bats are absent.
- If at any point bats are found, works will cease and ecological clerk of works will be supervised.
- If bats are found during works the ecological consultant will be contacted.
- Remedial timber treatments that are toxic to mammals will be avoided. If required, timber treatment will be carried out in the spring or autumn. Both pre-treated timbers and timber treatments will use chemicals classed as safe for use where bats may be present (see http://www.incc.gov.uk/pdf/batwork_manualpt4.pdf).
- Construction will follow the recommendations of the project ecological clerk or works to help to ensure that roosting opportunities are present in the future.

If bats are found at any time during the development work, E3 Ecology Ltd (01434 230982) must be contacted immediately.

If it is necessary to move the bats, gloves should be worn and the bats should be carefully placed into a cardboard box and either kept in a quiet place or moved to a part of the building that will not be affected by the construction work and released after dark, close to the roost site.

APPENDIX 5. INVASIVE SPECIES

INFORMATION FOR CONTRACTORS

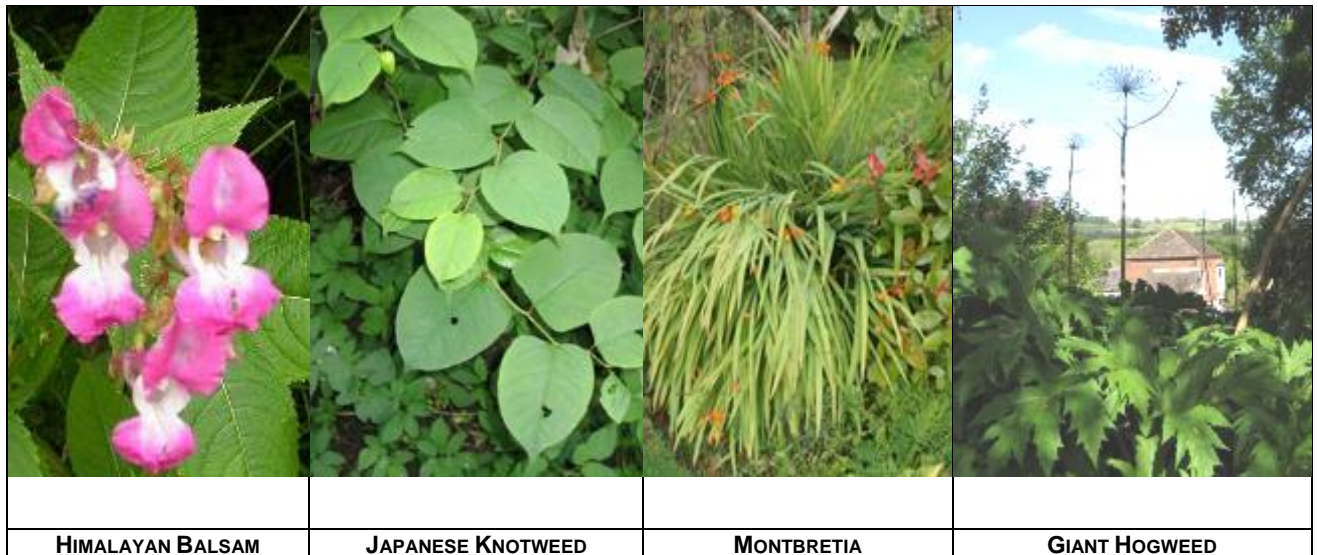
Himalayan balsam (*Impatiens glandulifera*), Giant hogweed (*Heracleum mantegazzianum*), Montbretia (*Crocasmia x crocosmiflora*), and Japanese knotweed (*Fallopia japonica*), have all been recorded within the site.

All of the species above are listed on Part II of Schedule 9 of the Wildlife and Countryside Act (1981 as amended). Section 14 of the Act (1981) states:

'if any person plants or otherwise causes to grow in the wild any plant which is included in Part II of Schedule 9, he shall be guilty of an offence.'

This could include cutting the plant or roots and disturbing surrounding soil if not correctly managed.

Any polluted soil or plant material which is viable should be appropriately disposed in order to ensure that there is unintentional spread of plants. Contaminated soil is classed as 'controlled waste' and should be accompanied by appropriate Waste Transfer documentation.



Working Methods

- Given the current known location of these species around the site and working areas it is likely that only Himalayan balsam will be impacted by works however updating survey will be carried out prior to the start of works in order to map out any areas where species listed as invasive are present and this method statement updated appropriately.
- Locations of invasive species will be included within site inductions and demarcated if required. A map of know locations will be displayed within the site office.
- An ecological clerk of works will be present on site for a minimum of once a fortnight for the durations of works. A check for invasive species will be included within this site visit to ensure appropriate measures are in place and adhered to.

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- Areas of Himalayan balsam (or other identified invasive species) that are present within working areas will be monitored and not allowed to grow more than 20cm above ground. Regular strimming should be undertaken from early in the growing season and maintained throughout the summer to prevent the production of any seed. Rolling or crushing of stems can also be undertaken to inhibit growth.
 - Arisings will be composted on site or removed to a licenced landfill.
 - Should giant hogweed be recorded on site, particular care should be given due to the hazardous effects associated with its sap. Further advice should be sought from the ecological clerk of works.