

MVV Environment Devonport Ltd
Energy from Waste Combined Heat and
Power Facility
North Yard, Devonport
Ecological Management Plan

May 2011



Prepared for

Revision Schedule

Ecological Management Plan May 2011

Rev	Date	Details	Prepared by	Reviewed by	Approved by
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01	14/04/11	Final	Paul Gregory Ecologist	Samantha Leathers Senior Landscape Architect	Ian Roach Principal Environmental Consultant
02	17/05/11	Revised Final Issued for Planning	Paul Gregory Ecologist	Samantha Leathers Senior Landscape Architect	Ian Roach Principal Environmental Consultant

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1 Introduction

1.1 Background

- 1.1.1 Scott Wilson Limited has prepared this Ecological Management Plan to accompany the landscape proposals set out in this Planning Application for the proposed EfW CHP Facility at North Yard, Devonport. The document is a set of objectives and actions on how to best manage the ecological resources within the proposed development site.
- 1.1.2 The five - ten year management plan has been produced for the maintenance of the existing and newly created habitats and planted areas within the site. The management plan includes the maintenance and enhancement of existing semi-natural broadleaved woodland and retained semi-improved neutral grassland and scrub. The creation of habitats include planted native trees and shrubs, semi-improved neutral grassland, ponds and wetlands, a brown roof, reptile hibernacula, 'bee-banks', bird and insect boxes.
- 1.1.3 The commitments should be considered in conjunction with the Landscape Management Plan for the site. This management plan is a general overview of habitat prescriptions for the site.

2 Habitat Management Plan – Schedule

2.1 Semi-natural Broadleaved Woodland (Blackies Wood)

- 2.1.1 Structural diversity within the woodlands will be increased by thinning out the more competitive species such as sycamore (*Acer Pseudoplatanus*) and ash (*Fraxinus excelsior*). Selective removal of occasional mature trees, preferably sycamore, will be undertaken over a five to ten year period. This will allow sufficient time for a diverse understory to develop within the woodland clearings. This will increase the range of niches available to woodland plants and animals and so increase species diversity.
- 2.1.2 Mature tree(s) which are to be felled that host features, such as rot holes, cracks, crevices and wood pecker holes, will first be re-inspected by a licensed bat ecologist with the aid of a tree climber if required. Surveying for the presence or potential for roosting bats is undertaken by inspecting the tree(s) for signs of bat occupancy, such as presence, droppings, scratch marks, staining and feeding remains. If tree(s) are suspected to have been used by bats then the tree(s) should be left in-situ.
- 2.1.3 Any mature tree(s) that are to be felled should be undertaken outside of the breeding season, usually taken as March - August inclusive. However, if felling cannot be avoided during the bird nesting season then an ecologist should supervise any works. Prior to commencement of any works a dedicated search will be undertaken for bird nests by an ecologist. If nests are found then these will be marked and left undisturbed until the young have fledged. More rigorous restrictions apply for Schedule 1 species listed under the Wildlife and Countryside Act, 1981.
- 2.1.4 Re-growth within the clearings will be monitored and thinned of sycamore as needed to promote the regeneration of pedunculate oak (*Quercus robur*).
- 2.1.5 Dead or dying trees will be left in-situ wherever possible. However, dead or dying trees may need to be cut down occasionally for safety reasons and the wood should be retained on site, for example in the form of habitat or log-piles to provide refugia for invertebrates.
- 2.1.6 Scrub can be left to grow naturally but will be thinned out using a strimmer or brush cutter where and when the scrub canopy overshadows the field layer. Selective removal of the most dominant competitive scrub species will be undertaken so as not to encroach upon other habitats. Cut back of small sections will be undertaken every year to create a mosaic of ages. Any works should take place between September and February to avoid disturbance to nesting birds.
- 2.1.7 An existing area of dense bramble located in the north-west of the woodland (opposite 13-18 Savage Road) is to be managed in this way. This area is to be selectively cleared as described but also gradually re-planted with a woodland and scrub belt towards the north, parallel with Savage Road, to reinforce the woodland boundary.
- 2.1.8 The eradication of non-native Japanese knotweed (*Fallopia japonica*), butterfly-bush (*Buddleja davidii*), cotoneaster sp. (*Cotoneaster sp.*), Himalayan honeysuckle (*Leycesteria formosa*) and snowberry (*Symphoricarpos albus*) will be a high priority. These shrubs will be treated with an inert herbicide treatment at the appropriated time of year, by a specialist contractor.

- 2.1.9 Monitoring for other invasive non-native plants species listed under Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended), such as Japanese knotweed (*Fallopia japonica*), giant hogweed (*Heracleum mantegazzianum*), rhododendron (*Rhododendron ponticum*) and Indian or Himalayan balsam (*Impatiens glandulifera*) will also be undertaken. Under the Act, it is an offence to plant or cause the spread of these species. In order to confirm eradication a specialist contractor dealing in Japanese knotweed eradication will be appointed. Japanese knotweed treatment hazard signs should be displayed on the site when undergoing treatment.
- 2.1.10 The creation of additional woodland glades and widening selected footpaths to create woodland rides could be undertaken. This would increase the light levels within 'edge' habitats to create 'eco-tones' with a more varied and structural field layer and ground flora. Sycamore should be preferentially felled to create rides and glades.
- 2.1.11 Log-piles or habitat-piles will be created and placed in areas surround the grassland habitat for the benefit of reptiles and invertebrates.

2.2 Retained Semi-improved Neutral Grassland and Scrub

- 2.2.1 The retained semi-improved grassland will be strimmed once a year and be kept free of litter. The grassland will be left un-cut during the summer months (March to September) – a single cut each November/December will be of most benefit to reptiles.
- 2.2.2 A hand strimmer is recommended to undertake this operation. The cuttings should be taken away or removed to a compost area on the site. The cut material produced will usually need to be removed from grassland to prevent die back of the sward and increased nutrient loading. If the cuttings have no use they can be heaped in a hidden corner of the site where in time they will provide a food source for a host of fungi and invertebrate species. This will maintain the ecological value and biodiversity of the grassland sward.
- 2.2.3 Scrub can be left to grow naturally but will be thinned out using a strimmer or brush cutter where and when the scrub canopy overshadows the field layer and grassland. Selective removal of the most dominant competitive scrub species will be undertaken so not to encroach upon the grassland. Dead or dying scrub/trees may need to be cut down occasionally for safety, and the wood should be retained on site, for example to provide habitat for invertebrates. Scrub should not be allowed to reach a height that will over-shadow the grassland.

2.3 Planted Native Woodland Trees and Shrubs

- 2.3.1 The benefit to wildlife of native planting will only be possible if appropriate management is undertaken. Once established any shrub areas will be cut back to stimulate bushy basal growth. Shrubs should be allowed to get to a height of >3m and allowed to flower and produce fruit/seeds. If this is not allowed then any benefits of using native species to encourage wildlife is significantly reduced. Scrub can be left to grow naturally but will be thinned out using a strimmer or brush cutter where and when the scrub canopy overshadows the field layer. Selective removal of the most dominant competitive scrub species will be undertaken so not to encroach upon other habitats. Cut back of small sections will be undertaken every year to create a mosaic of ages. Any works should take place between September and February to avoid disturbance to nesting birds, which is March to August inclusive.

- 2.3.2 Trees and shrubs can be left to grow naturally. Dead or dying trees may need to be cut down occasionally for safety reasons and the wood should be retained on site, for example to provide refugia for invertebrates adjacent the pond and wetland areas.
- 2.3.3 In the longer term 10-15 years thinning out of trees will be required. Use can be made of self-seeded trees to replenish the stock or else some additional planting may be required.

2.4 Semi-improved Neutral Grassland and Scrub

- 2.4.1 Sowing onto prepared soil is the most successful method for establishing a native grassland mixture. Thinner, poorer soils will almost always produce more varied and more attractive vegetation, and will be easier to manage. Fertilizer will not be applied at any stage. The suggested wildflower mixture should be sowed at 10g per square metre or 10kg per Hectare.
- 2.4.2 The wildflower mixtures should be sowed in the autumn or spring, selecting a time when the soil is moist and can be worked. To achieve an even sowing, it should be bulked with an inert carrier such as sand and sown at half rate in two directions. Seed will be sown on the surface and not raked or harrowed in. One or two passes with a Cambridge (ribbed) roll will firm and level the surface and create good seed soil contact.
- 2.4.3 Once established the grassland will be left un-cut during the summer months (March to September) – a single cut each November/December will be of most benefit to reptiles.
- 2.4.4 A hand strimmer is recommended to undertake this operation. The cuttings should be taken away or removed to a compost area on the site. The cut material produced will usually need to be removed from grassland to prevent die back of the sward and increase nutrient loading. If the cuttings have no use they can be heaped in a hidden corner of the site where in time they will provide a food source for a host fungi and invertebrate species. This will maintain the ecological value and biodiversity of the grassland sward.
- 2.4.5 Scrub control of the woodland edges will be undertaken to impede encroachment on the grassland and should not be allowed to reach a height that cause overshadowing.

2.5 Ponds, Wetland Areas

- 2.5.1 Selective removal of the most dominant competitive aquatic and marginal plants may be necessary for the benefit of wildlife within the pond. This should be undertaken during the early winter months, October to December. All aquatic pond material should be left at the edge of the pond overnight before being removed offsite or to a compost area, so any aquatic fauna can migrate back to the pond.
- 2.5.2 Dredging of pond material (*i.e.* silt) will need to be undertaken every five years. However, the frequency will depend on the size and extent of the pond system created. All material should be left at the edge of the pond over night before being removed offsite so any aquatic fauna can migrate back to the pond.
- 2.5.3 Marginal and wetland vegetation may need to be thinned to impede encroachment of the pond area and halt degradation of the pond habitat. A strimmer is ideal. Cuttings should be removed offsite or composted on site.

- 2.5.4 During annual maintenance any fish that may have colonised the pond will be removed immediately to preserve the biodiversity of this habitat.
- 2.5.5 Life buoys around the pond will be checked in October and the grass strimmed around it to keep access clear. General maintenance of life buoys should be undertaken if and when required.
- 2.5.6 Removal of the competitive aquatic and marginal vegetation will need to be undertaken to so as not to restrict water flow within the swales. This will be undertaken during the early winter months, October to December. All aquatic pond material should be left at the edge of the swales overnight before being removed offsite or to a compost area, so any aquatic fauna can migrate back to the water.

2.6 Brown Roof

- 2.6.1 A brown roof is proposed on the workshop building. This is aimed to provide foraging ground for birds, in particular the black redstart (*Phoenicurus ochruros*). The primary issue is the provision of suitable low nutrient substrate within the proposed development to support a variety and low-density coverage of ruderal plants.
- 2.6.2 The roofs to be used for mitigation for black redstarts will be based on aggregate mix present on the original site. For example a mixture of crushed brick and concrete graded from 25mm to dust. It will be contoured from heights of at least 5cm to 15cm and allowed to colonise naturally.
- 2.6.3 The roof substrate will consist of material from the site itself and be allowed to sit on site during construction. This will speed the colonisation process and also assist in the recycling of materials and also reduce costs.
- 2.6.4 Brown roofs require very little or minimal maintenance once created. Occasional selective 'weeding' by hand pulling of the most dominant competitive grasses and plants may be necessary for the benefit of wildlife. The cut material produced will usually need to be removed from site to prevent an increase nutrient loading. If the cuttings have no use they can be heaped in a hidden corner of the site where in time they will provide a food source for a host of fungi and invertebrate species.

2.7 Hibernaculae

- 2.7.1 Removal of scrub vegetation will be undertaken to impede encroachment by vegetation of the hibernaculae. Occasional selective strimming or 'hand-pulling' of the most dominant competitive vegetation may be necessary for the benefit of wildlife. The cut material produced will usually need to be removed from site to prevent an increase nutrient loading.

2.8 Bee banks

- 2.8.1 The bee banks will be created using the left over spoil from the excavation of the pond. The material will form a south facing bund with selective cuttings creating benches within the bank.
- 2.8.2 The construction of bee banks can create new bare ground habitat and add topographic interest to sites. Their effectiveness for invertebrate conservation is largely untested, however

they could provide useful habitat for ground nesting bees and wasps and warmth-loving species such as dingy skipper (*Erynnis tages*) and small blue butterflies (*Cupido minimus*).

- 2.8.3 Bare ground and a varied structure provide a wide range of foraging and nesting opportunities. Open-structured vegetation in front of the bank provides extra habitat and does not shade the bank. Taller flower-rich vegetation nearby provides important foraging areas. Bramble and other scrub in the vicinity provides a nectar and foraging resource, broken stems can provide nesting sites for stem nesting species.
- 2.8.4 Vegetation should be maintained at less than 15% cover overall and should not be allowed to dominate any one area. This can be achieved by selective strimming or 'hand-pulling' of the most dominant competitive species and re-creating areas of bare ground.

2.9 Bird, Bat and Insect Boxes

- 2.9.1 Woodcreate boxes, which consist of a sawdust and concrete impregnated material, have the highest occupation rates of all box types. They are carefully designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting. The boxes are expected to last approximately 25 – 50 years before needing to be replaced, and have low maintenance requirements.
- 2.9.2 Black red start boxes are proposed for installation around the workshop building, in close proximity to the brown roof. Ten boxes are proposed incorporating a selection of designs. Open-fronted nest-boxes will be used throughout the development but it is important to locate them appropriately. Holes or access points should allow for small birds to pass through them but prohibit access to larger birds, in particular Feral Pigeons. A large number of nest boxes should be used to give pairs some selection.
- 2.9.3 Ten bird boxes of various designs will be positioned within the planted and woodland areas.
- 2.9.4 Bird boxes will be routinely cleaned out on an annual basis and will require no further maintenance. Boxes will be cleaned out during September to February, outside of the bird-nesting season.
- 2.9.5 Ten bat boxes of various designs will be positioned within the planted and woodland areas.
- 2.9.6 Bat boxes will be cleaned out on a biannual basis and will require no further maintenance. Boxes will be cleaned out during October to February, outside of the bats breeding season. Bat boxes can only be checked by a licensed bat ecologist.
- 2.9.7 In general, it is important where insect boxes are positioned (*i.e.* fixed to walls of buildings, posts or structures), that they are put in areas that will receive direct sunlight. This might mean trimming back bushes or trees from time to time and keeping vegetation and leaf litter from becoming too dense around the boxes. Insect boxes that host reed and cane material should be replaced every five years. Boxes will require no further maintenance. Boxes will ideally be best suited around the pond, wetland or tree planting areas.
- 2.9.8 The positioning and selection of all boxes is to be carried out by an ecologist. Positioning of boxes within trees and woodland areas will be achieved with the aid of a tree climber where appropriate.

2.10 Signage and Footpaths

- 2.10.1 Interpretation panels positioned at strategic areas along footpaths and key features of interest will be provided. However, all interpretation should be sympathetically designed and positioned so as not to draw unwanted attention to areas or structures that are dangerous or easily damaged.
- 2.10.2 Signage, interpretation boards will be cleaned and maintained on an annual basis. If signs are damaged or defaced then these can be re-ordered.
- 2.10.3 Footpaths and access tracks will be kept open by strimming back any encroaching vegetation whenever the needs arise.

3 Ecological Management Plan 5 - 10 year maintenance schedule Tables

3.1.1 Maintenance tables for the habitats can be found below.

Ecological Management Plan 5 - 10 year maintenance schedule																					
Dates		Year 1 (2014)				Year 2 (2015)				Year 3 (2016)				Year 4 (2017)				Year 5 (2018)			
Habitat or Planted Areas	Task Description	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec
Semi-natural Broadleaved Woodland (Blackies Wood)	Selective removal of occasional mature trees, preferably sycamore and possibly ash should be undertaken over a five to ten year period.																				
	Re-growth within the clearings should be monitored and thinned of sycamore as needed to promote the regeneration of pedunculate oak.																				
	Scrub can be left to grow naturally but should be thinned out using a strimmer or brush cutter where and when the scrub canopy overshadows the field layer.																				
	The eradication of non-native plant species. Shrubs should be treated with an inert herbicide treatment at the appropriated time of year, by a <u>specialist contractor</u> .																				
	Monitoring for other invasive non-native plants species listed under Schedule 9 of the Wildlife and Countryside Act, 1981(as amended).																				
	The creation of additional woodland glades and widening selected footpaths. Sycamore should be preferentially felled to create rides and glades. Log-piles or habitat-piles should be created and placed in areas surround the grassland habitat for the benefit of reptiles and invertebrates.																				

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Retained Semi-improved Neutral Grassland	Semi-improved grassland should be strimmed once a year and be keep free of litter. A single cut each November/December. A hand strimmer is recommended to undertake this operation. The cuttings should be taken away or removed to a compost area on the site. If the cuttings have no use they can be heaped in a hidden corner of the site where in time they will provide a food source for a host fungi and invertebrate species.																				
	Scrub can be left to grow naturally but should be thinned out using a strimmer or brush cutter where and when the scrub canopy overshadows the field layer and grassland. Selective removal of the most dominant competitive scrub species should be undertaken so not to encroach upon the grassland. Dead or dying scrub/trees may need to be cut down occasionally for safety, and the wood should be retained on site, for example to provide habitat for invertebrates. Scrub should not be allowed to reach a height that will over-shadow the grassland.																				

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Planted Native Trees and Shrubs	Dead or dying trees may need to be cut down occasionally for safety. Wood should be retained on site, for example to provide refugia for invertebrates adjacent the pond/s and wetland areas.																				
	Once established any shrub areas should be cut back to stimulate bushy basal growth. Shrubs should be allowed to get to a height of c. >3m and allowed to flower and produce fruit/seeds. Cutting when required should take place between September and February to avoid disturbance to nesting birds, which is March to August.																				
	Scrub can be left to grow naturally but should be thinned out using a strimmer or brush cutter where and when the scrub canopy overshadows the field layer. Selective removal of the most dominant competitive scrub species should be undertaken so not to encroach upon the grassland. Dead or dying scrub/trees may need to be cut down occasionally for safety, and the wood should be retained on site, for example to provide habitat for invertebrates.																				

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Semi-improved Neutral Grassland	Sow grassland onto prepared soil. Wildflower mixture at 10g per square metre or 10kg per Hectare. To achieve an even sowing, bulk with an inert carrier such as sand and sow at half rate in two directions. Sow on the surface and do not rake or harrow in. One or two passes with a Cambridge (ribbed) roll will firm and level the surface and create good seed soil contact.																				
	Grassland should be left un-cut during the summer months (March to September) a single cut each November/December will be of most benefit to reptiles. A hand strimmer is recommended to undertake this operation. The cuttings should be taken away or removed to a compost area on the site. The cut material produced will usually need to be removed from grassland to prevent die back of the sward and increase nutrient loading. If the cuttings have no use they can be heaped in a hidden corner of the site where in time they will provide a food source for a host fungi and invertebrate species.																				
	Scrub control of the woodland edges should be undertaken to impede encroachment on the grassland and should not be allowed to reach a height that cause overshadowing.																				

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Ponds, Wetland Areas	Selective removal of the most dominant competitive aquatic and marginal plants. All aquatic pond material should be left at the edge of the pond overnight before being removed offsite or to a compost area, so any aquatic fauna can migrate back to the pond.																				
	Dredging of pond material (<i>i.e.</i> silt). All material should be left at the edge of the pond over night before being removed offsite so any aquatic fauna can migrate back to the pond.																				
	Marginal and wetland vegetation may need to be thinned to impede encroachment of the pond area and halt degradation of the pond habitat. A strimmer is ideal. Cuttings should be removed offsite or composted onsite.																				
	During annual maintenance any fish that may have colonised the pond should be removed immediately to preserve the biodiversity of this habitat.																				

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Ponds, Wetland Areas Cont.....	Life buoys around the pond should be checked October and the grass strimmed around it to keep access clear. General maintenance of life buoys should be undertaken if and when required.																				
	Removal of the competitive aquatic and marginal vegetation will need to be undertaken to so as not to restrict water flow within the swales. All aquatic pond material should be left at the edge of the swales overnight before being removed offsite or to a compost area, so any aquatic fauna can migrate back to the water.																				

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Brown Roof	Construction of a brown roof using a mixture of materials of crushed brick and concrete graded from 25mm to dust. It will be contoured from heights of at least 5cm to 15cm and allowed to colonise naturally.																				
	Occasional selective ‘weeding’ by hand pulling of the most dominant competitive grasses and plants may be necessary for the benefit of wildlife. The cut material produced will usually need to be removed from site to prevent an increase nutrient loading. If the cuttings have no use they can be heaped in a hidden corner of the site where in time they will provide a food source for a host fungi and invertebrate species.																				

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Hibernacula	Hibernacula should be created adjacent the pond area for the benefit of reptiles and amphibians. These will require minimal maintenance.																				
	Removal of scrub vegetation should be undertaken to impede encroachment of the hibernacula. Occasional selective strimming or 'hand-pulling' of the most dominant competitive vegetation may be necessary for the benefit of wildlife. The cut material produced will usually need to be removed from site to prevent an increase nutrient loading.																				

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Bee Banks	Bee banks will be created using the left over spoil from the excavation of the pond. The material should form a south facing bund with selective cuttings creating benches within the bank.																				
	Vegetation should be maintained at less than 15% cover overall and should not be allowed to dominate any one area. This can be achieved by selective strimming or 'hand-pulling' of the most dominant competitive species and re-creating areas of bare ground.																				

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Bird Bat and Insect Boxes	Erection of bird, bat and insect boxes. The positioning and selection of all boxes is to be carried out by an ecologist. Positioning of boxes within trees and woodland areas will be achieved and with the aid of a tree climber where appropriate.																				
	Boxes should be routinely cleaned out on an annual basis and will require no further maintenance.																				
	Insect boxes that host reed and cane material should be replaced every five years. Boxes will require no further maintenance.																				

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Habitat or Planted Areas	Task Description	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec
Signage and Footpaths	Interpretation panels should be positioned at strategic areas along footpaths and key features of interest.																				
	Signage, interpretation boards should be cleaned and maintained on an annual basis. Signs need to be cleaned and general maintenance undertaken. If signs are damaged or defaced then these can be re-ordered.																				
	Foot paths and access tracks should be kept open by strimming back any encroaching vegetation whenever the needs arise. Footpaths may benefit from the applying a layer of stone or granite chippings etc.																				