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Red John Pumped Storage Hydro Scheme

Volume 5, Appendix 6.6: Butterfly, Dragonfly and Damselfly Survey Report

ILI (Highlands PSH) Ltd.

November 2018

Quality Information

Prepared By	Checked By	Verified By	Approved By
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Revision History

Revision	Revision Date	Details	Authorized	Name	Position
1	November 2018	Submission	CA	Catherine Anderson	Associate Director

Distribution List

# Hard Copies	PDF Required	Association / Company Name

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Appendix 6.6 Butterfly, Dragonfly and Damselfly Survey Report

6.1 Introduction

Background

6.1.1 AECOM was appointed by Intelligent Land Investments (ILI) to carry out an Environmental Impact Assessment (EIA) for the proposed Red John Pumped Storage Hydro Scheme (hereafter also referred to simply as the 'Development').

6.1.2 The area encompassed by the red line boundary of the Development is hereafter also referred to as the 'Development Site'.

6.1.3 As part of the EIA process, the Red John Scoping Report (which can be found in Appendix 4.2: Scoping Report) identified the potential for a number of butterfly, dragonfly and damselfly species to be present in the vicinity of the Development.

Purpose of this Report

6.1.4 This report has been written as an Appendix to Chapter 6: Terrestrial Ecology (Volume 2). It describes the methods used for survey of butterflies, dragonflies and damselflies and sets out and discusses the results obtained. Where appropriate, it provides recommendations for mitigation to minimise the ecological impacts of the Development and highlights opportunities for biodiversity enhancement.

Development and Site Description

6.1.5 A full description of the Development can be found in Chapter 2: Project and Site Description. The habitats within the area encompassed by the Development vary with altitude. On the lower slopes up from Loch Ness there is extensive ancient semi-natural broadleaved woodland whilst on the higher ground and around the Headpond the woodland becomes coniferous, predominantly comprising Scots pine *Pinus sylvestris*, which in places is considered to be long-established of plantation origin. Outside of the woodland habitats there are areas of semi-improved grassland, blanket bog and wet heath.

6.1.6 There are a number of waterbodies in the vicinity of the Development, including large oligotrophic lochs as well as smaller ponds.

Species Ecologies

6.1.7 Butterflies, dragonflies and damselflies are widespread across Scotland.

6.1.8 Butterflies are a diverse group which can inhabit most terrestrial habitats, including woodland, heathland, grassland and other areas where suitable food-plants for adults and their larvae (caterpillars) are present. During the spring and summer, butterflies lay their eggs on or near their larval food plants. The eggs hatch into caterpillars which will then feed before making a chrysalis from which it will emerge as a fully formed adult. Unlike caterpillars, which generally feed on plant matter, butterflies feed by drinking nectar from flowers. A minority of butterflies almost never visit flowers, instead gaining sustenance from tree sap, rotting animal matter, and other organic material.

6.1.9 The timing of this process varies between species, with different butterflies present throughout the spring and summer. Species also differ in whether they overwinter as an egg, caterpillar, chrysalis or adult (Ref 2). Additionally some species may have two broods per year.

6.1.10 Dragonflies and damselflies can also occupy a range of habitats, however all require water in which to lay their eggs and live as larvae. Adult dragonflies are generally larger and more robust than adult damselflies and exhibit more powerful flight. Damselflies have a more fragile appearance and tend to spend less time in the air.

6.1.11 Both dragonfly and damselfly females lay eggs directly into the water or on aquatic plants or detritus, or deposit the eggs directly into the substrate. The egg hatches into a larva, which lives an aquatic and predatory lifestyle for between two months and five years, depending on the species. The larva climbs out of the water and an adult emerges directly from its larval skin in a process known as incomplete metamorphosis. Adults live up to a maximum of eight weeks, during which time they mate, lay eggs and feed on prey including other insects. As with butterflies, different species of adult will be present depending on the time of year. Clean and permanent water, and those that are acidic and fish-free with aquatic plants, are known to support a particularly rich diversity of dragonfly and damselfly species (Ref 3).

Legislative and Policy Context

6.1.12 The protection granted to butterflies, dragonflies and damselflies varies between species.

6.1.13 Northern brown argus *Aricia artaxerxes*, pearl-bordered fritillary *Boloria euphrosyne* and mountain ringlet *Erebia epiphron*, among other species less likely to be present on Site, are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (the 'WCA'). This legislation prohibits the sale of these species, including eggs, larvae, pupae, adult butterflies or pinned specimens, but does not apply to captive bred individuals. No dragonflies or damselflies likely to be present on Site are protected under the WCA.

6.1.14 Local planning policies for the region are detailed in the Highland Council's Highland-wide Local Development Plan (HwLDP). Table 6.1 provides a summary of those policies which are of relevance to the conservation of butterflies, dragonflies and damselflies.

Table 6.1 Summary of Relevant Policies within the Highland-wide Local Development Plan

Planning Policy	Purpose
Policy 28 – Sustainable Development	The Council will support developments which promote and enhance the social, economic and environmental wellbeing of the people of Highland. Proposed developments will be assessed on the extent to which they impact on habitats and species.
Policy 57 – Natural, Built and Cultural Heritage	All development proposals will be assessed taking into account the level of importance and type of heritage features, the form and scale of the development and any impact on the feature and its setting.
Policy 59 – Other Important Species	The Council will have regard to the presence of and any adverse effects of development proposals on other important species. These include species listed on Annexes II and V of the Habitats Directive, priority species listed in the UK and Local Biodiversity Action Plans (BAP) and species included on the Scottish Biodiversity List (SBL).

Planning Policy	Purpose
Policy 60 – Other Important Habitats	The Council will seek to safeguard the integrity of features of the landscape which are of major importance because of their linear and continuous structure or their importance as corridors for the movement of wild fauna and flora. The Council will have regard to the value of other important habitats, which include: habitats listed on Annex I of the Habitats Directive; habitats of priority and protected bird species; priority habitats listed in UK and Local BAPs; and, habitats included on the SBL.
Policy 67 – Renewable Energy Developments	The Council will support proposals for renewable energy development where it is satisfied that they will not have significant detrimental effects on natural heritage features, species and habitats.

6.1.15 Several butterfly species are identified as being of principal importance for biodiversity conservation in Scotland through their inclusion on the Scottish Biodiversity List. These include small pearl-bordered fritillary *Boloria selene*, Northern brown argus, small heath *Coenonympha pamphilus* and mountain ringlet. The northern damselfly *Coenagrion hastulatum* is also listed. The SBL is designed to highlight the species (and habitats) which are of highest priority for nature conservation to assist public bodies carrying out their biodiversity duty, as required by the Nature Conservation (Scotland) Act 2004.

6.1.16 Northern brown argus, pearl-bordered fritillary, small heath, small blue *Cupido minimus* and speckled wood *Pararge aegeria* butterflies and are also Priority Species of the Inverness and Nairn Local Biodiversity Action Plan (LBAP) which outlines various measures to protect and enhance the conservation status of species in the region. A number of habitats suitable for butterfly, dragonfly and damselfly species are also identified as Priority Habitats for conservation and enhancement.

6.2 Methods

Desk Study

6.2.1 A desk study was carried out to identify nature conservation designations for which butterflies, dragonflies or damselflies are notified features and to search for records of these species in proximity to the Development.

6.2.2 A stratified approach was taken when defining the desk study area, based on the likely zone of influence of the Development on butterflies, dragonflies and damselflies and an understanding of the maximum distances typically considered by statutory consultees. Accordingly, the desk study identified any national statutory and local non-statutory nature conservations designations within 2 km of the Development. A data search for records of protected mammals within 2 km of the Development was also undertaken.

6.2.3 The desk study was carried out using the Scottish Natural Heritage (SNH) SiteLink website (https://gateway.snh.gov.uk/sitelink/) to identify nature conservation designations within 2 km of the Development. A data request was submitted to the Highland Biological Recording Group (HBRG) on 04 August 2017 requesting all records of butterfly, dragonfly and damselfly species within the same search area.

Field Survey

6.2.4 Following a review of aerial images and based on an understanding of the Site gained through completion of a Phase 1 habitat survey as part of the Preliminary Ecological Appraisal (PEA) for the Development (AECOM's PEA Report can be found as an appendix to the Scoping Report for the Development which itself is provided in Appendix 4.2), three transect routes were devised which covered areas of habitat suitable for supporting the various life stages of butterflies, dragonflies and damselflies.

6.2.5 Each transect route was walked on a monthly basis between May and August 2018, inclusive, during periods of suitable dry, calm and mild or warm weather conditions, as described by the UK Butterfly Monitoring Scheme (UKBMS) *Field Guidance Notes for Butterfly Transects* (Ref 4) and the British Dragonfly Society (BDS) *Dragonfly Monitoring Scheme Manual* (Ref 1).

6.2.6 The transect routes are shown on Figure 6.6.1 (available at the end of this appendix). Transect A covered the location of the Tailpond Inlet / Outlet Structure on Loch Ness and the areas of ancient semi-natural broadleaved woodland on the slopes immediately east. Transect B covered areas of agricultural grassland, the edge of the plantation forest of Dirr Wood and the blanket bog and wet heath habitat of Ashie Moor. The route of Transect C passed through the Headpond area and along the edge of the semi-natural woodland at Glaic na Ceardaich. It covered the swamp area near the proposed location for the main construction compound (Compound 1) and then extended through Dirr Wood. For a full description of the habitats through which the transects passed, refer to Chapter 6: Terrestrial Ecology (Volume 2) and Appendix 6.1 National Vegetation Classification Survey Report.

6.2.7 All butterflies, dragonflies and damselflies observed while walking the transects, using binoculars where necessary, were identified to species level. Where it was not possible to identify to species level (e.g. due to short observation of a fast moving individual), then identification was made to genus level. The location of each encounter was accurately mapped using Esri ArcPad 10.2 software on a GPS-enabled Panasonic Toughpad.

6.2.8 Details of the butterfly, dragonfly and damselfly survey visits are provided in Table 6.2 below.

Table 6.2 Butterfly, Dragonfly and Damselfly Survey Details

Survey Date (2018)	Transect	Start Time	End Time	Surveyors	Temp. (°C)	Cloud / Sun	Precipitation	Wind
30 May	B	11:30	15:30	ND	17 - 20	Partial cloud	None	Very light
30 May	C	16:00	17:45	ND	18 - 20	Sunny	None	Negligible
31 May	C	10:30	14:30	ND	16 - 20	Partial cloud to full sun	None	Negligible
31 May	A	15:00	16:15	ND	18 – 20	Full sun	None	Negligible
11 June	A	13:00	14:00	ND / JD	17	Partial cloud	None	Light
12 June	B	14:00	15:30	ND / JD	15	Partial cloud	None	Very light

Survey Date (2018)	Transect	Start Time	End Time	Surveyors	Temp. (°C)	Cloud / Sun	Precipitation	Wind
15 June	C	13:00	14:00	ND	15 - 17	Cloudy	None	Light
17 July	A	15:25	16:30	ND / JD	18	Cloudy	None	Negligible or very light
18 July	B	14:35	17:40	ND / JD	18	Cloudy	None	Negligible
19 July	C	12:50	16:20	TM / JD	19	Partial cloud	None	Moderate
06 August	A	17:10	18:45	ND / JD	16 - 17	Partial cloud	None	Light to moderate
07 August	B	15:30	17:35	AF / JD	19	Partial cloud	None	Light
07 August	C	15:30	18:10	ND	19	Partial cloud	None	Light

Limitations

6.2.9 Desk study information is dependent on records having been submitted for the area of interest. As such, a lack of records for particular species does not necessarily mean they are absent from the area of interest. Similarly, the presence of records for particular species does not automatically mean they still occur within the area of interest or are relevant.

6.2.10 It is generally advised that survey for butterflies takes place only during bright sunshine (Ref 4). However, achieving this consistently in a location in northern Scotland at all times during the survey programme was not possible and three transects were carried out under cloudy conditions. Despite being overcast, the weather on those surveys was still otherwise favourable, being warm, with no rain and very light winds. It is therefore not considered that weather presented a significant limitation to the surveys.

6.2.11 Similarly, it is advised that butterfly surveys should be completed between 10:00 and 17:00 (Ref 4). However, on five occasions survey start times were delayed due to suboptimal weather conditions during the middle of the day and were consequently carried out beyond this time. There was no evidence of significantly reduced butterfly, dragonfly or damselfly activity in those surveys conducted later in the day and it is again not considered that this presents a limitation to the surveys.

6.3 Results

Desk Study

6.3.1 There are no designated sites for the protection of butterflies, dragonflies and damselflies within the desk study area.

6.3.2 Three records of butterflies were returned from HBRG during the desk study. These were all of small heath and dated from 1989 and 1996. No records of any dragonfly or damselfly species were returned.

Field Survey

6.3.3 Eleven species of butterfly (plus four records of white *Pieris* sp. butterflies which could not be identified to species level), four species of dragonfly and four species of damselfly were recorded during the survey programme.

6.3.4 The total number of each species recorded in each month of survey across all three transect routes is shown in Table 6.3. The total number of each species recorded from each transect across the four survey visits is shown in Table 6.4.

6.3.5 The locations of all butterflies, dragonflies and damselflies recorded during the survey programme are shown on Figures 6.6.2, Sheets 1 – 3, respectively (available at the end of this appendix).

Table 6.3 Numbers of Butterflies, Dragonflies and Damselflies Recorded per Month

Species	Month (2018)				Total
	May	June	July	August	
Butterflies					
Green-veined white *Pieries napi*	52	8	5	10	**75**
Meadow brown *Maniola jurtina*	-	-	2	-	**2**
Orange-tip *Anthocharis cardamines*	2	-	-	-	**2**
Peacock *Aglais io*	-	-	-	2	**2**
Ringlet *Aphantopus hyperantus*	-	-	25	-	**25**
Scotch argus	-	-	10	105	**115**
Small heath	-	1	1	-	**2**
Small pearl-bordered fritillary	2	23	3	-	**28**
Small tortoiseshell *Aglais urticae*	-	-	5	2	**7**
Small white *Pieris rapae*	-	-	2	-	**2**
Speckled wood	-	2	32	16	**50**
White species	-	4	-	-	**4**
Dragonflies					
Black darter *Sympetrum danae*	-	-	5	12	**17**
Common hawker *Aeshna juncea*	-	-	2	3	**5**
Four-spotted chaser *Libellulua quadrimaculata*	44	13	2	-	**59**
Golden-ringed dragonfly *Cordulegaster boltonii*	-	-	2	-	**2**
Damselflies					
Blue-tailed damselfly *Ischnura elegans*	-	1	-	-	**1**
Common blue damselfly *Enallagma cyathigerum*	-	25	4	4	**33**

Species	Month (2018)				Total
	May	June	July	August	
Emerald damselfly *Lestes sponsa*	-	-	2	-	**2**
Large red damselfly *Pyrrhosoma nymphula*	74	4	4	-	**82**

Table 6.4 Numbers of Butterflies, Dragonflies and Damselflies Recorded per Transect

Species	Transect A	Transect B	Transect C
Butterflies			
Green-veined white	15	24	36
Meadow brown	-	-	2
Orange-tip	-	1	1
Peacock	-	2	-
Ringlet	8	14	3
Scotch argus	6	27	82
Small heath	-	1	1
Small pearl-bordered fritillary	11	2	15
Small tortoiseshell	1	5	1
Small white	-	-	2
Speckled wood	11	10	29
White sp.	-	-	4
Dragonflies			
Black darter	-	4	13
Common hawker	-	3	2
Four-spotted chaser	3	29	27
Golden-ringed dragonfly	1	-	1
Damselflies			
Blue-tailed damselfly	-	-	1
Common blue damselfly	-	33	-
Emerald damselfly	-	1	1
Large red damselfly	-	70	12
Total	**56**	**226**	**233**

6.3.6 The most commonly encountered species was Scotch argus, with 115 individuals recorded during the course of the survey programme, followed by the large red damselfly, with 82 recorded individuals. Speckled wood and small pearl-bordered fritillary were reasonably

common, with 50 and 28 records, respectively. Small heath was only recorded on two occasions, once in June from Transect C and once in July from Transect B.

6.3.7 Although the number of records on each transect are not directly comparable, because the routes were of different lengths, it can be seen that relatively low numbers and species were present along Transect A, through the ancient semi-natural woodland near to Loch Ness. Larger numbers and a higher diversity of species were recorded on Transects B and C. However, even within these survey areas there were clear concentrations of records.

6.3.8 In addition to the species recorded during the targeted survey work, two small copper butterflies *Lycaena phlaeas* and one common blue *Poloymmatus icarus* were incidentally recorded in the field at the Tailpond Inlet / Outlet on 14 August 2018.

6.4 Discussion and Recommendations

6.4.1 All of the species recorded during the butterfly, dragonfly and damselfly survey programme are fairly abundant and widely distributed. However, although common in Scotland, Scotch argus has seen a range reduction in the south of the UK and is now present in just two isolated sites in England.

6.4.2 Small pearl-bordered fritillary and small heath are both species of principal importance for conservation in Scotland and are listed on the Scottish Biodiversity List. Small heath is also listed as a Priority Species on the Inverness and Nairn LBAP. Although common and widespread, speckled wood is identified as a local priority for conservation on the Inverness and Nairn LBAP. There are no dragonflies or damselflies listed as Priority Species on the LBAP.

6.4.3 Small pearl-bordered fritillary observations were generally confined to two main areas of the Development with a small number of outliers to these, as can be seen in Figure 6.6.2. One aggregation of records was identified in the southern end of the Headpond area where a small wet flush provides optimal habitat for this species. The other cluster of records was at the edge of the broadleaved woodland at Glaic na Ceardaich, where there is again a flush surrounded by bracken *Pteridium aquilinum*. The Phase 1 habitat and National Vegetation Classification (NVC) surveys for the Development highlight that there are other flushes outside of the footprint of infrastructure and which will be unaffected during construction and operation. Although not all surveyed for butterflies, it is likely that small pearl-bordered fritillary will also occupy these areas of suitable habitat.

6.4.4 There were only two records of small heath during the survey programme. One of these was from the area near to the Compound 1, whilst the other was near to an un-named waterbody on Ashie Moor, close to the edge of Dirr Wood (two small pearl-bordered fritillaries were also recorded in this area). Neither area will be permanently lost to the Development. Small heath butterflies occur predominantly in grassland and moorland habitats where there are fine grasses such as fescues *Festuca* sp. and bent grass *Agrostis* sp. Such areas are typical of a large portion of the Site and the surrounding area, including on open moorland and in some open areas of woodland.

6.4.5 Speckled wood butterflies were abundant and occurred widely in areas of woodland across the survey area. This includes the areas of semi-natural woodland on the slopes down to Loch Ness and around Glaic na Ceardaich. Speckled wood was also the only butterfly which occurred with any great frequency within the plantation forestry of Dirr Wood. Although present, it occurred only rarely in the Headpond area. This species prefers areas of

woodland with partial shade. The clear felling of Dirr Wood as part of the Development is therefore likely to result in the loss of a large area of habitat which supports the speckled wood butterfly.

6.4.6 It can be seen from Figure 6.6.2 that all of the remaining species of butterfly, dragonfly and damselfly were generally present across the Development Site. However, in the immediate vicinity of proposed infrastructure the numbers and diversity of species encountered were relatively low (the exception to this being the area of wet flush at the southern end of the Headpond).

6.4.7 Key areas of habitat which were found to support higher numbers and/or greater diversity were:

- The small area of flush habitat at the southern end of the Headpond which supported a population of small pearl-bordered fritillaries;
- The flush, swamp, woodland and bracken-dominated habitats at Glaic na Ceardaich;
- The small wetland areas within Dirr Wood. However, these wetland areas completely dried out during the summer of 2018 and are therefore of relatively low suitability to dragonflies and damselflies which require permanent (or near-permanent) standing water; and
- The area of heath surrounding the small un-named waterbody on Ashie Moor, close to the edge of Dirr Wood.

6.4.8 Wetlands are of high importance to butterflies, dragonflies and damselflies and this is reflected in the list above which highlights that the most important areas of the Development for these species are these habitats.

6.4.9 The largest area of habitat loss due to the Development will be at the Headpond location where areas of wet flush, wet heath and blanket bog will be excavated and the surrounding plantation forest, including Dirr Wood, will be clear felled. The results of the butterfly, dragonfly and damselfly survey suggest that this area is of relatively low importance to such species, although small pearl bordered fritillaries are present at the southern extent of the proposed Headpond location. Moreover, speckled wood butterflies were common in Dirr Wood and may be lost from this area as a result of tree felling. However, habitat of similar type and quality to Dirr Wood and the Headpond location is present widely in the nearby area, particularly across Ashie Moor to the west and south-west.

6.4.10 The potential impacts of the Development have been minimised by design, particularly by avoiding the storage of spoil material on the habitat at Glaic na Ceardaich, which supports the highest numbers and diversity of butterfly and particularly dragonfly and damselfly species.

6.4.11 The Embankment of the new Headpond will be reinstated with earth following the completion of construction and this will be seeded with a mixture of plant species. The species selected will be appropriate for the location and underlying soil conditions (which are likely to be well-drained and therefore quite dry) but will be selected, as far as possible, to benefit the butterflies present at the Development Site. Species which will make up the seed mix will include heather *Calluna vulgaris*, purple moor-grass *Molinia caerulea*, red fescue *Festuca rubra* agg., devil's-bit scabious *Succisa pratensis* and common dog violet *Viola riviniana*, all of which are important egg-laying or food plants.

6.4.12 An outline Landscape and Ecological Mitigation Plan (LEMP) is available in Appendix 3.2 and the Development Woodland Restocking Plan is available on Figure 12.6 (Volume 3), detailing the design and management of the replacement woodland which will be required following the clear felling around the Headpond. It is recommended that the woodland design considers butterflies, dragonflies and damselflies and includes habitat features for the benefit of these species. This should include the provision open clearings and glades within the woodland and the creation of new wetland areas. These could include areas of marshy grassland, suitable for species including small pearl-bordered fritillary, in addition to small ponds which should be of sufficient depth to avoid drying out, making them suitable for dragonflies and damselflies.

6.5 References

Ref 1. BDS (2009). Dragonfly Monitoring Scheme Manual [Online]. Available: https://british-dragonflies.org.uk/. [Accessed: 17/08/2017].

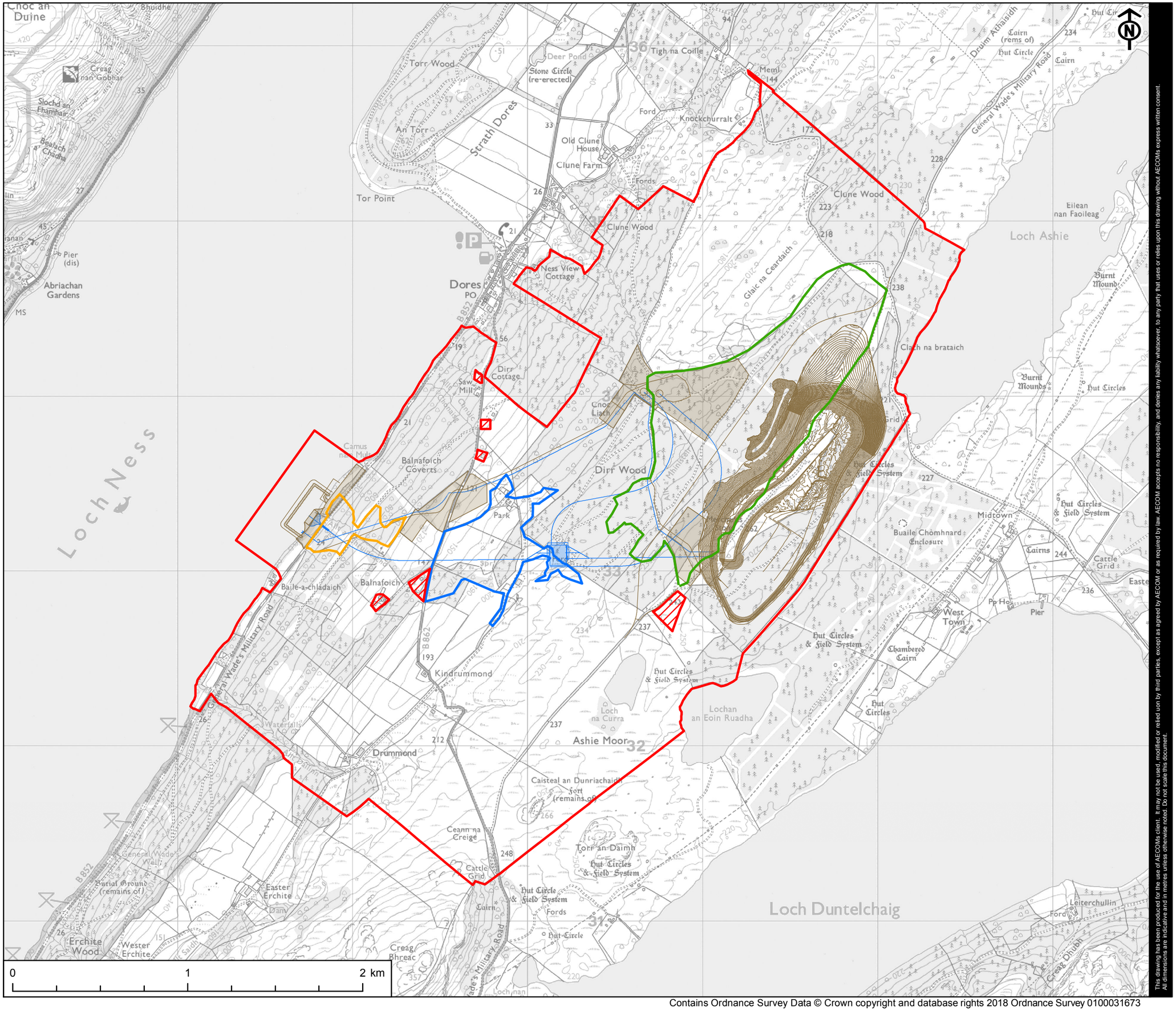
Ref 2. Newland, D., Still, R., Swash, A. and Tomlinson, D. (2010). Britain's Butterflies: A field guide to the butterflies of Britain and Ireland (2nd Edition). Princeton University Press, Woodstock.

Ref 3. Smallshire, D. and Swash, A. (2014*). Britain's Dragonflies: A field guide to the damselflies and dragonflies of Britain and Ireland (3rd Edition). Princeton* University Press, Woodstock.

Ref 4. UKBMS (undated). Field Guidance Notes for Butterfly Transects [Online]. Available: http://www.ukbms.org/resources.aspx. [Accessed: 17/08/2017].

Figures

Project Management Initials: CA Designer: LC Checked: SY Approved: CS



AECOM

PROJECT
RED JOHN PUMPED STORAGE HYDRO

CLIENT
ILI (Highlands PSH) Ltd.

KEY
- Development Site boundary
- Excluded from Development Site boundary
- Above ground infrastructure - Line
- Above ground infrastructure - Area
- Below ground infrastructure - Line
- Below ground infrastructure - Area

Transect Route
- A
- B
- C

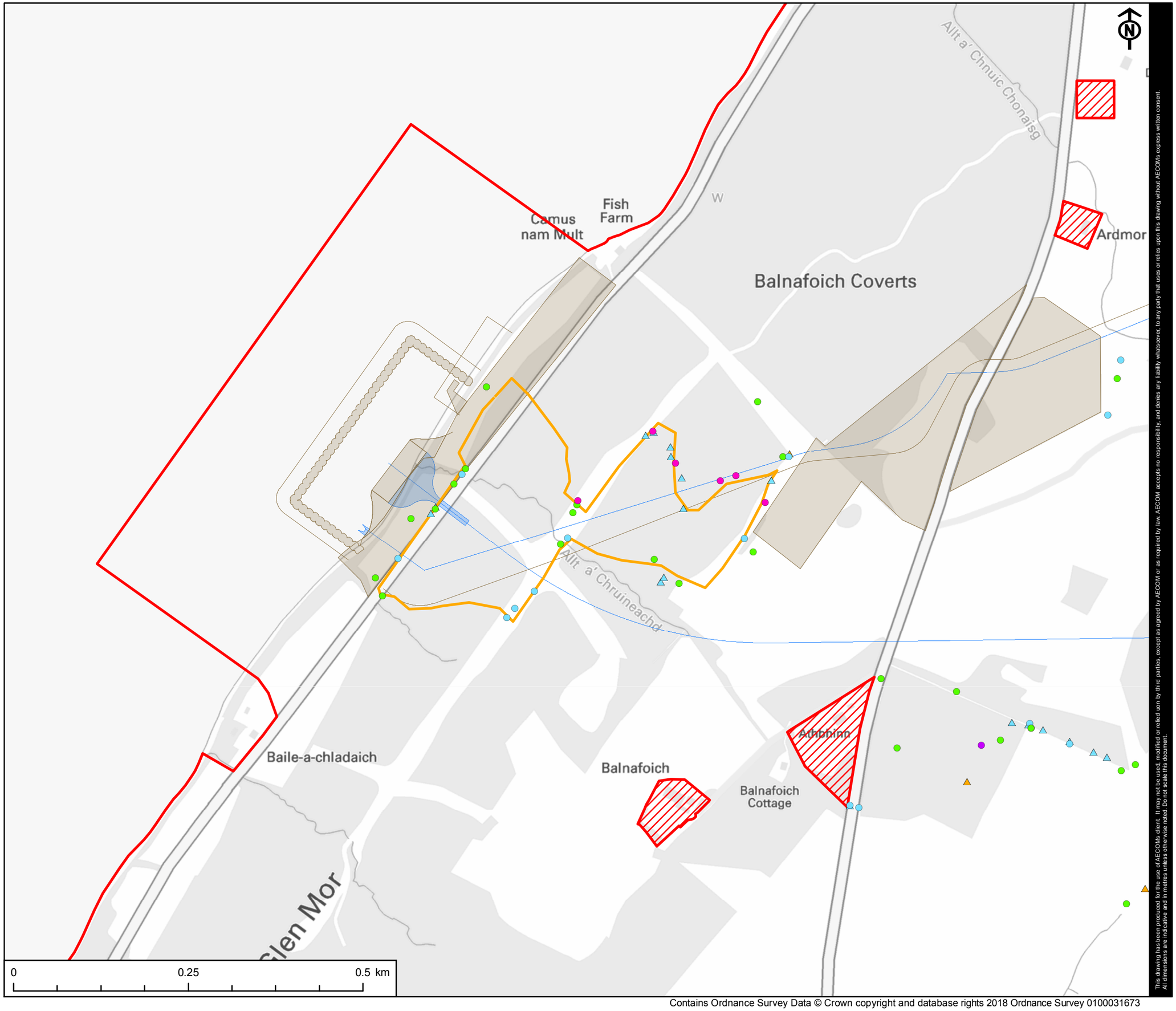
TITLE
FIGURE 6.6.1
BUTTERFLY, DRAGONFLY AND DAMSELFLY SURVEY TRANSECT ROUTES

REFERENCE
RJ_181031_EIA_A6.6.1_v1

SHEET NUMBER
1 of 1

DATE
31/10/18

Project Management Initials: CA Designer: LC Checked: SY Approved: CS



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AECOM

PROJECT
RED JOHN PUMPED STORAGE HYDRO

CLIENT
ILI (Highlands PSH) Ltd.

KEY
- Development Site boundary
- Excluded from Development Site boundary
- Above ground infrastructure - Line
- Above ground infrastructure - Area
- Below ground infrastructure - Line
- Below ground infrastructure - Area
- Transect Route A

Butterfly species
- Green-veined white
- Peacock
- Ringlet
- Scotch argus
- Small tortoiseshell
- Speckled wood

TITLE
FIGURE 6.6.2
BUTTERFLY OBSERVATIONS
TRANSECT A

REFERENCE
RJ_181031_EIA_A6.6.2_v1

SHEET NUMBER
1 of 3

DATE
31/10/18

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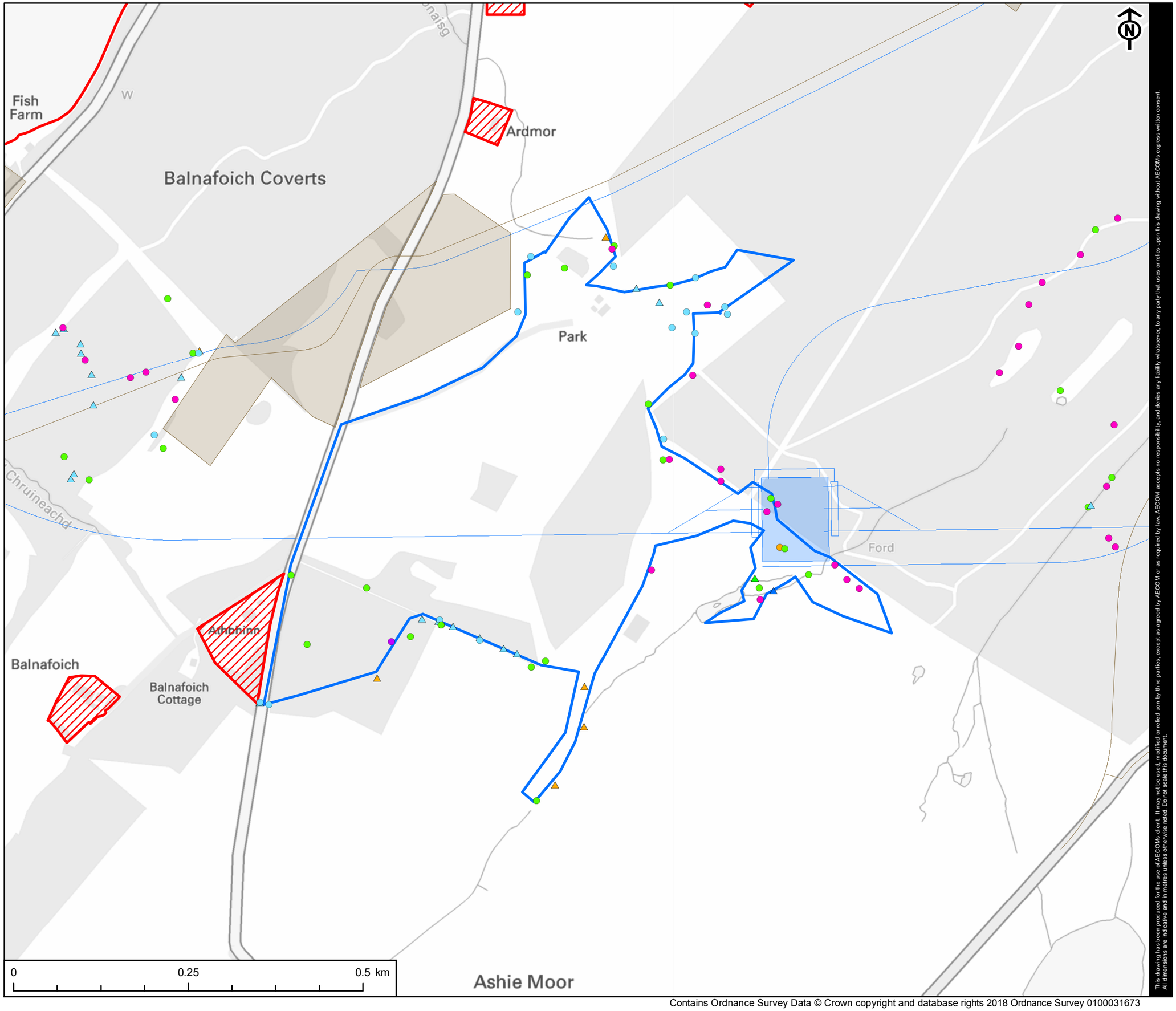

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AECOM

PROJECT
RED JOHN PUMPED STORAGE HYDRO

CLIENT
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KEY
- Development Site boundary
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- Above ground infrastructure - Line
- Above ground infrastructure - Area
- Below ground infrastructure - Line
- Below ground infrastructure - Area
- Transect Route B

Butterfly species
- Green-veined white
- Orange-tip
- Peacock
- Ringlet
- Scotch argus
- Small heath
- Small pearl-bordered fritillary
- Small tortoiseshell
- Speckled wood

TITLE
FIGURE 6.6.2
BUTTERFLY OBSERVATIONS
TRANSECT B

REFERENCE
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2 of 3

DATE
31/10/18

Project Management Initials: CA Designer: LC Checked: SY Approved: CS

Clune Wood
Glen Albyn or Glen Mor
Teigh Clainn Ic Colla
Glaic na Ceardaich
Dirr Wood
Clach na brataich
Cnoc Liath
Ford
Allt a' Mhinisteir
General Wade's Military Road
Merchants Stone
Buaile Chomhnard
Ford

0 0.25 0.5 km

Scale @ A3 1:7,500

AECOM

PROJECT
RED JOHN PUMPED STORAGE HYDRO

CLIENT
ILI (Highlands PSH) Ltd.

KEY
- Development Site boundary
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- Above ground infrastructure - Line
- Above ground infrastructure - Area
- Below ground infrastructure - Line
- Below ground infrastructure - Area
- Transect Route C

Butterfly species
- Green-veined white
- Meadow brown
- Orange-tip
- Ringlet
- Scotch argus
- Small heath
- Small pearl-bordered fritillary
- Small tortoiseshell
- Small white
- Speckled wood
- White sp.

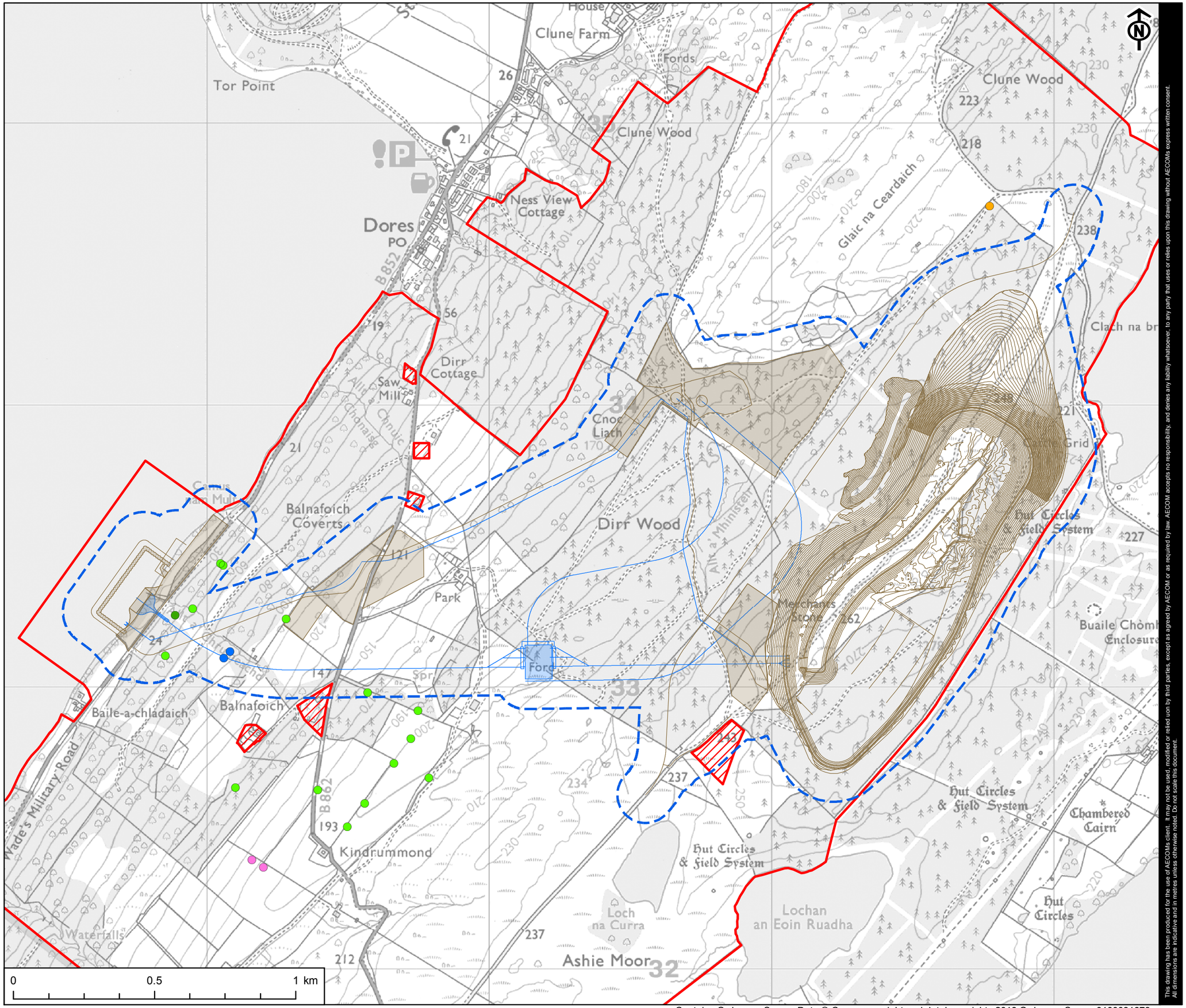
TITLE
FIGURE 6.6.2
BUTTERFLY OBSERVATIONS
TRANSECT C

REFERENCE
RJ_181031_EIA_A6.6.2_v1

SHEET NUMBER
3 of 3

DATE
31/10/18

Project Management Initials: CA Designer: LC Checked: SY Approved: CS



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AECOM

PROJECT
RED JOHN PUMPED STORAGE HYDRO

CLIENT
ILI (Highlands PSH) Ltd.

KEY

- Development Site boundary
- Excluded from Development Site boundary
- 100 m survey boundary
- Above ground infrastructure - Line
- Above ground infrastructure - Area
- Below ground infrastructure - Line
- Below ground infrastructure - Area

Badger field sign

- Footprint
- Foraging
- Latrine
- Mammal path
- Push-through

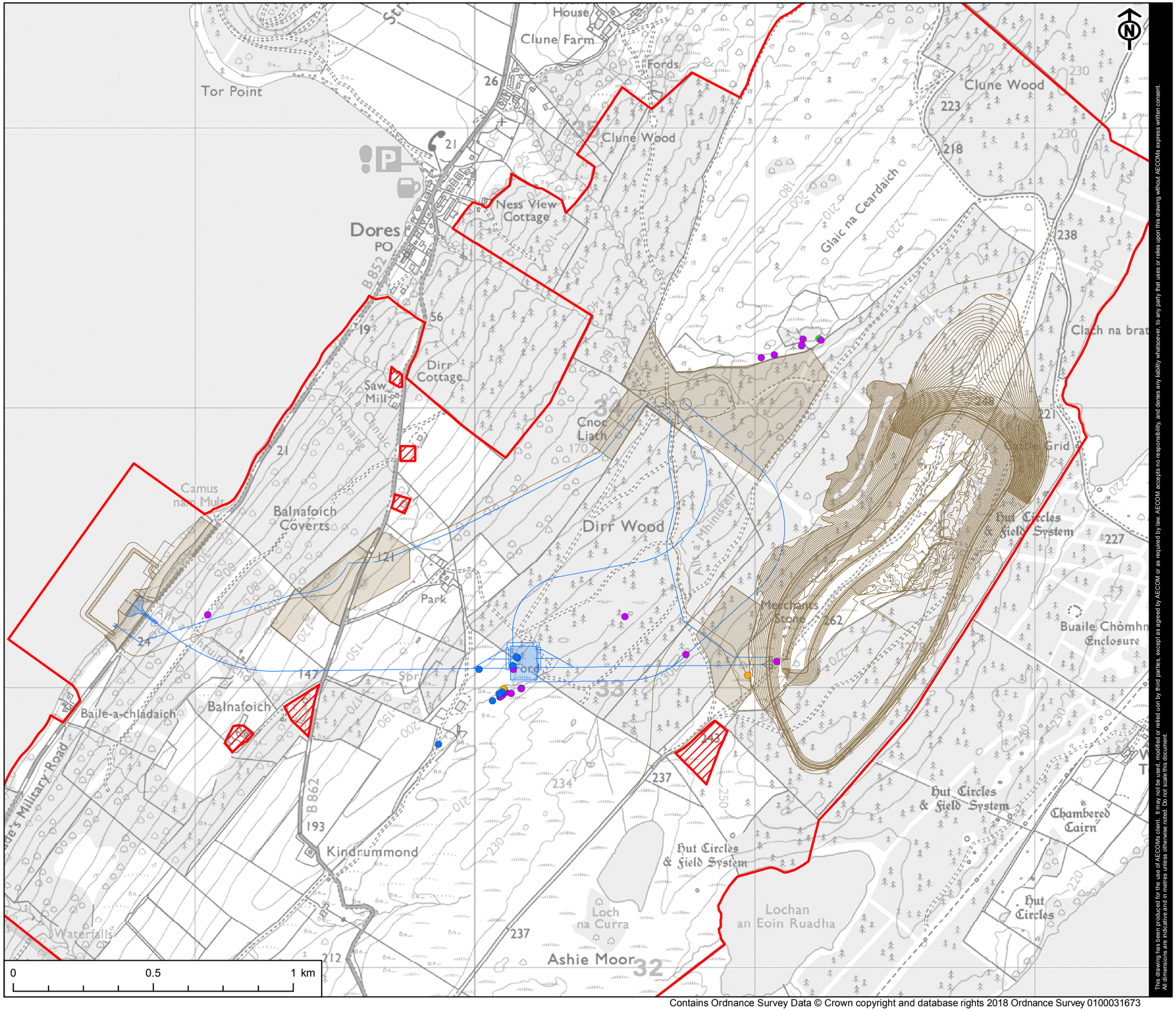
TITLE
FIGURE 6.3.3
BADGER SURVEY RESULTS

REFERENCE
RJ_181031_EIA_A6.3.3_v1

SHEET NUMBER
1 of 1

DATE
31/10/18

Project Management Initials: CA Designer: LC Checked: SY Approved: CS



Scale @ A3 1:12,500

0 0.5 1 km

AECOM

PROJECT
RED JOHN PUMPED STORAGE HYDRO

CLIENT
ILI (Highlands PSH) Ltd.

KEY
- Development Site boundary
- Excluded from Development Site boundary
- Above ground infrastructure - Line
- Above ground infrastructure - Area
- Below ground infrastructure - Line
- Below ground infrastructure - Area

Damselfly species
- Blue-tailed damselfly
- Common blue damselfly
- Emerald damselfly
- Large red damselfly

TITLE
FIGURE 6.6.4
DAMSELFLY OBSERVATIONS

REFERENCE
RJ_181031_EIA_A6.6.4_v1

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