

Flass Road, Wormit – Upgrade of Nature Trail Network:
Ecological & Arboricultural Impact Assessment

December 2024

A report to Roads & Transport Service, Fife Council



	DATE	PREPARED	REVIEWED	REMARKS
ISSUE 1	04/12/2024	MB	SG	-
REVISION 1				
REVISION 2				
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REVISION 4				

1 INTRODUCTION

1.1 Preamble

1.1.1 This report has been prepared by Heritage Ecological Ltd (HEL) for Fife Council, Roads & Transport Services (the Client) and provides the findings of an Ecological Impact Assessment (EclA) and Arboricultural Impact Assessment (ArbIA) for the proposed ramp upgrade of the nature trail off Flass Road in Wormit in the Fife Council area (the Project).

1.1.2 The survey fieldwork and report has been completed by Mark Bates Member of Chartered Institute of Ecology & Environmental Management (MCIEEM), HEL Director, who has been a professional ecologist for over 28 years, and has successfully completed The Arboricultural Association course on *British Standard 5837: 2012 Trees in Relation to Design, Demolition & Construction – Recommendations* and the Lantra *Basic Tree Survey and Inspection Course*.

1.1.3 The report comprises a Level 1 Desk Study and Level 2 Ecological Walkover. Avoidance, mitigation and/or compensation measures have been recommended where it is anticipated that the proposed Project may result in a significant effect on ecology without measures being implemented or in accordance with Best Practice guidelines, or to fulfil legal obligations.

1.1.4 The report also provides a Tree Survey with an associated ArbIA and Arboricultural Method Statement (ArbMS), according to *British Standard 5837: 2012 Trees in Relation to Design, Demolition & Construction – Recommendations*.

1.1.5 Scottish National Planning Framework 4 (NPF4) includes consideration of the following principles:

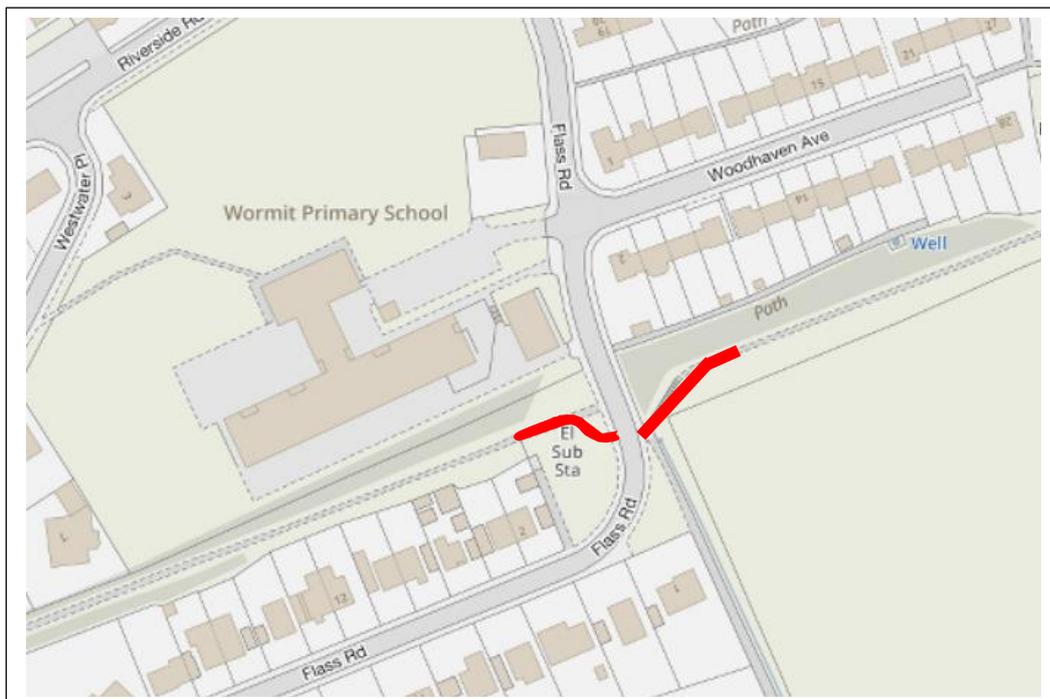
- Development plans should facilitate biodiversity enhancement;
- Development proposals should contribute to the enhancement of biodiversity;
- Potential adverse impacts of development proposals on biodiversity, nature networks and the natural environment should be minimised;
- Proposals for local development should only be supported if they include appropriate measures to enhance biodiversity, in proportion to the nature and scale of development;
- Development proposals that enhance, expand and improve woodland and tree cover will be supported; and
- Development proposals will not be supported where they will result in:
 - Any loss of ancient woodlands, ancient and veteran trees, or adverse impact on their ecological condition;
 - Adverse impacts on native woodlands, hedgerows and individual trees of high biodiversity value, or identified for protection in the Forestry and Woodland Strategy;
 - Fragmenting or severing woodland habitats, unless appropriate mitigation measures are identified and implemented in line with the mitigation hierarchy;
 - Conflict with Restocking Direction, Remedial Notice or Registered Notice to Comply issued by Scottish Forestry.

1.1.6 Measures are recommended that are proportionate to the Project, in order to ensure biodiversity enhancement.

1.2 Description and Location of Project

- 1.2.1 The Project is located at OS Grid Ref.: NO 40607 26745. Figure 1 below provides a location plan of the proposed Project area. It is understood that the Project will involve re-aligning the footpath on both the eastern and western sides of the Flass Road.

Figure 1 Location of Project Area



1.3 Policy & Guidance

- 1.3.1 In order to ensure the Project is legally compliant and in line with Best Practice, the following recommendations and legislative requirements given in the following have been considered:
- The Conservation (Natural Habitats &c.) Regulations 1994 (as amended in Scotland);
 - Nature Conservation (Scotland) Act 2004 (NCSA);
 - Wildlife and Natural Environment (Scotland) Act 2011 (WANE Act);
 - Wildlife and Countryside Act 1981 (WCA);
 - National Policy Framework 4 (NPF4);
 - The Scottish Biodiversity List (SBL);
 - BS 5837: 2012 *Trees in Relation to Design, Demolition & Construction*.
 - Fife Council adopted FIFEplan (Fife's Local Development Plan) adopted on 21 September 2017;
 - Chartered Institute of Ecology and Environmental Management (CIEEM); Guidelines for Ecological Impact Assessment in the UK and Ireland, 2018; and
 - A Handbook on Environmental Impact Assessment, Scottish Natural Heritage, 2018.

2 SURVEY METHODS

2.1 Ecology

Ecological Features Considered

2.1.1 The following provides a summary of the legislation in relation to the species/groups that are geographically likely to be present within the Project area:

European Otter, Eurasian Beaver, Bats and Great Crested Newt

2.1.2 European otter *Lutra lutra*, Eurasian beaver *Castor fiber*, bats (all species) and great crested newt *Triturus cristatus* are European Protected Species (EPS) protected under the Conservation (Natural Habitats &c.) Regulations 1994, as amended in Scotland. As EPS, it is an offence to deliberately or recklessly kill, injure or take (capture) animals, deliberately or recklessly disturb or harass animals, and damage, destroy or obstruct access to a breeding site or resting place of any EPS.

2.1.3 This legislation means that EPS are fully protected in Scotland, and that any planned activity, which may affect them, requires prior consultation with the appropriate statutory nature conservation organisation (NatureScot, formerly Scottish Natural Heritage [SNH]). Licences may be granted for certain purposes that would otherwise be illegal; such licences for development work must be applied for from NatureScot. Under Regulation 44 (2e) of the Conservation (Natural Habitats, &c.) Regulations 1994, licences may be granted for preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment. A licence will not be granted unless, under Regulation 44 (3), the appropriate licensing authority is satisfied there is no satisfactory alternative and that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

Badger

2.1.4 Badger *Meles meles* and their setts are comprehensively protected by the Protection of Badgers Act 1992 (as amended by the Nature Conservation (Scotland) Act 2004). In addition to protecting the animals themselves from certain acts of cruelty, the Acts makes it an offence to interfere with a badger sett either intentionally or recklessly causing or allowing:

- damage to a sett or any part of it;
- destruction of it;
- sett access to be obstructed, or any entrance of it; and
- disturbance to a badger when it is occupying it.

2.1.5 The Protection of Badgers Act 1992 allows licensing, for the purposes of development, of activities that would otherwise be prohibited. This allows developments, as defined in the Town and Countryside Planning (Scotland) Act 1997, to interfere with a badger sett within an area specified in the licence by any means so specified. Licences must be applied for from NatureScot.

2.1.6 Licences are not normally issued during the breeding season, which is between 30th November and 01st July, and cannot be issued retrospectively.

Water Vole

- 2.1.7 Enhanced statutory protection is afforded to those species protected under Schedule 5 of the WCA (as amended). Water vole *Arvicola amphibius* varies from other Schedule 5 listed mammals in that in Scotland it is afforded enhanced statutory protection under Schedule 5 – in respect of section 9 (4) only. This makes it an offence to disturb or damage any water vole resting place or habitat, but the animals themselves are not protected. This legislation means that water vole habitat is comprehensively protected in Britain, and that any planned activity which might affect this species requires prior consultation with the appropriate statutory conservation organisation (NatureScot).
- 2.1.8 If the development cannot avoid an offence with respect to water voles, a licence will be required from NatureScot to allow work to proceed. Such a licence can only be issued for development purposes if: a) the development will give rise to significant social, economic or environmental benefit, and b) there is no other satisfactory solution. There is a presumption against licensing disturbance or damage/destruction of burrows while they contain dependent young and during the winter months, with the pre-breeding season of March to mid-April the preferable period.

Pine Marten and Red Squirrel

- 2.1.9 Pine marten *Martes martes* and red squirrel *Sciurus vulgaris* resting places receive full protection under Schedule 5 of the WCA (as amended). It is an offence to intentionally or recklessly:
- kill, injure or take a pine marten/red squirrel;
 - damage, destroy or obstruct access to a den or any other structure or place which a pine marten/red squirrel uses for shelter or protection; and
 - disturb a pine marten/red squirrel when it is occupying a structure or place for shelter or protection.
 - This protection does not apply to areas where pine marten/red squirrel only feed.
- 2.1.10 If the Project cannot avoid an offence with respect to pine marten/red squirrel, a licence will be required from NatureScot to allow work to proceed. Such a licence can only be issued for development purposes if: a) the development will give rise to significant social, economic or environmental benefit, and b) there is no other satisfactory solution. There is a presumption against licensing disturbance or damage/destruction of places of shelter while they contain dependent young. This breeding period when young may be present in dens is March to July for pine marten and February to September for red squirrel.

Reptiles

- 2.1.11 Under the WCA (as amended), widespread species of reptile (common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis* and adder *Vipera berus*) are protected against:
- intentional or reckless killing and injury; and
 - trade – i.e. sale, barter, exchange, transport for sale, or advertise for sale or to buy.
- 2.1.12 No licensing system is in place for common lizard, slow-worm and adder for the purposes of development, and it is important that where impacts may occur on reptiles that appropriate mitigation is enacted prior to start of works.

Birds

- 2.1.13 All birds, their nests and eggs are protected by the Wildlife and Countryside Act 1981 (as amended), and it is thus an offence, with certain exceptions, to:

- Intentionally kill, injure or take any wild bird; and
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built.

2.1.14 The birds listed in Schedule 1 of the WCA (as amended) are further protected, making it an offence to intentionally or recklessly disturb adults and/or young at, on or near an 'active' nest.

Invasive Non-native Species (INNS) – Plants

2.1.15 The law on non-native species is covered by the WCA (as amended by the Wildlife and Natural Environment (Scotland) Act 2012.). In Scotland, it is an offence to plant, or otherwise cause to grow, a plant in the wild at a location outside its native range. Therefore, any works that may impact on non-native species must ensure that appropriate mitigation measures are enacted to prevent their spread.

Level 1: Desktop Study

2.1.16 A Level 1 desk study was undertaken on 26th November 2024 that included a review of Scotland's Environment website for designated sites for nature conservation and Ancient Woodland Inventory (<http://www.environment.gov.scot>) and from publically available NatureScot datasets. The Fife Council website (<https://www.fife.gov.uk/kb/docs/articles/planning-and-building2/built-and-natural-heritage/trees>) was investigated for any information relating to areas with Tree Preservation Orders (TPOs).

2.1.17 The following designated sites and their qualifying interests have been considered:

- Special Protection Areas (SPAs) and Ramsar sites;
- Special Areas for Conservation (SACs) and Sites of Special Scientific Interest (SSSIs) designated for nature conservation; and
- Other sites (Local Biodiversity Sites, TPOs, wildlife reserves of recognised conservation organisations, Local Nature Reserves, Ancient Woodland, etc.).

2.1.18 Relevant records from the desk study are included in **Section 3**, where appropriate.

Study Areas & Target Species/Features

2.1.19 The following study areas, with regard to the Project area have been assessed:

- Vegetation and flora, birds afforded general protection, reptiles: proposed development area and to a minimum of 10 m beyond;
- Bats: any trees or structures within proposed development area and to a minimum of 10 m beyond;
- Birds listed on Schedule 1 and great crested newt: proposed development area and to a minimum of 500 m beyond;
- European otter, Eurasian beaver and pine marten: proposed development area and to a minimum of 200 m beyond; and
- Badger and red squirrel: proposed development area and to a minimum of 50 m beyond;
- Water vole: proposed development area and to a minimum of 10 m beyond; and
- Trees: all trees >75 mm stem diameter measured at 1.5 m above ground level (agl) within proposed development area and to a minimum of 15 m beyond.

2.1.20 The above study areas have been defined in recognition of current survey guidelines and professional judgement, and are considered to be appropriate in assessing any potential effects on ecology/trees arising from the proposed Project.

Level 2 Ecological Walkover

2.1.21 A Level 2 Ecological Walkover was completed on 18th November 2024, involving the following:

Vegetation & Flora Survey

2.1.22 An assessment of the study area's vegetation was completed using the *Handbook for Phase 1 Habitat Survey - a technique for environmental audit* (JNCC 2010 as updated). The survey involved a systematic walkover of the study area, and all stands of vegetation were assigned to the one of the 109 habitat types/descriptors within the Phase 1 Habitat Survey. Notes were made of the vegetation in terms of dominant and associated species, and the presence of any species of conservation significance.

Invasive Non-Native Species (INNS) - Plants

2.1.23 Any invasive non-native plants, particularly Japanese knotweed *Reynoutria japonica*, giant hogweed *Heracleum mantegazzianum*, Himalayan balsam *Impatiens glandulifera* or rhododendron *Rhododendron ponticum*, were target noted and recorded during the walkover survey.

Bats

2.1.24 An assessment of the presence of bat roosts within the study area was undertaken according to current guidance as detailed in in *Bat Surveys for Professional Ecologists – Good Practice Guidelines* produced by Bat Conservation Trust (4th edition) (Collins, 2023). In addition, an assessment of potential impacts on bat foraging habitat was also considered during the walkover, in terms of impacts on potential foraging and commuting habitats for bats. The following provides a summary of the methods.

2.1.25 An assessment was made of the suitability of buildings, structures and trees within the study area for bat roosts. These were inspected for signs of bats from the ground, such as droppings, worn entrances and staining. No detailed internal searches were undertaken of any buildings, structures or tree cavities. Any bat droppings found were collected for further analysis. For each feature, an assessment of roosting potential was completed as per the definitions set out in **Table 1**, below.

Protected Mammals (other than bats)

2.1.26 The following species were considered given their geographical and historical distributions, and professional experience:

- Badger;
- Pine marten;
- European otter;
- Eurasian beaver;
- Red squirrel; and
- Water vole (habitat assessment).

2.1.27 Survey for protected mammal species was completed using standardised survey methods in: Harris *et al.* (1989) for badger; Ward *et al.* (1994) for otter; Gurnell and Lurz (2009) for

red squirrel; Campbell *et al.* (2012) for Eurasian beaver; Dean *et al.* (2016) for water vole and Birks *et al.* (2010) for pine marten. As well as sightings of protected mammal species, evidence of the presence/recent presence of species including prints, paths, droppings, places of shelter (including holes, setts, holts, lodges, dens, nest sites, etc.) and feeding remains were recorded and mapped.

2.1.28 Where suitable water vole habitat is confirmed, further surveys and/or mitigation may be recommended if there is potential for ecological impacts on this species.

Table 1: Bat Roost Suitability

Roosting suitability	Criteria
<p style="text-align: center;">High PRF-M</p>	<p>A building/structure/tree/rock exposure with one or more potential roost features that appear to offer suitability for high conservation status roosts (e.g., maternity, nursery or hibernation roosts with significant numbers of bats), due to factor(s) including size, shelter, protection, conditions and surrounding habitat (including connectivity to good foraging habitat). Buildings/structures with ideal high roost potential include complex attic and roof space features, deep cracks in stonework, etc. Trees with ideal features for roosting bats include features such as deep, dry features. These could include well developed hazard beams, splits or crevices. Rock exposures with high suitability would offer multiple deep and complex crevices/cavities.</p>
<p style="text-align: center;">Moderate PRF-I</p>	<p>A building/structure/tree/rock exposure with one or more potential roost features that appear to offer suitability for use by bats but considered unlikely to support roosts of high conservation status (e.g., maternity, nursery or hibernation roosts with significant numbers of bats), due to factor(s) including size, shelter, protection, conditions and surrounding habitat (including connectivity to good foraging habitat). Typically, buildings/structures/trees/rock exposures with such roost suitability support either single bats or small non-breeding groups.</p>
<p style="text-align: center;">Low PRF-I</p>	<p>Buildings/structures/trees/rock exposures that appear to offer a limited range or poor quality of roosting features. Typically, these features could be used by solitary or small numbers of bats, as occasional or transient roosts. Such features in buildings/structures/rock exposures include small, open cavities and in trees include shallow knot-holes that lack a higher grade of suitability either due to their exposed nature and/or shallow depth.</p>
<p style="text-align: center;">Negligible/None</p>	<p>Buildings/structures/trees/rock exposures that do not support features that bats are likely to access and use for roosting.</p>

Reptiles

2.1.29 The study area was assessed for potential habitats that could support species of reptiles, covering all aspects of their life cycle. The following features were considered in relation to habitat suitability for reptiles: areas with a sunny, open aspect; dense grassland and scrub for cover; basking areas; rubble/log piles for hibernation; and habitats providing healthy invertebrate populations.

2.1.30 Where suitable reptile habitat is confirmed, further surveys and/or mitigation may be recommended if there is potential for ecological impacts on this group.

Great Crested Newt

2.1.31 The study area was assessed for potential habitats that could support great crested newt. This included a desktop review of NBN atlas data and analysis of aerial and 1:25,000 scale

OS maps to identify any ponds/waterbodies within the study area that may support the species.

- 2.1.32 Where suitable habitat for great crested newt is confirmed, further survey may be recommended if there is potential for ecological impacts on this species.

Birds

- 2.1.33 A Level 2 walkover survey of the study area was completed which considered the suitability of habitats to support wintering species (geese/swans/raptors) and breeding Schedule 1 species (e.g. kingfisher *Alcedo atthis*), as well as those species afforded general protection. Further species-specific survey may be recommended where there is potential for ecological impacts on this group.

Other Ecological Features of Importance

- 2.1.34 Should other ecological features of importance be identified during the Level 1 desk study or Level 2 fieldwork, such as sites designated for nature conservation, important areas for other SBL species/groups these were noted. Where there is potential for impacts on these ecological features, further survey may be recommended.

Assessment of Effects

Introduction

- 2.1.35 The process of Ecological Impact Assessment (EclA) has been completed for all ecological features and has been undertaken by consideration of Best Practice guidance outlined in CIEEM guidelines (2018) and professional judgement.

- 2.1.1 EclA involves the following process:

- Evaluation of biodiversity value of ecological features;
- Impact assessment of the Project;
- Recommendations to avoid impacts through Project design (where possible);
- Provision of mitigation measures to reduce effects to acceptable levels;
- Provision of compensation measures to further reduce effects that can not be fully mitigated or reduced to acceptable levels;
- Provision of enhancement measures to ensure net biodiversity gain that is proportional to the Project; and
- Assessment and statement of residual effects of the Project

Evaluation of Biodiversity Value

- 2.1.2 Ecological features are assigned a value based on evaluation criteria adapted from existing guidelines and professional judgement. **Table 2** below shows the level of values and examples that are used as a guide in the evaluation process. Thus, ecological features are assigned a value according to a scale of *Negative* to *International Value*.

Impact Assessment of Project

- 2.1.3 In order to define the implications of the proposed Project on biodiversity an impact assessment of the proposal has been completed. Methods of impact prediction used in this assessment have included direct measurements and expert opinion. Published information (where available) has also been used to determine impacts. Impacts have been considered in relation to the probability of the impact occurring, whether they are predicted to be direct, indirect, temporary, permanent, reversible or irreversible.

2.1.4 For each potential impact of the Project, an assessment of impact magnitude has been provided based on the guidelines given below in **Table 3**. The magnitude of an impact has been assessed in conjunction with the value of the ecological feature to provide an assessment of effect significance. Impact magnitude is ranked according to a scale of *None* to *High*, based on increasing magnitude. A *Positive* category is also provided to indicate where there is a predicted increase in biodiversity value compared to the baseline.

2.1.5 For the purpose of this assessment a significant effect on biodiversity is defined, as outlined in CIEEM (2018) guidelines on EclA, as an effect that either supports (positive) or undermines (negative) biodiversity conservation objectives for important ecological features. As stated by CIEEM (2018) it should be noted that a significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission.

Avoidance Measures

2.1.6 Avoidance measures (where required and possible) are recommended that will avoid impacts on ecological features, such as consideration of alternative sites, revision of site layout/extent, etc.

Mitigation Measures

2.1.7 Mitigation measures are recommended where it is anticipated that a significant effect may result without measures being implemented or in accordance with Best Practice guidelines, or to fulfil legal obligations.

Compensation Measures

2.1.8 Compensation measures are recommended where it is anticipated that a significant residual effect may result even with avoidance and/or mitigation measures being implemented.

Enhancement Measures

2.1.9 In order to ensure that the Project results in biodiversity enhancement, measures will be recommended where these are considered to be proportional and relative to the scale and nature of the Project.

Assessment of Residual Effects

2.1.10 An assessment of avoidance/post-mitigation/compensation effects is provided to show the overall effect of the proposed Project.

Table 2: Guideline Nature Conservation Evaluation Criteria

Level of Value	Examples
International (European or Global)	<p>Habitats and/or species that meet published criteria for international designation such as World Heritage Sites, Biosphere Reserves, Biogenetic Reserves, RAMSAR Sites or sites of EU importance i.e. SPA's or SAC's.</p> <p>Outstanding examples of ecological features in a European context (i.e. high quality, good extent, viable areas of habitats and high density, core part of species population, etc.) of habitat types and species listed in Annex I and Annex II of the Habitats Directive.</p>
National (UK or Scotland)	<p>Habitats and/or species that meet published criteria for national designation such as SSSI's, NNR's or MNR's.</p> <p>Outstanding examples of ecological features in a national context (i.e. high quality, good extent, viable areas of habitats and high density, core part of species population, etc.) of habitat types and species listed in Schedules 1, 5 & 8 of the WCA and UK BAP Priority Species and Habitats.</p>
Regional (NatureScot Natural Heritage Zone)	<p>Habitats and/or species not satisfying international (<i>e.g.</i> SAC, SPA, <i>etc.</i>) or national (<i>e.g.</i> SSSI <i>etc.</i>) designation criteria, but are good examples of the following:</p> <ul style="list-style-type: none"> • areas of priority habitat and important populations of priority species included on the UK BAP; • sites containing regionally important numbers of a single species (<i>e.g.</i> >1% of NatureScot Natural Heritage Zone population for birds); and • species outlined in a Local BAP to be of regional rarity or localisation.
District (LDP Area)	<p>Viable areas of habitat or species identified in an LBAP.</p> <p>Good population sizes and/or assemblages of Red/Amber List birds.</p> <p>Extant areas of semi-natural ancient woodland.</p> <p>Sites meeting the criteria for Local District Authority area designation (<i>e.g.</i> SINC's or LNR's).</p>
Local (Proposed development site and 5 km beyond)	<p>Those ecological features considered to enrich the natural resource within the local environs, <i>e.g.</i> linear features such as hedgerows or boundary trees.</p> <p>Certain examples of habitats of conservation concern which are fragmentary and in poor condition.</p> <p>Non-critical habitat elements (<i>e.g.</i> a non-natal/temporary place of shelter or limited area of foraging resource) of certain widespread and/or abundant ecological features of conservation concern.</p>
Negligible	<p>Sites and/or specific examples of habitats of limited ecological value; including agriculturally intensified land (excluding species-rich margins), and other low grade and/or common and widespread habitats.</p> <p>Very common and abundant species.</p>
Negative	<p>Invasive and/or alien flora/fauna which have a deleterious ecological effect <i>e.g.</i> exotic, invasive species.</p>

Table 3: Guidelines for Assessing Impact Magnitudes

Impact Magnitude	Guidelines
High Negative	<p>A negative, fundamental change to the ecological baseline. Impact(s) that have a substantial effect on ecological feature(s) with regard to magnitude, extent and duration. For example complete or substantial,</p> <ul style="list-style-type: none"> • loss of an ecological feature; • reduction in population viability.
Medium Negative	<p>A negative, material change to the ecological baseline. Impact(s) that have a moderate effect on ecological feature(s) with regard to magnitude, extent and duration. For example moderate,</p> <ul style="list-style-type: none"> • deterioration in habitat quality; • reduction in population distribution.
Low Negative	<p>A negative change of limited scale to the ecological baseline. Impact(s) that have a limited effect on ecological feature(s) with regard to magnitude, extent and duration. For example limited,</p> <ul style="list-style-type: none"> • short term reduction in species diversity; • habitat loss of temporary duration.
Negligible Negative	<p>A very slight, detectable negative change to the ecological baseline. Impact(s) that have a very limited effect on ecological feature(s) with regard to magnitude, extent and duration. For example very limited,</p> <ul style="list-style-type: none"> • disturbance of a temporary nature to species/habitats; • impacts that would not affect the viability or carrying capacity of the site.
None	No detectable impact(s) on the ecological baseline.
Positive	Impact(s) resulting in positive effect(s) on the ecological baseline.

2.2 BS 5837 Tree Survey

2.2.1 The survey study area was systematically walked on 18th November 2024 and all trees were assessed according to the current recommendations in BS 5837. A visual assessment from the ground (aided by binoculars) was undertaken of all individual trees/sampled for tree groups >75 mm stem diameter measured at 1.5 m agl, and the following recorded in accordance with BS 5837:

- Tree position identified on topographical survey or hand-held GPS;
- Individual tag number with tags affixed on main stem north-facing at c. 1.8 m agl;
- Common and scientific name of tree according to *New Flora of the British Isles*(3rd Edition), Stace, C. Cambridge University Press;
- Tree quality and value assessment, defining trees as Category U, A, B and C (refer to **Table 4**, below);
- Type defined as single tree (T), group (G) or hedgerow (H);
- Life stage defined as either: Y= Young (less than 1/3 normal life expectancy), MA= Middle aged trees (1/3 to 2/3 normal life expectancy), M= Mature (over 2/3 normal life expectancy) or OM= Over Mature (beyond usually expected life span);
- Height (m) recorded to the nearest half metre for heights up to 10 m and the nearest whole metre for heights > 10m;
- Number of stems;
- Stems 1-5 diameter (mm) at 1.5 m agl, or if >5 stems mean stem diameter (mm) rounded to the nearest 10 mm;
- 1st branch height (m) and direction, noted as north (N), east (E), south (S) or west (W);
- Canopy/crown height (m);
- Branch spread (m) taken to the nearest half metre at the four cardinal points (N,E,S,W) measured from trunk;
- Root Protection Area (RPA) defined for single stem trees as an area equivalent to a circle with a radius x12 the stem diameter. For trees with two to five stems the combined stem diameter is calculated according to the following:
$$\sqrt{(stem\ diameter\ 1)^2 + (stem\ diameter\ 2)^2 \dots + (stem\ diameter\ 5)^2}$$
or trees with more than five stems the combined stem diameter calculated as
$$\sqrt{(mean\ stem\ diameter)^2 \times number\ of\ stems};$$
- Structural/physiological condition defined as Good, Fair, Poor, Moribund or Dead, and any presence of decay and/or physical defects;
- Remaining contribution of tree, defined as <10, 10+, 20+ or 40+ years; and
- Comments.

2.2.2 As per BS 5837 recommendation, hedgerows and stands of trees containing the same species (or mix of species) and age class/condition and which are therefore arboriculturally similar in character have been assigned either as a hedgerow (H) or tree group (G). Tree groups and hedgerows have not been tagged but were assigned as H1...Hn or G1....Gn respectively, and summary biometric data has been collected.

2.2.3 Trees are large dynamic organisms whose health and condition can change rapidly; therefore due to the changing nature of trees and other site considerations, this report and any recommendations made are only valid for the 12 month period following the site

survey which was conducted on 18th November 2024. **It should be noted that the tree survey undertaken does not constitute a comprehensive Tree Hazard Survey, which is the responsibility of Fife Council.**

2.2.4 It should be noted that no soil survey has been completed and/or used as part of this tree survey/assessment.

Table 4: Assessment of Tree Quality

Category and Definition	Criteria (including sub-categories where appropriate)			Identification on figures
Trees unsuitable for retention				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<ul style="list-style-type: none"> - Trees that have serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other Category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning); - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline; - Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality. 			Dark Red
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	1. Mainly arboricultural qualities Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue).	2. Mainly landscape qualities Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features.	3. Mainly cultural values, including conservation Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood pasture).	Light Green
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in Category A, but are down-graded because of impaired condition (e.g. presence of significant though remedial defects, including un-sympathetic past management or storm damage), such that they are unlikely to be suitable for retention beyond 40 years; or trees lacking the special quality necessary to merit Category A designation.	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality.	Trees with material conservation or other cultural value.	Mid Blue
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits.	Trees with no material conservation or other cultural value.	Grey

Notes on Tree Categories

1. Category U trees signifies trees that are in such a poor condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years and which should, in the current proposed development context, be removed for reasons of sound arboricultural management or health and safety, irrespective of any development proposals.

2. Category A trees signifies trees that are of a high quality and value with an estimated remaining life expectancy of at least 40 years. Occasionally a veteran tree, although not in the best condition may warrant this category because of its wildlife and cultural value. The design of the proposed development should take into account the retention of Category A trees where possible. A masterplan layout that suggests the removal of Category A trees has a considerably increased risk of planning refusal.
3. Category B trees signifies trees that are of a moderate quality and value with an estimated remaining life expectancy of at least 20 years. The design of the proposed development, where feasibly possible, should take into account the retention of Category B trees.
4. Category C trees signifies trees that are of low quality and value with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm. They are generally trees that could remain and are expected to have a safe useful life expectancy of between 10 and 20 years if no development were to occur. All Category C trees; under normal circumstances would not normally be retained in a development context, unless in such a location that they do not represent a significant constraint on the development proposal – refer to relevant note at foot of Table 1 of BS5837.
5. Therefore all Category A & B trees will, under normal circumstances, be retained on development sites, and should influence and inform the design, site layout, and in some cases the specific construction methods to be used – The root protection areas of these trees will generally form a construction exclusion zone, although under certain circumstances it may be possible to build within these areas providing that appropriate specifications have been agreed between the local planning authority, the consulting arboriculturist and the developer/client.
6. Where Ash Die-back (caused by *Hymenoscyphus fraxineus* - an Ascomycete fungus resulting in a chronic fungal disease of ash trees in Europe, characterised by leaf loss and crown dieback and typically death of infected trees) is encountered a pragmatic approach to their categorisation is adopted. As recommended by The Tree Council in Ash Dieback: An Action Plan Plan Toolkit (2019), all ash have been categorised according to the following health classes:
 - Health Class 1 – 75-100% canopy healthy;
 - Health Class 2 – 50 – 75% canopy healthy;
 - Health Class 3 – 25- 50% canopy healthy; and
 - Health Class 4 – 0 -25% canopy healthy

Where no Ash Die-back is recorded for a particular tree then it is assessed entirely as outlined in Table above. Where only minor symptoms of the disease are recorded (Health Class 1) then the tree is assessed as Category C with a remaining life expectancy of >10 years. However, where trees exhibit significant symptoms (Health Class 4), e.g. die-back of scaffold branches and stems, lesions on the bark, secondary infections, etc. and life expectancy is expected to be <10 years then the tree is assessed as Category U. It should be noted that trees affected with Ash Die-back, particularly those classified as Health Class 2 and 3, should be regularly checked to assess development of the disease and may require increased levels of inspection and/or arboricultural works.

3 RESULTS & ASSESSMENT

3.1 Introduction

3.1.1 The following provides the results of the Level 1 Desktop Study and Level 2 Ecological Walkover Surveys.

3.2 Level 1 Desk Study

Designated Nature Conservation Sites

3.2.1 The search of Scotland's Environment website¹ and NatureScot's sitelink map² confirmed that no statutory designated sites for nature conservation (SPA/SSSI/SAC) are present within the immediate area of the proposed Project.

3.2.2 The nearest designated site to the Project is the Firth of Tay and Eden Estuary SAC which is located approximately 250 m north from the Project area. The Qualifying Interests for which the SAC site is designated are:

- Estuaries;
- Mudflats and sandflats not covered by seawater at low tide;
- Intertidal mudflats and sandflats;
- Sandbanks which are slightly covered by sea water all the time;
- Subtidal sandbanks; and
- Common seal *Phoca vitulina*.

3.2.3 The Project will have no likely significant effect on the Firth of Tay and Eden Estuary SAC, given the spatial separation.

3.2.4 The Firth of Tay and Eden Estuary SPA is located c.1,138 m to the north-west of the Project. The Qualifying Interest for which the site is designated are:

- The Firth of Tay and Eden Estuary SPA qualifies under Article 4.1 by regularly supporting populations of European importance of the Annex I species: marsh harrier *Circus aeruginosus* (1992 to 1996, an average of 4 females, 3% of the GB population); little tern *Sternula albifrons* (1993 to 1997, an average of 25 pairs, 1% of the GB population) and bar-tailed godwit *Limosa lapponica* (1990/91 to 1994/95, a winter peak mean of 2,400 individuals, 5% of the GB population);
- The Firth of Tay and Eden Estuary SPA further qualifies under Article 4.2 by regularly supporting populations of European importance of the migratory species: redshank *Tringa totanus* (1990/91 to 1994/95, a winter peak mean of 1,800 individuals, 1% of the Eastern Atlantic biogeographic population); greylag goose *Anser anser* (1990/91 to 1994/95 a winter peak mean of 1,200 individuals, 1% of the Iceland/UK/Ireland biogeographic population) and pink-footed goose *Anser brachyrhynchus* (1990/91 to 1994/95 a winter peak mean of 2,800 individuals, 1% of the Eastern Greenland/Iceland/UK biogeographic population);
- The Firth of Tay and Eden Estuary SPA also qualifies under Article 4.2 by regularly supporting in excess of 20,000 individual waterfowl. During the period 1990/91 to 1994/95 a winter peak mean of 48,000 individual waterfowl was recorded, comprising

¹ <https://map.environment.gov.scot/sewebmap/>

² <https://sitelink.nature.scot/map>

28,000 wildfowl and 20,000 waders, including nationally important populations of the following species: velvet scoter *Melanitta fusca* (730 individuals, 24% of the GB population); pink-footed goose (2,800 individuals, 1% of the GB population); greylag goose (1,200 individuals, 1% of the GB population); redshank (1,800 individuals, 2% of the GB population); cormorant *Phalacrocorax carbo* (230 individuals, 2% of the GB population); shelduck *Tadorna tadorna* (1,200 individuals, 2% of the GB population); eider *Somateria mollissima* (13,800 individuals, 18% of the GB population); bar-tailed godwit (2,400 individuals); common scoter *Melanitta nigra* (3,100 individuals, 9% of the GB population); black-tailed godwit *Limosa limosa islandica* (150 individuals, 2% of the GB population); goldeneye *Bucephala clangula* (230 individuals, 1% of the GB population); red-breasted merganser *Mergus serrator* (470 individuals, 5% of the GB population); goosander *Mergus merganser* (220 individuals, 2% of the GB population); oystercatcher *Haematopus ostralegus* (5,100 individuals, 1% of the GB population); grey plover *Pluvialis squatarola* (920 individuals, 2% of the GB population); sanderling *Calidris alba* (220 individuals, 1% of the GB population); dunlin *Calidris alpina alpina* (5,200 individuals, 1% of the GB population) and long-tailed duck *Clangula hyemalis* (560 individuals, 2% of the GB population).

3.2.5 Although outwith the SPA boundary, consideration must be given to any potential use of the Project area and immediate surrounds by the above qualifying interests, for example for feeding birds, high tide roosting, etc. However, given the Project area is located on the urban edge of Wormit on a predominantly wooded former railway line now used as a public footpath, the utilisation by any qualifying species is considered very unlikely. In addition, the agricultural land to the south of the Project area is located on moderate slopes, and in addition to being disturbed is also considered unsuitable for roosting/feeding habitat for any of the qualifying species. Therefore the Project will have no likely significant effect on the Firth of Tay and Eden Estuary SPA.

3.2.6 Given no predicted impacts on designated nature conservation sites, no avoidance, mitigation, compensation or enhancement measures are required for designated sites as part of the proposed Project.

Ancient Woodland/Native Woodland

3.2.7 The search of Scotland's Environment website³ confirmed that no areas listed on the Ancient Woodland Inventory (Scotland) nor on the Native Woodland Survey for Scotland website⁴ are present within the potential zone of influence of the proposed Project.

3.2.8 Given no predicted impacts on Ancient Woodland/Native Woodland, no avoidance, mitigation, compensation or enhancement measures are required for these woodland sites as part of the proposed Project.

Tree Preservation Orders (TPOs)

3.2.9 The search of Fife Council's website⁴ confirmed that there are no Tree Preservation Orders (TPO) present within the potential zone of influence of the proposed Project.

3.2.10 Given no predicted impacts on TPOs, no avoidance, mitigation, compensation or enhancement measures are required for these designated trees as part of the proposed Project.

³ <https://forestry.gov.scot/forests-environment/biodiversity/native-woodlands/native-woodland-survey-of-scotland-nwss>

⁴ <https://www.fife.gov.uk/kb/docs/articles/planning-and-building2/built-and-natural-heritage/trees>

3.3 Vegetation

3.3.1 **Figure 2** below shows the Phase 1 habitat types found throughout the study area. **Photograph 1 & 2** provides representative views of the Project area.

3.3.2 The existing steps on the eastern side of Flass Road are c. 16 m in length and have a wooden post and handrail on the southern side. The embankment is defined along Flass Road by a low stone retaining wall 1.2 – 1.4 m high, which is partially ivy *Hedera helix* covered. The slope onto the top of the embankment has a desire line defined by bare ground immediately adjacent to the steps, presumably mainly as a result of use by cyclists. To the north of the steps is mainly rough, species-poor neutral grassland with a single mature Himalayan birch *Betula utilis*, and tall ruderal community dominated by rosebay willowherb *Chamaenerion angustifolium* with bramble *Rubus fruticosus* agg. The north-facing slopes of the embankment support broadleaved semi-natural woodland of mainly sycamore *Acer pseudoplatanus* and European ash *Fraxinus exclesior* which has largely been previously felled and now comprise multi-stemmed trees that have regrown to 3-9 m in height. The ground flora is overwhelmingly dominated by ivy. The south-facing embankment also supports an initial area of ivy with mature sycamore and European ash to the east. A ditch (with no flowing water at the time of survey) is present along the edge of the existing houses and down the side of the agricultural field, and this has a small silt trap before being culverted to the north. It is understood that this ditch discharges a considerable amount of run-off following rainfall. The steep agricultural field to the south of the embankment supports poor semi-improved grassland and was grazed by cattle during the survey.

Figure 2: Phase 1 Habitats in Project Area



3.3.3 To the west of Flass Road, the ground rises less steeply and the existing footpath is routed through an area of mainly amenity grassland with several mature Himalyan birch and a small group of mature Swedish whitebeam *Sorbus intermedia* adjacent to the small electricity substation. The vegetation along the south embankment supports a stand of

tall ruderal dominated by rosebay willowherb, with sycamore and European ash on the north side. The trees bordering Wormit Primary School have previously been felled and now comprise multi-stemmed trees c. 3-6 m in height, with a ground flora dominated by ivy.

3.3.4 No flora of conservation significance were recorded within the study area during the survey, although it should be noted that this was undertaken outwith the key period for flowering plants (i.e. May – September). It is considered that the study area includes habitats of *Negligible Value* (e.g. amenity grassland) and *Local Value* (e.g. broadleaved semi-natural woodland).

3.3.5 The realignment of the existing steps to east of Flass Road to the immediate south will involve the loss of habitats of an area of approximately 200-250 m² comprising species-poor neutral grassland, ivy-dominated vegetation and a small area of broadleaved semi-natural woodland (consisting of two mature European ash – see **Section 4: Tree Survey**) of *Local Value*. The realignment of the footpath to the west of Flass Road on less steep gradient will result in loss of a single Himalayan birch (refer to **Section 4: Tree Survey**) and approximately 150 m² of amenity grassland of *Negligible Value*. The small loss of the above habitats would represent a medium negative impact magnitude on an ecological resource of *Negligible – Local Value* and is therefore not considered to represent a significant ecological effect. However, **Section 5** provides a series of compensatory measures to offset the impact on vegetation.

3.4 Invasive Non-Native plant Species (INNS)

3.4.1 No invasive non-native plant species (INNS) were recorded within the study area during the ecological walkover.

3.4.2 No potential impacts on INNS are predicted as a result of the Project. No avoidance, mitigation or compensation measures are required for this group as part of the proposed Project.

3.5 Bats

3.5.1 No potential bat roost features were recorded within the study area during the ecological walkover, and therefore no potential impacts on bat roosts are predicted as a result of the Project.

3.5.2 The former rail line currently supports good quality commuting and foraging habitat for bats that may be geographically present. The small loss of broadleaved semi-natural woodland associated with the Project will represent a negligible negative impact magnitude on bat commuting/foraging habitats and is therefore not considered to represent a significant ecological effect. However, **Section 5** provides a series of compensatory and enhancement measures to off-set the impact on bat habitats and ensure biodiversity enhancement.

3.6 European Otter

3.6.1 No evidence to indicate the presence of European otter was recorded from the study area during the ecological walkover.

3.6.2 No potential impacts on European otter are predicted as a result of the Project. No avoidance, mitigation or compensation measures are required for this species as part of the proposed Project.

3.7 Eurasian Beaver

3.7.1 No evidence to indicate the presence of Eurasian beaver was recorded from the study area during the ecological walkover.

3.7.2 No potential impacts on Eurasian beaver are predicted as a result of the Project. No avoidance, mitigation or compensation measures are required for this species as part of the proposed Project.

3.8 Pine Marten

3.8.1 No evidence to indicate the presence of pine marten was recorded from the study area during the ecological walkover.

3.8.2 No potential impacts on pine marten are predicted as a result of the Project. No avoidance, mitigation or compensation measures are required for this species as part of the proposed Project.

3.9 Water Vole

3.9.1 No evidence of water vole was recorded within the study area during the ecological walkover. The ditch to the south of the Project area is considered not to provide suitable habitat for water vole, as it lacks both high quality aquatic and riparian habitats necessary to support this species.

3.9.2 No potential impacts on water vole are predicted as a result of the Project. No avoidance, mitigation or compensation measures are required for this species as part of the proposed Project.

3.10 Badger

3.10.1 No evidence to indicate the presence of badger was recorded from the study area during the ecological walkover.

3.10.2 No potential impacts on badger are predicted as a result of the Project. No avoidance, mitigation or compensation measures are required for this species as part of the proposed Project.

3.11 Red Squirrel

3.11.1 No evidence of red squirrel was recorded within the study area during the ecological walkover.

3.11.2 No potential impacts on red squirrel are predicted as a result of the Project. No avoidance, mitigation or compensation measures are required for this species as part of the proposed Project.

3.12 Reptiles

3.12.1 The habitats associated with the Project area are not considered to provide suitable habitats for reptiles.

3.12.2 No potential impacts on reptiles are predicted as a result of the Project. No avoidance, mitigation or compensation measures are required for this group as part of the proposed Project.

3.13 Great Crested Newt

3.13.1 Desk survey of aerial/1:25,000 OS maps and the ecological walkover surveys confirmed no waterbodies are present within the study area, which therefore does not provide any potential breeding habitat for great crested newt. Therefore, this species is unlikely to be present within the Project area. The nearest contemporary desk study record for great

crested newt, as reported on NBN Scotland⁵, is c. 2 km to the south, indicating a low risk of the presence of this species.

- 3.13.2 No potential impacts on great crested newt are predicted as a result of the Project. No avoidance, mitigation or compensation measures are required for this species as part of the proposed Project.

3.14 Birds

- 3.14.1 The Project area and surrounding habitats do not provide suitable habitat for any breeding bird listed on Schedule 1 of the WCA, being located on the urban edge of Wormit on a predominantly wooded former railway line now used as a public footpath, and therefore subject to relatively high levels of disturbance. However, the habitats present along the former rail line provide breeding habitat for a variety of passerines and the following anecdotal list of breeding species was provided by a local knowledgeable resident: wood pigeon *Columba palumbus*, blue tit *Cyanistes caeruleus*, great tit *Parus major*, Eurasian blackcap *Sylvia atricapilla*, willow warbler *Phylloscopus trochilus*, tree sparrow *Passer montanus*, chiffchaff *Phylloscopus collybita*, bullfinch *Pyrrhula pyrrhula*, yellowhammer *Emberiza citrinella* and skylark *Alauda arvensis*. Therefore, the breeding bird assemblage is considered to be of *Local Value* given that tree sparrow, skylark and yellowhammer are Red Listed on the BOCC⁶.

- 3.14.2 The Project would result in the small loss of broadleaved semi-natural woodland and associated habitat and amenity grassland within the study area and will represent a negligible negative impact magnitude on breeding bird habitats, and is therefore not considered to represent a significant ecological effect. However, **Section 5** provides a series of compensatory and enhancement measures to off-set the impact on bird habitats and ensure biodiversity enhancement.

- 3.14.3 **Section 5** also outlines general precautionary avoidance measures to ensure that the works are legally compliant given the legal protection afforded to all breeding birds under the WCA.

3.15 Other Species of Significance

Butterflies

- 3.15.1 Anecdotal records of holly blue *Celastrina argiolus* from a local resident highlighted the use of the former rail line by this butterfly species.
- 3.15.2 The holly blue is widespread and relatively common in England and Wales, south of a line running from Cumberland in the west to County Durham in the east. This species is also found on the Isle of Man and throughout Ireland, but until relatively recently was absent from Scotland except as a scarce vagrant. Recently it has expanded northwards and has colonised northern England, parts of southern and central Scotland. The larvae feed predominantly on the flower buds, berries and terminal leaves of holly *Ilex aquifolium* in the spring generation, and ivy in the summer generation, the latter being very common along the former rail line. The presence of a reported good population of holly blue within the study area is considered to be of *District Value*.

⁵ <https://scotland-records.nbnatlas.org> SNH Great crested newt records [Accessed 29/11/2024]

⁶ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain*. British Birds 114: 723-747.

3.15.3 The Project would result in the small loss of holly blue habitat comprising a small extent of broadleaved semi-natural woodland and associated stand of ivy within the study area. This loss of a very limited extent of habitat will represent a negligible negative impact magnitude on holly blue given the limited area that will be unaffected. Impacts are therefore not considered to represent a significant ecological effect. However, **Section 5** provides a series of compensatory and enhancement measures to off-set the impacts of the Project and ensure biodiversity enhancement.

4 TREE SURVEY RESULTS

4.1 General Description of Study Area

4.1.1 The study area to the east of Flass Road comprises mainly trees that are part of the mature broadleaved semi-natural woodland along the former rail line on both the northern and southern sides of the embankment, and a single planted tree. In contrast, the study area to the west of Flass Road is comprised entirely of planted trees. It is likely that these trees were planted in the early 1970s as part of the surrounding residential development, and when it is understood that the rail overbridge over Flass Road was removed and landscaped.

4.2 Overview of Trees

4.2.1 **Table 5** below provides an overview of the tree survey with the study area comprising 17 trees, with **Figure 3** in **Appendix A.1** showing the location of all trees together with their associated categories and RPAs. **Table 9** in **Appendix A.2** provides a tree schedule and tree descriptions for the study area. **Photographs 1 – 2**, below are provided below to illustrate the trees within the study area.

Table 5: Overview of Tree Survey

Tree Category	Single Trees	Tree Groups	Hedges	Retention Value on Site
U	5	0	0	Trees with life expectancy of <10 years. The reasons for removal include trees being dead/moribund, presence of significant rot, Ash Die-back, poor form, suppression or general die-back within the tree. Details for each tree can be found in the survey data in Appendix A.2.
A	0	0	0	Trees of high quality with an estimated remaining life expectancy of at least 40 years
B	9	0	0	Trees of moderate quality with an estimated remaining life expectancy of at least 20 years
C	3	0	0	Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm .
Total Number	17	0	0	

Category U

4.2.2 A total of five trees have been classified as Category U trees (unsuitable for retention with a life expectancy of <10 years) within the study area, as follows:

- No. 4 European ash (Tag No. 0813, 0814, 0815 & 0817) present along the eastern section of the former rail line embankment show significant signs of Ash Dieback and

it is recommended that these diseased trees are removed due to their close presence to the adjacent footpath; and

- No. 1 Swedish whitebeam (Tag No. 0819) adjacent to the electricity substation to the west of Flass Road. Tree has colonisation of honey-fungus *Armillaria* sp. at base, and is likely to be suffering from root rot of potentially significance that may cause the tree to fail. In addition to felling this tree it is recommended that the stump is ground below the ground and all material removed from site.

4.2.3 In addition, it is recommended that the remaining group of Swedish whitebeam (Tag No. 0820, 0821, 0822 & 0823) are subject to regular monitoring to check if these trees have become colonised by honey-fungus, which causes white rot decay that is frequently associated with root and stem failure of trees.

Category A

4.2.4 No Category A trees (trees of High Quality) were recorded from the study area.

Category B

4.2.5 Category B trees (trees of Moderate Quality) within the study area include 9 trees, comprising the following:

- Himalayan birch (Tag No. 0809) – mature, planted, single-stemmed tree c. 15 m high and 395 mm stem diameter. RPA is 4.74 m radius;
- Sycamore (Tag No. 0816) – mature, probably self-sown, multiple stemmed c. 14 m high and 330, 200 and 130 mm stem diameter. RPA is 4.89 m radius;
- Himalayan birch (Tag No. 0818) – mature, planted, single-stemmed tree c. 15 m high and 445 mm stem diameter. RPA is 5.34 m radius;
- Swedish whitebeam (Tag No. 0820) – middle-aged, planted, single-stemmed c. 15 m high and 490 mm stem diameter. RPA is 5.88 m radius;
- Swedish whitebeam (Tag No. 0821) – middle-aged, planted, single-stemmed c. 15 m high and 480 mm stem diameter. RPA is 5.76 m radius;
- Swedish whitebeam (Tag No. 0822) – middle-aged, planted, single-stemmed c. 15 m high and 425 mm stem diameter. RPA is 5.10 m radius;
- Swedish whitebeam (Tag No. 0823) – middle-aged, planted, single-stemmed c. 12 m high and 395 mm stem diameter. RPA is 4.74 m radius;
- Himalayan birch (Tag No. 0824) – mature, planted, single-stemmed tree c. 14 m high and 400 mm stem diameter. RPA is 4.80 m radius; and
- Himalayan birch (Tag No. 0825) – mature, planted, single-stemmed tree c. 16 m high and 405 mm stem diameter. RPA is 4.86 m radius.

4.2.6 Category B trees within the study area are of moderate quality for mainly landscape reasons, B2.

Category C

4.2.7 Category C trees (trees of Low Quality) within the study area include 3 trees, and comprise the following:

- Sycamore (Tag No. 0810) – multi-stemmed, probably self-sown mature tree following felling, c. 9.5 m high with 20 stems with average diameter of 65 mm. RPA is 3.49 m;
- Wild cherry *Prunus avium* (Tag No 0811) – young, probably self-sown tree, c. 4.5 m high with single stem of 110 mm diameter. RPA is 1.32 m radius; and

- Sycamore (Tag No. 0812) – multi-stemmed, probably self-sown mature tree following felling, c. 9.5 m high with 22 stems with average diameter of 80 mm. RPA is 4.50 m.

4.2.8 Category C trees within the study site are of low quality for mainly landscape reasons, C2.

4.3 Arboricultural Impact Assessment (ArbIA)

4.3.1 The following provides an ArbIA of the proposed Project.

Direct Loss of Trees

4.3.2 The proposed Project has been designed to ensure minimal direct loss of trees, and will involve the loss of only a single tree, Category B Himalayan birch (Tag No. 0818) on the western side of Flass Road. It should be noted that although a further two European ash (Tag No. 0814 & 0815) will also be impacted on the eastern side of Flass Road, these trees have been assessed as Category U (unsuitable for retention with a life expectancy of <10 years) and have been recommended for removal due to the trees being infected with Ash Die-back (caused by *Hymenoscyphus fraxineus* - an Ascomycete fungus resulting in a chronic fungal disease of ash trees in Europe). Therefore, these two European ash are not included in the assessment of direct loss of trees.

4.3.3 The loss of a single Category B tree is considered to represent a medium negative impact magnitude, and is not considered to represent a significant arboricultural impact. However, **Section 5** provides recommendations for compensatory planting to offset the impact of the Project.

Damage to Trees

4.3.4 Damage to trees during the construction phase of the Project (including initial vegetation clearance and earth works) may occur to trees to be retained if the works are not carefully planned and the trees not adequately protected.

4.3.5 Potential damage includes physical damage to tree roots, stems and branches (during ground investigation, vegetation clearance, earthworks and construction) by plant and vehicles, and when works are within their respective RPA's by damage to their roots and compaction and/or pollution of soils which may result in early senescence and loss of trees.

4.3.6 For the purpose of this assessment, potential damage to trees has been defined as any Project works within RPAs (but excluding felling which is considered under *Direct Loss of Trees* above). However, all retained trees within the Project area have the potential to be adversely affected by ill-planned works.

4.3.7 **Figure 4** in **Appendix A.1** shows the location of all trees and their associated RPAs in relation to the proposed Project. **Table 6** below provides a summary of the trees where proposed works are within the RPAs of trees, and which may be subject to potential damage according to the various categories. Also included in **Table 6** are those trees in close proximity to the Project, including those in close proximity to the new path route and those near the sections of the old path that will be restored. This includes 7 Category B trees and 2 Category C trees.

4.3.8 **Table 7** provides a detailed breakdown of those trees where works may result in their damage, comprising Category B Himalayan birch (Tag No. 0809 & 0825), Swedish whitebeam (Tag No. 0820, 0821, 0822 & 0823), and Category C sycamore (Tag No. 0816) and wild cherry (Tag No 0811).

- 4.3.9 The implementation of an ArbMS, aimed at protecting all retained trees (refer to **Section 6**) during the construction phase, will ensure that potential damage to these trees during the Project will be mitigated, and there will be negligible impacts on trees.

Table 6: Overview of potential damage to trees

Tree Category	Single Trees	Hedgerow
A	0	0
B	7	0
C	2	0
Total Number	2	0

Table 7: Summary of potential damage to trees

Species	Tag No.	Category	RPA (m radius)	Summary of Works
Himalayan birch	0809	B	4.74	New path and area of old steps to be restored close to tree
Wild cherry	0811	C	1.32	New path and area of old steps to be restored close to tree
Sycamore	0816	C	4.89	Approximately 24% of RPA within new path, requiring earth works to create new grade
Swedish whitebeam	0820	B	5.88	Approximately 10% of RPA within new path
Swedish whitebeam	0821	B	5.76	New path close to tree
Swedish whitebeam	0822	B	5.10	New path close to tree
Swedish whitebeam	0823	B	4.74	New path close to tree
Himalayan birch	0824	B	4.80	New path and area of old path to be restored close to tree
Himalayan birch	0825	B	4.86	New path and area of old path to be restored close to tree

Indirect Impacts

- 4.3.10 All retained trees within the Project area may require future arboricultural management, for example as part of the standard tree risk assessments in order to ensure the health and safety of its users. On-going maintenance, potentially in the form of crown lifting/reduction, removal of any deadwood and removal of any unsafe trees, will therefore likely be required as part of this on-going arboricultural management.
- 4.3.11 It is important that all future arboricultural works are completed by an Arboricultural Association Approved Contractor, and according to BS 3998: 2010. Tree Work. Recommendations. This will ensure that future arboricultural works do not have a significant impact on any retained trees.
- 4.3.12 Falling leaves, fruit and flowers also have potential to cause minor seasonal nuisance to the Project. However, general maintenance and good housekeeping will ensure such seasonal nuisance is not a significant issue.

Photograph 1: View of east of Flass Road, showing Category B Himalayan birch (Tag No. 0809) on left and Category U European ash (Tag No. 0814 & 0815). Red line shows approximate route of upgraded footpath.



Photograph 2: View of west of Flass Road, showing Category B Himalayan birch (Tag No. 0818) in centre and group of Category B Swedish whitebeam (Tag No. 0820 – 0823) and Category U Swedish whitebeam (Tag No. 0819). Red line shows approximate route of upgraded footpath.



5 AVOIDANCE/ MITIGATION/COMPENSATION/ ENHANCEMENT MEASURES

5.1 Introduction

5.1.1 The following provides recommendations for avoidance, mitigation and compensation measures, where it is anticipated that the proposed Project may result in a significant effect on ecological/arboricultural features without measures being implemented or in accordance with Best Practice guidelines (e.g. Biodiversity Enhancement), or to fulfil legal obligations. In addition, enhancement measures are recommended to ensure the Project results in biodiversity enhancement.

5.2 Avoidance Measures

Birds

5.2.1 Avoidance measures are required if the proposed Project works (including any pre-works vegetation clearance, etc.) are planned during the breeding bird season (generally defined as mid-March to mid-August, although some species may breed outwith this general period).

5.2.2 It is recommended that bird nest checks are completed by an experienced ecologist if any works are undertaken within the breeding bird season. Any active nests should be delineated with an appropriate buffer, depending on the species. No works should be undertaken within this exclusion buffer until breeding has been completed and the young have left the nest. All existing active nests should be monitored to ensure that the nests are no longer active before the start of works within the delineated buffer

5.2.3 It is considered that provision of the above avoidance measures will ensure that residual impacts of the Project are legally compliant with the WCA.

5.3 Mitigation Measures

5.3.1 No Project mitigation measures are required.

5.4 Compensation Measures

Vegetation

5.4.1 In order to compensate for impacts on vegetation and associated habitat loss as a result of the Project, it is recommended that all areas of disturbed ground (excluding current amenity grassland which should be fully restored) are seeded with a native meadow seed mix.

5.4.2 It is recommended that the proposed native meadow mix creation area is sown with Scotia Seeds *Bee, Bird & Butterfly Mix*, which is a seed mix that does not contain grasses but has a mix of biennial and perennial wildflowers to create a long-lasting wildflower area with a range of plants to attract wildlife from bumblebees and moths to seed-eating birds. There are 30 species in this mix from a range of different sites, as detailed in **Table 8** below. The approximate area of the native meadow mix is shown in **Figure 5** below.

5.4.3 As pre-sowing preparation, it is important that any existing vegetation is killed-off by spraying with glyphosate herbicide and then preparing a fine seed bed – a smooth surface with the soil broken down as much as possible – by rotavating. If perennial weeds are, or have been present, it may be necessary to prepare the soil and allowing weed seeds to germinate then killing them, repeating the process once or twice more.

Table 8: Scotia Seeds *Bee, Bird & Butterfly Mix*

Species	%
Yarrow <i>Achillea millefolium</i>	3
Cow Parsley <i>Anthriscus sylvestris</i>	5
Lesser Burdock <i>Arctium minus</i>	4
Clustered Bellflower <i>Campanula glomerata</i>	1
Crosswort <i>Cruciata laevipes</i>	2
Wild Carrot <i>Daucus carota</i>	3
Foxglove <i>Digitalis purpurea</i>	3
Teasel <i>Dipsacus fullonum</i>	3.6
Vipers Bugloss <i>Echium vulgare</i>	12
Hemp Agrimony <i>Eupatorium cannabinum</i>	0.5
Meadowsweet <i>Filipendula ulmaria</i>	9
Lady's Bedstraw <i>Galium verum</i>	5
Meadow Cranesbill <i>Geranium pratense</i>	1
Wood Cranesbill <i>Geranium sylvaticum</i>	2
Herb Bennet <i>Geum urbanum</i>	3
Imperforate St John's Wort <i>Hypericum maculatum</i>	1
Common St John's Wort <i>Hypericum perforatum</i>	1
Field Scabious <i>Knautia arvensis</i>	2
Meadow Vetchling <i>Lathyrus pratensis</i>	1
Musk Mallow <i>Malva moschata</i>	1
Selfheal <i>Prunella vulgaris</i>	6
Meadow Buttercup <i>Ranunculus acris</i>	7
Red Campion <i>Silene dioica</i>	9
White Campion <i>Silene latifolia</i>	5
Hedge Woundwort <i>Stachys sylvatica</i>	0.2
Devils-bit Scabious <i>Succisa pratensis</i>	0.2
Tansy <i>Tanacetum vulgare</i>	3
Wild Thyme <i>Thymus polytrichus</i>	0.3
Goatsbeard <i>Tragopogon pratensis</i>	0.5

5.4.4 The seed mixture should be sown in Spring or Autumn. In Spring, sow as soon as it is possible to work the soil and as it starts to warm up (later on wet soils). Late sowing after April is possible up to the end of June but there is an increasing risk that seedlings will appear in very warm weather and the young plants will be vulnerable to drought. In Autumn sowing can be carried out from late August to late September. An autumn sowing

gives plants the advantage of an early start in spring. The disadvantage is that the site will look bare over winter with the possibility of soil erosion on some sites and any seedlings that unexpectedly appear may later be killed by frost.

5.4.5 Sow on or very close to the soil surface at 2 gm/m². Mix the seed at the start and keep mixing whilst sowing as the seeds of different species vary in size and can separate out. As the sowing rate is low it is recommended that an equal amount of dry sand is used to bulk up the seed so that it is easier to spread and can be seen on the soil surface. After sowing the ground should be rolled to ensure that the seeds are pressed into the soil surface so that it makes better contact with the soil and absorbs water from the soil more effectively. A light raking or harrowing before rolling can help to settle the seed into the soil. The seed should not be buried.

5.4.6 Although the seed mix contains some biennials this is mainly a perennial mix that will reappear indefinitely. In terms of management, the vegetation can be cut back after flowering and the arisings collected to prevent the soil becoming nutrient enriched. However, it is also possible to leave the attractive seed heads and dried stems over winter providing food and shelter for wildlife, and new growth will come through in the Spring.

Trees

5.4.7 In order to compensate for the loss of the Category B Himalayan birch as a result of the Project, it is recommended that three trees are planted, representing the generally accepted rule of three new trees for each tree lost.

5.4.8 It is recommended that the compensatory planting should include three light standard trees, as shown in **Figure 5** below, of the following species:

- Rowan *Sorbus aucuparia* (No. 2); and
- Silver birch (No. 1).

5.4.9 Tree planting and maintenance will be completed by a British Association of Landscape Industries (BALA) (or similar) approved contractor, and according to British Standard (BS) 8545 (204) Trees: from nursery to independence in the landscape to ensure successful planting. Planting stock for the 3 light standards should comprise well established, bare-rooted stock to 200-250 cm high with stem girths of 6-8 cm of local regional provenance (where available), and with good root and branch structure with no obvious defects. All planting stock should be inspected and any sub-standard plants rejected.

5.4.10 Planting should be undertaken during the dormant period when stock are not actively growing or post bud-break, i.e. generally between mid-November and mid-April.

5.4.11 Care in handling planting stock is vital. When planting it is important that plants are not exposed to the wind or sun to cause drying out. In the field, plants should be kept in co-extrusion bags and where possible in a shady place. Plants should be healed in if they are not to be planted immediately.

5.4.12 Planting areas (c. 1 m²) should be initially screefed by hand to provide an area of bare earth for planting and the trees should be pit planted and appropriately staked.

5.4.13 A 3-year maintenance programme should be undertaken following the planting to ensure successful establishment. All failed trees should be replaced.

Bird Boxes

5.4.14 In order to compensate for the loss of breeding bird habitat as a result of the Project it is recommended that 2 bird boxes should be installed on existing suitable nearby mature trees within 50 m of the Project area:

- No. 2 Schwegler Nestbox 1B with entrance hole 32 mm suitable for great, blue and coal tits, redstart, nuthatch, tree and house sparrow.

5.5 Enhancement Measures

5.5.1 The following outlines enhancement measures which are considered appropriate to the scale of the proposed Project and would adhere to the requirements of NPF4:

- Provision of x5 bat boxes suitable for summer roosting bats such as pipistrelle and brown long-eared bat (e.g. Schwegler 2F or similar) should be affixed to suitable nearby mature trees within 100 m of the Project area.

Figure 5: Location of proposed compensation measures



6 ARBORICULTURAL METHOD STATEMENT (ARBMS)

6.1 Introduction

6.1.1 The following details the proposed tree protection and compensation/enhancement measures that will be adopted by the Project in order to ensure the protection of retained trees and ensure biodiversity enhancement. The ArbMS is intended as a stand-alone section, as required under BS 5837 (2012). A **Tree Protection Plan** is also provided below and summarises the measures that are described in this ArbMS.

6.2 Scheme of Supervision

6.2.1 A suitably qualified arborist (Arboricultural Clerk of Works [ArbCoW]) will be appointed by the Client and will be responsible to oversee tree protection and compensation/enhancement measures, detailed in this ArbMS, as follows:

- Submission of ArbMS for the written approval of Fife Council as Planning Authority – prior to commencement of works;
- Induction of site staff on all arboricultural matters relating to the development - prior to the commencement of works;
- Marking out tree protection zones (TPZ's) (see below) and approval of barrier fencing - prior to the commencement of works;
- Reporting to be submitted to the Client– following satisfactory installation of barrier fencing; following completion of all works within tree RPAs; following completion of all development works (including landscaping works) and removal of barrier fencing; and
- Site visits by the ArbCoW – as necessary throughout the developments works.

6.3 Pre-emptive Arboricultural Works within RPAs

The entire Project works will be outwith the RPAs of retained trees with the exception of the following:

- Sycamore (Tag No. 0816) - approximately 24% of RPA within new path, requiring earth works to create new grade, although it is expected that the root spread will be asymmetrical with only limited roots in the steep ground associated with this portion of the RPA; and
- Swedish whitebeam (Tag No. 0820) - approximately 10% of RPA within new path.

6.3.1 Pre-emptive arboricultural works will be required to be undertaken for these trees prior to any other works being as described below.

6.3.2 Where any unavoidable works are to be undertaken within the RPAs that involve any excavation works, tree roots will be subject to pre-emptive controlled root pruning. Tree roots will first be exposed by hand digging a trench to a maximum depth of 400 mm. Roots smaller than 25 mm diameter will be pruned back, making a clean cut with a suitable sharp tool (e.g. bypass secateurs or handsaw), except where they occur in clumps. Roots occurring in clumps or of 25 mm diameter and over should be severed only following consultation with the Project ArbCoW, as such roots might be essential to the tree's health and stability.

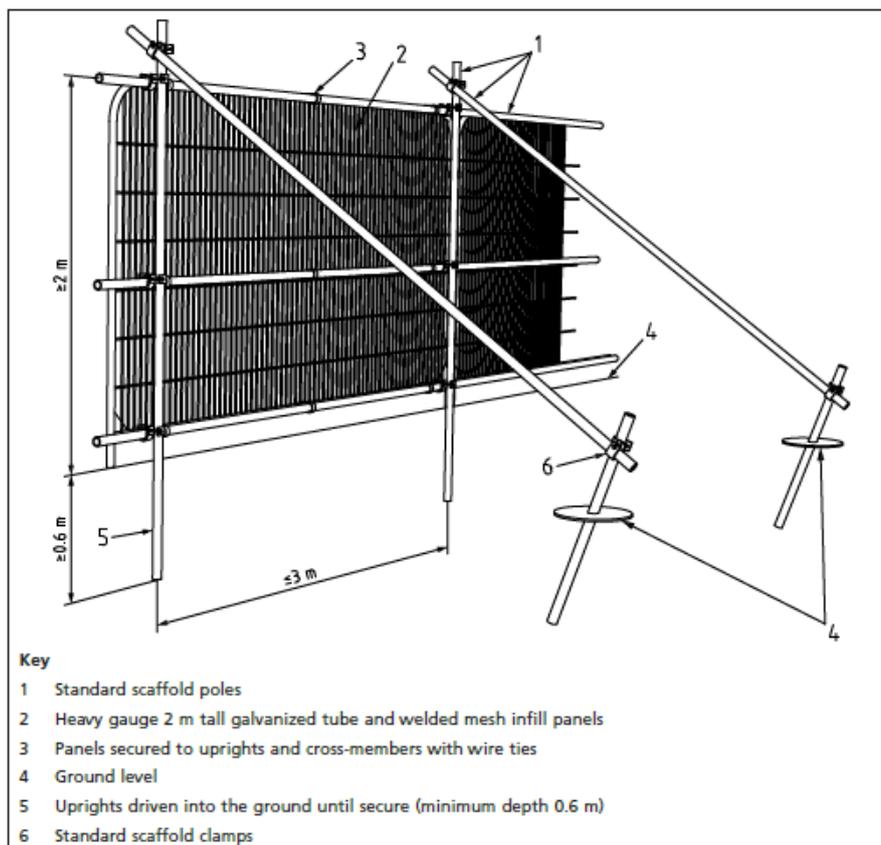
6.3.3 Roots, if exposed, should immediately be wrapped or covered with damp hessian cloth to prevent desiccation and to protect them from rapid temperature changes. Any wrapping should be removed prior to backfilling, which should take place as soon as possible. Any backfilling material should consist of quality topsoil (not sub-soil).

6.3.4 Immediately following these pre-emptive works, Tree Protection Zones, as detailed below will be established.

6.4 Tree Protection Zones (TPZs)

6.4.1 TPZs are shown on the **Tree Protection Plan** below. Specific tree protection measures are given in the respective sections below. No deviation from the commitments or tree protection measures noted below will be undertaken unless there is prior agreement with the Project ArbCoW.

6.4.2 TPZs will be demarked by the tree protection fencing based on the default BS5837 (2012) specification as shown below:



6.4.3 The above tree protection will be used to protect the following trees:

- Himalayan birch (Tag No. 0809) - 4.74 m radius;
- Wild cherry (Tag No. 0811) - 1.32 m radius
- Sycamore (Tag No. 0816) - 4.89 m radius;
- Swedish whitebeam (Tag No. 0820) - 5.88 m radius;
- Swedish whitebeam (Tag No. 0821) - 5.76 m radius;
- Swedish whitebeam (Tag No. 0822) - 5.10 m radius;
- Swedish whitebeam (Tag No. 0823) - 4.74 m radius;
- Himalayan birch (Tag No. 0824) - 4.80 m radius; and
- Himalayan birch (Tag No. 0825) - 4.86 m radius.

6.4.4 Tree protection fencing will be installed prior to the start of the Project works to the satisfaction of the Project ArbCoW and maintained throughout the entire Project works.

- 6.4.5 No sites workers, vehicles, storage of materials, equipment or machinery will be permitted within the TPZs.
- 6.4.6 The Site Manager will ensure that all personnel are aware of the restrictions that apply to the TPZs.
- 6.4.7 Waterproof warning signs labelled 'Tree Protection Area' will be placed at appropriate intervals to ensure that all personnel are aware of the restrictions that apply to the TPZs.
- 6.4.8 The protection fencing will be inspected for faults or damage by the Site Manager or other responsible named person on a weekly basis and a written record kept. Any faults or defects will be repaired or replaced as soon as is reasonably practicable.
- 6.4.9 The Tree Protection Fencing will not be removed, breached or altered without prior agreement with the Project ArbCoW.

6.5 General Tree Protection Measures

- 6.5.1 The RPAs of all trees will be protected by establishment of TPZs as detailed in **Section 6.4**. All works with the potential to affect trees should be undertaken with due regard to pollution prevention. Of particular relevance to tree protection are the following elements:
- Any mixing of cement based materials will take place outside TPZs. Cement will be mixed at an appropriate distance (at least 10 m) and not upslope from each zone so that water/pollution run-off cannot enter RPAs;
 - All other chemicals hazardous to tree health, including petrol and diesel, will be stored in suitable containers as specified by current COSHH Regulations, and kept at least 10 m away and not upslope from TPZs;
 - Where there is a risk of pollution entering Tree Protection Zones, appropriate sediment/pollution fencing should be installed prior to start of works; and
 - No fires should be lit within 25 m of any Tree Protection Zone to prevent radiant heat causing damage to trees.

6.6 Site Compound & Storage of Materials

- 6.6.1 The Contractors temporary site compound and storage of materials should be located outwith the TPZs of all trees, and the recommended location is on the hardstanding area to the east of Flass Road (see Tree Protection Plan).

6.7 Tree Removal Works

- 6.7.1 The following trees are proposed to be removed as part of the Project, and for reasons of health and safety as shown on the **Tree Protection Plan**:
- No. 1 Himalayan birch (Tag No. 0818) – present on route of proposed re-aligned path to west of Flass Road;
 - No. 4 European ash (Tag No. 0813, 0814, 0815 & 0817) present along the eastern section of the former rail line embankment show significant signs of Ash Dieback and it is recommended that these diseased trees are removed due to their close presence to the adjacent footpath; and
 - No. 1 Swedish whitebeam (Tag No. 0819) adjacent to the electricity substation to the west of Flass Road. Tree has colonisation of honey-fungus *Armillaria* sp. at base, and is likely to be suffering from root rot of potentially significance that may cause the tree to fail. In addition to felling this tree, it is recommended that the stump is ground below the ground and all material removed from site.

6.7.2 All proposed tree felling and/or tree works will be undertaken in accordance with *BS 3998:2010 Tree work. Recommendations*. If standard felling techniques are likely to result in damage to any retained trees, sectional dismantling methods should be used. All cut material should be removed from site and disposed of in an environmentally responsible manner. Tree removal should be completed by a suitably qualified Arboricultural Association (or similar professional body) approved contractor.

6.8 Arboricultural Clerk of Works (ArbCoW)

6.8.1 The Project ArbCoW will visit the site as required during the construction period and inspect the works to ensure that all the measures outlined in this ArbMS are being adhered to, and to define any remediation measures if required.

6.8.2 The Project ArbCoW will attend site during the initial setting up of TPZs and associated fencing and will sign-off these works.

6.9 Post Construction Works

6.9.1 Following completion of all construction works the Tree Protection Fencing will be removed.

6.9.2 Landscaping works will be undertaken on the principle that works within RPAs of all trees should accord to the principle that the tree and soil structure take priority. Soil structure will be preserved at a suitable bulk density for root growth and function, existing rootable soil retained and roots themselves protected.

6.9.3 All works will be undertaken by hand; no heavy plant or vehicles will be operated within the RPA of retained trees.

6.9.4 If roots are exposed (e.g. during rotovating) these will immediately be wrapped or covered with damp hessian to prevent desiccation and to protect them from rapid temperature changes. Any wrapping will be removed prior to backfilling, which will take place as soon as possible. Prior to backfilling, the roots will be surrounded with topsoil or uncompacted sharp sand (builders' sand will not be used because of its high salt content, which is toxic to tree roots), or other loose inert granular fill, before soil or other suitable material is replaced. This material will be free of contaminants and other foreign objects potentially injurious to tree roots.

6.9.5 The Project ArbCoW will attend site and will sign-off these works.

6.10 Compensation Tree Planting

6.10.1 In order to compensate for the loss of the Category B Himalayan birch as a result of the Project, it is recommended that three trees are planted, representing the generally accepted three new trees for each tree lost.

6.10.2 Compensatory planting should include three light standard trees, as shown in **Tree Protection Plan** below of the following species:

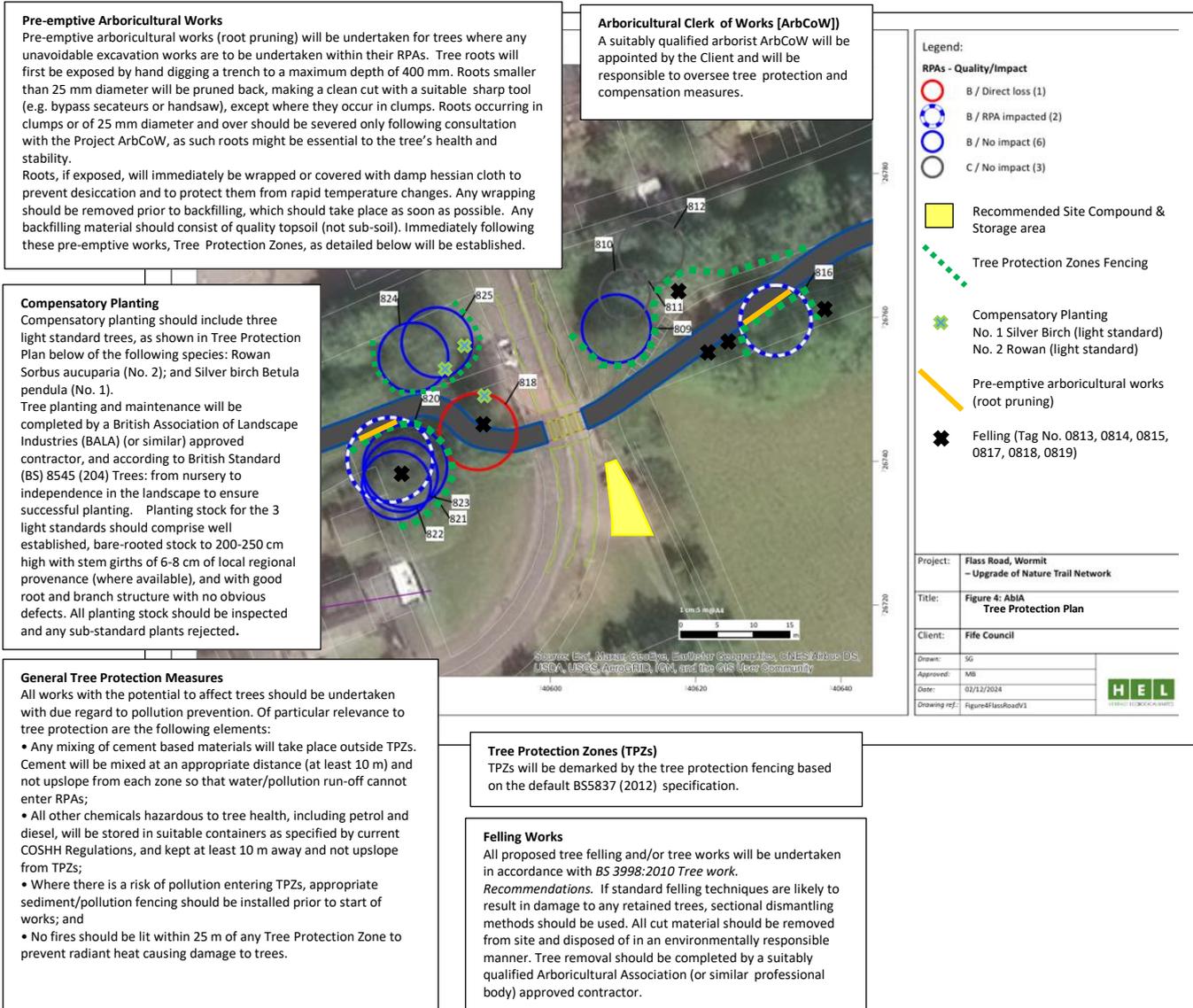
- Rowan *Sorbus aucuparia* (No. 2); and
- Silver birch (No. 1).

6.10.3 Tree planting and maintenance will be completed by a British Association of Landscape Industries (BALA) (or similar) approved contractor, and according to British Standard (BS) 8545 (204) Trees: from nursery to independence in the landscape to ensure successful planting. Planting stock for the 3 light standards should comprise well established, bare-rooted stock to 200-250 cm high with stem girths of 6-8 cm of local regional provenance

- (where available), and with good root and branch structure with no obvious defects. All planting stock should be inspected and any sub-standard plants rejected.
- 6.10.4 Planting should be undertaken during the dormant period when stock are not actively growing or post bud-break, i.e. generally between mid-November and mid-April.
- 6.10.5 Care in handling planting stock is vital. When planting it is important that plants are not exposed to the wind or sun to cause drying out. In the field, plants should be kept in co-extrusion bags and where possible in a shady place. Plants should be healed in if they are not to be planted immediately.
- 6.10.6 Planting areas (c. 1 m²) should be initially screeded by hand to provide an area of bare earth for planting and the trees should be pit planted and appropriately staked.
- 6.10.7 A 3-year maintenance programme will be undertaken for the planting, initiated the year following planting. Management prescriptions are as follows:
- Annually, in July of Years 1-3 following planting, assess establishment success of the planting. All failed stock to be clearly marked;
 - Replace all failed stock in November-December of Years 1-3 with trees/shrubs of local regional provenance stock (where available); and
 - Assess effectiveness of management prescriptions in August of Year 4. Management is considered effective if there is 75 % establishment of each species. Where this establishment figure is not met a further 3 year period of inspection and replacement should be undertaken.

Flass Road, Wormit – Upgrade of Nature Trail Network:
Ecological & Arboricultural Impact Assessment

Figure: Tree Protection Plan



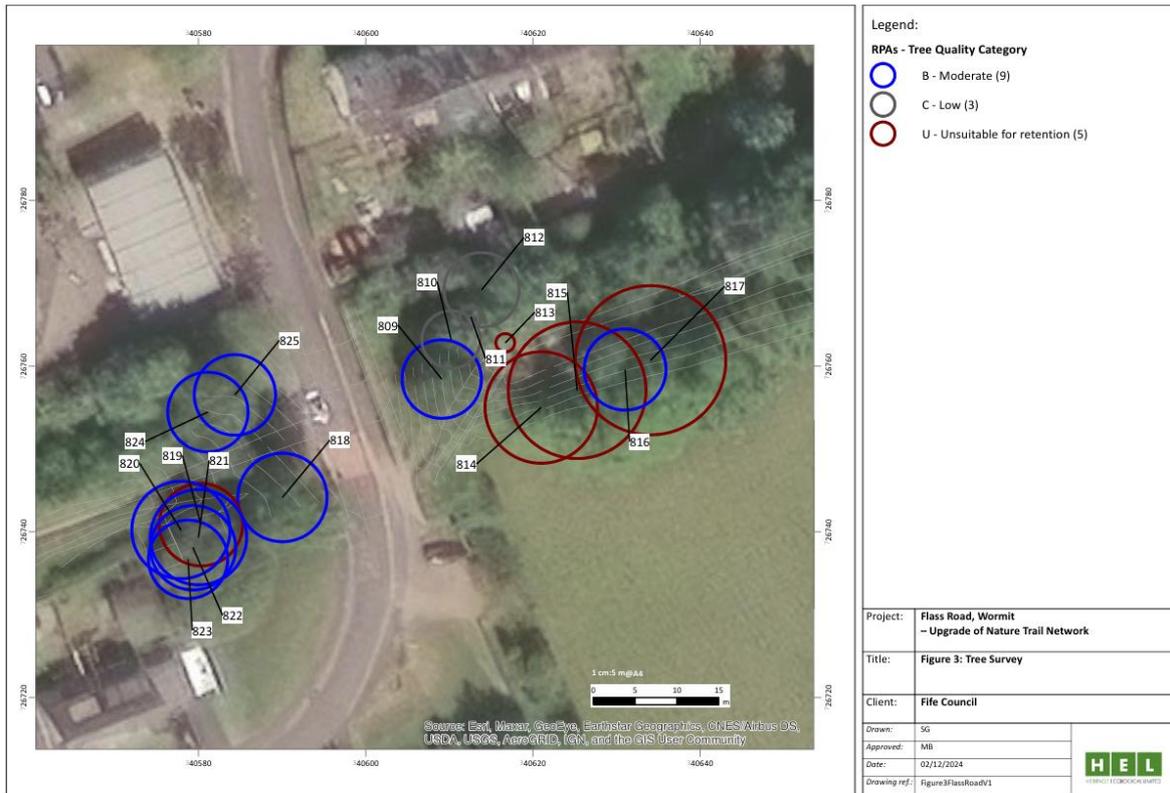
7 ASSESSMENT OF RESIDUAL IMPACTS

- 7.1.1 It is considered that the avoidance, mitigation, compensation and enhancement measures identified, and associated ArbMS outlined above will result in a positive effect on biodiversity as a result of the Project.

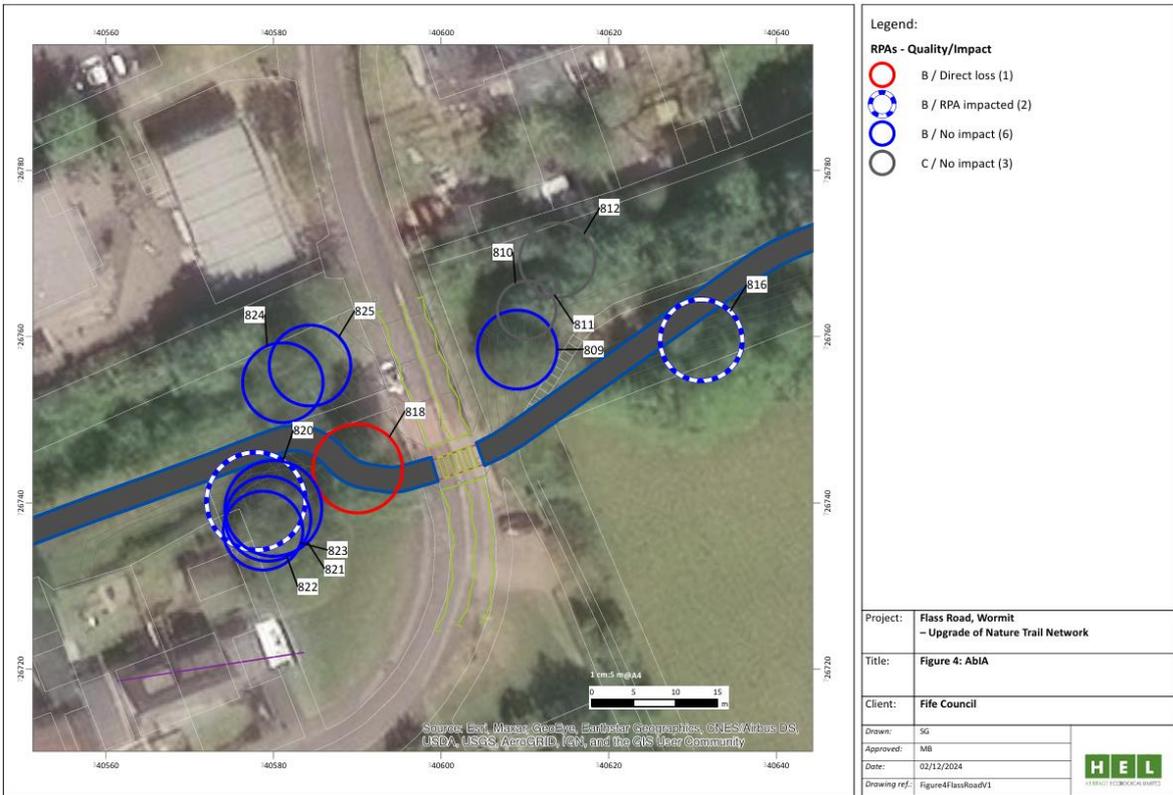
8 REFERENCES

- Campbell, R.D., Harrington, A., Ross, A. & Harrington, L. 2012.** *Distribution, population assessment and activities of beavers in Tayside*. Scottish Natural Heritage Commissioned Report No. 540.
- Collins, J. (ed) 2016.** *Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edn*. The Bat Conservation Trust, London.
- Dean, M., Strachan, R., Gow, D. & Andrews, R. 2016.** *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series)*. Eds Fiona Mathews & Paul Chanin. The Mammal Society, London.
- Gurnell, J., Lurz, P. and Pepper, H. 2009.** *Practical Techniques for Surveying and Monitoring Squirrels*. Forestry Commission, Surrey.
- Harris, S., Cresswell, P. and Jefferies, D. 1989.** *Surveying Badgers*. The Mammal Society, London.
- Sewell, D., Griffiths, R.A., Beebee, T.J.C., Foster, J. and Wilkinson J.W. 2013.** *Survey protocols for the British herpetofauna*. ARC.
- SNH.** Species Planning Advice- Reptiles. (<https://www.nature.scot/species-planning-advice-reptiles>)
- Ward, D., Holmes, N. and José P. (Eds). 1994.** *The New Rivers and Wildlife Handbook*. RSPB, Bedfordshire.

APPENDIX A.1 FIGURES



Donavourd – Residential Development:
Ecological & Arboricultural Impact Assessment



Donavourd – Residential Development:
Ecological & Arboricultural Impact Assessment

APPENDIX A.2 TABLE 9: TREE SCHEDULE

Tag No.	Easting	Northing	Species	Category	Type	Life-stage	Height (m)	No. Stems	Stem Diameter					1 st Branch height (m)	Orientation	Canopy Height (m)	Branch spread (NESW)				Physiology/ Structure	Remaining Contribution	RPA Radius (m)	RPA Radius (m ²)	Notes	
0809	340606	726757	Himalyan birch <i>Betula utilis</i>	B2	T	M	15	1	395						2.2	W	1.4	5	3.5	5.5	5.5	Good/Good	20+	4.74	70.58	Planted tree. Clean bole to c. 2.3 m above ground level (agl), with many scaffold stems from c. 3 m agl
0810	340608	726762	Sycamore <i>Acer pseudoplatanus</i>	C2	T	M	9.5	20	65	65	65	65	65	0.1	S	1.0	4	3	3	3.5	Good/Fair	20+	3.49	38.23	Probably self-sown tree. Multi-stemmed tree from regrowth of reasonably large stump, following felling.	
0811	340611	726765	Wild cherry <i>Prunus avium</i>	C2	T	Y	4.5	1	110					0.4	W	1.6	2	1.5	2	1.5	Good/Good	20+	1.32	5.47	Probably self-sown young tree.	
0812	340613	726770	Sycamore <i>Acer pseudoplatanus</i>	C2	T	M	9.5	22	80	80	80	80	80	0.1	S	1.0	4	3	3	3.5	Good/Fair	20+	4.50	63.70	Probably self-sown tree. Multi-stemmed tree from regrowth of reasonably large stump, following felling.	
0813	340614	726764	European ash <i>Fraxinus excelsior</i>	U	T	Y	3	2	75	55				0.6	N	1	1.5	1	0.5	1	Poor/Poor	<10	1.12	3.91	Probably self-sown tree. Basal regrowth from previously felled tree, with very poor growth and signs of Ash Dieback (Health Class 3)..	

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Tag No.	Easting	Northing	Species	Category	Type	Life-stage	Height (m)	No. Stems	Stem Diameter					1 st Branch height (m)	Orientation	Canopy Height (m)	Branch spread (NESW)				Physiology/ Structure	Remaining Contribution	RPA Radius (m)	RPA Radius (m ²)	Notes	
0814	340621	726755	European ash <i>Fraxinus excelsior</i>	U	T	M	18	1	560						1.3	E	1	3	5	7	8	Poor/Poor	<10	6.72	141.87	Probably self-sown tree. Significant signs of Ash Dieback with approximately only 35-40% of canopy present (Health Class 3). Very strong ivy growth from base and extending into canopy. Large scaffold stem on east side has partially snapped and is hung-up in adjacent European ash (Tag No. 0815). Abundant signs of epicormic shoots on canopy stems.
0815	340626	726757	European ash <i>Fraxinus excelsior</i>	U	T	M	18	5	350	340	300	300	230	2.5	N	1	6	8	9	4	Poor/Poor	<10	8.24	213.08	Probably self-sown tree. Significant signs of Ash Dieback with approximately only 50% of canopy present (Health Class 3). Multi-stemmed tree with significant cover of ivy from base and extending into canopy.	
0816	340630	726761	Sycamore <i>Acer pseudoplatanus</i>	B2	T	M	14	3	330	200	130			2	N	0.5	6	5	6	5	Good/Fair	20+	4.89	75.01	Probably self-sown tree. Multi-stemmed tree from base with strong ivy cover from base and extending into canopy. Main stems in compression union (= potentially weak union) at 0.2 m agl.	
0817	340634	726763	European ash <i>Fraxinus excelsior</i>	U	T	M	16	1	750					4	W	1.5	6	7	6	4	Poor/Poor	<10	9.00	254.47	Probably self-sown tree. Significant signs of Ash Dieback with approximately only 30% of canopy present (Health Class 3). Very strong cover of ivy from base and extending into canopy. Tree has single bole to c. 2.2 m agl then main scaffold branching with some dieback of canopy.	
0818	340587	726745	Himalyan birch <i>Betula utilis</i>	B2	T	M	15	1	445					2.2	E	1.6	5	4.5	4.5	4.5	Good/Good	20+	5.34	89.58	Planted tree. Clean bole to c. 2.2 m agl, with many scaffold stems from c. 2.5 m agl, with some minor dieback of canopy present.	

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Tag No.	Easting	Northing	Species	Category	Type	Life-stage	Height (m)	No. Stems	Stem Diameter				1 st Branch height (m)	Orientation	Canopy Height (m)	Branch spread (NESW)				Physiology/ Structure	Remaining Contribution	RPA Radius (m)	RPA Radius (m ²)	Notes	
0819	340578	726738	Swedish Whitebeam <i>Scandosorbus intermedia</i>	U	T	MA	14	1	415					2.2	E	1.6	4.5	5	2.5	2	Poor/Fair	<10	4.98	77.91	Planted tree. Tree has colonisation of honey-fungus <i>Armillaria</i> sp. at base, and is likely to be suffering from root rot of potentially significance that may cause the tree to fail. Honey-fungus causes white rot decay that is frequently associated with root and stem failure of trees. Tree has lean to east and has asymmetrical canopy due to suppression from adjacent Swedish whitebeams. Some minor dieback of canopy evident.
0820	340576	726736	Swedish Whitebeam <i>Scandosorbus intermedia</i>	B2	T	MA	14.5	1	490					1.9	SW	1.6	5	2.5	3.5	4.5	Good/Good	20+	5.88	108.62	Planted tree. Tree has clean bole to 1.7 m agl and then many main scaffold stems. Tree has been crown lifted on west side to 4 m agl to keep clear of adjacent electricity substation.
0821	340580	726736	Swedish Whitebeam <i>Scandosorbus intermedia</i>	B2	T	MA	15	1	480					2.0	W	1.6	2.5	5	3.5	3	Good/Good	20+	5.76	104.23	Planted tree. Tree has clean bole to 1.9 m agl and then many main scaffold stems. Some root exposure on surface on west side associated with desire line across grassland.
0822	340578	726733	Swedish Whitebeam <i>Scandosorbus intermedia</i>	B2	T	MA	15	1	425					2.1	NW	1.7	3	4.5	6	4.5	Good/Good	20+	5.10	81.71	Planted tree. Tree has clean bole to 2 m agl and then several main scaffold stems. Some minor crown reduction on west side for electricity substation.
0823	340579	726730	Swedish Whitebeam <i>Scandosorbus intermedia</i>	B2	T	MA	12	1	395					2.0	S	1.4	3	2.5	4.5	4	Good/Good	20+	4.74	70.58	Planted tree. Tree has slight lean to south, with a clean bole to 2 m agl then multiple main scaffold stems. Some minor crown lifting on west and north-west side to 3 m agl for electric substation, with some minor dieback of secondary stems.

Flass Road, Wormit – Upgrade of Nature Trail Network:
Ecological & Arboricultural Impact Assessment

Tag No.	Easting	Northing	Species	Category	Type	Life-stage	Height (m)	No. Stems	Stem Diameter					1 st Branch height (m)	Orientation	Canopy Height (m)	Branch spread (NESW)				Physiology/ Structure	Remaining Contribution	RPA Radius (m)	RPA Radius (m ²)	Notes	
0824	340577	726752	Himalyan birch <i>Betula utilis</i>	B2	T	M	14	1	400						4.0	N	1.6	6	5	4.5	3	Good/Fair	20+	4.80	72.38	Planted tree. Tree has significant ivy cover from ground level to c. 8 m, and has generally only fair branch structure.
0825	340580	726757	Himalyan birch <i>Betula utilis</i>	B2	T	M	16	1	405						2.5	NW	1.5	7	5	6	5	Good/Good	20+	4.86	74.20	Planted tree. Well grown tree with no obvious issues.