Scottish & Southern Electricity Networks
TRANSMISSION

TG-NET-ENV-529

Environmental

Beaver Species Protection Plan

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Contents

1 Introduction

Beaver (Eurasian or European) is a European Protected Species and is afforded a high level of protection in Scotland. This Species Protection Plan (SPP) provides guidance and agreed procedures for the protection of beavers and their shelters during construction works on SSEN Transmission projects.

This SPP applies to all projects where beaver may be present. It outlines the responsibilities of SSEN Transmission and the *Contractor* regarding protection of beaver. It also details relevant legislation, survey requirements, general mitigation measures and the requirement for licensing and mitigation.

2 References

The documents detailed in

Table 2.1 - Scottish and Southern Electricity Networks Documents and Table 2.2 - Miscellaneous Documents, should be used in conjunction with this document.

Table 2.1 - Scottish and Southern Electricity Networks Documents

Reference	Title
TG-NET-ENV-512	General Environmental Management Plan (GEMP) - Working in or Near Water
TG-NET-ENV-515	General Environmental Management Plan (GEMP) - Watercourse Crossings
TG-NET-ENV-519	General Environmental Management Plan (GEMP) - Forestry

Table 2.2 - Miscellaneous Documents

Title
Campbell-Palmer, R. et al. (2016) The Eurasian Beaver Handbook: Ecology and Management of *Castor fiber*. Exeter: Pelagic Publishing, UK
The Conservation (Natural Habitats &c.) Regulations 1994 (as amended in Scotland)
The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019
Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora
NatureScot Standing advice for planning consultations - Beavers
NatureScot Management Framework for Beavers in Scotland
NatureScot Ecological and practical interpretation of legal definitions: disturbance, breeding sites and resting places of beavers (Updated: 7 March 2019)
NatureScot Managing the impacts of beavers in Scotland. Guidance for land, property and infrastructure managers
NatureScot Beaver Mitigation Practical Guides: Protecting trees using wire mesh
NatureScot Licensing
SEPA WAT-PS-14-01: (The Controlled Activities Regulations) CAR and the Management of Beaver Structures
SEPA Water levels

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3 General Protection Plan

3.1 Background

Beaver (*Castor fiber*) are mainly nocturnal, large, semi-aquatic rodents with a characteristic large, flattened, scale-covered tail. Although they occurred across Scotland in the past before being hunted to extinction, they now have a limited distribution in Scotland with known populations primarily in Tayside, as a result of probable escapes or unofficial releases and through a Scottish Government approved trial reintroduction project in Knapdale. Other populations may exist outwith these areas.

The most sensitive period for beavers is during the kit dependency period normally between the 1st April and 16th August. They form territorial family groups (typically a monogamous pair with a number of yearlings and kits) and are largely restricted to freshwater and associated riparian broadleaved woodland habitats. Territories are related to food resources and will change over time in relation to availability of suitable food sources. They are considered to be 'ecosystem engineers' - altering their environment to create ponds and wetlands, altering sediment transport, importing woody debris into aquatic environments, creating standing dead wood and coppiced stands. Whilst overall beavers may have a positive impact on biodiversity, there can be negative impacts on certain species and habitats. It can also lead to conflicts with other land uses such as forestry, agriculture and infrastructure. Beavers form lodge and chambered burrow structures for breeding and will also form simple burrow structures for shelter and protection. The majority of beaver activity is found within 20 m of the water's edge. Aspen and willow appear to be preferred food choice for beaver, whilst conifers are generally avoided. In Scotland ash, rowan and birch are also browsed or felled. Additionally, a wide variety of herbaceous materials are also foraged including arable crops and bracken.

Beaver activity has been recorded across large parts of Tayside, spreading from the catchments of the River Tay and the River Earn. More recently, beavers have expanded their range naturally from Tayside into the Forth catchment and the Loch Lomond / Leven catchment. Further expansion is likely, with a single animal known to be in the Clyde catchment. The Scottish Government announced on the 24th November 2021 that it will actively support the expansion of the beaver population, promoting translocation, helping beavers to establish beyond where natural expansion would be expected to reach in the short term

Signs of beaver:

- Feeding remains – chiselled stumps of felled/gnawed trees which may include relatively large trees (sometimes in excess of 1 m diameter), ring barked trees and wood chips are often the most obvious signs of beaver activity. Other feeding signs include closely 'grazed lawn' areas of vascular plants, cleared areas of root or cereal crops adjacent to watercourses and feeding stations where beavers return repeatedly, evidenced by piles of peeled sticks or other feeding remains
- Beaver shelters – burrows are preferred to 'true' free-standing lodges. Burrows may extend up to 20 m from the water's edge (usually starting with an underwater entrance); however, most burrows only extend to within 10 m of a watercourse. Each beaver family will have several shelters within their territory:

- Free-standing lodges have the majority of their chambers within a woody stick pile, with below ground burrowing limited due to unsuitable ground conditions for digging or water level. A free-standing lodge will have underwater entrance(s). Free-standing lodges can be breeding sites or resting places
- Bank lodges are formed where beavers pile branches and other material on top of the bank where the depth of the bank is not great enough. The majority of chambers are within the chambered burrow below ground. Bank lodges will have underwater entrance(s). Bank lodges can be breeding sites or resting places
- Chambered burrows have multiple entrances (below the waterline) with multiple chambers dug into the riverbank. Those with a woody material roof or branches and other material piled on to top of the bank where the depth of the bank is not deep enough are bank lodges (see description above). Chambered burrows can be breeding sites or resting places
- Simple burrows are usually short (less than 5 m in length) and lack multiple chambers. They can have multiple entrances above or below the waterline (typically 2-3). NatureScot's published interpretation does not consider simple burrows to be breeding sites or resting places. However, beavers are protected from disturbance when using simple burrows for shelter and protection. In practical terms, a non-intrusive survey of a burrow that appears to have an end chamber is unlikely to be able to distinguish between burrows with a single end chamber (simple burrow) or multiple end chambers (chambered burrow). Furthermore, a burrow with a single end chamber could feasibly be used as a resting place. This Species Protection Plan proposes a precautionary approach of initially classifying any burrow that appears to have an end chamber as a chambered burrow and, where necessary, monitoring to establish if the burrow is being used a breeding site or resting place
- Short burrows with no end chamber are a type of simple burrow which may be identified if the whole burrow can be viewed (there are no bends) or if the top of the burrow collapses and the burrow can be viewed down to the water line. Short burrows with no end chamber are not considered to be breeding sites or resting places but beavers are protected from disturbance when using them for shelter and protection. They do not require a licence to destroy if monitoring establishes that a beaver is not in occupation so would not be disturbed
- Temporary nest (or couch) - temporary loose structure consisting of a small area of gathered vegetation and shredded woody material on land, used as a 'day rest' or bed or used by family group or individuals when lodge or permanent burrow is temporarily uninhabitable (e.g., as a result of flooding). Temporary nests or couches are not considered to be breeding sites or resting places but beavers are protected from disturbance when using them for shelter and protection. They do not require a licence to destroy if monitoring establishes that a beaver is not in occupation so would not be disturbed

- Dams – built from logs, branches, grass mud and stones. These are built in mainly narrow or shallow watercourses to raise water levels to protect lodges or burrows.

Dams are largely unknown on larger watercourses (>10 m wide). They are often built at pinch-points in the flow, such as at culverts or where the channel narrows around an obstruction such as a boulder or tree. *Dams over two weeks old are considered part of a breeding site or resting place where they regulate the water level*

- Beaver prints and trails – beaver paws have five clawed toes and are of a typical rodent shape although the hind feet are webbed. Tracks can appear to be three or four toed and hind paw prints are often obscured by the dragging tail
- Foraging trails (sometimes referred to as slides) – well-worn trails and pathways connecting to areas where beavers repeatedly forage on land. These have a semi-excavated appearance and can develop into canals from digging
- Canals – actively excavated channels of around 30 – 60 cm width, radiating from a waterbody, used as navigation channels for food and materials for construction. These can also form from foraging trails filling with water
- Scent-mounds or marks – used to delineate territories and communicate within territories but may not always be present if unrelated beavers are not encountered regularly. These mounds are constructed of mud, sticks and stones can be detected from a camphor-like smell. Lots of scent marking at the borders of a territory will only be found if there is another beaver territory adjacent
- Food caches – winter food stores associated with overwintering resting places, collected in the autumn. Cut branches are secured in the substrate, often just outside the entrance of the main lodge or chambered burrow in a territory being used for overwintering, and may have other branches woven through or piled on to them. Not all beaver families will make caches every winter, therefore absence of this field sign is not evidence that a lodge/burrow is not active. *A food cache is considered to be an integral part of the overwintering resting place so interference with or prevention of access to a food cache during winter months (from November to March) is likely to cause disturbance and require a licence*

3.2 Responsibilities

It is the *Contractor's* responsibility to comply with all the requirements of this Protection Plan where beaver may be present, and it is both the *Contractor's* and SSEN Transmission's responsibility to monitor compliance with the Protection Plan.

3.3 Legislation

Beaver is a European Protected Species (EPS) protected under Annexes II and IV of EC Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive). The Habitats Directive is transposed into Scottish law by the Conservation (Natural Habitats &c.) Regulations 1994 (as amended in Scotland). The protection has remained operable in Scotland following amendments of the Regulations by the Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019.

Beaver, Eurasian or European, is listed on Schedule 2 of the Conservation (Natural Habitats &c.) Regulations 1994 (as amended in Scotland). Current legislation means that beaver and their breeding sites and resting places are fully protected in Scotland.

In summary it is illegal to:

- Deliberately or recklessly kill, injure, take (capture) a beaver
- Deliberately or recklessly harass a beaver or a group of beavers
- Deliberately or recklessly disturb a beaver whilst it is occupying a lodge, burrow or other place it uses for shelter or protection
- Deliberately or recklessly disturb a beaver while it is rearing or otherwise caring for its young
- Deliberately or recklessly obstruct access to a beaver breeding site or resting place, or otherwise prevent their use
- Deliberately or recklessly disturb a beaver in a manner or in circumstances likely to significantly affect the local distribution or abundance of the species
- Deliberately or recklessly disturb a beaver in a manner or in circumstances likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young

It is also an offence (of strict liability) to:

- Damage or destroy a breeding site or resting place of a beaver

NatureScot considers the breeding sites and resting places of beavers to be lodges, and chambered burrows and they are protected whilst a territory is active, regardless of whether or not they are physically occupied at that point in time.

Reckless acts would include not having or disregarding a mitigation plan aimed at protecting beaver resulting in killing, injury, and/or disturbance of any beaver, or protection of a beaver shelter; or carrying out an activity which would result in an offence where the potential to cause damage or disturbance could have reasonably been expected to have been foreseen but no action was taken to assess the risk.

Removing, notching or installing flow devices to established dams (more than two weeks old at the time that the action is taken) should be presumed to require a licence from NatureScot. This is due to the difficulty in ascertaining whether those dams protect breeding sites or resting places, particularly as burrow entrances may be concealed below water level.

NatureScot's Management Framework for Beavers in Scotland guidance on 'Managing the impacts of beavers in Scotland Guidance for land, property and infrastructure managers' lists actions that do not require a licence (subject to the protections above) which includes:

- Destroying short burrows with no end chamber
- Bank protection from burrowing activity
- Filling in canals created by beavers
- Fencing off areas to keep beavers out and use of protectors for vulnerable trees

- Removing, notching, or installing flow-devices to new dams less than two weeks old (at the time that the action affecting the dam is undertaken)

NatureScot advises that in most cases of development works a licence is unlikely to be required provided that the works will not damage lodges, breeding burrows or affect beaver dams; affect their access or access to associated foraging habitats, or otherwise interrupt normal ecological behaviour beyond a short-term temporary period.

3.4 Surveying for Beaver

1. Surveys for beaver must be undertaken in all works areas containing suitable beaver habitat within or with connectivity to recorded ranges. Initial surveys will be considered valid for a maximum of 12 months prior to the works commencing (this includes site investigations). Information from any previous surveys (e.g., surveys carried out to provide data for Environmental Impact Assessment (EIA) or other assessments) can be a useful guide to beaver activity in an area, particularly if lodges were recorded. Where beavers are a consideration, a preconstruction check must also be made of work areas a maximum of two weeks prior to the start of works, to check for new lodges, burrows or associated dams or changes in occupation of previously recorded shelters.
2. Surveys must include all suitable habitat within 50 m of working areas, including access tracks. This is increased to all suitable habitat within 100 m of when works have potential for high noise and/or vibration (piling, blasting etc.). If the works involve significant changes to hydrology (water levels or flow rates) then the survey should be extended to suitable habitat across all affected areas.
3. Surveys must be carried out by suitably qualified and experienced ecologists and will identify whether any beaver shelters or dams are likely to be affected by the works.
4. Where evidence of beavers is detected, the ecologist will provide a map showing beaver habitat and the location of beaver shelters, dams, food caches, feeding signs, beaver prints and trails, foraging trails (slides), canals and scent-mounds or marks in relation to the works.
5. Shelters will be classified as the following and will note the number of entrances identified, evidence of activity and any food caches:
    - **Lodge (free-standing / bank)**
    - **Chambered burrow**
    - **Short burrow with no end chamber**
    - **Temporary nest (or couch)**
6. Dams will each be classified as one of the following:
    - **Newly built dam:** This classification may only be used if the dam was not reported during a survey of the same extent less than two weeks before it was first detected. The survey report must specify the date and survey details of the prior survey which did not detect the dam for the avoidance of doubt and to

inform implications of delays to any works impacting that dam. Newly built dams are not considered likely to protect water levels at associated natal lodges or chambered burrows. *This will need to be reassessed if works will commence more than two weeks after any survey has classified the dam as newly built.*

- **Established dam:** Interpreted as more than two weeks old or where no prior survey has taken place in the two weeks prior to demonstrate that the dam is less than two weeks old. The record can be supported by a surveyor opinion on the potential for maintaining water levels at a lodge or chambered burrow used either for birth and rearing kits (a 'natal dam') or as a resting place outside of the kit dependency period (such as an overwintering resting place).

7. Appropriate monitoring should be undertaken where required to determine if any beaver shelter is being used for breeding or otherwise in use. Camera trap monitoring may require a licence from NatureScot. In certain circumstances an evening watch of the entrance location(s) may be more effective. The potential that a well-insulated beaver may not trigger a Passive Infrared (PIR) sensor camera trap immediately after emerging from water should be considered if relying solely on camera trap monitoring.

    - **Camera trap monitoring of lodge or burrow with underwater entrances:** movement in and out of the lodges and burrows will be very difficult to establish where the entrance is underwater, therefore use should be presumed if a beaver is detected nearby. Beavers may not be active on the banks close to these structures, therefore a bait (e.g., carrots or castoreum) will be required to attract beavers to the camera over a deployment which should be no less than 2 weeks.
    - Camera trap monitoring of lodge or burrow with entrances above water or temporary nest (or couch): camera trap deployment should take place over 2 weeks.
    - **Evening watch of the entrance location(s):** Watches should take place over at least two nights, each for four hours beginning in the evening and ending at nightfall (the start time in Scotland can vary from 18:30 to 21:00 depending on the time of year). The two visits should be spaced sufficiently far apart so that factors arising from river or weather conditions are negated. A one-week gap should be reasonable in most circumstances but should be extended to two weeks if river or weather conditions are unfavourable. Lodge/burrow watches should not be undertaken when:
    - water levels are high relative to normal levels (because the beavers may have temporarily moved)
    - during heavy rain (which may mask the view of beavers in the water)
    - when visibility is restricted (e.g., fog, heavy rain or snow)
    - when the water in front of the lodge/burrow is iced over
    - when the air temperature is below about -5°C (due to the potential that beavers will not be very active)

If a lodge or burrow shows signs of recent maintenance (fresh sticks placed on top, or mud plaster on it) then an evening watch will not be necessary to establish use since the shelter is clearly in-use. A food-cache located in front of a lodge or burrow during the winter is also evidence that the shelter is in-use.

3.5 Review of Beaver Survey

Once a beaver survey has been carried out, the ecologist / Ecological Clerk of Works (ECoW) should review the survey results, apply the mitigation hierarchy outlined below and decide if a licence is required for the works.

Construction teams should be advised of existing / new constraints, together with mitigation and licensing requirements by the ecologist / ECoW.

Relevant site documentation and project information sources should be updated with new and amended information on beaver constraints as it is produced, with changes communicated to appropriate staff immediately.

All records of beaver activity are required to be submitted to SSEN Transmission in a format compatible with SSEN Transmission's GIS and must comply with the current data standard.

3.6 Mitigation Hierarchy

There is a general presumption against works being carried out which could disturb beavers in their place of shelter or requiring the destruction or exclusion of any lodge or chambered burrow. A hierarchical approach to mitigation of Avoidance - Disturbance - Destruction will be applied to any lodge / place of shelter that may be affected (see Appendix A Beaver Mitigation Decision Tree).

Beavers demonstrate a particular tolerance to human activities and appear to be undisturbed by the presence of people, road traffic or land management activities. NatureScot are of the opinion that land-use practices and other activities that avoid damage to lodges and chambered burrows, or dams that protect them, are unlikely to result in an offence and that specifying disturbance-free protection zones is not necessary. This SPP considers high noise and vibration activities and other construction activities that may impact on the integrity of structures and shelters used by beavers so proposes the use of protection zones which are subject to Risk Assessment.

Avoidance

This is the preferred option for all lodges, burrows and temporary nest (or couch) identified. The default protection zone will be 50 m from the closest part of a lodge, the nearest detected entrance of a burrow or nearest part of a temporary nest (or couch); or 100 m from the closest part to high noise and vibration (piling, blasting etc.) activities. This larger protection zone considers not only the potential for disturbance, but also burrow collapse from vibration.

The default protection zones may be reduced if in the opinion of a suitably qualified ecologist it can be demonstrated that it will not result in damage or destruction of lodges or chambered burrows or dams protecting them; will not obstruct or otherwise deny access to the lodge or chambered burrow; and will not result in disturbance of a beaver occupying a lodge, burrow or temporary nest (or couch) or a beaver while it is rearing or otherwise caring for its young.

- Default protection zones will not be reduced around lodges or chambered burrows during the young dependency period which is normally between 1st April and 16th August without monitoring in accordance with this Species Protection Plan (for no less than two weeks) prior to the works to demonstrate that the structure is not relied upon for breeding or dependent young and those findings being considered as part of the Risk Assessment. Monitoring will continue until works within the protection zone have been completed
- Default protection zones should not be reduced overnight or within two hours of sunset / sunrise
- Free-standing lodges and bank lodges are more likely to be resilient to collapse from high vibration activities due to their woody structure

If a reduction in the protection zone is proposed, the ecologist / ECoW must complete a Risk Assessment using the form in Appendix B 'Beaver Protection Zone Reduction Risk Assessment' to support the reduction and detail why it is considered that offences will be avoided and will specify any mitigations (which could include the consideration of low ground pressure vehicles, ground protection panels, bog mats etc.) to minimise the risk to structures. Although disturbance is unlikely, care should be taken if operating near the water's edge at night where beavers are active. Although beavers are quite resilient to disturbance, changes in noise and activity levels may solicit a change in behaviour (i.e., urban beavers are used to human disturbance but other groups may not be). They are also likely to be intolerant of people at close-proximity when outside of the lodge or burrow.

The Risk Assessment must be made available for inspection by SSEN Transmission if requested.

Protection zones should be visibly marked and signed on the ground with appropriate material to restrict work access and must be maintained until works are completed. Site staff should be briefed of the purpose of the protection zone via a Toolbox Talk. Works will be micro-sited outwith the protection zone.

Activities impacting on any beaver dams shall be avoided in the first instance. Where impacts on, or manipulation, of a dam (whether newly built or established) cannot be avoided then Appendix C 'Beaver Dam Risk Assessment' must be completed to assess the risks of works to the ecological functionality of lodges or chambered burrows. Work on any established dam i.e., those older than two weeks old at the time that the action will be taken or cannot otherwise be demonstrated to be less than two weeks old at that time, will be presumed to require a licence from NatureScot unless it can be demonstrated beyond reasonable doubt that the dam does not protect a breeding site or resting place. Where surveys have identified the beaver dam is less than two weeks old it will be important to understand the programme of works. A licence will be required if there are any delays to this programme resulting in manipulation of a dam which is more than two weeks old.

There is no need to obtain a licence from NatureScot if the following can be **avoided**:

- damage to or destruction of lodges or chambered burrows and dams protecting them;
- disturbance of beavers occupying a lodge, burrow or temporary nest (or couch);
- disturbance of beavers rearing or otherwise caring for young;
- obstruction or otherwise denial of use of lodges or chambered burrows

Destruction, removal or preventing access to food caches should be avoided generally and **must be avoided** during the winter months (from November to March) when they are integral to an overwintering resting place as this could impair beaver ability to survive, breed or reproduce, or rear or otherwise care for its young.

Disturbance

If, following the advice of a suitably qualified ecologist, it is not possible to establish a protection zone which eliminates the potential for disturbance then a licence application to NatureScot will be required.

Manipulation of established dams (more than two weeks old when works commence) will be considered as capable of damaging the ecological integrity of lodges and chambered burrows (this extends to negative impacts on any food cache which is integral to an overwintering resting place between November and March inclusive) and therefore could disturb beavers so will be presumed to require a licence application to NatureScot, unless it can be demonstrated beyond reasonable doubt that the dam does not protect a breeding site or resting place (also see comments under Destruction about impacts on dams capable of resulting in the destruction of the ecological integrity of these sites in case that is also applicable).

There is a presumption against licensing disturbance to beaver lodges, natal burrows and associated dams while beavers have dependent young. The young dependency period is normally between 1st April and 16th August. Licensed activity in this situation would have to wait until the beavers had finished breeding and the young are fully mobile.

Licence applications to NatureScot should be accompanied by a Protection Plan which outlines how disturbance will be minimised and how lodges and chambered burrows and associated dams regulating their water levels will be protected. This could include screening of works and modifying protection zones.

Destruction

Destruction of lodges and chambered burrows or destruction of dams associated with these structures should only be undertaken as a last resort.

- A licence will be required from NatureScot for destruction of lodges or chambered burrows or for manipulation of a dam which is capable in resulting in the destruction of the ecological integrity of lodges or chambered burrows
- A short burrow with no end chamber or a temporary nest (or couch) will not require a licence to destroy, if monitoring demonstrates that the structure is not currently occupied by a beaver (or another protected species such as otter)

There is a presumption against licensing damage to beaver lodges, natal burrows and associated dams while beavers have dependent young. The young dependency period is normally between 1st April and 16th August. Licensed activity in this situation would have to wait until the beavers had finished breeding and the young are fully mobile.

Licence applications to NatureScot should be accompanied by a Protection Plan which outlines how impacts will be minimised and individuals protected (see NatureScot Standing advice for planning consultations – Beavers).

The plan should include monitoring to ensure breeding is not taking place in the feature and that the group has more than one lodge/chambered burrow in the immediate vicinity to switch to. It is unlikely that surveys will be able to establish the extent of a beaver territory. Seek advice from NatureScot if no alternative lodge/chambered burrow is identified or if more than one lodge/chambered burrow would need to be destroyed. Any lodge or chambered burrow subject to works under licence will be monitored during and after those works. Techniques for exclusion of lodges/chambered burrows or the provision of artificial lodges have not yet been established.

3.7 Mitigation Measures

3.7.1 General mitigation

1. All works close to waterbodies and watercourses showing signs of regular use by beavers should not take place at night or within two hours of sunset / sunrise, if possible.
2. Where works close to waterbodies and watercourses are required at night, lighting should be directed away from riparian areas. Works of a prolonged nature should consider visual screening such as a solid ply fence around 2 m tall.
3. All works close to watercourses and waterbodies must follow best practice measures outlined in the GEMPs, Scottish Environment Protection Agency (SEPA) guidance and *Contractor's* EMP to ensure their protection against pollution, silt and erosion.
4. Any temporarily exposed pipes or ducts should be capped when staff are off site to prevent beavers from gaining access.
5. All exposed trenches and holes should be provided with mammal exit ramps e.g., wooden planks or earth ramps when *Contractor*s are off site.
6. An emergency procedure should be implemented by site workers if a beaver, beaver shelter or beaver dam is unexpectedly encountered. All work within 50 m (100 m for high noise/vibration activities) should cease until a suitably qualified and experienced ecologist has inspected the site and determined the appropriate course of action. *Burrows are easy to miss because the entrances are usually underwater. Therefore, vigilance is needed by all workers.*
7. An exceptional circumstance procedure will be implemented should mitigation options not prove satisfactory in a particular case. Works will be halted whilst mitigation is determined (under consultation with NatureScot if required).
8. Beavers can be excluded from stands of trees using specification C.8 Permanent exclusion fencing described in Campbell-Palmer *et al.* (2016) using galvanised high-tensile mesh (locked-joint or weldmesh) with mesh dimension of 10 cm or less, erecting a fence of a minimum of 120 cm above ground, pegging out a skirt of around 40 cm into the ground from the direction that beavers are likely to approach from and burying a section of fence vertically. Fences within 5 m of a watercourses with steep sides underwater may be burrowed under from the bank so would need the fencing to extend vertically 0.5-1 m below normal water level and not as a horizontal skirt (so not rocky channels or those with shallow margins). NatureScot has published 'Beaver

Mitigation Practical Guides: Protecting trees using wire mesh' concerning protection of individual trees as part of their Management Framework for Beavers in Scotland.

9. Where dams are required to be removed, notched or a flow control device installed the Appendix C 'Beaver Dam Risk Assessment' must be completed and a record kept with site documents. Reducing water levels to depths of less than 70 cm at burrow or lodge entrances is likely to make the feature unsuitable for beavers. It should be presumed that this should be done in compliance with the relevant CAR guidance and strict adherence to GBRs. SEPA has published the position statement WAT-PS-14-01: (The Controlled Activities Regulations) CAR and the Management of Beaver Structures.
10. Hard bank reinforcement options may be suitable where flood defences have been compromised by burrowing. Discussion with SEPA would be required.
11. Design and locate culverts for future beaver resilience. This could include using square profiles, widths greater than 5.5 m and consideration of siting to avoid pooling of water at the inlet. Culverts should be of a specification which allows safe passage by beavers. These must also comply with CAR requirements.

3.7.2 Monitoring and Reporting

1. The Ecologist / ECoW will attend site on a regular basis throughout the construction period to ensure all environmental mitigation relevant to beaver is delivered.
2. Reports will be submitted to NatureScot as required by the relevant licence.

3.8 Licensing Requirements

Licence applications must be sent into NatureScot Licensing Team sufficiently in advance of the works start date (approximately 6 weeks) to ensure that the licence is in place prior to any work commencing. There is a presumption against licensing during the kit dependency period between 1st April and 16th August. Licensed activity in this situation would have to wait until the beavers had finished breeding and the young are fully mobile.

Licence applications should be accompanied by a Method Statement.

Further guidance and details of how to apply for a beaver licence can be found on the NatureScot website (https://www.nature.scot/professional-advice/protected-areas-and-species/licensing/species-licensing-z-guide/beavers-and-licensing).

4 Revision History

No	Overview of Amendments	Previous Document	Revision	Authorisation
01	New document created	N/A	1.00	Richard Baldwin
02				

Appendix A Beaver Mitigation Decision Tree

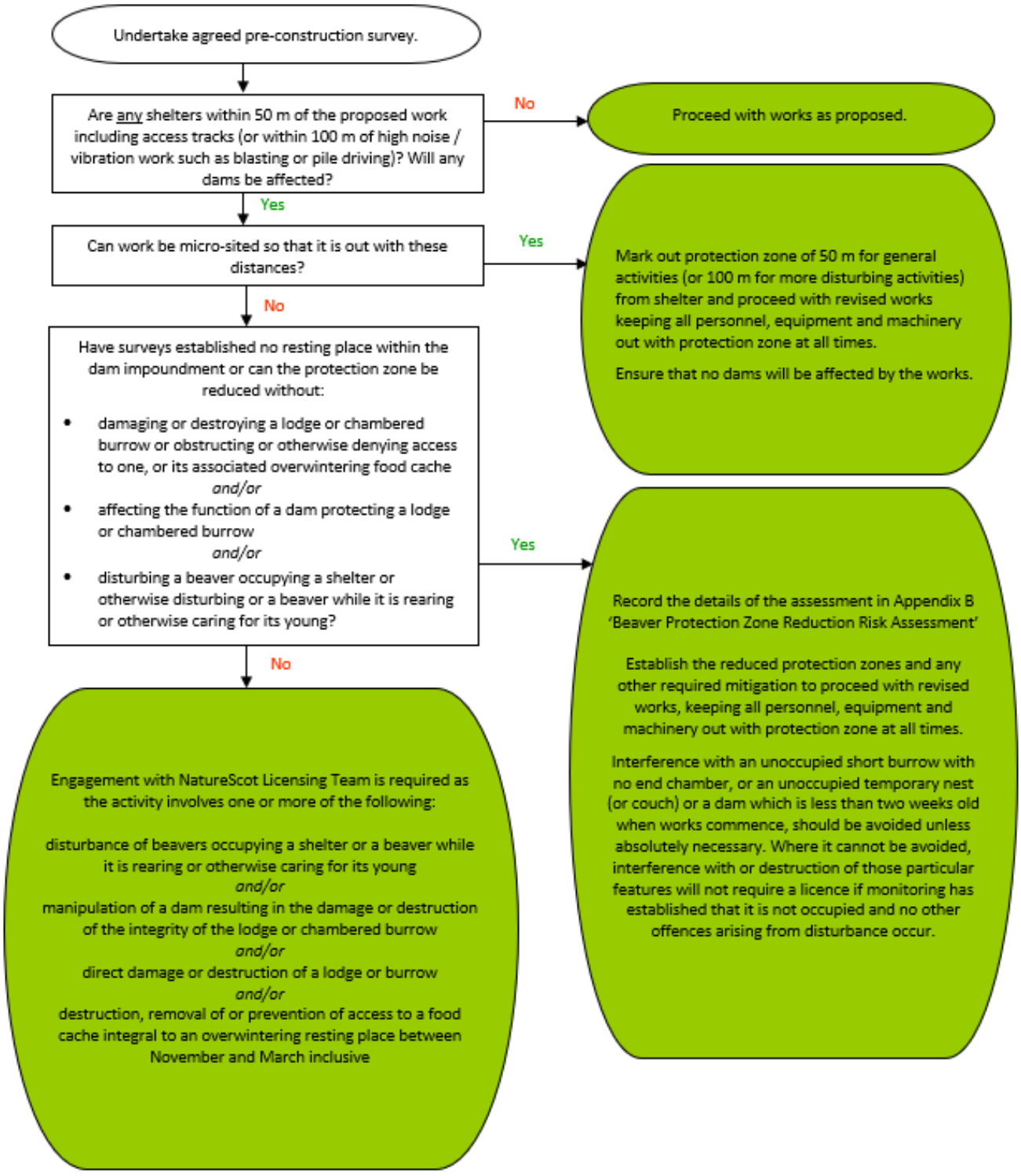

Figure A.1

Appendix B Beaver Protection Zone Reduction Risk Assessment

<*Project name*>: Beaver Protection Zone Reduction Risk Assessment

<Title including record ID and location>

Scope of Work

This method statement is applicable for <*insert details of works to be undertaken*>. The work comprises of:

Location and Access/Egress

<*Insert details including map / plan showing beaver habitat and the location of signs, shelters and dams in relation to the works and access*>

Description of beaver shelter and relationship to works (including access routes)

Table B.1

Beaver shelter name	Type of shelter *Free-standing lodge / Bank lodge / Chambered burrow / Short burrow with no end chamber / Temporary nest (or couch)*	Photo reference	Shelter location and grid reference	Description of beaver shelter and justification for category assigned	Relationship with project works *Provide the distance in metres from works (including access routes) to closest visible part of beaver shelter (this may for example be an entrance on a bank)*

Programme of Works

The following works are planned within <*50 m, or 100 m for areas of potential high noise and vibration (piling, blasting etc.)*> of the beaver shelter:

<*Insert details including timing and duration*>

Planned Equipment and Labour

The operation will be carried out by the following personnel and using the following equipment

<*Insert details*>

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Risk Assessment / Mitigation / Supervision of Work

<Include:

- the details of the assessment (including the qualifications and experience of the Ecologist/ECoW undertaking the Risk Assessment);
- existing disturbance of the features (such as agricultural or forestry traffic, including any correspondence of their typical access routes with the proposed working area);
- detail the reduced protection zone extent (including distance from the nearest visible part of the beaver shelter);
- state why it has been assessed that damage to a lodge or chambered burrow will be avoided when the protection zone is reduced;
- state why it has been assessed that disturbance to a beaver occupying a shelter will be avoided when the protection zone is reduced (consideration should be given to avoiding activities with the potential to cause disturbance within a reduced protection zone overnight or within two hours of sunset / sunrise);
- state why it has been assessed that disturbance of a beaver rearing or otherwise caring for its young will be avoided when the protection zone is reduced (this should reference timing of potential disturbances with regards to any increased sensitivity to the proposed activities during the kit dependency period of 1st April to 16th August);
- explain why it has been assessed that the works will not obstruct or otherwise deny use of a lodge or chambered burrow;
- if the works are proposed to take place between November and March inclusive if a food cache is integral to the overwintering resting place and how it has been taken into account; and
- detail mitigation required to avoid offences.>

Summary of reduced protection zone distance and controls relating to beaver shelter

Table B.2

Beaver shelter name	Shelter location and grid reference	Proposed reduced protection zone distance (metres)	Mitigation measures	Proposed monitoring of shelter and controls

Appendix C Beaver Dam Risk Assessment

<*Project name*>: Beaver Dam Risk Assessment

<Title including record ID and location>

Scope of Work

This method statement is applicable for <*insert details of works to be undertaken*>. The work comprises of:

Location and Access/Egress

<*Insert details including map / plan showing beaver habitat and the location of signs, lodges or burrows and dams in relation to the works and access*>

Description of beaver dam

Table C.1

Beaver dam name	Photo reference	Feature location and grid reference	Details of any beaver shelters with the potential of having water levels maintained by the dam	Dam manipulation works proposed and anticipated implications on water levels at associated beaver lodge or chambered burrow

Evidence that dam is newly built

Date that dam was first detected and details of surveyor: <*Include details of the surveyor*>

Description of dam and approximate water depth at any associated beaver lodge or chambered burrow: <*Include details of any associated overwintering food cache if the works are proposed to take place between November and March inclusive* >

Date and details any recent prior survey during which the dam had not been detected: <*Include details of the surveyor*>

Programme of Works

The following works are planned which will impact on the dam:

<*Insert details including timing and duration*>

Planned Equipment and Labour

The operation will be carried out by the following personnel and using the following equipment

<*Insert details*>

Risk Assessment / Mitigation / Supervision of Work

Removing, notching or installing flow devices to established dams (those more than two weeks old) is presumed to require a licence from NatureScot unless it can be demonstrated beyond reasonable doubt that the dam does not protect a breeding site or resting place. This is due to the

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difficulty in ascertaining whether those dams protect breeding sites or resting places particularly as burrow entrances may be concealed below water level.

<Include:

- the details of the assessment (including the qualifications and experience of the Ecologist/ECoW undertaking the Risk Assessment);
- an assessment of the relationship of the dam to any beaver lodge or chambered burrow (and any food cache integral to an overwintering resting place if the works are proposed to take place between November and March inclusive);
- if it has been assessed that manipulation of the dam will not affect water levels at an associated lodge or chambered burrow and damage or destroy the ecological functionality of the site then detail why, making reference to previous survey details if it is classified as a 'newly built dam' less than two weeks old;
- if a dam is more than two weeks old then the risk assessment should detail the assessment undertaken under appropriate field conditions (which avoids periods following prolonged heavy rainfall and/or high water levels) which detected no evidence of recent field signs and/or camera trap monitoring over a minimum of two weeks demonstrating that there is no occupancy of associated lodges or chambered burrows (taking into account that although beavers are active all year that they may be confined to lodges and burrows under ice during extreme winter conditions);
- reference to SEPA water level data (*www.sepa.org.uk/environment/water/water-levels*); and
- mitigation required to ensure that water levels at associated lodges and chambered burrows are not compromised.