ECOLOGICAL IMPACT ASSESSMENT

MERKLAND BURN
BRODICK

BHYD-22-01
AUGUST 2022

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ECOLOGICAL IMPACT ASSESSMENT

MERKLAND BURN
BRODICK
NORTH AYRSHIRE
KA27 8HZ

GRID REF
NS 01550 39030

REPORT FOR
ROBERT BRAKES HYDROPOWER LTD

Quality Assurance

Version	Prepared by	Date	Checked by	Date	Approved by	Date
R1	[redacted]	08/08/2022	[redacted]	08/08/2022	[redacted]	15/08/2022

This assessment is intended to provide an accurate description of findings from the desktop study and from survey work undertaken on the date shown; however, all ecological data has a shelf life, which is dependent on the discretion of the governing body overseeing licencing or condition application. This is usually one survey season. This assessment cannot fully account for the reliability of third-party data provided or for any changes to site conditions following the completion of the survey work due to activities carried out on site or the dynamic nature of the natural environment. All work carried out by Naturally Wild Consultants Ltd is subject to our Terms and Conditions.

The report has been produced in accordance with current best practice guidelines.

REPORT CONTENTS

EXECUTIVE SUMMARY

Naturally Wild were instructed to undertake an Ecological Impact Assessment (EcIA) at Merkland Burn, Brodick. The site comprised a mature plantation to the north-western aspect of site, with an area of clearfell to central aspect leading into an area of mature semi-natural woodland to the south-eastern aspect of site. The proposals are to install a hydrothermal power cable along the length of the burn, with an outflow at the southern border of site controlled by a 4 m x 4 m building. An intake will be installed at the northern border of site.

The EcIA comprised two parts: a desktop study and a series of survey visits. The desktop study collated available public information regarding the biodiversity of the area, including the habitat structure of the site and surrounding area and the presence of any statutory or non-statutory designated sites. In addition, biological records within 1 km of the site were requested from the South West Scotland Environmental Information Centre.

The survey visits consisted of an assessment of all habitats on site and in the surrounding area to determine their ecological value and was conducted on 27th June and 29th June 2022 by ecologist [redacted].

The site was found to be of high ecological value. The habitat offered suitable foraging, commuting, and nesting habitat for birds, bats and the clearfell could provide some suitable habitat for reptiles.

Following the site assessment and in review of the findings, a series of ecological mitigation and enhancement measures to be incorporated into the works have been outlined. These include a sensitive lighting scheme; clearance works to be conducted outside the nesting bird season and avoiding felling native trees where possible. Full details are provided in Section 5.

Providing the recommendations of this report are implemented in full, Naturally Wild would conclude that there will not be a significant impact to protected species or habitats as a result of the proposed works.

SUMMARY OF POTENTIAL ECOLOGICAL CONSTRAINTS

Summary Assessment

Works can start only once authorised by an ecologist.	Additional ecological works required.	No action required.

Potential Ecological Constraints		
Designated sites	Impacts from development on nearby sites expected to be low	
Ecologically valuable watercourses	Development not expected to have negative impact on watercourses	
Plants and habitats	Development not expected to have negative impact upon plants (Killarney fern)	
Badgers	Development not expected to impact badger setts	
Bats	Development not expected to impact local bat populations provided suitable trees remain intact	
Dormice	N/A	
Great crested newts	N/A	
Nesting birds	Works to take place outside bird nesting season	
Otters	Development not expected to negatively impact otters	
Reptiles	Development not expected to negatively impact reptiles	
Water voles	N/A	
White-clawed crayfish	N/A	
Invasive species	Rhododendron on site to be removed	
Other	N/A	

Recommended Actions		
Requirement for formal Environmental Impact Assessment	N/A	
Requirement for consultation with statutory environmental bodies	N/A	
Requirement for 'assent' from Natural England (e.g., within or adjacent to a European site or SSSI)	N/A	
Requirement for further ecological surveys	N/A	
Requirement for protected species licensing	N/A	

Requirement for an ecologist to oversee the works (see below)	N/A	

The contractor should inform the ecologist of the works programme with sufficient notice to coordinate the following		
Ecologist to be on site before works begin (includes vegetation clearance)	N/A	
Ecologist to be on site during the first day of works	N/A	
Ecologist to be on site throughout the works	N/A	
Ecologist to be on site as the works are completed	N/A	
Ecologist to be on site once all the works is completed	N/A	

1 INTRODUCTION

Naturally Wild were instructed to undertake an Ecological Impact Assessment (EcIA) at Merkland Burn, Isle of Arran (Figure 1). The site comprised a mature plantation to the north-western aspect of site, with an area of clearfell to central aspect leading into an area of mature semi-natural woodland to the south-eastern aspect of site. The main objective of the assessment was to determine the suitability of the site to support protected species and to check for any evidence of the presence of protected species, as well as the presence of any protected or notable habitats.

The proposals are to install a hydrothermal power cable along the length of the burn, with an outflow at the southern border of site controlled by a 4 m x 4 m building. An intake will be installed at the northern border of site. As part of the planning process, an ecological assessment is required to determine if any protected or notable species/habitats are likely to be affected by the proposed works, and to show how any negative ecological impacts would be mitigated and compensated.

Figure 1. Site location plan. Red line shows the area proposed for re-development.

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2 RELEVANT LEGISLATION

British wildlife is protected by a range of legislation, the most important being the Wildlife and Countryside Act 1981 and the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). The Wildlife and Countryside Act, as amended by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2011, protects species listed within its various schedules from being killed, injured, and used for trade. For some species, such as great crested newts and all bat species, the provisions of this Act go further to protect animals from being disturbed or taken from the wild and protects aspects of their habitats. The Act also stipulates that offences occur regardless of whether they were committed intentionally or recklessly.

The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), also known as 'the Habitats Regulations', is the Scottish enactment of European legislation and provides similar but subtly different protection for species listed on Schedules 2 and 4 of those regulations. Recent changes in this legislation means that the provisions of this Act now complement those of the Wildlife and Countryside Act more. Species to which these provisions apply are known as European Protected Species. Activities that might cause offences to be committed can be legitimised by obtaining a licence from the relevant statutory body.

The Environment Act (2021) aims to further improve air and water quality, waste management, biodiversity and make other environmental improvements. Schedule 14 of the Act sets the condition that grants of planning permission in Scotland must achieve a Biodiversity Net Gain (BNG), ensuring that onsite habitats within a development have a minimum 10% higher biodiversity value, calculated as biodiversity units, post-development than pre-development baseline values. The percentage of biodiversity units required for net gain and the preferred habitats focussed for improvement will differ between Local Planning Authorities (LPAs). The need to achieve 10% net gain will not become mandatory until November 2023 but many LPAs are already requiring at least a 1% gain for any new developments, meaning that baseline calculations need to be undertaken on most sites.

Planning permission in Wales already requires developments to maintain and enhance biodiversity under The Environment (Wales) Act 2016 ensuring that ecosystems are diverse, maintain connections, scale, and condition. The Planning (Scotland) Act 2019 sets six key outcomes, one of which is 'securing positive effects for biodiversity' with some LPA's requiring a set percentage of biodiversity net gain.

Further details on the legislation protecting species of British wildlife relevant to this assessment can be found in Section 8.1 of this report.

3 METHODOLOGY

3.1 Overview

The EcIA comprised a desktop study and a series of survey visits. All work undertaken has been completed in line with official guidelines produced by Natural England and the Chartered Institute for Ecology and Environmental Management (CIEEM), and British Standard document BS 42020: 2013 *'Biodiversity – Code of practice for planning and development.'*

The desktop study collated available public information regarding the biodiversity of the area, including the habitat structure of the site and surrounding area and the presence of any statutory or non-statutory designated sites, and any records of previously granted European Protected Species (EPS) mitigation licences in relation to certain species, using the Multi-Agency Geographic Information for the Countryside (MAGIC) resource, along with a search of the Local Planning Authority's website for any trees in the area covered by Tree Preservation Orders (TPOs). In addition, biological records within 1 km of the site were requested from the South West Scotland Environmental Information Centre (SWSEIC), which included records of protected and notable species and any nearby non-statutory designated sites not available through MAGIC.

The objective of the survey was to ascertain if any protected species may be using the site, document the habitats present and determine any potential ecological impacts during and following the completion of the works. The survey would be completed under suitable weather conditions and by an experienced ecologist. Further to this, the results of the desktop study and site survey would be assessed to determine the ecological impacts posed by the work, any additional survey work required, and how such impacts should be mitigated and compensated for.

The survey work and the preparation of this report has been conducted by ecologist [redacted] BA (Hons) who are experienced in undertaking ecological assessments.

3.2 Survey Area

The application site is located at Grid Reference NS 01550 39030 and can be accessed via the A841. The assessment focused on the application site, as well as all habitats in the immediate surrounding area (where access was available).

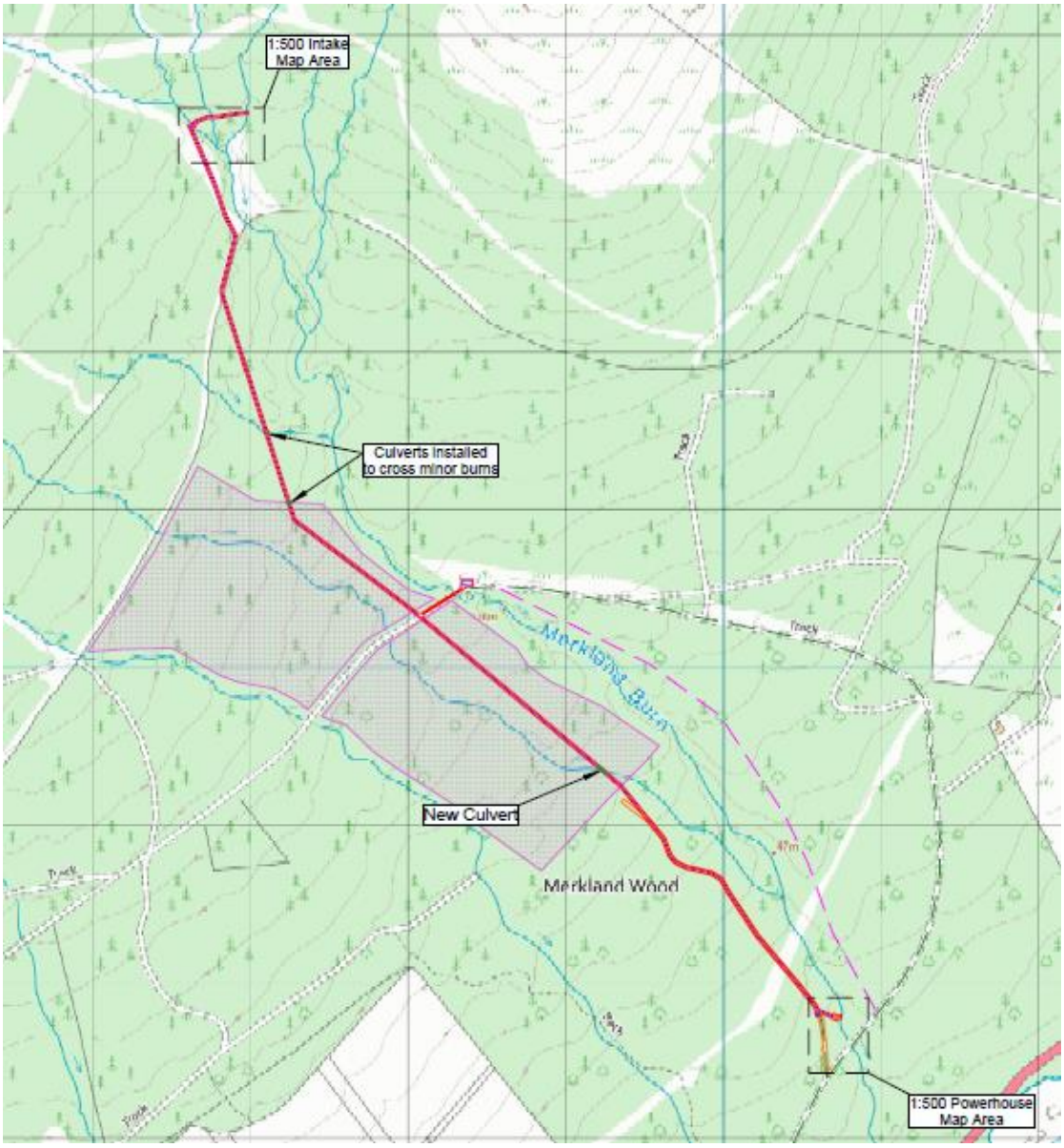

Figure 2. Location of the surveyed area. Site boundary is shown by the red line.

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3.3 Survey Constraints

There were no constraints with regards to site access or completion of the survey objectives across the site.

3.4 Field Survey

3.4.1 Habitat Assessment

The survey was carried out on Monday 27th June 2022 and consisted of an assessment and classification of the habitats on and adjacent to the site, based on their structure and the dominant vegetation coverage, where present, following the UK Habitat Classification System as required when completing a Biodiversity Net Gain calculation (Butcher *et al*., 2020). Following this, the habitats present were assessed for their suitability to support protected species and for the presence of any evidence of protected species. Each habitat present was then assigned a level of value (negligible, low, moderate, or high) on a geographical scale from site level to European/international level, with reference to guidance provided by CIEEM (2018).

Weather conditions for the survey were: temperature 13 degrees (Celsius), cloud cover 5 (oktas), wind 1 (Beaufort) and no precipitation during the extent of the survey.

3.4.2 Protected Species Impact Assessment

Based on the habitats present, the site was assessed with particular regard to determine the presence or otherwise of badgers (*Meles meles*), bats, great crested newts (GCN) (*Triturus cristatus*), nesting birds, and reptiles. An overview of the survey methods used is outlined below.

Badgers: An assessment of the site and surrounding habitats (where access was available), with particular focus on any areas of dense vegetation, was carried out in order to identify any evidence of badgers, including:

- the presence of any setts
- well-used runs/tracks
- supplementary evidence, such as hairs or prints
- badgers themselves

Bats: A preliminary ground level roost assessment of any trees on or directly adjacent to the site was carried out in order to identify the presence of any potential roost features (PRFs) for bats, such as split bark, woodpecker holes and other cavities for bats and/or evidence of roosting bats. All trees assessed were categorised in terms of their value in accordance with the current Bat Conservation Trust (BCT) survey guidelines ([redacted] 2016), shown in Table 1.

Table 1. Guidelines for assessing bat roosting potential of structures and trees.

Suitability	Habitat description	Further action required?
Negligible	Negligible habitat features on site likely to be used by roosting bats.	No further bat risk assessment effort or bat activity surveys are required.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).	**Structures:** One bat activity survey is required to determine whether the structure is being utilised by roosting bats; this may be a dusk or dawn survey. This survey must occur between May and August. The discovery of a roosting bat during this single bat activity survey will require further survey effort.

	A tree of sufficient size and age to contain PRFs, but with none seen from the ground or features seen with only very limited roosting potential.	**Trees:** No further bat risk assessment effort or bat activity surveys are required.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection conditions and surrounding habitat, but unlikely to support a roost of high conservation status.	Two bat activity surveys are required to determine whether the structure or tree is being utilised by roosting bats; this should be comprised of one dusk and one dawn survey. One survey must occur between May and August.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Three bat activity surveys are required to determine whether the structure or tree is being utilised by roosting bats; this should be comprised of one dusk and one dawn survey, with an additional survey (either dusk or dawn). Two surveys must occur between May and August.

Evidence of roosting bats includes: bat droppings in, around or below an entrance hole; staining around an entrance hole; audible squeaking at dusk or in warm weather; smoothening of surfaces around cavity or an entrance hole; distinctive smell of bats.

The assessment was completed using binoculars and a powerful torch. An endoscope was also available to check any small gaps/cracks for evidence of bats. The initial assessment was completed by [redacted] BA (Hons).

Great Crested Newts: An assessment of the habitats present on the site was carried out in order to determine their suitability to support foraging and sheltering GCN, and any natural or artificial refugia (such as logs, stones, discarded building materials, etc.) present were also lifted to check for the presence of GCN.

Nesting Birds: The habitats on site were assessed to determine their suitability for nesting, with a check carried out for the presence of any active nests or any evidence of nesting behaviour.

Reptiles: The assessment for reptiles followed survey guidance provided by Froglife (1999), with an assessment of the habitats present carried out to determine their suitability to support reptiles for shelter, foraging and basking, and with any refugia lifted to check for the presence of reptiles or evidence of reptiles, such as sloughs (shed skins).

Other Wildlife: In accordance with good practice, the site was checked for the presence of any other protected/notable species, with particular regard to any other species highlighted in the desktop study.

Invasive Species: The site was also surveyed for the presence of any invasive, non-native flora or fauna.

4 RESULTS

4.1 Desktop Study

4.1.1 Designated Sites

Statutory Designated Sites: There are two statutory designated sites within 1 km of the site in the form of the Arran Northern Mountains and Arran Moors Site of Special Scientific Interest (SSSI). There are also several further SSSIs within 5km of the site (shown in table below). The site was designated for its geological and ecological interests. These include the largest and most diverse assemblage of upland habitats in west central Scotland. The habitats also support rare and endangered plant and animal species such as Killarney fern (*Trichomanes speciosa*), brown beak-sedge (*Rhynchospora fusca*), hen harrier (*Circus cyaneus*), golden eagle (*Aquila chrysaetos*) and short-eared owl (*Asio flammeus*).

Table 1. Statutory protected sites within 5 km of the development site.

Designation	Name	Distance	Designation
Special Protection Area	Arran Moors	1.00 km N	Breeding and wintering Hen harriers
Sites of Special Scientific Interest	Arran Moors	1.00 km N	Breeding Hen harriers and Upland Breeding Bird assemblage
	Arran Northern Mountains	2.18 km NW	Upland Birch Woodland, Breeding Bird assemblage, Dragonfly and Beetle assemblage and Bryophyte communities
	Corrie Foreshore and Limestone Mines	3.51 km N	Geological features
	Clauchlands Point - Corrygills	4.22 km S	Upland Mixed Ash woodland
	Gleann Dubh	4.72 km SW	Upland Breeding Bird assemblage and Upland Floral Mosaic

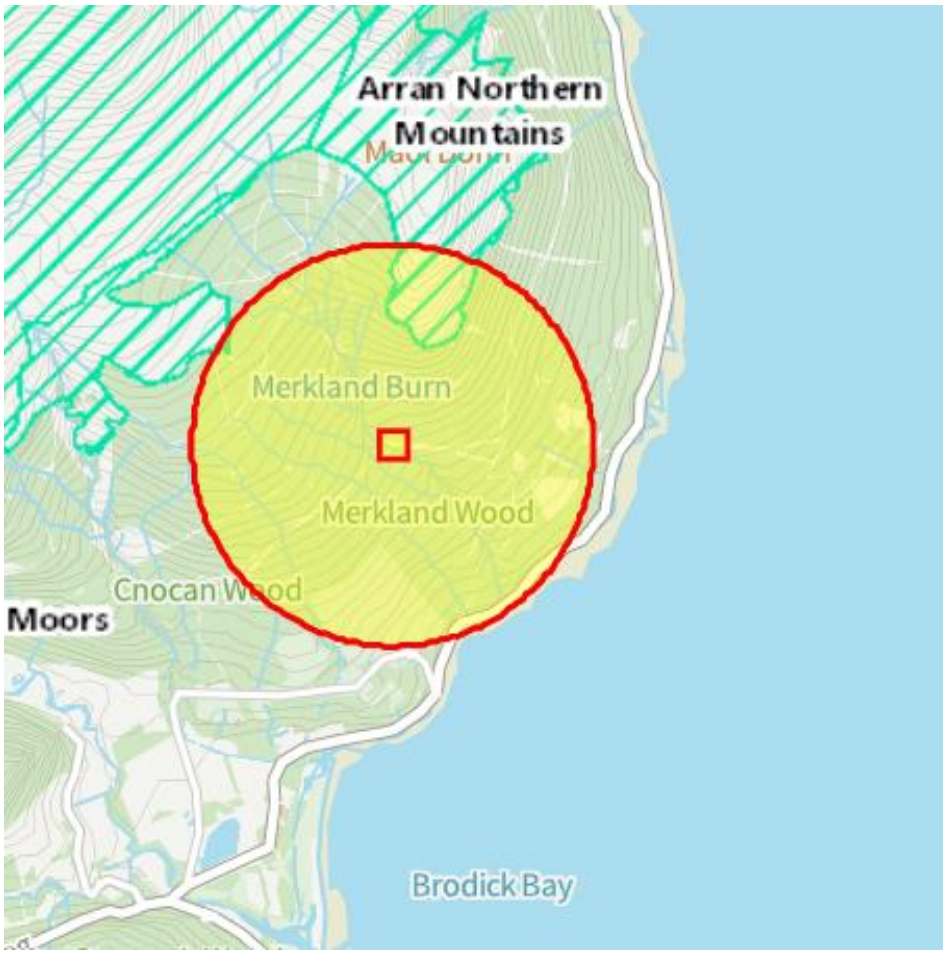

Figure 3. Location of the surveyed site in relation to the surrounding designated sites.

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Due to the distance to the designated sites, it is expected that any impacts from the development upon protected species will be negligible.

Non-statutory Designated Sites: There is no information in the public domain available on non-statutory sites within the immediate vicinity of the site boundary. Notwithstanding this, the impact of the development on the habitats and species in the area is expected to be low as outlined below.

Notable Habitats: There are no available maps in the public domain showing notable habitats in the vicinity of the site. However, the nearby SSSIs are designated as such for their geological and biological interest, including rare habitats such as upland heath and blanket bog. These habitats are classed as UK Priority BAP Habitats and support a wide variety of flora and fauna. Heather provides suitable feeding and nesting habitat for species such as black grouse (*Tetrao tetrix*), curlew (*Numenius arquata*), golden eagle (*Aquila chrysaetos*), hen harrier (*Circus cyaneus*), merlin (*Falco columbarius*) and red grouse (*Lagopus lagopus*). Heathland also provides suitable habitat for a number of UK reptiles including adder (*Vipera berus*) and common lizard (*Zootoca vivipara*). The woodland on site in the form of plantations and natural river valleys also provides suitable habitat for a range of scarce birds including spotted flycatcher

(*Muscicapa striata*), common redstart (*Phoenicurus phoenicurus*), northern goshawk (*Accipiter gentilis*) and common buzzard (*Buteo buteo*). Deciduous woodland is also classed as a UK Priority BAP Habitat.

4.1.2 Biological Records

A total of 125 records were returned from South West Scotland Environmental Information Centre, which can be separated into the following groups: five amphibian records (common frog, common toad); 1477 bird records (80 species); eight marine mammal records; 151 terrestrial mammal records, including European otter (*Lutra lutra*) and Eurasian badger (*Meles meles*); 98 bat records (six species) and two reptile records (common lizard and adder). The importance of individual species records in the context of the proposals are discussed in Section 4.3 – Protected Species, where and if appropriate. A full list of received records is available on request with the permission of the records centre, excluding records of sensitive species.

4.2 Site Assessment

4.2.1 On-Site Ecological Features

The site comprised a mature plantation to the north-western aspect of site, with an area of clearfell to central aspect leading into an area of mature semi-natural woodland to the south-eastern aspect of site. The general ecological value of each habitat is described in the paragraphs below, with any notable species-specific findings detailed in Section 4.3. A habitat map showing the distribution of the habitats on site is provided at the end of this section, and a series of site photographs giving an overview of the habitats present are provided in Section 6.

A description of each habitat is discussed below. At this stage it was deemed that a UKHabs map would not be required as the 'working' area and surrounding habitats are very similar and there is nothing to be gained. However, a basic habitat map has been included to show variation of habitat type across the development site and local area.

Mature conifer plantation

To the northern aspect of site is a mature conifer plantation. The woodland forming species included non-native conifers of the genus *Abies* at the lower elevations, moving into larch (*Larix decidua*) and birch (*Betula pendula*) at the higher elevations. The plantation had an understory consisting of various mosses and ferns, including *Festuca* sp., Tufted hair-grass (*Deschampsia cespitosa*), broad-buckler fern (*Dryopteris dilatate*) and hard fern (*Blechnum*), as well as perforated St-John's wort (*Hypericum perforatum*), campylopus moss (*Campylopus introflexus*) and common bent-grass (*Agrostis capillaris*). Rhododendron was also present along most of the site layout. The habitat was assessed as being of high ecological value at site level due to the diversity of plant species and the habitat for nesting bird species such as common buzzard (*Buteo buteo*), goldcrest (*Regulus regulus*) and coal tit (*Periparus ater*). An active buzzard nest was observed in the area (W3W: film.sized.cleans) and as such could be impacted by the development if still active. The development will result in the removal of an area of vegetation approximately 5 m across by a maximum of 1 m deep, which will include the felling of some trees. The process will involve the removal of the vegetation in 50 m strips to insert the pipeline, with the area of vegetation being replaced on top of the pipeline. Provided appropriate mitigation measures are adhered

to, it is expected that the impacts of the development upon the surrounding habitat will be low due to the impacts being contained within the red-line boundary. The route for the pipeline can also be altered to minimise the felling of native tree species and to avoid active nests.

Clearfell

To the central aspect of site was an area of clearfell. Species found in the clearfell area included foxglove (*Digitalis purpurea*), *Juncus* sp., deer fern (*Blechnum spicant*), common wood sorrel (*Oxalis acetosella*) and various mosses. Rhododendron was also present in various locations in this area. The clearfell area provided some suitable nesting habitat for crevice dwelling birds such as the wren (*Troglodytes troglodytes*). The clearfell also provides suitable shelter and foraging habitat for amphibians, terrestrial mammals, and birds. There were some ephemeral ponds present within the clearfell that contained reasonable quantities of common frog (*Rana temporaria*). Given that great crested newts are absent from the Isle of Arran, and as such a HSI/RRA were not deemed necessary. The clearfell was deemed to be of moderate ecological value at site level due to the suitability for some nesting birds and amphibians. Provided that basic mitigation measures are adhered to, it is expected that any impacts from the development on the area of clearfell will be low.

Mixed woodland

To the southern aspect of site was an area of mixed woodland bordering the burn. The species recorded in this area included Killarney fern (*Trichomanes speciosa*), broad buckler-fern (*Dryopteris dilatate*), narrow buckler-fern (*Dryopteris carthusiana*), mountain bladder-fern (*Cystopteris montana*), silver birch, *Abies* sp., English oak (*Quercus robur*), foxglove, bramble (*Rubus fruticosus*), bracken (*Pteridium aquilinum*), and rhododendron. The riparian habitat provided excellent foraging and nesting habitat for a wide variety of woodland birds, as well as some terrestrial mammals such as deer. The banks adjoining the burn could also provide some suitable habitat for European otter (*Lutra lutra*) although none were recorded during the survey. The mature trees within the woodland could also provide suitable foraging and roosting habitat for bats. Provided that mature trees are not felled during the installation of the pipeline, it is expected that the impacts from the development on the mixed woodland will be low.

Running Water

The main waterbody on site is the Merkland Burn. It is a mixture of riffles, waterfalls, and small pools. There are some larger waterfalls that are thought to preclude migratory salmonid fish. The main impasses are dams of fallen wood on the upstream sections of the larger tributary of Merkland Burn.

In places the burn is situated in long, eroded gullies which are dark and humid. This is the location of the rare Killarney fern (*Trichomanes speciosum*) in its gametophyte stage, and is located at grid reference NS0197138872 (Image 15).

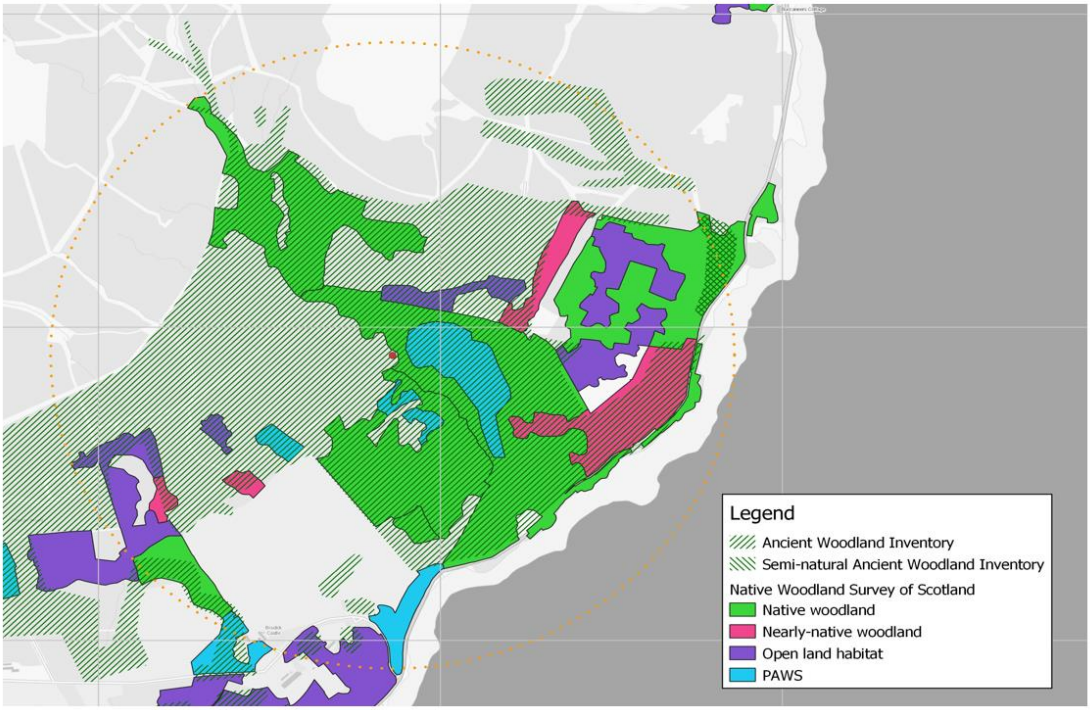

Figure 4. Habitat map of the development site and the surrounding surveyed area.

4.2.2 Off-Site Ecological Features

The further surrounding habitats off site consist largely of conifer plantations of similar composition to those on site. These provide suitable habitat for a wide variety of birds, terrestrial mammals, and invertebrates. Beyond the plantations were areas of upland heath, planted ancient woodland sites (PAWS) and other open land habitat. Upland heath provides ideal breeding areas for a wide variety of species including hen harrier (*Circus cyaneus*), golden eagle (*Aquila chrysaetos*), merlin (*Falco columbarius*) and black grouse (*Tetrao tetrix*). Given the small scale nature of the development and the impacts being restricted to the red line boundary, it is unlikely that the development will have an adverse impact on these off-site habitats.

4.3 Protected Species

4.3.1 Badgers

A search on SWSEIC returned nine records for badger within 1 km of the application site. There were no signs of badger presence recorded on site during the survey; including prints, latrines, snuffle holes, feeding scrapes or guard hairs. Whilst badgers may be able to access the site for foraging, it is not believed that the proposed development holds any risk to a badger sett and providing basic mitigation is adopted (covering of significant man-made excavations overnight), the impact to badger as a whole is likely to be low.

4.3.2 Bats

SWSEIC returned 98 bat records. There are no structures within the boundaries of the application site. Some PRFs were detected in the mature oak trees near the southern aspect of site. Woodland also

provides suitable foraging habitat for bats. However, given the fact that the development is limited to a narrow strip of land it is expected that the impacts of the development on bats will be low provided basic mitigation measures are adhered to and trees containing PRFs are left intact.

4.3.3 Great Crested Newts

Great crested newts are entirely absent from the Isle of Arran, therefore it is expected that there will be no impacts from the development on GCN.

4.3.4 Nesting Birds

The mixed woodland and conifer plantations contained a typical assemblage of birds, including common buzzard (*Buteo buteo*), coal tit (*Periparus ater*), robin (*Erithacus rubicula*), chaffinch (*Fringilla coelebs*) chiffchaff (*Phylloscopus collybita*), spotted flycatcher (*Muscicapa striata*), dunnock (*Prunella modularis*), siskin (*Carduelis spinus*) and wren (*Troglodytes troglodytes*). The conifer plantation could also provide suitable nesting habitat for crossbills (*Loxia* sp.). An active common buzzard nest was recorded on site near to the existing route for the pipeline. Any clearance of vegetation must occur outside of the breeding bird season (generally running from March to August but includes February for crossbills) to avoid harm to nesting birds, which are afforded protection under legislation. Schedule 1 species such as golden eagles (*Aquila chrysaetos*) are afforded additional protection, including buffer zones around their nest sites in which construction cannot occur.

Provided that appropriate mitigation measures are adhered to and active nests are given a suitable exclusion zone if clearance works take place inside the nesting bird season, the impact of the development upon nesting birds is expected to be low. Furthermore, the biodiversity of such conifer plantations is generally lower than that of natural woodland. The management cycle of forestry plantations is such that veteran trees are not able to form due to the cycle of felling and regeneration.

4.3.5 Reptiles

No reptiles were detected on site during the survey. Coniferous woodland provides sub-optimal habitat for reptiles due to the lack of suitable basking sites. The clearfell area to the central aspect of site provides some suitable habitat for reptiles with various refugia and basking areas. Given the management cycle of forestry plantations and lack of suitable habitat in the form of conifer plantations and mixed woodland in the vicinity of the site, it is thought that the impacts of the development on local reptile populations will be low.

4.3.6 Other Wildlife

The burn could provide suitable habitat for European otter. No signs of otter were detected during the survey but riparian habitat is associated with European otter and SWSEIC returned five records within 1 km. Due to the nature of the works, otters are not expected to be impacted by the development. Although the habitat on site is largely unsuitable for hedgehog, care should be taken to ensure none are impacted by the development.

4.4 Invasive Species

One invasive species, Rhododendron – including non-native invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) – was recorded within the site extent at the time of the site survey, or within habitats adjacent to the site. These invasive species are common throughout the west coast of Scotland and should be removed from the site to prevent further spread. SWSEIC also returned one American mink (*Neovison vison*) record although no signs were detected on site during the survey.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Overall, the site was found to be of high ecological value, with suitable habitat for nesting birds as well as rare flora. Following the site assessment and in review of the findings, the following measures are considered to be required to be incorporated into the works:

5.2 Mitigation Measures

- Due to the suitability of mature trees to support nesting birds, clearance works should be carried out outside of the nesting season, which is defined as running from March to August, inclusive. If this is not feasible for any reason, a nesting bird survey must be carried out by a suitably qualified ecologist shortly prior to the start of works to ensure no active nests are present. In the event that any active nests are found during this survey or at any point during the works, a suitable exclusion zone should be put around the nest, with no work taking place in this area until such time as the nest can be confirmed as no longer active.
- Where possible, native trees should be left intact by clearance works.
- Works should be carried out in a precautionary manner in relation to hedgehogs, with any hedgehogs encountered during the works allowed to move off of their own accord. If this is not feasible, they should be carefully moved to a safe location by gloved hand. If clearance works are being carried out during hedgehog hibernation season (defined as November to March), any structures suitable for hedgehog hibernation such as vegetation piles should be checked for hibernating hedgehogs. If a hibernating hedgehog is present, a suitable exclusion zone should be put around the hedgehog, with no works occurring in this area until the hedgehog has moved off of its own accord. If this is not feasible, the hedgehog will be carefully translocated to suitable off-site habitat by a suitably qualified ecologist under appropriate weather conditions. New nesting material and supplementary food safe for hedgehog consumption will be provided at the translocation site.
- Due to the presence of 'priority BAP species', it is recommended that site clearance works are carried out following the destructive search methodology. A suitably qualified ecologist should be present to oversee these works and carry out a careful inspection to check for any priority BAP species. If present, the priority BAP species will be translocated to a suitable off-site habitat.
- Any excavations should be covered at night to prevent wildlife becoming trapped, if feasible. If this is not feasible, a suitable means of egress such as a plank of wood at 45° (max.) should be provided
- To prevent a further reduction in ecological connectivity resulting from the development, any fenced boundaries are to be gapped, with a 13 x 13 cm hole cut at ground level to allow small mammals to access and egress gardens.
- Works should be carried in a precautionary manner in relation to the rhododendron present on site, with care taken not disturb the rhododendron, which could potentially result in its distribution to the wider surrounding habitats. If the rhododendron is to be disturbed during development works it should be removed following best practice bio-security protocol, by which the rhododendron is cut to ground level, and the stump treated with glyphosate. Any cuttings should be sent to a landfill licensed to receive invasive plant material.

- A sensitive lighting scheme should be implemented during and after construction to avoid indirect disturbance to foraging and commuting bats, birds and small mammals that may be using the woodland, burn and clearfell, and should include the following elements:
    - Sensitive positioning of lighting to avoid unnecessary spill onto the burn and surrounding woodland, habitat enhancement features to be incorporated into the (re-)development (see below);
    - Angle of lighting: avoidance of direct lighting and light spill onto areas of habitat that are of importance as commuting pathways and/or foraging areas;
    - Type of lighting: studies have shown that light sources emitting higher amounts of UV light have a greater impact to wildlife. Use of narrow-spectrum bulbs that avoid white and blue wavelengths are likely to reduce the number of species impacted by the lighting;
    - Reduce the height of lighting columns to avoid unnecessary light spill.

5.3 Compensation Measures

- If any vegetation is to be replanted, it should resemble the native flora present on Arran.

5.4 Enhancement Measures

- Any landscape planting should use native plant species and/or species of known wildlife value that will enhance the ecological value of the site for local populations of invertebrates, birds, bats and small mammals.
- A series of invertebrate hibernacula should be installed at suitable locations on site post-development.
- A series or bird and bat boxes should be incorporated into the development to provide enhanced roosting and nesting habitat.

This report should be reviewed and amended, as necessary, upon finalised development plans being produced, to ensure that further survey effort and mitigation measures are appropriate to the scale and nature of the works.

Providing the recommendations of this report are implemented in full, Naturally Wild would conclude that there will not be a significant impact to protected species or habitats as a result of the proposed works.

6 SITE IMAGES

Image 1 – Proposed location of intake at top of site

Image 2 – Merkland Burn. Tape on branches marks proposed route of pipeline

Image 3 – typical understory of the mature plantation including grasses, ferns, and mosses

Image 4 – Firs making up majority of mature plantation

Image 5 – Rhododendron to be removed with proposed pipeline route

Image 6 – active buzzard nest

Image 7 – clearfell looking towards mature plantation

Image 8 – foxgloves growing in clearfell

Image 9 – clearfell looking to southern aspect of site

Image 10 – area of juncus in clearfell

Image 11 – edge of mixed woodland to southern aspect of site

Image 12 – proposed route of pipeline through mixed woodland

Image 13 – Mixed deciduous woodland to southern aspect of site

Image 14 – forest track intersecting burn in middle of site.

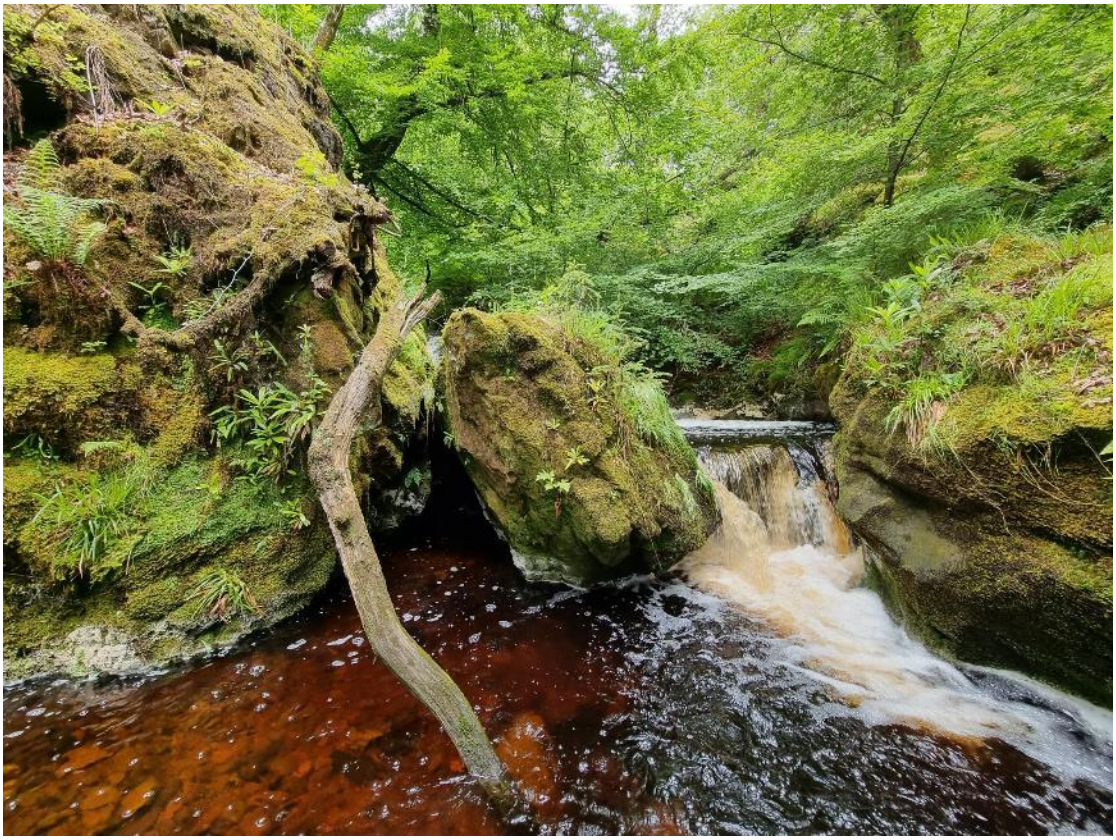

Image 15 – location of Killarney fern

7 BIBLIOGRAPHY AND REFERENCES

- Amphibian and Reptile Groups of the UK (2010) *ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index.* Available: http://www.arguk.org/download-document/9-great-crested-newt-habitat-suitability-index-arg-advice-note-5
- British Standards Institution (2013) *BS 42020:2013. Biodiversity – Code of practice for planning and development*. British Standards Institution, London.
- [redacted]) UK Habitat Classification – Habitat Definitions V1.1. http://ukhab.org
- CIEEM (2016) *Guidelines for Accessing and Using Biodiversity Data.* CIEEM, Winchester.
- CIEEM (2017a) *Guidelines for Preliminary Ecological Appraisal (2nd ed.)*. CIEEM, Winchester.
- CIEEM (2017b) *Guidelines for Ecological Report Writing (2nd ed.)*. CIEEM, Winchester.
- CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine,* version 1.1, CIEEM, Winchester.
- [redacted] (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd edn*. Bat Conservation Trust, London.
- The Conservation of Habitats and Species Regulations 2017 (as amended). https://www.legislation.gov.uk/uksi/2019/579/contents/made
- Cresswell, W. and Whitworth, R. (2004) *An assessment of the efficiency of capture techniques and the value of different habitats for great crested newts.* English Nature Research Reports 576. English Nature, Peterborough.
- European Commission (no date, a). Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. https://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm
- European Commission (no date, b) Council Directive 2009/147/EC on the conservation of wild birds. https://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm
- Froglife (1999) *Reptile Survey: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10.* Froglife, Peterborough.
- [redacted] (1989) *Surveying Badgers*. Occasional Publication No. 9. The Mammal Society, London.
- The Hedgerows Regulations 1997 https://www.legislation.gov.uk/uksi/1997/1160/contents/made
- Ministry of Housing, Communities and Local Government (2021) *National Policy Planning Framework*. Crown Copyright 2021. https://www.gov.uk/government/publications/national-planning-policy-framework--2
- [redacted]. (2004) *Bat Mitigation Guidelines.* English Nature, Peterborough.
- Multi-Agency Geographical Information for the Countryside (MAGIC). Crown Copyright and database rights [2021]. Ordnance Survey 100022861. Available at: http://www.magic.gov.uk/
- Natural Environment and Rural Communities (NERC) Act 2006 https://www.legislation.gov.uk/ukpga/2006/16/contents
- [redacted]. (2000) Evaluating the suitability of habitat for the Great Crested Newts (*Triturus cristatus*), *Herpetological Journal*, 10: 143-155.
- ODPM Circular 06/2005*. Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and Their Impact Within the Planning System.* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf
- The Protection of Badgers Act (1992).

- [redacted] *The Wild Flower Key*, Revised Edition. Penguin Books, London.
- The UK Biodiversity Action Plan. Available: http://jncc.defra.gov.uk/page-5155
- Wildlife and Countryside Act 1981 (as amended). https://www.legislation.gov.uk/ukpga/1981/69

8 APPENDICES

8.1 Additional Information for the Legislation of Other Protected Species

Badgers: The badger is geographically widespread across the UK; however, they are still vulnerable to baiting, hunting and detrimental impacts of development to their habitat. Both the badger and its habitat are protected under The Protection of Badgers Act 1992, Schedule 6 of the Wildlife and Countryside Act 1981 (as amended) an Appendix Three of the Bern Convention; therefore, badgers have legal protection against deliberate harm or injury and it is an offence to:

- Interfere with a badger sett by damaging or destroying it
- Kill, injure, take or possess a badger
- Cruelly ill-treat a badger
- Obstruct access to a badger sett
- Disturb a badger whilst it is in a badger sett

Bats: All British bat species are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are therefore afforded protection under Section 9 of this Act. In addition, all bat species are listed in Schedule 2 of The Conservation of Habitats and Species Regulations and are protected under Regulation 39 of the Regulations. These Regulations make provision for the purpose of implementing European Union Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 1992, under which bats are included on Annex IV. The Act and Regulations makes it an offence, *inter alia,* to:

- Intentionally kill, injure, take (handle) or capture a bat;
- Intentionally or recklessly damage, destroy or obstruct access to any place that a bat uses for shelter or protection (this is taken to mean all bat roosts whether bats are present or not) - under the Habitats Regulations it is an offence to damage or destroy a breeding site or resting place of any bat; or
- Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection - under the Habitats Regulations it is an offence to deliberately disturb a bat (this applies anywhere, not just at its roost) in such a way as to be likely to affect its ability to survive, breed, reproduce, rear or nurture their young or hibernate.

Further details of the above legislation, and of the roles and responsibilities of developers and planners in relation to bats, can be found in Natural England's Bat Mitigation Guidelines ([redacted]).

Nesting Birds: Birds receive protection under the Wildlife and Countryside Act 1981 (as amended). It is an offence to intentionally or recklessly kill, injure or take any wild bird; take, damage or destroy a nest of a wild bird whilst it is in use or being built; or to take, damage or destroy an egg of a wild bird. The bird-nesting season is defined as being from 1st March until 31st August with exceptions and alterations for some species.

Reptiles: All native British species of reptile (of which there are six) are listed on Schedule 5 of the Wildlife and Countryside Act 1981 and, as such, are protected from deliberate killing, injury or trade; therefore,

where development is permitted and there will be a significant change in land use, a reasonable effort must be undertaken to remove reptiles off site to avoid committing an offence. The same Act makes the trading of native reptile species a criminal offence without an appropriate licence.

8.2 Development Plans

For reference only. For full details, please see original drawings.