APPENDIX 1 - LANDSCAPE AND VISUAL SCOPING REPORT

CRAIG FARM SAND & GRAVEL PIT, ABERDEENSHIRE
Landscape and Visual
Scoping

Prepared By Mullin Design Associates
Chartered Landscape Architects

DECEMBER 2023

CONTENTS

1 LANDSCAPE AND VISUAL ASSESSMENT SCOPING

1.1 Introduction

The assessment will be prepared by Mullin Design Associates, Chartered Landscape Architects, to establish potential landscape and visual impacts/effects arising from a proposed sand & gravel quarry operation at, Craig Farm, Aberdeenshire.

The project will involve an iterative design process that considers the proposed development against the existing baseline conditions, and identify potential mitigation measures to avoid or minimise negative landscape and visual impact.

The Landscape and Visual submission will not only include measures to mitigate potential impacts, it will include full post-operative restoration proposals.

The proposal site is circa 3.8km to the North of Lumsden and 2.8km south west of Rhynie.

At the time of writing the final application area remains to be determined and will be confirmed through assessment and consultation. An overall "Site" area has been defined for the purposes of initial assessment comprising a total area of 18.0 hectares. Drawing WG656/SR/F/02 shows the Site in context. The overall Site is shown edged red and contains:

- A proposed extraction area (comprising 7.6 hectares delineated by a dashed black line in Drawing WG656/SR/F/02) together with surrounding peripheral land for ancillary uses including the storage of soils and overburden (circa 4.6 hectares).
- A field to the south west between the proposed working area and the B9002 (comprising 5.8 hectares outlined in orange in Drawing WG656/SR/F/02) which provides options for road access and screening of the works.

The drawing referred to is appended to the main EIA Scoping Report.

This Landscape and Visual Assessment will be overseen by Pete Mullin, BA (Hons) CMLI, MILI Chartered Landscape Architect and principal of Mullin Design Associates. Pete has produced several hundred Landscape and Visual Impact Assessments during 25 years in the profession and is a recognised specialist within the mineral sector.

This study will be structured in the following subsections:

Methodology – explanation of how the assessment has been undertaken, with reference to methodology, terminology, assessment criteria, and planning policy.

Receiving Environment - or Landscape and Visual Context – baseline description, classification and evaluation of the existing landscape character containing the application site and an assessment of visual amenity, with identification of visual receptors.

Project Description – description of aspects of the proposed development which have the potential to cause a landscape and/or visual effect and measures which will be incorporated to mitigate or avoid greater potential effects.

Assessment of Impacts – an outline of potential landscape and visual impacts with proposed mitigation measures and cumulative impacts.

Residual Impacts and impact summary.

1.2 Methodology

1.2.1 Method of Assessment & Guidelines

The landscape and visual assessment will be carried out in accordance and with reference to best practice guidance documents and information sources including the following :

- Guidelines for Landscape and Visual Impact Assessment (GLVIA), Third Edition, edited by The Landscape Institute and Institute of Environmental Management and Assessment (2013);
- Landscape Character Assessment Guidance (2002) Countryside Agency in conjunction with Scottish Natural Heritage
- Landscape Character Topic papers 1 to 9 (Various Dates). Published by The Countryside Agency and Scottish Natural Heritage
- Aberdeenshire Local Development Plan 2023
- National Planning Framework 4;
- Nature Scotland Landscape Character Assessment Aberdeenshire

- Inventory of Gardens and Designed Landscapes in Scotland;
- Pastmap mapping database;
- Ordnance Survey maps;
- Digital sources of mapping and aerial photography;

Finally as recommended the landscape and visual assessment incorporates both desk and field-based studies, and has been compiled and interpreted by an experienced landscape professional.

1.2.2 Assessment Sequence

This landscape & visual Assessment will be undertaken in the following stages:

• Desk Study (Stage 1)	1	Analysis of Baseline data, maps and plans;
	2	Consultation of Policy Documentation;
	3	Zone of Visual Influence (Theoretical);
	4	Identification of Potential Visual Receptors;
• Field Study	5	Confirmation of Visual Receptors;
	6	Photo Survey from Visual Receptors;
	7	Zone of Visual Influence (Actual/Field);
	8	Confirmation of Landscape Character;
	9	Establish Landscape Sensitivity;
• Desk Study (Stage 2)	10	Analysis of Field Survey data;
	11	Viewpoint Analysis;
	12	Consider Mitigation and,
▪ Desk Study (Stage 3)	13	Report Preparation.

1.2.3 Assessment Criteria

The proposed assessment criteria for the Landscape and Visual Impact Assessment is set out below:

The aim of this landscape and visual impact assessment is to identify, evaluate and predict potential key effects arising from the proposed development. The assessment combines sensitivity with predicted magnitude of change, to establish the significance of residual landscape and visual effects. These are based on pre-defined criteria as set out in Tables 1.1 to 1.5 below.

Table 1.1 - Landscape Sensitivity Criteria

Class	Criteria
High	Landscape characteristics or features with little or no capacity to absorb change without fundamentally altering their present character. Landscape designated for its international or national landscape value. Outstanding example in the area of well cared for landscape or set of features.
High – Medium	Landscape characteristics or features with a low capacity to absorb change without fundamentally altering their present character. Landscape designated for regional or county-wide landscape value where the characteristics or qualities that provided the basis for their designation are apparent. Good example in the area of reasonably well cared for landscape with notable landscape features.
Medium	Landscape characteristics or features with moderate capacity to absorb change without fundamentally altering their present character. Landscape designated for its local landscape value or a regional designated landscape where the characteristics and qualities that led to the designation of the area are less apparent or are partially eroded or an undesignated landscape which may be valued locally – for example an important open space. An example of a landscape or a set of features which is neutral or mixed character.
Medium – Low	Landscape characteristics or features which are reasonably tolerant of change without detriment to their present character. No landscape designation present or of medium to low local value, or an example of a common or un-stimulating landscape or set of features and conditions.

Low	Landscape characteristics or features which are tolerant of change without detriment to their present character. No designation present or of low local value. An example of monotonous unattractive visually conflicting or degraded landscape or set of features.

Table 1.2 - Visual Sensitivity Criteria

Class	Criteria
High	Users of outdoor recreational facilities, on recognised national cycling or walking routes or in national designated landscapes. Dwellings with views orientated towards the proposed development.
High – Medium	Users of outdoor recreational facilities, in locally designated landscapes or on local recreational routes that are well publicised in guide books. Road and rail users in nationally designated landscapes or on recognised scenic routes, likely to be travelling to enjoy the view.
Medium	Users of primary transport road network, orientated towards the Development, likely to be travelling for other purposes than just the view. Dwellings with oblique views of the proposed development.
Medium – Low	People engaged in active outdoor sports or recreation and less likely to focus on the view. Primary transport road network and rail users likely to be travelling to work with oblique views of the Development or users of minor road network.
Low	People engaged in work activities indoors, with limited opportunity for views of the Development. Road users on minor access roads travelling for other purposes than just the view.

Table 1.3 - Landscape Magnitude Criteria

Class	Criteria
Very High	Very extensive, highly noticeable change, affecting most key characteristics and dominating the experience of the landscape; and, Introduction of highly incongruous development.
High	Extensive, noticeable change, affecting many key characteristics and the experience of the landscape; and,

	Introduction of many incongruous elements.
Medium	Noticeable change to a significant proportion of the landscape, affecting some key characteristics and the experience of the landscape; and Introduction of some uncharacteristic elements.
Low	Minor change, affecting some characteristics and the experience of the landscape to an extent; and, Introduction of elements that are not uncharacteristic.
Very Low	Little perceptible change.

Table 1.4 - Visual Magnitude Criteria

Class	Criteria
Very High	The development would dominate the existing view.
High	The development would cause a considerable change to the existing view over a wide area or an intensive change over a limited area.
Medium	The development would cause moderate changes to the existing view over a wide area or noticeable change over a limited area.
Low	The development would cause minor changes to the existing view over a wide area or moderate changes over a limited area.
Very Low	No real change to perception of the view. Weak, not legible, and/ or indiscernible.

Table 1.5 - Categories of Landscape and Visual Significance of Effect

Degree of significance	Description of Landscape Effect	Description of Visual Effect
Major	Substantial alteration to elements/features of the baseline (pre-development) conditions. Notably affect an area of recognised national landscape quality. Substantial alteration to the character, scale or pattern of the landscape.	Major/substantial alteration to elements/features of the baseline (pre-development) conditions. Where the proposed development would cause a very noticeable alteration in the existing view. This would typically occur where the proposed development closes an existing view of a

		landscape of regional or national importance and the proposed development would dominate the future view.
Moderate – Major	This category is a combination of descriptions of Major listed above and Moderate below. These combinations are discussed within the assessment of each landscape or visual receptor when they occur.	
Moderate	Alteration to elements/features of the baseline conditions. Affects an area of recognised regional landscape quality. Alteration to the character, scale or pattern of the local landscape.	Alteration to one or more elements/features of the baseline conditions such that post development character/attributes of the baseline will be materially changed. This would typically occur where the proposed development closes an existing view of a local landscape and the proposed development would be prominent in the future view.
Moderate – Minor	This category is a combination of descriptions of Moderate listed above and Minor below. These combinations are discussed within the assessment of each landscape or visual receptor when they occur.	
Minor	A minor shift away from baseline conditions. The Development partially changes the character of the site without compromising the overall existing landscape character area.	A minor shift away from baseline conditions. This occurs where change arising from the alteration would be discernible but the underlying character / composition / attributes of the baseline condition will be similar to the pre-development. It would also occur where the proposed development newly appears in the view but not as a point of principal focus or where the proposed development is closely located to the viewpoint but seen at an acute angle and at the extremity of the overall view.
Negligible	No or very little change from baseline conditions.	Where there is no discernible improvement or deterioration in the existing Landscape Character Area or the view.

	Change not material, barely distinguishable or indistinguishable.	
No Effect	The Development would not affect the landscape receptor.	The Development would not affect the view.

The significance of identified landscape and visual effects is established through a simple matrix, which measures the magnitude of change against landscape or visual sensitivity. The resulting impacts are classed Major, Moderate-Major, Moderate, Minor, Negligible/None.

Therefore, as the sensitivity of a landscape increases from Low to High, and the Magnitude of Change increases from Very Low to Very High the predicted impacts also increase.

The example matrix table below is used to summarise the findings from the criteria tables. By combining sensitively (along the top) with predicted magnitude of change (along the side) a predicted impact/ effect is reached. This format is applicable to both landscape impacts and visual impacts.

Table 1.6 Matrix Example

Example Matrix (Professional judgement applied at every stage of assessment and matrix only used to check consistency.)		**Sensitivity**				
		High	**High / Medium**	**Medium**	**Medium – Low**	**Low**
Magnitude	**Very High**	Major	←→	Major	←→	Mod-major
	High	Major	←→	Mod-major	←→	Moderate
	Medium	Mod-major	←→	Moderate	←→	Minor
	Low	Moderate	←→	Minor	←→	Negligible
	Very Low	Minor	←→	Negligible	←→	Negligible / None

Intermediate sensitivity ratings (as per the criteria) would lead to a series of effects that lie between those stated above if a matrix was applied to the assessment. Professional judgement is then used to determine

the degree of effect, e.g. high-medium sensitivity combined with medium magnitude would equate to a Moderate+ effect and a decision needs to be made to determine if this effect is Moderate or Moderate-Major. Intermediate magnitude ratings can also be arrived at during the assessment and a similar method is also applied here.

Effects above Moderate are considered Significant (presented in dark grey in the example matrix).

Where intermediate effects are arrived at, particular care should be taken at the upper and lower limits of the significance threshold i.e. between Moderate and Moderate-Major (presented in lighter grey in the example matrix).These effects may require additional explanation as to why the decision was made to judge the effect as either significant or not significant.

In addition to the impacts which sensitivity combined with the magnitude of change generate, there are a number of other factors which will be taken into account when preparing the landscape and visual assessment. For example - Development is often viewed as permanent and/or perceived to have a negative impact, it is therefore important to consider that change generated by a development can be temporary, short-term or indeed reversible and may in many cases deliver beneficial outcomes.
The assessment would also considers and identifies both the 'Type' and 'Duration' of the potential impacts.
The following terminology has been used were appropriate.

Type of Visual Impacts

- **Beneficial**: A positive impact which will improve or enhance the landscape character or viewpoint.
- **Neutral:** A neutral impact which will neither enhance nor detract from the landscape character or viewpoint.
- **Adverse**: A negative impact which will have an adverse effect on the existing landscape character or viewpoint.

Duration of Impacts

- **Temporary**: Impacts lasting one year or less.
- **Short–term**: Impacts lasting one to seven years.
- **Medium-term**: Impacts lasting seven to twenty years.
- **Long-term**: Impacts lasting twenty to fifty years.
- **Permanent**: Impacts lasting over fifty years.

1.3 Receiving Environment

The Landscape is about the relationship between people and place. Understanding the character of a landscape allows us to identify its 'sense of place', and the things that distinguish it from other places. All landscape has economic, social and environmental value; landscape characterisation provides a mechanism and baseline from which landscapes can be valued and their sensitivity and capacity to accommodate various development typologies gauged. Collectively this information assists with positive decision making when considering future appearance and function. This section establishes the landscape and visual context (or baseline) of the proposed development. It will include desk and field survey work.

1.3.1 Baseline Study – Site description

The overall Site currently comprises by undulating improved grazing pasture, bound by blocks of coniferous plantation, the B9002 to the west and the minor Wheelemont Road (U97M) to the south.

1.3.2 Baseline Study - Landscape Character Types

There are a number identified within 5km of the subject site, namely:-

- LCT 27 – Farmed Moorland Edge – Aberdeenshire (includes subject site)
- LCT 23 – Farmed Basin - Aberdeenshire
- LCT 28 – Outlying Hills & Ridges

Farmland Moorland Edge (includes subject site) (Lumsden Valley)

There are two distinctive Moorland landscape character types, the only upland character areas in Aberdeenshire, Farmed Moorland Edge and Moorland Plateaux. These make up the high ground in the western part of the study area and are the transitional landscapes between the much higher Grampian Mountains massif, within the Cairngorms National Park, and the rolling lowland landscapes of agricultural heartland. They form the distinctive, upland backdrop to much of Aberdeenshire.

The Farmed Moorland Edge LCT is the transition, separating the higher Moorland Plateaux and merging into the rolling agricultural heartland areas to the east of Aberdeenshire. This character type continues west into Perth & Kinross and merges with other upland character types, including Moorland Plateaux, to the north and to the east in Aberdeenshire. The Cromar Uplands, Daugh of Cairnborrow and Lumsden Valley often form the watersheds between the deeper straths of the rivers Dee, Don, Deveron and Bogie. Mainly of variable relief, including compact landforms of small valleys

and mounds as well as wide-open basins and plateaux, the small fields, well defined by drystane dykes, are used predominantly for livestock farming.

The subject site is located within a section of Farmed Moorland Edge LCT referenced as Lumsden Valley.

In profile this has a valley landform but with no watercourse. It forms the division between the watersheds of the Don and the Bogie, surrounded by much higher ground; the majority of the area is open farmed land changing to remote exposed moorland in the west. The majority of the area is characterised by a convoluted landform of small hummocks and depressions which gives rise to a small scale landscape pattern of paddocks and rough pasture enclosed by gappy dykes, fences and sheltered farms and cottages.

1.3.3 Baseline Study – Visual

When establishing the extent of the proposed developments visibility, there are a number of recognised stages:

- The first is generally conducted through desk study via utilisation of digital terrain models or printed mapping to generate Zone of Theoretical Visibility (ZTVI) analysis. This provides the assessor with a worst-case scenario of potential visibility, recognising that the exercise does not account for potential screening influence of vegetation, manmade structures or indeed low level localised topographical variation.
- With ZTVI prepared, the next stage is to consider potential visual receptors. Again, this can initially be carried out as a desk study to identify potential properties, road intersections, historic sites or OS marked viewpoints etc. which may be important to the assessment.
- The next stage generally is to test and refine desk study analysis in the field. Consideration of the surrounding landscape from a high point within the proposed development site is often a logical starting point for field work. From an elevated location, the assessor (comparing with ZTVI mapping) can identify points in the wider landscape from which the site is most likely to be visible. This exercise is known as intervisibility and forms the basis of defining the actual visual envelope. The final stage is to consider visibility of the subject site from the surrounding landscape. This generally involves assessment and photography from fixed key locations as identified, along with sequential views experienced along pedestrian and vehicle routes.

It would obviously be impossible (indeed unnecessary) to assess potential visibility from every possible angle or potential viewpoint. Therefore, the recognised practice is to identify a selection of viewpoints considered representative of a range of views and viewer types, including residences, transport routes, recreational routes, visitor attractions (including historic monuments), main landscape character types and a variety of distances, aspects, elevations, extents, and sequential routes. These are known as 'key visual receptors' and provide a reliable sample of potential impressions across the study area. Based on field survey and analysis, Figure 1.1 illustrates the identified ZTVI created by the proposed development site with Figure 1.2 illustrating the location of key visual receptors identified for the study. The ZTV focusses on the proposed extraction area and its immediate surrounds. A list of the identified receptors is provided in Table 1.7 below.

Table 1.7 Proposed LVIA Viewpoints

Viewpoint	Grid Reference	Latitude	Longitude	Receptor Type
VP1	NJ 47260 25423	57.316303	-2.8772539	Intervisibility
VP2	NJ 46806 25272	57.314901	-2.884756	Residential (Oblique Views)
VP3	NJ 47145 24934	57.311899	-2.879051	B9002 (Sequential Views)
VP4	NJ 46073 24705	57.309716	-2.8968005	B9002 (Sequential Views)
VP5	NJ 46805 24888	57.311447	-2.8846943	B9002 (Sequential Views)
VP6	NJ 47083 24858	57.31121	-2.8800648	Heritage Building (Residential / Heritage Views)
VP7	NJ 47542 25254	57.31482	-2.8725332	Minor Road (Sequential Views)
VP8	NJ 47455 22253	57.287854	-2.8733392	A97 - Lumsden /Tourist (Sequential Views)
VP9	NJ 48412 29306	57.351316	-2.8589438	Tap O North Hill Fort (Tourism/ Heritage Views)
VP10	NJ 47290 26069	57.322113	-2.8768880	Cnoc Cailliche Fort - scheduled monument

1.4 Characteristics of the Proposed Development

The sequence, position and extent of the proposed extraction area will be designed iteratively with direct input from the project landscape architect to ensure that the quarry incorporates all primary mitigation measures possible.

This application will include direct design input that :

- Identifies required screening, with potential location of advance screening requirement including temporary screen bunds and or planting;
- Identifies and agrees extraction limits;
- Agrees final quarry shape, form and depth;
- Identifies and agrees stand offs and buffers;
- Agrees phasing and restoration proposals along with direction of extraction;

1.5 In terms of landscape Identification of Likely Significant Impacts

1.5.1 Landscape & Visual Impacts

Landscape assessment attempts to establish the sensitivity of specific landscape resources and describe the significance of changes to that landscape as a result of a proposed development. More importantly, they should also identify opportunities during the design process focused on minimising potential landscape and visual impacts (mitigation) through positive iterative design intervention. This can include exerting influence on the development layout and arrangement, determining sympathetic approaches to realising the development proposal, i.e. Suggested operational sequence/phasing, advance screening, planting etc.

Landscape and visual impacts are intrinsically linked; therefore, measures to reduce landscape impacts such as the introduction of green infrastructure will generally assist with reduction of visual impacts and vice versa.

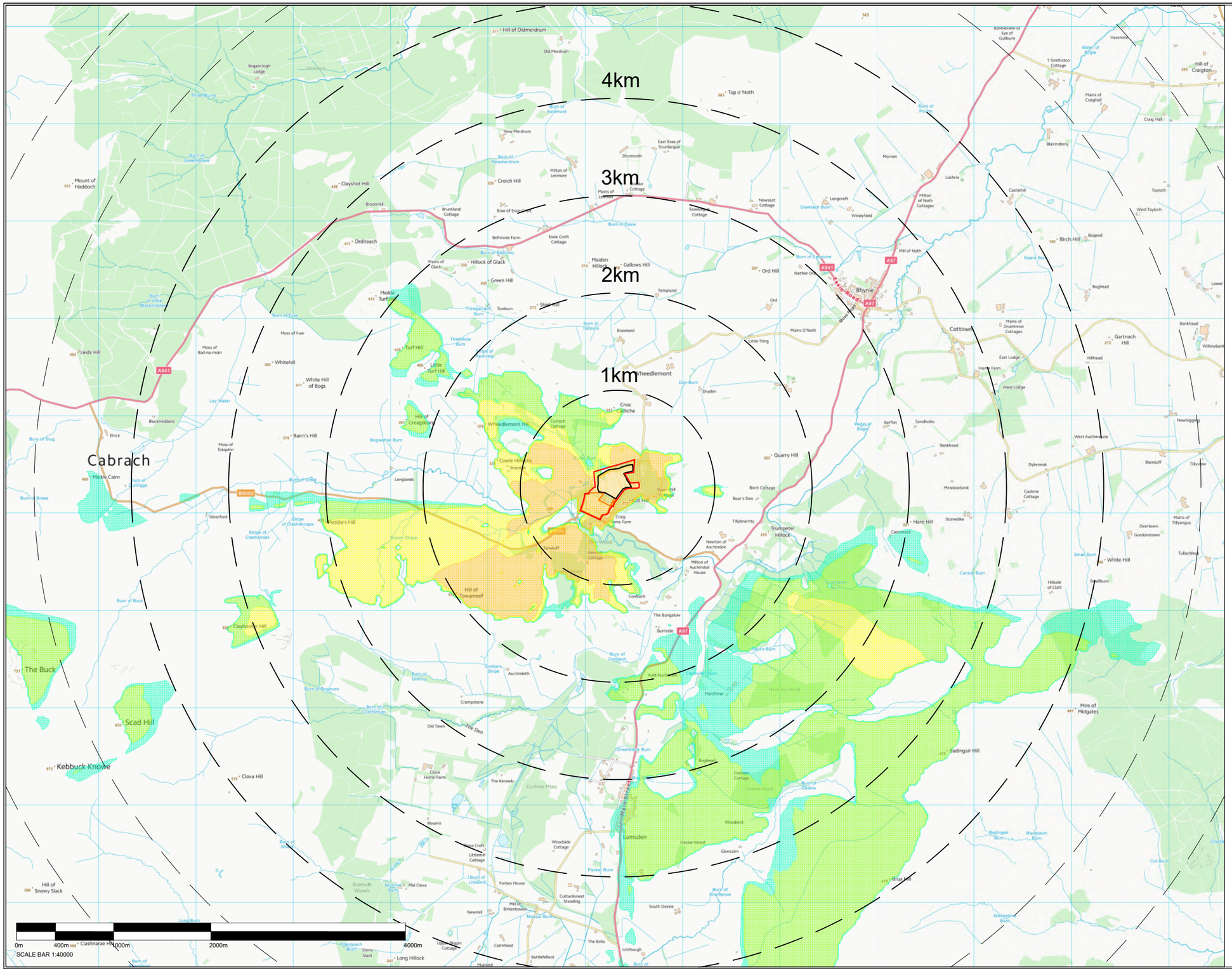
It is understood that development of this type results in permanent change, and may fundamentally alter the physical appearance of a landscape. However, it should be emphasized that, altered appearance does not necessarily equate to permanent negative impact to landscape character. It is therefore essential that a holistic view is taken when assessing proposals of this nature, not only considering the potential quarry impact during extractive operations but importantly how they will appear when extraction has ceased and restoration proposals are fully implemented and established.

Assessment of potential landscape and Visual Impacts will be considered in the following phases:-

1 Construction Phase (Establishment)

2 Operational Phase (Extractive Operations)

3 Restoration Phase (Post Extractive Operations)



Visual Catchment

As a basic visual principal, development in the landscape become less perceptible with distance. This simply equates to a reduction of the significance of potential visual impacts as one moves further away.

Viewpoint Distance 0-2km
Although this is difficult to quantify, it is acceptable to state that a site located approx 2km or less from a viewer is considered close enough to allow identification of significant detail. Any positions in this range with open uninterrupted views of the site would generally receive the greatest visual impacts.

Viewpoint Distance 2-5km
The visibility of the site becomes more general, with viewers in open uninterrupted positions able to identify general form, occasionally colour/tone and textural contrast, but losing the more focused detail achievable closer.

Viewpoint Distance 5-15km
Visual prominence quickly diminishes. In certain circumstances / light conditions etc have potential to allow certain types of development and material finishes to be perceived. The development increasing becomes part of the general background/distance views.

Viewpoint Distance 15km+
Upwards of this distance potential visibility of the development quickly becomes a minor feature within the landscape and considered imperceptible to the average human eye. The development in effect becomes part of the general background/distance views.

legend

- Site Boundary
- Extraction Area
- Area for Access
- Distance from Site in Kilometers
- Greater than 3 degrees visible vertical angle
- Between 1 and 3 degrees visible vertical angle
- Between 0.25 and 1 degrees visible vertical angle
- Between 0.1 and 0.25 degrees visible vertical angle

client	date	scale	by	notes
Leiths	Dec 2023	1:40000@A3	AJ	

Zone of Theoretical Visual Influence -
Proposed Extraction Areas as Existing - 5km

Craig Farm

mullin design associates
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chartered landscape architects

Viewpoint Locations

1. Intervisibility
2. Residential (Oblique Views)
3. B9002 (Sequential Views)
4. B9002 (Sequential Views)
5. B9002 (Sequential Views)
6. Heritage Building Residential/Heritage Views)
7. Minor Road (Sequential Views)
8. A97 - Lumsden (Tourism/Sequential Views)
9. Tap O' Noth Hill Fort (Tourism/ Heritage Views)
10. Cnoc Caillich Fort (Tourism/ Heritage Views)

legend

Subject Area

Distance from Site in Kilometers

1 Viewpoint Locations

client	date	scale	by	notes
Grange Quarries	Dec 2023	1:40000@A3	AJ	Ordnance Survey © Crown Copyright 2022. All rights reserved. Licence number 100022432

Viewpoint Locations | **fig. 1.2**

Grange Quarry - Existing Topography

mullin design associates
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APPENDIX 2 - PRELIMINARY ECOLOGICAL APPRAISAL

Craig Farm Proposed Quarry

Preliminary Ecological Appraisal

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WL064	Version:	I[st] Draft Final Copy	26/07/2022 06/11/2023

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Contents

1.0 Introduction

1.1 Latimer Ecology has been engaged by Johnson, Poole & Bloomer Consultants, on behalf of the Lieths Group, to undertake an ecological assessment of a proposed sand and gravel quarry at Criag Farm, near Lumsden, Aberdeenshire. The proposal site, centred at OS Grid Ref. NJ 473 253) is located in farmland north of the B9002 road leading from the A97 westwards to the Cabrach. A minor road from Craig Farm, situated on the Cabrach road, leading to Rhynie passes along the eastern boundary of the proposed site. The site was surveyed in mid July 2022 with the survey covering also the access options from the Cabrach road into the proposed quarry.

1.2 The following report provides a Preliminary Ecological Appraisal of the project following the process of data gathering, surveys and assessment. A habitat plan and reptile survey plan arising from the survey work are given in Appendix 1; Appendix 2 shows the site boundary, access area and proposed extent of quarrying and a number of site photographs are given in Appendix 3.

2.0 Methodology

Approach

2.1 The study, comprising data collection, survey, assessment and reporting, has followed the format of an Preliminary Ecological Appraisal (PEA) following guidance published by the Chartered Institute of Ecology and Environmental Management (see: https://cieem.net/resource/guidance-on-preliminary-ecological-appraisal-gpea/). PEAs are undertaken where full details of the development are not yet available and where, as a result, it may not be possible to complete a full ecological impact assessment. PEAs aim to:

- identify the likely ecological constraints associated with a project;
- propose mitigation measures which are likely to be required,;
- recommend additional surveys that may be required to inform an Ecological Impact Assessment (EcIA); and if possible
- outline the opportunities offered by a project to deliver ecological enhancement.

2.2 The results of a PEA can be used to guide detailed design of a project so that any predicted potential adverse environmental impacts can be addressed in the early phases of the project.

2.3 The appraisal has been conducted in the light of the information available on the project as shown in the layout plan from Johnson, Poole & Bloomer .

Desk Study

2.4 A study of existing information has been undertaken using web-based sources including the Scottish Natural Heritage website Sitelink to locate any relevant areas designated for their scientific interest (https://sitelink.nature.scot/map) and the biological records available on the National Biodiversity Network (NBN) Atlas (https://nbnatlas.org/). Other web-based sources used include Google-Earth for recent, historical aerial coverage and the historical maps

available at the National Library of Scotland (http://maps.nls.uk/) which can assist in the understanding of the nature of present-day habitats. A full data search of biological records from the North-east Scotland Biological Record Centre (NESBReC) has been obtained and the results are given in Appendix 3.

Site Surveys

2.5 All surveys were conducted by Dr W. Latimer.

Habitats and Vegetation

2.6 Habitats have been identified, assessed and mapped using the mapping protocol of the Phase 1 Habitat Survey methodology (JNCC 2010). Certain features which are too small to map are identified by numbered target notes (TN) on the Habitat Plan in Appendix 1.

2.7 Records were made of plant species present sufficient to analyse any communities of particular botanical interest according to the National Vegetation Classification (NVC, see Rodwell 1991 *et seq*.). The NVC assists in the evaluation of vegetation communities and the understanding of their ecological context.

2.8 Plant names are given in the text qualified by their scientific name at first mention, with nomenclature according to Stace (1999). A number of site photographs are given in Appendix 2 with photograph numbers indicated in the text below in **bold**.

Birds

2.9 As the survey was conducted rather late in the bird breeding season, no repeat dedicated surveys for birds has been undertaken and notes on birds present during the walk-over survey were made based on identification by sight and song

Mammals

2.10 Signs of protected species were sought, including tracks and footprints, feeding signs (prey items, scrapes, food remains), droppings (scats, latrines, spraints), shed hair, burrows and other resting places (setts, holts, dreys & dens), and odour at such sites. Some species-specific survey methodologies and guidance followed included:

- for badger the methods in Reynolds & Harris 2005 provide a good protocol for surveys for this species; some aspects of the protocol applies also to some other mammals such as pine marten, though for this species, suitable cavities in trees and voids in stone piles are also searched,

- otters: using the survey methodology described in Liles (2003). *Otter Breeding Sites. Conservation and Management* and with reference to UK government advice in: https://www.gov.uk/guidance/otters-protection-surveys-and-licences,

- wild cat and pine marten: for the former, Forestry Commission Scotland has produced a Guidance Note 35d – Forest Operations and Wild Cat in Scotland (https://forestryandland.gov.scot/images/corporate/pdf/epswildcat.pdf) while the Scottish Natural Heritage Commissioned Report No. 479 provides details on camera

trapping methodology for this species. The Vincent Wildlife Trust has produced "A Guide to Identifying Evidence of Pine Martens (Evidence-of-Pine-MartensJune2020Webversion.pdf (vwt.org.uk), Camera trapping is employed where field evidence such as well-used trails, scats, prints and claw marks, and potential dens.

- red squirrel using the survey method advised in the Forestry Commission Practice Note No. 11 (Gurnell *et al.* 2009).

- water voles following the guidance in Dean *et al.* (2016).

Reptiles

2.11 Presence/absence surveys for reptiles were conducted at two locations, the south-west facing dry-stone wall embankment delineating the conifer woodland on the north-east boundary and the west-facing hillside in the north west where patchy scrub, reasonably diverse grasslands and sandy soils with mammal burrows were considered to provide possible reptile habitat (see the Site plan in Appendix 1). At these locations refugia made from 40cm squares of bituminous roofing felt were laid, 13 tiles along the wall in the east and 17 in the west with 12 laid at the sheltered southern edge of gorse bushes in the pasture and 5 laid in adjacent unmanaged grassland on the northern boundary of the site to test if the longer ungrazed grassland provided a reservoir population.

2..12 The protocol for reptile surveys is given in the Froglife 2015 publication *Surveying for Reptiles*, and in Sewel *et al.* (2013). There are two optimum seasons in the year for surveys, following hibernation, depending on the weather, from the latter half of March to the end of May and again in September. Surveys should be conducted in warm sunny conditions where the air temperature is around 10^{o}C and over. Towards mid-summer, conditions may be too warm for reptiles to bask upon the tiles for any length of time: spring and late summer provide the optimum period for sampling reptile populations using such artificial refugia.

2.13 At least 5 survey visits over the sampling period should be conducted where the surface and underneath the tiles are checked. Some idea of reptile numbers, where present, and population distribution can also be gained. Binoculars may be used to inspect visible tiles at distance before they are approached. In addition to checking the tiles, transects were slowly walked along the dry-stone wall in the east of the site and through the pasture on the western hillside, again using binoculars to look ahead for any signs of reptiles.

2.14 Trees were assessed for the presence of bat roosting habitat in cracks, crevices and voids in dead wood. Guidance for such surveys is available in (Collins 2016) and the Bat Tree Habitat Key, BTHK 2020) and the examination also detects potential nesting spaces for birds.

Baseline Assessment and Evaluation

2.15 In the UK, approaches to the setting of criteria for the assessment of the nature conservation value of a defined area of land commenced with the A Nature Conservation Review (Ratcliffe 1977). A range of primary qualities were identified: size, diversity, naturalness, rarity, fragility and typicalness. These, together with the secondary criteria, recorded history, position in an ecological or geographical unit, potential value and intrinsic appeal, provide a framework for the selection of national sites for statutory protection and has been used as a basis for ecological evaluation.

2.16 In parallel to this process of evaluation of ecological interest for nature conservation objectives, the UK Department of Transport developed guidance for the assessment of ecological value as one of the sub disciplines of environmental impact assessment (EIA) for transport schemes in the New Approach to Appraisal (DETR 1998). The appraisal approach has gained national acceptance for a range of developments and is now published as Transport Analysis Guidance (TAG) available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/825064/tag-unit-a3-environmental-impact-appraisal.pdf

2.17 This appraisal methodology addresses the geographical scale or context at which the feature, or ecological receptor, is important and confers a scale of value according to the national hierarchy of site designation from the highest, international scale to undesignated sites deemed to be of some ecological interest at the local scale. This methodology has further been modified by the Chartered Institute of Ecology and Environmental Management (CIEEM) and addressed in successive editions of their Guidelines for Ecological Impact Assessment (CIEEM 2018) and the following scale of ecological importance is commonly used:

- International importance
- UK importance
- National importance (England / Northern Ireland / Scotland / Wales)
- Regional importance
- County (or Metropolitan)
- District (or Unitary Authority, City or Borough)
- Local or Parish
- Site level only (limited to the site boundary)

2.18 Other defined geographical contexts may be appropriate e.g. river basins, estuaries and reference to the Scottish Natural Heritage publications on Natural Heritage Zones (NHZ) can also provide a unit of bio-geographical scale at a regional level. The NHZ describe landscapes with a measure of ecological cohesion and a broad database of habitat types (see: https://www.nature.scot/natural-heritage-zones-national-assessment-scotlands-landscapes).

2.16 Other criteria used in the evaluation of sites and their ecological features include the presence of uncommon, rare or vulnerable habitats and species, e.g.

- Habitats and species listed for protection or conservation action in the relevant Annexes and Schedules of the nature conservation legislation (see Table 2 below),

- Habitats and species in national and regional Biodiversity Action Plans (BAP) and biodiversity lists (e.g. the Scottish Biodiversity List, see: https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy/scottish-biodiversity-list),
- Species in Red data lists (e.g. for UK birds see: https://www.bto.org/our-science/publications/psob).

2.19 Sites can have significant value for the ecosystem services they provide and these can be classified as:

- Cultural: the value derived from the site's amenity, landscape, the presence of charismatic species, educational value,
- Provisioning: e.g. food, materials, medical compounds and other genetic resources, water, oxygen from plant photosynthesis. Sites may have value in providing wildlife corridors; links within a wider network.
- Regulatory: climate control, water attenuation and cleansing, erosion control, pollination, pest control, pollution treatment and attenuation,
- Supporting services for the above processes: soil formation, nutrient and water cycling, primary and secondary production.

2.20 In the face of climate change, increasing attention is being paid to some key services which are relevant to extreme weather events such as water storage and attenuation, erosion control and regulation of local climate. Table 1 below provides a summary of the evaluation criteria.

Table 1. Biodiversity value criteria

Scale of value	Criteria
International	An internationally designated site or candidate site (SPA, possible SPA, SAC, possible SAC, Ramsar Site, Biogenetic Reserve) A viable area of a habitat type listed in Annex I of the Habitats Directive, or smaller areas of such habitat that are essential to the maintenance of the viability of a larger whole. Any regularly occurring population of an internationally important species that is threatened or rare in the UK, i.e. a RDB species, or listed as occurring in 15 or fewer 10km squares in the UK (categories 1 and 2 in the UK BAP), or of uncertain conservation status, or of global conservation concern in the UK BAP. A regularly occurring, nationally significant population of any internationally important species. A regularly occurring, nationally significant number of an internationally important species during a critical phase of its life cycle.
National	A nationally designated site (SSSI, NNR, Marine Nature Reserve (MNR)) or a discrete area that meets the published selection criteria for national designation (e.g. SSSI selection guidelines). A viable area of a priority habitat identified in the UK BAP, or smaller areas of such habitat that are essential to maintain the viability of a larger whole.

Scale of value	Criteria
	Any regularly occurring population of a nationally important species that is threatened or rare in the region or county. A regularly occurring, regionally or county significant population of any nationally important species. A regularly occurring, regionally or county significant number of a nationally important species during a critical phase of its life cycle.
Regional (i.e. within the North East Glens NHZ)	Viable areas of key habitat identified as being rare in the NE Coastal Plain NHZ, or nationally scarce; small areas of such habitat that are essential to maintain the viability of a larger whole. Any regularly occurring, locally significant population of a regionally important species. A regularly occurring, locally significant number of a regionally important species during a critical phase of its life cycle. Sites that exceed the county-level designations but fall short of SSSI selection guidelines, where these occur.
County (i.e. within Aberdeenshire)	County sites and other sites that meet the published ecological selection criteria for designation, including Local Nature Reserves (LNR) and Local Nature Conservation Sites (LNCS). A viable area of habitat identified as rare in the county or regionally scarce or localised. Any regularly occurring, locally significant population of a county important species . A regularly occurring, locally significant number of a county important species during a critical phase of its life cycle.
Local (i.e. within 10km radius of the study area)	Areas of habitat considered to appreciably enrich the habitat resource within approximately a 10km radius of the study area. Areas of habitat that are rare within approximately a 10km radius of the study area, or scarce or localised on a county scale. A regularly occurring, locally significant population of a locally important species. A regularly occurring, locally significant number of a locally important species during a critical phase of its life cycle. A regularly occurring, locally significant total number of more than one locally important species.
Very local (i.e. within the immediate environs of the study area)	Areas of habitat considered to appreciably enrich the habitat resource within the study area.
All scales	Ecosystem services.

Assessment of Potential Impact

2.21 The assessment of ecological impact follows the CIEEM 2018 Guidelines which advise consideration of whether impacts be positive or negative, their magnitude and extent, duration, frequency and timing, and whether such impacts are reversable.

2.22 Where necessary the assessment also includes an indication of the confidence level that a change will take place as a result of the plan or development. The following terminology is used:

- Certain: probability estimated to exceed 95%
- Likely: probability estimated to be 65-95%
- Possible: probability around 65 – 35%
- Unlikely: probability estimated to be 35-5%
- Extremely Unlikely: probability estimated to be less than 5%.

2.23 Each impact is assessed as being significant or not significant upon each valued ecological feature. An ecologically significant impact is defined as an impact on the integrity of a defined site or ecosystem and/ or the conservation status of habitats or species. The impact is assessed within a specific geographic context i.e. "significant" or "not significant" at the scale at which it was valued (e.g. international, national, regional or local). Significant effects are those which must be given due weight by decision makers and, where the plan or project proceeds, negative significant effects merit particular effort to avoid, ameliorate or mitigate the effect.

2.24 The assessment of significance of impacts on species caused by disturbance uses the definition of the threshold of deliberate disturbance used by The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2007 (SI 2007/80). A significant impact of disturbance is assumed if the work significantly affects the ability of any significant group of animals of that species to survive, breed or rear or nurture their young or likely to significantly affect the local distribution or abundance of the species (see Paras 39 (b) v and vi in the above Regulations).

2.25 The final prediction of impact significance is completed taking the mitigation measures into account. This requires an assessment on the likelihood of successful mitigation being achieved (Oxford 2000) and the mitigation proposed should be qualified in terms of the probability of success. The assessment of success of mitigation can be based on both professional judgement and experience of other mitigation schemes. Where habitat processes or species requirements may not be fully understood, there may be uncertainty over the effectiveness of such mitigation and a precautionary approach is advisable in determining the outcome. It should also be noted that some habitat creation schemes may require a significant timescale for the objectives to be achieved, e.g. replacement woodland. Mitigation should therefore be qualified according to the following scheme.

Table 2. Qualification of Mitigation

Probability of Success	**Probable timescales**		**Habitat Examples**
Very low	Very long	> 100 years	Mature woodlands, raised mires, flushes and deep peat formations.
Low	Long	50 – 100 years	Immature woodlands, some shallower peatlands

Moderate	Moderate	10 – 50 years	Mature scrub, heathland, fens
High	Short	5 – 10 years	Grasslands
Very high	Very short	< 5 years	Ponds

Limitations

2.26 No significant limitations are considered to apply to the survey and assessment as undertaken so far. By mid-July, many resident bird species have completed nesting, have ceased to sing and have dispersed from their nesting territories. They can be, therefore, more difficult to detect during a site survey. A small herd of cattle have free range of the site so that footprints and trails of wild mammals can be obscured by trampling.

3.0 Statutory and Planning Context

Key Legislation

3.1 The legislative framework that provides protection for wildlife in the UK is derived from European directives and national law. It is relevant to the evaluation of ecological features (habitats and species in need of legal protection are generally highly valued), it guides local planning policies and planning determination, and confers legal obligations. The overarching directives and statutory instruments are indicated in the table below.

Table 3. Legislation. Key Protection afforded to Habitats and Species

Legislation	**Brief Description**
International	
The Birds Directive (79/409/EEC)	The Directive aims to maintain the favourable conservation status of all wild bird species (Article 2). It establishes a general scheme for the protection of all wild birds (Article 5). The Directive also requires the identification and classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex I of the Directive and regularly occurring migratory species.
The Habitats Directive (92/43/EEC)	Annex 1 of the Directive lists the habitats, and Annex II lists the species for which member states must undertake special conservation measures. See the Habitat Regulations section below for the implications of this Directive in the UK context.
Convention on Biological Diversity	Conservation of biodiversity (the variety of life on earth) is an essential element of sustainable development. The UK Biodiversity Action Plan (BAP) provides the framework for fulfilling the UK's responsibilities towards the Convention on Biological Diversity and in Scotland a duty to have regard for biodiversity is stated in the Nature Conservation (Scotland) Act 2004. The Scottish Biodiversity List, published by Scottish Ministers, informs that duty in accordance with Section 2 (4) of the Act.

Legislation	Brief Description
UK & Scotland	
Wildlife and Countryside Act, 1981, as amended (WCA)	The WCA sets out the protection offered to various species of plants, birds, other animals and Sites of Special Scientific Interest in Great Britain. Bird species listed in Schedule 1, animal species listed in Schedule 5 and plant species listed in Schedule 8 of the WCA are fully protected. Other sections of the Act deal with pest and alien species, listed in Schedule 9, where it illegal to cause their spread in the wild. The WCA has since been strengthened and updated by subsequent UK and Scottish legislation (see below).
Protection of Badgers Act 1992	Offences under the Act include: (1) taking, injuring or killing badgers; (2) cruelty to badgers; (3) interference with badger setts; (4) selling and possession of live badgers and (5) marking and ringing. Exceptions and licences can apply.
The Conservation (Natural Habitats &c.) Regulations 1994, as amended (Habitats Regulations)	The provisions of the Habitats Directive were transposed into UK law by the Habitat Regulations. Schedule 2 of the Habitat Regulations lists the European protected species of animals whilst Schedule 4 lists the European protected species of plants. Under the Habitat Regulations, it is illegal to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4 without a licence granted by the appropriate authority. Licences can only be granted for certain purposes and if a set of conditions have been met. Requires, under Section **48.**—(1) an "appropriate assessment" of the implications of any plan or project for European sites (SPA and SAC – see Table 4 below) .
Nature Conservation (Scotland) Act 2004	Deals with conserving biodiversity by introducing a duty on all public bodies to further the conservation of biodiversity and requires under Section 2(4) publication of a list of habitats and species for conservation action (the Scottish Biodiversity List). Amends the 1981 Wildlife & Countryside Act in respect of protecting Sites of Special Scientific Interest, and similarly strengthens protection of certain birds, animals and plants. Updates the 1992 Protection of Badgers Act.
The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2004	Amends 1994/ Habitats Regulations to bring the provisions for protection of European 'Natura 2000' sites into line with the protection regime set out in the Nature Conservation (Scotland) Act 2004 and affords protection to European candidate sites. Gives further protection to European protected species and introduces a new offence of '*reckless disturbance'* in respect of European sites and species.

Legislation	Brief Description
The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2007.	Significantly strengthened the regulations relating to European Protected Species of animals and enacting the requirement to assess developments plans (structure and local plans) with regard to effects on Natura 2000 (EC Directive) sites.
The Environmental Liability (Scotland) Regulations 2009	Transposes the EC Directive 2004/35/CE on environmental liability with regard to the prevention and remedying of environmental damage into Scottish law and requires the perpetrators of any pollution to prevent and repair damage to water systems, land quality, protected sites, species and their habitats.
Wildlife and Natural Environment (Scotland) Act 2011	Modernises game law and deer management legislation, badger licensing legislation, strengthens controls on invasive non-native species, improves Sites of Special Scientific Interest (SSSI) legislation and modifies muirburn regulations.
The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. UK SI No. 579	These regulations amend the existing legal instruments which transpose the Habitats and Wild Birds Directives into UK law so that they continue to be valid following the UK's exit from the European Union (EU) and to ensure that existing protections continue.
Animals and Wildlife (Penalties, Protections and Powers) (Scotland) Bill 2019	Strengthens the measures in previous legislation concerning species protection and animal welfare by increased penalties.

3.2 Proposed development must be able to show that all reasonable measures have been taken to ensure that protected species are not disturbed. The habitats of all Conservation Regulations Schedule 2 species, WCA Schedule 1 and some WCA Schedule 5 species are also protected from disturbance and destruction. Again, all reasonable precautions should be taken to ensure that this does not happen.

UK Biodiversity Action Plans

3.3 Arising from the 1992 Convention on Biological Diversity, the national UK Biodiversity Action Plan (BAP), together with Local Biodiversity Action Plans (LBAP), provide information on conservation imperatives for listed habitats and species. In addition to the UK national BAP, the local plan for the proposal site is the North-East Scotland Local Biodiversity Action Plan (see: http://www.nesbiodiversity.org.uk/actionplans/).

3.4 The 2004 Nature Conservation Act requires all public bodies to have regard for the conservation of biodiversity in their public duties and the publication of the Scottish Biodiversity List (SBL) under Section 2(4) of provides some legislative backing for the 1992 Convention.

Protected Sites

3.5 Sites for nature conservation are protected under the legislation outlined above and through planning policies. Table 2 below shows the main statutory and non-statutory designations.

Table 4. Common Statutory and Non-Statutory Designations

Designation	Brief Description
Statutory Sites	
Ramsar Sites	Wetlands of international importance notified under the Ramsar Convention 1971. Ramsar Sites are effectively protected, through the planning system, under the Wildlife and Countryside Act 1981, as amended, and the Nature Conservation (Scotland) Act 2004 through their notification as SSSIs and through other regulatory systems addressing water, soil and air quality.
Special Protection Areas (SPAs)	SPAs are the most important habitats for rare and migratory birds within the European Union. The Birds Directive, adopted by the UK in 1979, provides for the protection, management and control of all species of naturally occurring wild birds in the European territory of Member States, including the UK. The provisions of the Birds Directive are transposed into English law by the Conservation (Natural Habitats &c) Regulations 1994.
Special Areas of Conservation (SACs)	SACs are sites that are chosen to conserve the natural habitat types and species of wild flora and fauna listed in Annex I and II of the Habitats Directive. They are the best areas to represent the range and variety of habitats and species within the European Union. The provisions of the Habitats Directive were transposed into English law by the Conservation (Natural Habitats &c) Regulations 1994.
National Nature Reserves (NNRs)	NNRs are nationally important areas of wildlife habitat and geological formations in Britain. NNRs are designated and protected under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981, as amended.
Sites of Special Scientific Interest (SSSIs)	SSSIs are nationally important sites for wildlife, geological and geomorphological features in England. They are designated and protected under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981, as amended. They receive additional protection under the Nature Conservation (Scotland) Act 2004.
Local Nature Reserves (LNRs)	LNRs are similar to NNRs but they apply to the local context. They are sites of value to nature conservation and are designated under the National Parks and Access to the Countryside Act 1949. They are managed for the benefit of nature conservation.
Nature Conservation Sites protected through Planning Policy	
Ancient Woodland	Ancient woodlands in Scotland are those that have been established since or before 1750AD. The Scottish Natural Heritage inventory also lists “Long-established woodlands of semi-natural origin” and “Long-

Designation	Brief Description
	established woodlands of plantation origin" identified on the first OS maps of 1860. They are non-statutory sites but they are recognised as of high conservation and landscape value, essentially non-replaceable, and are subject to national and local conservation policies whereby there is a presumption against developments that would result in the loss of ancient woodland and its trees.
Local Nature Conservation Sites or Wildlife Sites	These non-statutory sites are sites designated by local authorities and protected through the planning system by a presumption against disturbance from development. Where such disturbance is considered necessary comprehensive mitigation is generally sought.
Wildlife Trust Reserves	These are nature reserves managed by the Wildlife Trusts for wildlife conservation and education.

Planning Context

3.6 The National Planning Framework 4 (NPF4) for Scotland deals in some detail with the principle that development should result in net improvements to biodiversity, e.g. Policy 3a: "*Development proposals will contribute to the enhancement of biodiversity, including where relevant, restoring degraded habitats and building and strengthening nature networks and the connections between them. Proposals should also integrate nature-based solutions, where possible"* and Policy 3c: "*Proposals for local development will include appropriate measures to conserve, restore and enhance biodiversity, in accordance with national and local guidance. Measures should be proportionate to the nature and scale of development*".

3.7 Regional planning policy in relation to biodiversity and the environment is provided in Section 10 of the Aberdeenshire Local Development Plan 2023 in which Policy E1 Natural Heritage deals with the rationale for the protection of all areas designated for their nature conservation value, the conservation of protected species, and general biodiversity issues.

4.0 Results

Designated Sites

4.1 A little over a kilometre to the west is the extensive Hill of Towanreef SSSI and SAC, notified for its wide range of internationally important species-rich upland plant communities; dry heath, alpine and sub-alpine heath, juniper scrub, base-rich flushes, blanket and intermediate bog (see Appendix 3 for site boundary plans). Of particular interest are the plant assemblages on soils derived from the underlying serpentine; rock providing elevated levels of magnesium, iron and other trace metals. Part of the site lying around 2 km due west of the proposed quarry is listed in the Geological Conservation Review, a list of sites with geological and geomorphological features of national and international importance.

Biological Records

4.2 The NESBReC report given in Appendix 3 shows data for the application site plus a search area of 2 km radius from the site centre. Notable species (i.e. those protected by law or included in biodiversity action plans) recorded within this search area include pine marten, badger, red squirrel and wild cat with birds such as curlew, lapwing and cuckoo though none of these are located within the site boundary. The proposed quarry site falls within the Strathbogie Wildcat Priority Area, one of 5 such areas in Scotland identified by Scottish Wildcat Action (see: Scottish Wildcat Action | Saving Wildcats | Saving Wildcats) where conservation efforts for this species are focussed.

4.3 The records on the NBN Atlas database lists 63 bird species within a 1 km radius of the site centre. There are a number of species present listed in the UK BAP and cited in the Red and Amber lists of birds of conservation concern (see: https://www.bto.org/science/monitoring/psob), including the red-listed species such as lapwing, curlew, linnet, spotted flycatcher, lesser redpoll, song thrush and cuckoo and the amber-listed reed bunting, meadow pipit, bullfinch, dunnock and willow warbler. That certain species have been sighted in the area does not imply that the species is necessarily resident upon the site or derives key resources such as nesting sites and foraging habitat.

Habitats.

General Setting & Land-use History

4.4 The site is located on a south facing slope above the farm buildings of Craig Farm (Photograph **2**. Appendix 2). A large paddock, grazed by horses, and a large pond lie between the farm buildings and the southern boundary of the proposal site. A number of specimen trees have been planted in the paddock east of the pond. Improved pastures cover the greater part of the site (Photograph **1**). The south-eastern boundary is bounded by a minor road (**9**) which runs along the edge of the coniferous plantation woodlands of Cot Hill. The road heads northwards past the mixed woodlands of Quarryhill to the east and a block of Norway spruce to the west: the western boundary of the wood abuts the proposal site (**1 & 8**). To the west, the boundary crosses north to south across a field of improved pasture on the eastern side of the Cuttie burn (**3**) (as part of the process of scoping and consultation this boundary has been drawn back from its former alignment along the edge the burn). Southwards the western boundary skirts the eastern edge of another block of coniferous woodland to the south, Firhill Wood (**5**). A belt of woodland enclosing a pond (Lochnagab) abuts the northern boundary. The pattern of open pasture and woodland appears to have changed little since the publication of the 1870 six-inch OS map. At the time of the survey the land, including the conifer woods in the north-east, were grazed by a relatively small herd of cattle.

Woodlands & shrub.

4.5 The site boundary abuts two sections of Norway spruce (*Picea abies*) plantation on the east and west sides respectively. The eastern woodlands (TN 1 on the Phase 1 habitat plan in Appendix 1) encompass a notable line of old beech (*Fagus sylvatica*) trees planted along a boundary running diagonally through the wood and growing on part of the south western edge of the wood. Many of these trees shown dead-wood cavities and woodpecker holes both

providing potential bat roosting and bird nesting habitat. A mature spreading sycamore (*Acer pseudoplatanus*) is part of this line of old trees and a single ash (*Fraxinus excelsior*) and a wych elm (*Ulmus glabra*) are also present in the north-west of the wood, the latter also showing a hollow in the trunk. Under the relatively dense shade of the dominant spruce, the ground flora is very sparse but includes wood sorrel (*Oxalis acetosella*), chickweed (*Stellaria media*) and rather stunted and scattered ferns (*Dryopteris dilitata, D felis-mas*).

4.6 The western section of woodland in the site comprising the eastern extremity of Firhill Wood is a dense Norway spruce monoculture with no appreciable ground flora present.

4.7 North of Firhill Wood on a grassy hillside a number of scattered trees are present; downy birch (*Betula pubescens*), rowan (*Sorbus aucuparia*) and goat willow (*Salix caprea*) with scattered shrubs of gorse (*Ulex europaeus*) as shown in Photographs **3 & 7**.

4.8 A belt of old beech woodland extends eastwards from Firhill Wood along an old disused track running along the southern boundary of the paddock (**10**) which surrounds Craig Farm pond with some trees showing crevices and dead-wood cavities, potential bat roosting and bird-nesting habitat (**11 & 12**). A few veteran beech grown on the walled embankment of the old track to east of the pond. Along the minor road to the east trees shade the roadside verges by the Craig farm buildings, mainly sycamore and wych elm.

Improved grasslands

4.9 Improved and species-poor pasture grasslands cover the majority of the proposal site (**1 & 2**) with a typical flora of rye-grass (*Lolium perenne*) dominant with clover (*Trifolium repens*). There are occasional additional grass species, Yorkshire fog (*Holcus lanatus*), cocksfoot (*Dactylis glomeratus*) and meadow grasses (*Poa pratensis),* and herbs, creeping buttercup (*Ranunculus repens*), docks (*Rumex obtusifolius*), thistle (*Cirsium arvense*) and nettle (*Urtica dioica).*

Good semi-improved grassland

4.10 A relatively small area of more species rich grassland covers a west-facing slope in the north-west of the site, the valley slope of the Cuttie burn (**3 & 7**). Here there is a mosaic of grassland associations with areas of the finer leaved fescues and bents (*Festuca rubra, Agrostis capillaris*) predominant, mainly in the north of the compartment and usually with frequent wavy-hair grass (*Deschampsia flexuosa*). To the south where the tree cover described in Para. 4.7 above increases, Yorkshire fog forms a significant cover in the grassland community. Herb species present include heath bedstraw (*Galium saxatile*), germander and field speedwell (*Veronica chamaedrys, V. arvensis*), clover (*Trifolium repens*), wild pansy (*Viola tricolor*), sheep's sorrel (*Rumex acetosella*), harebell (*Campanula rotundifolia),* autumn hawkbit (*Scorzoneroides autumnalis),* ribwort plantain (*Plantego lanceolata*), creeping buttercup, daisy (*Bellis perennis*), yarrow (*Achillea millefoliium*) and ragwort (*Senecio jacobea*).

4.11 Roadside verges, e.g. along the minor road running north from Craig Farm towards Rhynie (**9**), support tall grasslands of false oat (*Arrhenatherum elatius*) and cocksfoot with rough meadow-grass (*Poa trivialis*), wood millet (*Millium effusum*) and herb robert (Geranium robertianum) in areas of shade. Tall herbs from a significant component of the vegetation,

wild raspberry (*Rubus ideaus*), rose-bay willowherb (*Chamaerion angustifolium*), alkanet (*Pentaglottis sempervirens*), sweet cicely (*Myrrhis odorata*) and ground elder *(Agopogium podagraria*). Open unshaded grasslands further northwards along the verges include species such as birdsfoot trefoil (*Lotus corniculatus*), lesser stitchwort (*Stellaria graminea*), bush vetch (*Vicia sepium*), clover, cow parsley (*Anthriscus sylvestris*) and hogweed (*Heracleum sphondyllium*) and finer-leaved grasses such as red fescue, bent grass and sweet vernal grass (*Anthoxanthum odoratum*) become locally frequent.

Marshy grassland

4.12 The paddock grasslands close to the large pond south of the proposed quarry site are dominated by poached, species-poor Yorkshire fog grasslands with much creeping buttercup, occasional soft rush (*Juncus effusus*), docks, nettle and ragwort (**10**). At the margins of the pond, soft rush increases in cover and bog stichwort (*Stellaria alsine*) can be found in the open poached ground.

4.13 The corridor of the Cuttie burn (**4**) is dominated by stands of meadowsweet (*Filipendula ulmaria*) grading into damp grassland, mainly to the west of the burn, with tufted hair-grass (*Deschampsia cespitosa*), Yorkshire fog and herbs such as meadow vetchling (*Lathyrus pratensis*) and tufted vetch (*Vicia cracca*).

Open water

4.14 The Cuttie burn flows gently over a fine muddy substrate in a broad floodplain down the north western edge of the proposal site. The channel is narrow throughout, around 0.75 metres, apart from where a poached cattle drink is present downstream on the east bank.

4.15 The Craig Farm pond (TN3, Appendix 1), a large pond just south of the proposed development site (**2**), is locally fringed with soft rush and stands of yellow flag (*Iris pseudacoris*) while tall grasses, soft rush and sedge (Carex spp.) grow on two central islands in the pond.

4.16 Just over the northern boundary of the site on a saddle of land between Cott Hill and Cnoc Cailliche to the north another pond, Lochnagab (**14**), is present (TN2) screened by Norway spruce trees and a number downy birch and grey willow (*Saix cinerea*) shrubs along the banks. Here, aquatic emergent plants dominate the pond, principally bottle sedge (*Carex rostrata*) but there remain some small areas of open water in the west of the pond. Other aquatic emergent include flote-grass (*Glyceria* spp), marsh cinquefoil (*Potentilla palustris*), spearwort (*Ranunculus flammula*) and marsh willow herb (*Epilobium palustre*). Soft rush fringes the banks.

Boundary features

4.17 Current field boundaries are post and wire stock fencing. As noted above, the western boundary of the Norway spruce plantation on the north-east edge of the site is formed by a dry-stone wall embankment (**8**). A similar embankment runs along the edge of the old track (**10**) running east-west between the barns of Craig farm and the pond.

Fauna

Amphibia & Reptiles

4.18 There are no habitats upon the proposed quarry site which would offer suitable habitat for amphibia though it is likely that they may be present in the pond and its surrounding habitat. While there is no ideal extensive reptile habitat, the dry-stone wall embankments on the western edge of the conifer plantation in the north -east of the site and along the old track between Craig farm and the pond may offer summer refuges and winter hibernation sites between the stones (**8 & 10**). The hillside in the north west of the site with reasonably species-rich grasslands and scattered gorses scrub growing on sandy soils (**3**) may also support reptiles such as common lizard or slow worm with numbers possibly depending on the intensity of grazing. Accordingly reptile surveys were undertaken at these two sites. The results are given in Table 5 below.

Table 5. Record of Reptile Surveys

Survey date & time on site	Weather conditions	Results
13/09/22 at 10.15	Intermittent bright sun, 60% cloud cover, strong breeze from the north-west. 13°C	No reptiles observed.
13/09/22 at 17.25	Intermittent bright sun, 50% cloud cover, moderate breeze from the north-west, decreasing. 17°C	No reptiles observed.
19/09/22 at 15.15	Bright, high thin cloud, 95% cover. Hazy sunshine periodically penetrating cloud. Very calm, 14.5°C.	No reptiles observed.
20/09/22	Bright sun, 50% cloud, very calm, 17°C	No reptiles observed.
23/09/22 at 14.15	Sunny intervals, 75% cloud, moderate breeze, 14.5 °C. Previous rain in the morning	No reptiles observed.

Birds

4.19 As noted above the survey, completed in mid-July, was approaching the end of the nesting season when birds become cryptic in their behaviour. The relatively few bird species recorded during the survey included chaffinch, goldfinch, yellowhammer, reed bunting, tree creeper, coal tit, blue tit and great tit, robin, dunnock, wren, blackcap, carrion crow, jackdaw, house sparrow, blackbird and mistle thrush, most of these species associated with woodland edges and the habitats and the Cuttie burn, around the ponds and Craig Farm. Very few species were recorded over the improved pastures that form the core of the proposal site.

4.20 The Craig Farm pond supports a breeding colony of black-headed gulls, estimated to number around 30 pairs breeding on the islands in the centre of the pond. The small sand quarry in the south-west of the site(TN4 Appendix 1) supports breeding sand martins with around 45 – 50 nesting burrows evident though the numbers of birds seen here during the survey suggested that many of these burrows may have been empty. Mallard were flushed from the small areas of open water in the Lochnagab pond.

Protected Mammals

4.21 No signs were found for the presence of red squirrels in the woods on the edge of the proposal site, though this species is recorded as present in the locality according to the biological records. Similarly, no signs of otter or water vole were found. The Cuttie burn appears too small to support a resident population of otter and too shallow to provide optimum habitat for riparian water voles. The wetland habitats on the periphery of the site may provide otters with occasional foraging for amphibia in the two ponds as well as along the burn, together with cover provided by tall-herb vegetation. The survey did not detect signs of, or note good refuges for, pine marten and wild cat.

4.22 Two badger setts have been located on the site, each with a single entrance. One outlier sett has been dug into the hillside on the west-facing slope in the north-west of the site (**3**). During the Phase 1 habitat survey the single entrance, while open, appeared not to have been in very recent use though poaching by cattle may have obscured tracks in the sand at the sett entrance. The other sett on the edge of Firhill Wood showed badger prints in the sand heap at the entrance and lightly-used trails leading away from the sett (**16**). Both appear to be outlier setts, i.e. not in use by breeding females of the clan, and it is assumed that a main sett lies somewhere in the vicinity of the proposal site.

4.23 The repeated site visits in September 2022 for the reptile surveys (see Table 5 above) allowed further monitoring of the hillside sett. Twigs laid in the entrance were repeatedly disturbed and badger prints were finally registered in the sand at the entrance when cattle were absent from this pasture for a few days. It is concluded therefore that this sett is also in in regular use. A “push-under” trail under the stock fence by the Lochnagab shelterbelt indicates that badgers are probably foraging around the pond here.

Bats

4.24 Inspection of the old and veteran beech trees, those remaining in the conifer plantation in the north-east of the site, and the line of old trees west of the Craig Farm pond, noted a number with cavities potentially suitable as bat roosting habitat (**11&12**). A single wych elm in the north-west of the wood also had a hollow in the trunk, another potential roosting site for bats. There are no buildings upon the site which could provide roosts and the open improved grasslands over the majority of the site offer poor foraging habitat. It should be noted, however, that the presence of cattle attract bats to feed on the insects associated with the animals and their dung. The wetlands around the periphery of the site, the Cuttie burn and the two ponds would also provide high-quality foraging sites.

Ecological Evaluation

4.25 Within the core of the site, the greater part of the area which is dominated by improved and semi-improved agricultural pasture is of low ecological interest and the value of this habitat appears not be elevated in any way by the presence of rare, uncommon or protected species. While it was not possible to undertake breeding bird surveys, the dry and mainly evenly grazed pastures would not be considered suitable habitat for birds of open ground, skylark, meadow pipit and waders such as curlew and lapwing and no sign of these species were seen in the pastures during the survey.

4.26 The good semi-improved grasslands in the north west of the site are of interest for their more varied flora, including the presence of wild pansy (**15**), a species included in the Scottish Biodiversity List in view of its national decline. These grasslands with their scattered shrubs and trees would be considered of certain Site value (see Para. 2.14 above).

4.27 Though lying outside the site boundary, the two ponds would be judged of certain Site value and possible Local value for the flora of the Lochnagab wetland in the north while the Craig Farm pond in the south supports a black-headed gull breeding colony. The wet and damp grasslands of the horse paddock around this pond are rather species-poor and considered to be of low ecological value. The ponds with their nearby trees would provide a high quality foraging habitat for bats.

4.28 The small sand quarry in the south-west of the site provides a nesting site for sand martins which adds value at a Site and possibly Local level.

5.0 Assessment of Potential Impact and Proposed Mitigation

5.1 Impacts and potential impacts arising from the proposed quarry comprise the direct and permanent effects of habitat loss from land-take, and indirect effects on fauna and flora outside the site. This section considers the nature and significance of those impacts and, where adverse ecological effects may arise, mitigation measures are proposed.

Habitat Loss & Mitigation

5.2 Permanent habitat loss will arise to progressive land-take for the sand and gravel arisings. This will affect primarily the species-poor improved pastures which is not considered to represent an adverse ecological impact.

5.3 As the quarry extends westwards, around 60-70% of the more species-rich grasslands on the western valley slope of the Cuttie burn and its scattered stands of trees and shrubs will be taken (see Appendix 2). This represents a significant adverse impact but at the Site level only. Appropriate mitigation would be the in-compensation establishment of species rich grasslands elsewhere on the site using topsoils, and hence the seed and vegetative reproductive store within, derived from the slopes and placed on a site for restoration. The success of establishment must be assessed by an appropriate monitoring regime and any

need identified for supplemental planting of wildflower species. Phasing of extraction and restoration should be planned to take account of this requirement and the area of new habitat created should ideally exceed that lost by a factor of 1.5 – 2 times the area. Loss of trees from the valley slope should similarly be compensated for by new plantings. The scope for advance planting of trees and shrubs should be identified, e.g. along the southern boundary of the quarry site where a belt of native trees and shrubs would assist in screening the pond and its wildlife from quarry activities.

5.4 Options for the access road to the quarry are under review. Use of the existing road east of the proposed quarry (Option 3) would minimise habitat loss though any need for road improvements may entail the loss of some of the verge flora. Option 2 passes through the farm buildings and across the western section of the partially wooded paddock grazed by horses. The western option 1 would pass from the road across a large field of improved pasture then enter the land to the west of the Craig Farm pond, the partially wooded paddock grazed by horses. Both options 1 & 2 here would entail the loss of trees, the former would puncture the line of old beech trees west of the pond, some with dead-wood cavities suitable for bats and breeding birds, the latter would require planted ornamentals to be removed. Both options would result in land take from the wet and damp grasslands by the pond which, given the species-poor nature of the plant community, would not be, in itself, regarded as significant. The passage of traffic along these access roads, however, would pose a likely significant disturbance to the fauna of the pond, principally the black-headed gull colony (see below).

5.5 The Lochnagab pond to the north of the site is undergoing gradual succession from open water to swamp though areas of open water do remain in the west of the pond. The excavation of material and the lowering of the ground to the south of the pond may accelerate this trend with the result that the pond will dry out and succeed to terrestrial vegetation. This potential impact should be further informed by hydrographical studies and the option for a new wetland in the restored site explored. A wetland in the valley of the Cuttie burn would offer a relatively sustainable long-term habitat.

Impacts upon Fauna

5.6 The potential for the disturbance of the black-headed gull colony from quarrying activities, in particular the passage of traffic along either of the access options 1 & 2, has been noted above. Adoption of access option 3, using the existing road in the east for quarry traffic would provide the least disturbing option. Screening the pond from the operational quarry with screen bunding and/or advance planting of a tree and shrub screen may reduce the levels of disturbance to wildlife at the pond and it is possible that the gulls would tolerate an attenuated level of visual and noise disturbance from the active quarry.

5.7 It is unlikely that the quarry project would adversely affect any other bird species or species populations with the possible exception of the small sand-martin colony in the sand quarry in the west of the site, depending on how this area of land is used. There is, of course, a distinct possibility that the quarry would offer new sand martin habitat in the cut faces, depending on the nature of the deposits. Occupied faces during the operational life of the quarry would need to be protected during the nesting season and excavation of sand and gravel stocks continued after the birds have completely departed the nesting burrows. There could be a net gain in

the local sand martin population over the life of the quarry. Options to retain some sand faces following decommissioning of the quarry should be considered though without management, erosion usually eventually results in such faces becoming sub-optimal for burrowing into well-protected nesting sites.

5.8 Surveys have indicated that reptiles appear to be absent from the proposal site and therefore no adverse impacts are anticipated on this group of protected species.

5.9 As the quarry extends towards the west-facing slope of the Cuttie burn valley, the badger sett on the valley side will fall within the 30 metres disturbance zone in respect of licencing. The sett appears to lie outside the area proposed for quarrying: accurate measurement of the distance between the sett entrance and the cut face of the quarry to the east will however be required for the licence application. The active sett on the eastern edge of Firhill Wood may come under some more distant disturbance from quarrying activity but will not otherwise be affected. Removal of any active badger sett or works within 30 metres of an active sett must be done under conditions of a protected species licence issued by NatureScot (see: Badgers and licensing | NatureScot). To inform the appraisal process inherent in licencing, further surveys of badger activity at and around the setts wlll be required and the result assessed in the light of final plans for the quarry layout, its access tracks and proposed use of the land within the peripheral areas. In this landscape and with the sett on the west facing slope of the burn valley being a single-entrance used outlier, no further mitigation is likely to be required. The development is therefore considered unlikely to adversely affect the local badger population as long as best practice is followed in the operational quarry in relation to the protection of wildlife. These measures will be outlined in the Species Protection Plan which will be required for the licence application.

5.10 Land-take for the quarry itself is not anticipated to directly affect bats as no good foraging habitat is removed and no roosting sites will be affected, though when the phased excavation affects the trees on the west-facing valley slope of Cuttie burn, then a re-inspection of these trees should be undertaken to ensure that no cracks or hollows have developed in the meantime. The western access option 1 would entail the removal of old beech trees with some tree here showing bat roosting potential (Photographs **11 & 12**). Should this option be adopted, further inspection of any affected trees will need to be undertaken prior to any application for planning determination to find out if bats are seasonally present. Any removal of bat roosting habitat requires that a licence from NatureScot (Bats and licensing | NatureScot) is in place, informed by survey data and a species-protection plan. Where bat roosts are lost, compensation roosts will need to be provided. New bat boxes could result in a net gain of roosting opportunities for bats. All impacts upon bats and their roosts would be obviated by adopting access option 3.

Impact Summary

5.11 The impact assessment and mitigation proposed is summarised in the following table in relation to those receptors of ecological concern.

Table 6. Potential Impacts and Mitigation

Ecological Receptor of conservation concern	Nature of Potential Impact and Probability Level before mitigation	Mitigation & Enhancements	Probability of success	Impact following mitigation	Scale of Significance
Good semi-improved grassland (Phase 1 Habitat B.2.2)	Loss to later phase of quarrying Certain	Compensation. Examine phasing and restoration options in order to establish wildflower grasslands on restored land using topsoils derived from the grasslands under impact.	Moderate to high. May require re-enforcement with additional wildflower seed	Neutral to net gain depending on the area of land that can be restored	**Site**
Lochnagab pond	Risk of de-watering and loss of open-water habitat Uncertain	Examine options for a new wetland in the restored site	High	Net biodiversity gain depending on the area of land that can be restored and conserved as wetland	**Site**
Protected species. Badger. Sett located on west-facing slope down to the Cuttie burn	Potential impacts upon an outlier sett Certain	Monitor sett prior to any disturbance and apply for a badger licence to permit disturbance. Ensure the site is operated with standard measures adopted to protect wildlife	High	Unlikely to be significantly adverse upon the local badger population	**Site: not significant**

Ecological Receptor of conservation concern	Nature of Potential Impact and Probability Level before mitigation	Mitigation & Enhancements	Probability of success	Impact following mitigation	Scale of Significance
Protected species. Bats and roosting sites		Adopt access route option 1 along the minor road east of the site. Otherwise, ensure all potential tree-roosts are surveyed. Where positive results are obtained, compile species protection plan and apply for the NatureScot licence. Compensation roosting sites must be provided	Moderate to high Moderate to High	Unlikely to be significantly adverse upon the local bat population. Bat boxes could provide a net gain in roosting space. Unlikely to be significantly adverse upon local bat populations	**Site**
Protected species: breeding birds – black headed gull	Potential disturbance from quarry traffic and abandonment of existing nesting sites on the Craig Farm pond Uncertain	Option 3 using the existing road for quarry access would limit disturbance. Use screen bunding/plant tree and shrub belt to reduce disturbance from quarrying activity upon the wildlife at the pond	Moderate	Impacts difficult to determine	**Site to Local**

Ecological Receptor of conservation concern	Nature of Potential Impact and Probability Level before mitigation	Mitigation & Enhancements	Probability of success	Impact following mitigation	Scale of Significance
Protected species: breeding birds – sand martins	Loss of nesting site depending on land-use of the small sand quarry	Maintain in current state. Allow nesting in the new quarry with avoidance of extraction at any nesting sites during the breeding season	Potentially high depending on the nature of the deposits	Potentially positive during the life of the quarry	**Site to Local**

6.0 Conclusions & Recommendations

6.1 Virtually all of the site identified for the sand and gravel quarry is dominated by extensive areas of dry improved pastures of very low botanical interest and, under the current grazing regime, a vegetation structure considered unlikely to be attractive to ground nesting birds and foraging bats. Land-take for quarrying in these areas is unlikely to raise any adverse ecological effects in relation to direct loss of habitat. There are peripheral habitats and features of note, however, where further work is required to assess potential impacts.

6.2 The good semi-improved grasslands on the west-facing valley slope above the Cuttie burn has conservation value for the range of plant species present, though considered to be significant at the Site level only. Any loss of this habitat should nevertheless be mitigated to ensure no net loss of biodiversity and to secure, consistent with best practice and planning policy, some measure of net gain. The process of planning the phased extraction of material from the quarry should address the proposal to create new wildflower grasslands in a restored phase of the quarry using topsoils from the good semi-improved grasslands on the valley slope, supplementing the community with planted wildflower seed if necessary. Trees lost from this area should also be replaced by peripheral screens of advance planting.

6.3 A repeat preconstruction survey for badgers must be undertaken prior to any ground disturbance and during subsequent phases of quarry expansion. Where setts remain open upon the site, a badger licence will need to be applied for at the time when quarrying represents a risk of disturbance to the sett. Badgers are otherwise not considered to be under any threat from this development as long as appropriate surveys are completed and best practice is employed on the working site relating to the protection of wildlife.

6.4 Access Option 3 represents the optimum in respect of ecological and potential ecological impact as this minimizes habitat loss and the risk of disturbance to the black-headed gull colony and the potential loss of bat roosts in the beech trees west of Craig Farm pond. Screen fencing and a planted native tree and shrub belt along the southern boundary of the proposal site would assist in reducing visual and to some extent, noise disturbance from the quarry which may otherwise deter the black-headed gulls from nesting.

6.5 There are three areas where further study is required to determine the overall impact of the development:

- Where any trees are lost to the development a detailed assessment must be completed to determine if the tree may support roosting bats. Such surveys should take place prior to the planning application as it is incumbent upon the planners to determine the application in the light of any risk to protected species.

- Potential impacts upon the Lochnagab pond, perched on the edge of the northern boundary of the site would need to be informed by a hydrological study to assess the risks of drawdown of ground water and desiccation of the pond.

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Appendix 1. Phase 1 Habitat Survey & Reptile Sampling Locations

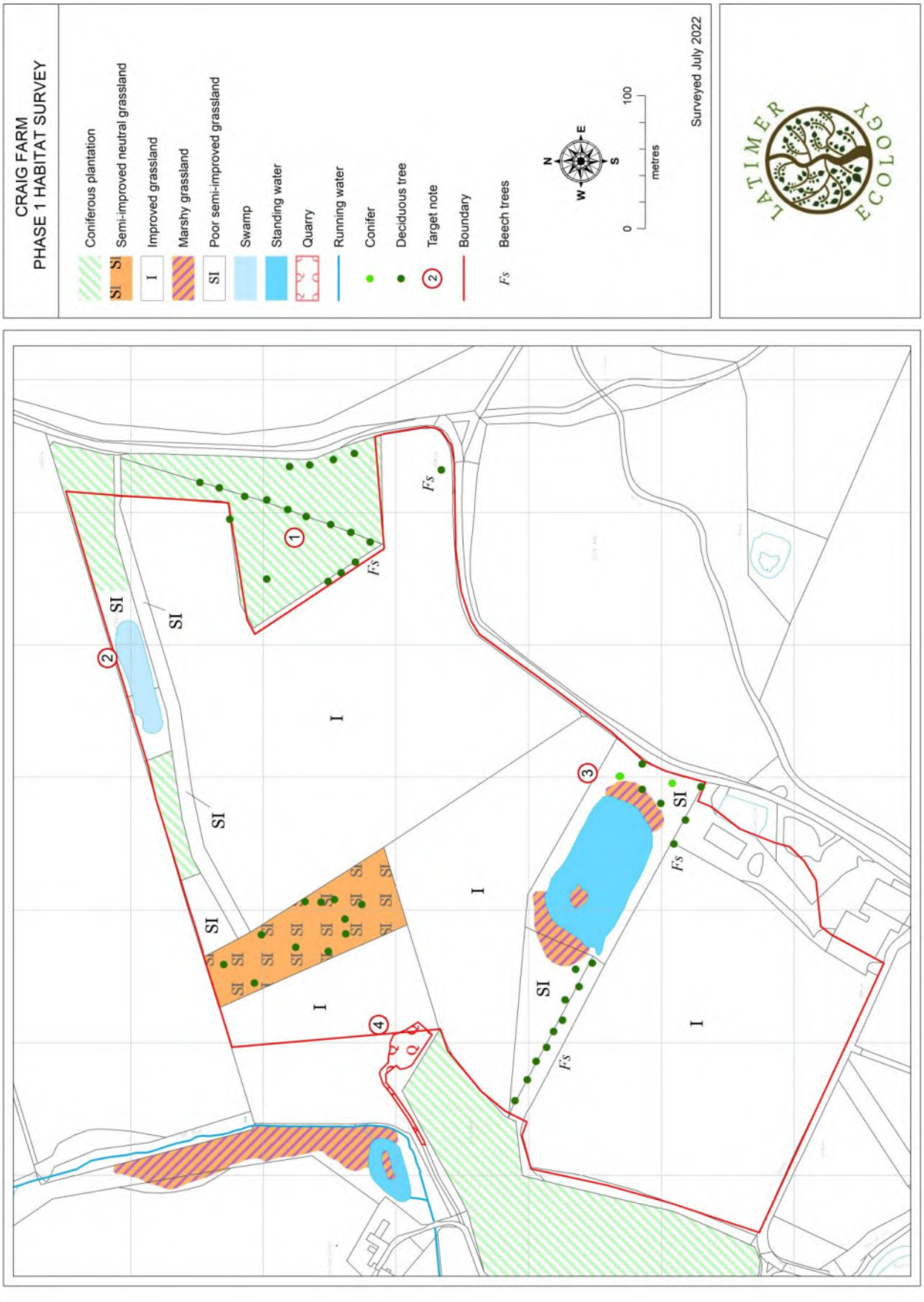
Target Notes:

1. Line of old beech trees, many with deadwood habitat and cavities potentially suitable for roosting bats.

2. Lochnagab pond located in a high saddle of land between two hills. With a predominance of emergent plants, the habitat is coded as swamp but small areas of open water remain.

3. Craig Farm pond. Extensive open water with a black-headed gull breeding colony and small areas of fringing rushes, sedges and yellow flag iris.

4. Small sand quarry with a colony of nesting sand martins. An active badger sett is located nearby on the edge of the Firhill Wood conifer plantation.



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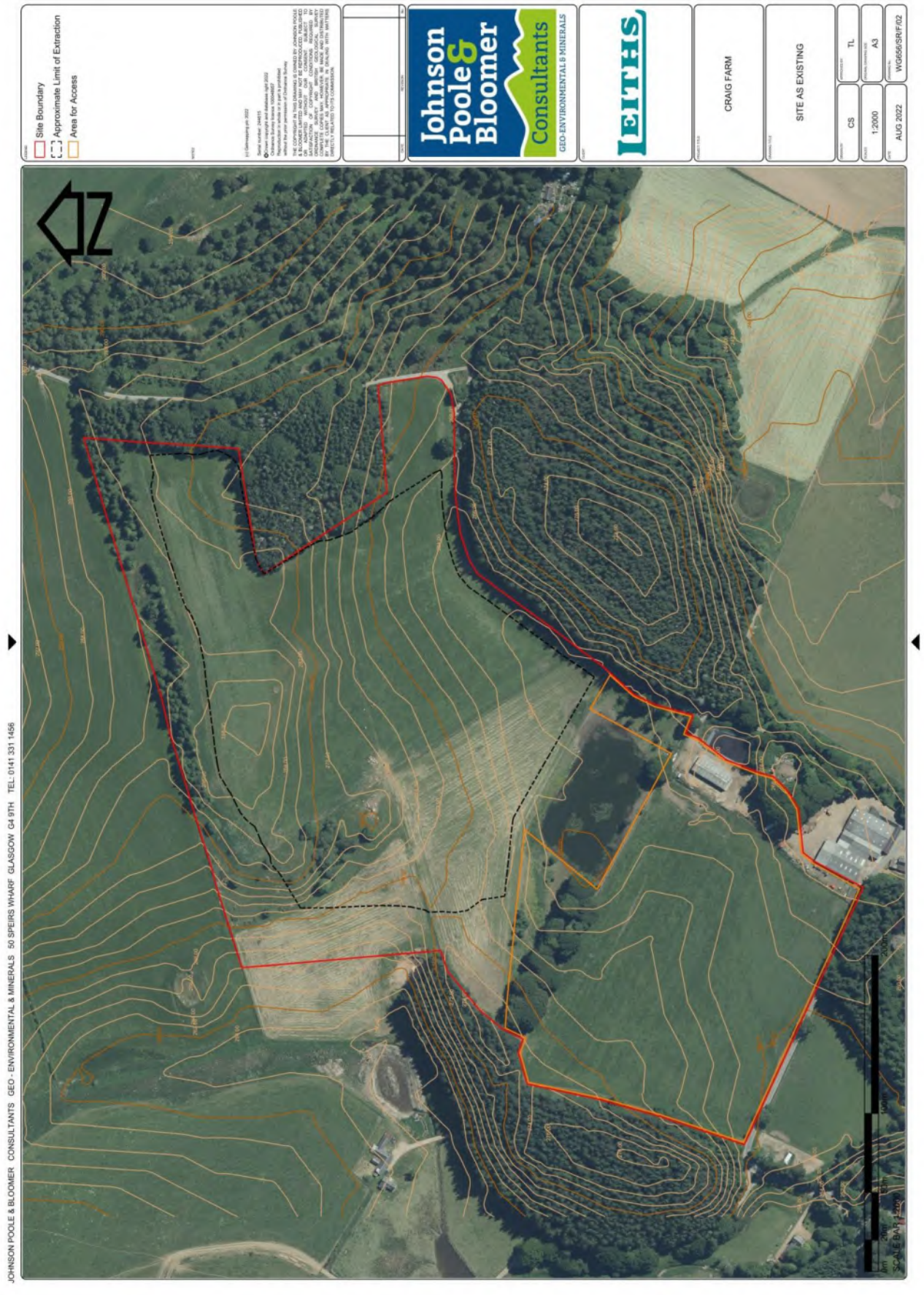
Website: https://www.latimer-ecology.co.uk/

Reptile Sampling Locations - arrowed in blue.

Appendix 2. Site Boundary, Access Area and Proposed Extent of Quarrying.


Site Boundary
Approximate Limit of Extraction
Area for Access
Johnson Poole & Bloomer
Consultants
GEO-ENVIRONMENTAL & MINERALS
CRAIG FARM
SITE AS EXISTING
CS
TL
1:2000
A3
AUG 2022
WG660/SR/F/02
JOHNSON POOLE & BLOOMER CONSULTANTS GEO - ENVIRONMENTAL & MINERALS 50 SPEIRS WHARF GLASGOW G4 9TH TEL: 0141 331 1456

Appendix 3. Site Photographs

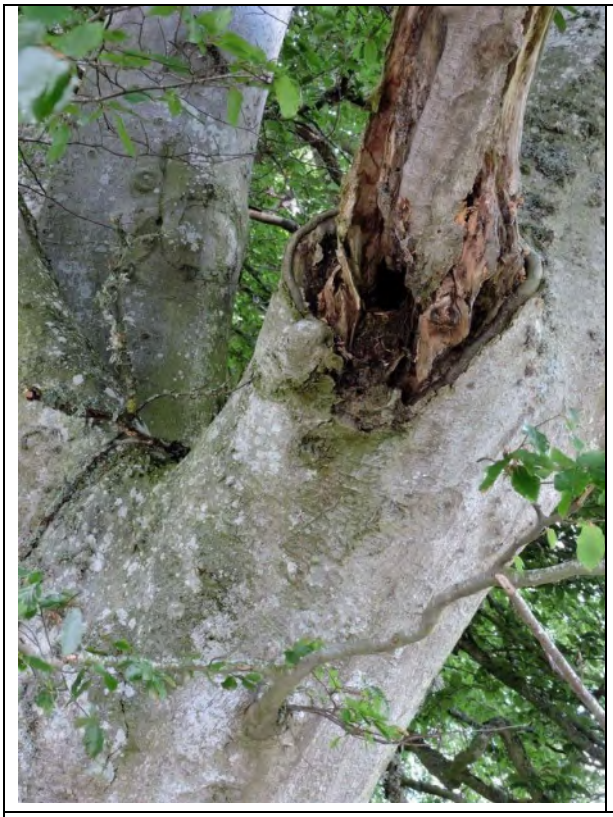
1. Looking northwards across the site to the woods on the north-eastern edge.
2. Looking south from the centre of the site to the pond and Craig Farm.

3. West facing slope descending to the Cuttie burn with a suspected outlier badger sett in left of picture. **4.** Meadowsweet stands along the burn.

5. Cattle drink by the southern reach of the burn with Firhill Wood in the background.
6. Sand martin nesting burrows in the quarry on the edge of the wood

7. Looking northwards along the west-facing valley slope of the Cuttie burn with good semi-improved grasslands, scattered scrub and trees. **8.** Drystone embankment along the north-east boundary of the site, potential reptile habitat.

9. Minor road along the eastern side of the quarry site; number 3 of the Access Options.
10. Looking south from the paddock west of Craig Farm pond along the line of Access Option 1. An old track is supported by a drystone wall, visible in left of picture



11 & 12. Examples of dead-wood habitat in the beech trees, potential bat roosting or bid nesting sites. **13.** Black-headed gulls on Craig Farm pond

14. Lochnagab. Small remnant areas of open water in rush, sedge and marsh cinquefoil stands. **15.** Wild pansy growing in the good semi-improved grassland on the west-facing slope of the Cuttie burn valley

16. Badger sett on the edge of Firhill Wood.

Appendix 4. Biological Records