September 2013

HANSON RESPONSE TO OTHER COMMENTS RECEIVED FROM CONSULTEES

A number of points of clarification and request for further information were received from Consultees following submission of the bird addendum to the original EcIA for an extension of time at Blubberhouses Quarry.

A significant proportion of the comments were concerning the impacts of quarrying on the adjacent SPA/SAC/SSSI. A separate Habitats Regulations Assessment has been provided to deal with the issues concerning the SPA and SAC and to a large degree also the SSSI but there remains a number of other points that are dealt with below.

Points raised were:

1. Lack of details of restoration
2. Impacts at stages within the development
3. Mitigation for impact on notable bird species outwith those of the SPA
4. Loss of BAP habitat
5. Removal, storage and relaying of peat
6. Monitoring
7. Long-term management

1. Restoration

At the moment, the restoration plan is that submitted with the original planning application and attached to the current planning permission. It is agreed that this has now been overtaken by changes in restoration practice and techniques, expectations of the Mineral Planning Authority and statutory consultees and land use policy.

It is thus proposed that in consultation with the MPA, the land owner, statutory consultees and other relevant interested parties a new restoration plan is produced. The plan will be shaped by the requirements of the landowner but also opportunities to produce a more diverse heathland landscape with provision of shallow open water areas and scrapes in particular for use by the waders that are present and encouraged by the managed heathland.

It is expected that the details of the plan would be produced within twelve months of the planning permission being extended.

The overall concept will be to recreate managed heather moorland within which there will be shallow water areas, scrapes, peat filled hollows with surface water inputs and shallow surface clay lined watercourses. Whilst the detailed plan will provide a design for restoration, from experience elsewhere, it is realised that opportunities arise and problems occur and thus the plan will not be a blueprint but subject to change throughout the life of the quarry and beyond that will be agreed by a restoration advisory group comprising representative from the operator, landowner, MPA, Natural England, RSPB and other interested groups e.g. wildlife trust.

2. Development Stages

The table below provides an approximate Phase by Phase loss of land to quarrying and land restored. A finer scale cannot be provided, as year by year depends on the actual annual output from the quarry. Below is also a worst case, as Phase 1 has been for the most part already disturbed but the silt lagoon and lake are used by birds present in the area, particularly the silt lagoon by a range of wader species. This habitat will be present throughout the working of the quarry albeit temporary and at different locations, but up to around 10 years at any of the given locations. The figures given are in hectares.

Quarry Phase	Loss by end of Phase	Remaining at end of Phase	Restored by end of Phase	Total Remaining and Restored
1	6.7	32.4		32.4
2	10.8	21.6		21.6
3	5.8	15.8	6.5	22.3
4	8.4	7.4	9.2	16.6
5	7.4	0	19.8	19.8
Final Restoration	39.1		19.03	39.1

It is during Phase 4 that the amount of habitat available falls to its lowest level around 42% of the land available currently within the extraction area. From the end of Phase 3, land is being restored and thus becomes available for bird use. The species that use the restored land will change as vegetation develops but species such as lapwing and little ringed plover will quickly utilise recently restored ground.

3. Impacts on Notable Birds Outwith the SPA

The assessment of impacts from working of the quarry on the species for which the SPA has been designated is also applicable to the other notable species recorded within and bounding the site. Figure 5 presented in the bird addendum and provided below as Appendix 1 shows the results of the breeding bird survey undertaken in 2012 but with those for red grouse removed; this species is managed as part of the wider grouse moor and so numbers are enhanced as part of the management.

Figure 5 shows that small numbers of five notable species bred within the site in 2012. All but one of these species was recorded breeding in and around the silt lagoon at the south end of the site. The exception was one pair of skylark that bred nearby a watercourse in the north west of the site.

Figure 5 also shows that three pairs of skylark and two pairs of lapwing bred within the SPA between 300m and 600m of the proposed realigned Kex Gill Road at the western boundary of the site. A further three pairs of lapwing bred in the field to the south of the east side of the site and four pairs to the north of the east side of the site.

The habitat favoured by the birds within the site is the bare and sparsely vegetated areas associated with previous quarrying including the silt lagoon. The loss of this preferred breeding habitat within the site is small but it is recognised that similar habitat is not present in the immediate wider area. However, this habitat will be present throughout working of the

quarry, albeit temporary and at different locations but up to around 10 years at any given location. It is expected that these species will quickly adapt to the new habitat and utilise it, as they appear to do at many quarries where this habitat is present.

Similarly, the loss of foraging habitat is not expected to be significant, given that large siltation areas will be present throughout the working of the quarry.

4. BAP Habitat

The original ES recognised that approximately 30ha of these habitats will be lost to quarrying over an approximate 20 year period but that the restoration proposals included progressive restoration of heathland from Phase 3 onwards and concluded that there would be no overall loss of these habitats in the long term.

It is accepted that there will be progressive short-term loss and other than changes to local management on similar habitat on the wider estate, there is not much scope to enhance or provide alternative habitat in the interim. The moor will continue to be managed for grouse but the landowner is committed and signed up to undertake this sympathetically for nature conservation and most of the land is now under HLS agreements.

The depth of peat remaining over much of the site means that most of the vegetation would be described as dry heath not blanket bog and much of the east side of the road in particular is subject to regular burning to maintain a cycle of heather dominated stands of varying age. Restoration of heather dominated vegetation is relatively straightforward and relies on tried and trusted techniques used over many years including restoration of heather moorland both following extensive damaging fires (e.g. North York Moors 1976) and following quarrying (e.g. quarries in Dorset and silica sand in Scotland), mining (e.g. opencast in Staffordshire and South Wales) and installation of utilities (e.g. gas and oil pipelines).There is also evidence from Blubberhouses quarry itself where trials were established as part of the original planning permission. A visit to the Site in 2011 showed that stands of heather have been successfully established either solely from the seed bank of soil spread over bunds or following applications of heather brash cut from adjoining moorland.

The conclusion remains that there will be loss of BAP habitat whilst quarrying is undertaken but that provided an up to date specification is written for the restoration of these habitats, there is no reason not to expect re-establishment to be successful. There is a commitment following granting of planning for a re-design of the restoration that will include opportunities for creation of a more diverse moorland landscape through incorporation of features that are restricted currently to the areas that have been worked but not restored e.g. shallow water areas with bare scrapes and draw down margins and features that are currently limited in extent e.g. bog pools with *Sphagnum* and common cotton grass and scrubby woodland along valley features.

5. Peat

The peat has a median thickness of 28cm west of the Kex Gill road and 46cm east of the Kex Gill road. The soil scientist who undertook the survey advised that the peat could be stored in shallow (1.5m height) mounds without any detriment to the peat. Approximately 46000m^3 will require storage but the peat from around 20ha will be available to be placed directly to bed for restoration. This means that the large majority of the peat resource will be stripped and re-laid the same day.

The environmental management plan that will be produced as part of the extension of permission will include a detailed peat resource inventory and a schedule of stripping, storage and replacement along the lines of but obviously less complex than the plans submitted for windfarm developments (see Appendix 2).

6. Monitoring

There is a commitment to monitoring throughout the life of the quarry and subsequent aftercare. This will include any period between granting of the extended permission and commencement of quarrying operations.

As a minimum because of the SPA and bird interest, bird surveys will be undertaken every three years starting in spring 2014 of the area covered by the 2012 breeding bird survey up to commencement of working, which is likely to be some years hence. The survey will comprise the Brown and Shepherd methodology (Brown, A.F. & Shepherd, K.B., 1993) for surveying upland waders, as this is the most applicable for the notable species recorded. This will involve three visits (early, mid and late season) to record birds along transects surveyed in 2012.

Once quarrying commences, the surveys will be increased to annually across the same area until lost to quarrying. Restored areas will be included, as the site develops.

Other features are less critical to be monitored until such time as quarrying is due to commence. It is proposed that twelve months prior to commencement a survey of the vegetation within the site and up to 500m into the SAC is undertaken to provide an up to date baseline of the condition of the habitats. This information will be used to monitor any effects of quarrying on areas within the SAC and to provide information on areas within the site that can be utilised to provide source material for restoration. Throughout the life of the quarry, the survey within the SAC will be repeated every three years and will use the appropriate Condition Site Monitoring protocol used by NE to monitor the condition of habitats within SACs and SSSIs.

Once restoration commences, an annual walkover will be undertaken to record development of the vegetation and provide information for management such as weed control and ultimately grazing. The walkover is likely to continue for a minimum five-year period or until such time as the vegetation is considered to have established, at which time it will be included in the management of the wider moorland.

7. Long-term Management

A management plan that covers the planning permission area could form part of the commitments in a Section 106 agreement which would accompany the grant of planning permission for the extension of time.

On completion of the Section 106 agreement and grant of planning permission Hanson shall implement the management plan during an initial 5-year period and this will be updated on a 5-year cycle in consultation with a restoration working group /management committee.

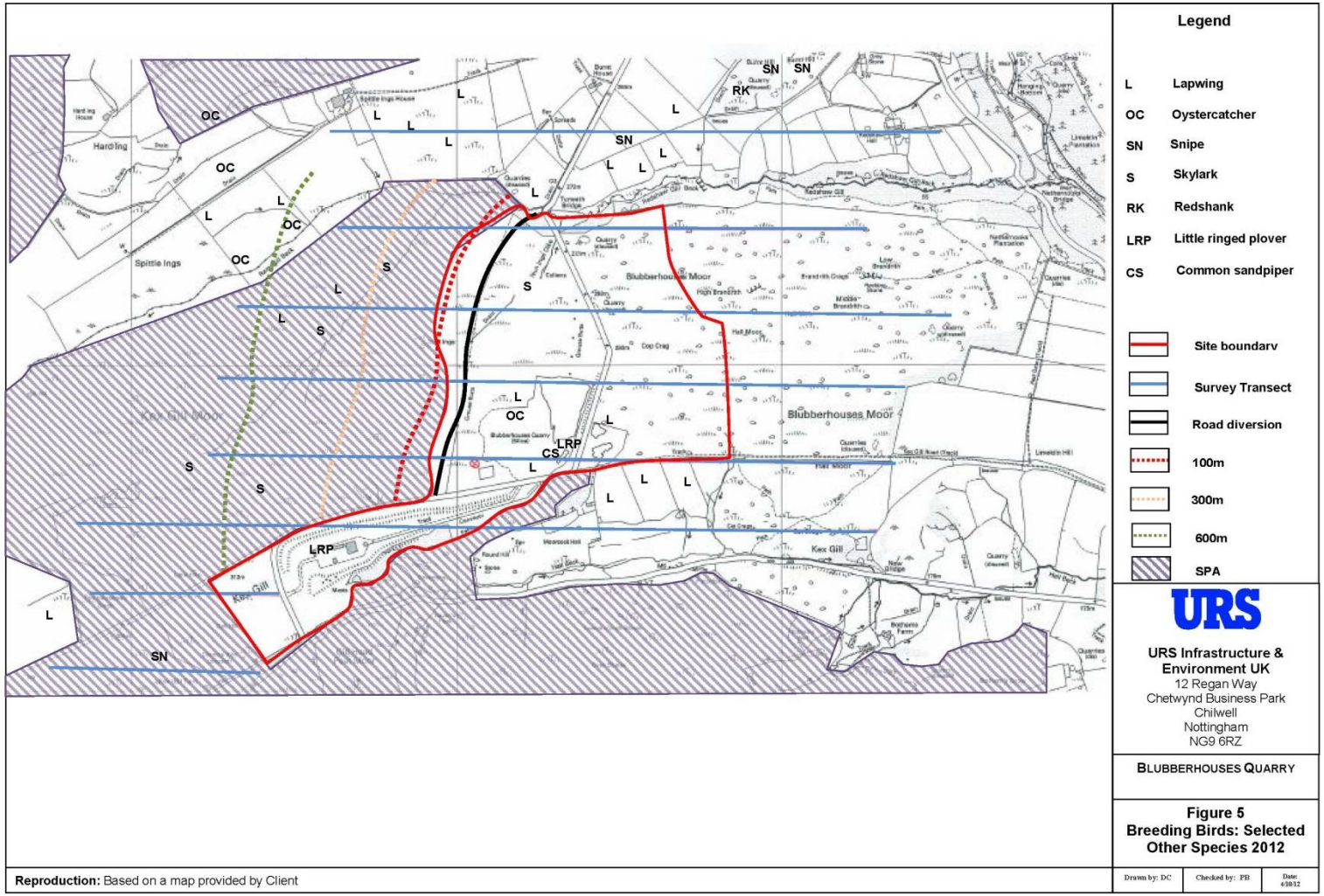
The submission of 5-year plans will run continuously for the life of the planning permission (25 years) and for a 10-year period beyond the standard 5-year aftercare period.

During the extraction, restoration, aftercare and long term management period an annual report will be submitted to the NYCC which will detail works undertaken during the previous and next 12 months, and set out the results of monitoring and development of habitats.

Hanson and the landowner (where applicable) shall aim to manage and maintain the land in accordance with the principles and objectives contained in the management plan having regard to the advice provided by the management committee.

APPENDIX 1

Figure 5: Breeding Birds Recorded in 2012



APPENDIX 2

SCOPE OF PEAT MANAGEMENT PLAN

While there are no defined requirements for the layout or content of a Peat Management Plan, the following provides a guide to what should be considered when preparing such a plan:

Subject	Aspects to be addressed within peat management plan
Peat Conditions	Briefly describe the peat conditions on site and how this was determined (with reference to EIA if necessary).
Excavation and re-use volume estimates and reuse requirements	Provide detail on what activities will generate volumes of peat and the expected / estimated volumes. Identify where and what volumes of material are required for reinstatement and landscaping purposes (e.g. alongside road verges and reinstatement of other infrastructure).
Classification of excavated material	Consider the likely physical nature of the material and confirm it will be suitable for the reuses proposed.
Use of peat in restoration	Provide information on intended final restoration profile and method statement for how this is to be achieved, the likely volumes of material required to and where the material is to be sourced. Demonstrate that any restoration materials are suitable and are required to meet the restoration profile and objectives. If specific habitat management objectives are applicable, describe how these objectives are to be met. Confirm borrow pit design has taken account of medium and long term restoration objectives relating to habitat and environment. Restoration should be achieved without requiring any further material treatment.
Handling excavated materials	Describe how excavated soils and turves will be handled so as to avoid cross contamination between distinct horizons and ensure reuse potential is maximised. For example, the storage time for peat turves should be minimised and turves should only be used for surface restoration.
Temporary storage	Describe construction phasing and programme and intended methods of handling and holding of all excavated materials, including peat. It is desirable to keep haul distances of excavated peat as short as possible in order to minimise the potential impact on its structure. It is important that temporary storage is safe and keeps the material suitable for its planned reuse. Identify areas for any temporary storage areas required for peat, taking into account constraints and mitigation requirements identified in the EIA and existing peat slide/stability reports. Describe any intended drainage, pollution prevention and material stability mitigation measures that may be required. When planning the temporary storage areas any additional disturbance areas should be minimised.

URS

Blubberhouses Quarry Habitat Regulations Assessment

September 2013

49343426

Prepared for:

- Hanson Aggregates

UNITED KINGDOM & IRELAND

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1 Introduction

URS was appointed by Hanson Aggregates to produce a report to inform a Habitats Regulations Assessment (HRA) of the Proposed Development at Blubberhouses Quarry (the Site).

The UK is bound by the terms of the Habitats Directive (92/43/EEC). Under Article 6(3) of the Habitats Directive, an appropriate assessment is required where a plan or project is likely to have a significant effect upon a European Site, either individually or in combination with other projects. The Directive is implemented in the UK by the Conservation of Habitats and Species Regulations 2010 (as amended) (the Habitats Regulations).

The objective of this Report is to identify any aspects of the Proposed Development that would be likely to lead to significant effects upon any sites afforded protection under the Habitats Regulations. In the UK, this comprises Special Areas of Conservation (SACs), candidate Special Areas of Conservation and Special Protection Areas (SPAs). In accordance with Government policy, assessment is applied to sites designated under the Ramsar Convention as Wetlands of International Importance (Ramsar sites) and potential SPAs. These sites are referred to collectively in this Report as "European Sites".

The purpose of this Report is to enable North Yorkshire County Council in its capacity as competent authority to carry out an HRA and to enable the Secretary of State in its capacity as Examining Authority to make an 'Appropriate Assessment' of the implications for a European Site, in view of that site's conservation objectives.

This Report has avoided reproducing extensive information already presented in the original ES and the Bird Addendum submitted in October 2012 but does include the breeding bird maps from 2011 and 2012 (Appendix 1); Vantage Point maps now produced for the 2011 data and a data table (Appendix 2); re-presents the 2012 maps including modifications to improve presentation and a data table (Appendix 3). Also presented is data on noise and vibration not available previously in the ES and 2012 Addendum (Appendix 4).

2 Legislative Context

The need for an assessment of impacts on Natura 2000 sites is set out within Article 6 of the Habitats Directive, and transposed into UK law by the Habitats Regulations. The ultimate aim of the Habitats Directive is to *"maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest"* (Article 2(2)). This aim relates to habitats and species, not the European Sites themselves, although the European Sites have a significant role in delivering favourable conservation status.

The Habitats Directive applies the precautionary principle to European Sites. Consent should only be granted for plans and projects once the relevant competent authority has ascertained that there will be no adverse effect on the integrity of the European Site(s) in question. Where an appropriate assessment has been carried out and results in a negative assessment, or if uncertainty remains over the significant effect, consent will only be granted if there are no alternative solutions and there imperative reasons of over-riding public interest (IROPI) for the development and compensatory measures have been secured.

In order to ascertain whether or not site integrity will be affected, an assessment should be undertaken of the plan or project in question. The competent authority is entitled to request the applicant to produce such information as the competent authority may reasonably require for the purposes of the assessment, or to enable it to determine whether an appropriate assessment is required.

This Report has been produced in accordance with Regulation 5 (2)(g) of the 2009 Regulations, European Commission guidance on Appropriate Assessment and Planning Inspectorate Advice Note 10: Habitat Regulations Assessment.

Box 1. The legislative basis for Appropriate Assessment

Habitats Directive 1992

Article 6 (3) states that:

"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives."

Conservation of Habitats and Species Regulations 2010

The Regulations state that:

"A competent authority, before deciding to ... give any consent for a plan or project which is likely to have a significant effect on a European site ... shall make an appropriate assessment of the implications for the site in view of that sites conservation objectives... The authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site".

Over the years, 'Habitats Regulations Assessment' has come into wide currency to describe the overall process set out in the Habitats Regulations from screening through to identification of Imperative Reasons of Overriding Public Interest (IROPI). This has arisen in order to distinguish the overall process from the individual stage of "appropriate

assessment". Throughout this Report we use the term HRA for the overall process and restrict the use of Appropriate Assessment to the specific stage of that name.

Planning Inspectorate Advice Note 10 states that where other consents are being obtained under other regulatory regimes, consideration should be given to the likelihood of the other consent being granted. Timing should also be considered and the impact this may have on the examination of the Planning Application and the preparation of its appropriate assessment.

3 Physical Scope of the Assessment

There are no European Sites that lie within the Site Boundary. However, the following listed sites do lie within 10km of the Site:

- North Pennine Moors SPA & SAC – located adjacent to the western boundary of the Quarry and a small spur adjacent to the south east boundary of the Plant Site;

Using the authors professional judgment and that of Natural England and other consultees, it is considered that impacts stemming from potential loss of foraging habitat and disturbance - are possible with regard to the SPA due to its close proximity to the Site and hydrological impacts with regard to the SAC. Figure 1 shows the location of the European Sites in relation to the Site.

Candidate sites of statutory designations were included within the search, but none are present within the search area and have not therefore been included within this HRA.

4 Methodology

4.1 Introduction

This section describes the process involved in HRA.

In practice, HRA of projects can be broken down into four discrete stages, each of which effectively culminates in a test. The stages are sequential, and it is only necessary to progress to the following stage if a test is failed. The stages are:

- Stage 1 – Likely Significant Effect Test;
- Stage 2 – Appropriate Assessment; and
- Stages 3 and 4 – Assessment of Alternative Solutions and Imperative Reasons of Overriding Public Interest Test.

4.2 Data Collation Methodology

Baseline data for the European Sites covered in this assessment is derived from the Natura 2000 data sheets, citations for the constituent Sites of Special Scientific Interest (SSSI), the Joint Nature Conservation Committee website (www.jncc.gov.uk) and the Multi Agency Geographical Information for the Countryside (MAGIC) website **(magic.defra.uk)**. Information concerning the general sensitivity of waders to disturbance derives from the published literature as cited throughout this Report and noise assessments that have been undertaken for this report.

4.3 Consultation

There has been two written responses from Natural England; the first to the original ES and the second in response to the submission of the Bird Addendum. There has also been a site visit in March 2012 to agree the further survey work undertaken in 2012 and presented in the Bird Addendum and a meeting on the 22nd April 2013 to discuss with NE, North Yorkshire County Council, the RSPB and Yorkshire Wildlife Trust, the scope of further material to demonstrate that there are no significant impacts on the conservation status of the SPA and SAC.

4.4 Stage 1 – Likely Significant Effect Test

This is essentially a risk assessment, typically utilising existing data, records and specialist knowledge. The process involves identifying the likely impacts of a project upon a European Site, either alone or in combination with other plans and projects, and considering whether the impacts are likely to be significant. The purpose of the test is to decide whether 'full' Appropriate Assessment is required.

If it can be demonstrated that significant effects are unlikely, no further assessment is required.

4.5 Stage 2 – Appropriate Assessment

If it cannot be satisfactorily demonstrated that significant effects are unlikely, a full "Appropriate Assessment" will be required. This involves the consideration of the impacts on the integrity of the European Site, either alone or in combination with other plans and projects, with regard to the site's structure and function and its conservation objectives. Where there are adverse impacts, an assessment of mitigation options is carried out to

determine the adverse effect on the integrity of the site. If these mitigation options cannot avoid any adverse effect, or mitigate it to such an extent that it is no longer significant, then development consent can only be given if an assessment of alternative solutions is successfully carried out or the IROPI test is satisfied.

In many ways, this is analogous to an Ecological Impact Assessment, but is focussed entirely upon the designated interest features of the European Sites in question. Bespoke survey work and original modelling and data collation are usually required. The essential question here is:

"Will the project, either alone or in combination with other relevant projects and plans, actually result in an adverse effect upon the integrity of any European Sites, without mitigation?"

Unlike standard Ecological Impact Assessment, compensation for adverse effects (i.e. creation of alternative habitat) is not permitted at the Appropriate Assessment stage.

4.6 Stages 3 and 4 – Assessment of Alternatives and Imperative Reasons of Overriding Public Interest (IROPI) Test

If a project will have a significant adverse effect upon a European Site, and this effect cannot be either avoided or mitigated, the project cannot proceed unless it passes the IROPI test. In order to pass the test, it must be objectively concluded that no alternative solutions exist. The project must be referred to the Secretary of State on the grounds that there are Imperative Reasons of Overriding Public Interest as to why the project should nonetheless proceed. Potential compensatory measures needed to maintain the overall coherence of the site or integrity of the European Site network must also be considered.

4.7 Other Plans and Projects

It is a requirement of the Habitat Regulations that the impacts of the project being assessed are not considered in isolation, but where necessary are considered in combination with other plans and projects that may also affect the European Site(s) in question. The purpose of the in combination assessment is to identify situations, whereby several projects/plans may each independently have an effect that is unlikely to be significant, but when they are considered together may result in a cumulative effect that is significant.

5 Impact Pathways

There are essentially three impact pathways that require consideration given the European Sites concerned and the type and location of the Proposed Development. These are loss of foraging habitat and disturbance to bird species for which the SPA site is designated and changes in hydrology resulting in a reduction in quality or changes in the vegetation types for which the SAC site is designated.

Seasonal influences of relevance are limited, as the bird species for which the SPA was designated all relate to breeding populations and not over wintering or passage.

This HRA has covered all impact pathways arising from the Proposed Development whether direct, indirect, temporary, permanent or cumulative.

5.1 Disturbance of Birds

Human activity can affect birds either directly (e.g. through causing them to flee) or indirectly (e.g. through damaging their habitat). The most obvious direct effect is that of immediate mortality such as death by shooting, but human activity can also lead to behavioural changes (e.g. alterations in feeding behaviour, avoidance of certain areas etc.) and physiological changes (e.g. an increase in heart rate) that, although less noticeable, may ultimately result in major population-level effects by altering the balance between immigration/birth and emigration/death[1].

Quarry sites can share many noise and visual disturbance issues (e.g. heavy vehicle movements and loud machinery) with other industrial operations. The degree of impact that varying levels of noise will have on different species of bird is poorly understood. However, a number of studies have found that an increase in traffic levels on roads does lead to a reduction in the bird abundance within adjacent hedgerows - Reijnen et al (1995) examined the distribution of 43 passerine species (i.e. 'songbirds'), of which 60% had a lower density closer to the roadside than further away. By controlling vehicle usage they also found that the density generally was lower along busier roads than quieter roads[2]. Disturbance and displacement from feeding areas has been demonstrated with regard to wintering geese[3], curlew and hen harriers[4].

Further research in Holland has shown displacement of birds (not waders) at varying distances based on traffic flows[5]. This paper presented evidence using grassland bird data collected over five-years that 3000 - 8000 vehicles/day had no significant impact; 8000 - 15000 vehicles/day breeding was reduced up to 400m and 15000 30000 vehicles/day breeding was reduced up to 700m.

There is also recent research that shows upland waders are very tolerant of human disturbance[6]. Golden plover and Dunlin showed no significant reduction in breeding success close to a footpath used by walkers when there was a defined route.

The sensitivity of wildlife to the noise of roads and aircraft varies greatly from species to species. However, road and airport/aircraft noise can cause some wildlife – notably a

[1] Riley, J. 2003. Review of Recreational Disturbance Research on Selected Wildlife in Scotland. Scottish Natural Heritage.
[2] Reijnen, R. et al. 1995. The effects of car traffic on breeding bird populations in woodland. III. Reduction of density in relation to the proximity of main roads. Journal of Applied Ecology 32: 187-202
[3] Langston, R.H.W & Pullan, J.D. (2003). Effects of Wind Farms on Birds: Nature and Environment No. 139. Council of Europe.
[4] Madders, M. & Whitfield, D.P. 2006. Upland raptors and the assessment of wind farm impacts. Ibis 148 (Suppl. 1), 43-56.
[5] Road Traffic and Nearby Grassland Bird Patterns in a Suburbanising Landscape Richard T T Forman, Bjorn Reineking, Anna M Hersperger Environmental Management (2002) Volume 29 Issue 6 Pages 782 - 800
[6] Testing the Effects of Recreational Disturbance on Two Upland Breeding Waders J.W. Pearce Higgins, S.K Finney, W. Yalden & R.H.W Langston (2007) IBIS Volume 149 Issue supplement S1 pages 45 -55

range of grassland and woodland birds - to avoid areas near them, reducing the density of those animal populations[7]. Elsewhere, reduced breeding success has been recorded.

A review of the effects of highway noise on birds[8] recommended a guideline noise level of 55dBA below which there is no discernible effect on bird behaviour.

Disturbing activities are on a continuum. The most disturbing activities are likely to be those that involve irregular, infrequent, unpredictable loud noise events, movement or vibration of long duration. Birds are least likely to be disturbed by activities that involve regular, frequent, predictable, quiet patterns of sound or movement or minimal vibration. The further any activity is from the birds, the less likely it is to result in disturbance.

The factors that influence a species response to a disturbance are numerous, but the three key factors are species sensitivity, proximity of disturbance sources and timing/duration of the potentially disturbing activity.

It has been shown that, in some cases, the most easily disturbed birds simply move to other feeding sites, whilst others may remain - possibly due to an absence of alternative sites - and thus suffer greater impacts on their population[9]. A literature review undertaken for the RSPB[10] also urges caution when extrapolating the results of one disturbance study because responses differ between species and the response of one species may differ according to local environmental conditions. These facts have to be taken into account when attempting to predict the impacts on European Sites.

The distance at which a species takes flight when approached by a disturbing stimulus is known as the 'tolerance distance' - also called the 'escape flight distance' - and differs between species to the same stimulus and within a species to different stimuli.

There is relatively little clear information in the literature concerning flushing distances of the birds for which the SPA site is designated but there is empirical evidence from the surveys undertaken in 2011 and 2012 at the Site that curlew bred within 100m of the edge of the Kex Gill Road and birds have been observed sitting on fence posts as cars pass along the road. Casual observations over a number of years at hard rock and sand and gravel quarries has shown that many species of bird quickly habituate to the activities on sites and quite happily co-exist utilising lagoons, sand piles, areas of bare ground and rock faces for breeding and foraging.

5.2 Loss of Foraging Habitat for Birds

A literature review to assess the connectivity of a number of bird species of conservation interest to SPAs was undertaken in 2011 and the species included curlew and golden plover[11].

[7] Kaseloo, P. A. and K. O. Tyson. 2004. Synthesis of Noise Effects on Wildlife Populations. FHWA Report.

[8] Dooling, R.J & Popper, A.N. 2007. The Effects of Highway Noise on Birds. Report for the California Dept of Transportation, Sacramento by Environmental BioAcoustics LLC, Rockville.

[9] Gill et al. (2001) - Why behavioural responses may not reflect the population consequences of human disturbance. *Biological Conservation,* **97**, 265-268

[10] Woodfield & Langston (2004) - Literature review on the impact on bird population of disturbance due to human access on foot. *RSPB research report* No. 9.

[11] Pendlebury, C., Zisman, S., Walls, R., Sweeney, J., McLoughlin, E., Robinson,C., Turner, L. & Loughrey, J. (2011). Literature review to assess bird species connectivity to Special Protection Areas. *Scottish Natural Heritage*

5.2.1 *Golden Plover*

The review found from the literature that golden plover had a mean area for foraging of 106ha ± 92ha and a range of 14ha to 393ha.

From the literature mean distances between nests for different density situations were found to be less than 250m at very high densities (>10 pairs km-2); 450 - 850m at moderate densities (1.5 to 4 pairs km-2); and greater than 1650m at very low densities (0.5 pairs km-2).

A study in the South Pennines found that golden plover chick home ranges included a greater proportion of cotton grass and bare peat. The habitat choices of chicks also shifted slightly with age, with younger chicks tending to use cotton grass habitats more, and older chicks tending to make more use of crowberry and bilberry habitats.

The review found that chicks, prior to fledging at around 37 days, occupied mean home ranges of 40ha (range: 18.3 to 86.2ha) and that this is equivalent to a distance of 350m (range: 240 to 520m). Another study quoted found that broods were able to move large distances, e.g. 700m in 24 hours, after disturbance by humans, whilst another found that birds moved progressively further away from the nest site as the chicks developed: 300 ± 100m from the nest in the first ten days after hatching; and up to 450 ± 240m during days 21-30 days after hatching.

Mean distance for foraging flights was found from a number of studies to be approximately 0.4km to 10.7km.

5.2.2 *Curlew*

The review found that curlews tend to forage within 0.5 and 1km of nest sites but with regular foraging up to 1.5km. It also reported that a study in Upper Teesdale found that first-year burned areas were used as nesting habitat at a greater frequency than would be expected based on the availability of this habitat.

The same study found that chicks showed a preference for first-year burned areas, as well as *Juncus effusus* flush, based on a greater use of these habitats than would be expected based on their availability. Also, chicks tended to move between 100m - 490m from the nest.

5.3 Changes in Hydrological Regime

Changes in groundwater and/or surface water supply to sensitive plant communities can lead to loss of particularly sensitive species or wholesale changes in community type. Most of the water available to plants is situated within 2m of the ground surface, which is related to rooting depth.

Water can be provided by rainfall, which falls onto the ground and then infiltrates the soil to depths determined by the soil moisture capacity of the soil type and the depth of the water table. This can be a true water table determined by depth to groundwater or a false water table determined by the depth to an impermeable layer. Water can also be provided by the water table, the depth to which can vary seasonally or fluctuate more frequently depending on rainfall.

Quarry working can impact on both surface and groundwater levels. A reduction in surface water supply can result from a loss of land upslope from the sensitive vegetation or a reduction or increase in surface water resulting from disruption to surface water patterns. Quarry working can also lead to a reduction in groundwater levels, as a result of

creating a void into which the groundwater flows or from pumping the workings to enable quarrying.

The vegetation in the SAC within 500m of the quarry boundary is dominated by heather over peat, much of which is managed as grouse moor but with areas of acid grassland and wetter patches where surface water lodges in the peat or is associated with surface water seepages and small watercourses. The major vegetation type is Blanket Bog, which is akin to the National Vegetation Community M19 *Calluna vulgaris - Eriophorum vaginatum*. The blanket bog is degraded currently because of regular management by burning. Blanket Bog is vegetation that develops where there is high rainfall and low evapo-transpiration and fed entirely by precipitation (ombrogenous), which differentiates them from fens, which receive inputs from groundwater.

5.4 Dust and Lighting

Dust is defined in BS 6069:1994[1] as particulate matter with a diameter in the size range 1-75 µm (microns)[12]. Effects from dust arise when it is deposited on surfaces and deposition of large amounts of dust can affect vegetation in two ways; physical smothering leading to a reduction in growth through restricting light on the leaves and also restricting transpiration of water off the leaves and chemical induced changes on the above parts of plants or changes to the pH and/or nutrient status of the soil.

Dust will be generated during soil stripping operations, blasting, excavating and transporting mineral and during restoration following quarrying.

The principle airborne emissions from Site, with the potential to cause impacts beyond the site boundary, are fugitive emissions of dust from the Quarry's operational processes and restoration activities. Other related emissions include nitrogen dioxide (NO_2) from vehicle movements associated with the operational quarry.

There is some evidence within the scientific literature that dust deposition rates of between 100 - 200 mg/m$_2$/day could represent the threshold at which complaints from receptors might be generated and these values have been applied at mineral extraction sites[13]. Significant impacts on vegetation are unlikely to occur at deposition rates of less than 1000 mg/m^2/day[14].

Any dust incidents are highly dependent upon local weather, with extended periods of dry weather combined with winds blowing from the source of dust to the receptor being the conditions that significant dust related impacts are most likely to occur. These conditions would need to be combined with an activity creating dust close enough to the receptor for increases in dust soiling rates to be perceptible. However, this would only be the case when there is an inadequate application of the mitigation measures being employed on site.

It is possible that vegetation may be affected by the deposition of dust at rates that exceed the baseline conditions within 25m of quarrying operations. However, the deposited material would be composed of peat or sand like particles that are unlikely to harm vegetation, and any material that settles on vegetation would be readily displaced during periods of precipitation. The deposition of dusts of this type would not significantly affect local vegetation.

[12] British Standards Institute BSI (1994), British Standard 6069 (Part 2) Characterisation of Air Quality – Glossary.

[13] Vallack H W and Shillito D E (1998), Suggested Guidelines for Deposited Ambient Dustfall. Atmospheric Environment, Vol. 32, pp. 2737 – 2744.

[14] Highways Agency (2007), Design Manual for Roads and Bridges (DMRB) – Part 1, HA 207/07, Volume 11, Section

6 Likely Significant Effects: North Pennine Moors SPA

6.1 Introduction

The North Pennine Moors SPA encompasses a number of SSSIs across four counties; Cumbria, Durham, North Yorkshire and Northumberland and is a very large site; approximately 147,000ha. The SPA includes parts of the moorland massif between the Tyne Gap (Hexham) and the Ribble-Aire corridor (Skipton). It encompasses extensive tracts of semi-natural moorland habitats. The site is of European importance for several upland breeding species, including birds of prey and waders. The southern end of the SPA is within 10 km of the South Pennine Moors SPA which supports a similar assemblage of upland breeding species.

The Constituent SSSI relevant to the Site and the HRA is West Nidderdale Barden and Blubberhouses SSSI (13,418ha) and is designated because it is important for heather moorland, blanket bog vegetation and breeding bird populations.

6.2 Features of European interest

The North Pennine Moors SPA qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European Importance of the following species on Annex 1 of the Directive during the breeding season:

- Golden Plover *Pluvialis apricaria*, 1,400 pairs representing at least 6.2% of the breeding population in Great Britain
- Hen Harrier *Circus cyaneus*, 11 pairs representing at least 2.2% of the breeding population in Great Britain (Estimated population)
- Merlin *Falco columbarius*, 136 pairs representing at least 10.5% of the breeding population in Great Britain
- Peregrine *Falco peregrinus*, 15 pairs representing at least 1.3% of the breeding population in Great Britain

The site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species during the breeding season:

- Curlew *Numenius arquata*, 3,930 pairs representing at least 3.3% of the breeding Europe - breeding population (1992/3/4 survey)
- Dunlin *Calidris alpina schinzii*, 330 pairs representing at least 3.0% of the breeding Baltic/UK/Ireland population (Estimate based on 92-94 counts)

6.3 Historic Trends and Current Conditions

During the most recent condition assessment of the SSSI units that underpin the SPA within 2km of the Site (see Table 1 below) the relevant constituent parts of the SPA are all classed as unfavourable but in recovering condition. The unit immediately to the west of the Site is Unit 10.

TABLE 1: Assessment of Condition of SSSI Units

Vegetation	SSSI Unit	Size of Unit	Date Assessed	Status	Notes
Dwarf shrub heath - upland	8	700.96	28 Mar 2009	Unfavourable recovering	Assessment of 26/03/2009 was CSM compliant
Bogs - upland	9	38.05	27 Mar 2009	Unfavourable recovering	CSm visit done by habitats team. Now classed as recovering due to HLS AG00289570 due June 2009
Bogs - upland	10	172.43	27 Mar 2009	Unfavourable recovering	Classed as recovering due HLS agreement due to start June 2009
Dwarf shrub heath - upland	16	22.23	18 Nov 2007	Unfavourable recovering	Recovering due to CSS agreement in place.
Dwarf shrub heath - upland	17	97.48	16 Feb 2009	Unfavourable recovering	Unit fails due to a complete lack of dwarf shrub diversity across entire unit. Calluna vulgaris is dominant throughout. Also fails due a lack of some heather growth phases across large portions, particularly lacking in late mature. Unit is considered to be in Unfavourable Recovering condition due recent HLS agreement covering this land.
Dwarf shrub heath - upland	18	798.08	20 Mar 2009	Unfavourable recovering	Unit fails due to a lack of dwarf shrub diversity across large areas of the site, which are Calluna dominated. Some areas also found to be lacking in late mature heather. *Vaccinium myrtillus*, *Vaccinium vitis-idaea* and *Calluna vulgaris* seen. Unit considered being in Unfavourable Recovering condition due to HLS agreement now covering this land.

It is considered that the future baseline conditions in the absence of the Proposed Development could be materially different from the current baseline, as a result of the recently introduced HLS management agreement. However, the area would also likely remain as a managed grouse moor and as such subject to temporal and spatial changes in vegetation type and structure, which in turn would influence numbers and locations of breeding and foraging birds.

6.4 Conservation Objectives

The statement of vulnerabilities for the vegetation within the SSSI states:

- All interest features have been affected by excessive livestock grazing levels across parts of the site. These have been, and are still, encouraged by headage payments, but agreements with graziers and moorland owners, including those in Wildlife Enhancement and Countryside Stewardship schemes, are starting to overcome the problems of overgrazing. In places, the difficulty of reaching agreements on commons, which cover much of the site, means that successes are limited at present, and continues to prevent restoration.

- Drainage of wet areas can also be a problem; drains have been cut across many areas of blanket bog, disrupting the hydrology and causing erosion, but in most parts these are being blocked and the habitat restored under agreements.

- Burning is a traditional management tool on these moorlands, which contributes to maintaining high populations of SPA breeding birds. However, over-intensive and inappropriate burning is damaging to heath and blanket bog and further agreements are needed with the landowners to achieve sympathetic burning regimes.

- Restoration, to some degree, of a mosaic of more natural habitats across parts of the site is desirable.

- Acid and nitrogen deposition continue to have damaging effects on the site.

The Views About Management (VAM) statement produced by Natural England for the SSSI contains a section on upland birds. There are no species specific requirements but a number do relate to species for which the SPA is designated:

- areas of taller heather particularly on slopes and along watercourses to provide nesting sites for merlin and hen harrier

- shorter vegetation on flatter land to provide nesting and foraging sites for golden plover and curlew

6.5 Key Environmental Conditions

The following key environmental conditions were identified for the SSSI, given the conservation objectives identified in the previous section. These effectively identify the key vulnerabilities of the designated features in addition to the key structural and functional relationships that create the SSSI and European Site's integrity.

List of Key Environmental Conditions:

- Avoidance of changes to overall hydrological processes;

- Maintenance/introduction of sustainable grazing / burning regimes through agri-environment schemes;

- Avoidance of over intensive management

6.6 Likely Significant Effects Assessment

6.6.1 *Loss of Breeding & Foraging Habitat*

The working of the quarry will result in the temporary loss over a period of 20 - 25 years of 39ha of land outside but adjacent to the SPA but with an increasing area being restored back to heathland from around Year 12. The land to be lost to the quarry is very similar in composition; the west side of the Site next to the SPA is a mosaic of heather, acid grassland and marshy grassland, which is part of an extensive area of sheep grazing that includes land within the SPA; the east side is for the main part intensively managed heather grouse moor with large swathes dominated by various aged stands of heather (Figure 1).

The species that could be impacted by loss of this land to quarrying are curlew and golden plover. The three raptor species (peregrine falcon, merlin, hen harrier), two (peregrine falcon, hen harrier) of which have not been recorded during the surveys, have wide foraging ranges and the loss of this small area to quarrying would not be expected to be significant to the maintenance of the populations of these species within the SPA as a whole. The remaining species, dunlin was only recorded infrequently within and adjacent to the Site and it is concluded would not be impacted significantly.

This leaves curlew and golden plover and both were recorded breeding within the Site which is outside of the SPA, as well as within the SPA to the west of the Site in 2011 and 2012.

Curlew

In 2011, 3 pairs of curlew bred within the Site and in 2012, 4 pairs. On the SPA to the west in 2012, 4 pairs were recorded breeding within 500m of the Site boundary and in 2012, 5 pairs. None were recorded on the moor to the east of the Site in 2011 but 2 pairs were recorded in 2012. The location of the nest sites in both years seems to indicate the preference for early stage heather development by curlew, a pattern which changes as the heather is managed for grouse.

The vantage point surveys in 2011 recorded movement of limited numbers of curlew and these were mostly birds that were nesting within the Site moving to and from the silt lagoon area and similarly to and from the wet pastures to the south of the Site (see Appendix 1). There was little recorded movement of birds between the SPA and other parts of the Site. In 2012, most movement of curlew was again within the Site but also moving between the SPA and the silt lagoon and moving between the fields to the north and the silt lagoon (see Appendix 2).

Golden Plover

In 2011, none were recorded breeding within the Site but two pairs bred amongst areas of managed heather just outside the Site to the east and west. Only two golden plover flights were observed; a bird was seen arriving at the silt lagoon from the north and leaving again in the same direction on 12th May (See Appendix 1).

In 2012, three pairs were recorded breeding; two within the Site, to the east of Kex Gill Road and a third outside the Site to the west within the SPA. Birds were observed moving about the survey area from March and were then seen to remain close to their nesting locations until June when small post breeding flocks were observed to the west within the SPA (Appendix 2).

Birds were observed during the vantage point surveys in May and June making flights to and from the silt lagoon from their nest sites east of Kex Gill Road (see Appendix 1). The breeding pair present within the SPA to the west was not recorded visiting the lagoon.

Conclusion

The bird surveys undertaken in 2011 and 2012, show that two SPA species bred within the Site and wider area up to 500m from the site; golden plover (Site: two pairs and three pairs) and curlew (nine pairs and 21 pairs). Up to 2 pairs of golden plover bred within the Site and four pairs of curlew, the remaining pairs bred within the SPA or land to the north and east outside the Site and SPA

Golden plover qualifies due to 1,400 pairs (at least 6.2% UK population) and curlew for 3,930 pairs (at least 3.3% UK population). The integrity of the SPA is measured on the ecological function for the whole area.

Based on the results obtained in 2011 and 2012, it is considered that the loss of breeding and foraging habitat outside of the SPA with respect to these two SPA species is unlikely to result in a "likely significant effect". It is reasonable to expect that the wider area has the carrying capacity to absorb this small number of pairs of golden plover (2) and curlew (4) and that the loss of foraging habitat to birds nesting in the SPA within 500m of the site is also not significant based on the results showing that there are limited movements of birds from the SPA into the site, save for visits to the silt lagoon. The silt lagoon provides habitat not found in the wider area; shallow water and bare silt. Silt lagoons will be present throughout the working life of the quarry and on restoration it is now proposed to create shallow water and bare ground habitat.

6.6.2 *Disturbance*

Disturbance could theoretically result from either noise/vibration or visual stimuli. The proposals are to work the quarry in five phases with Phase 1 largely complete prior to mothballing of the quarry and a small part of Phase 2 also worked. To allow full working of the quarry, the Kex Gill Road is to be relocated approximately 300m to the west, bringing the new road much closer to the boundary of the SPA. The plant and processing site has been demolished but the location is still present and is a low lying area in the south surrounded by bunds and natural hillside that hides it from surrounding land and provides an effective acoustic and visual barrier.

Phases 2 and 4 are at least 400m east of the boundary of the main part of the SPA (there is a small projection from the south that is closer but no species of interest were recorded here) and given this distance, the conclusion is that working of these two phases will not result in any Likely Significant Effects on the SPA. The plant and processing site is in a sunken location and the conclusion is that its operation will not result in any Likely Significant Effects on the SPA. HGV traffic leaving the Site turns south and joins the A59 a matter of 100m from the entrance. The A59 is a major road and carries significant amounts of heavy goods traffic. The re-introduction of quarry traffic onto this road is not expected to lead to a significant increase and thus there is not anticipated impact on the adjacent SPA other than any that is already current.

Phases 3 and 5 and the relocation of the Kex Gill Road are all closer to the boundary of the SPA. In the case of Phase 3, the nearest working is approximately 100m from the SPA; Phase 5, 140m and the relocated alignment of the Kex Gill Road, approaches within 50m of the boundary of the SPA at one point but is generally 90m+ from the boundary. It is working of these two phases and the relocated road that could adversely impact on the SPA.

There is the potential for disturbance from lighting from passing traffic, quarry vehicles and the plant site.

The plant site is sunk within an area of screen bunds and natural hills and any light spillage would be minimal and will not result in any Likely Significant Effects on the SPA. The new road will not be lit and so no impacts are predicted.

There is evidence that constant light sources at night can have both beneficial and adverse effects on birds but not sporadic short duration sources. Lighting from quarry vehicles will generally only be during the winter, as hours of working are 07:00 - 16:00 and for the most part vehicles will be working below ground level. The SPA applies to breeding populations of the named species only and as such, when breeding birds are present, lighting will be used least if at all. Lights from traffic passing along the new road will be very similar to that along the existing road and this does not seem to adversely affect bird usage of the immediate area, as evidenced by breeding curlew and golden plover within 300m and in the case of curlew 100m. A similar effect along the new road alignment would be expected to have a similar negligible impact, as there is no predicted increase in usage of the road and thus it is concluded that this will not result in a significant impact on the maintenance of the populations of these species within the SPA as a whole.

Conclusion

Based on the evidence above it is concluded that there is the potential for a significant impact from noise generated by passing traffic on the realigned road and the working of the quarry and vibration generated from blasting in proximity to the SPA. These are considered further below.

It is concluded that there is unlikely to be a significant effect on the features in the SPA from lighting and is not discussed further.

6.7 Appropriate Assessment

6.7.1 *Noise Disturbance*

Introduction

Most of the potential for impact from quarrying will be when working is at ground level in terms of both noise and visual impacts and when quarrying is closest to the boundary of the SPA. There could also be a temporary impact when worked areas are restored. The relocation of the road is permanent.

In their response to the original ES, the RSPB stated (letter dated 12th January 2012) that there is evidence (not referenced) that upland waders showing avoidance and displacement of between 300m - 600m. For noise, Natural England in their response dated 15th December 2012 to the Bird addendum note that sound levels of between 55dB - 70dB should be considered. In published literature these levels have been shown to be the range of threshold levels at which birds are disturbed and 55dB(A) has been put forward as a precautionary lower threshold. This value has been used to determine likely significant effects at Blubberhouses.

The breeding bird results show that in 2011, 1 pair of curlew bred in the SPA within 300m of the proposed new road alignment and a further 2 pairs within 600m. One pair of golden plover bred 600m west of the proposed new road alignment. In 2012, 1 pair of curlew bred in the SPA within 300m of the proposed new road alignment and a further 4 pairs within 600m. No golden plovers bred within 600m of the proposed new road alignment.

As a reference, in 2011 4 pairs of curlew bred within 300m of the existing road and in 2012, 8 pairs of curlew bred within 300m of the existing road and 2 pairs of golden plover. Clearly, these birds were apparently unaffected by the traffic on the existing road and the new road will be of very similar construction and take the same traffic load as the current road. This was put forward as sufficient evidence of no likely significant effect in the bird addendum but was not accepted without data to show actual predicted noise levels within the SPA.

Natural England indicated that threshold levels of noise from traffic of between 55dB - 70dB could start to disturb birds and as noted above, 55dB(A) has been put forward as a precautionary threshold, below which there is deemed to be no effect .

Modelling Results

Data has been collected from along the existing Kex Gill Road and used to model noise levels at distances from the proposed new road alignment (see Appendix 3). Existing data presented in Chapter 10 (Noise) of the original ES has been used to model the levels of noise from operating plant into the SPA (see Appendix 3).

Road Noise - From this report it can be seen that provided the road is constructed outside of the breeding bird season to avoid construction noise close to the SPA boundary, there is no reason to expect that curlew and golden plover arriving in the spring into the SPA will be significantly impacted by the presence of the new road. The 55dB(A) threshold along the realigned section of road is only exceeded within the SPA along a very short section where the realignment approaches closest to the SPA boundary; an approximately 90m stretch where the level does not fall

below 55dB(A) until 10m into the SPA. For the remaining length of new road, the level falls below 55dB(A) before the SPA boundary.

It is concluded that this will not result in a likely significant impact on the maintenance of the populations of these species within the SPA as a whole and as such no further consideration or mitigation is necessary.

Quarry Noise - Noise levels from quarrying and quarry vehicles will be at their peak when work is at the surface during Phases 3 and 5. Using the data presented in the ES to estimate noise levels at the nearest habitations, the noise levels from quarrying have been calculated at the site boundary coincident with the SPA boundary and distances into the SPA. The threshold used was again 55dB(A). The report presented in Appendix 3 shows that the noise levels generated from site operations even at the surface fall below 55dB(A) before reaching the SPA boundary. Whilst the vehicles are noisier, they are further from the SPA boundary.

It is concluded that this will not result in a likely significant impact on the maintenance of the populations of these species within the SPA as a whole and as such no further consideration or mitigation is necessary.

Blasting - Blasting data used to calculate vibration levels at the nearest habitations (see Chapter 12 original ES) has been used to calculate vibration levels at the site boundary coincident with the SPA boundary and distances into the SPA (Appendix 4).

The data shows that using a threshold of 8mm/s, which is the level used for habitation, the level will be exceeded at least 500m into the SPA from blasting within Phases 3 and 5. It is clear that whilst blasting is likely to be no more than monthly and possibly at longer intervals, this could within the breeding season cause significant disturbance to birds nesting within the SPA.

To avoid this happening, blasting within Phases 3 and 5 will be restricted to the period mid July - end March i.e. outside of the breeding season of curlew and golden plover based on the results of the vantage point and breeding bird surveys at the Site; birds appear to arrive during late March and have bred and moved off the moor by mid-July. This way disturbance to these two species is avoided and therefore a likely significant impact. The designation of the SPA is for breeding only and thus outside the breeding season a significant impact on the species for which the SPA is designated cannot occur.

Conclusion

The calculations presented in the report by Vibrock using actual and derived data has shown that there will not be a likely significant impact on the features for which the SPA is designated from re-alignment of the road and operational plant working in Phases 3 and 5. This is based on using a threshold for effect of 55dB(A), which appears to be a precautionary value put forward in various literature and indicated by Natural England.

The blast data presented by Vibrock shows that there is the potential for a likely significant effect on breeding birds from blasting in Phases 3 & 5. However, to avoid this, blasting will only be undertaken in Phases 3 & 5 outside of the breeding bird season and thus avoiding a likely significant impact and progression to Stages 3 and 4 of the Habitat Regulations Assessment.

7 Likely Significant Effects: North Pennine Moors SAC

7.1 Introduction

The North Pennine Moors SAC encompasses a number of SSSIs across four counties; Cumbria, Durham, North Yorkshire and Northumberland and is very large site; approximately 103, 000ha. The SAC includes parts of the moorland massif between the Tyne Gap (Hexham) and the Ribble-Aire corridor (Skipton). It encompasses extensive tracts of semi-natural moorland habitats. The site is of European importance for several vegetation types including European dry heath, blanket bog and old sessile oak woods.

The Constituent SSSI relevant to the Site and the HRA is West Nidderdale, Barden and Blubberhouses SSSI (13,418ha) and is designated because it is important for heather moorland, blanket bog vegetation and breeding bird populations.

7.2 Features of European interest

The site qualifies for the presence of a number of Annex 1 habitats; six are a primary reason for its designation;

4030 European dry heaths - The North Pennine Moors (along with the North York Moors) hold much of the upland heathland of northern England. At higher altitudes and to the wetter west and north of the site complex, the heaths grade into extensive areas of 7130 blanket bogs. The most abundant heath communities are H9 *Calluna vulgaris – Deschampsia flexuosa* heath and H12 *Calluna vulgaris – Vaccinium myrtillus* heath. There are also examples of H18 *Vaccinium myrtillus – Deschampsia flexuosa*, H10 *Calluna vulgaris – Erica cinerea* and H21 *Calluna vulgaris – Vaccinium myrtillus – Sphagnum capillifolium* heaths.

5130 *Juniperus communis* formations on heaths or calcareous grasslands - The North Pennine Moors includes one major stand of juniper scrub in Swaledale as well as a number of small and isolated localities. The Swaledale site grades into heathland and bracken *Pteridium aquilinum* but the core area of juniper is of W19 *Juniperus communis – Oxalis acetosella* woodland with scattered rowan *Sorbus aucuparia* and birch *Betula* spp.

7130 Blanket bogs * Priority feature - The North Pennine Moors hold the major area of blanket bog in England. A significant proportion remains active with accumulating peat, although these areas are often bounded by sizeable zones of currently non-active bog, albeit on deep peat. The main NVC type is M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire, but there is also representation of M18 *Erica tetralix – Sphagnum papillosum* blanket mire and some western localities support M17 *Scirpus cespitosus – Eriophorum vaginatum* blanket mire. Forms of M20 *Eriophorum vaginatum* blanket mire predominate on many areas of non-active bog.

7220 Petrifying springs with tufa formation (*Cratoneurion*) * Priority feature - The petrifying springs habitat is very localised in occurrence within the North Pennine Moors, but where it does occur it is species rich with abundant bryophytes, sedges and herbs including bird's-eye primrose *Primula farinosa* and marsh valerian *Valeriana dioica*.

8220 Siliceous rocky slopes with chasmophytic vegetation - Acidic rock outcrops and screes are well-scattered across the North Pennine Moors and support vegetation typical of Siliceous rocky slopes with chasmophytic vegetation in England, including a range of lichens and bryophytes, such as *Racomitrium lanuginosum*, and species like stiff sedge *Carex bigelowii* and fir clubmoss *Huperzia selago*.

91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles - Birk Gill Wood is an example of old sessile oak woods well to the east of the habitat's main distribution in the UK. However, this sheltered river valley shows the characteristic rich bryophyte and lichen communities of the type under a canopy of oak, birch *Betula* sp. and rowan *Sorbus aucuparia*. The slopes are boulder-strewn, with mixtures of heather *Calluna vulgaris*, bilberry *Vaccinium myrtillus* and moss carpets in the ground flora.

A further seven Annex I habitats are present as a qualifying feature, but are not a primary reason for selection of this site;

4010 Northern Atlantic wet heaths with *Erica tetralix*

6130 Calaminarian grasslands of the *Violetalia calaminariae*

6150 Siliceous alpine and boreal grasslands

6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

7230 Alkaline fens

8110 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)

8210 Calcareous rocky slopes with chasmophytic vegetation

There is one Annex II species present as a qualifying feature, but it is not a primary reason for selection of this site

1528 Marsh saxifrage *Saxifraga hirculus*

Of the above only Upland heath and possibly Blanket bog habitats occur within the SAC immediately adjacent to the west of Site. Marsh saxifrage has not been recorded within the Site or the adjacent land within the SAC.

7.3 Historic Trends and Current Conditions

During the most recent condition assessment of the SSSI units that underpin the SAC within 2km of the Site (see Table 2 below) the relevant constituent parts of the SAC are all classed as unfavourable but in recovering condition. The unit immediately to the west of the Site is Unit 10.

TABLE 2: Assessment of Condition of SSSI Units

Vegetation	SSSI Unit	Size of Unit	Date Assessed	Status	Notes
Dwarf shrub heath - upland	8	700.96	28 Mar 2009	Unfavourable recovering	Assessment of 26/03/2009 was CSM compliant
Bogs - upland	9	38.05	27 Mar 2009	Unfavourable recovering	CSm visit done by habitats team. Now classed as recovering due to HLS AG00289570 due June 2009
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Dwarf shrub heath - upland	17	97.48	16 Feb 2009	Unfavourable recovering	Unit fails due to a complete lack of dwarf shrub diversity across entire unit. Calluna vulgaris is dominant throughout. Also fails due a lack of some heather growth phases across large portions, particularly lacking in late mature. Unit is considered to be in Unfavourable Recovering condition due recent HLS agreement covering this land.
Dwarf shrub heath - upland	18	798.08	20 Mar 2009	Unfavourable recovering	Unit fails due to a lack of dwarf shrub diversity across large areas of the site, which are Calluna dominated. Some areas also found to be lacking in late mature heather. Vaccinium myrtilus, Vaccinium vitis-idaea and Calluna vulgaris seen. Unit considered to be in Unfavourable Recovering condition due to HLS agreement now covering this land.

It is considered that the future baseline conditions in the absence of the Proposed Development could be materially different from the current baseline, as a result of the introduced management but the area would also remain as a managed grouse moor and as such subject to temporal and spatial changes in vegetation type and structure.

7.4 Conservation Objectives

The statement of vulnerabilities for the SAC states:

- All interest features have been affected by excessive livestock grazing levels across parts of the site. These have been, and are still, encouraged by headage payments, but agreements with graziers and moorland owners, including those in Wildlife Enhancement and Countryside Stewardship schemes, are starting to overcome the problems of overgrazing. In places, the difficulty of reaching agreements on commons, which cover much of the site, means that successes are limited at present, and continues to prevent restoration.

- Drainage of wet areas can also be a problem; drains have been cut across many areas of blanket bog, disrupting the hydrology and causing erosion, but in most parts these are being blocked and the habitat restored under agreements.

- Burning is a traditional management tool on these moorlands, which contributes to maintaining high populations of SPA breeding birds. However, over-intensive and inappropriate burning is damaging to heath and blanket bog and further agreements are needed with the landowners to achieve sympathetic burning regimes.

- Restoration, to some degree, of a mosaic of more natural habitats across parts of the site is desirable.

- Acid and nitrogen deposition continue to have damaging effects on the site.

The Views About Management (VAM) statement produced by Natural England for the SSSI contains more details of management objectives and those relevant to the habitats found in Unit 10 adjacent to the Site are as follows:

Blanket bog

- Light summer grazing may be beneficial, particularly on those sites with a history of grazing management. This can be used to prevent the development of tussocky vegetation and scrub on the blanket bog, which would damage the characteristic communities of plants and animals.

- Where heather burning is practiced, the burns should be carried out under conditions that encourage 'cool' burns which do not burn into the moss layer or peat.

- Burning blanket bog can reduce its conservation value where burns are too hot, too frequent or are carried out in the wrong place.

- Areas that contain pools should not be burnt, as it can be very damaging to the moss hummocks, invertebrate and amphibian populations that they support.

- Burning can also damage the top layer of peat and prevent the formation of new peat. Burning should not be introduced to blanket bog areas that have not been burnt.

- No new drainage should be introduced to blanket bogs and deepening of any existing surface drainage should be avoided.

- It will be appropriate to block existing drains that are eroding or are lowering the water table.

Wet and Dry Upland Heath

- Continued habitat management is essential for maintaining the nature conservation interest and open nature by preventing the invasion of scrub and trees that would otherwise dominate these dwarf shrub communities.

- Management should aim to create a structurally diverse mosaic of dwarf shrub vegetation to provide the feeding, breeding and sheltering areas needed by the range of plants and animals that are characteristic of a well managed heath.

- It is generally beneficial if all phases of the heather life cycle are present.

- Light grazing, particularly in the summer months, is a suitable means of managing dry heath.

- Stock levels need to be appropriate to the type and age structure of the vegetation. Heavy grazing can lead to the loss of dwarf shrub cover and a consequent shift to grass and rush communities, which reduce the structural diversity necessary for maintaining a variety of upland animal and plant species. Excessive trampling and poaching by livestock can damage the habitat further.

- Stock-feeding can be carried out using traditional methods such as small heather bales and feed blocks. Care should also be taken to avoid unnecessary concentration of poaching or overgrazing in foddering areas.

- Careful periodic burning is a useful tool for maintaining structurally diverse dry heath. Burning must be used with caution, as inappropriate burning can be very damaging to both plant and animal communities.

- Burning should only be undertaken during the winter and should follow an appropriate burning rotation in order to create a mosaic of habitats with vegetation of different ages, composition and structure, which in turn supports a wide diversity of species.

- The use of burning as a management tool on wet heath can be damaging in the same way as on blanket bog and should be carried out only with particular care.

- Cutting is a possible alternative to burning but must keep to the same seasonal timings as heather burning (including baling). If cutting is used, it is normally desirable to remove the resultant litter, or germination of seedlings will be inhibited and there will be an additional fire-risk.

- Artificial drainage is damaging to wet heath plant and animal communities due to lowering of the water table and erosion effects and should be avoided.

7.5 Key Environmental Conditions

The following key environmental conditions were identified for this SAC, given the conservation objectives identified in the previous section. These effectively identify the key vulnerabilities of the designated features in addition to the key structural and functional relationships that create the European Site's integrity.

List of Key Environmental Conditions:

- Avoidance of changes to overall hydrological processes;
- Maintenance/introduction of sustainable grazing / burning regimes through agri-environment schemes;
- Avoidance of over intensive management

7.6 Likely Significant Effects Assessment

7.6.1 Changes in Hydrological Conditions

It has been indicated by consultees in their responses to the original ES and subsequent Bird Addendum that the information provided so far does not satisfy them that there will not be a significant impact on the vegetation within the SAC to the west of the Site through changes in hydrology.

The vegetation immediately west of the Site has been designated as Bogs - Upland by Natural England for the purposes of Condition Site Monitoring (CSM) of the SSSI. Unit 10 is the area immediately west of the Site (see Table 2 above) and it has been assessed as being in an unfavourable but recovering condition. The reason for its recovering status was the proposed entry of the land into a Higher Level Stewardship scheme back in 2009.

The types of vegetation present within the SAC/SSSI immediately west of the Site; blanket bog, upland dry heath, upland wet heath, rush and purple moor grass dominated marshy grassland, small flushed and small valley mire features are all surface water fed or spring fed from upslope. The average annual rainfall for the area is 1120mm/yr and the number of days when the soils are assessed to be at field capacity 260 days/yr. Blanket bog vegetation is generally ombotrophic i.e. rainwater fed and not reliant on underlying groundwater. This is reinforced here by the ground water being at least 2m below ground level and separated from the vegetation by a layer of generally impermeable clay at least 1m thick, resulting in surface water dependency.

The topography of the Site and the land up to 600m to the west within the SPA is shown on Figure 2. It can be clearly seen that all the land within the SPA from a high point some 700m west of the Site boundary slopes down to the Site and this fall continues within the Site to a low spot at the northern boundary where there is a watercourse. The land from the high spot also falls to the south to the A59. This clearly shows that surface water movement is towards the Site from within the SAC and that there is no surface water movement into the SAC from within the Site. Thus, as far as surface water is concerned, working of the Site will not result in the loss of any surface water into the SAC. Also, from the Site boundary there is a minimum 30m to the new road alignment and on average 100m and furthermore, there is at least 100m from the boundary of the SAC to the nearest excavation.

This being the case, the construction of the road and the excavation of mineral will not change the surface water hydrological conditions upslope in the SAC and so it is concluded that there will not be a likely significant effect on the features within the SAC for which it was designated from working of the quarry.

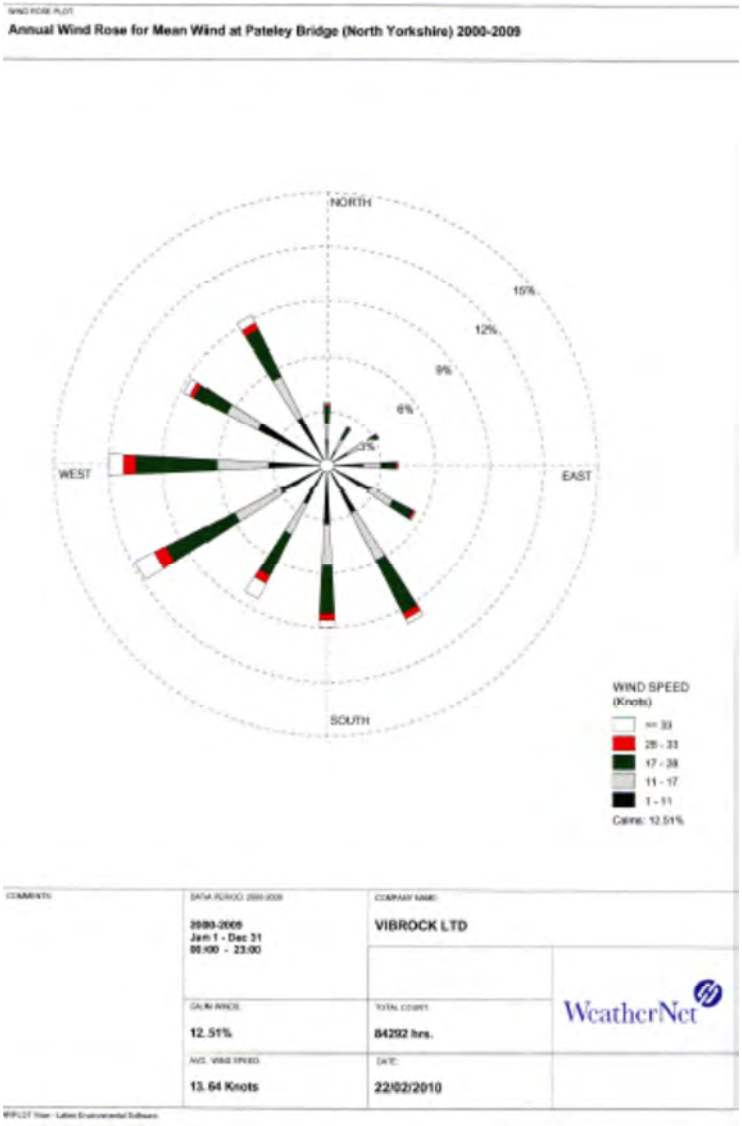
7.6.2 Run-Off from the Road

The potential for surface run off from the new road was also indicated by the consultees to be a potential impact on the SAC. The topography shows that this cannot be the case as the road is downslope form the SAC boundary and generally has a 100m buffer between the two. The road is to be constructed so that any surface water off the road flows east and north east, away from the SAC.

7.6.3 Dust

Soil stripping and restoration activities are of short duration and the soils to be stripped and restored are the same soils that occur within the SAC i.e. peat. Dust produced however from mineral operations is longer-term and thus could potentially produce accumulations over time on both vegetation and soils. This dust will be chemically neutral largely and will not induce pH changes in the peat soils within the SAC.

The likelihood of dust deposition in significant quantities over the SAC is considered very low risk. Chapter 11 of the Environmental Statement considers dust and provides evidence to the effect that the prevailing wind measured over ten years at Pateley Bridge quarry (considered to be representative of situation at Blubberhouses) is from all points west between north - south (see below).



When this is considered along with the number of dry days measured at Pateley Bridge for each wind direction, this results in only 20 days/year when the weather is dry and the wind comes from a direction towards the SAC. Further, most dust settles within 100m - 200m from source (limit of excavation closest approach during Phase 3 is 120m) and when weather patterns are such that dust will be generated, industry standard dust suppression measures will be implemented and could include the following:

- restriction on the duration of soil handling activities and the sealing of soil storage mounds as soon as practicable;
- protect exposed materials (including stockpiles, overburden, etc) from wind using screens and enclosures;
- the containment and suppression of dust at key points, including conveyors and drop points, crushing and screening plant, blending and packing processes;
- use of water sprays to dampen down stockpiles and haul routes;
- use of dust extraction equipment on plant;

- minimise drop heights;
- locating potential dust generating processes as far from sensitive locations as practicable;
- imposition and enforcement of an appropriate speed limit on unpaved ground;
- regular cleaning of paved areas on-site and along off-site access routes;
- sheeting and vehicle chassis/wheel washing of lorries leaving site;
- an ongoing visual risk assessment by all site staff of the potential for site activities to generate fugitive dust emissions, with an appropriate action taken to limit such emissions in the event that they occur.

Based on this, it is considered that dust deposition that may occur on vegetation within the SAC will not lead to a “likely significant” effect on the vegetation present adjacent to the quarry within the SAC.

8 Summary

The potential for resumption of quarrying at Blubberhouses to impact on two internationally protected sites; North Pennine Moors SPA and North Pennine Moors SAC has been identified.

The SPA is designated for the presence of qualifying numbers of six breeding species; peregrine falcon, hen harrier, merlin, dunlin, golden plover and curlew.

The SAC is designated on account of the presence of thirteen habitat types and one plant species.

The potential impacts on the SPA from quarrying have been identified as;

- Loss of foraging land to quarrying
- Disturbance from noise, vibration and lighting

The potential impacts on the SAC from quarrying have been identified as;

- localised changes to hydrology
- fugitive dust

The assessment of impacts on the features within the SPA has concluded that there is no likely significant impact on any of the species through loss of breeding or foraging habitat that occurs outside of the SPA; there is no impact on such habitat within the SPA; lighting of the quarry, which will be confined largely to outside of the breeding bird season.

It has also concluded that there is no likely significant impact on any of the species from vehicle noise from the re-alignment of the Kex Gill Road or from plant operating along the western boundary of the extraction area. The threshold of 55dB(A) is only breached along one small location of the Kex Gill Road and here it is only a matter of 10m inside the SPA and the threshold is not breached at all from plant operating in the quarry.

The assessment did find however that there is the potential for a likely significant impact on the SPA from blasting within Phases 3 and 5 of the quarry but it is proposed that blasting here is limited to outside of the breeding season thus avoiding the potential for such an impact.

It has been shown that there is no likely significant impact on the sensitive features of the SAC from any changes in hydrology; the SAC lays upslope of the quarry and the extraction area lies at least 100m from the SAC boundary. Also the vegetation type present, blanket bog is ombrogenous i.e. rainwater dependant and quarrying will have no impact on surface water being downslope of the SAC.

Dust will only be generated for limited periods in any one year based on the rainfall and wind patterns. The quarry also lies generally downwind from the SAC and thus it is concluded that there will be no likely significant impact on the vegetation.

The overall conclusion is that it has been shown that working and restoration of Blubberhouses quarry will have no likely significant impact on the features for which the SPA and SAC are designated; in the case of basting this has been concluded following placing a restriction of blasting in Phases 3 and 5 to outside of the breeding bird season.

It is concluded that the information and assessment provided in this report will enable North Yorkshire County Council in its capacity as competent authority to carry out an HRA and to enable the Secretary of State in its capacity as Examining Authority to make an ‘Appropriate Assessment’.

FIGURES

Legend

SPA/SAC/SSSI

Approximate Site Boundary

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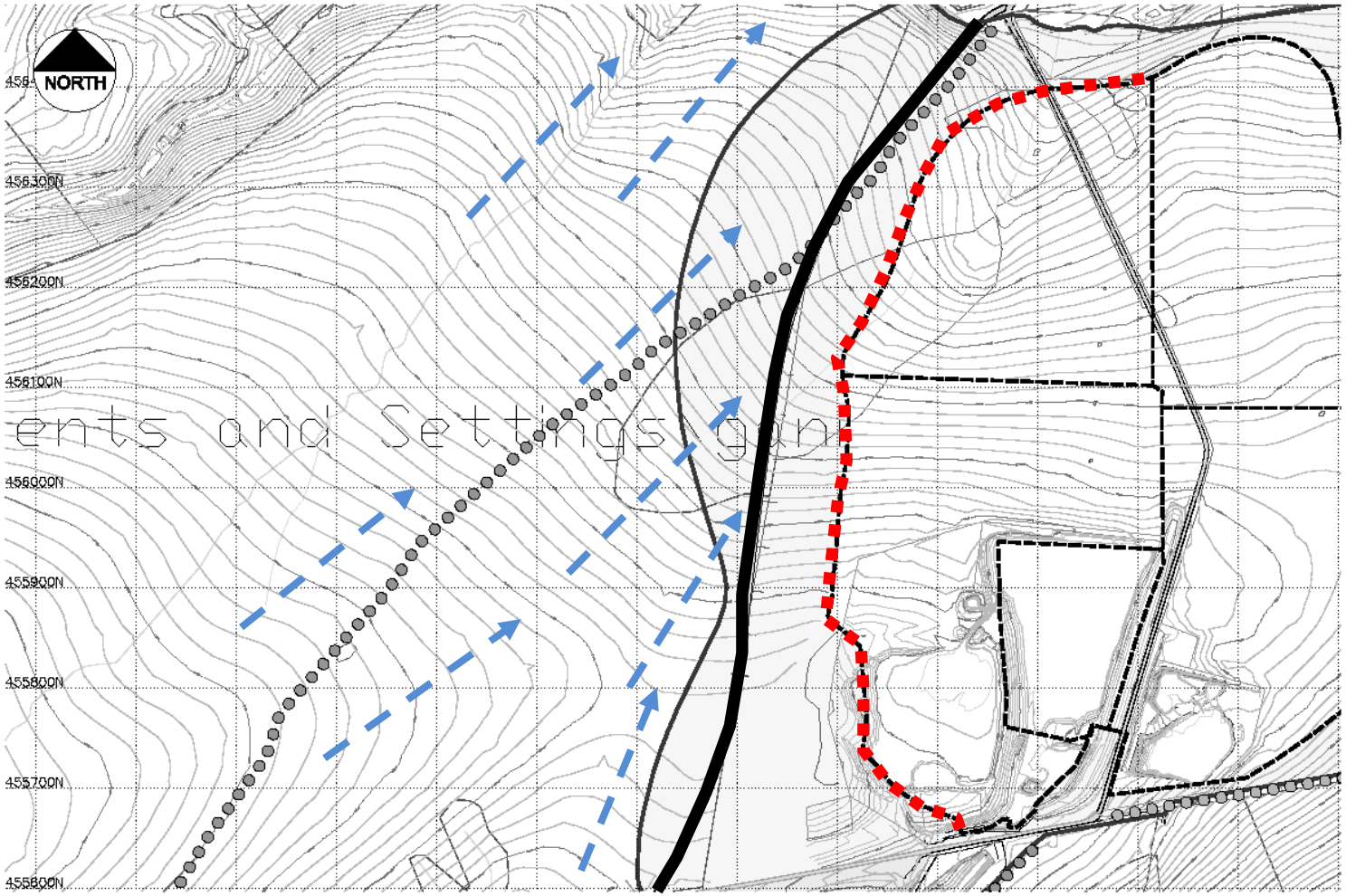
Blubberhouses Quarry

FIGURE 1

Boundary of Blubberhouses Quarry and SPA/SAC/SSSI

Reproduction: Based on a map provided by Client

Drawn by:	Checked by:	Date:
PB	CR	13/02/08



Legend

- Direction of surface flow
- Realigned Kex Gill Road
- Westermost limit of excavation

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Blubberhouses Quarry

Figure 2

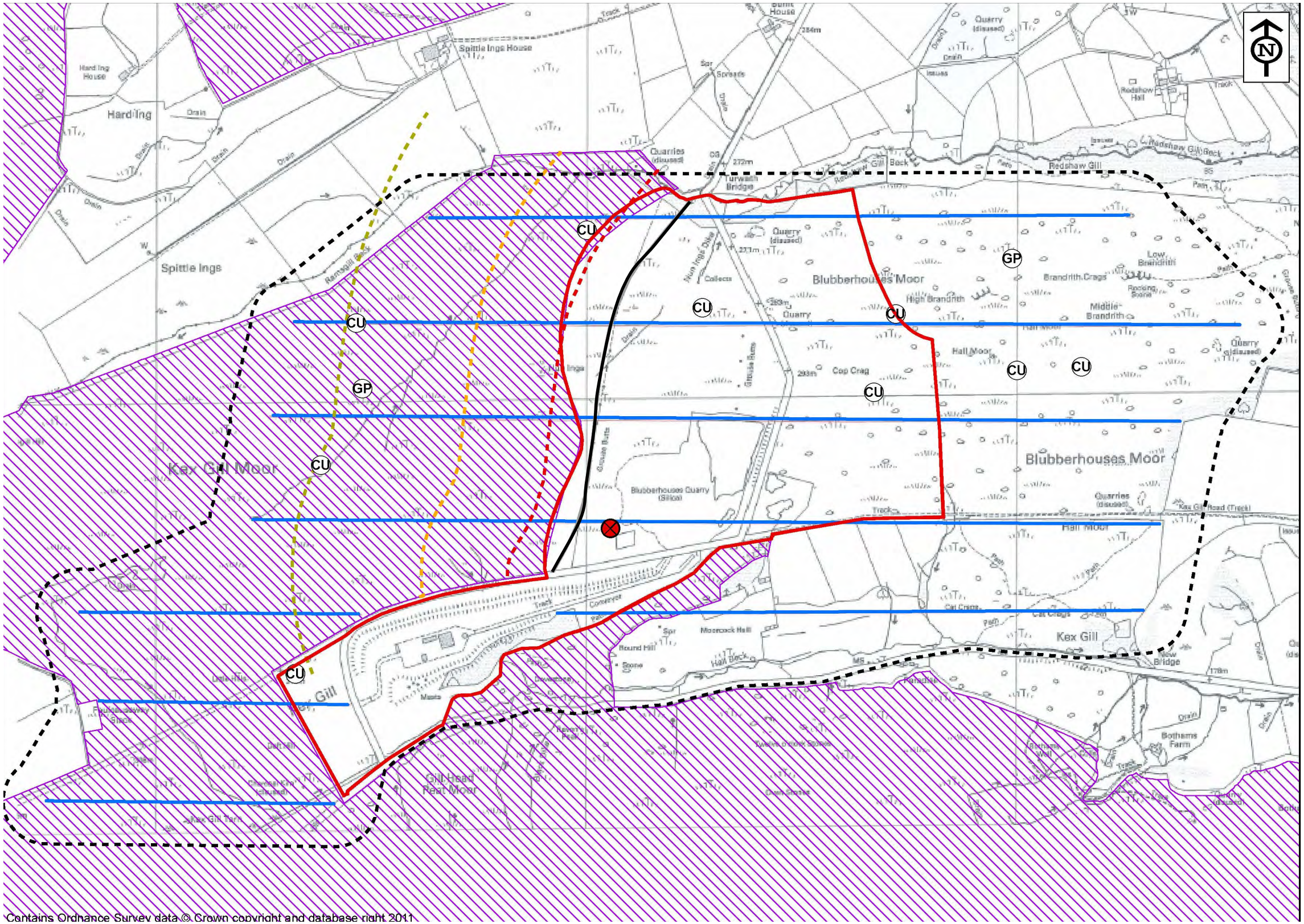
Height Contours and Surface Water Flow

Reproduction: Based on plan supplied by Client

Drawn by:	Checked by:	Date:
PB	DN	11 06 13

APPENDICES

APPENDIX 1



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Legend

CU	Curlew
GP	Golden plover
	Site boundary
	Survey Transect
	Road diversion
	100m
	300m
	600m
	SPA

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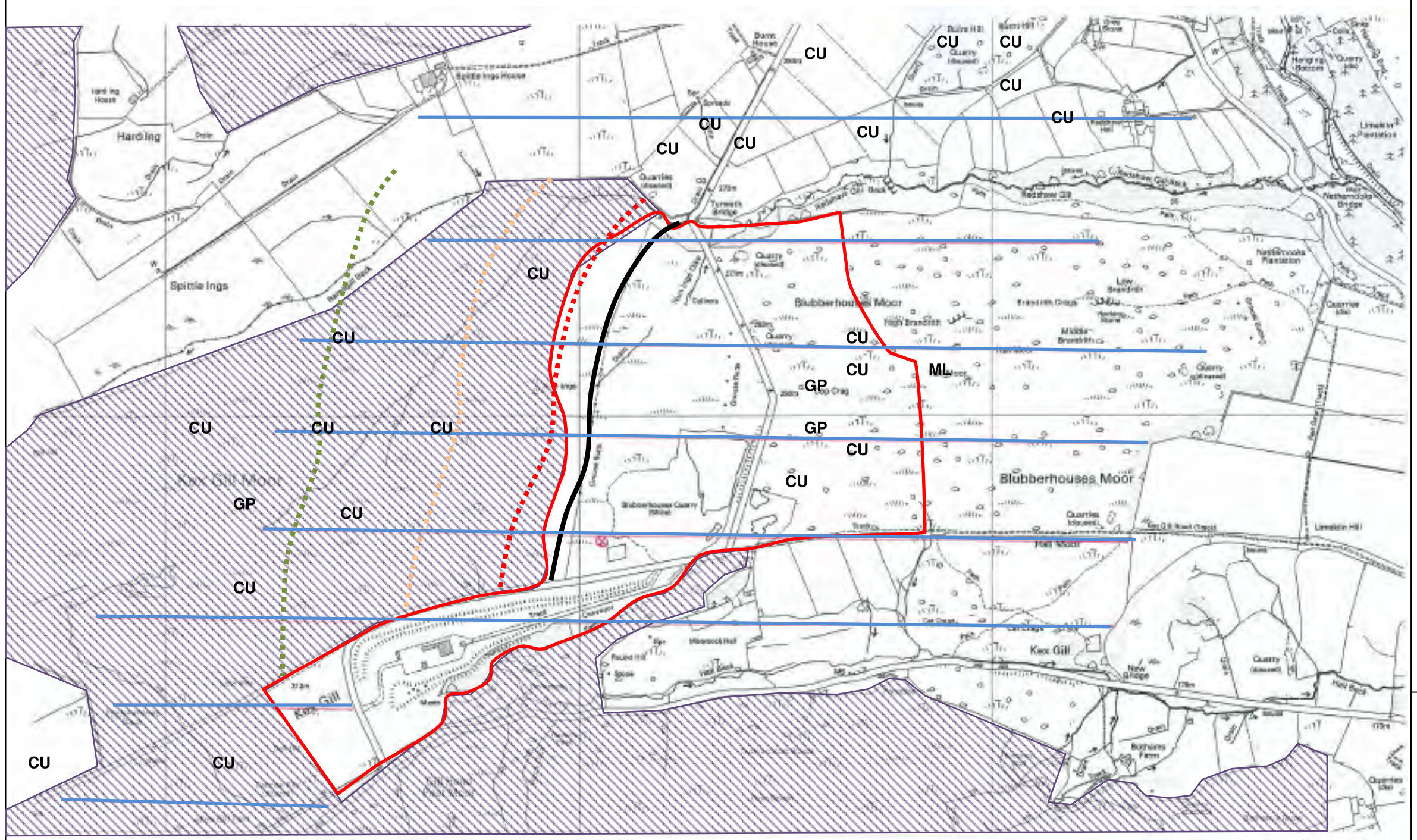
BLUBBERHOUSES QUARRY

Figure 2
Breeding Birds SPA Species 2011

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by: PB	Date: 4/10/12



Legend

CU	Curlew
GP	Golden plover
ML	Merlin
	Site boundary
	Survey Transect
	Road diversion
	100m
	300m
	600m
	SPA

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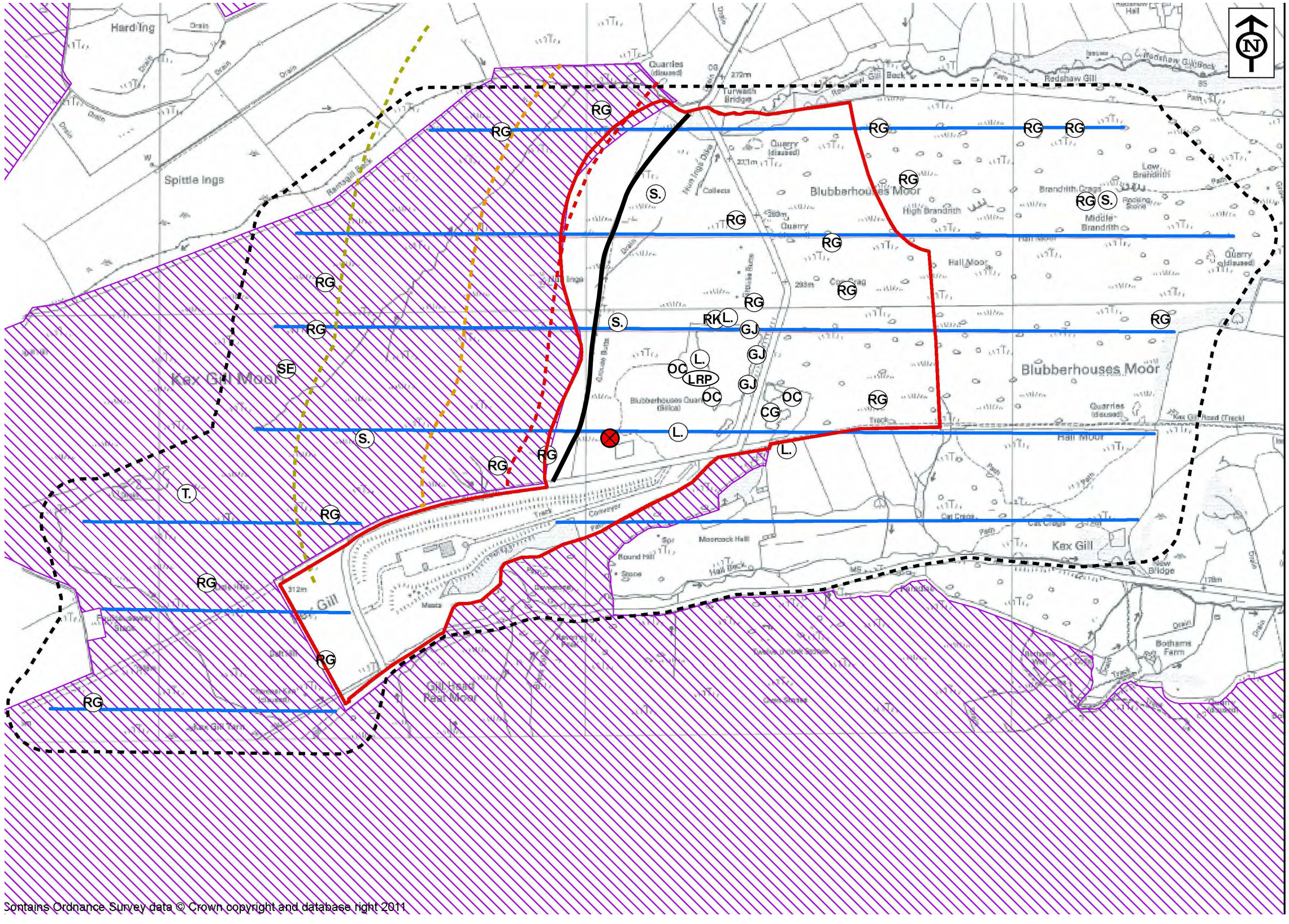
BLUBBERHOUSES QUARRY

Figure 3
Breeding Birds: SPA species 2012

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by: PB	Date: 4/10/12



Legend

R	Red grouse
S	Skylark
L	Lapwing
RK	Redshank
O	Oystercatcher
T	Teal
G	Greylag goose
LRP	Little ringed plover

Site boundary

Survey Transect

Road diversion

100m

300m

600m

SPA

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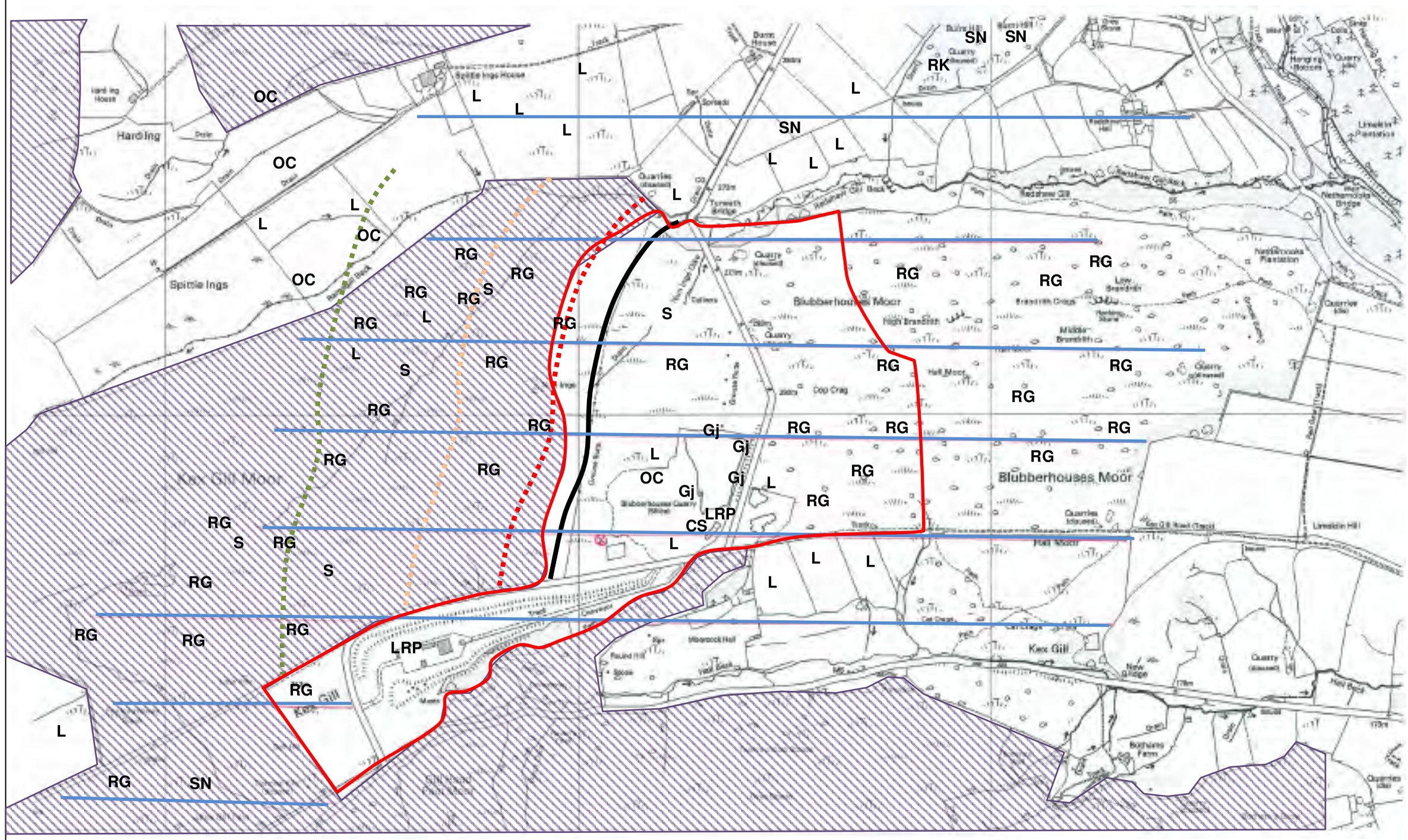
BLUBBERHOUSES QUARRY

Figure 4
Breeding Birds: Selected Other Species 2011

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by: PB	Date: 4/10/12



Legend

RG	Red Grouse
L	Lapwing
OC	Oystercatcher
SN	Snipe
S	Skylark
RK	Redshank
LRP	Little ringed plover
CS	Common sandpiper
Gj	Greylag goose

Site boundary

Survey Transect

Road diversion

100m

300m

600m

SPA

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BLUBBERHOUSES QUARRY

Figure 5
Breeding Birds: Selected Other Species 2012

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by: PB	Date: 4/10/12

APPENDIX 2

Point Surveys 2011

25th March 2011
9:00 - 15:00

Number	Species	Number	Time
3	Kestrel	1	11:34
1	Buzzard	1	14:43
4	Greylag Goose	4 pairs	all day
2, 8, 9, 10	Curlew	4	all day
7	Oystercatcher	1	
5, 6, 11	Lapwing	3	

Date: 26th April 2011
10:00 - 13:00

1	Lapwing	1	10:06
2	Curlew	1	10:09
3	Oystercatcher	1	10:11
4	Lapwing	1	10:15
5	Lapwing	1	10:31
6	Greylag Goose	2	10:41
7	Canada goose	1	10:41
8	Greylag Goose	2	10:50
9	Lapwing	1	10:58
10	Lapwing	1	10:58
11	Curlew	1	11:17
12	Curlew	1	11:18
13	Oystercatcher	1	11:27
14	Common sandpiper	2	11:37
15	Red kite	1	11:45
16	Mallard	1	11:47
17	Lapwing	1	12:06
18	Curlew	1	12:08
19	Mallard	3	12:28
20	Greylag Goose	1	12:48
21	Canada goose	2	12:56

Date: 26th April 2011
14:00 - 17:00

1	Curlew	1	14:07
2	Greylag goose	1	14:11
3	Lapwing	1	14:11
4	Oystercatcher	3	14:11
5	Curlew	1	14:13
6	Lapwing	1	14:19
7	Curlew	1	14:20
8	Curlew	1	14:20
9	Oystercatcher	1	14:27
10	Lapwing	1	14:34
11	Mallard	2	14:45
12	Curlew	2	14:55
13	Mallard	1	15:00
14	Lapwing	1	15:03
15	Curlew	1	15:13
16	Red kite	1	15:17

17	Redshank	1	15:21
18	Curlew	1	15:24
19	Greylag goose	2	15:24
20	Redshank	1	15:24
21	Redshank	1	15:28
22	Greylag goose	2	15:30
23	Oystercatcher	1	15:40
24	Curlew	1	15:52
25	B H gull	1	15:53
26	Curlew	1	15:56
27	Curlew	3	16:00
28	B H gull	4	16:00
29	B H gull	2	16:08
30	Heron	1	16:08
31	Curlew	1	16:08

Date: 12th May 2011

13:00 - 14:30

1	Lapwing	1	13:12
2	Lapwing	1	13:20
3	Lapwing	1	13:30
4	Curlew	1	13:32
5	Redshank	1	13:34
6	Lapwing	1	13:34
7	Golden plover	1	13:34
8	Lapwing	1	13:36
9	Oystercatcher	1	13:40
10	Golden plover	1	13:41
11	Merlin	1	13:42
12	Lapwing	1	13:45
13	Curlew	1	13:45
14	Curlew	3	13:45
15	Lapwing	1	13:45
16	Oystercatcher	1	13:53
17	Lapwing	1	13:53
18	Curlew	1	13:57
19	Curlew	1	14:01
20	Lapwing	1	14:03
21	Lapwing	1	14:05
22	Curlew	1	14:10
23	Curlew	1	14:13
24	Merlin	1	14:14
25	Curlew	1	14:19
26	Oystercatcher	2	14:25

Date: 12th May 2011

14:30 - 16:00

1	Curlew	1	14:41
2	Oystercatcher	1	14:41
3	Curlew	1	14:42
4	Lapwing	1	14:51
5	Merlin	1	14:52
6	Lapwing	2	14:58
7	Lapwing	1	14:58
8	Lapwing	1	14:59
9	Curlew	1	15:01
10	Common sandpiper	1	15:01
11	Lapwing	1	15:07
12	Lapwing	1	15:10
13	Lapwing	1	15:11
14	Curlew	1	15:13
15	Curlew	1	15:15
16	Lapwing	3	15:17
17	Curlew	1	15:20
18	Curlew	1	15:21
19	Lapwing	1	15:21
20	Lapwing	1	15:30
21	Lapwing	1	15:30
22	Curlew	1	15:43
23	Canada goose	2	15:45
24	Lapwing	1	15:46
25	Curlew	1	15:46

Date: 13th May 2011

09:00 - 12:00

1	Lapwing	1	09:20
2	Lapwing	1	09:20
3	Lapwing	1	09:26
4	Common sandpiper	1	09:30
5	Curlew	1	09:34
6	Curlew	1	09:34
7	Lapwing	1	09:40
8	Lapwing	1	09:41
9	Red Kite	1	09:41
10	Curlew	1	09:51
11	Curlew	1	09:55
12	Curlew	1	10:00
13	Lapwing	1	10:01
14	Oystercatcher	1	10:02
15	Lapwing	1	10:04
16	Curlew	1	10:12
17	Curlew	1	10:18
18	Curlew	1	10:21
19	Greylag goose	1	10:42
20	Greylag goose	1	10:50
21	Canada goose	4	10:50
22	Canada goose	1	11:42
23	Curlew	1	11:28
24	Oystercatcher	1	11:32
25	Curlew	1	11:41

Date: 3rd June 2011

10:00 - 13:00

1	Redshank	1	10:10
2	Redshank	1	10:13
3	Curlew	1	10:19
4	Canada goose	1	10:20
5	Lapwing	1	10:24
6	Curlew	1	10:24
7	Lapwing	1	10:32
8	Oystercatcher	1	11:06
9	Oystercatcher	1	11:07
10	Curlew	1	11:10
11	Curlew	1	11:23
12	Oystercatcher	1	11:23
13	Curlew	1	11:23
14	Curlew	1	11:30
15	Redshank	1	11:33
16	Redshank	1	11:51
17	Curlew	1	12:03
18	Curlew	1	12:09
19	Curlew	1	12:09
20	Curlew	1	12:09
21	Curlew	1	12:13
22	Lapwing	1	12:16

Date: 3rd June 2011

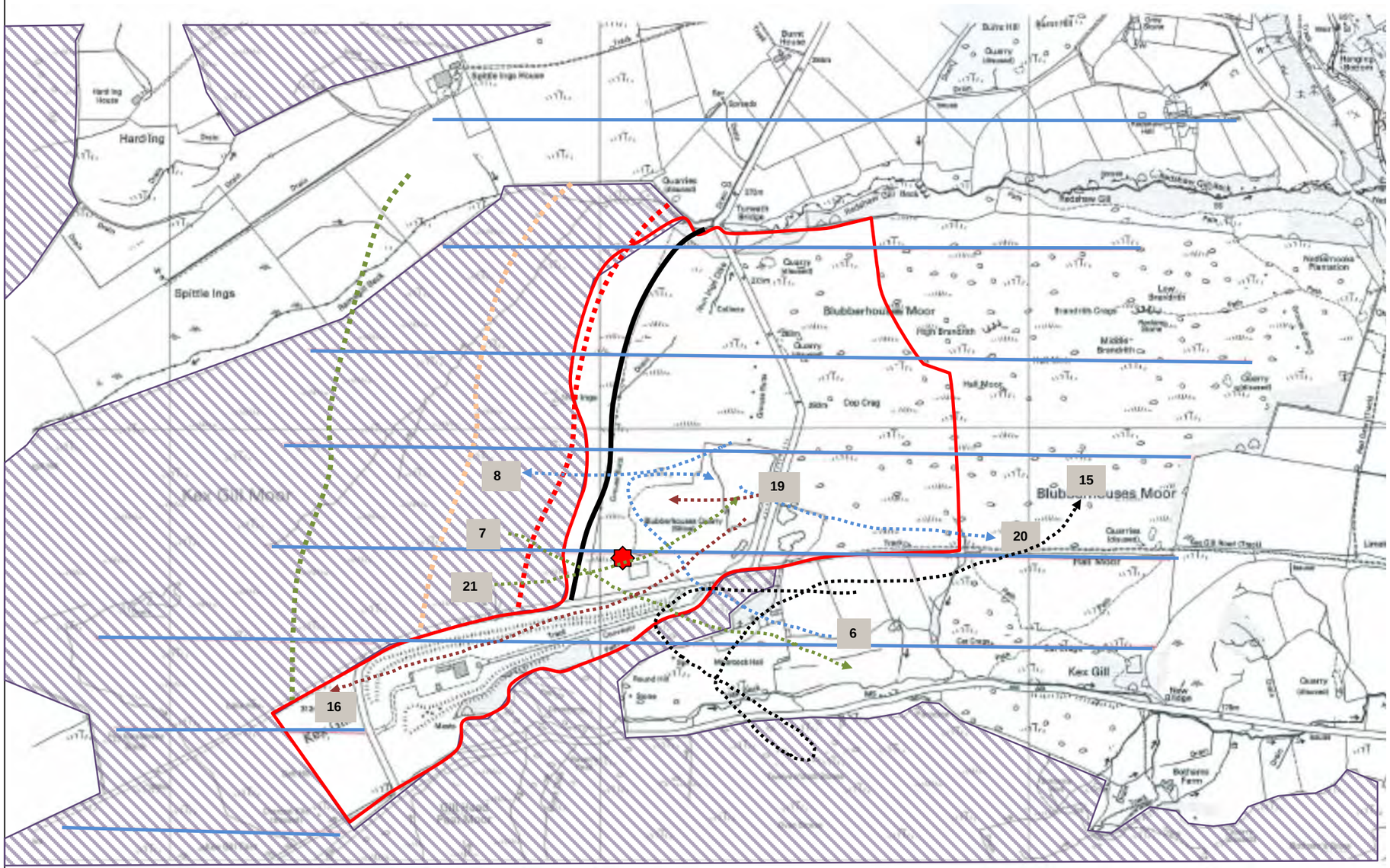
13:00 - 16:00

1	Curlew	1	13:09
2	Lapwing	1	13:18
3	Curlew	1	13:23
4	Oystercatcher	1	13:28
5	Curlew	1	13:31
6	Curlew	1	13:48
7	Curlew	2	13:55
8	Lapwing	8	14:09
9	Lapwing	7	14:09
10	Curlew	1	14:12
11	Curlew	1	14:14
12	Mallard	1	14:26
13	Oystercatcher	1	14:27
14	Oystercatcher	1	14:27
15	Oystercatcher	1	14:41
16	Redshank	1	14:46
17	Curlew	1	14:47
18	Oystercatcher	1	14:59
19	Oystercatcher	1	15:12
20	Oystercatcher	1	15:15
21	Curlew	1	15:30
22	Oystercatcher	1	15:31
23	Redshank	1	15:44

Date: 8th July 2011

16:00 - 09:00

1	Lapwing	1
2	Lapwing	1
3	Curlew	1
4	Kestrel	1



Legend

6 - Greylag goose
7 - Canada goose
8 - Greylag goose
15 - Kestrel
16 – Mallard
19 - Mallard
20 - Greylag goose
21 - Canada goose

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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Nottingham
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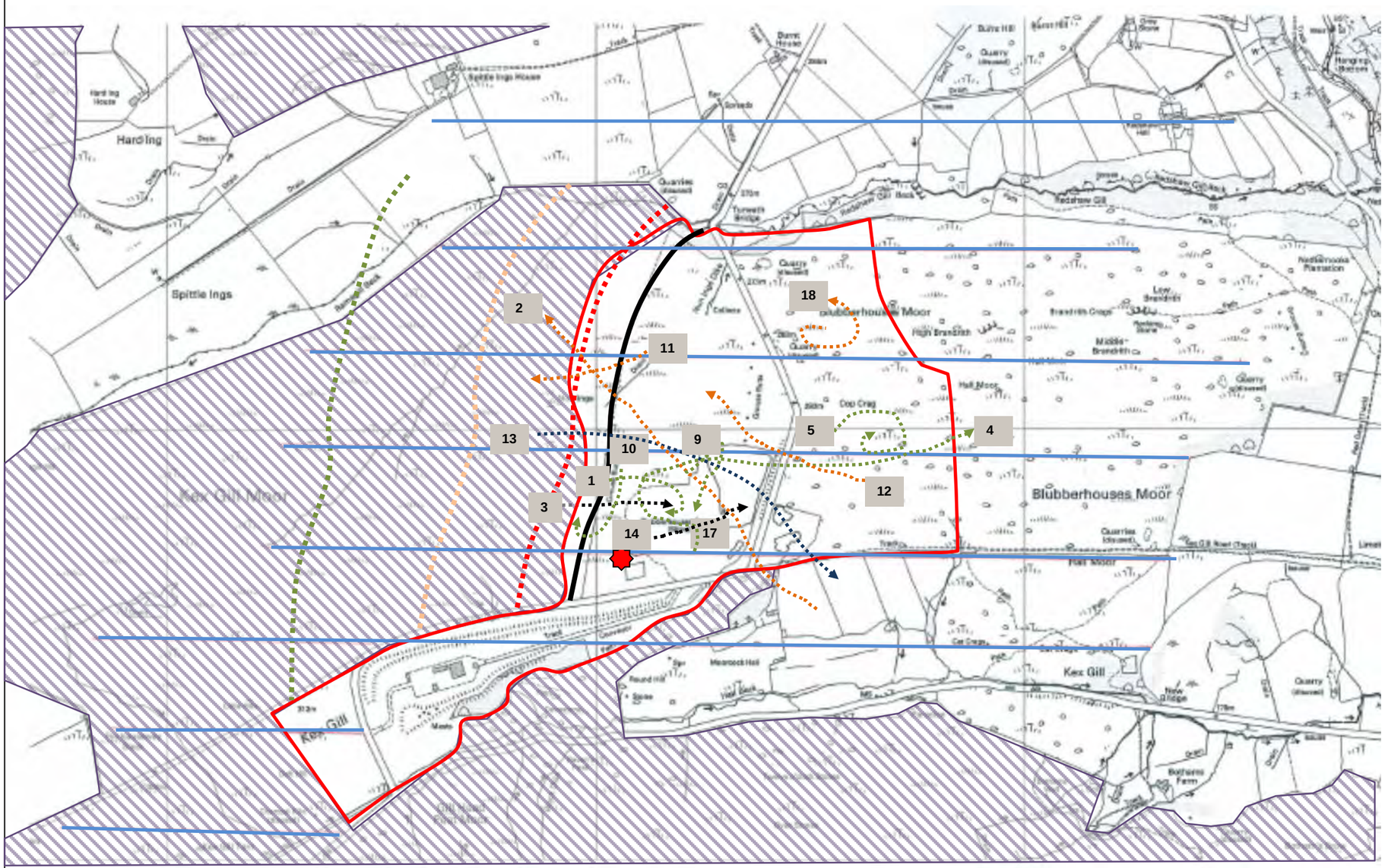
BLUBBERHOUSES QUARRY

Figure 2b
Raptors & Waterfowl
VP 26th April 2011
(10:00 - 13:00)

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

1 - Lapwing
2 - Curlew
3 - Oystercatcher
4 - Lapwing
5 - Lapwing
9 - Lapwing
10 – Lapwing
11 – Curlew
12 – Curlew
13 – Oystercatcher
14 – Common sandpiper
17 - Lapwing
18 - Curlew

Site boundary

Vantage Point

Road diversion

100m

300m

600m

SPA

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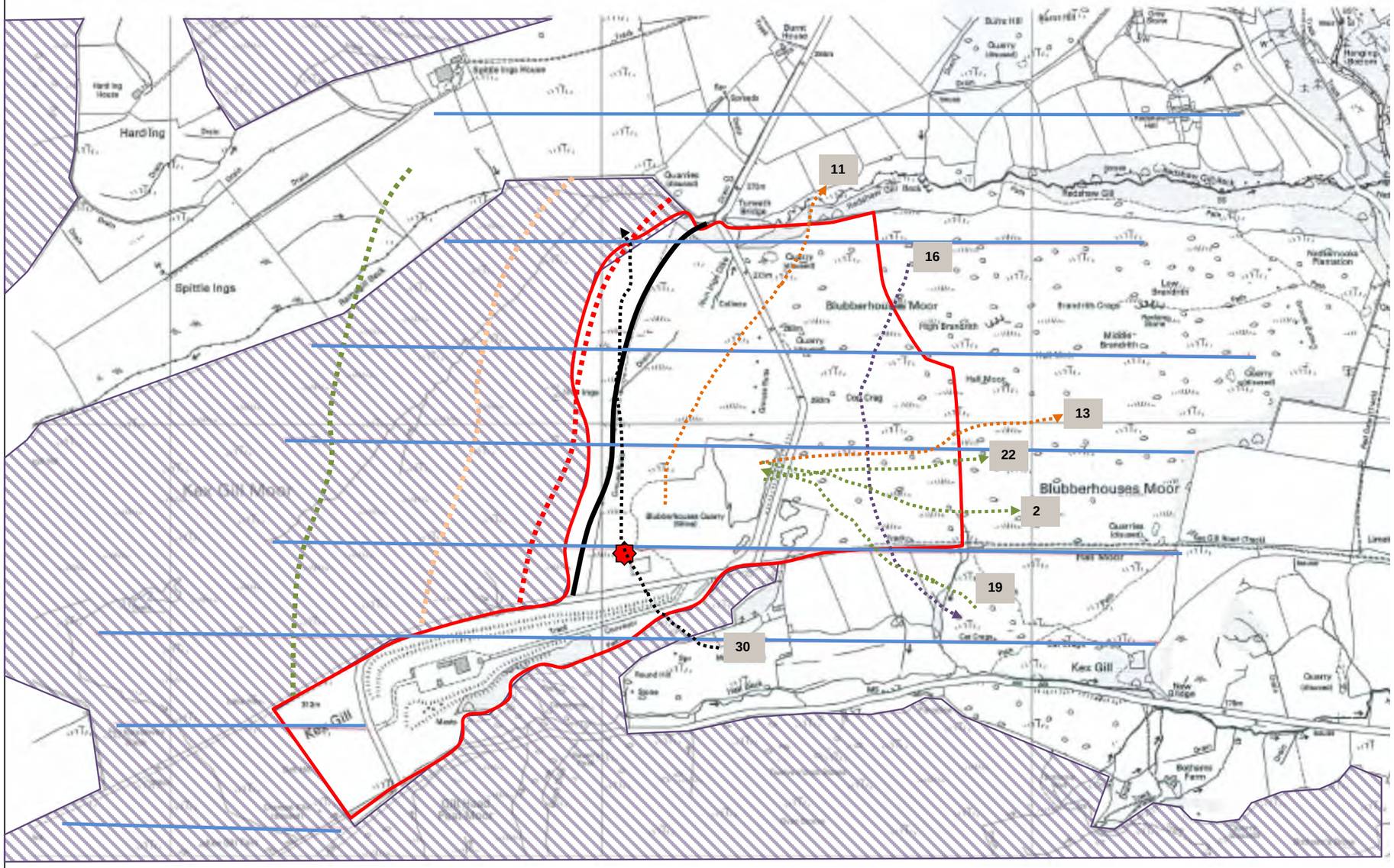
BLUBBERHOUSES QUARRY

Figure 2a
Waders
VP 26th April 2011
(10:00 - 13:00)

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

2 - Greylag goose
11 - Mallard
13 - Mallard
16 - Kestrel
19 - Greylag goose
22 - Greylag goose
30 - Heron

Site boundary
Vantage Point
Road diversion
100m
300m
600m
SPA

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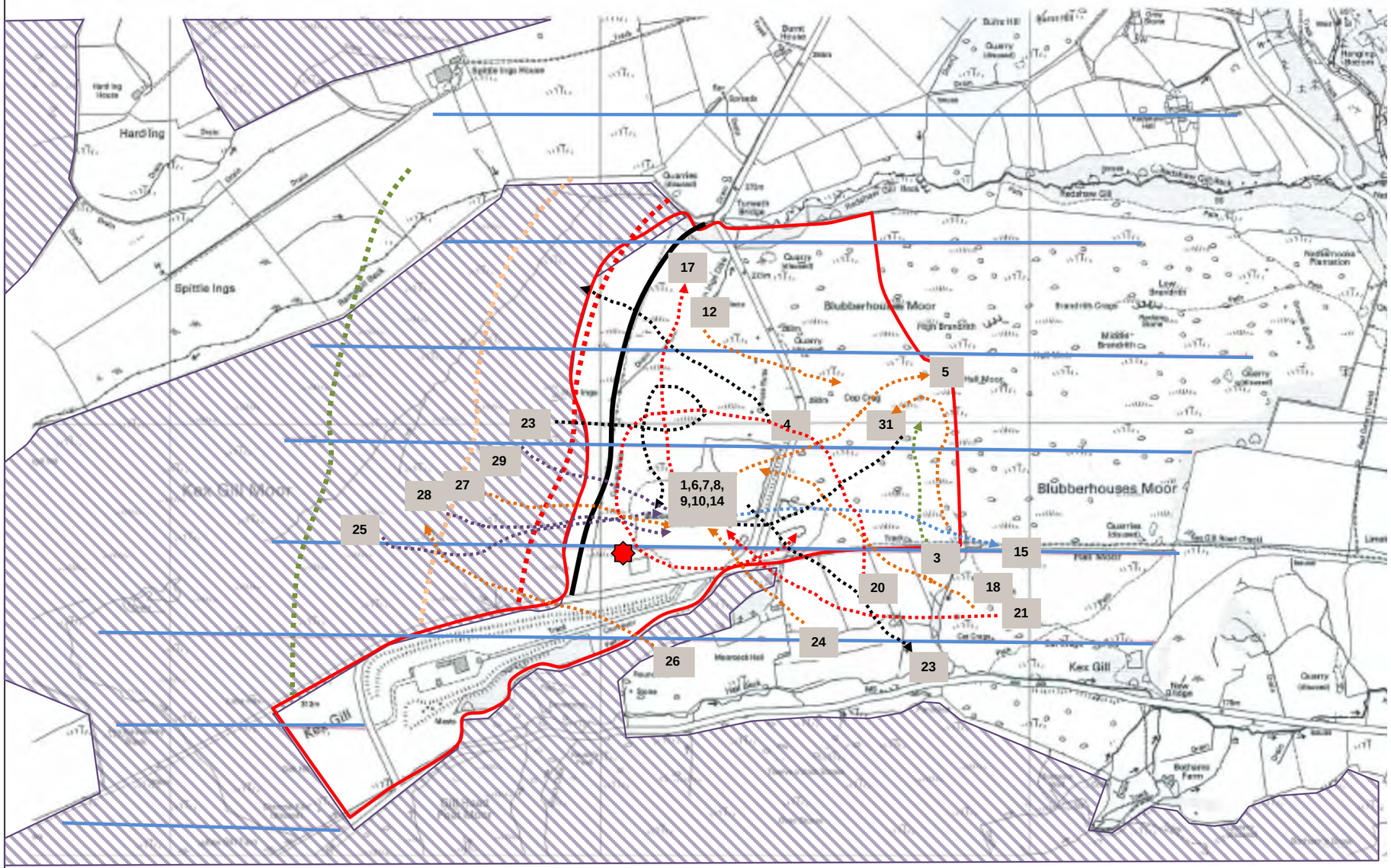
BLUBBERHOUSES QUARRY

Figure 3b
Wildfowl & Raptors
VP 26th April 2011
(14:00 - 17:00)

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

1 – Curlew
3 – Lapwing
4 - Oystercatcher
5 - Curlew
6 - Lapwing
7 - Curlew
8 - Curlew
9 - Oystercatcher
10 – Lapwing
12 - Curlew
14 - Lapwing
15 - Curlew
17 - Redshank
18 – Curlew
20 - Redshank
21 - Redshank
23 - Oystercatcher
24 – Curlew
25 - B H Gull
26 – Curlew
27 - Curlew
28 - B H Gull
29 - B H Gull
31 - Curlew

Site boundary
Vantage Point
Road diversion
100m
300m
600m
SPA

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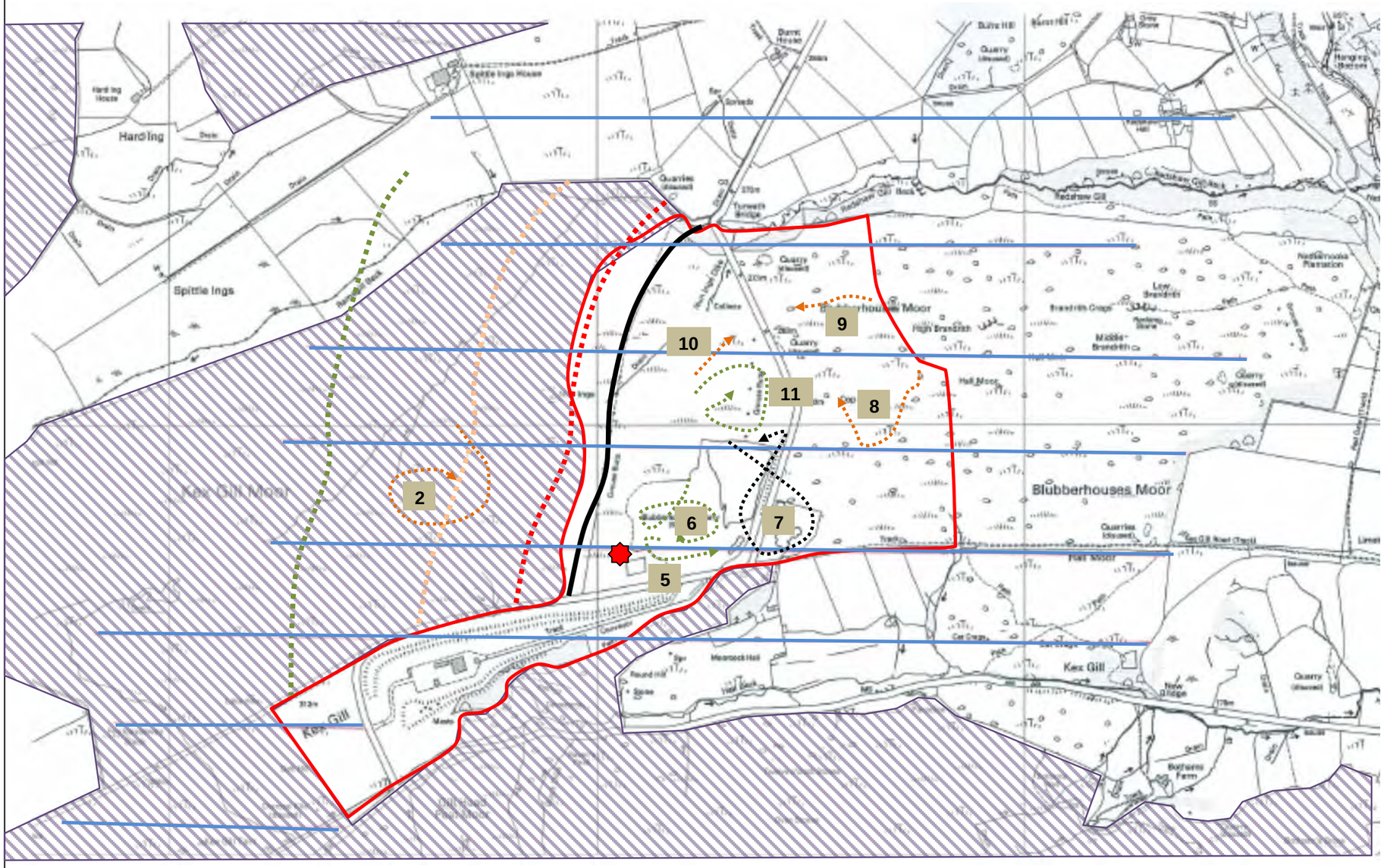
BLUBBERHOUSES QUARRY

Figure 3a
Waders and Gulls
VP 26th April 2011
(14:00 - 17:00)

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

2 - Curlew
5 - Lapwing
6 - Lapwing
7 - Oystercatcher
8 - Curlew
9 - Curlew
10 - Curlew
11 - Lapwing

Site boundary
Vantage Point
Road diversion
100m
300m
600m
SPA

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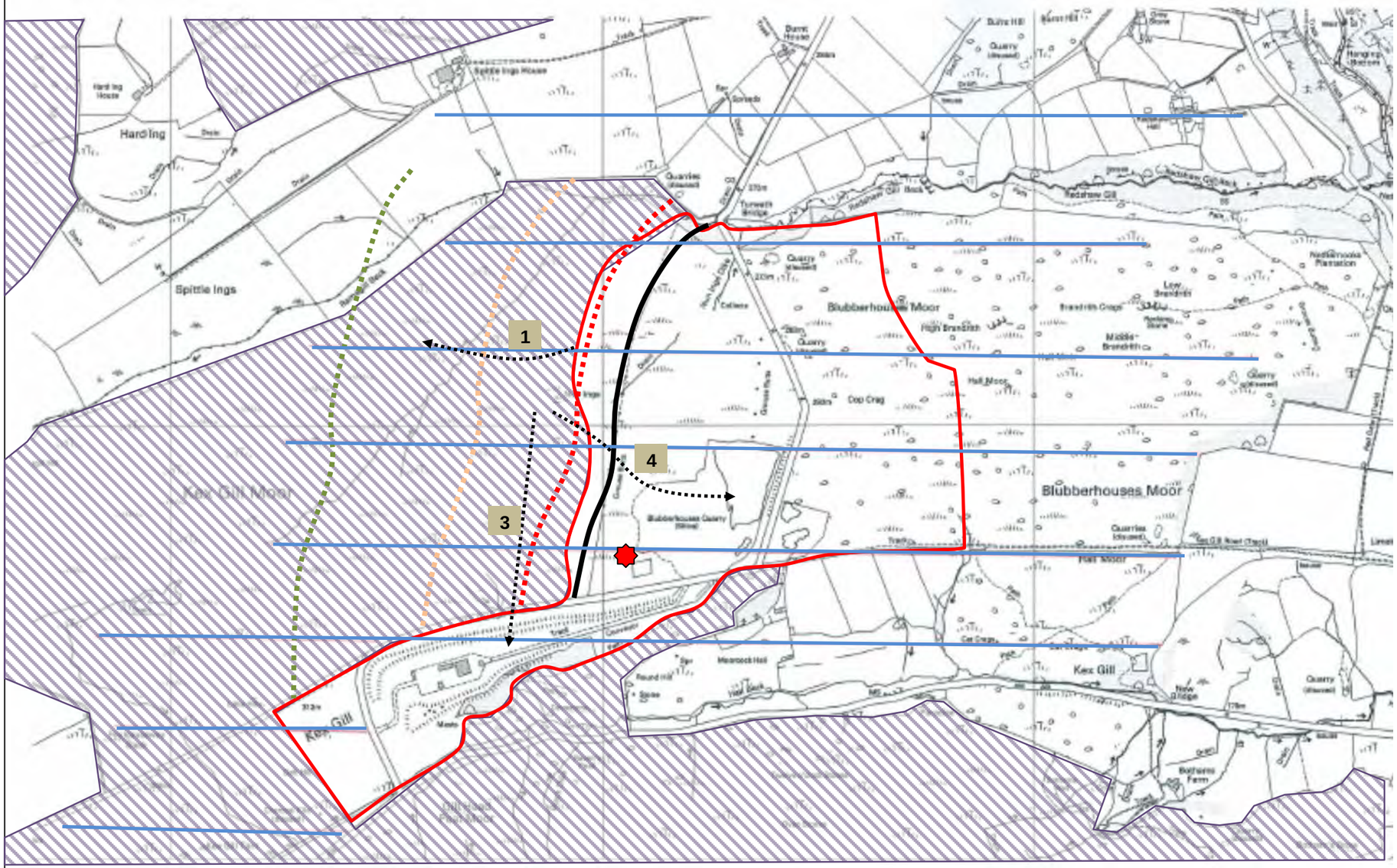
BLUBBERHOUSES QUARRY

Figure 1a
Waders
VP 25th March 2011

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

1 – Buzzard

3 – Kestrel

4 - Greylag goose

Site boundary

Vantage Point

Road diversion

100m

300m

600m

SPA

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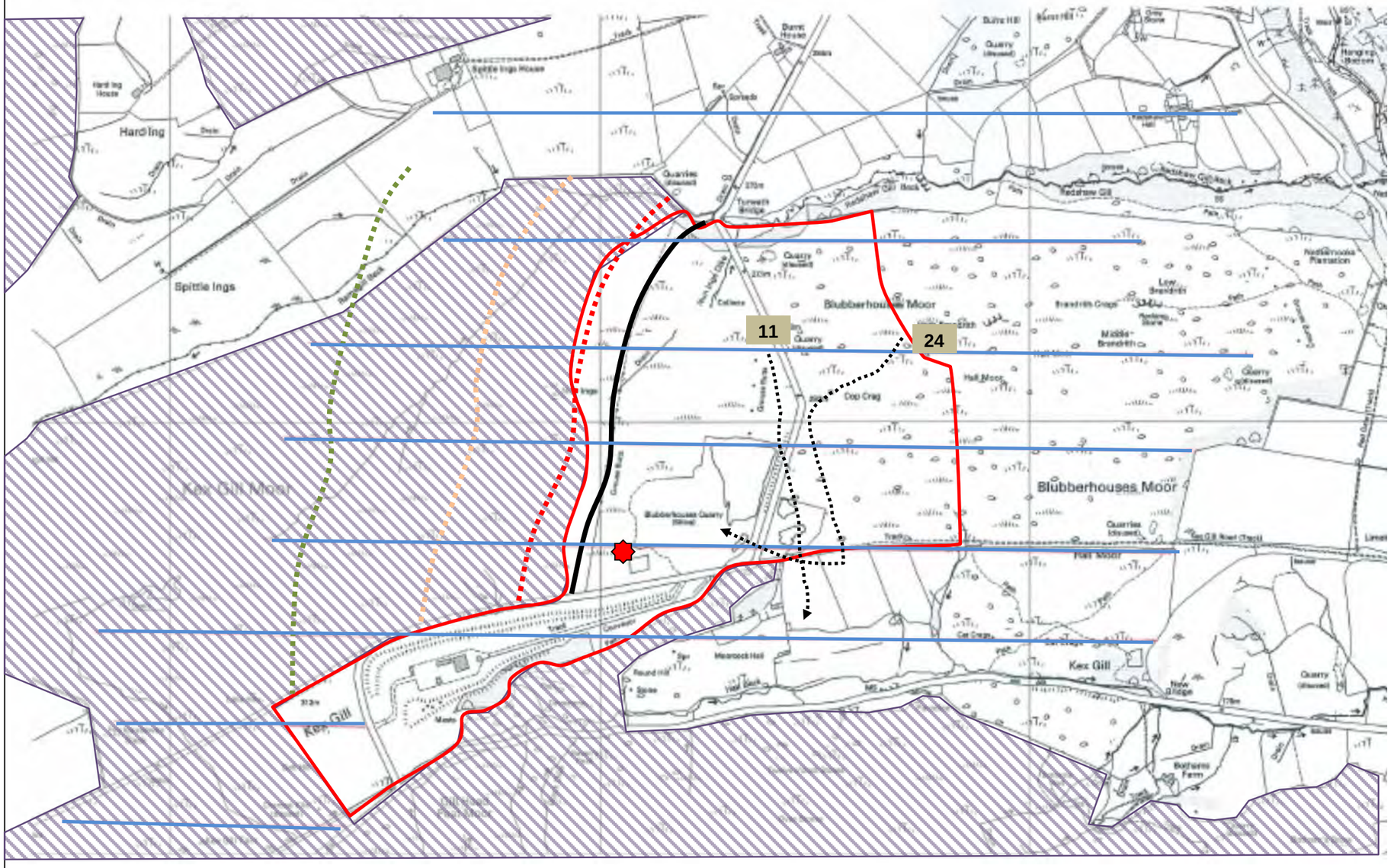
BLUBBERHOUSES QUARRY

Figure 1b
Raptors & Waterfowl
VP 25th March 2011

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

11 - Merlin

24 - Merlin

Site boundary

Vantage Point

Road diversion

100m

300m

600m

SPA

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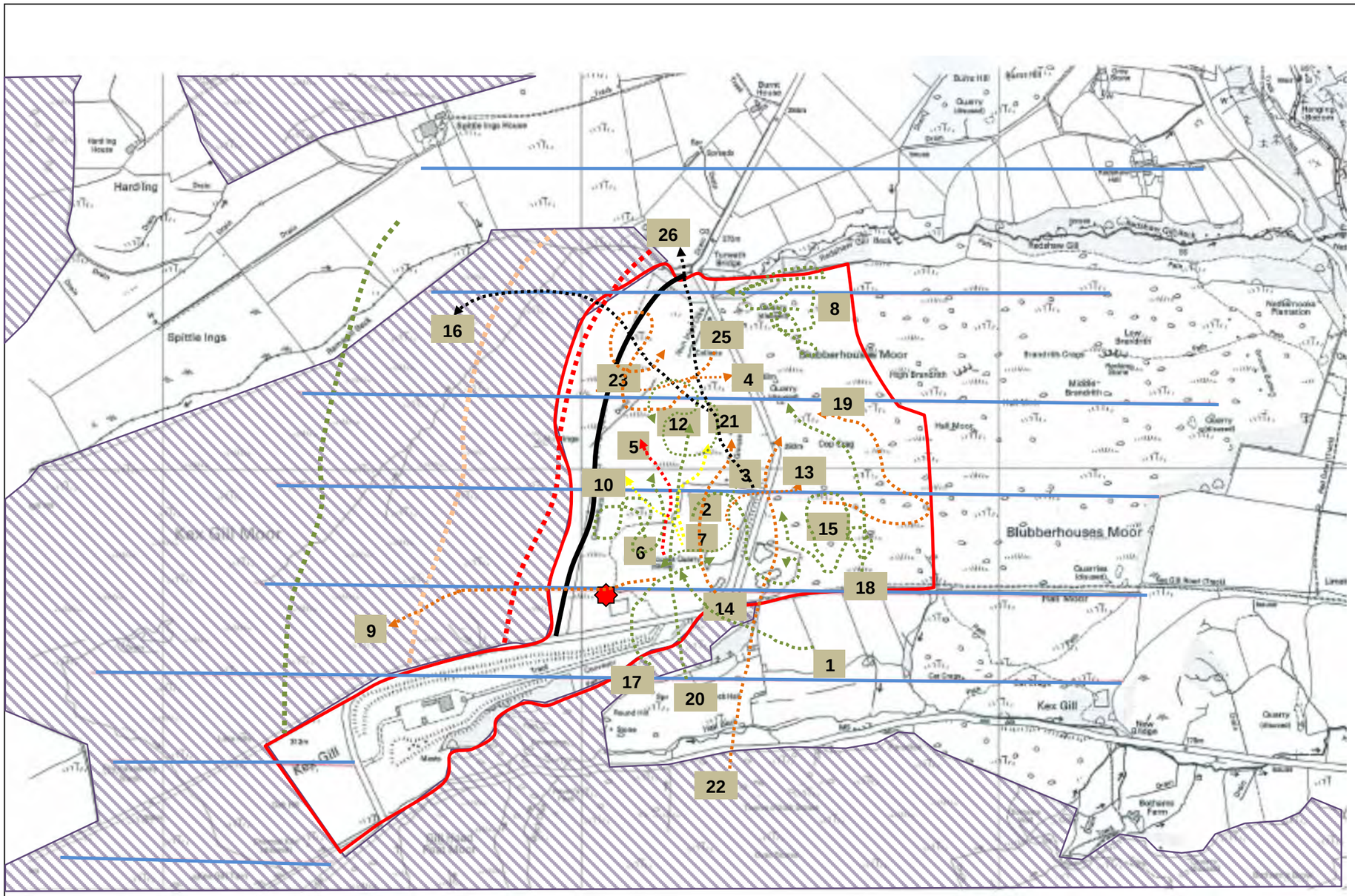
BLUBBERHOUSES QUARRY

Figure 4b
Raptors
VP 12th May 2011
(13:00 - 14:30)

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

1 - Lapwing	2 - Lapwing
3 - Lapwing	4 - Curlew
5 - Redshank	6 - Lapwing
7 - Golden plover	8 - Lapwing
9 - Curlew	10 - Golden plover
12 – Lapwing	13 - Curlew
14 – Curlew	15 – Lapwing
16 - Oystercatcher	17 - Lapwing
18 – Curlew	19 – Curlew
20 – Lapwing	21 - Lapwing
22 – Curlew	23 - Curlew
25 - Curlew	26 - Oystercatcher

- **Site boundary**
- **Vantage Point**
- **Road diversion**
- **100m**
- **300m**
- **600m**
- **SPA**

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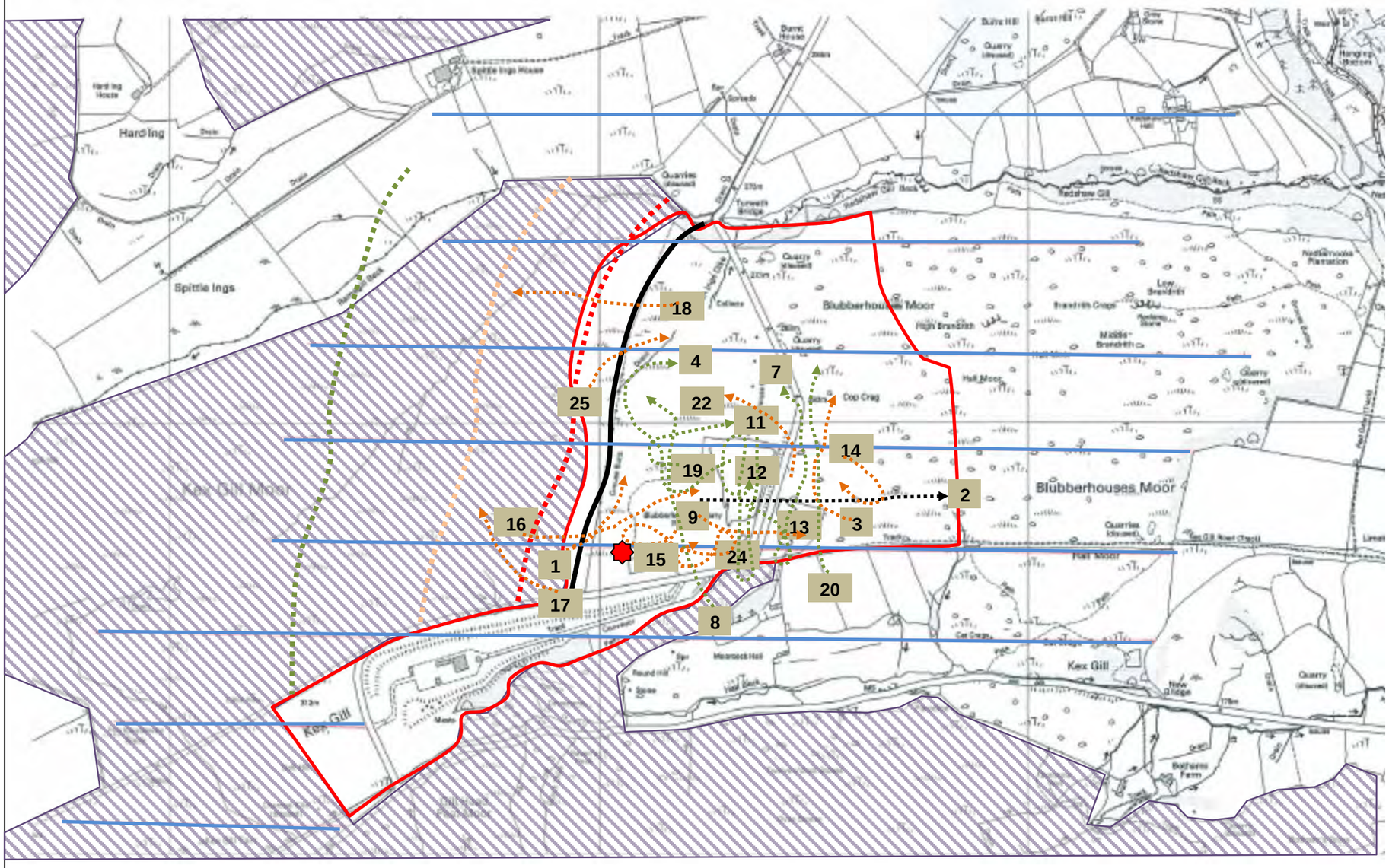
BLUBBERHOUSES QUARRY

Figure 4a
Waders
VP 12th May 2011
(13:00 - 14:30)

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

1 - Curlew	2 - Oystercatcher
3 - Curlew	4 -Lapwing
6 – Lapwing	7 – Lapwing
8 – Lapwing	9 - Curlew
11 - Lapwing	12 - Lapwing
13 - Lapwing	14 - Curlew
15 - Curlew	16 - Curlew
17 - Curlew	18 - Curlew
19 - Lapwing	20 - Lapwing
21 - Lapwing	22 - Curlew
24 – Lapwing	25 - Curlew

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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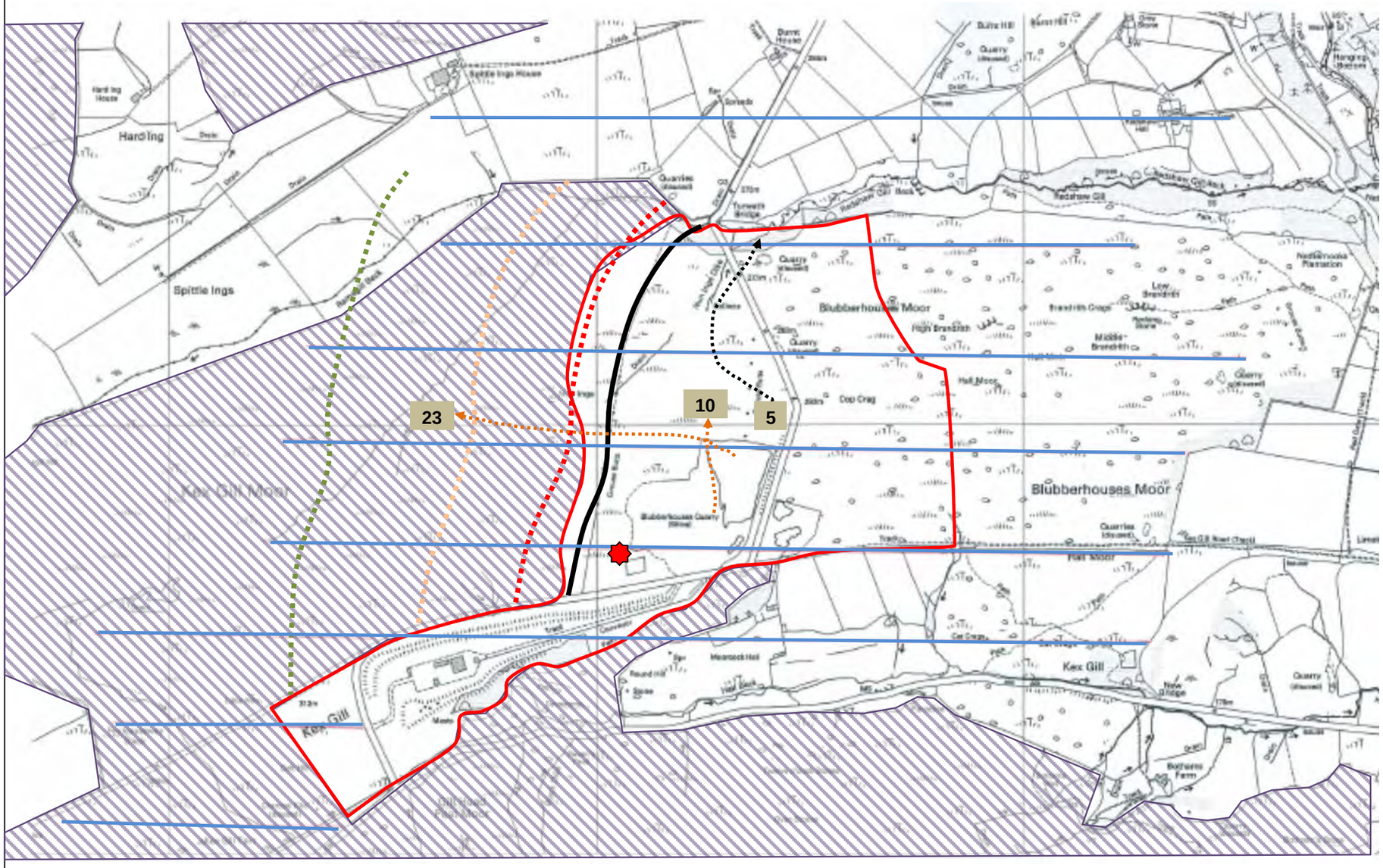
BLUBBERHOUSES QUARRY

Figure 5a
Waders
VP 12th May 2011
(14:40 -16:00)

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

5 – Merlin

10 - Canada goose

23 - Canada goose

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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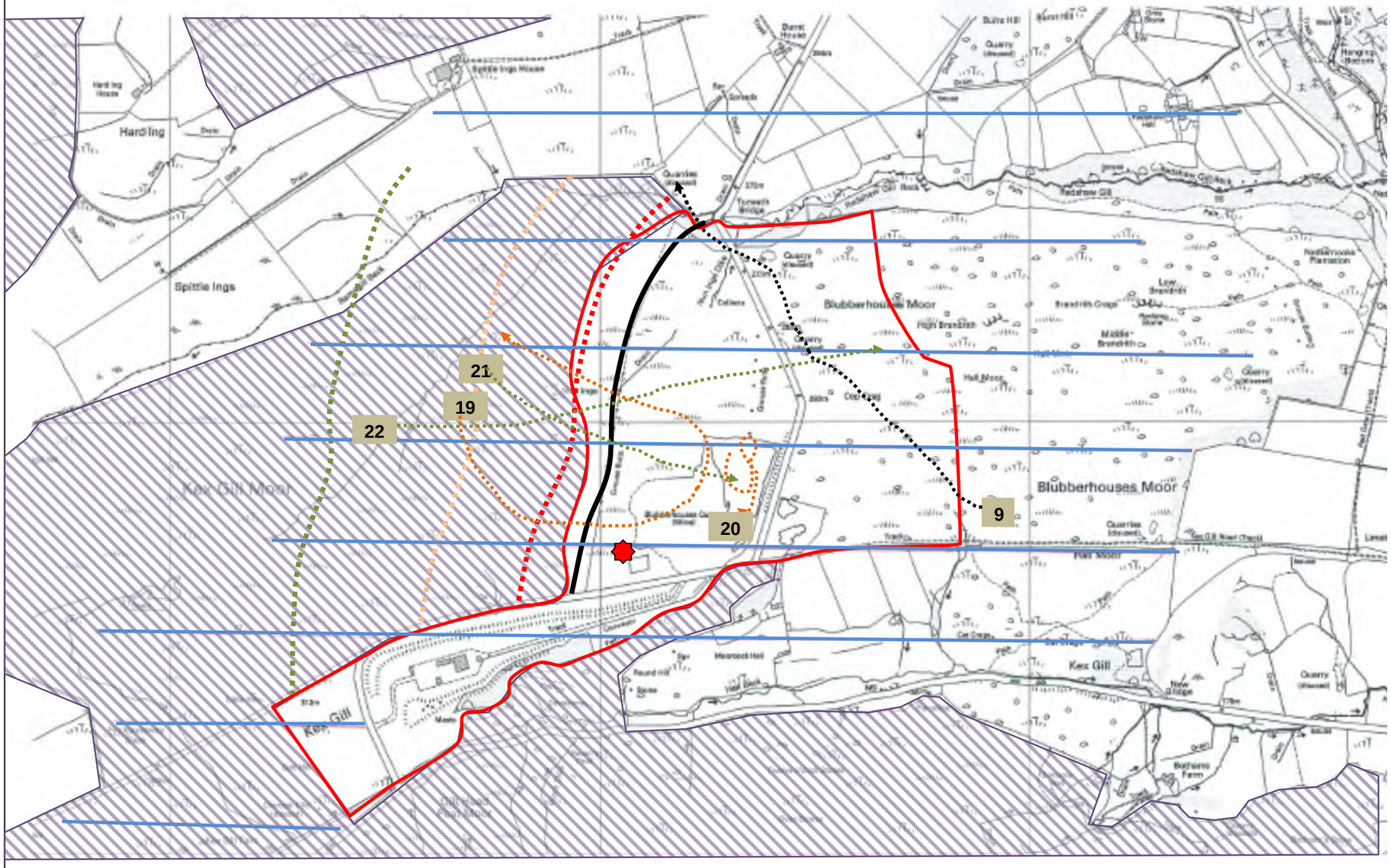
BLUBBERHOUSES QUARRY

Figure 5b
Wildfowl & Raptors
VP 12th May 2011
(14:40 -16:00)

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

9 - Red Kite

19 - Greylag goose 20 - Greylag goose

21 - Canada goose 22 - Canada goose

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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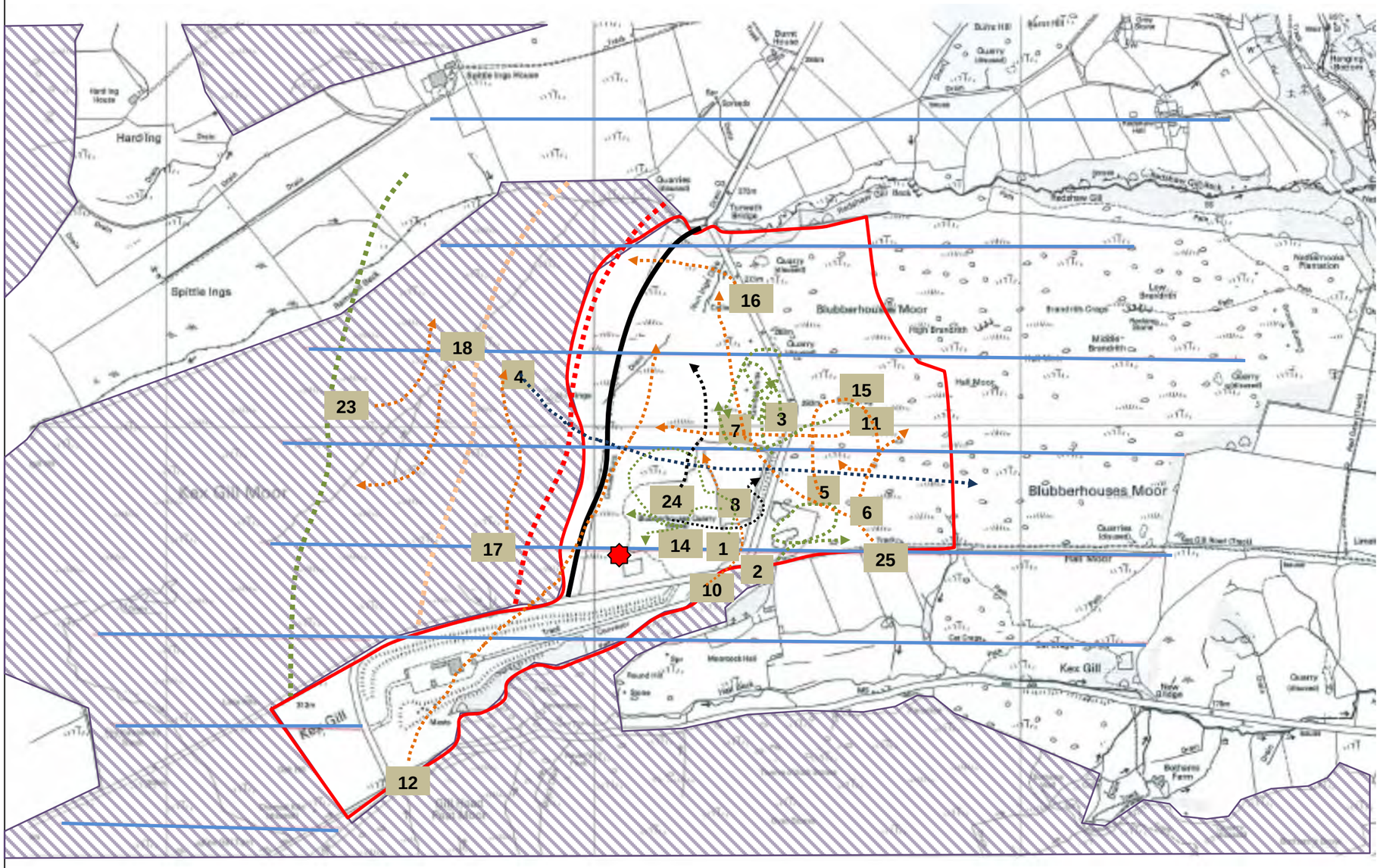
BLUBBERHOUSES QUARRY

Figure 6b
Wildfowl & Raptors
VP 13th May 2011
(09:00 -12:00)

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

1 - Lapwing	2 - Lapwing
3 - Lapwing	4 -Common sandpiper
5 - Curlew	6 - Curlew
7 - Lapwing	8 – Lapwing
10 – Curlew	11 – Curlew
12 – Curlew	13 – Lapwing
14 – Oystercatcher	15 - Lapwing
16 – Curlew	17 – Curlew
18 – Curlew	23 – Curlew
24 – Oystercatcher	25 - Curlew

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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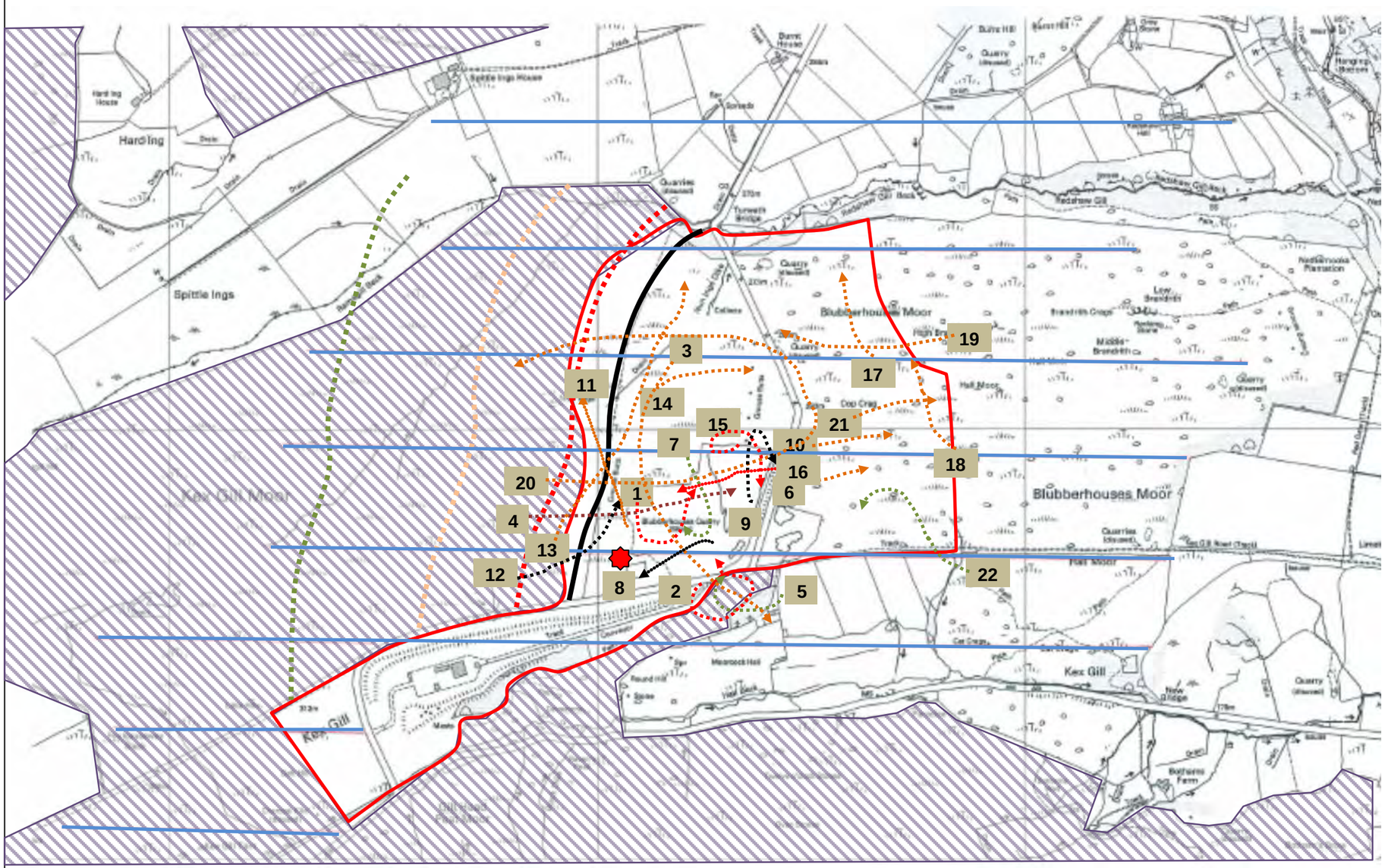
BLUBBERHOUSES QUARRY

Figure 6a
Waders
VP 13th May 2011
(09:00 -12:00)

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

1 - Redshank	2 - Redshank
3 - Curlew	4 - Canada goose
5 - Lapwing	6 - Curlew
7 - Lapwing	8 - Oystercatcher
9 - Oystercatcher	10 - Curlew
11 - Curlew	12 - Oystercatcher
13 - Curlew	14 - Curlew
15 - Redshank	16 - Redshank
17 - Curlew	18 - Curlew
19 - Curlew	20 - Curlew
21 - Curlew	22 - Lapwing

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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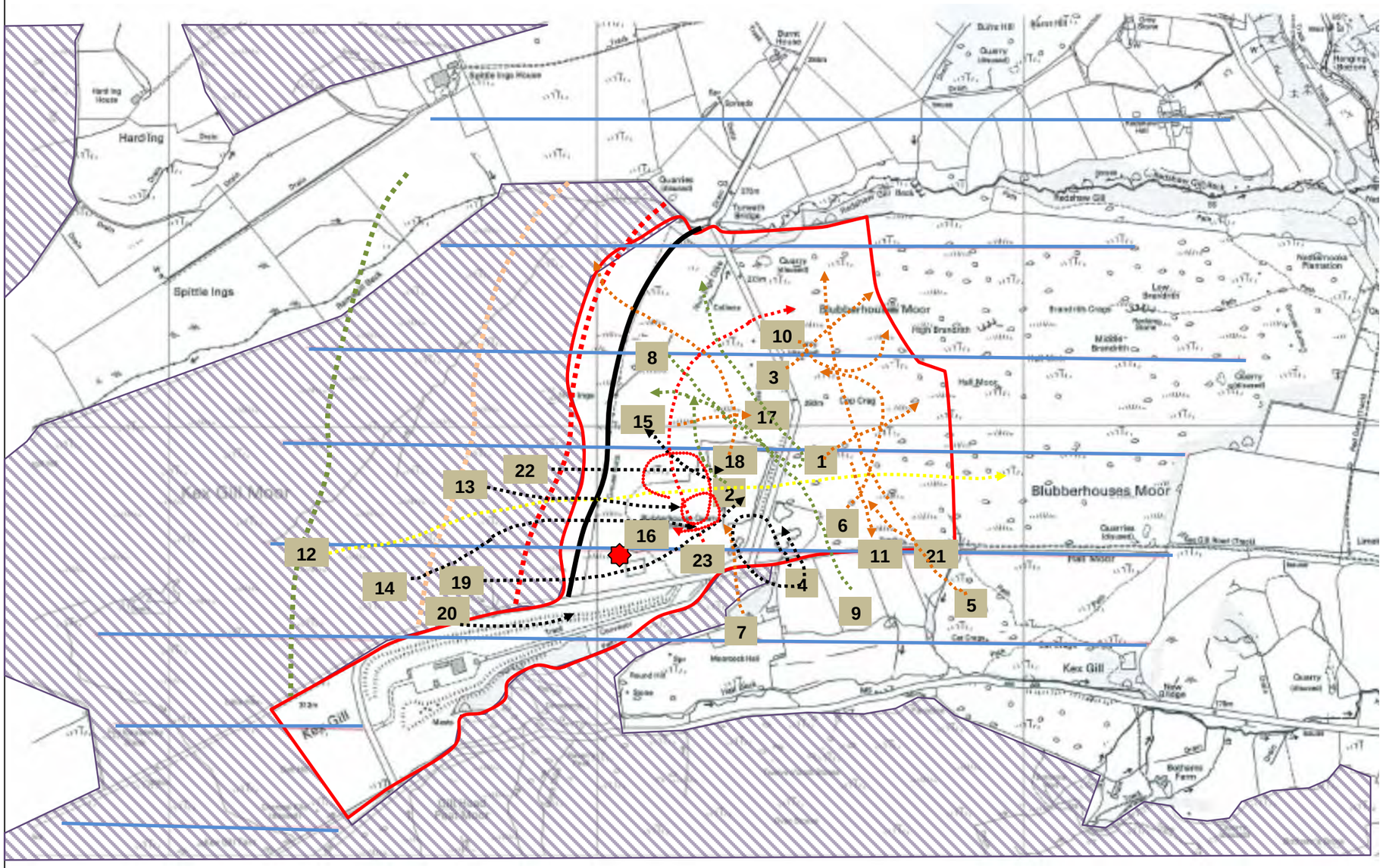
BLUBBERHOUSES QUARRY

Figure 7
Waders and Waterfowl
VP 3rd June 2011
(11:00 -13:00)

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

1 - Curlew	2 - Lapwing
3 - Curlew	4 - Oystercatcher
5 - Curlew	6 - Curlew
7 - Curlew	8 - Lapwing
9 - Lapwing	10 - Curlew
11 - Curlew	12 - Mallard
13 - Oystercatcher	14 - Oystercatcher
15 - Oystercatcher	16 - Redshank
17 - Curlew	18 - Oystercatcher
19 - Oystercatcher	20 - Oystercatcher
21 - Curlew	22 - Oystercatcher
23 - Redshank	

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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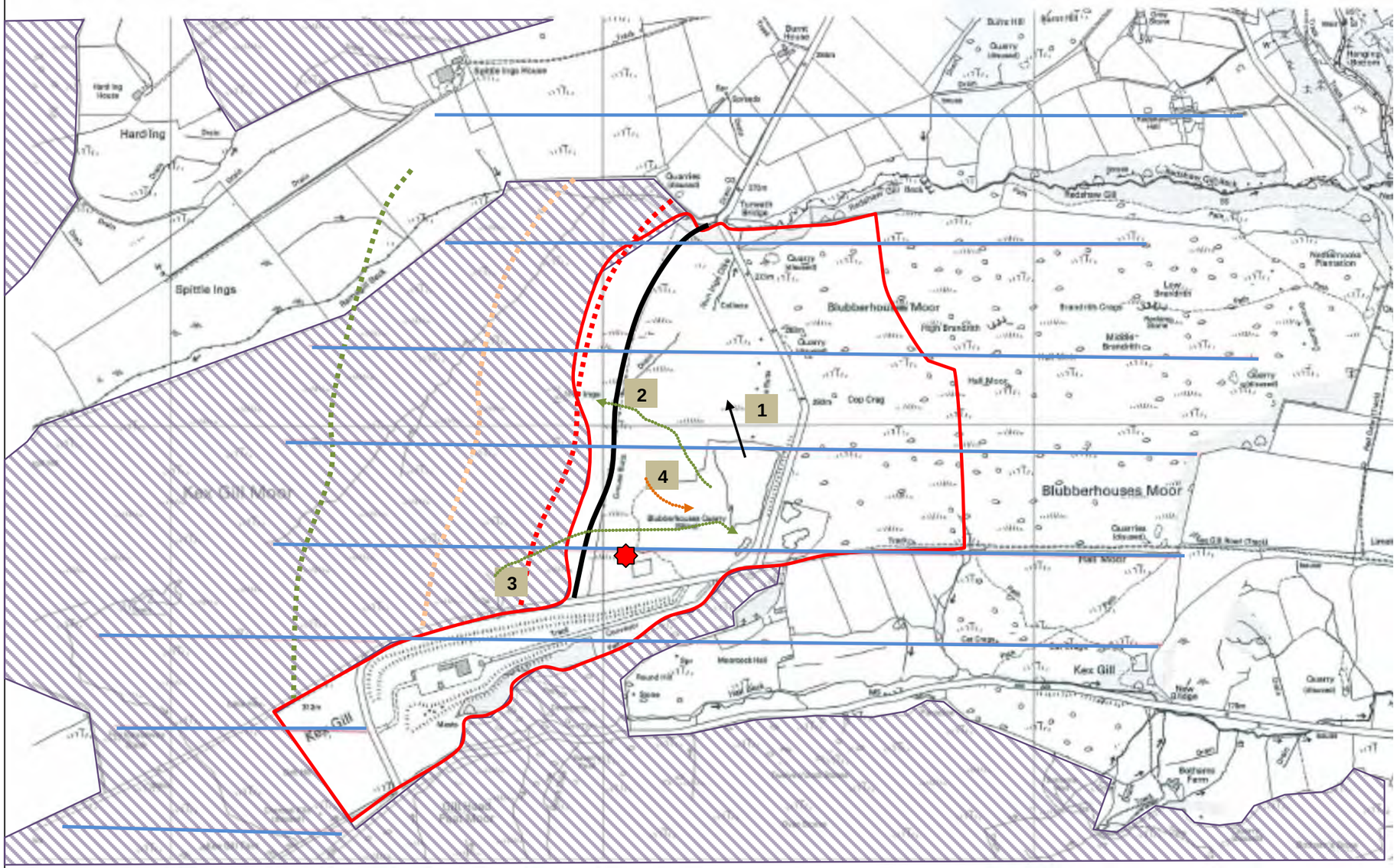
BLUBBERHOUSES QUARRY

Figure 8
Waders & Waterfowl
VP 3rd June 2011
(13:00 -16:00)

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

1 - Kestrel

2 - Lapwing

3 - Lapwing

4 - Greylag goose

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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BLUBBERHOUSES QUARRY

Figure 9
VP 7th July 2011
(06:00 - 09:00)

Drawn by: DC	Checked by:	Date: 4/10/12

APPENDIX 3

Vantage Point Surveys 2012

Date: 22nd March 2012
15:30 - 18:30

Number on Plan	Species	Number	Time
	Widlfowl		
1	Greylag goose	2	16:47
2	Greylag goose	2	17:01
3	Canada goose	2	17:02
4	Canada goose	2	17:03
5	Greylag goose	2	17:18
6	Canada goose	6	17:30
7	Mallard	2	17:32
8	Canada goose	2	17:33
9	Canada goose	1	18:00
10	Mallard	2	18:04
11	Greylag goose	2	18:10
12	Greylag goose	16	18:20
	Waders		
1	Curlew	2	17:54
2	Oystercatcher	2	17:58
3	Curlew	2	18:05
4	Curlew	2	18:12
5	Curlew	7	18:25

Date: 23rd March 2012
06:00 - 09:00

Number on Plan	Species	Number	Time
	Widlfowl		
1	Canada goose	2	06:10
2	Greylag goose	2	06:11
3	Greylag goose	2	06:21
4	Greylag goose	2	06:32
5	Mallard	1	06:36
6	Canada goose	1	06:45
7	Greylag goose	2	06:47
8	Mallard	2	06:55
9	Mallard	1	06:55
10	Greylag goose	1	07:19
11	Canada goose	1	07:16
12	Canada goose	2	07:27
13	Greylag goose	4	07:27
14	Greylag goose	1	07:39
15	Greylag goose		07:54
16	Greylag goose	2	08:25
17	Mallard	1	08:50
	Waders		
1	Oystercatcher	1	06:41
2	Oystercatcher	2	07:18
3	Curlew	2	07:19
4	Curlew	1	07:48
5	Lapwing	2	08:00
6	Curlew	1	08:04
7	Curlew	1	08:09
8	Curlew	1	08:51

Date: 21st April 2012
12:30 - 15:30

Number on Plan	Species	Number	Time
	Widlfowl		
1	Greylag goose	2	12:35
2	Canada goose	3	12:48
3	Canada goose	1	12:54
4	Shelduck	2	13:27
5	Canada goose	2	14:36
6	Canada goose	2	14:37
7	Canada goose	4	14:43

Date: 26th May 2012
18:30 - 21:30

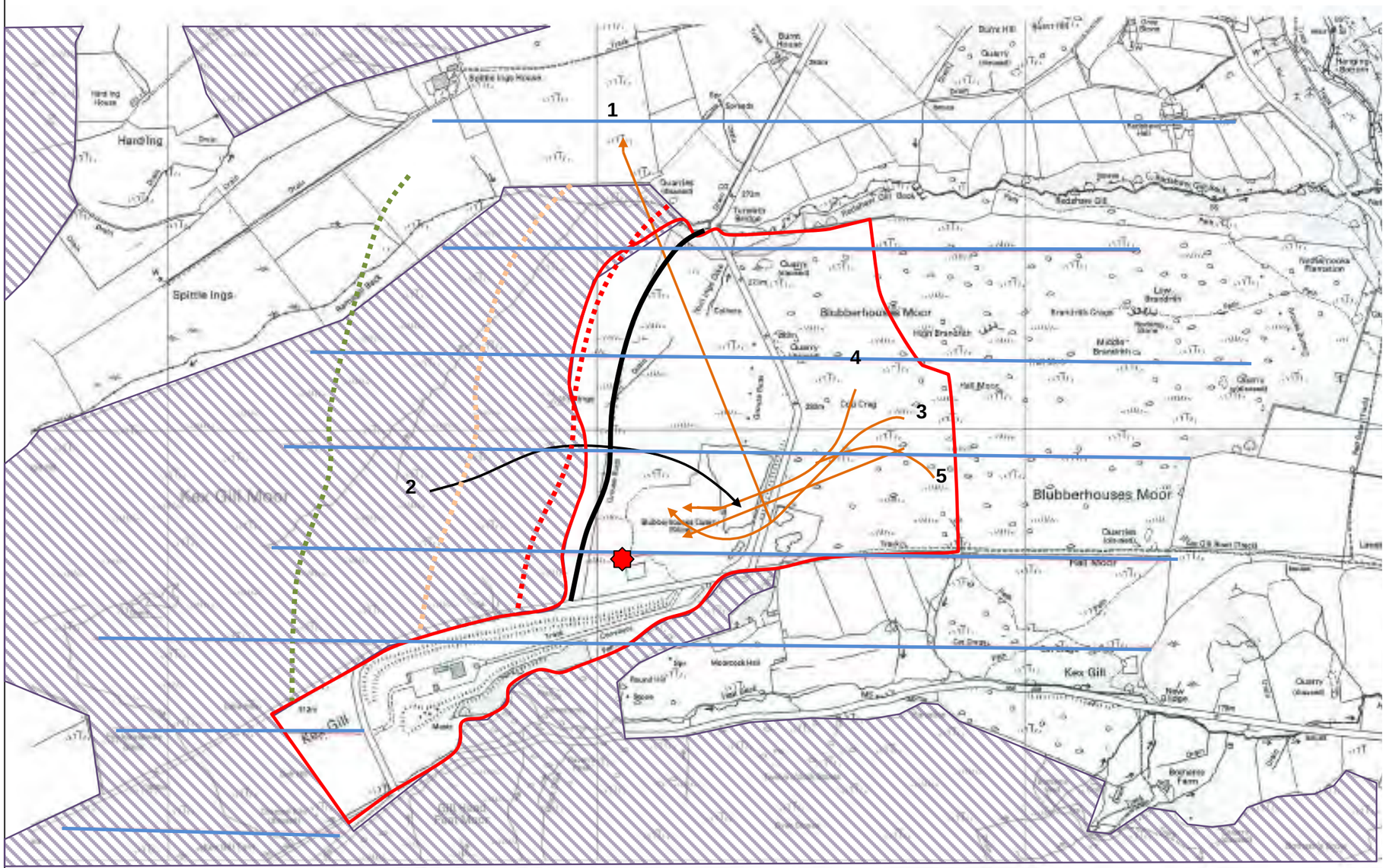
Number on Plan	Species	Number	Time
	Waders		
1	Curlew	1	18:36
2	Curlew	1	18:41
3	Lapwing	1	18:42
4	Lapwing	1	18:50
5	Lapwing	1	18:51
6	Curlew	2	18:53
7	Curlew	2	18:54
8	Curlew	1	18:59
9	Curlew	2	19:56
10	Lapwing	1	19:57
11	Curlew	1	20:01
12	Curlew	2	20:04
13	Curlew	2	20:07
14	Golden plover	1	20:15
15	Common sandpiper	1	20:21
16	Golden plover	1	20:26
17	Curlew	1	20:33
	Raptors		
1	Buzzard	1	18:30
2	Kestrel	1	18:47
3	Kestrel	1	18:56
4	Red kite	1	19:00
5	Merlin	1	19:38
6	Merlin	1	19:44
	Wildfowl		
1	Canada goose	2	19:15
2	Greylag goose	3	19:27
3	Canada goose	3	20:37
4	Greylag goose	2	20:43

Date: 17th June 2012
05:15 08:15

Number on Plan	Species	Number	Time
	Waders		
1	Curlew	1	05:15
2	Curlew	1	05:17
3	Redshank	1	05:22
4	Lapwing	2	05:30
5	Lapwing	1	05:44
6	Golden Plover	1	05:56
7	Curlew	1	06:04
8	Oystercatcher	1	06:08
9	Oystercatcher	1	06:15
10	Lapwing	2	06:17
11	Curlew	1	06:25
12	Lapwing	1	06:28
13	Lapwing	1	07:00
14	Curlew	2	07:21
15	Curlew	1	07:33
16	Curlew	1	07:43
17	Curlew	1	07:52
18	Lapwing	1	07:58
	Raptors		
1	Merlin	1	06:11
2	Merlin	1	06:37
3	Merlin	1	07:38
4	Red kite	1	08:09
	Wildlfowl		
1	Canada goose	2	05:36
2	Canada goose	2	06:12
3	Greylag goose	2	06:45
4	Greylag goose	1	07:27
5	Greylag goose	2	07:40
6	Greylag goose	1	08:15
7	Greylag goose	2	08:16

Date: 26th July 2012
05:15 08:15

Number on Plan	Species	Number	Time
	Waders		
1	Redshank	2	06:10
2	Oystercatcher	2	07:03
3	Oystercatcher	1	07:08
Wildfowl			
1	Mallard	1	06:38



Legend

22nd March 15:30 -18:30

Curlew flights: 1, 3, 4, 5

Oystercatcher flights: 2

Site boundary

Vantage Point

Road diversion

100m

300m

600m

SPA

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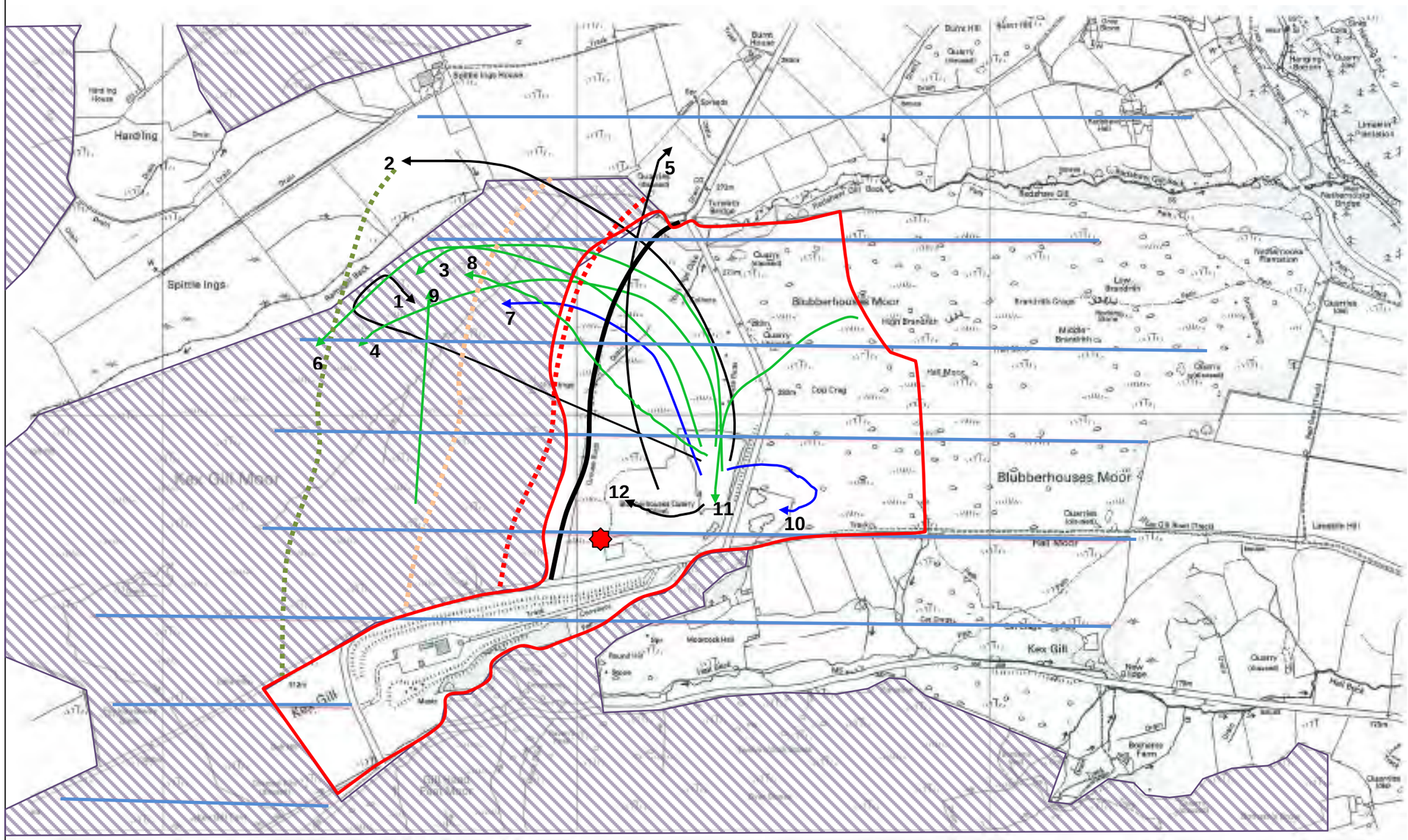
BLUBBERHOUSES QUARRY

Figure 6
VP 22nd March 2012: Waders

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

22nd March 15:30 -18:30

Greylag goose: 1, 2, 5, 11, 12

Canada goose: 3, 4, 7, 8, 9

Mallard: 7, 10

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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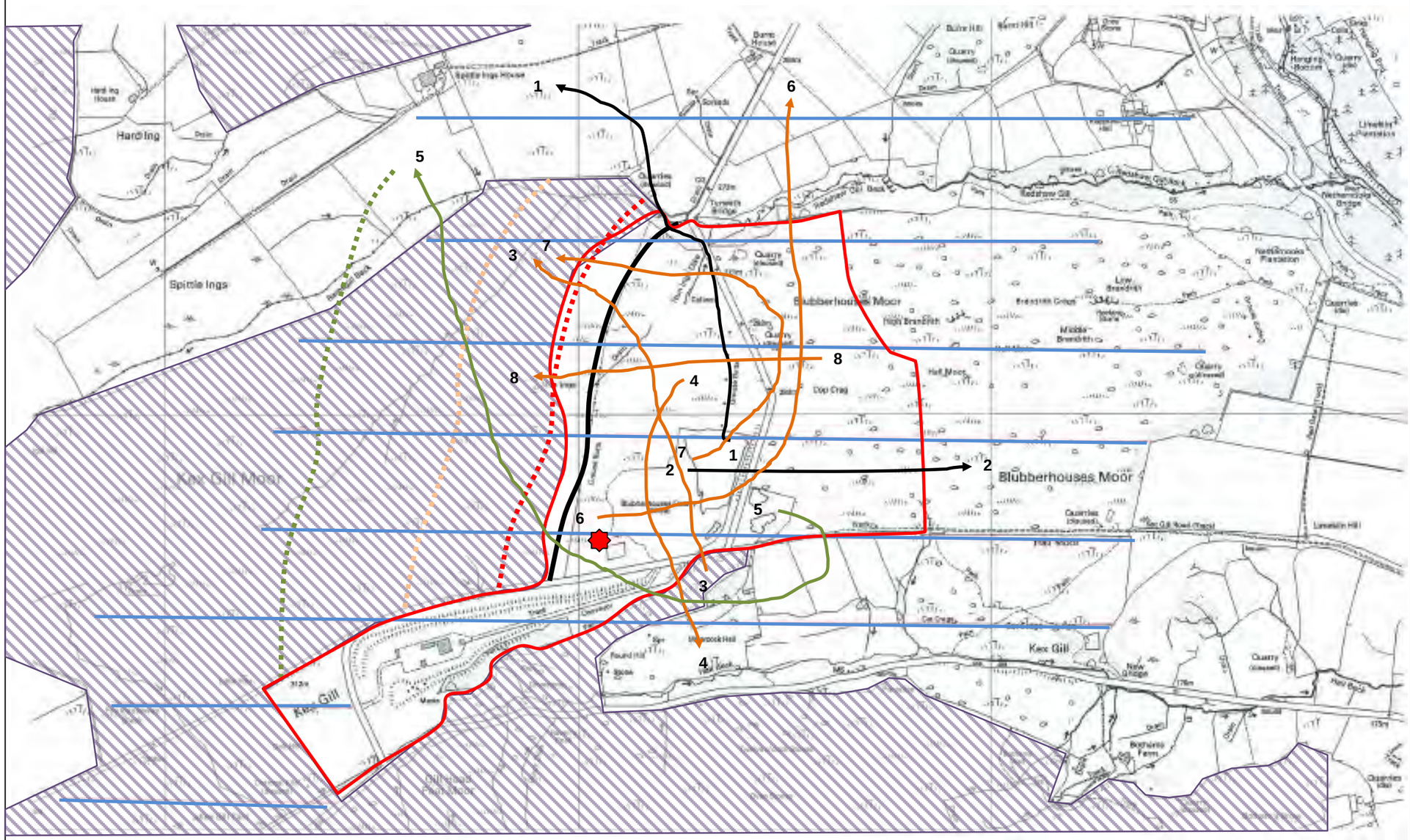
BLUBBERHOUSES QUARRY

Figure 7
VP 22nd March: Wildfowl

Reproduction: Based on a map provided by Client

Drawn by:	Checked by:	Date:



Legend

23rd March 06:00 -09:00

Oystercatcher; 1, 2

Curlew: 3, 4, 6, 7, 8

Lapwing: 5

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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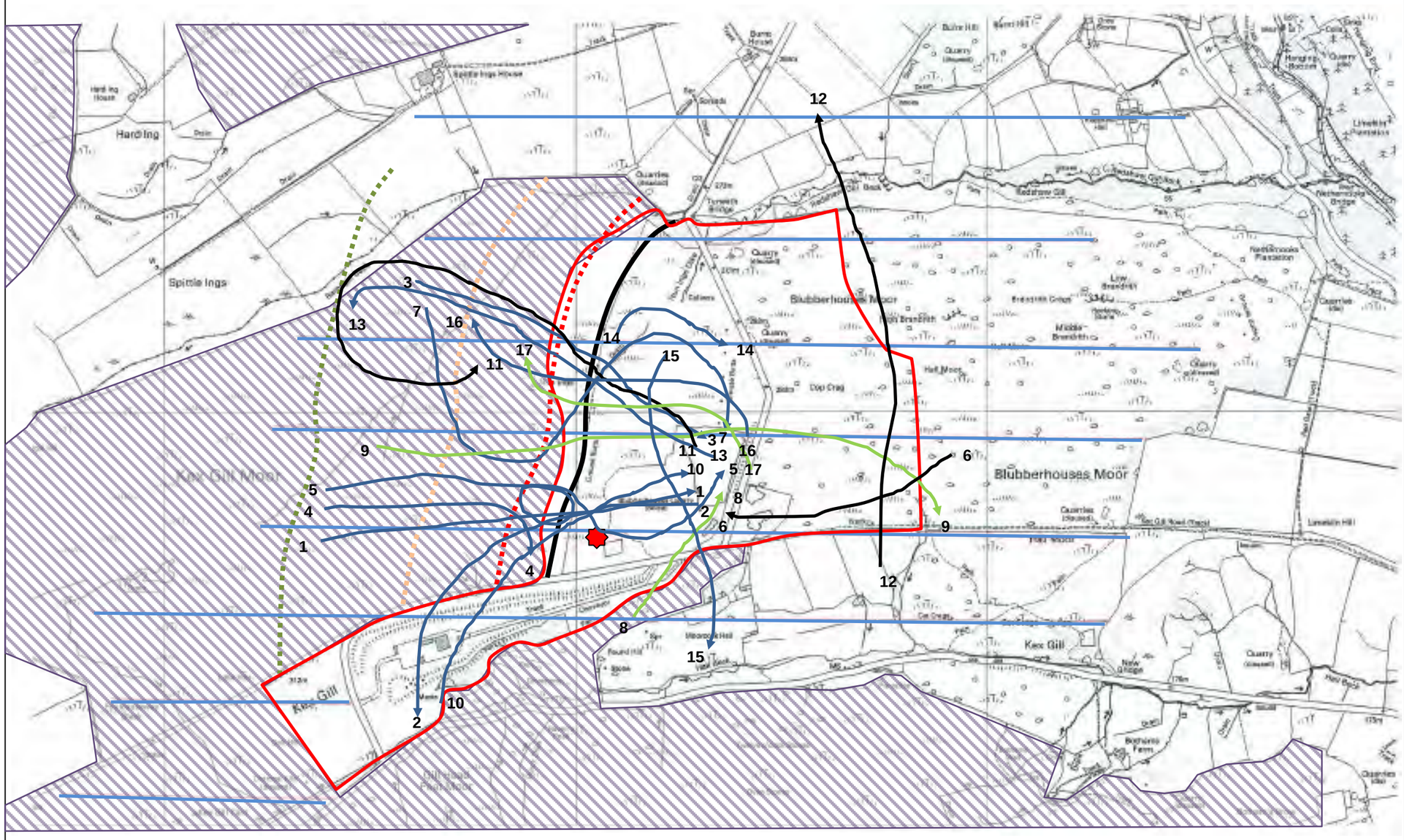
BLUBBERHOUSES QUARRY

Figure 7a
VP 23rd March 2012: Waders

Drawn by:	Checked by:	Date:



Legend

23rd March 06:00 -09:00

Greylag goose: 2, 3, 4, 7, 10, 13, 14, 15, 16

Mallard: 8, 9, 17

Canada Goose: 6, 11, 12

Site boundary

Vantage Point

Road diversion

100m

300m

600m

SPA

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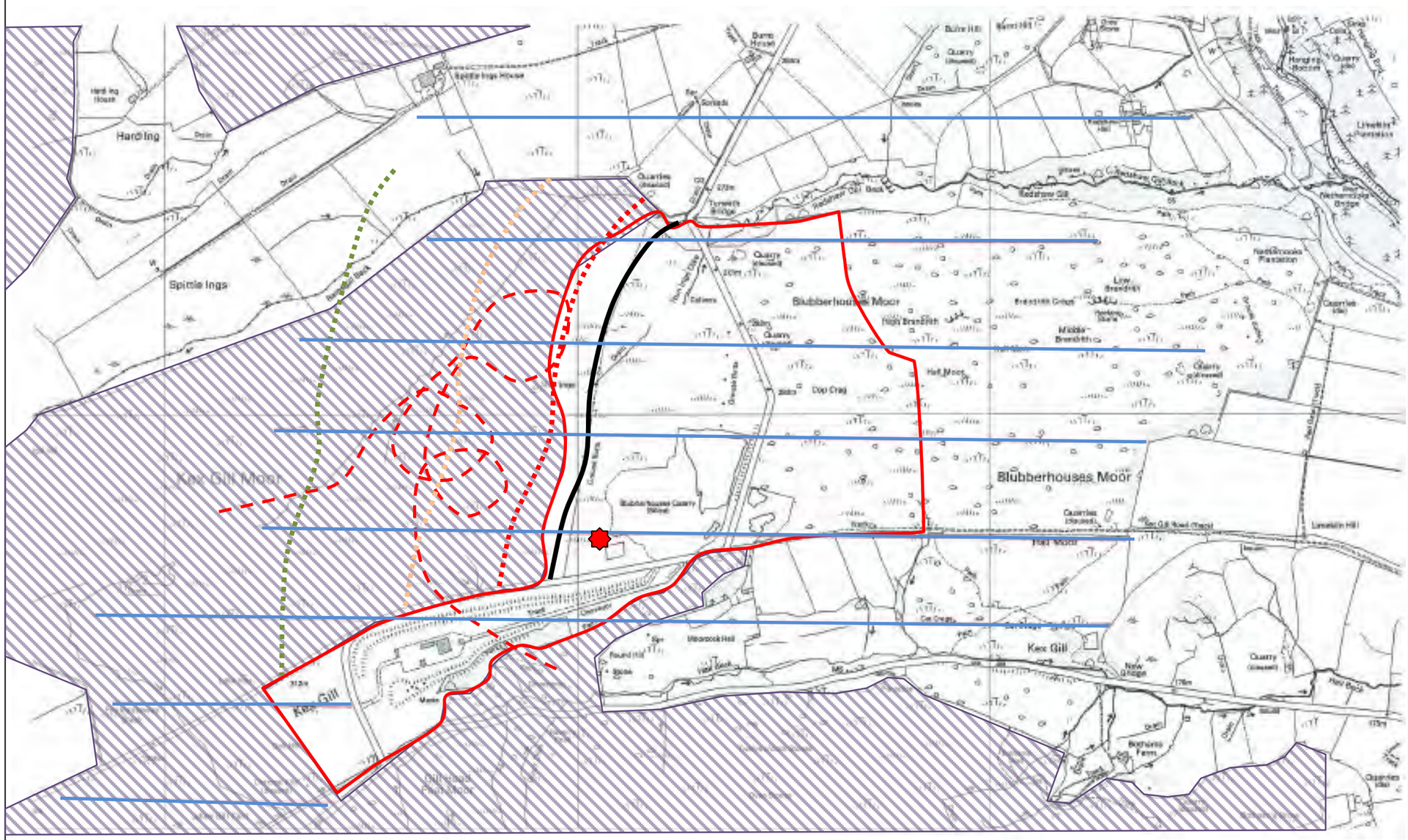
BLUBBERHOUSES QUARRY

Figure 7b
VP 23rd March 2012: Waterfowl

Reproduction: Based on a map provided by Client

Drawn by:	Checked by:	Date:



Legend

1 Red kite

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

URS

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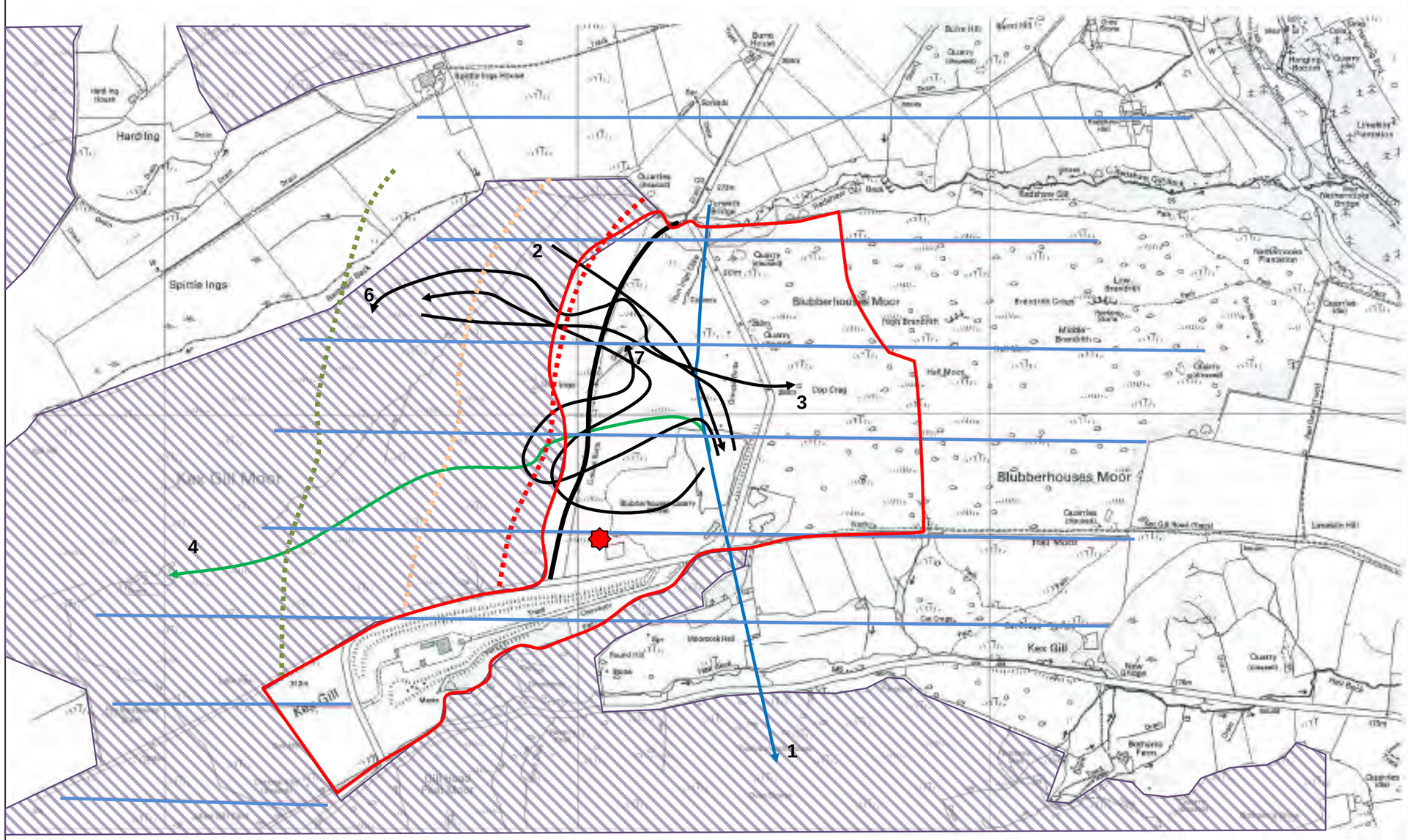
BLUBBERHOUSES QUARRY

Figure 8
VP 21st April 2012: Raptors

Drawn by: DC	Checked by: PB	Date: 4/10/12



Legend

Canada goose: 2, 3, 5, 6, 7

Greylag goose: 1

Shelduck: 4

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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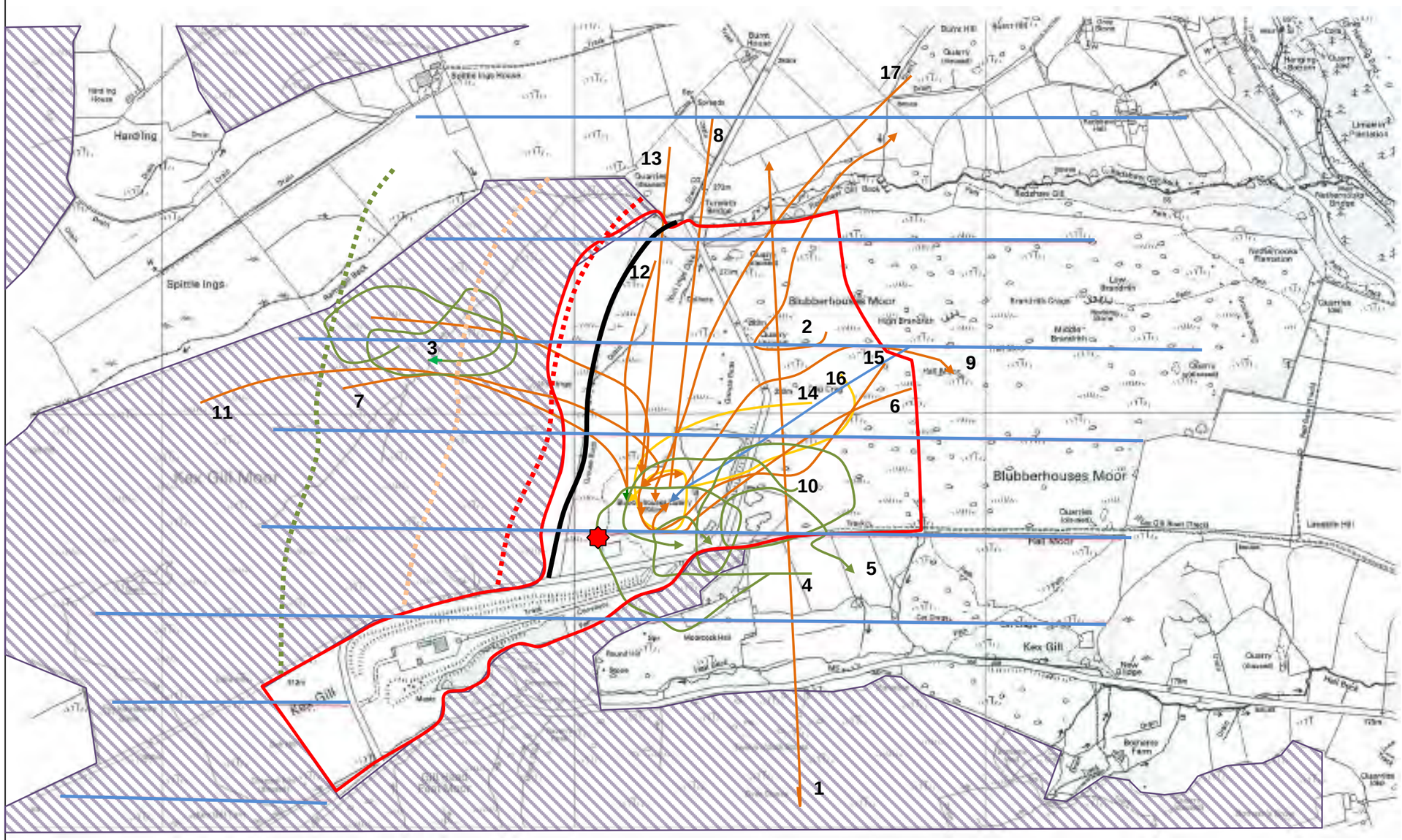
BLUBBERHOUSES QUARRY

Figure 9
VP 21st April 2012: Wildfowl

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by: PB	Date: 4/10/12



Legend

26th May 18:30 – 21:30

Golden Plover: 14, 16

Curlew kite flights: 1, 2, 6, 7, 8, 9, 11, 12, 13, 17

Lapwing: 3, 4, 5, 10

Common Sandpiper: 15

Site boundary

Vantage Point

Road diversion

100m

300m

600m

SPA

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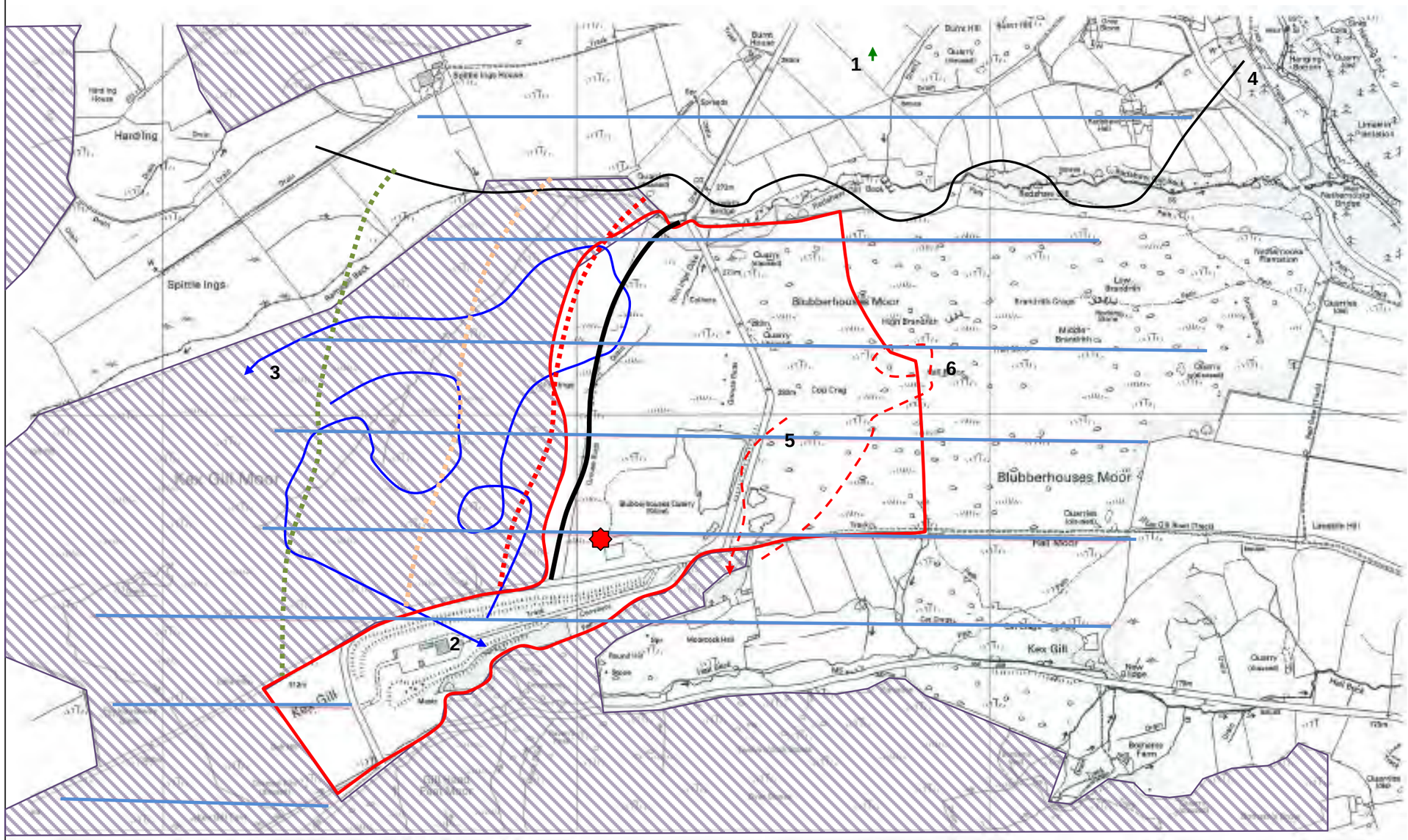
NG9 6RZ

BLUBBERHOUSES QUARRY

Figure 10
VP 26th May: Waders

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

26th May 18:30 – 21:30

Merlin: 5, 6

Red Kite: 4

Kestrel: 2, 3

Buzzard: 1

Site boundary

Vantage Point

Road diversion

100m

300m

600m

SPA

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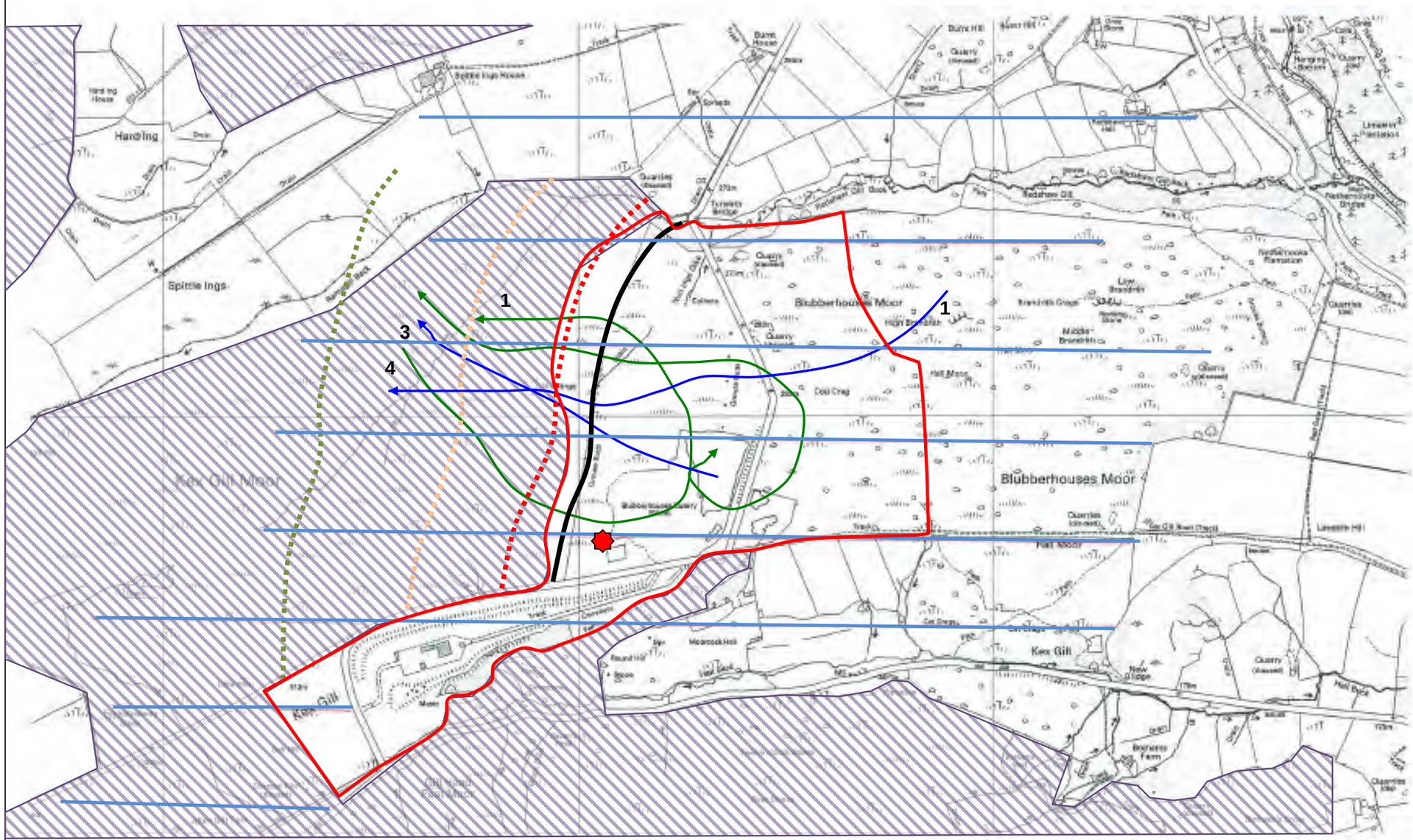
BLUBBERHOUSES QUARRY

Figure 11

VP 26th May: Raptors

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

26th May 18:30 – 21:30

Greylag goose: 2, 4

Canada goose: 1, 3

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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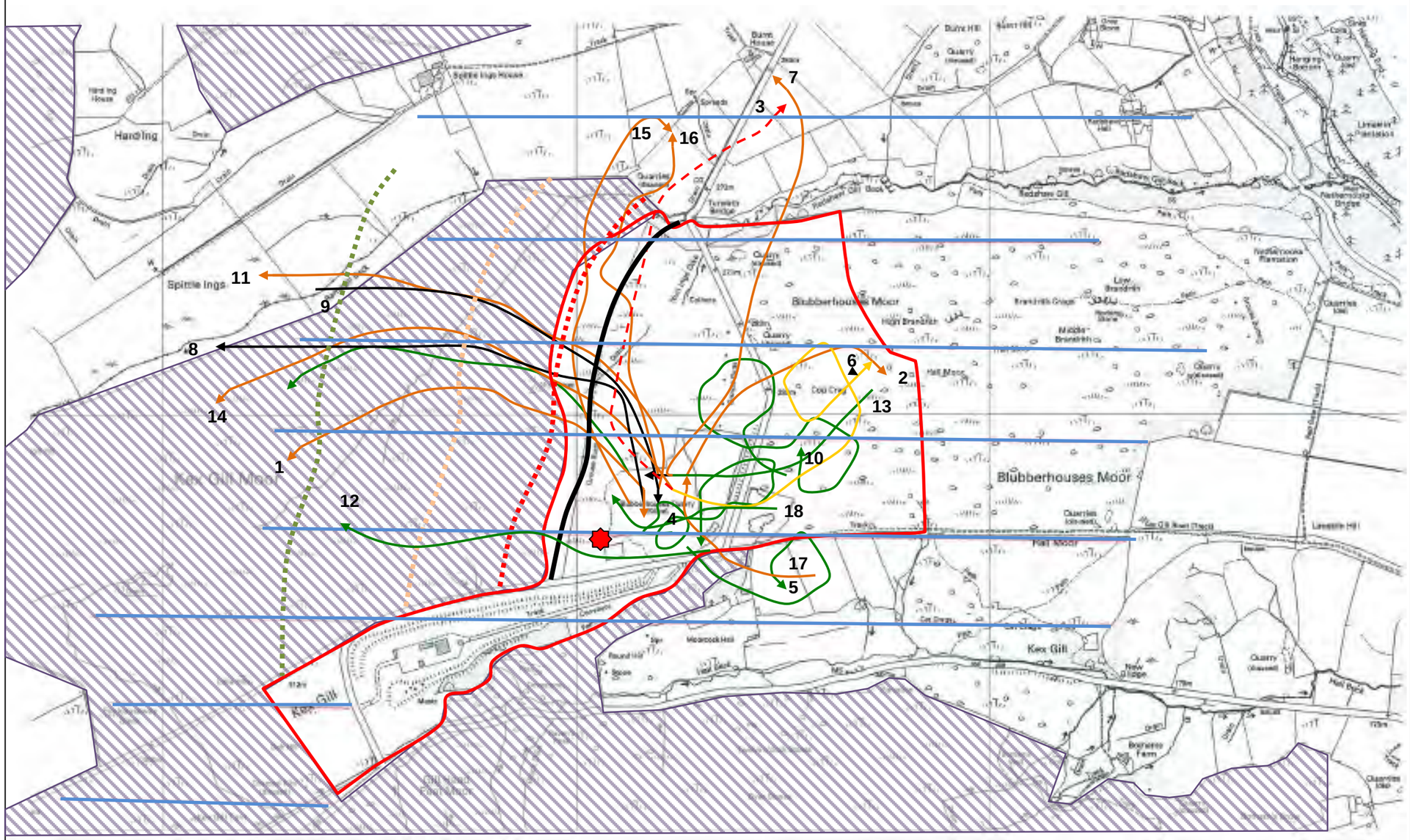
BLUBBERHOUSES QUARRY

Figure 12
VP 26th May: Wildfowl

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

17th June 5:15 – 8:15

Lapwing flights: 4,5,10,12,13,19

Curlew flights: 1, 2, 7, 11, 14, 15, 16, 17, 18,

Oystercatcher flights: 8, 9

Redshank flights: 3

Golden Plover flights: 6

Site boundary

Vantage Point

Road diversion

100m

300m

600m

SPA

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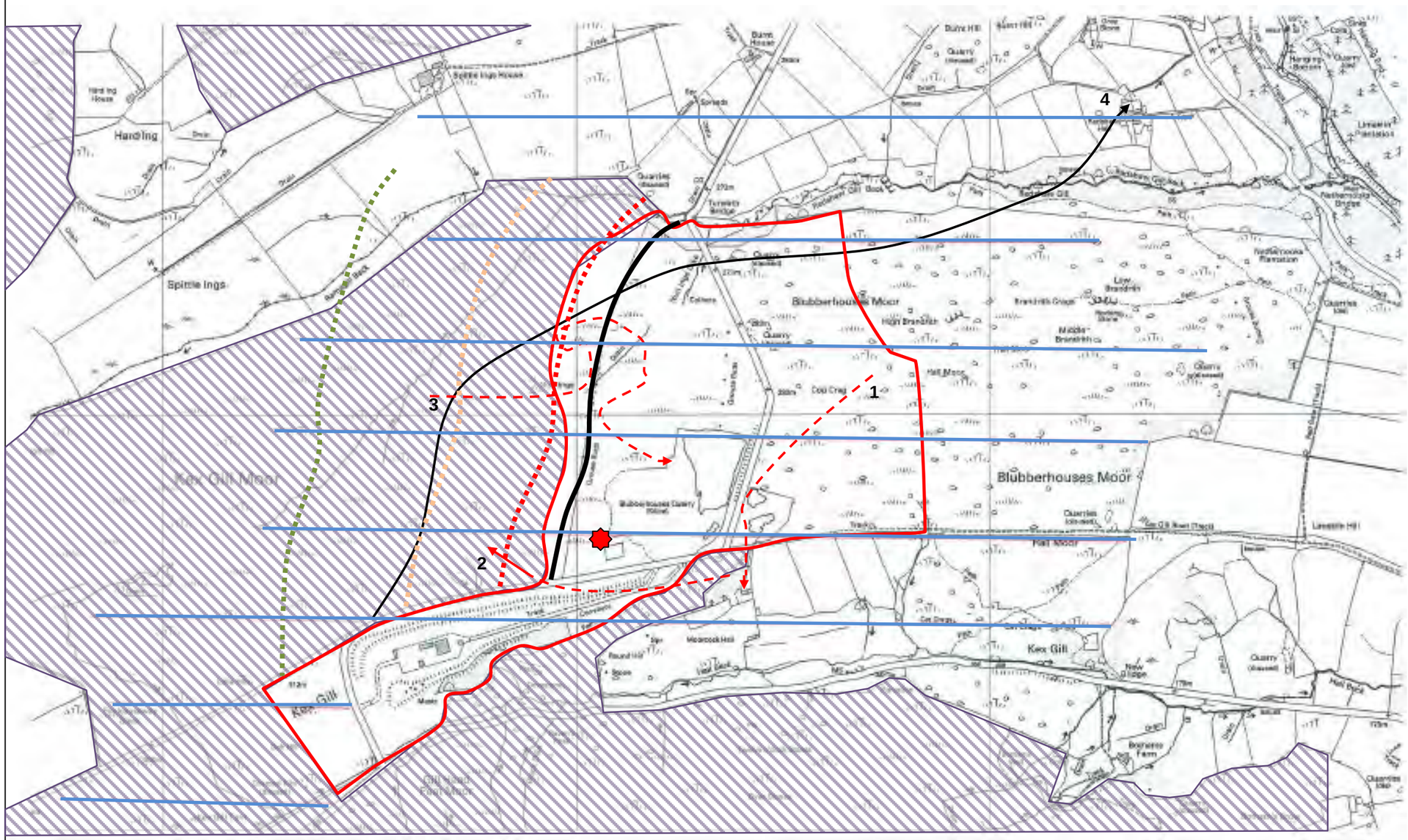
BLUBBERHOUSES QUARRY

Figure 13
VP 17th June: Waders

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

17th June 5:15 – 8:15

Raptor flights

Merlin flights: 1, 2, 3

Red Kite flights: 4

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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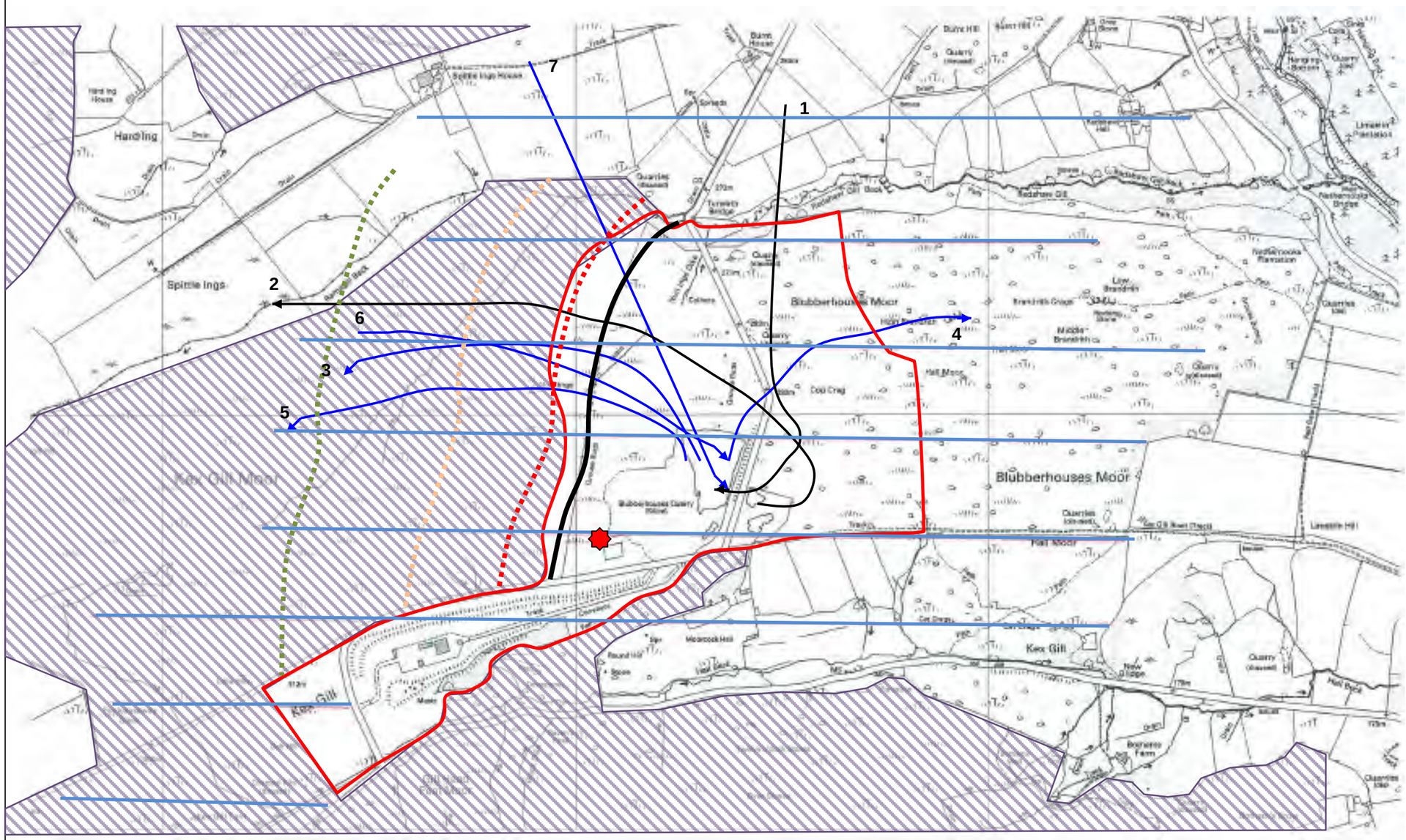
BLUBBERHOUSES QUARRY

Figure 14
VP 17th June: Raptors

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

17th June 5:15 – 8:15

Greylag flights: 3, 4, 5, 6, 7

Canada flights: 1, 2

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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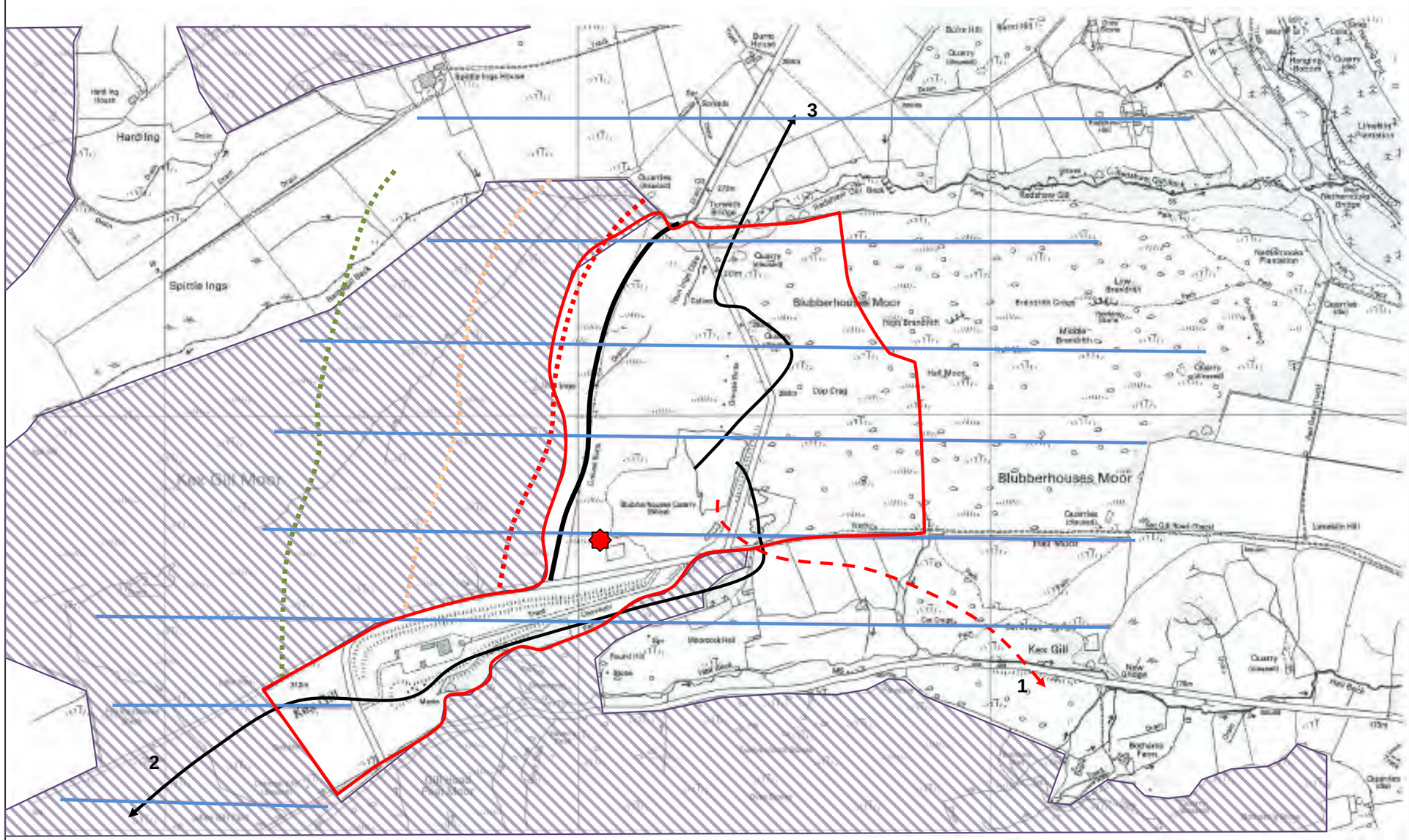
Chilwell
Nottingham
NG9 6RZ

BLUBBERHOUSES QUARRY

Figure 15
VP 17th June: Wildfowl

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by:	Date: 4/10/12



Legend

Redshank: 1

Oystercatcher: 2, 3

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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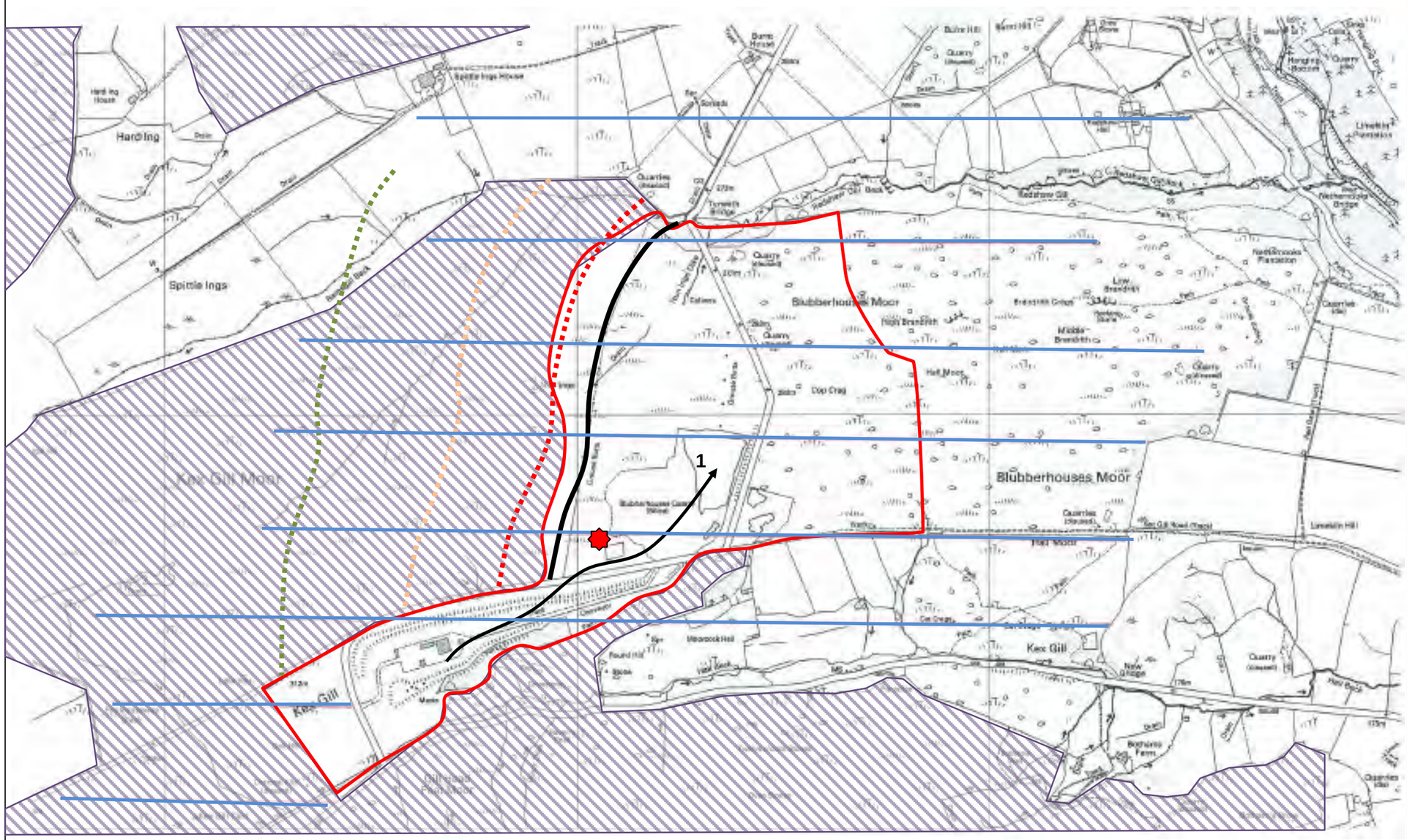
Chilwell
Nottingham
NG9 6RZ

BLUBBERHOUSES QUARRY

Figure 16
VP 26th July: Waders

Drawn by: DC	Checked by: PB	Date: 4/10/12



Legend

Mallard: 1

- Site boundary
- Vantage Point
- Road diversion
- 100m
- 300m
- 600m
- SPA

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Chilwell
Nottingham
NG9 6RZ

BLUBBERHOUSES QUARRY

Figure 17
VP 26th July: Wildfowl

Reproduction: Based on a map provided by Client

Drawn by: DC	Checked by: PB	Date: 4/10/12

APPENDIX 4

Proposed Renewal of Time Limited Planning Permission, Blubberhouses Silica Sand Quarry, Kex Gill, North Yorkshire

Assessment of Environmental Impact of Noise - Supplementary Report

for

HANSON QUARRY PRODUCTS EUROPE LIMITED

by

VIBROCK LIMITED

Report No. *R13.7628/02/PC*
Date: *24.05.13*

This report has been prepared by:

P CLAYTON
Consultant

This report has been checked by:

D B JOHNSON
Director

Date: 24th May 2013

NON-TECHNICAL SUMMARY

1. The working of any mineral deposit has the potential to create a certain degree of environmental disturbance to locations in its immediate vicinity.

2. This may be in the form of noise and it is therefore essential that any such potential is recognised and tightly controlled by safe and up to date site working practices and by strict site management.

3. The realignment of Kex Gill Road to the west of the extraction area, together with quarry activity, has the potential to increase noise levels around the site boundary and at nearby residential properties.

4. Accordingly, the existing noise climate adjacent to Kex Gill Road has been assessed and predictions of maximum likely future noise levels due to the realigned road and site operations have been undertaken for the point where the realigned road is at the closest to Gill Moor in accordance with the relevant British Standards.

5. The predicted noise levels refer to worst case scenarios, when operations are undertaken at their closest distances and maximum working level to the receptor and therefore have the greatest influence on the noise climate at that location.

6. Quarry activity at closest approach to Gill Moor will not exceed 70 dB or 55 dB thresholds suggested by Natural England.

7. Vehicle movements on the realigned Kex Gill Road will not exceed 70 dB, but could generate short term maximum noise levels in excess of 55 dB.

Vibrock Limited
Shanakiel
Ilkeston Road Heanor
Derbyshire DE75 7DR UK
Tel: +44 (0) 1773 711211
Fax: +44 (0) 1773 711311
Email: vibrock@vibrock.com
Web: http://www.vibrock.com

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Figure 1

Vibrock Limited
Shanakiel
Ilkeston Road Heanor
Derbyshire DE75 7DR UK
Tel: +44 (0) 1773 711211
Fax: +44 (0) 1773 711311
Email: vibrock@vibrock.com
Web: http://www.vibrock.com

1.0 INTRODUCTION

1.1 Hanson Aggregates wish to renew the time limited planning permission at their Blubberhouses Quarry at Kex Gill in North Yorkshire.

1.2 Vibrock Limited have undertaken an assessment of the environmental impact of noise from the planned activity at the site in report No.R11.7050/02/LD dated 25.11.11.

1.3 That assessment considers site noise and its effects on the closest residential properties.

1.4 However, it is proposed to divert part of Kex Gill Road, a minor public road which currently runs through the proposed extraction area, to the west of the extraction area.

1.5 Such a diversion will bring the road closer to the adjacent Gill Moor, a part of the North Pennine Moors Special Protection Area (SPA), Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) that lies to the west of the site boundary.

1.6 That area is a European designated site and is subject to the closest scrutiny. Natural England have expressed concern that the level of work undertaken regarding birds and road traffic and site generated noise is not sufficient and hence have requested further work is undertaken.

1.7 In support of the work to be undertaken by ecologists, Vibrock Limited were commissioned to undertake noise measurements from vehicles on Kex Gill Road and to calculate noise levels at the western site boundary from site activity and from road traffic on the diverted Kex Gill Road.

2.0 SITE DESCRIPTION

2.1 Setting

2.1.1 Blubberhouses Quarry is a silica sand quarry located approximately halfway between Harrogate and Skipton. The site is located wholly within the Nidderdale AONB and located adjacent to the North Pennine Moors Special Protection Area and Special Area of Conservation. The route of the trans-Pennine A59 runs to the south of the site and dominates the noise climate in the area.

2.1.2 The site is very isolated with the nearest individual residential properties being located several hundred metres from the boundary. The processing area is very well screened by virtue of large screening bunds, which run parallel to the plant area. It should be noted that all processing plant has been removed from site, so any future winning of material would require the development of new processing plant.

2.1.3 The processing area is separated from the main quarry area by Kex Gill Road, material has historically been transported from the main quarry to the processing area by an overland conveyor. Kex Gill Road would be diverted to the west of the site as part of the proposals.

2.2 General Environs

2.2.1 The area surrounding Blubberhouses Quarry is generally rural in character with isolated farms, the noise climate is influenced by road traffic, military and civilian aircraft, farming activity and birdsong.

3.0 NOISE TERMINOLOGY

3.1 Sound is produced by mechanical vibration of a surface, which sets up rapid pressure fluctuations in the surrounding air.

3.2 Between the quietest audible sound and the loudest tolerable sound there is a million to one ratio in sound pressure level. It is because of this wide range that a noise level scale based on logarithms is used in noise measurement. This is the decibel or dB scale.

3.3 Audibility of sound covers a range of about 0 to 140 decibels (dB) corresponding to the intensity of the sound pressure level. The ability to recognise a particular sound is dependent on the pitch or frequencies present in the source. Sound pressure measurements taken with a microphone cannot differentiate in the same way as the ear, consequently a correction is applied by the noise measuring instrument in order to correspond more closely to the frequency response of the ear which responds to sounds from 20 Hz to 20000 Hz. This is known as 'A weighting' and written as dB(A).

3.4 The use of this unit is internationally accepted and correlates well with subjective annoyance to noise.

3.5 The logarithmic basis of noise measurements means that when considering more than one noise source their addition must be undertaken in terms of logarithmic arithmetic. Thus, two noise sources each of 40 dB(A) acting together would not give rise to 40 + 40 = 80 dB(A) but rather 40 + 40 = 43 dB(A). This 3 dB(A) increase represents a doubling in sound energy but would be only just perceptible to a human ear.

3.6 The following table gives typical noise levels in terms of dB(A) for common situations.

Approximate Noise Level /dB(A)	***Example***
0	Threshold of hearing
30	Rural area at night, still air
40	Public library
50	Quiet office, no machinery
60	Normal conversation
70	Inside a saloon car
80	Vacuum cleaner
100	Pneumatic drill
120	Threshold of pain

3.7 The ambient environmental noise at any location will vary according to the activities in progress around that location. In the vicinity of a busy motorway, for example, the noise level will remain fairly constant due to the relatively steady noise input from road traffic, whereas the noise level close to a source of high noise over short periods, such as an airport, will vary over a much wider range. It is therefore necessary to consider how to quantify the existing noise levels in an area in order to accurately assess the acceptability of the introduction of a new noise source.

3.8 The background noise level, defined as the L_{A90} parameter, represents the noise level exceeded for 90% of a measurement period, or the ninety percentile level. It generally reflects the quieter noise level between noise events and generally ignores the effects of short term higher noise level events.

3.9 The fifty and ten percentile levels, L_{A50} and L_{A10}, represent the average noise level and the level exceeded for 10% of the measurement period, respectively. The latter, for example, is commonly used to describe and quantify noise from road traffic.

3.10 The equivalent continuous sound pressure level, or L_{Aeq} parameter, is a measure of the average sound energy over a given time period. It will include noise from all contributing sources. Unless the noise level at the receiving point is perfectly steady, the L_{Aeq} will always be higher than the L_{A90} over any one measurement period.

3.11 The Sound Exposure Level (SEL) (also sometimes called the Single Event Level) is the sound level over one second which would have the same energy content as the whole event.

3.12 $L_{Amax,Fast}$ is a measure of the maximum root mean squared (r.m.s.) A-weighted sound pressure level occurring during the measurement period and is measured in dB(A).

4.0 NOISE CRITERIA

4.1 Existing Planning Consent, Reference C6/105/6A/PA, dated 27th January 1986

4.1.1 There are no noise limits set within the existing planning consent. The condition relevant to noise emissions is number 4, which is duplicated below:

> *4 All plant, machinery and vehicles used on site shall be fitted with effective silencers.*

4.2 National Planning Policy Framework (NPPF)

4.2.1 This document was issued on 27th March 2012 and replaces Minerals Policy Statement 2 (MPS2): Controlling and Mitigating the environmental effects of Minerals Extraction in England.

4.2.2 The supporting document Technical Guidance to the National Planning Policy Framework. March 2012, is the current Government advice applicable to the control of noise from surface mineral extraction and associated operations in England. Section 30 states "Subject to a maximum of 55 dB $L_{Aeq,1h}$ (free field), Mineral Planning Authorities should aim to establish a noise limit at the noise sensitive property that does not exceed the background level by more than 10 dB(A). It is recognised, however, that in many circumstances it will be difficult to not exceed the background level by more than 10 dB(A) without imposing unreasonable burdens on the mineral operator. In such cases the limit should be as near that level as practicable during normal working hours (0700 – 1900) and should not exceed 55 dB(A) $L_{Aeq,1h}$ (free field). Evening (1900 – 2200) limits should not exceed the background level by more than 10 dB(A) and night-time limits should not exceed 42 dB(A) $L_{Aeq,1h}$ (free field) at noise sensitive dwellings. Where tonal noise contributes significantly to the total site noise, it may be appropriate to set specific limits for this element. Peak or impulsive noise, which may include some reversing bleepers, may also require separate limits that are independent of background noise – e.g. Lmax in specific octave or third-octave bands – and should not be allowed to occur regularly at night."

4.3 Natural England

4.31. The North Pennine Moors Special Protection Area for birds is adjacent to the western site boundary and Natural England have indicated interest in 70 dB and 55 dB thresholds.

5.0 NOISE LEVEL PREDICTIONS

5.1 Introduction

5.1.1 Noise has been defined as sound which is undesired by the recipient. The effects of noise on the neighbourhood are varied and complicated, including such things as interference with speech communication, disturbance of work, leisure or sleep. A further complicating factor is that in any one neighbourhood some individuals will be more sensitive to noise than others.

5.1.2 A measure that is in general use and is recommended internationally for the description of environmental noise is the equivalent continuous noise level or L_{Aeq} parameter.

5.1.3 In general, the level of noise in the local environs that arises from a development site will depend on a number of factors. The more significant of which are:-

(a) The sound power levels (L_{WA}s) of the plant or equipment used on site.

(b) The periods of operation of the plant on site.

(c) The distance between the source noise and the receiving position.

(d) The presence or absence of screening effects due to barriers, or ground absorption.

(e) Any reflection effects due to the facades of buildings, etc.

5.2 Prediction Methodology

5.2.1 The prediction method used in this study is based upon that outlined within British Standard (BS) 5228: 1 2009 Code of practice for noise and vibration control on construction and open sites. Part 1: Noise.

5.2.2 BS 5228-1:2009 replaces BS 5228-1:1997. The main change is that this standard is split into two parts (noise and vibration), rather than five as in the previous standard. The most important elements of this standard used in the report are calculated barrier attenuations, attenuation due to soft ground and angle of view corrections.

5.2.3 BS 5228-1:2009 indicates that a barrier attenuation of 10 dB(A) can be used when the noise screen completely hides the source from the receiver. The standard then states that “high topographical features and specifically designed and positioned noise barrier could provide greater attenuation”. Examples of which are overburden mounds and excavation high walls.

5.2.4 As the site is mothballed and all plant has been removed it is necessary to make some assumptions relating to the plant. Data from Vibrock’s database of similar sites and manufacturer’s data has been used in the assessment.

5.2.5 In order to consider the worst case situation in the noise assessment the plant is positioned at its closest approach to potentially noise sensitive properties and highest working level.

5.3 Plant Complement

5.3.1 A list of plant sound power levels (L_{WA}s) from which the noise predictions were made are presented in Table 2. The plant complement is based on information provided by Hanson and Vibrock's experience on similar projects. The sound power levels used are either from manufacturer's data or from Vibrock's extensive in-house database. All sound power levels take into consideration where applicable the operation of reverse warning / start-up alarms which are fitted to the plant.

5.4 Noise Prediction Assumptions

5.4.1 The noise prediction exercises are based on a number of assumptions concerning the working of the site. These assumptions are presented as follows:-

5.4.2 All predictions have been calculated with the combinations of plant working at the realistic closest point to the prediction location. They are therefore worst case scenarios which may be of relatively short duration. However, they indicate the maximum L_{Aeq} noise level to which a particular property or group of properties may be exposed during the proposed future working of Blubberhouses Quarry. By definition, the worst case situation will occur intermittently over the entire life of the quarry, thus longer term noise levels perceived outside of the site boundary would normally be significantly less.

5.4.3 It has been assumed that future operations will work in the same way as previous operations.

5.4.4 For the purposes of this prediction exercise, the above described worst case situation has been considered at all times, thus operations are assumed to be undertaken at their realistic minimum distances and maximum heights. In this exercise only the major operations have been considered as they are likely to have the most impact on the local environs.

5.4.5 Given that all prediction methods are estimates and that in practice measured levels are invariably lower due to the effects of interactions between such things as meteorological conditions and air absorption, these predicted levels are a reasonable representation of the worst case predictions assuming ideal meteorological conditions for sound propagation.

6.0 SURVEY METHOD

6.1 Introduction

6.1.1 The methodology described below was employed during the noise survey. Wherever possible all measurements were undertaken to comply with the requirements of BS 7445:2003.

6.2 Environmental Noise Measurement Technique

6.2.1 The sound level meter was placed with a clear sight of the road at six different distances from a straight section of Kex Gill Road at grid reference 414370E 456265N.

6.2.2 A January 2011 Ford Focus 2.0L ZetecS petrol engined car was driven at 30, 40 and 45 mph up and down the section of road which was aligned approximately north west to south east with an increasing gradient.

6.2.3 The following parameters were obtained:

L_{Aeq} (dB) – Equivalent continuous sound level
L_{Amax} (dB) – Maximum sound level
SEL (dB) – Sound Exposure Level
L_{A10} (dB) – Level exceeded for 10% of the time (traffic noise)
L_{A90} (dB) – Background noise level

6.2.4 A 15 minute measurement was also made at 3.5 m from the edge of Kex Gill Road at grid reference 414370E 456265N in order to establish the background noise level (L_{A90}). A traffic count was also undertaken during that measurement period.

6.3 Noise Measurement Locations

6.3.1 The noise measurements were made at the following distances from the western edge of a straight section of Kex Gill Road at grid reference 414370E 456265N:

3.5 m from road edge
10 m from road edge
20 m from road edge
30 m from road edge
40 m from road edge
50 m from road edge

7.0 SURVEY DETAILS

7.1 Instrumentation

7.1.1 The following instrumentation was used for all noise measurements:

Manufacturer	*Description*	*Type*	*Serial No.*
Cirrus	1 x Integrating Sound Level Meter	CR811C	D20572FD
Cirrus	Electronic Calibrator	CRL 511D	039466

7.1.2 The following set-up parameters were used on the sound level meter during all noise measurements:

Time Weighting: fast
Frequency Weighting: A
Measurement Period: Manual

7.2 Calibration

7.2.1 The sound level meter was calibrated with the electronic calibrator prior to commencement and on completion of the survey. No significant drift in calibration was observed.

7.3 Survey Dates And Personnel

7.3.1 Noise levels were measured between the hours of 1156 to 1348 on Tuesday 30th April 2013. The surveys were conducted by Mr Peter Clayton and Mr Joe Grimes of Vibrock Limited.

7.4 Meteorological Conditions

7.4.1 On the day of the survey the weather was dry with increasing cloud to 7/10 and an easterly wind of 2 - 3 ms^{-1}.

8.0 RESULTS

8.1 The results of the traffic noise surveys on Kex Gill Road are shown in Table 1 while Table 2 gives the 15 minute environmental noise measurements.

8.2 Typical sound power levels of plant used in the noise predictions are presented in Table 3 and Table 4 gives the calculated noise levels at Gill Moor at the location where the realigned Kex Gill Road is at the closest approach, grid reference 413990E 455900N.

9.0 DISCUSSION

9.1 Table 1 shows that at 3.5 m the maximum noise level from a passing car was 76 dB, while at 10 m it was 69 dB and at 20 m it fell to 61 dB.

9.2 At 30 m the maximum noise level from a single passing car was 59 dB, at 40 m it was 57 dB and at 50 m it was 49 dB.

9.3 The closest approach of the realigned Kex Gill Road to the boundary of Gill Moor occurs at grid reference 413990E 455900N. At that point the road is approximately 20 m from the boundary with Gill Moor.

9.4 Inspection of Table 1 shows that at that distance a maximum noise level of up to 61 dB would be produced by a passing car.

9.5 Table 4 gives the calculated noise level at the same receptor if 10 vehicles per hour were to pass that point and also considers site activity at closest approach to Gill Moor during phase 3.

9.6 Both scenarios are calculated to produce a one hour L_{eq} of 53 dB at the receptor point.

9.7 It should be noted that the maximum noise level is that which occurs over a very short time period (⅛ of a second) whereas the one hour L_{Aeq} is the level of a steady continuous noise, which has the same total energy as the real fluctuating noise measured over the same time period.

9.8 Consideration of the Natural England thresholds of 70 dB and 55 dB show that at the closest approach of the realigned Kex Gill Road to Gill Moor, a maximum noise level of 70 dB would not be produced by passing traffic, but the lower level of 55 dB would be exceeded.

9.9 It is considered that a realistic and safe maximum speed for cars passing along the realigned Kex Gill Road is 40 mph. Inspection of Table 1 shows that at that speed the closest approach to the roadside without exceeding 55 dBA is at 30 m.

9.10 Figure 1 shows a line at 30 m from the western edge of the realigned Kex Gill Road and which indicates that the area of the adjacent Gill Moor which would be subjected to short duration levels of greater than 55 dBA from road vehicles is approximately 90 m in length and 10 m width.

9.11 Quarry activity in phase 3 at the closest approach to Gill Moor would not exceed either the 70 dB or 55 dB thresholds.

10.0 CONCLUSIONS

10.1 Sound level measurements of a car travelling along Kex Gill Road have been made at a number of known distances from the roadside.

10.2 Noise calculations based upon those measurements have been made to determine the noise levels at the closest approach to Gill Moor of:

a) the realigned Kex Gill Road.
b) the quarry extraction and processing activity.

10.3 Quarry activity and the movement of vehicles on the realigned Kex Gill Road will produce noise levels well below the Natural England criterion of 70 dB.

10.4 The Natural England criterion of 55 dB would not be exceeded by quarry activity, but would be exceeded by passing vehicles at the closest point to Gill Moor.

11.0 REFERENCES

1. Minerals Policy Statement (MPS) 2 “Controlling and Mitigating the Environmental Effects of Minerals Extraction in England”. March 2005.

2. Planning Policy Guidance Note 24 (PPG 24) 'Planning and Noise', 1994.

3. British Standard Code of practice for Sound insulation and noise reduction for buildings. British Standards Institution, BS 8233:1999.

4. British Standard 5228 Part 1:2009 Code of practice for noise and vibration control on construction and open sites.

5. A Guide to the Measurement and Prediction of the Equivalent Continuous Sound Level L_{Aeq}. Noise Advisory Council, 1978.

6. "The Control of Noise at Surface Mineral Workings" W S Atkins Report on behalf of the Department of Environment, 1990.

7. Guidance on the new approach to appraisal, DETR, 2001.

8. Existing planning Consent, Reference C6/105/6A/PA, dated 27th January 1986.

INDEX TO TABLES

1 Road Traffic Noise Measurements on Kex Gill Road

2 Environmental Noise Levels at Kex Gill Road

3 List of Plant and Sound Power Levels for Blubberhouses Quarry

4 Summary of Worst Case Predicted Noise Levels at closest approach to Gill Moor

TABLE 1

ROAD TRAFFIC NOISE MEASUREMENTS ON KEX GILL ROAD

Measurement Location: 414370E 456265N
Day/Date of Survey: Tuesday 30th April 2013
Noise Source: January 2011 Petrol Ford Focus 2.0L ZetecS

Distance from Road Edge (m)	Vehicle Speed mph	Up/Down Gradient	Statistical Parameters dB(A)			Time (s)
			L_{Aeq}	L_{Amax}	SEL	
3.5	30	Up	59.7	71.6	72.4	19
3.5	30	Down	56.8	69.9	71.3	29
3.5	40	Up	61.4	76.0	75.3	25
3.5	40	Down	60.1	72.4	73.7	23
3.5	45	Up	62.5	76.1	76.3	25
3.5	45	Down	65.0	75.2	76.1	13
10	30	Up	49.5	62.5	64.0	29
10	30	Down	49.9	61.3	65.6	38
10	40	Up	53.0	66.3	67.3	27
10	40	Down	53.0	66.5	68.3	35
10	45	Up	56.8	68.5	69.9	21
10	45	Down	55.3	67.4	68.4	21
20	30	Up	47.3	56.3	61.4	26
20	30	Down	43.3	52.1	58.7	36
20	40	Up	50.0	60.6	64.2	28
20	40	Down	48.7	57.1	62.2	23
20	45	Up	51.2	58.4	63.4	18
20	45	Down	49.6	58.0	63.1	23
30	30	Up	42.2	50.2	56.3	26
30	30	Down	41.4	54.2	56.4	32
30	40	Up	46.2	54.5	60.3	26
30	40	Down	46.4	53.8	60.0	23
30	45	Up	47.4	58.6	61.6	27
30	45	Down	47.7	56.8	61.0	22
40	30	Up	43.5	50.4	57.7	26
40	30	Down	41.6	48.6	56.2	29
40	40	Up	45.1	53.7	58.7	23
40	40	Down	43.1	50.6	57.3	27
40	45	Up	45.7	57.1	59.6	25
40	45	Down	43.6	51.0	57.4	24
50	30	Up	38.6	47.7	53.9	35
50	30	Down	37.5	44.4	52.6	34
50	40	Up	43.3	49.4	57.1	24
50	40	Down	38.7	46.2	54.7	41
50	45	Up	40.9	49.0	54.8	25
50	45	Down	40.0	47.8	54.4	28

TABLE 2

ENVIRONMENTAL NOISE LEVELS AT KEX GILL ROAD

Date/Date of Survey: Tuesday 30th April 2013
Time: 1156 – 1211
At 3.5 m from Western Road Edge at 414370E, 456265N

Duration	L_{Aeq} (dB)	L_{A10} (dB)	L_{A90} (dB)	L_{Amax} (dB)	SEL (dB)
15 mins	36.2	39.2	29.5	58.2	65.5

One Tesco home delivery van passed the measurement position, travelling up the gradient. No other vehicles passed in the 15 minute measurement period. Other noise sources included military and civilian aircraft, sheep and bird calls. No A59 traffic was audible.

TABLE 3

LIST OF PLANT AND SOUND POWER LEVELS FOR BLUBBERHOUSES QUARRY

	Plant Description	Quantity	Sound Power Level / dB(A)
A	1x Drilling Rig	1	116
B	Face Excavator	2	113
C	Mobile Crusher	1	115
D	Loading Shovel	1	108
E	Processing plant	1	112
F	Overland Conveyor	-	100
G	Road Lorries	15 movements per hour	105

TABLE 4

SUMMARY OF WORST CASE PREDICTED NOISE LEVELS DURING NORMAL OPERATIONS AT CLOSEST APPROACH TO GILL MOOR

Receptor Point: Gill Moor
Grid Reference:413990E 455900N

Location	***Calculated Worst Case $L_{Aeq,1h}$ / dB(A)***	***Activity***
Gill Moor	53	Extraction in phase 3 and mineral processing
Gill Moor	53	10 vehicles per hour on diverted Kex Gill Road

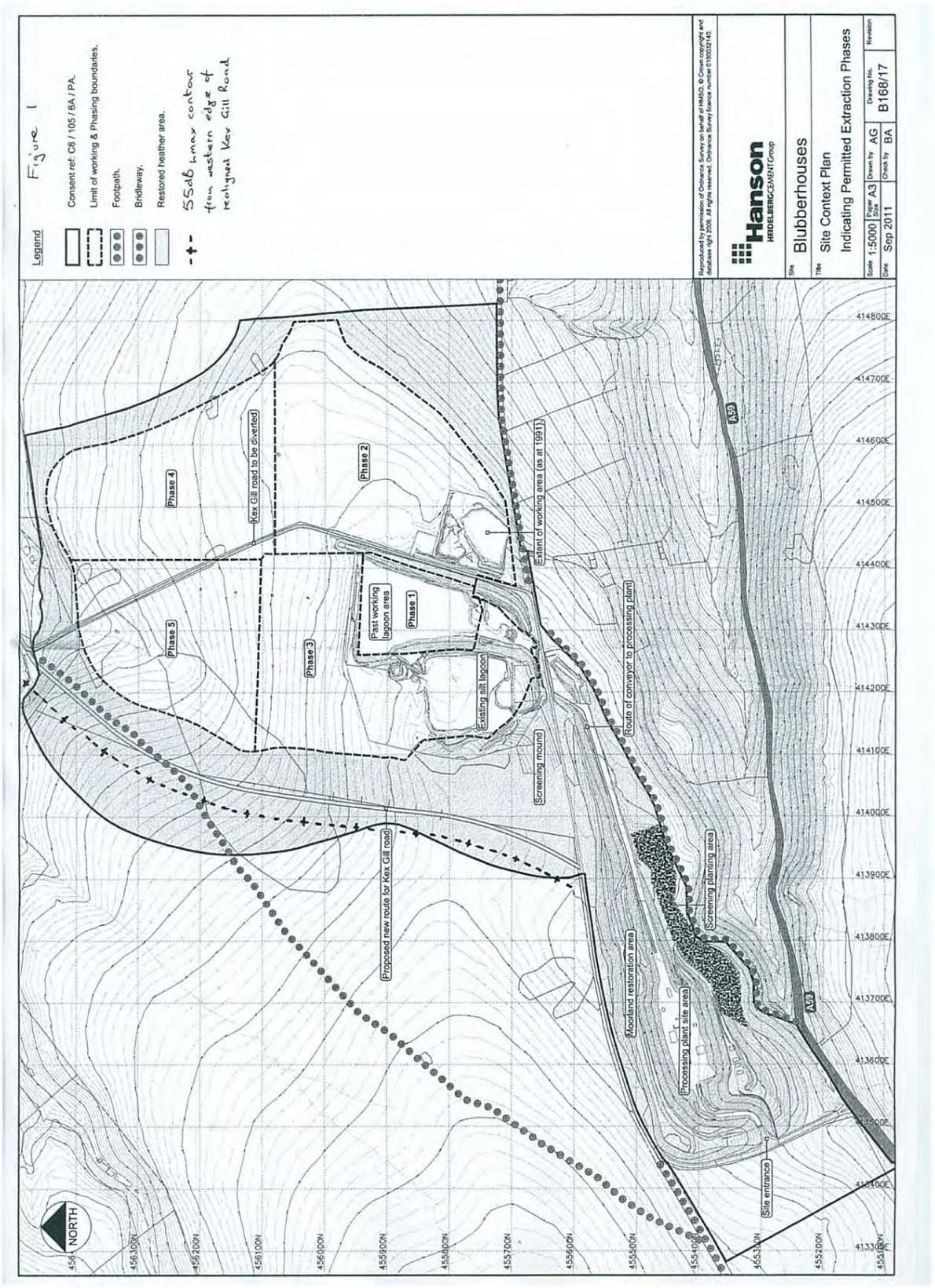
Figure 1
Legend
Consent ref: C6 / 105 / 6A / PA.
Limit of working & Phasing boundaries.
Footpath.
Bridleway.
Restored heather area.
55ab 1mm contour from western edge of realigned Kex Gill Road
Hanson
HEIDELBERGCEMENT Group
Site Blubberhouses
Title Site Context Plan Indicating Permitted Extraction Phases
Scale 1:5000
Paper Size A3
Drawn by AG
Drawing No. B168/17
Date Sep 2011
Check by BA
Revision
Phase 1
Phase 2
Phase 3
Phase 4
Phase 5
Past working lagoon area
Existing silt lagoon
Extent of working area (as at 1991)
Kex Gill road to be diverted
Proposed new route for Kex Gill road
Screening mound
Route of conveyor to processing plant
Moorland restoration area
Processing plant site area
Screening planning area
Site entrance
A59
NORTH

Paul Benyon

From: Vibrock <vibrock@vibrock.com>
Sent: 22 April 2013 10:58
To: Paul Benyon
Subject: Blubberhouses - Blast Induced Vibration

Paul

We have considered the closest possible distance of approach of blasting operations to the SPA in phases 3 and 5. The assessment has been based on the site specific blast vibration data recorded on 17th October 1985 and has considered a maximum instantaneous explosive charge weight of 100 kg. Table 1 details the predicted vibration levels at the closest point of the SPA to the limit of extraction in each phase and as such is considered to be a worst case scenario.

Table 1

Phase	Predicted Peak Particle Velocity mms^{-1}	
	Mean	Maximum
3	25	38
5	20	31

The predicted site noise predictions will follow in due course.

Regards

Peter Clayton

Vibrock Limited
Registered Office:
Shanakiel
Ilkeston Road
Heanor
DERBYSHIRE
DE75 5DR
UK
Registered in England and Wales Company Number 03716013
VAT Registration Number GB716487610

Tel: +44 (0) 1773 711211
Fax: + 44 (0) 1773 711311
Email: vibrock@vibrock.com
Web: www.vibrock.com