ENVIRONMENTAL STATEMENT

FOR

THE PROPOSED EXTENSION TO YENNADON QUARRY, IRON MINE LANE, DOUSLAND, YELVERTON, DEVON, PL20 6NA

06 July 2014

Job No. 7397 Rev. A

John Grimes Partnership Ltd ♦ Leonards Road Ivybridge Devon PL21 0RU
Tel: 01752 690533 ♦ www.johngrimes.co.uk ♦ post@johngrimes.co.uk ♦ Registration No: 4184549

QUALITY CONTROL

This report has been prepared in accordance with John Grimes Partnership Ltd Quality Control Management System to British Standard EN ISO 9001: 2000

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Report by:	**A. M. Robertson** **Associate Director**		**06 July 2015**
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	For and on behalf of John Grimes Partnership Ltd		

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CONTENTS

The Environmental Statement that comprises the above chapters is supported by the following Appendices, which are bound separately.

APPENDICES

A1	**Screening Opinion and Scoping Opinion**
A2	**Photographic Record**
A3	**Land Agent Report on Common Land; and Statement of Community Engagement**
A4	**Development Proposals, Restoration and Aftercare Plan; and Extractive Materials Management Statement**
A5	**Summary of Planning Policy**
A6	**Socio Economic Studies**
A7	**Archaeology**
A8	**Assessment of Process Pollution**
A9	**Emissions Assessment**
A10	**Phase 1 Desk Study**
A11	**Ground Investigation for Yennadon Quarry Extension: Factual and Interpretive Report**
A12	**Noise Assessment**
A13	**Transport Statement**
A14	**Phase 1 and Phase 2 Ecological Surveys; Biodiversity Mitigation and Enhancement Plan; and Verification Surveys**
A15	**Landscape and Visual Impact Assessment**

Report prepared by:

Client	**Yennadon Stone Ltd**
Lead Consultant and Principal Author	**John Grimes Partnership Ltd**
Planning Consultant **Statement of Community Engagement**	**PCL Planning**
Land Agent	**Luscombe Maye**
Socio Economic Consultants	**Vickery Holman Property Consultant** **John Grimes Partnership Ltd** **Clifton Emery Design**
Archaeology Consultants	**Exeter Archaeology** **Archœdia**
Process Pollution and Emissions Consultant	**John Grimes Partnership Ltd**
Geological, Hydrogeological and Hydrological Consultant	**John Grimes Partnership Ltd**
Noise Consultant	**Ian Sharland Ltd** **Acoustic Associates South West Ltd**
Transport Consultant	**John Grimes Partnership Ltd**
Ecological Consultant	**Acorn Ecology Ltd**
Landscape and Visual Impact Assessment Consultant	**Chris Britton Landscape Associates**

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NON-TECHNICAL SUMMARY

Foreword

The Non-Technical Summary is intended to present the main development proposals and an assessment of how they will impact on the environment of the surrounding area. This is presented in plain language and also presented as a separate report: it may be distributed to serve as an introduction to the main issues that members of the public can readily understand.

This Environmental Statement (ES) has been prepared on behalf of Yennadon Stone Ltd in support of a planning application for the phased restoration and extension to Yennadon Quarry. This planning application follows a previous planning application No 0667/13 refused 14th July 2014 and consequently this updated ES gives consideration to Dartmoor National Park's conclusions in respect of the previous application.

The ES has been structured in accordance with best practice guidance as follows:

- Non-Technical Summary: published separately and providing a concise non-technical explanation of the contents and conclusions of the Environment Statement;
- Environmental Statement: setting out the assessment methodology, description of the site and proposed development and a consideration of planning policy issues. Each individual topic area identified in the Scoping Opinion is then outlined and assessed.
- Appendices (three volumes): Technical reports prepared by specialist consultants covering each of the topic areas. The Appendices are numbered to correspond with specific chapters of the ES. They are of a technical nature and intended to provide background to the corresponding chapters, which are more concerned with the planning implications of particular issues.

Copies of the Environment Statement are available to view on the Yennadon Stone website (www.yennadonstone.com). Paper copies are available to view from The Clerk of Burrator Parish Council, or in the receptions of:

- Dartmoor National Park Authority, Parke, Devon.
- John Grimes Partnership Ltd, Leonards Road, Ivybridge, Devon PL21 0RU.

Alternatively, copies can be purchased (all prices include VAT) in the following ways:

- Environmental Statement and Appendices (printed): £200.
- Environmental Statement and Appendices (on CD and in case): £18.
- Environmental Statement without Appendices: £40.
- Technical Summary: £16.

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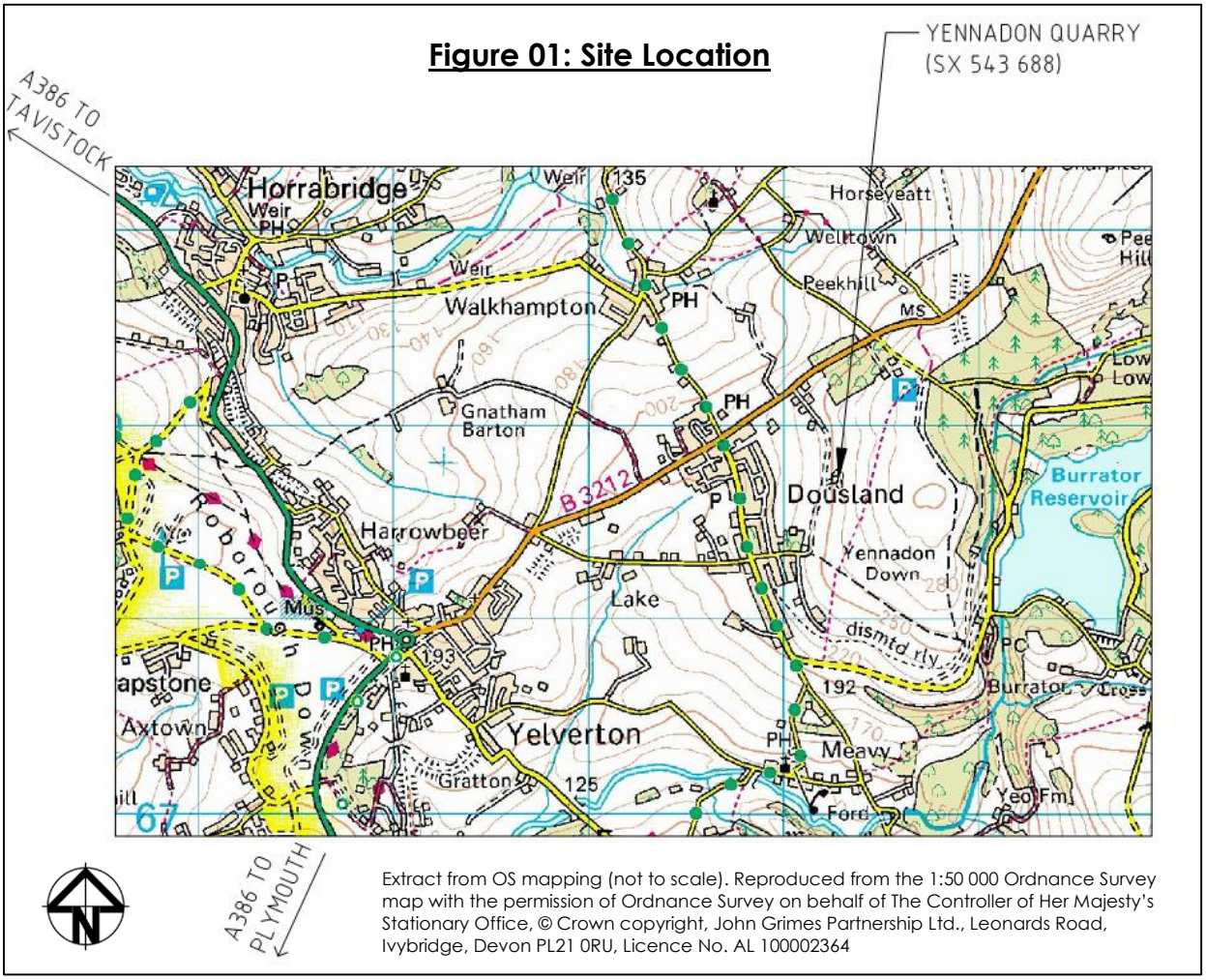
Background

The existing Yennadon Quarry is located approximately 300m to the east of Dousland (National Grid Reference SX 543 688) on moorland known as Yennadon Down. It lies just within the western boundary of the south-western confines of Dartmoor National Park. Access to the existing quarry is gained from Iron Mine Lane via an unmetalled road that extends to the quarries western edge. The site location is shown on Figure 01.

Figure 01: Site Location



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The quarry is sited on common land owned by the Walkhampton Trust and administered by Lord Roborough's Maristow Estate. Yennadon Quarry has been run under its current lease from the Maristow Estate for around 80 years and in its current form since 1990, when Planning Permission was granted for 35 years (to 2025) for the, "....winning and working of minerals and continued use of existing buildings". The current operation of the quarry is subject to a licence agreement made in 2005 between the Walkhampton Trust and the current operator, Yennadon Stone Ltd.

Yennadon Quarry is an existing operational quarry providing building stone. This planning application is for the extension of the quarry along its northern face, in conjunction with phased restoration of the existing quarry. The quarry operators are seeking the extension to enable production to continue, as a minimum at current extraction rates and up to the maximum permitted; until the current planning permission expires in 2025. The operators intend to continue production up to 2025 regardless of the outcome of this planning application; however if permission is not granted, production levels will decline, resulting in a negative impact on employment and a source of local high quality building stone. Granting planning permission to extend the working area of the quarry will enable the quarry to sustain a viable future and continue to provide an invaluable source of local stone for building and restoration projects.

The red line area for the resubmission remains the same; however, there have been some fundamental changes, **mainly a reduction in the size of area delineated for extraction by approximately 35%**, changes in the screening bund configuration and a change in the landscape mitigation measures. It is important to note that with regard to this planning application **no change to mode of operation, hours, extraction rates, number of vehicles etc. is proposed.** The proposals are not for an increase in the level of activity at the quarry or increased vehicle movements. What is proposed is an extension of the area being worked within the existing operational timeframe for the quarry.

The existing quarry at Yennadon is currently listed in Dartmoor National Park Authority's Local Plan (Table 7: "Mineral Operations Currently Active in the Dartmoor National Park") as:

> *Yennadon, Nr Dousland: Metamorphic; 1990;* ***Small;*** *Long-established quarry; Building, walling and ornamental stone; Comprehensive conditions.*

Based on the DNPA's definition of *Small*, *Medium* and *Major*, it is clear that the proposed development of Yennadon Quarry would remain a **Small** quarry.

The key considerations for this planning application are: what is the need for this stone; what implications arise from the impact of operations on the proposed extension area in the National Park; and do any benefits arise from the proposed reinstatement and aftercare.

Environmental Setting

Yennadon is an historic quarry and has existed for approximately 150 years. The quarry pre-dates the nearby village of Dousland and the creation of the National Park. Yennadon Quarry is the only remaining operational quarry supplying local dimension stone within the boundary of the National Park. The quarry provides an invaluable source of building stone for local building projects as well as projects in other parts of Devon and Cornwall. Over the past 150 years the quarry has made, and continues to make, a significant contribution to the character and appearance of the built environment. As well as providing an important source of local stone, the quarry also represents part of the living cultural heritage and legacy of Dartmoor.

Yennadon Quarry is located on the lower 'moorland fringe' of Yennadon Down. Yennadon Down is flanked on its northern boundary by Dousland Plantation and farmland. To its east is Yennadon Plantation, beyond which is Burrator Reservoir. Bowdens Plantation and farmland lie to the south. To the west of Yennadon Down is a strip of fields used for grazing, beyond which is the village of Dousland. There is a Public Right of Way within 150m of the proposed extension. With the exception of the existing quarry area, commoners have grazing rights across the Down and the public has a right of access.

The site is located within Dartmoor National Park, which is also a designated Environmentally Sensitive Area (ESA). There are no other statutory or non-statutory designations covering the site.

The boundary of the existing quarry lies 15.5m from the adjacent farmland to the west at its closest point. The quarry is located in a 'landscape character type' known as 'Upland Moorlands with Tors', close to the boundary with the 'Moorland Edge Slopes' area. One of the key characteristics of 'Upland Moorland with Tors' includes the history of mineral workings and quarries in the area. Just over 300m south and southeast of the existing quarry (and adjacent to the end of Iron Mine Lane) are the remains of Yennadon Mine (1830 to 1850). Notable pits and burrows are all that remains of this iron, copper, tin and manganese mine, with the shaft and adits having been obscured over time. Several other small quarries and pits are recorded across Yennadon Down and on the south-eastern flank of the Down are two notable stone quarries, collectively known as the Burrator Quarries. Together they are designated a Site of Special Scientific Interest (SSSI) due to their geological and geomorphological interest.

The historical mines and quarries in the area were in no small part responsible for the development of the tramways and railways in the area. The access track that extends from Iron Mine Lane to the quarry and continues along the west of the quarry to the north was originally the line of the old Plymouth and Dartmoor Tramway, formed to transport goods and building materials. A siding to the railway is shown to extend into Yennadon Quarry on the Tithe and early OS maps.

Existing Planning Permission

Current Planning Permission was granted in 1990 for 35 years (to 2025). The Local Planning Authority (LPA) is Dartmoor National Park Authority (DNPA). Within the Planning Permission, agreements were entered into with Devon County Council in terms of the following:

Town and Country Planning Act 1990	Section 106
Local Government Act 1972	Section 111
Local Government (Miscellaneous Provisions) Act 1982	Section 33

The Planning Permission is conditional; some of the existing conditions that are most pertinent (unless subsequently agreed otherwise) are:-

1. Total amount of material removed shall not exceed 14,000 tonnes per annum.
2. Lorry trips shall not exceed 35 in any week. [Tractors and trailers are not included in this total].
3. Landscaping – the construction of a low bund along the western rim of the quarry is stipulated.
4. Quarrying operations are restricted to periods 07:00 to 18:00 Monday to Friday and 08:00 to 13:00 on Saturdays; however, essential maintenance, pumping etc., can be carried on outside of these periods subject to LPA satisfaction.
5. Lorry movements are restricted to periods 08:00 to 18:00 Monday to Friday and 08:00 to 13:00 on Saturdays.
6. A minimum of 75% of the total tonnage of stone leaving the quarry each year shall be building and walling stone – 'to ensure that the output from the quarry contributes to the achievement of conservation objectives in the area'.
7. No blasting is to be carried out without agreement.
8. At the conclusion of workings, the site is to be landscaped.
9. The entrance area should remain undisturbed due to possible archaeological remains.

Proposed Quarry Extension

The development proposals are for the extension to the working plan area of the quarry, while concurrently infilling parts of the existing quarry. The proposed extension area is located to the immediate north of the existing Yennadon Quarry as shown on Figure 02.

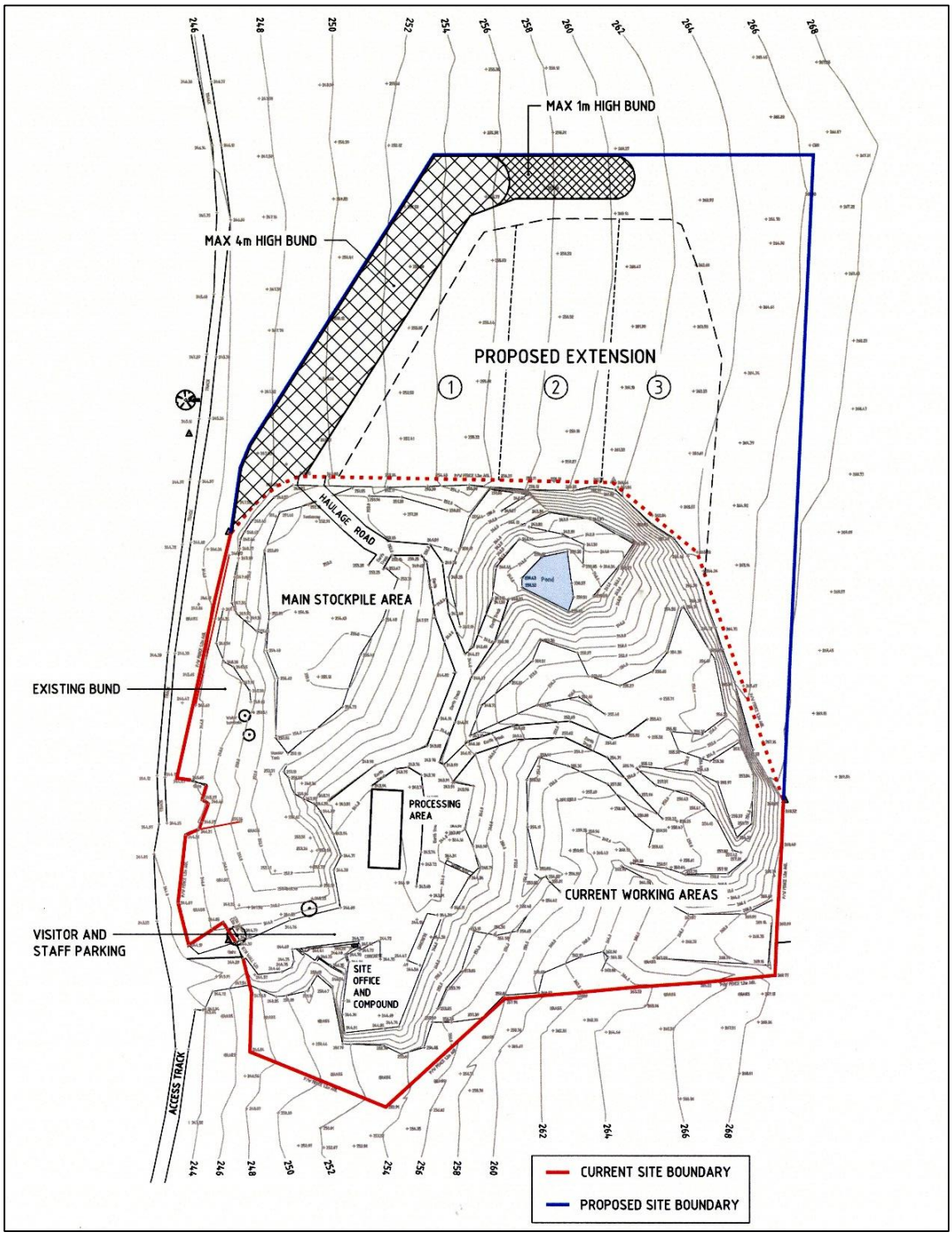


Figure 02: Site Plan Showing Proposed Extension Area Layout

The proposed extension area is irregular in shape, occupies an area of approximately 1ha and slopes from the east down towards the west. It currently comprises open moorland forming part of Yennadon Down and Meavy Common.

There will be no change to mode of operation, hours, extraction rates, number of plant, etc. What is proposed is an extension of the area being worked within the existing operational timeframe for the quarry, as well as a **reduction** of the production limits (to 10,000 tonnes per annum) and a **reduction** of lorry trips (to a maximum 30 round trips per week) to those set out in the current planning permission conditions.

The decision to extend the quarry to the north was based on discussions with DNPA. The size of the extension was jointly decided between the Local Authority and the quarry operators. The boundary line was extended by a further 15m along the northern boundary following a public consultation to accommodate the construction of a low bund / landscaped buffer area to reduce potential visual and noise impacts to local residents. Following the July 2014 decision, the size of the actual area to be extracted was reduced and the extraction and restoration rationale modified to reduce visual impacts. The fundamental proposals are summarised below:

- The red-line area remains the same; however, the proposed extraction area has been substantially reduced; the eastern limit of excavation has been reduced to the 264m AOD contour (as opposed to 268m AOD previously = 4m reduction). The overburden (~3m deep) will be excavated at a 45° angle and planted (approved trees/native plants). Together, this equates to a significant reduction of overburden/rock visible above the height of the new bund from viewpoints to the west compared to the previous submission.
- The new 4m high bund will be constructed along the western boundary of the extension to provide visual and noise screening. The bund will be graded into the existing slope profile along the northern boundary. The lower 1m of the bund will be planted with approved trees/native plants and the upper bund grassed. On completion of quarrying the upper bund will be removed and planted with approved trees/native plants.
- The un-vegetated northern end of the existing bund will be battered back to a lower angle (and graded into the new bund), soiled and planted, all as part of pre-excavation works.
- The eastern side of the existing bund will be re-graded and upper 4m will be soiled and planted to improve view points from the east.
- Yennadon Stone and the landowners have agreed to jointly fund the flailing / swiping (cutting down by mechanical means) of 14 acres (5.67ha) of gorse and bracken overgrowth (to restore land to grazing ground) to compensate for enclosure of the 1ha extension area.
- Once extraction has ceased in the existing quarry, the south-east / east faces will be backfilled to a near-natural profile, soiled, planted and returned to moorland.
- The rolling landscaping and planting programme within the existing quarry (which will begin when permission is granted), will restore 7,040m^2 of land. This area is approximately a third larger than the new extraction area 5,270m^2 (i.e. the area restored to moorland within the

existing quarry area is greater than the new extraction area). Restoration will begin 8 -10 years earlier than under the current planning condition requirements.

- The new extension area will be worked from west to east in three sections, so that the initial extraction phases will be screened to the west by the new bund. The extraction area will be fenced off in two phases so as to minimize loss of grazing / public access. A landscaped buffer zone will be formed along the eastern and northern boundaries, which will be planted with approved trees/native plants.
- Final restoration will be complete by end of 2025. The final restoration scheme incorporates enhanced habitat and bio-diversity. An aftercare plan will be agreed between Yennadon Stone Ltd and the Maristow Estate.
- A public information board on the history of the quarry and tramway will be erected at the quarry entrance.
- There are currently no common land rights or public access rights to the existing quarry area. The Maristow Estate have indicated that this will remain the case should planning permission be refused; i.e. the quarry will remain fenced off, primarily due to health and safety reasons associated with the quarry faces. Any future access will be subject to necessary negotiation between the Maristow Estate and the DNPA. Any access would be subject to the quarry being suitably and safely restored, as per the proposals. A suitably restored and accessible quarry could provide future opportunities for the enjoyment of the biodiversity and special landscape features of the restored quarry by the public.

Yennadon Stone Ltd has the full support of the Maristow Estate and Walkhampton Trust for its quarry expansion and restoration plans.

EIA Requirements

Following a formal Screening Opinion, DNPA concluded that an Environmental Impact Assessment for the Yennadon proposals was required. They indicated that:

1. **The proposal does <u>not</u> fall within Schedule 1 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.**
2. **The proposal <u>does</u> fall within Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999: "Extractive industry- (a) Quarries, open-cast mining and peat extraction".**
3. **The proposal falls within a National Park defined in The Regulations as a 'sensitive area', thus the thresholds identified in Schedule 2 do not apply.**
4. **There is a need to establish, through EIA, the significance of the impact the proposal would have on the landscape and visual amenity, ecological interests, archaeological interests, and pollution and other nuisances.**

DNPA, following discussions and consultations with a number of bodies, set out in their Scoping Opinion that the EIA should consider in detail the following issues:

- **Socio Economic Impact** – Consideration should be made of access and public amenity issues in relation to the loss of land open to public access; impact of security / safety of the site; and impact on the grazing rights of commoners.
- **Archaeology** – Assessment is required by a qualified archaeologist.
- **Process Pollution** – Consideration should be given of the adequacy of existing arrangements and an assessment of the potential for the proposal to result in an increase in dust generation.
- **Emissions** – Consideration should be given of the adequacy of existing arrangements and an assessment of the potential for the proposal to result in an increase in emissions.
- **Surface Water Management** - Consideration should be given of the adequacy of existing arrangements and an assessment of the potential for the proposal to result in changes to the local drainage regime, impact on surface water management and any avoidance or mitigation measures deemed necessary.
- **Geology and Hydrogeology** – The site is identified as being on an Aquifer of Intermediate Vulnerability; it is approximately 450m from an inner water Source Protection Zone 1 and approximately 200m from the Devonport Leat. The EIA should consider the impact of the development on these features.
- **Noise** - Consideration should be given of the adequacy of existing arrangements and an assessment of the potential for the proposal to result in an increase in noise generation and any potential impact on sensitive receptors.
- **Traffic** - Consideration should be given of the adequacy of existing arrangements and an assessment of the potential for the proposal to result in an increase in traffic generation.
- **Ecological Impacts and Biodiversity** – A Phase 1 Habitat Survey is required and any specialist surveys then identified as necessary. It should include a consideration of avoidance, mitigation and compensation measures as necessary.
- **Visual Impact** – A landscape and visual impact assessment, from key viewpoints, should be made, including impacts during and after operation.
- **Cumulative Impacts and an Assessment of Alternatives**

Planning Policy Context

The Scoping Opinion prepared by DNPA requires assessment of the proposals at Yennadon Quarry against the planning policy context. The ES sets out the planning policy framework germane to the consideration of the planning application and addresses a number of matters raised in the officer report to the planning committee in the previous planning application.

The Planning Policy Framework impacting on Yennadon Quarry has been subject to change during recent years. Key elements are; the introduction of the National Planning Policy Framework (NPPF), which has replaced the previous Planning Policy Statements and Mineral Planning Guidance; the National Planning Practice Guidance (NPPG), which contains technical guidance on Minerals Planning; the replacement (in part) of the Local Plan with a Core Strategy and; the introduction of a Development Management DPD. The manner in which key policy tests have been met is addressed in a number of individual reports that form the ES.

Set out below is a review of the material considerations considered appropriate to this revised planning application; the planning policy framework; the reason for refusal of planning application 0667/13; and policy appraisal and conclusions.

The National Planning Policy Framework sets out a presumption in favour of sustainable development and reaffirms the legal requirement that planning decisions should be made in accordance with the development plan unless material considerations indicate otherwise.

With regard to mineral development there is a general presumption against new quarrying in National Parks as this does not accord with their strategic/national purpose. However policy provision is made for Mineral Development, including specifically, **small scale** quarrying of traditional building stone where it would not cause damage to matters of acknowledged importance.

The planning refusal raised a number of issues. The key issue running through all of the reasons for refusal is the question of judgement of scale and the application of appropriate tests against which the judgement should be made. At the heart of this is the use of the term "major" and its definition particularly in respect of an application for an extension to a building stone quarry. In assessing the application it would appear from the officer's report and internal correspondence that the starting position of the DNPA was that the application was a "major" proposal. The report makes reference to the Development Management Procedure Order (DMPO) which defines all mineral extraction as major development. This reliance on the DMPO to provide a definition of major in the context of Policy COR22 is incorrect (Aston and another v SOSCLG and others [2013] EWHC 1936 9Admin)). The DMPO sets out a procedure to be followed by different types of application, it does not prejudge how an application should be considered in a policy context.

The report to the DNPA Planning Committee does refer to COR22 on the basis that the policy does refer to small scale and therefore it is appropriate to consider whether the proposal is major with reference to the Core Strategy. The report goes on to state: "Given the size of the site and

the proposed extension, the tonnage arising, the operating parameters and the location of the site in the National Park it is considered that the proposal is major". Considerable changes have been made to the proposal in order to reflect the underlying concerns behind this statement, however as a matter of principle the starting position behind this assumption with regard to the previous application is incorrect as a matter of law, definition and policy. In respect of this later point there is no evidence to suggest that a "minor or intermediate" view of the quarry has been taken or considered, particularly as the purpose of the quarry is to provide building stone and not minerals or aggregate and it is surprising that there is no discussion of this point in the committee report.

There are three elements to Policy COR22, which provide for an assessment of a stratum of quarrying operations; major, other and small. That the Policy COR22 is expressed in its current adopted form arises from concern expressed at the Examination of the Core Strategy that there was a potential lack of consistency between the Core Strategy Policy and the then National Policy. DNPA proposed the introduction of the term major into the first part of COR22: "This would differentiate the large scale minerals development from 'small scale quarrying,' which would be addressed by the second part of that policy." (Public hearings matter 7 evidence of DNPA). This view of differentiated scale is supported by the descriptions of each quarry set out in Part 4 of the Dartmoor National Park Local Plan Review 2004. Furthermore it is clear from these statements and the policy that there is no requirement for the building stone to be used within the National Park.

It is noted that Policy M4 of the Local Plan Review, which provides a template for the issues that an application for the extension of mineral extraction must address, formed part of the reason for refusal. It is a moot point as to whether or not the use of this policy is appropriate to this application given that Policy M3, which was specifically superseded by Policy COR22, contained a presumption in favour of small scale building stone quarries, subject to what may be considered a lesser series of tests.

Both the NPPG and the Development Plan separate small scale building stone quarries from mineral extraction. Elsewhere in the Development Plan (and NPPF and NPPG) is the need for development to meet particular policy requirements and each of these matters is the subject of detailed examination and separate reports. These are set out in the main body of the Environmental Statement and addressed in the individual sections.

Collectively the policies provide a number of key tests against which the proposals for an extension to the working area at Yennadon Quarry will of necessity need to be judged. Critical amongst these are:

- The protection of the National Park per se for its beauty, wildlife and cultural heritage.
- Support for the socio-economic vitality of the National Park.
- Need to maintain the source of local stone in the context of rigorous examination of the impacts and that the need cannot be met in other ways.
- Maintenance and enhancement of character and appearance via the use of local materials
- Protection of amenity
- Accessibility and sustainability

Whilst MPS1 is no longer extant the same socio economic requirement is a key plank of the NPPF. Of further importance is the question of need and the availability of additional or alternative sources of suitable stone. Put simply "why do this here in the National Park and not elsewhere". These matters are examined in detail within the Socio Economic Chapter of the ES, which concludes:

- There are a limited number of quarries serving the building industry with building stone in Devon and Cornwall
- Of the existing quarries none produce a stone of the right quality with regard to strength, colour, bedding planes and rustic finish. The unique qualities of the stone from Yennadon Quarry arise from its position within the Tavy Formation and the contact metamorphosing that has taken place as a result of the nearby granite intrusion.
- Yennadon Stone complies with Building Regulation requirements as a construction stone
- Alternative but as yet untapped sources also lie within the Dartmoor National Park.
- Planning policy and design guidance within the National Park and surrounding districts has a presumption in favour of maintaining the character of the area, particularly in conservation areas, via the use of natural and local materials.
- It is the stone of choice for many builders and local authorities alike with it being specified for a large number of local developments and via materials conditions on a number of planning consents.
- Critically Yennadon is the only quarry that can provide commercial quantities of natural quoins and is also the first stone of choice as a replacement for Hurdwick stone which is the principle stone in Tavistock (World Heritage site).
- Yennadon stone is a very significant element in defining the character of the communities on the western 'moorland fringes'.

The above sets out in brief the reasons why permission should be granted for the extension of the working area to the existing quarry. As previously stated detailed information on each of the matters of acknowledged importance is contained in the relevant sections of the ES. These

proposals seek an extension of the working area of the quarry in a northerly direction within the context of a substantially revised landscape strategy. They do not seek to, or will bring about a, change in working hours, vehicle movements, number of employees, rates of extraction, etc. Consequently matters with regard to noise, dust, etc. should remain unchanged.

The public consultation event associated with the previous application highlighted two areas where improvement could be made. The first of these was noise which was associated with a particular piece of equipment which has now been replaced. The second was visual impact. Following the previous refusal a comprehensive review of the landscape approach has resulted in a reduced working area and enhanced landscape area and strategy which addresses these matters.

ES Method Statement

The ES is structured in accordance with the best practice guidance. Each topic area is covered in an individual technical chapter and is formatted as follows:

- An ***introduction;***
- A description of the survey ***methodology*** followed;
- A summary of ***baseline conditions*** and survey results (if appropriate);
- A description of the ***assessment of impact*** of the development, initially in the operational phase and subsequently during the restoration stage of development;
- A description of the ***mitigation strategies*** to be adopted to address the effects both in the operational phase and in the restoration phase; and
- A description of the ***residual effects*** of development following the implementation of the mitigation strategies.

The assessment of environmental effects is set out in accordance with appropriate Regulations or guidelines or, where this is not the case, based on expert judgment. Care has been taken to ensure that the effects, if any, arising from the assessment work have been the subject of review to ensure consistency of approach. Any effects are assessed according to four criteria:

Geographical context	1. Local 2. Regional / District 3. National 4. Global
Nature of effect	1. Beneficial 2. Neutral 3. Adverse 4. Not significant (negligible) 5. None

Duration of effect	1. Short term: < 12 months 2. Medium term: 1 to 5 years 3. Long Term: > 5 five years 4. Permanent / irreversible
Significance of effect	1. Major – these effects are likely to be important considerations in the planning process, depending on the scale and relative importance attached to the issue in planning policy and development plan terms. 2. Moderate – adverse effects of this kind are not likely to be key decision-making issues. Effects, beneficial or adverse, will be experienced albeit mitigation measures and detailed design work are likely to ameliorate the impact. 3. Minor – these effects may be raised as local issues but are unlikely to be of importance in the decision making process. However, they are of relevance in enhancing the subsequent design of the development and consideration of mitigation measures. 4. Insignificant – where no significant effects are identified or would be perceptible.

Methodology for Assessment of Impact and Effects

The ES also assesses the cumulative effect of the development and, if appropriate, any indirect effects.

Socio Economic Impact

In order to fully evaluate the socio-economic impacts of the quarry, three reports were produced:

- *Yennadon Quarry: Socio-Economic Report* by Vickery Holman Property Consultants; to determine the potential impact of the proposed quarry extension on a number of social and economic factors. The socio-economic study considered product market; employment; site security; highways and access; and designation of Yennadon Down as Common Land.
- *Yennadon Quarry: Product and Alternative Sources* by John Grimes Partnership Ltd.; to provide additional information on the stone produced at Yennadon Quarry and its market, as well as considering the alternatives should the quarry cease operation.
- *Yennadon Stone and the built environment: A review of the important role that stone from the quarry plays in maintaining the character and appearance of the local area*, by Clifton Emery Design; to explain the important role that the quarry plays supplying stone that supports the quality of building design and historic building conservation in the local area and moreover within the National Park itself.

The existing quarry operations are close to the boundary limits of the currently permitted working area. Yennadon Stone Ltd. has indicated that that the remaining extractable resources within the existing quarry boundary will not sustain the production rates currently achieved by the quarry. Should planning permission be refused, the operators intend to continue production up to 2025, however production levels will decline, resulting in a negative impact on employment

and a significantly reduction in the availability of local high quality building stone. The proposed extension will simply enable economic activity and full employment to be maintained.

Yennadon is the only remaining operational quarry supplying local slate dimension stone within the boundary of the National Park. The quarry has been in existence for approximately 150 years and represents an important part of Dartmoor's cultural heritage.

Product Market - The stone produced from Yennadon Quarry is a Dartmoor Rustic Stone. It is a metamorphosed sedimentary rock (Hornfelsed Slate) that is well suited to and favoured as a building stone due to its indigenous appearance, and resistance to both frost and weathering. It has an established reputation in the market place as a good, flexible, high quality building product. Yennadon Stone has distinct characteristics that make it unique. The stone is flat bedded and nearly all of the joints (naturally occurring discontinuities) within the rock are virtually set at right angles, so that rectangular or square blocks are formed resulting in all natural faces having the rustic colouring. It has distinct subtleties in colour, tone and patina creating a variegated overall appearance when seen in a wall. Its colour ranges between yellowy brown hues, some with iron oxide staining on joint faces, through to bluish grey tones on the cut faces. Yennadon Stone is a particularly strong and durable slate stone. It is not prone to weathering and as a result does not tend to flake or delaminate, unlike some other slate stone types in the region.

The main source of demand for the material comes from the construction industry, for new builds, extensions, boundary walls and building repairs. The market for the stone is principally throughout Devon and Cornwall with just 1% of supply going further afield. It is important to note that current levels of supply from the quarry underpin the viability of the operation. A key role of Yennadon is making suitable stone available for use on Dartmoor in areas where it has been used historically and is an integral part of the local scene. This is acknowledged in the existing (1991) planning conditions (condition b), which states: "*A minimum of 75% of the total tonnage of stone leaving the quarry each year shall be building and walling stone* ***to ensure that the output from the quarry contributes to the achievement of conservation objectives in the area***". If the quarry only supplied stone to projects in the National Park then it would be unviable and cease to operate. Making stone available for building projects further afield directly affects the ability of the quarry to make local stone available – this has been the case historically. In addition, as discussed previously, there is no requirement within the planning policies that the building stone should be used within the National Park.

Whilst areas of the 'high moor' are mostly associated with the use of granite in the construction of buildings and other structures, the 'moorland fringe' has a legacy of building using metamorphic stone that is more consistent with the geology of these areas. Slate stone is a predominant building material in the 'moorland fringe' settlements and is very evident in the fabric of buildings, walls and other structures. Within the National Park slate building stone has had a major role in the makeup of the historic built fabric in many local settlements including: Ashburton, Yelverton, Dousland, Sheepstor, Brisworthy, Horrabridge, Buckfastleigh, South Brent, Walkhampton, Meavy, Burrator, Sampford Spiney, Mary Tavy, Peter Tavy, Buckland Monochorum, Crapstone, Milton Combe, Shaugh Prior, Hoo Meavy, Clearbrook, Lovaton, Wotter and Roborough. Outside of the National Park, settlements such as Tavistock (World Heritage site), Okehampton, Plymouth, and Ivybridge, as well as numerous smaller hamlets, building groups, farmsteads and one off buildings, boundary walls and agricultural structures, use slate stone that is similar to that sourced from the Yennadon Quarry. Whilst Yennadon Stone may not have been used in all settlements where metamorphic slate is the principal stone (other stone quarries within the National Park are all now disused), Yennadon does provide an appropriate construction material and in fact the only remaining slate stone quarry that is available within Dartmoor National Park. The quarry plays an important role in making appropriate building stone available for building and conservation projects in these areas.

Planning policies continue to encourage the use of local materials and recognise the importance of sourcing and utilising appropriate local stone in the design of new buildings and structures throughout the local area and within the National Park. It is clear that the use of appropriate local stone is key to the delivery of a plethora of planning policy requirements in the DNPA area and in surrounding local authorities, including the Tavistock World Heritage site.

The Strategic Housing Land Availability Assessments (SHLAA) produced by DNPA identifies where land is available to deliver housing into the future. Within the National Park about 40% of the 90 sites identified are within localities that are characterised geologically as being slatey stone areas. The availability of a high quality source of locally appropriate stone will be important to achieving successful developments that are locally distinctive and which have regard to the intrinsic character of the moor. This becomes increasingly difficult if the principal sources of local stone are not available – a viable and operational Yennadon Quarry is crucial to ensuring that the appropriate local stone is available for the design and construction of these developments.

Alternative Sources - There are a variety of different 'slate' stone types that have historically been quarried throughout Devon and Cornwall. The term 'slate' for building stone is loosely applied to mudstones and siltstones that have undergone various grades of metamorphism. The nature and

appearance of these stones varies greatly; and can be weak or strong, durable or non-durable, dark or light grey, have green, to yellow, to red hues, and be characterised by brown iron oxide and/ or quartz veining.

Most other existing 'slate' quarries in the region produce a dark grey "Blue" slate (which can be used as both traditional roofing slate and dimension stone, etc.). There are limited other sources of 'Rustic Stone' within the Southwest. Whilst there are slates that share some 'characteristics' with Yennadon Stone, none extract the high quality Hornfelsed Slate produced at Yennadon. As such, there are none that can provide exact and viable alternatives in terms of stone type, quality, shape, colour, strength and durability that exist.

There are just two other sources of a rustic stone, with some similarities in appearance, available within a 30 mile radius of Yennadon, namely Mill Hill Quarry and Lantoom Quarry. Neither provide appropriate replacements with regard to stone type, quality, colour, strength and durability.

The Hornfelsed Slate deposit that Yennadon Stone quarries lies almost predominantly within the boundary of Dartmoor National Park. Therefore, alternative sources of Rustic Stone from high grade Hornfelsed Slate are very limited outside the National Park and opening a new quarry within the National Park is not considered viable.

Employment - Yennadon Quarry is an established employer within an area of Devon which offers limited opportunities outside of the service, agricultural and tourism industries. The quarry currently employs 27 people including the two directors. Eleven persons are aged between 18 and 24 with a further nine aged between 25 and 30, making up the majority of the staff employed. Against the general economic background the preservation of opportunities for youth employment as skilled labourers and the retention of employment for older skilled workers should be a paramount consideration. This is particularly relevant in a rural economy, such as West Devon/Dartmoor/ South Hams/South East Cornwall, where 12 of the employees reside. The current workforce is adequate to operate the extended quarry on the basis of current annual output levels. There is no suggestion that the grant of permission will create the immediate opportunity for new jobs. It is noted in the DNPA Core Strategy Examination that the local significance of the minerals industry was recognised; paragraph 5.14.2 of the Core Strategy (June 2008) states inter alia: "*The two large quarries in Dartmoor – Linhay and Meldon – are important components in the local economies of Ashburton and Okehampton and the surrounding areas. The smaller quarries also contribute to the range of employment opportunities in their own localities*".

Given the limited opportunity in the locality for skilled quarrying jobs the loss of the 27 jobs at Yennadon Quarry will have ramifications on the local economy through the loss of the economic activity of those employees. In using Gross Value Added (GVA) figures (per person), this would result in a potential loss of £159,264 per year from rural communities, and £250,000 from the region (based on the lower 2012 employment figures on 21 jobs). This increases to £827,075 if we apply the GVA per job across the region, which is arguably a more appropriate measure. As a result, it is considered that the loss of this quarry would have a substantial economic impact on the region. Clearly the proposal would have a significantly positive impact on the area in terms of the economy.

Security - The existing quarry operation is fenced along all boundaries to prevent third parties and grazing stock from entering the operational area. The current quarry has an exemplary record of safety. The proposals include the provision of security fencing around the new extension to ensure continued safety measures at the quarry.

Highways and Access - The extended quarry operation can be serviced by the existing roads and infrastructure. The proposed quarry expansion will not place any additional pressures on the existing transport network or the wider area.

Designation of Yennadon Down as Common Land - The proposed development will not have an undue impact on the access rights of the public. The extension is located on the western periphery of Yennadon Down, which has little or no historical, ecological or aesthetic interest, and will not impinge on any of the existing footpaths that are routinely used by the public.

The main social impact arises from the loss of approximately 1% of the common land used for grazing. However, an assessment into the Common Land indicates that a flailing/swiping programme on 14 acres (5.67hs) of gorse and bracken overgrowth to return it to grazing land would more than compensate for the loss of the land by the proposed extension (1ha). It is considered that although the loss of Common Land is adverse, as the area that is affected is small (less than 1%), the overall significance is therefore minor.

Summary of socio-economic impacts - Notwithstanding the benefits of maintaining the viability of the quarry from a building design and conservation perspective, there are many wider socio-economic benefits that are associated with the continued operation of the quarry – not least of which would be the continued operation of an important part of Dartmoor's cultural heritage and the positive economic benefits. It is considered these positive benefits, represented by the proposal to extend the quarry, far outweigh the social impacts. This has particular relevance as

it is possible to mitigate against a number of the negative aspects of the application. Site restoration will ensure that there will be no permanent residual effects of the development upon social impacts.

Whilst the quarry remains viable and stays open for business, the availability of Yennadon stone means that the tradition of using high quality and locally appropriate local stone in new buildings and in the conservation and restoration of historic structures can be maintained into the future. It also means that an important aspect of life on Dartmoor can continue.

Archaeology

An assessment of the local history and archaeological features present at the site and surrounding areas has been made. The assessment indicated three historic sites (Yennadon Quarry; Dartmoor Tramway; and medieval to post-medieval field systems) within or close to the proposed extension area.

Yennadon Quarry – there are no features or structures of archaeological significance identified within the present quarry, with the exception of the site of the tramway and siding (see below). No mitigation measures are required for the actual quarry.

Dartmoor Tramway - Historic mapping suggests that the tramway siding lies beneath the present quarry entrance and within the southern part of the quarry (parking area and site offices). It is not known if any part of the siding survives within the quarry area. There are no proposed alterations to this area, which will remain undisturbed (as stipulated in the current planning permission). The tramway passes immediately west of the present quarry and proposed extension, and its route appears, at least in part, to be represented by the current north-south trackway, which is utilised by vehicles. A number of granite setts and fragments of rail are visible in the trackway west and north of the quarry, and it is possible that these, and other components, continue below the present ground surface in this area and elsewhere along its route. The tramway is an important feature in the landscape and surviving elements should be preserved. However, the section of trackway west and north of the quarry where the tramway features are evident, will not be used to access the proposed extension area. The existing quarry entrance will continue to be used. Therefore, no mitigation measures are suggested for the trackway west and north of the quarry.

Field system - Elongated linear features that may indicate the presence of former medieval or post-medieval field systems were identified on modern aerial photographs over a wide area of Yennadon Down, including areas to the south-east, east and north-east of Yennadon Quarry.

However, no above-ground features associated with the field system were identified within the subject site (quarry extension area). Although there is no evidence of field systems in the new quarry working area, as a precautionary measure a 'watching brief' will be undertaken to mitigate any impacts from the proposed development should unidentified features exist in the extension area. The watching brief would comprise a geophysical survey following the clearance of vegetation and, if deemed necessary, site attendance during soil stripping by a qualified archaeologist.

There is also the potential for unidentified historic sites, the impact of which would also be mitigated by the watching brief and geophysical survey following the clearance of vegetation.

Process Pollution

An assessment of the quarry processes at Yennadon Quarry has been made, with consideration given to controlling air emissions and other potential sources of pollution associated with the quarry process. Over the past seven years the quarry has produced on average approximately 5,500 tonnes per annum (t/a). A maximum potential future production level of 10,000t/a has been proposed, a reduction from 14,000t/a stipulated in the current planning conditions. The assessment included the production of a site conceptual model, which describes the potential pollutants associated with the quarry process, and potential impacts based on a maximum potential output of 10,000t/a.

Yennadon Stone operates a "Hard Rock" quarry that produces dimension stone for natural stone building material and walling purposes. The quarrying operation maximises the material suitable for sale, with approximately 40% of the stone excavated being non-saleable spoil. Yennadon Quarry uses low technology extraction and processing methods. It does not employ 'prescribed[1]' quarry processes that necessitate Local Air Pollution Control (LAPC) or Local Air Pollution Prevention and Control (LAPPC) permits.

The proposals will not result in any change in production methods. The existing operating hours are to be continued. The location of the site offices and processing areas are to be kept as existing. There will be no increase in the number of either static or mobile plant or vehicles, or their operating hours. Therefore, there will be no scheduled increase in emissions from plant, with the exception of the dumper trucks, which will have a slight increase in movements; i.e. further distance to travel between working faces and processing area. The potential increase in exhaust emissions is considered to be minor.

[1] Prescribed quarry processes include drilling and blasting techniques, mechanical crushing and screening plant and transportation of stone using conveyor belts and chutes.

The assessment indicated dust emissions and noise pollution as having potentially significant impacts and have been assessed individually. Other potential pollutants are all considered to pose minor or insignificant impacts.

Yennadon Quarry has an Environmental Management Strategy (EMS), which ensures environmental impacts are managed. The EMS will continue to be adhered to and will be regularly reviewed. The implementation of the EMS will provide sufficient mitigation of the potential impacts of process pollution. These impacts would cease upon reinstatement of the site to moorland. No permanent residual effects are anticipated.

Emissions

An assessment of dust emissions from Yennadon Quarry was carried out with emphasis on the impact of nuisance dust generated by the quarry. The assessment quantified the level of dust being generated by the existing operations across the environs and assessed the impact of the quarry extension on dust generation. The prevailing wind[1] direction is from the south-west. However, the local topography (the quarry lies on the western flank of Yennadon Down) will affect the low-level winds, which will direct the winds to the north. Local residents most likely to be affected by nuisance dust would be located to the north of the quarry.

In production terms, the extraction, processing and transport processes that have the potential to generate dust are to remain identical to the existing operation. The only variations would be the requirement to remove / strip topsoil and overburden, the construction of a new bund; and a slight increase in the length of the haulage road from the quarry face to the material processing area.

The data for the dust assessment of existing conditions was obtained from a dust monitoring survey, which enabled a semi-quantitative measurement of depositional rates to be established. Meteorological data was obtained to enable interpretation of the dust data. During the four week dust monitoring period, prevailing south-westerly winds were dominant. Typically wind speeds ranged from a light to a gentle breeze (1 to 9 knots). Rainfall fell on 15 days out of the 28 days of the dust monitoring period, with more than 1mm of rainfall falling on 13 days. Levels of daily rainfall greater than 1mm acts to suppress dust. Therefore, the levels of rainfall received during the four week dust monitoring programme had an impact on measured dust levels.

[1] Prevailing wind is defined as the direction wind blows from with the highest percent of frequency. In the UK, prevailing winds normally blow from the South-West (approximately from 245 degrees).

All of the dust monitoring results fell into the 'very low potential impact' category. The highest recorded Effective Area Coverage (EAC)/day value of 0.3% is regarded as being 'noticeable', but is below the 0.5% EAC/day level that typically gives rise to a 'possible complaint'.

The off-site 'control' dust monitors identified that there are several sources of dust being generated in the surrounding area. The directional dust gauges gave no strong indication that dust from Yennadon Quarry predominates. The off-site control to the west of Dousland measured the highest levels of dust from the southwest, west and northwest (i.e. not from Yennadon Quarry). Levels adjacent and down-wind of the quarry were not significantly elevated above the control monitors and typical background levels expected within a rural area within summer months. The baseline conditions at the site indicate that levels of dust currently generated at the site are within 'Acceptable Levels'.

It is considered that should the quarry operate at the proposed full capacity of 10,000t/a compared to the current average of approximately 5,500t/a, the level of nuisance dust generated from the quarry are likely to be below the threshold that could give 'possible complaint'. Therefore, the risk of nuisance dust affecting the residents is considered to be low.

It is considered that wind-whipped dust could potentially be generated from uncovered/ un-vegetated spoil heaps/bunds and from the compacted stone access track. However, it is considered that levels of nuisance dust are unlikely to exceed a significance level of low to medium.

In April 2015, Yennadon Quarry formalised their dust management arrangements into a Dust Management Plan, which includes the comprehensive dust suppression arrangements.

The on-going quarrying activities at Yennadon Quarry will inevitably give rise to some dust emissions although the potential impact at the nearest residential properties is not considered to be of any significance (assuming normal conditions and wind distribution patterns). Implementation of mitigation measures and Dust Management Plan will ensure that there will be no significant residual effects of the proposed quarry extension on local residents from dust emissions.

Surface Water Management

An assessment of existing and proposed surface water management at the quarry has been made, as well as an assessment of drainage paths within the catchment area. The existing quarry operation manages surface water within the site by collection in an infiltration pond in the quarry

base. Some of the water is recycled (through a 'silt-buster'). The remaining water in the pond drains through the underlying strata, supplemented by pumped discharge to a soakaway. This arrangement utilises SuDS techniques and based on performance to date, is considered to be an adequate and appropriate arrangement and will continue to be used for the extension of the quarry. There will be no increase in the area of impermeable surfaces resulting from the quarry extension. The proposed phasing of quarrying and reinstatement seeks to minimise the impact of the development on the local drainage regime.

There are no natural surface water bodies within the existing quarry or the subject site and both areas are located outside of any floodplain. Future quarry workings are expected to be above the water table hence the site will not be susceptible to groundwater flooding.

An assessment was made of watershed (catchment area) and drainage paths around the site. It is evident that surface water run-off directly to the east of the quarry drains into the quarry. Within the quarry, drainage is shown to be directed to the base of the quarry. No drainage paths are shown discharging from the quarry entrance. Rainfall onto the bund would be expected to drain freely through the granular material. Therefore, no significant surface water run-off is derived from the existing quarry itself. The modelling did indicate that across Yennadon Down, there are numerous flow paths leading from the Down to the access road and then from the access road down slope. It is recommended that an investigation should be carried out to the camber of the access road and the requirements for any drainage at its southern end close to Iron Mine Lane. Any drainage improvement scheme would need to be designed as not to impact on any potential archaeological remains of the tramway underlying the access road. The scheme would need to be submitted to the local authority for approval prior to any works commencing. Yennadon Stone Ltd have indicated that they will undertake the investigatory works and approved improvement works as part of their track maintenance requirements.

It is concluded that, with mitigation, the proposed development will have no permanent or significant impacts upon local drainage. There will be no impacts upon surface water bodies. The potential impacts of development of flood risk and surface erosion can be fully mitigated through good management practices. No permanent residual effects are anticipated.

Geology and Hydrogeology

An assessment of the geology and hydrogeology present on and beneath the site has been made. The assessment did not identify any features of recorded geological importance present on the site. No potential contaminants were identified that will affect soil quality in the area of the proposed extension. The proposals will require disturbance of the existing site soils, for use in

bunds and site restoration; and adoption of proper soil handling procedures is proposed to maintain soil quality.

The existing quarry workings are not sub-water table and it is unlikely that sub-water table quarrying will take place within the extended quarry. The hydrogeology assessment concluded that groundwater flow is towards the west, i.e. would migrate away from the identified groundwater Source Protection Zones (to the east of the site). It also concluded that the proposed extension will not result in any increase of groundwater recharge and will have a negligible effect on stream base flow to surface water courses to the west of the site including the disused section of the Devonport Leat to the west of the site.

Noise

An assessment has been made to quantify the level of existing environmental noise across the environs as existing and consideration made as to the likely impact of the quarry extension and any appropriate mitigation measures. A detailed noise survey was carried out of existing quarry activity noise at the nearest neighbour, Higher Yennadon, some 142m from the northern edge of the existing quarry. Noise levels were also monitored 90m from the edge of the quarry, which would effectively be the conservative distance from the extended quarry to Higher Yennadon. The survey has shown that noise levels are typically higher at Higher Yennadon than they are at the closer "90m position" and this suggests that quarry activity noise does not control the noise climate at the neighbours.

The seven day noise survey indicated that the MPS2 55 decibels (dB) L_{Aeq} criterion (2005 guidance on noise and mineral extract in Annex 2 of Mineral Policy Statement, MPS2) can be complied without mitigation. However, the noise survey results over the weekend, when the quarry was shut, does show that ambient noise levels can fall below 40 dB L_{Aeq}. Therefore, a limit of 10 dB greater than ambient levels, of 50 dB L_{Aeq} would give a more appropriate limit for the site.

Typical working day noise levels at the "90m position" fell in the range of 45-50 dB L_{Aeq} and is considered to be indicative of the likely noise level at Higher Yennadon if the quarry was to be extended 90m to the north. The highest hourly level was 51 dB L_{Aeq}, 1hr, which was recorded whilst a 360° slew (excavator) worked on top of the spoil mound, to the northwest of the quarry, in direct sight of the measurement positions. The construction of the 4m high bund along the western side of the proposed quarry extension prior to any excavation works will help protect the amenity of the nearest neighbour, as well as to visually screen all quarry workings. The new bund would increase screening losses by at least 5 dB and therefore it would not be unduly constrictive to consider the imposition of a noise condition of 50 dB L_{Aeq} (free field) at the nearest neighbouring

property. It is considered that noise from the extended quarry could be controlled to no more than 50 dB L_{Aeq}.

The potential impact of noise on visitors to the National Park was also evaluated; i.e. impact of noise on the tranquillity of Yennadon Down. When evaluating tranquillity, a number of factors (both positive and negative) need to be considered. Noise is in fact a small part of overall tranquillity. In the previous submission, the DNPA's case officer stated "The quarry working will be at a similar level to the existing operation and noise levels will be at the same level which means its impact on tranquillity will be no worse"; i.e. the impact of noise on tranquillity will be neutral. However, as tranquillity takes into account visual aspects of the landscape, the revised proposed working and restoration scheme (which will result in an immediate rolling restoration programme) is considered to be relevant in assessing the impact of the proposals on overall tranquillity. The proposed restoration provides positive tranquillity factors including improving "the naturalness of the landscape" and "openness of landscape". Considering predicted noise levels from the quarry are acknowledged to remain as existing and the revised proposed working and restoration scheme will reduce visual impacts (over existing) and provide long-term landscape improvements, the proposals can be considered as enhancing levels of tranquillity. Considering the quarry is in an area defined by the National Park as an "Area of Heavy Recreation Use", sensitivity to change can be considered to be already relatively low.

Transport

An assessment has been made of the existing traffic conditions and characteristics of the area and the potential impacts of the proposed quarry extension. In transport terms, the operation method, employee numbers and delivery route for the proposals remains identical to the existing operation. Therefore, it is proposed that the existing traffic management arrangements will continue to be operated as existing.

The key findings of the Transport Statement are:

- The quarry currently accounts for approximately 20 HGV lorries per week on Burrator Road (0.62% of day time traffic). Increasing HGV trips to 30 per week represents an increase of 0.3%. Therefore, the impact of vehicle trips associated with the proposed quarry extension on the existing highway network users is expected to be negligible;
- The existing quarry access is expected to continue to operate efficiently and safely;
- The accident history does not raise any significant accident concerns and the proposed quarry extension is not expected to increase accident rates on the highway;
- The existing arrangements are expected to remain effective in minimising debris being tracked onto the highway.

It is anticipated that there will be only temporary insignificant to negligible impacts on the local transport network during the operation of the quarry extension. These impacts would cease upon final restoration and closure of the site. No permanent residual effects are anticipated. Recommended mitigation measures to limit the potential impacts of the quarry extension include:

- Continue vehicle maintenance plan for HGV.
- Monitor the amount of mud in compound area and staff / visitor car park; carryout cleaning / maintenance if excessive mud accumulates.
- Maintain access routes to the quarry to ensure the access track effectively removes mud from HGV tyres.

The implementation of the mitigation measures described above will ensure that there will be no significant residual effects of the development upon the existing local highway network.

Ecological Habitat and Biodiversity

An assessment of the current ecological conditions of the site has been made in respect of important and legally protected sites, habitats and species. The ecological assessment has included an extended Phase 1 habitat survey, followed by specific surveys for badgers, breeding birds, bats, butterflies and reptiles. A botanical survey was also undertaken. Two Verification Surveys have also been undertaken to verify that ecological conditions have not varied since 2010 when the first survey was undertaken and to confirm that findings and recommendations remain applicable.

Yennadon Quarry and the quarry extension are not within any statutory or non-statutory sites of nature conservation interest. No impacts on sites specifically designated for nature conservation are anticipated.

The extension of the existing quarry will result in adverse impacts to unimproved acid grassland, small numbers of scattered hawthorn trees, common lizard, nesting habitat for up to five bird species and habitat for butterflies including the small heath butterfly. However, measures to avoid, mitigate and compensate these adverse impacts have been developed and detailed in a site-specific Biodiversity Mitigation and Enhancement Plan. Such measures include undertaking a translocation of reptile species, sensitive seasonal timing of vegetation clearance and appropriate planting and seeding of the proposed earth bund and the phased restoration areas with species-rich locally sourced seed. Detailed proposals for the following will be submitted for approval prior to development and restoration:

1. Grassland habitat creation and management statement (including species mixes, management regimes and habitat provision for ground nesting birds);

2. Pond Creation and Management Statement (including provision for fairy shrimp); and
3. Post quarry restoration habitat and species management plan.

These measures to mitigate for anticipated adverse impacts have resulted in residual impacts on habitats and species being negligible, neutral or in some cases beneficial. In the long-term, spoil piles will be restored for the benefit of ecology and nature conservation.

Landscape and Visual Impact

An assessment has been made of the current baseline situation and the likely landscape and visual impacts of the revised proposals both during and after operation of the proposed extension, and then approximately 10-15 years later when the mitigation measures will be fully established. The potential impacts of the revised proposals are also assessed against the impacts that will occur as a result of the existing planning permission. Representative viewpoints have been selected that illustrate the existing character and condition of the landscape around the application site, the visibility of the existing quarry and the contribution that it makes to local character.

Key conclusions of the baseline assessment were:

- Yennadon Quarry has been in existence for at least 150 years and pre-dates the settlement of Dousland. It is one of the historic features that contributes to local character or 'sense of place';
- Quarries are an important and often highly visible part of the Dartmoor landscape. They form focal points and places of historic interest and can contribute positively to the special qualities of the National Park;
- The area surrounding the quarry is not part of the remote upland moorland that contribute strongly to the 'iconic' vision of Dartmoor, and the area does not exhibit the key properties or remoteness or high tranquillity;
- The 'upland fringe' adjacent to the site is characterised by naturally re-generating small trees. These provide opportunities to assimilate the site into the local landscape that do not exist at more elevated locations. The lower, less exposed parts of Yennadon Down to the north and south of the existing quarry are being gradually colonised by areas of naturally re-generating small trees and bracken. These form part of the on-going pattern of landscape change in the area, and will progressively screen views towards the site from the western edge of the Down;
- From viewpoints around Dousland, views into the working area of the quarry are screened by the existing spoil bund, but the un-vegetated part of the bund itself is a rather alien and intrusive feature;

- Yennadon Down consists of a mosaic of unimproved acid grassland, bracken and scattered gorse scrub and trees. This vegetation tends to be maintained at a very short sward height by the grazing of livestock, including sheep, ponies and cattle. Between the clumps of vegetation there is a network of grassland and well used footpaths. This including one that runs around the upper eastern edge of the quarry, providing views into the existing working area;
- The remains of the disused Yennadon Iron Mine to the south of the site are now well integrated into landscape by areas of typical moorland vegetation. Although evidence of past mining activities can still be identified, the mine does not form an intrusive feature in the landscape. This shows how former mining features can be successfully assimilated into the landscape by the native moorland vegetation;
- Several small ponds are located on Yennadon Down. These tend to be surrounded by typical moorland vegetation that integrates them into the local landscape and enhances their bio-diversity;
- A combination of the mature vegetation around the property to the northwest and the dense woodland in Dousland Plantation predominantly screens more distant views towards the site from the north and northwest, limiting views to those available from Yennadon Down. In more distant views from the northwest, it is only the upper un-vegetated parts of the spoil bund and the rockfaces defining the south eastern corner of the existing quarry that are visible. While the site does not form a highly conspicuous part of these views, it is evident that the landform of the quarry would be even less apparent if the rockface was vegetated like the surrounding moorland;
- From Roborough Down the site is seen as part of the transition zone between the settled and more vegetated 'Moorland Edge Slopes' and the more elevated and exposed moorlands beyond. The vertical rock face defining the upper eastern edge of the site forms the most visually prominent and intrusive part of the existing quarry, but the un-vegetated part of the spoil bund is also visible; and
- From viewpoints to the southwest, the site does not contribute meaningfully to the character or composition of views, but the other disused quarry on the edge of Yennadon Down is clearly visible, demonstrating the typical contribution of quarries to local character.

The existing impacts and opportunities for enhancements that could be incorporated into the revised proposals were identified as follows:

- The well-established vegetation on the original spoil heap to the north of the site entrance screens views into the existing quarry and integrates the bund into the landscape. This area should be retained as part of the revised proposals;

- The un-vegetated northern part of the existing spoil mound forms a prominent and highly intrusive feature on the skyline in views from the trackway along the western boundary. The height and profile of this feature will remain unchanged under the existing permission. There are clearly opportunities to re-profile, topsoil and plant this feature during the initial phases of the revised proposals;
- There is a well-worn pathway around the upper (eastern) side of the existing site area that is regularly used by walkers keen to view operations within the quarry. This should be retained as part of the revised proposals;
- The scale and depth of the existing quarry is readily apparent from viewpoints around the existing working area. The vertical rock faces along the eastern side of the quarry form the most prominent features;
- While the quarry occupies its original historic location within the landscape, the modern extraction methods mean that the internal character of the site differs from the other disused quarries seen within the local area;
- Due to the distinctive fall in the landform from east to west, the proposed extension area is located in a markedly lower and less prominent part of the landscape than the top of the eastern rock face defining the edge of the existing working area;
- The existing working area is screened from most viewpoints on Yennadon Down by the landform and the surrounding vegetation, with the upper east-facing part of the western spoil bund being the principle intrusive feature that is visible. There are clearly opportunities to re-profile, topsoil and plant this feature during the initial phases of the revised proposals; and
- No public access will be possible under the existing permission as the upper parts of the quarry will remain as vertical rock faces and the boundary fences retained.

If planning permission for the revised proposals is not granted, Yennadon Stone will continue to operate under the terms of the Existing Permission, which expires in 2025. It is therefore assumed that excavation works will continue, albeit at a somewhat reduced capacity, until 2025. The anticipated impacts that will arise as a result of the existing Permission can be summarised as follows:

- The height and profile of the un-vegetated northern part of the existing spoil mound will remain and will be left to naturally re-vegetate, so this will remain as an alien landform in views towards the site from the west;
- The restoration plans will not be submitted until 2023, so restoration is unlikely to commence until at least 2024/2025;
- The top and east-facing slope of the existing spoil bund is the main feature that is visible from local viewpoints on Yennadon Down. This will remain in its existing position and will be left to naturally re-vegetate at the end of the operational period under the existing permission;

- The upper parts of the eastern rock face are the most visually intrusive elements of the existing quarry. These will remain as prominent near-vertical rock faces as there is insufficient fill available to re-profile them to safe gradients that will allow them to be physically or visually integrated back into the surrounding landscape; and
- Currently there are no common land rights or public access rights to the existing quarry. The Trustees of the Walkhampton Trust have indicated that this will remain the case should planning permission be refused. The quarry will therefore remain fenced off, primarily due to health and safety concerns associated with the remaining vertical quarry faces.

The Landscape Restoration Plan demonstrates how the revised landscape strategy would successfully assimilate the proposals back into the local landscape. The plan shows how the areas of new vegetation on the restored landform could be managed to integrate with the existing vegetation pattern around the site, providing linkages with the existing informal pathway across Yennadon Down.

Topography: The key impacts on the topography of the site will relate to the profile and gradient of the landform, and the contribution that this makes to local landscape character. The profile of the existing quarry is clearly at odds with the surrounding landform, despite the fact that quarries are identified as one of the typical characteristics of the local landscape. The revised proposals would restore a substantial part of the quarry to a near-natural ground profile. It is evident therefore that the restoration plans respond to the typical and 'valued attributes' of the local landscape (as is required by Policy DMD5) and would result in a clearly noticeable betterment compared to the situation that would arise under the existing permission. With a high sensitivity and a moderate magnitude of change, it is concluded that the revised proposals would result in a significant benefit to the landform within the site.

Vegetation / Ecological Considerations: The site-specific Biodiversity Mitigation and Enhancement Plan (detailed in the Ecological Habitat and Biodiversity assessment) provide measures to avoid, mitigate and compensate ecological impacts. Taking the quarry as a whole and comparing the impacts to those that will occur as a result of the existing permission, there will be a clearly noticeably benefit. This would result in a moderately significant benefit across the wider site area.

Public Rights of Way: There are currently no common land rights or public access rights to the existing quarry area and the Maristow Estate have indicated that this will remain the case under the existing planning permission. As a result, the quarry will remain fenced off. Under the new proposals (and subject to necessary negotiations between the Maristow Estate and DNPA) there

is the potential for public access to the restored quarry, which would promote opportunities for the enjoyment of the enhanced biodiversity and special landscape features within the quarry by the public. Access is therefore regarded as a high or very highly sensitive landscape attribute. With the potential for new public access providing opportunities for a clearly noticeable benefit, the proposals have the capacity to result in a significant benefit compared to the existing permission.

Watercourses and Drainage: The Surface Water Management Assessment anticipates that there will be temporary insignificant impacts on the local drainage and groundwater regime during the operation of the extension, with no permanent residual effects anticipated. The pond to be retained in the base of the quarry will provide opportunities for longer term bio-diversity enhancements.

Archaeology and Cultural Heritage: With the exception of the site of the tramway and siding no features of archaeological or historical interest have been identified within the quarry itself and no cultural heritage mitigation measures are suggested. In order to "promote the understanding and enjoyment of the special qualities of the National Park" it is proposed that an information board will be erected close to the entrance of the quarry describing the link between the Tramway, Yennadon Quarry and the history of quarrying on Dartmoor. This will provide a benefit compared to the provisions of the existing permission, in accordance with the primary objectives of the National Park.

Visual Impacts: The Visual Appraisal has demonstrated that from every viewpoint that was assessed the revised proposals would result in benefits compared to the existing permission. It is logical to conclude therefore that this must mean that the proposals would 'conserve and enhance' the natural beauty of the local landscape when the impacts are judged against the baseline conditions.

Residential Amenity: This relates to the on-going 'live-ability' of a property, and the avoidance of potentially 'unneighbourly' developments. It is acknowledged that there will be a short period during the initial site set-up stage when there will be a slight increase in impacts on the properties with views towards the site. However, this eight week period represents approximately 1.5% of the total length of the existing permission and is therefore a short–term impact that is not considered to be significant. After this time, impacts will return to their existing level, and the re-profiling and planting of the un-vegetated part of the spoil bund will gradually become evident. It is concluded that there will not be any unacceptable impacts on the residential amenity of the private properties.

It is concluded that the proposals would not have a detrimental residual impact on the character of the area, and by restoring part of the site to a near natural grade and retaining the presence of the quarry, the proposals will enhance what is special or locally distinctive about the local landscape character. Furthermore, rather than harm the wider landscape, the progressive restoration will provide clear betterment compared to the existing permission, so the revised proposals will enhance local landscape for the following reasons:

- They would restore a greater area to moorland than would be temporarily required for the extension area;
- They would facilitate the earlier restoration of the most visible and intrusive parts of the existing quarry (the un-vegetated parts of the existing bund and the upper south eastern and eastern faces of the existing quarry);
- They would provide a clear improvement to the final restored landscape of areas with the greater visual impact (the south-eastern and eastern faces will be infilled to near-natural profiles, unlike the existing permission);
- They would provide opportunities for increased bio-diversity and habitat creation within the site;
- The information board to be erected close to the entrance of the quarry will describe the link between the Tramway, Yennadon Quarry and the history of quarrying on Dartmoor, in accordance with the primary objectives of the National Park;
- They would result in an improvement to the visual impacts from every viewpoints considered by the assessment; and
- The suitably restored and accessible quarry could provide future opportunities for the enjoyment of the biodiversity and special landscape features of the restored quarry by the public.

Consequently, no significant adverse impacts would arise as a result of the revised proposals, and the progressive restoration scheme would result in clear benefits compared to the existing permission. This would 'conserve and enhance' the natural beauty of the landscape in accordance with the primary purposes of designating land within National Parks. It is concluded therefore that the proposals would be fully compatible with the relevant planning policies and that there are no landscape or visual reasons why planning permission should not be granted.

Cumulative Impacts

To ensure a consistent approach with regard to assessing the impact of the proposals and identifying the inter-relationships between effects, a review of the ES was undertaken, which resulted in the production of the table below, summarising the assessment of potential impacts and their mitigation.

	Geographical	Nature	Duration	Significance	Mitigation
Effect on human beings, buildings and man-made features					
Economy and employment	Local Regional	Beneficial	Long-term	Major Minor	N/A
Do-nothing effect on economy and unemployment	Local Regional	Adverse	Long-term	Major Minor	N/A
Traffic - Volume change associated with proposed extension	Local	N/S	Medium / Long-term	Minor	Maintain traffic management arrangements
Traffic - effects of the development on local roads and transport.	Local	N/S	Long-term	Insignificant	Maintain traffic management arrangements
Site Security	Local	Neutral	Long-term	Insignificant	Extend existing security measures around new perimeter
Loss of Common Land	Local	Adverse	Long-term	Minor	Undertake flailing / swiping to restore grazing elsewhere on Common
Impact of nuisance dust affecting Local Residents	Local	Adverse	Long-term	Insignificant	Maintain existing dust suppression arrangements; implement additional measures
Levels of other emissions from quarry processes during normal operation (exhaust fumes, light, etc.)	Local	N/S	Long-term	Insignificant	Maintain Environmental Management Strategy (EMS)
Noise - levels and effects of noise	Local	Adverse	Long-term	Minor	Construct bund on western boundary; Adopt Good Practice for Noise Reduction
Change in population arising from proposals and consequential environmental effects	Local	None	N/A	N/A	N/A
Effects on buildings, the architectural and historic heritage and other human artefacts (through pollutants, visual intrusion, vibration)	Local	N/S	Long-term	Insignificant	N/A
Effects on new-builds (continued supply of natural building stone as encouraged in planning policies to maintain the aesthetic appearance)	Local / Regional	Beneficial	Long-term	Moderate	N/A
Effects on Landscape and Visual Impacts					
Public Rights of Way	Local	Benefit	Subject to Agreement	Major	Any future access would be subject to agreement between landowners & DNPA
Water features	Local	Benefit	Permanent	Insignificant	Creation of pond & seasonal wetland.
Archaeology and Cultural Heritage	Site	Benefit	Permanent	Insignificant	Information board: history of Tramway, Yennadon Quarry and quarrying on Dartmoor.

Topography	Local / Site	Benefit	Permanent	Moderate	Mitigation measures form an integral and fundamental part of proposals, as progressive restoration of the existing quarry will be carried out as the works in the extension area are undertaken
Vegetation	Local / Site	Benefit	Permanent	Moderate	
Tranquillity	Local	Benefit	Permanent	Moderate	
Local Views	Local	Benefit	Permanent	Moderate	
Distant Views	District / Local	Benefit	Permanent	Minor	
Local Landscape character	Local / Site	Benefit	Permanent	Major	
Wider Landscape Character	District / Local	Benefit	Permanent	Minor	
Effects on archaeology					
Site 1 - Yennadon Quarry	Local	Adverse	Permanent	Minor	N/A
Site 2 - Dartmoor Tramway	Regional	Adverse	Permanent	Minor / Moderate	N/A
Site 3 - Field system	Local / Regional	Adverse	Permanent	Minor / Moderate	Watching brief
Potential unidentified sites	Unknown	Adverse	Permanent	Unknown	Watching brief
Effects on flora, fauna and geology					
Statutory sites	National	None	N/A	N/A	N/A
Non-statutory sites	County	None	N/A	N/A	N/A
Unimproved acid grassland, bracken and scrub mosaic	Local	Adverse	Long-term	Moderate	Implement a site-specific biodiversity mitigation and enhancement plan
Scattered hawthorn trees	Local / Site	Adverse	Long-term	Moderate	
Quarry	Local / Site	Neutral	Long-term	Insignificant	
Badgers	Local	Negligible	Long-term	Insignificant	
Bat species	Local	Negligible	Long-term	Insignificant	
Bird species	Local / Site	Adverse	Long-term	Moderate	
Butterfly species	Local / Site	Adverse	Long-term	Moderate	
Reptile species	Local / Site	Adverse	Long-term	Moderate	
Overall loss of, or damage to habitats/plants/animal species	Local / Site	Adverse	Long-term	Minor	
Geology - Loss of, and damage to, geological, paleontological and physiographic features	Local	N/S	Permanent	Insignificant	N/A
Other ecological consequences	N/S	N/S	N/S	N/S	N/A
Effects on land					
Physical effects of the development (e.g. change in local topography, effect on earth-moving on stability, soil erosion, etc.)	Local	Adverse	Long-term	Minor	Adopt MAFF guidelines: proper soil handling; Implement phased restoration plan
Soil quality	Local	Neutral	Long-term	Minor	Adopt MAFF guidelines on proper soil handling
Contamination risk from quarry process (hydrocarbon spill)	Local	Adverse	Long-term	Minor	Maintain EMS
Land use/resource effects: • alternative uses of the site (inc.'do nothing approach') • on surrounding land uses	Local	Neutral	Permanent	Moderate	N/A
Effects on water					
Hydrogeology - changes to characteristics e.g. ground water level and flow	Local	N/S	Permanent	Insignificant	Maintain EMS
Effect on water quality - Impact on groundwater SPZs	Local	N/S	Permanent	Insignificant	

Impact on Devonport Leat	Local	Neutral	Permanent	Insignificant	Maintain existing surface water management arrangements and implement additional measures
Local Drainage Regime	Local	N/S	Long	Insignificant	
Surface Water Bodies	Local	N/A	N/A	N/A	
Flood Risk at Site	Local	N/S	Long-term	Minor	
Flood Risk Downstream	Local	Neutral	Long-term	Insignificant	
Surface Erosion from run-off during soil stripping, etc.	Local	Adverse	Short	Minor	Adopt MAFF guidelines on proper soil handling
Effects on air and climate from quarry process					
Exhaust Fumes	Local Regional	Adverse N/S	Long-term	Minor Insignificant	Maintain EMS
Dust (particulate matter)	Local	Adverse	Long-term	Insignificant	Maintain existing dust management plan & implement additional measures
Overall level and concentration of emissions from quarry and their environmental effects	District/local	Adverse	Long-term	Minor	Maintain existing EMS measures and implement additional measures
Other indirect and secondary effects					
Secondary effects from the interaction of separate direct effects, as above	N/S	N/S	N/S	N/S	N/A

N/S – Not significant; N/A – Not applicable

Combined Assessment of Impact and Effects

Overall Summary and Conclusions

In accordance with the Scoping Opinion adopted by Dartmoor National Park Authority, a full Environmental Impact Assessment of the proposed extension to Yennadon Quarry, Dousland, has been undertaken in terms of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.

The development proposals are for the extension to the working plan area of the quarry and phased restoration scheme. The proposed extension area is located to the immediate north of the existing Yennadon Quarry.

The ES comprises a number of general and environmental topics that, overall, cover the areas of enquiry specified in the Scoping Opinion. The need issues of relevant planning policies have also been addressed in the ES.

Where impacts have been identified, they have been assessed for geographical effects, nature (adverse, beneficial, etc.), duration of effect and significance. Where impacts are assessed as "adverse" and other than "not significant", mitigation measures have been identified that can reduce or remove the impact on the environment.

The ES has established that with the exception of economic impacts, there are no major impacts that may give rise to issues that would affect the planning decision making process. The significance of the economic impacts is considered to be major. Given the limited opportunity in the locality for skilled quarrying jobs the loss of 27 jobs at Yennadon Quarry will have ramifications on the local economy through the loss of the economic activity of those employees. It is considered that the loss of this quarry would have a substantial negative economic impact on the region.

In addition to economic benefits, the revised restoration scheme provides a clear improvement to the final restored landscape of areas with the greater visual impact (the south-eastern and eastern faces will be infilled to near-natural profiles), unlike under the existing permission. The proposed restoration scheme would result in an improvement to the visual impacts from every viewpoint considered by the assessment.

The 'Revised Development Proposals, Restoration and Aftercare Plan' identifies that the rolling restoration programme within the existing quarry, which will begin as soon as permission is granted, will restore approximately 7,040m^2 of land to moorland. This area is approximately a third larger than the extent of the new extraction area. This restoration will take place progressively throughout the operational period, and will start at least 8-10 years before any restoration will occur under the existing permission. On completion of quarrying operations, it is planned to finalise landscaping and restoration, creating opportunities for increased bio-diversity and habitat creation within the site. It is evident therefore that the proposals will 'conserve and enhance' the landscape in accordance with the policies and strategic objectives of the National Park.

The positive economic benefits and improved restoration scheme, represented by the proposal to extend the quarry, far outweigh other impacts as it is possible to mitigate against a number of the negative aspects of the application.

During the previous submission, the main elements of the reasons for refusal were:

1. Failure of the Environmental statement to assess the likely impacts of the development at the proposed upper limits of 10,000 tonnes per annum.
2. The proposed extension would perpetuate the quarry and the related impacts in the long term until 2025. The development is major and there is no overriding need for the development.
3. Acceptable alternative sources of stone exist to meet the demand currently met by the quarry. The alternative option for the quarry itself would be its restoration on exhaustion of the

permitted reserves, thus reducing the current landscape impact, and enhancing the landscape.

4. The proposed development would have an unacceptable impact on the special qualities of the National Park, particularly in terms of amenity use, landscape and tranquillity.

These reasons for refusal contain a number of elements which Yennadon Stone and their advisors have sought to address or clarify.

This revised submission addresses these issues as follows:

Reason 1: In respect of the accuracy of the information contained in the previous ES it is acknowledged that there was a degree of confusion over the tonnage of quarrying proposed per annum. All of the figures contained with the ES were within the existing permitted extraction rate of 14,000 tonnes per annum. This ES has been revised based on a uniform figure of 10,000 tonnes/annum in each appropriate section. A recalculation of the extraction area required to deliver at this reduced maximum rate until 2025 results in a smaller quarry area which, beneficially, within the proposed application area allows a significantly enhanced landscape strategy.

Reason 2: It was an incorrect assumption on the part of the DNPA that in the absence of a further planning permission the quarry would close before 2025 (The time limit of the existing planning permission.) Without the grant of a further planning permission the quarry will continue to operate albeit with a reduced output and with reducing levels of staff arising from the physical constraints of working within such a tight area.

It was determined by the DNPA that this was a major application arising from a definition within the Development Management Procedure Order (DMPO) which does not apply to the definitions contained with Core strategy Policy 22, the key policy against which the application needs to be tested. Therefore notwithstanding other reasons for refusal the incorrect starting position in assessing the application arose because of the generalised definition contained in the DMPO.

With regard to the matter of need, Policy COR22 applies this criterion to major mineral development and it is not contained in the elements of the policy dealing with "small scale quarry of traditional building stone" or "other mineral development". Notwithstanding the policy definitions, significant weight was given to the assertions of Lantoom Quarry without the provision of substantiation. Further work undertaken by advisors to Yennadon Stone demonstrates that the Lantoom stone is of a lesser quality in a number of respects including: colour, strength, weathering, water resistance, shape and appropriateness to the character of the area. In this latter respect it is also worth noting that the use of Lantoom Stone would be alien to many of the

sites identified in the DNPA SHLAA and also the recommendations of the DNPA Design Guide on the importance of using local metamorphic stone in construction projects in the "moorland fringe" areas. A further area of concern arises from the assertion that Lantoom Quarry could readily take up the production that would be lost at Yennadon. This assertion was untested and detailed evidence now provided within the ES demonstrates that this is unlikely.

Reasons 3 and 4: The question of the availability of alternative acceptable sources of stone is addressed above. With regard to the significant landscape issues identified in these two reasons Yennadon Stone sought the advice of new landscape consultants and a revised extraction and restoration scheme was established, which enhances the visual impact of the landscaping at the same time as reducing the impact of the working faces. The landscape assessment also sets out the betterment arising from the restoration proposals. This will ultimately deliver a greater restored area of moorland, increased biodiversity and the potential for public access over the whole restored quarry area.

The existing permission contains no restoration details only a condition that these are submitted two years prior to the closure of the quarry. The landscape assessment indicates that it is an incorrect assumption that this approach would result in a significantly lower level of impact over that arising from the proposed extension.

In summary, Yennadon is a historic quarry in the Dartmoor National Park and has provided stone for many of the local communities for over 150 years. It is the only remaining operational quarry supplying local slate dimension stone within the boundary of the National Park and represents an important part of Dartmoor's cultural heritage. The proposed extension scheme provides a solution that will sustain the requirement for the stone, which will be extracted in a manner in which areas previously worked, can be progressively restored.

1.0 INTRODUCTION

1.1 Outline Proposals

1.1.1 This Environmental Statement (ES) has been prepared on behalf of Yennadon Stone Ltd in support of planning application for an extension to Yennadon Quarry, Dousland. The ES is the culmination of a process of assessment that has taken place over several years. This planning application follows a previous planning application (No 0667/13) refused on 14th July 2014. Consequently this updated ES gives consideration to Dartmoor National Park Authority's conclusions in respect of the previous application.

1.1.2 The ES is supported by Appendices that are bound separately (in three volumes) to the ES. The Appendices are numbered to correspond with the chapters of the ES. They are of a technical nature and intended to provide background to the chapters of the ES, which are more concerned with the planning implications of particular issues.

1.1.3 This planning application is for the extension of the quarry along its northern face, in conjunction with phased restoration of the existing quarry. The quarry operators are seeking the extension to enable production to continue, as a minimum at current extraction rates and up to the maximum permitted, until the current planning permission expires in 2025. Granting planning permission to extend the working area of the quarry will enable the quarry to sustain a viable future and continue to provide an invaluable source of local stone for building and restoration projects.

1.1.4 Yennadon is an historic quarry in the Dartmoor National Park and has existed for approximately 150 years. Yennadon Quarry is the only remaining operational quarry supplying local dimension stone within the boundary of the National Park. The quarry provides an invaluable source of building stone for local building projects as well as projects in other parts of Devon and Cornwall. Over the past 150 years the quarry has made, and continues to make, a significant contribution to the character and appearance of the built environment. As well as providing an important source of local stone, the quarry also represents part of the living cultural heritage and legacy of Dartmoor.

1.1.5 The existing quarry has untapped reserves along its southern boundary, which are currently heavily vegetated and naturalised. It is the quarry operators' intention to leave the area to the south-southwest of the site offices untouched if permission is granted for the extension, which will provide ecological and visual impact benefits. Should planning

permission be refused, the entire southern end of the existing quarry would be worked to enable production to continue. However, Yennadon Stone Ltd. have indicated that the remaining extractable resources within the existing quarry boundary will not sustain the production rates currently achieved by the quarry. The operators intend to continue production up to 2025, however production levels will decline, resulting in a negative impact on employment and a source of local high quality building stone.

1.1.6 This revised Environmental Statement addresses concerns raised by Dartmoor National Park Authority (DNPA) during the previous submission (dated December 2013). The main changes from the previous submission include, a reduction in the size of area delineated for extraction by approximately 35%, changes in the screening bund configuration and a change in the landscape mitigation measures.

1.1.7 The red line area for the resubmission is to remain the same. Of this 3.3ha, the proposed total extension area (subject site) is approximately 1ha. However, the actual proposed extraction area covers only 0.53ha. The remaining extension area will comprise a screening bund along the western site boundary only (0.17ha) and a landscaped buffer zone (0.3ha).

1.1.8 The existing quarry at Yennadon is currently listed in Dartmoor National Park Authority's Local Plan (Table 7: "Mineral Operations Currently Active in the Dartmoor National Park") as: *Yennadon, Nr Dousland: Metamorphic 1990* ***Small*** *Long established quarry. Building, walling and ornamental stone. Comprehensive conditions.* It is considered that the size of the application is such that the proposed quarry will remain within the category of **small scale quarrying of traditional building stone**, for which there is provision within the planning policy framework (as discussed in Chapter 5).

1.1.9 The proposed extension area is irregular in shape and slopes from the east down towards the west. The area of the proposed extension currently comprises open moorland. Access to the subject site is currently gained from the same unmetalled road that provides access to the existing quarry. Should planning permission be granted, the extension area would only be accessed from the existing quarry.

1.1.10 Yennadon Stone Ltd does not wish to change the constraints imposed by the current planning conditions with the exception of the following:

1. As there is no intention to increase the production rate of the quarry above current output, it is considered feasible to **reduce** the total amount of material to be removed to a maximum of 10,000 tonnes per annum.
2. There will be no increase in vehicle movements, therefore it is considered feasible to **reduce** lorry trips to a maximum of 30 in any week.

1.1.11 Yennadon Stone Ltd has the full support of the Trustees of Walkhampton Trust, who own the land, for its quarry extension and restoration plans.

1.1.12 To mitigate the impact of the extension, it is proposed to infill depleted parts of the quarry in a phased manner concurrently with the ongoing excavation. On completion of quarrying operations, it is planned to landscape the site using spoil from the quarrying process, place topsoil and carry out seeding and planting. The restored areas will create habitat for local species. Currently, there are no common land rights or public access rights to the existing quarry. The Trustees of the Walkhampton Trust have indicated that, subject to necessary negotiations with the DNPA, access could be granted to restored areas if the quarry is suitably restored with safe access, as per the revised proposals.

1.1.13 A full description of the site and of the application proposals is set out in subsequent Chapters of this ES. The site location is shown in Figure 01.

1.2 The Need for Environmental Impact Assessment

1.2.1 The Town & Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (the Regulations) require that before consent is granted for certain types of development, an Environmental Impact Assessment must be undertaken. The Regulations were made pursuant to European Directive No. 85/337.EEC as subsequently amended by Directive 97/11/EC which came into force on 14th March 1999.

1.2.2 The Regulations set out the forms of development which must always be subject to Environmental Impact Assessment (Schedule 1 development) and other developments which may require assessment if they give rise to significant environmental effects. "Urban development projects" of over 0.5 hectares fall into this latter (Schedule 2) category.

1.2.3 Schedule 3 to the Regulations describes the criteria for determining whether a Schedule 2 development should in fact be subject to Environmental Impact Assessment, the

determining factor being whether the development, as proposed, is likely to give rise to significant environmental effects as a result of the development:

- being major in scale and of more than local importance;
- being proposed in particularly environmentally sensitive or vulnerable locations; or
- with unusually complex and potentially hazardous environmental effects.

1.2.4 In accordance with the Regulations, a Screening Opinion was sought from the local planning authority, to determine whether Environment Impact Assessment was required.

1.3 Screening Request

1.3.1 John Grimes Partnership Ltd submitted a Screening Request dated 20th May 2010 (Appendix A1). The request was accompanied by information identifying the site, the nature of the proposed development and an indication of likely environmental effects.

1.3.2 Dartmoor National Park Authority (DNPA) adopted a Screening Opinion dated 10 June 2010; reference no. DJ/PE/Burrator, (Appendix A1). The local authority concluded that an EIA was required for the Yennadon proposals. The full reasoning for the local authority's decision was outlined in an appendix attached to their letter dated 10 June 2010. The local authority indicated that:

1. The proposal does not fall within Schedule 1 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.
2. The proposal does fall within Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999: "Extractive industry- (a) Quarries, open-cast mining and peat extraction".
   The proposal falls within a National Park defined in The Regulations as a 'sensitive area', thus the thresholds identified in Schedule 2 do not apply.
3. There is a need to establish, through EIA, the significance of the impact the proposal would have on the landscape and visual amenity, ecological interests, archaeological interests, and pollution and other nuisances.

1.4 Scope of Assessment

1.4.1 The 1999 Regulations set out the information to be included in an Environmental Statement (ES). The purpose of the process is to assess the main or the significant environment effects. Each assessment is to be prepared "on a realistic basis and without unnecessary elaboration". Regulation 10 provides for potential applicants to ask the relevant local planning authority to state in writing the information that ought to be provided in an ES – a so called 'Scoping Opinion'.

1.4.2 John Grimes Partnership Ltd submitted a request to Dartmoor National Park Authority (DNPA) dated 8th July 2010 for the local authority to identify those elements that should be included within the scope of an ES. John Grimes Partnership Ltd also produced a submission document in support of the scoping requested dated 21 July 2010.

1.4.3 Dartmoor National Park Authority consulted a number of Statutory Consultees, as designated in the Regulations, in order to issue Decision dated 12 August 2010 detailing the scope of the Environmental Impact Assessment to be prepared for Yennadon. This is set out in Appendix A2.

1.4.4 Key consultees that provided comment on the scope of the ES are:

- Dartmoor National Park Authority
- Environment Agency
- Devon Stone Federation
- Burrator Parish Council
- Devon County Council
- West Devon Borough Council
- South West Water
- English Heritage
- Natural England
- Dartmoor Preservation Association
- Dartmoor Commoners Council

1.4.5 DNPA, following discussions and consultations with a number of bodies, set out in their Scoping Opinion that the EIA should consider in detail the following issues:

- **Socio Economic Impact** – Consideration should be made of access and public amenity issues in relation to the loss of land open to the public access; impact of security / safety of the site; and impact on the grazing rights of commoners.
- **Archaeology** – Assessment is required by a qualified archaeologist.
- **Process Pollution** – Consideration should be given of the adequacy of existing arrangements and an assessment of the potential for the proposal to result in an increase in dust generation.
- **Emissions** – Consideration should be given of the adequacy of existing arrangements and an assessment of the potential for the proposal to result in an increase in emissions.
- **Surface Water Management** - Consideration should be given of the adequacy of existing arrangements and an assessment of the potential for the proposal to result in changes to the local drainage regime, impact on surface water management and any avoidance or mitigation measures deemed necessary.
- **Geology and Hydrogeology** – The site is identified as being on an Aquifer of Intermediate Vulnerability; it is approximately 450m from the inner water Source

Protection Zone 1 and approximately 200m from the Devonport Leat. The EIA should consider the impact of the development on these features.

- **Noise** - Consideration should be given of the adequacy of existing arrangements and an assessment of the potential for the proposal to result in an increase in noise generation and any potential impact on sensitive receptors.
- **Traffic** - Consideration should be given of the adequacy of existing arrangements and an assessment of the potential for the proposal to result in an increase in traffic generation.
- **Ecological Impacts and Biodiversity** – A Phase 1 Habitat Survey is required and any specialist surveys then identified as necessary. It should include a consideration of avoidance, mitigation and compensation measures as necessary.
- **Visual Impact** – A landscape and visual impact assessment, from key viewpoints, should be made including during and after operation.
- **Cumulative Impacts and an Assessment of Alternatives**

1.4.6 This ES has been structured in accordance with the best practice guidance. The structure of the ES is as follows;

- Non-Technical Summary: published separately and providing a concise non-technical explanation of the contents and conclusions of the ES;
- The ES report: setting out the assessment methodology, description of the site and the proposed development and a consideration of planning policy issues. Each individual topic area identified in the Scoping Opinion is then outlined and assessed.
- Appendices: Technical reports and plans prepared by specialist consultants covering each of the areas. Where appropriate, the appendices describe the specific consideration of alternatives examined.

1.4.7 Each Chapter is structured to a common format, as follows;

- An ***introduction***;
- A summary of ***baseline conditions*** and survey results (if appropriate);
- A description of the ***assessment of impact*** of development, initially in the extraction phase and subsequently following restoration;
- A description of the ***mitigation strategies*** to be adopted to address the effects both in the extraction phase and restoration phase; and
- A description of the ***residual effects*** of development following the implementation of the mitigation strategies.

2.0 METHOD STATEMENT

2.1 Consultant Team

2.1.1 The following chapter sets out a method and approach applied by the consultant team in preparing this Environmental Statement (ES). Whilst there are no statutory requirements concerning the form of an ES, Schedule 4 of the 1999 Regulations sets out the information to be included.

2.1.2 In preparing this ES for the proposed extension to Yennadon Quarry, John Grimes Partnership Ltd, on behalf of Yennadon Stone Ltd, has assembled a consultancy team to provide information and advice on environmental issues. The roles and responsibilities of the consultant team have regard to the issues identified in the Scoping Opinion. The assessment team comprises the following specialists and experienced consultants:

- **John Grimes Partnership Ltd**: Geology and hydrogeology, process pollution, emissions, dust, transport and surface water drainage.
- **Exeter Archaeology and Archaedia:** Archaeology.
- **Acorn Ecology Ltd**: Ecology – habitat, flora and fauna.
- **Ian Sharland Ltd. and Acoustics Associates South West Ltd.**: Noise.
- **Chris Britton Landscape Associates:** Landscape and visual impact.
- **Vickery Holman**: Socio-economic advice.
- **PCL Planning**: Planning policy and Community engagement.
- **Clifton Emery Design**: Architect advice
- **Luscome Maye**: Land agent advice.

2.2 Baseline Studies

2.2.1 The collection of information on the site and surroundings of the proposed development is required on each of the topics identified in the Scoping Opinion. This is known as 'baseline' information or a 'baseline study'. The likely extent of environmental effects can then be assessed.

2.2.2 Each technical chapter of the ES has been structured to begin with an assessment of baseline conditions.

2.3 Assessment of Effects

2.3.1 Following the setting out of the baseline position, the ES assesses the potential environmental effects of the proposed development. Effects are assessed against

thresholds set out in the Regulations or guidelines or, where this is not the case, based on expert judgment.

2.3.2 The effects, where identified, are assessed according to four criteria, as outlined below.

Geographical context	1. Local 2. Regional / District 3. National 4. Global
Nature of effect	1. Beneficial 2. Neutral 3. Adverse 4. Not significant
Duration of effect	1. Short term: < 12 months 2. Medium term: 1 to 5 years 3. Long Term: > 5 five years 4. Permanent / irreversible
Significance of effect	1. Major – these effects are likely to be important considerations in the planning process, depending on the scale and relative importance attached to the issue in planning policy and development plan terms. 2. Moderate – adverse effects of this kind are not likely to be key decision-making issues. Effects, beneficial or adverse, will be experienced albeit mitigation measures and detailed design works are likely to ameliorate the impact. 3. Minor – these effects may be raised as local issues but are unlikely to be of importance in the decision making process. However, they are of relevance in enhancing the subsequent design of the development and consideration of mitigation measures. 4. Insignificant – where no significant effects are identified or would be perceptible.

Table 2/01: Methodology for Assessment of Impact and Effects

2.3.3 The ES also assesses the cumulative effect of the development and, if appropriate, any indirect effects.

2.3.4 It is important to note that with regard to this planning application no change to mode of operation, hours, extraction rates, number of plant, etc. is proposed. What is proposed is an extension of the area being worked within the existing operational timeframe for the quarry. However, the assessment of impacts undertaken within this ES are based on the proposed upper production limits of 10,000 tonnes per annum and 30 lorry trips per week, which would be imposed within the planning conditions. This represents a **reduction** of the production limits / lorry trips set out in the current planning permission conditions.

3.0 DESCRIPTION OF SITE AND THE SURROUNDING AREA

3.1 Site Location and Environment

3.1.1 The existing Yennadon Quarry is located approximately 300m to the east of the village of Dousland (Grid Reference SX 543 688). Figures 01 and 02 present the site location and site layout plans respectively. Drawing 0310a/0001C provides a topographical survey of the site. Appendix A2 presents a photographic record of the existing quarry and surrounding area.

3.1.2 Access to the existing quarry is gained from Iron Mine Lane via an unmetalled road that runs along the quarry's western edge. Iron Mine Lane links with Burrator Road and then the B3212, which connects with the A386, which is the main road connecting Tavistock and Plymouth.

3.1.3 The site is situated on Yennadon Down, which is common land owned by the Walkhampton Trust and administered by Lord Roborough's Maristow Estate. Yennadon Quarry has been run under lease to the Maristow Estate for around 80 years and in its current form since 1990, when Planning Permission was granted for 35 years (to 2025) for the, "....winning and working of minerals and continued use of existing buildings". Stone for building purposes has been extracted from Yennadon Quarry for approximately 150 years.

3.1.4 Yennadon Down is flanked on its northern boundary by Dousland Plantation and farmland. To its east is Yennadon Plantation, beyond which is Burrator Reservoir. Bowden's Plantation and farmland lie to the south. To the west of Yennadon Down is a strip of fields used for grazing, beyond which is the village of Dousland.

3.1.5 The quarry is located on the lower moorland fringe of Yennadon Down. The boundary of the existing quarry lies 15.5m from the adjacent farmland to the west at its closest point.

3.1.6 The subject site, which includes the proposed extension and surrounding landscaped buffer zone, is located to the immediate north of the existing Yennadon Quarry as shown on Figure 02. The subject site is irregular in shape, occupies an area of approximately 1ha and slopes from the east down towards the west. The site currently comprises open moorland. Access to the subject site is gained from the same unmetalled road that provides access to the existing quarry. **Should planning permission be granted, access**

to the extension area would only be through the existing quarry; i.e. plant will <u>not</u> use the unmetalled track west of the quarry.

3.1.7 Commoners have grazing rights on Yennadon Down. There is a Public Right of Way within 150m of the proposed extension. The public also have a right of access over the site of the proposed extension. Due to the fact that the quarry pre-dates the formation of both the common land and the National Park, there are actually no common land rights or public access rights to the existing quarry area.

3.1.8 In general terms the subject site offers good habitat for insects, birds, reptiles and mammals. The ecology is described in detail in Chapter 14.

3.1.9 The subject site's topography is generally un-altered by human activities. In broad terms, the land drops gently in an east to west direction across the site from around 269m AOD to around 247m AOD. The highest point on Yennadon Down is 301m AOD to the east of the site. The landscape is described in detail in Chapter 15.

3.1.10 The subject site's history has been traced back through early records that show no indication of development other than from a rural / agricultural base. The history of the site and surrounding area is described in detail in the archaeology section (Chapter 7) and, with regard to the history of local building stone, in the socio economic section (Chapter 6).

3.1.11 In brief, the earliest map (OS surveyors' drawing of 1784) shows the site as open land, with the lines of Devonport Leat and Plymouth Leat on the southern edge of the Down and the surrounding fields. By the Tithe Map, the Plymouth and Dartmoor Railway is depicted, as is Yennadon Quarry. Several other small quarries / pits and Yennadon Iron Mine are recorded across Yennadon Down. The route of the tramways and railways across Dartmoor was primarily governed by the need to intersect these quarries and mines. Stone from various quarries across Dartmoor, including from Yennadon Quarry, were transported to Plymouth via the railway and then shipped further afield. The demand for stone from Yennadon Quarry was such that it was connected to the railway, with a siding extending into the quarry. The early success and longevity of Yennadon Quarry appears to be a combination of the quality of the stone and the link with the railway (and later via road links) to its various end markets.

3.2 Existing Community and Facilities

3.2.1 The site lies just within the western boundary of the south western confines of Dartmoor National Park and is under the administrative control of Dartmoor National Park Authority (DNPA). The site also lies within the Parish Ward of Burrator within West Devon Borough Council. Burrator Parish (5,940.55ha) has a population of around 1,540 (West Devon Borough Council data).

3.2.2 Dousland is a small village, with limited local amenities including a Post Office (and community shop) and a Public House. The nearest primary school and church is in Walkhampton. The nearest health centre and larger retail outlets are located in Yelverton.

3.2.3 As part of the previous planning application, a range of consultations were undertaken with the local community including a public consultation on 23rd April 2013 and guided tour of the quarry on the morning of 27th April 2013. PCL Planning Ltd. produced a Statement of Community involvement (Appendix 3a) with provides a record of the response with the consultations.

3.3 Common Land

3.3.1 Common Land covers approximately 37% of the Dartmoor National Park. Yennadon Down lies within the Common Land Unit CL191 Meavy Common and is more commonly known as Lynch Common, Wigford Down and Yennadon Down.

3.3.2 It is acknowledged that the proposals will result in temporary loss of Common Land. Appendix A3b provides a report from land agent Luscombe Maye into the condition of the common land, the impact of loss of grazing land as a result of the proposals and potential mitigation works to compensate for the loss of grazing land.

3.3.3 Common Land Unit CL191 covers 283 acres and currently comprises approximately 50% (140 acres) gorse and bracken overgrowth and 50% grazing ground. It is understood there are no Stewardship Agreements in place and therefore there are no controls on stock numbers, therefore any farmer with allocated Commons Rights on Yennadon Down is free to graze cattle, sheep and ponies with no restriction.

3.3.4 The proposals will result in the loss of approximately 1% of the common land within CL191. The land agent has proposed that, to compensate for this loss, 14 acres (5.67ha) of gorse

and bracken overgrowth is flailed / swiped (cut down by mechanical means) and restored to grazing ground.

3.3.5 Both Yennadon Stone and the Maristow Estate are willing to pay the costs for such a scheme.

4.0 DEVELOPMENT PROPOSALS

4.1 Background

4.1.1 The current operation of the quarry is subject to a licence agreement made in 2005 between the Walkhampton Trust and the current operator, Yennadon Stone Ltd. Yennadon Stone Ltd is owned by: Mr David Wallace (Director)
Mr Mark Hufton (Director)

4.1.2 Yennadon Quarry produces dimension stone suitable for natural stone walling. The quarrying operation maximizes the material suitable for sale with limited amounts of spoil produced, which is accommodated within the quarry for land restoration. No waste stone is removed from site. An Extractive Materials Management Statement is provided in Appendix A3.

Existing Planning Permission

4.1.3 Current Planning Permission was granted in 1990 for 35 years (to 2025). The Local Planning Authority is Dartmoor National Park Authority (DNPA). Within the Planning Permission, agreements were also entered into with Devon County Council in terms of the following:

- Town and Country Planning Act 1990 Section 106
- Local Government Act 1972 Section 111
- Local Government (Miscellaneous Provisions) Act 1982 Section 33

4.1.4 The Planning Permission is conditional; some of the current conditions that are most pertinent are:-

a) Total amount of material removed shall not exceed 14,000 tonnes per annum.
b) Lorry trips shall not exceed 35 in any week. Tractors and trailers are not included in this total.
c) Landscaping – the construction of a low bund along the western rim of the quarry is stipulated.
d) Quarrying operations are restricted to periods 0700 to 1800 Monday to Friday and 0800 to 1300 on Saturdays; however, essential maintenance, pumping etc., can be carried on outside of these periods subject to LPA satisfaction.
e) Lorry movements are restricted to periods 0800 to 1800 Monday to Friday and 0800 to 1300 on Saturdays.
f) A minimum of 75% of the total tonnage of stone leaving the quarry each year shall be building and walling stone – 'to ensure that the output from the quarry contributes to the achievement of conservation objectives in the area'.

g) No blasting is to be carried out without agreement.
h) At the conclusion of workings, the site is to be landscaped.

4.1.5 It is also a condition of the Planning Permission that the entrance area should remain undisturbed: 9 (v) "No working of the length of the weathered face opposite the quarry entrance"; so as to reduce the visual impact from the quarry entrance.

4.1.6 During 2008 the quarry operators began a consultation process with the Local Authority regarding extending the plan area of the quarry. The decision to extend the quarry to the north was based on recommendations from DNPA. The size of the extension was jointly decided between the Local Authority and the quarry operators.

4.1.7 On 15th September 2008, Planning Permission (DNPA Application ref 0418/08) was granted for the installation of four exploratory boreholes to investigate the suitability of underlying material for the building stone extraction in the proposed extension area (Figure 02). The findings of these boreholes are discussed in Chapter 12.

4.1.8 In December 2013, following frequent detailed consultation with DNPA during the preceding years, the operators entered into a Planning Performance Agreement with the DNPA. Planning application (no. 0667/13) was submitted on 17th December 2013 and was refused on 14th July 2014 on the following grounds:

1. *The Environmental statement dated 22 November 2013 is insufficient for the proposed development as it fails to assess the likely impacts of the development at the proposed upper limits of 10,000 tonnes per annum and 60 vehicle movements per week. It is not therefore possible to assess the proposal in terms of the NPPF (Para115 & 116) and policies COR22 and M4 of the Development Plan.*
2. *The proposed extension would perpetuate the quarry and the related impacts in the long term until 2025. The development is major and there is no overriding need for the development, or exceptional circumstances demonstrated which would justify permitting that development in the National Park. In this respect the proposal is contrary to the NPPF (para 115 & 116) and policies COR22 and M4 of the Development Plan.*
3. *Acceptable alternative sources of stone exist to meet the demand currently met by the quarry. The alternative option for the quarry itself would be its restoration on exhaustion of the permitted reserves, thus reducing the current landscape impact,*

and enhancing the landscape. In this respect the proposal is contrary to the NPPF (para 115 & 116) and policies COR22 and M4 of the Development Plan.

4. *The proposed development would have an unacceptable impact on the special qualities of the National Park, particularly in terms amenity use, landscape and tranquillity. In this respect the proposal is contrary to the NPPF (para 115 & 116) and policies DMD5, COR1, COR3 and M4 of the Development Plan.*

4.1.9 The planning refusal raises a number of substantive issues with regard to the clarity of information provided within the ES and the landscape strategy and impacts, which have been addressed within this revised ES. In addition, a key issue running through all of the reasons for refusal is the question of judgement of scale and the application of appropriate tests against which the judgement should be made. At the heart of this is the use of the term "major" and its definition particularly in respect of an application for an extension to a building stone quarry.

4.1.10 The existing quarry at Yennadon is currently listed in Dartmoor National Park Authority's Local Plan (Table 7: "Mineral Operations Currently Active in the Dartmoor National Park") as:

> *Yennadon, Nr Dousland: Metamorphic 1990* ***Small*** *Long established quarry. Building, walling and ornamental stone. Comprehensive conditions.*

4.1.11 Of the six other quarries located within Dartmoor National Park and listed in Table 7; two other quarries, Prison Quarry near Princetown and Higher Longford near Tavistock are listed as **Small**; one quarry (Merrivale near Princetown) is listed as **Medium**; and three (Meldon near Okehampton, Linhay Hill near Ashburton and Lee Moor China Clay) are listed as **Major**. Figure 01 below presents a comparison between these quarries and the area of Yennadon Quarry ***including*** the proposed extension and access road. As can be seen from Figure 01, Yennadon Quarry is 54.5% the size of Merrivale Quarry, which is listed in Table 7 as Medium; and only 5% of the size of Linhay Quarry, which is the smallest of the three Major quarries listed.

Figure 4/01: Outline plans of quarries listed in DNPA's Table 7 "Mineral Operations Currently Active in the Dartmoor National Park"

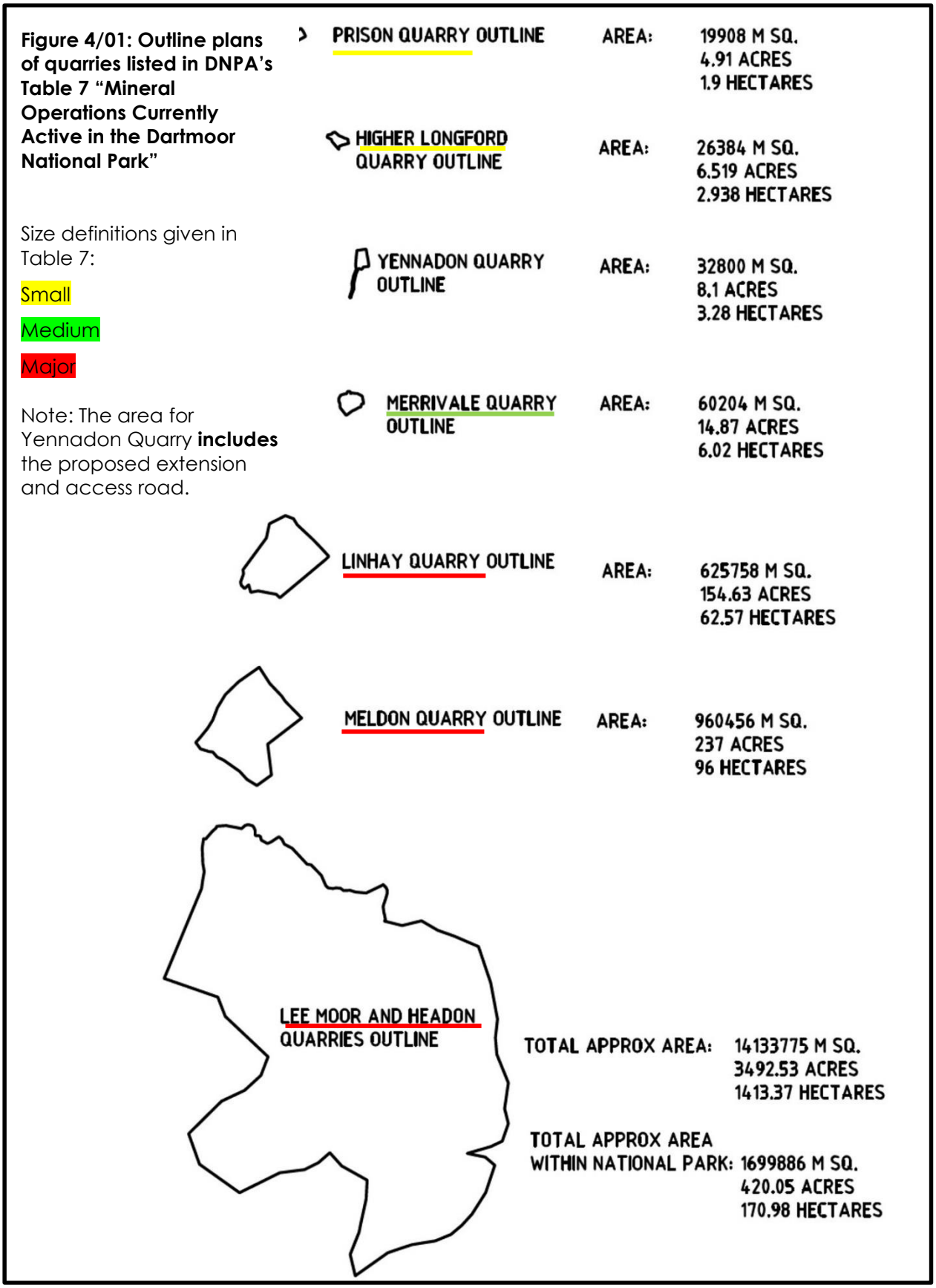
Size definitions given in Table 7:

Small

Medium

Major

Note: The area for Yennadon Quarry **includes** the proposed extension and access road.



4.1.12 Section 5 discusses the planning policy context regarding the size of the development; based on the policies discussed and the actual size of the proposed quarry in comparison with DNPA's definition of **Small**, **Medium** and **Major**, it is clear that the proposed development of Yennadon Quarry would remain as **Small**.

4.2 Revised Quarry Extension Proposals

4.2.1 Following refusal, the extension proposals have been revised to address the issues raised regarding landscape and visual impact. The fundamental proposals are summarised below:

- The red-line area remains the same; however, the proposed extraction area has been substantially reduced. In particular, the eastern limit of excavation has been reduced to the 264m AOD contour (as opposed to 268m AOD previously = 4m reduction). In addition, the approximately 3m deep overburden will be excavated at a 45° angle and planted (approved trees/native plants). Together, this equates to a significant reduction in elevation of 7m of bare overburden/rock visible above the height of the bund from viewpoints to the west compared to the previous submission.
- A 4m high bund will be constructed along the western boundary of the proposed extension area to provide visual and noise screening. The bund will be graded into the existing slope profile along the northern boundary so that only a low bund will be formed at the northern western end providing screening to the properties north-west of the quarry. The lower 1m of the bund will be planted with approved trees/native plants and the upper bund grassed. (On completion of quarrying the upper bund will be removed and re-planted as to reduce permanent visual impact from the bund itself).
- The northern end of the existing bund is currently un-vegetated. This will be battered back to a lower angle (and graded into the new bund), soiled and planted, all as part of pre-excavation works.
- The eastern side of the existing bund will be re-graded and upper 4m will be soiled and planted to improve view points from the east.
- Together Yennadon Stone and the landowners will fund the flailing / swiping (cutting down by mechanical means) 14 acres of gorse and bracken overgrowth (to restore land to grazing ground) to compensate for enclosure of the 1ha extension area.
- Once extraction has ceased in the southeast end of the existing quarry (current working area), this area will be backfilled to a near-natural profile, soiled, planted and returned to moorland.
- The rolling landscaping and planting programme within the existing quarry (which will begin when permission is granted), will restore 7,040m^2 of land. This area is

approximately a third larger than the new extraction area 5,270m^2 (i.e. the area restored to moorland within the existing quarry area is greater than the new extraction area). Restoration will begin 8 -10 years earlier than under the current planning condition requirements.

- The new extension area will be worked from west to east in three sections, so that the initial extraction phases will be screened to the west by the bund.
- The extraction area will be fenced off in two phases so as to minimize loss of grazing / public access.
- A landscaped buffer zone will be formed along the eastern and northern boundaries between the proposed fence-line and actual extraction area, which will be planted with approved trees/native plants. Fencing will be moved closer to the edge of excavations once the landscape buffer has been established.
- Final restoration will be complete by end of 2025. It will involve removal / re-grading of the temporary bund, backfilling remaining eastern faces and re-grading / landscaping of the remaining areas within the quarry. All buildings and infrastructure will be removed.
- The final restoration scheme incorporates enhanced habitat (year-round pond and seasonal wetland; sections of quarry face retained for raptors). The ecological consultants will undertake regular monitoring throughout the phased extraction and restoration works.
- A public information board will be erected at the quarry entrance providing the history of the quarry and tramway.
- An aftercare plan will be agreed between Yennadon Stone Ltd and the Maristow Estate.
- There are currently no common land rights or public access rights to the existing quarry area. The Maristow Estate have indicated that this will remain the case should planning permission be refused; i.e. the quarry will remained fenced off, primarily due to health and safety reasons associated with the quarry faces. Any future access will be subject to necessary negotiation between the Maristow Estate and the DNPA. Any access would be subject to the quarry being suitably and safely restored, as per the proposals. This access to the restored quarry would promote opportunities for the enjoyment of the biodiversity and special landscape features by the public.

4.2.2 In summary, the proposals provide betterment compared to the existing permission for the following reasons:

- Earlier restoration of parts of the quarry that present the greater visual impact (the existing bund and south-eastern and eastern quarry faces);

- An improvement in the final restored landscape of areas with the greater visual impact (the south-eastern and eastern faces will be infilled to near-natural profiles);
- Increased biodiversity and habitat; and
- A restored quarry (and if an agreement on accessibility is negotiated between the landowners and DNPA is reached) would provide opportunities for the enjoyment of the biodiversity and special landscape features by the public.

4.2.3 The combination of the extension and phased restoration can be considered simply as a repositioning of the working plan area of the quarry.

4.3 Product, Quality and Market

4.3.1 A detailed review of the product and the market for the stone is provided in Chapter 6 and Appendix A6. An overview of the type of stone produced and its market is provided below.

4.3.2 The quarry is situated in a zone of metamorphosed rock (known as an aureole) surrounding the massive igneous intrusion of granite that now forms upland Dartmoor. The sedimentary rock within the area (predominantly mudstone/slates) has been altered by the metamorphism into a Hornfelsed Slate, which has resulted in the stone being particularly strong and durable in comparison to slates from outside the metamorphic aureole. This peripheral zone is recognised as an economic source of high quality building stone.

4.3.3 Yennadon Quarry extracts a "Rustic Stone" (or 'Baked Shillett'), which is the trade name for iron stained slates from the region, the appearance of which is regarded as 'local' and 'typical of the area' with its 'mellow' colouring being closely associated with buildings in many areas of Devon and Cornwall. The stone from Yennadon Quarry is marketed as "Dartmoor Rustic Stone", which within the building industry has become widely known as "Yennadon Stone". There is a variation in colour from yellowy brown through to bluish grey.

4.3.4 A similar 'rustic' stone, comes from a quarry at Millhill about 10km to the north-west (sporadic, small scale production only and the quarry is currently close to its operational limit). A 'rustic' slate dimension stone is also produced at Lantoom Quarry near Liskeard, some 30km from Yennadon (which extracts a different geological formation and has also suffered from lack of production capacity). Whilst there are superficial aesthetic similarities between these two alternative sources and Yennadon Stone, neither Mill Hill or

Lantoom can provide appropriate replacements with regard to stone type, quality, colour, strength and durability.

4.3.5 Stone of a similar geological type and appearance is also available from North Wales and China. However, importing stone from elsewhere in the UK and abroad will result in notable transport costs and increased delivery times, as well as a significant increase in carbon impact.

4.3.6 Production rates at Yennadon Quarry can meet the demands of all the large developers and house builders in the area and consequently stone from Yennadon has become their product of choice.

4.3.7 Local housing developers, including Wainhomes, Taylor Wimpey, Persimmon, Barratts, Linden, Cavanna, Bloor & many more currently get the vast majority of their natural building stone from Yennadon Quarry. A number of commercial developers (such as Dawnus Construction) and social housing contractors (such as 3MS Construction) also draw the bulk of their natural stone from Yennadon Quarry, as do various builders merchants, including Travis Perkins, Jewsons, Bradfords, RGB & RGC.

4.3.8 Yennadon Stone extracts a 'blocky' slate with near vertical and horizontal fracture planes. It has an attractive mottled appearance and colour caused by mineral staining, mostly brown from iron. Yennadon stone has good resistance to frost and weathering and is regarded as a high quality building product. Yennadon Quarry is also unique locally for being able to supply developers with much sought after 'natural quoins'; i.e. nearly all of the joints (naturally occurring discontinuities) within the rock are virtually set at right angles, so that rectangular or square blocks are formed resulting in all faces having the rustic colouring. Most other quarries have to cut blocks to achieve a square end, which results in a different coloured end-faces.

4.3.9 The main demand for Yennadon Stone is for facing stone to new buildings. For this the quarried stone needs to have a vertical front face of good appearance; this is preserved as each stone is cut by saw into blocks generally 100mm wide. Blocks with a natural front face have premium value but blocks with sawn faces are also in demand. Selected walling stone is produced also for landscaping, barn restoration, etc.

4.4 Scheme Alternatives

4.4.1 Other potential sources of the mellow coloured 'rustic' building stone quarried from the site (i.e. a Hornfelsed Slate), would only be from opening new quarries within or close to Dartmoor National Park, or importing a geologically similar stone from either North Wales or China. Other nearby quarries in the Southwest (such as Millhill about 10km NW and Lantoom Quarry near Liskeard 30km SW) produce a more blue/grey stone and suffer from lack of availability (i.e. not able to supply stone at the rates required by developers). Alternative sources are discussed further in Chapter 6.

4.4.2 Opening a new quarry within Dartmoor National Park, would only be permitted "in locations where this would not be damaging to the landscape, archaeological, ecological or geological interests, or to the amenity of local residents and where the local road network is adequate to cope with the traffic generated by or associated with the proposed development" [Dartmoor National Park Local Authority Framework Core Strategy Development Plan Document – 2008].

4.4.3 Importing stone from outside Southwest England would result in an increase in carbon footprint as well as additional costs associated with increased transport.

4.4.4 It is considered that there is not a current local source of stone that would provide a viable alternative with regard to volume of cut stone being produced and of similar 'mellow' local appearance. It is considered that importing building stone would result in increased product costs and negative environmental impacts.

Alternative use of the site

4.4.5 It should be noted that there are currently no restoration plans in place for the existing quarry under the existing planning conditions, which states that a 'scheme for the after-use and after-care' of the site shall be submitted to the DNPA for approval two years before cessation of working. Due to constraints within the existing quarry, it is unlikely that a restoration scheme could be implemented that would enable restoration of the high visibility faces (as per the proposals). Therefore, under the existing proposals it is considered likely that the disused quarry would remain with shear faces on all sides and permanently fenced for health and safety reasons.

4.4.6 Currently there are no common land rights or public access rights to the existing quarry. The Trustees of the Walkhampton Trust have indicated that this will remain the case should planning permission be refused; i.e. the quarry will remain fenced off.

5.0 PLANNING POLICY CONTEXT

5.1 Introduction

5.1.1 This part of the Environmental Statement sets out the planning policy framework germane to the consideration of the attached planning application. This planning application follows a previous planning application No 0667/13 refused 14th July 2014 and consequently it is necessary to give consideration to Dartmoor National Park's conclusions in respect of that application.

5.1.2 Notwithstanding the differences in approach, as set out in paragraph 4.2.1, between this and the previous planning application it is necessary to address a number of matters raised in the officer's report to the planning committee. In particular the use of the Town and Country Planning (Development Management Procedure) (England) Order 2010 (DMPO) as a starting point for the consideration of the application rather than the more stratified definition provided by the Core Strategy and the saved policies of the Local Plan. Additionally and in this context reference is made to the DNPA evidence submitted to Core Strategy Examination and the Report of the Inspector.

5.1.3 The Planning Policy Framework impacting on Yennadon Quarry has been subject to change during recent years. Key elements are; the introduction of the National Planning Policy Framework (NPPF), which has replaced the previous Planning Policy Statements and Mineral Planning Guidance; the National Planning Practice Guidance (NPPG), which contains technical guidance on Minerals Planning; the replacement (in part) of the Local Plan with a Core Strategy and; the introduction of a Development Management DPD.

5.1.4 The Development Plan comprises the following documents:

- The DNPA Core Strategy 2008
- The DNPA Local Plan First Review 2004 (saved and non-superseded policies)
- The DNPA Development Management and Delivery DPD 2013
- Dartmoor National Park – Design Guide

5.1.5 All planning decisions are required to be taken in the context of the appropriate Development Plan as set out in The Planning and Compulsory Purchase Act 2004, Section 38(6). Yennadon Quarry lies within the Dartmoor National Park Authority (DNPA) and as a consequence it is not subject to the Devon County Minerals Local Plan as would normally

be the case with a district planning authority. Detailed Minerals Policy is contained in the DNPA Core Strategy and DNPA Local Plan until such time as superseded by more up to date planning policy documents.

5.1.6 It is also important to note that Section 38 (6) additionally provides for consideration to be given to material considerations where appropriate. Key material considerations are considered to be:

- The National Parks and Access to the Countryside Act 1949,
- The Environment Act 1995,
- The National Planning Policy Framework and
- The National Planning Practise Guidance.

5.1.7 The following sections of this part of the Environmental Statement set out; the material considerations considered appropriate to this revised planning application; the planning policy framework (full policy content is included in Appendix A5); the reason for refusal of planning application 0667/13 and; policy appraisal and conclusions.

5.1.8 The manner in which key policy tests have been met is addressed in individual topic reports which form the various parts to this Environmental Statement. They are also discussed with regard to individual policies in this section where appropriate.

5.2 Key Material Considerations

Legislative Framework

5.2.1 The primary purpose of National Parks was established in the National Parks and Access to the Countryside Act 1949 and subsequently amended in the Environment Act 1995 as follows:

> *"To conserve and enhance the natural beauty, wildlife and cultural heritage (of the National Parks); and*
>
> *To promote opportunities for the understanding and enjoyment of the special qualities (of the National Parks) by the public".*

5.2.2 These are defined as two separate purposes in that where conflict may occur between these two elements, Section 62 of the 1995 Act indicates that the first purpose should prevail.

5.2.3 The 1995 Act also states that, in pursuing National Park purposes, National Park Authorities have a duty:

> *"To seek to foster the economic and social well-being of local communities (within the National Park) by working closely with the agencies and local authorities responsible for these matters, but without incurring significant expenditure."*

The National Planning Policy Framework (NPPF)

5.2.4 The NPPF sets out the Government's view of the three dimensions of sustainable development, being; an economic role, a social role and an environmental role. This is followed by a statement on the presumption in favour of sustainable development and the 12 core land-use planning principles.

5.2.5 Section 11 of the NPPF, *Conserving and enhancing the natural environment* at paragraph 115 states:

> *"Great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty. The conservation of wildlife and cultural heritage are important considerations in all these areas, and should be given great weight in National Parks and the Broads."*

5.2.6 With regard to planning applications in designated areas it states at paragraph 116:

> *"Planning permission should be refused for major developments in these designated areas except in exceptional circumstances and where it can be demonstrated they are in the public interest. Consideration of such applications should include an assessment of:*
>
> - *the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy;*
> - *the cost of, and scope for, developing elsewhere outside the designated area, or meeting the need for it in some other way; and*
> - *any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated."*

5.2.7 Clearly a key threshold set in this statement is the interpretation of the term "major" in designated areas before the caveats can be applied. Understanding of the term

"major" in the context of the NPPF, the DMPO and the Core Strategy is important determinant in the assessment of this application.

5.2.8 Section 13 of the NPPF sets out the government's policy on facilitating the sustainable use of minerals recognising that:

> *"Minerals are essential to support sustainable economic growth and our quality of life. It is therefore important that there is a sufficient supply of material to provide the infrastructure, buildings, energy and goods that the country needs. However, since minerals are a finite natural resource and can only be worked where they are found, it is important to make best use of them to secure their long-term conservation."*

5.2.9 A Socio-Economic Report has been prepared by Vickery Holman which along with further detailed information provided by Yennadon Stone Ltd and Clifton Emery Design, seeks to address the balance between the above issues.

5.2.10 In order to facilitate the sustainable use of minerals Local Authorities are required inter alia to:

- *set out environmental criteria, in line with the policies in the Framework, against which planning applications will be assessed so as to ensure that permitted operations do not have unacceptable adverse impacts on the natural and historic environment or human health, including from noise, dust, visual intrusion, traffic, tip- and quarry-slope stability, differential settlement of quarry backfill, mining subsidence, increased flood risk, impacts on the flow and quantity of surface and groundwater and migration of contamination from the site; and take into account the cumulative effects of multiple impacts from individual sites and/or a number of sites in a locality;*
- *put in place policies to ensure worked land is reclaimed at the earliest opportunity,*
- *give great weight to the benefits of the mineral extraction, including to the economy;*
- *consider how to meet any demand for small-scale extraction of building stone at, or close to, relic quarries needed for the repair of heritage assets, taking account of the need to protect designated sites; and*
- ***recognise the small-scale nature and impact of building and roofing stone quarries,** and the need for a flexible approach to the potentially long duration of planning permissions reflecting the intermittent or low rate of working at many sites.*

The National Planning Practice Guidance (NPPG)

5.2.11 The Technical Guidance to the NPPF on Minerals Planning has been archived and superseded by Guidance set out in the National Planning Practice Guidance. This contains a specific section on Minerals and addresses key considerations with regard to:

- 3. Planning for mineral extraction
- 4. Assessing environmental impacts from mineral extraction
- 6. Restoration and aftercare including Landscape Strategy, *Landscape Strategy*

5.2.12 The NPPG provides detailed guidance in respect of the winning and working of a number of different types of minerals but only provides limited specific advice in respect of building stone.

5.2.13 Section 3 "Planning for Minerals Extraction" encourages Mineral Planning Authorities to plan for mineral extraction in the following ways (in order of priority) by; designating Specific Sites, Preferred Areas and Areas of Search. This process is subject to the following caveat: National Park Authorities are not expected to designate Preferred Areas or Areas of Search given their overarching responsibilities for managing National Parks. Clearly this does not preclude them from designating "Specific Sites".

5.2.14 Section 4 "Assessing Environmental Impacts from Mineral Extraction" sets out the principal issues that mineral planning authorities should address, bearing in mind that not all issues will be relevant at every site to the same degree, these include:

- *noise associated with the operation;*
- *dust;*
- *air quality;*
- *lighting;*
- *visual impact on the local and wider landscape;*
- *landscape character;*
- *archaeological and heritage features (further guidance can be found under the Minerals and Historic Environment Forum's Practice Guide on mineral extraction and archaeology;*
- *traffic;*
- *risk of contamination to land;*
- *soil resources;*
- *geological structure;*
- *impact on best and most versatile agricultural land;*

- *blast vibration;*
- *flood risk;*
- *land stability/subsidence;*
- *internationally, nationally or locally designated wildlife sites, protected habitats and species, and ecological networks;*
- *impacts on nationally protected landscapes (National Parks, the Broads and Areas of Outstanding Natural Beauty);*
- *nationally protected geological and geo-morphological sites and features;*
- *site restoration and aftercare;*
- *surface and, in some cases, ground water issues; and*
- *water abstraction.*

5.2.15 Whilst the above a clearly intended to set the parameters of assessment for mineral extraction where appropriate to this application the above elements are addressed in detail in this ES.

5.2.16 This section of the National Planning Practice Guidance also provides specific advice in respect of the environmental impacts of building stone quarries. It states:

> *"Mineral planning authorities should recognise that, compared to other types of mineral extraction, most building stone quarries are small-scale and have a far lower rate of extraction when compared to other quarries. This means that their local environmental impacts may be significantly less. Such quarries often continue in operation for a very long period, and may be worked intermittently but intensively ("campaign working"), involving stockpiling of stone."*

5.2.17 Yennadon quarry is an existing quarry providing building stone. It is the subject of an existing planning permission which controls all of the above identified elements. It is important to note that with regard to this planning application **no change to mode of operation, hours, extraction rates, number of vehicles etc. is proposed.** What is proposed is an extension of the area being worked within the existing operational timeframe for the quarry.

5.2.18 The key considerations to address therefore are: what is the need for this stone, what implications arise from the impact of operations on the proposed extension area in the National Park and do any benefits arise from the proposed reinstatement and aftercare.

5.2.19 The development plan provides a range of detailed polices for the assessment of these matters.

5.3 The Development Plan

5.3.1 The Planning and Compulsory Purchase Act 2004, Section 38(6), provides that decisions shall be taken in accordance with the Development Plan unless material considerations indicate otherwise. The importance of an up to date plan is re-affirmed in the NPPF.

5.3.2 As of 20th May 2013 (SI 2013 No 935) the Regional Spatial Strategy for the South West along with (inter alia) the Devon Structure Plan have been revoked. With regard to this policy appraisal it is considered that given the age of RPG10 and its strategic nature that it does not have any detailed relevance with regard to informing this application and the decision making process. Reference however is retained to the Devon Structure Plan as it provided the strategic policy context for both the Dartmoor National Park Local Plan First Review and the subsequent Core Strategy. The development plan comprises:

- The Dartmoor National Park Core Strategy (Adopted June 2008)
- The Dartmoor National Park Local Plan First Review (2004)
- The Dartmoor National Park Development Management and Delivery DPD (July 2013)

Devon Structure Plan – Devon to 2016

5.3.3 The Devon Structure Plan provided the strategic planning policy framework for all development in Devon, including the Dartmoor National Park. Three key policies could be considered relevant to this application and also informed the Core Strategy. These policies are set out in full in the policy appendix (A5) of the ES.

5.3.4 However, it is important to note that the DNP is not subject to Devon County Council's Minerals Working Local Plan and detailed minerals working policies for the National Park are set out in the DNP Core Strategy and the saved policies of the DNP Local Plan First Review.

Dartmoor National Park Core Strategy (Adopted June 2008)

5.3.5 In considering all development in National Parks it is important to have regard to the Acts that established them and set out their statutory purposes. The National Parks and Access to the Countryside Act 1949 and the Environment Act 1995 provide the context for the DNPA strategic principles set out in the Core Strategy.

5.3.6 Many of the policies within the Core Strategy are not specific to mineral working but they nevertheless, taken collectively, set out the full range of landscape, environmental and socio-economic considerations that any proposals for minerals working will need to address. These policies are set out in full in Appendix A5. The summary below sets out the key issues to be considered in this ES. It is also important to note that the Core Strategy was adopted prior to the publication of both the NPPF and the NPPG.

5.3.7 **Policy COR1** is a wide ranging, criteria based policy setting out the sustainable development principles to which all development in the National Park should adhere.

5.3.8 **Policy COR3** requires that development will conserve and enhance all factors contributing to the character of Dartmoor's landscape and environmental quality and **Policy COR7** has similar requirements in respect of biodiversity and geo-diversity.

5.3.9 **Policy COR11** seeks to maintain the tranquillity of Dartmoor whilst **Policy COR21** aims to facilitate accessibility.

5.3.10 Strategic minerals guidance is provided via **Policy COR22**. This policy adopts a stratified approach to proposals for minerals development within the National Park. It separates minerals development into three distinct types:

Major mineral development will not be allowed unless, after rigorous examination, it can be demonstrated that there is a national need which cannot reasonably be met in any other way, and which is sufficient to override the potential damage to the natural beauty, wildlife, cultural heritage or quiet enjoyment of the National Park.

Other mineral development will be carefully assessed, with great weight being given in decisions to the conservation of the landscape and the countryside, the conservation of wildlife and cultural heritage and the need to avoid adverse impacts on recreational opportunities.

Small scale quarrying of traditional building stone will be granted in locations where this would not be damaging to the landscape, archaeological, ecological or geological interests, or to the amenity of local residents and where the local road network is adequate to cope with the traffic generated by or associated with the proposed development.

5.3.11 This policy was the subject of critical review at the time of the Core Strategy Examination in order to properly understand the National Park's intentions and ensure that the policy properly reflected these, National Policy and to avoid a policy void between major and small scale quarrying. A full discussion on this matter is set out below (Section 5.4).

5.3.12 **Policy 23**, Waste Management, requires that wherever possible all waste should be managed on the site where it arises.

Dartmoor National Park Local Plan First Review (2004)

5.3.13 Elements of the Dartmoor National Park Local Plan remain extant particularly in respect of minerals developments. The position with regard to Mineral working polices is as follows:

M1 New mineral working, or extensions, or waste tipping - strategic policy. Replaced by Core Strategy Policy COR22

M2 Proposals to mitigate the adverse environmental effects of mineral working. Saved until replaced by Minerals and Waste Development DPD

M3 Small scale quarrying of traditional stone. Replaced by Core Strategy Policy COR22

M4 New mineral working, or extensions, or waste tipping - detailed criteria. Saved until replaced by Minerals and Waste Development DPD

M5 Recycling or reuse of mineral waste. Saved until replaced by Minerals and Waste Development DPD

M6 Development within mineral consultation areas. Saved until replaced by Minerals and Waste Development DPD

M7 Exploratory drilling. Saved until replaced by Minerals and Waste Development DPD

5.3.14 Of the above policies M2 and M4 are germane to these proposals. **Policy M2** states that: "*Planning permission will be granted for proposals which, after rigorous examination, would effectively reduce the adverse environmental effects of existing workings, mineral waste tipping operations, or approved but unimplemented minerals development.*"

5.3.15 Whereas **Policy M4** sets a range of traffic, environmental economic and social criteria against which any application will be judged.

5.3.16 Table 7 of the Local Plan provides information of "Mineral Operations Currently Active in the Dartmoor National Park". Yennadon Quarry is currently listed as follows:

Yennadon, Nr Dousland: Metamorphic 1990 ***Small*** *Long established quarry. Building, walling and ornamental stone. Comprehensive conditions.*

5.3.17 It is noted that only three of the seven quarries listed in Table 7 of the Local Plan at that time are now active.

Dartmoor National Park Authority Development Management and Delivery DPD (July 2013)

5.3.18 The Development Management and Delivery DPD was adopted in July 2013. It contains a number of policies relevant to this proposal. Key amongst these are as follows:

- **Policy DMD1a**: Presumption in favour of sustainable development which reflects the NPPF
- **Policy DMD1b** Delivering National Park purposes and protecting Dartmoor National Park's special qualities which reflects DSP Policy CO2,
- **Policy DMD2** Major development in Dartmoor National Park which reflects NPPF #116,
- **Policy DMD4** Protecting residential amenity in Dartmoor National Park which reflects COR11,
- **Policy DMD5** Protecting the character of Dartmoor's landscape which reflects COR3 with particular reference to the DNP Landscape Character Assessment,
- **Policy DMD 6** Development affecting moor, heath and woodland,
- **Policy DMD7** which inter alia seeks to reinforce the distinctive qualities of place including materials which is also reflected in Polices DMD 9 and DMD 12
- **Policy DMD14** Natural environment, biodiversity and geo-diversity which reflects COR7.

5.3.19 The primary issue with regard to all these policies is the requirement for the application to demonstrate that at the scale proposed the matter of need is addressed and that the requirements of policies with regard to sustainable development, landscape and environment, biodiversity and geodiversity, residential tranquillity and accessibility are met. These matters are discussed in the Policy Summary Section below.

Dartmoor National Park - Design Guide

5.3.20 The Dartmoor National Park Design Guide was adopted November 2011. In respect of description of the area's landscape and buildings it separates these into two categories; the 'high moor' and the 'moorland fringe'.

5.3.21 The moorland fringe is described in the following manner:

> *"At the edges of the high moor the land quickly descends into the steep wooded valleys of the moorland fringe. As the valleys level out, the landscape becomes an undulating mixture of farm, wood and river giving it a rich mosaic appearance."*
>
> *"When compared with the high moor, this landscape appears busy with human activity and movement."*
>
> *"Settlements and buildings in the moorland fringe increase in scale, size and complexity as the shelter of the lower valleys is reached. The typical, isolated farm of the high moor gives way to sheltered hamlets containing two, three or four farms grouped together. This transition is less marked on the western fringes, which even at lower altitudes, are still so exposed to the harsh winter weather that they reproduce some of the robust forms of the high moor"*
>
> *"The underlying geology is very varied and this is reflected in the building stones of the settlements. Granite the universal stone of the high moor and the area immediately adjacent to it, gives way to a mix of other stones at lower levels. To the west around Mary Tavy and Tavistock, buildings are constructed of slate and mudstone walls with slated roofs."*

5.3.22 The above presents a very clear picture of the transition landscape around Yennadon Quarry dealing with both the reasons why building stone is quarried in this location and why the nearby communities are off the western edge of the transition slopes of the moor. The 1901 OS map shows the quarry isolated from the communities that used the stone for building, a clear demonstration of the efficacy of the stone as a robust building material rather than more proximate sources.

5.3.23 From the archaeological assessment and review of historic maps, the earliest map (OS surveyors' drawing of 1784) shows the lines of Devonport Leat and Plymouth Leat on the southern edge of the Down and the surrounding fields. By the 1800s Tithe Map, the Plymouth and Dartmoor Railway is depicted, as is Yennadon Quarry. Several other small quarries and pits and Yennadon Iron Mine are recorded across Yennadon Down. The route of the tramways and railways across Dartmoor was primarily governed by the need to intersect the quarries and mines. Stone from various quarries across Dartmoor, including Yennadon, were transported to Plymouth via the railway and then shipped further afield. The demand of stone from Yennadon Quarry was such that it was connected to the railway, with a siding extending into the quarry. The early success and

longevity of Yennadon Quarry appears to be a combination of the quality of the stone and the link with the railway (and later via road links) to its various end markets.

5.3.24 The section of the Design Guide on external walls makes the following observations with regard to stone.

> *"Most local building stones are no longer quarried in the National Park but mudstone and limestone for example are still available from local working quarries."*
>
> *"Use local sources where practical and relevant to the traditions of the locality. Where stone is used, lay it on its natural bed with uncut faces exposed and coursed."*

5.3.25 Chapter 6 of the ES contains an assessment prepared by Clifton Emery Design of the historic and current importance of Yennadon Stone in the development of the communities on the western side of the moor. Chapter 6 also sets out a comparison of the strength and weathering characteristics of Yennadon Stone and Lantoom Stone. This independent assessment is clear in its conclusions that Lantoom Stone is not of such high quality as Yennadon Stone in a number of significant respects.

5.4 Policy Summary and Appraisal

5.4.1 It should be noted at the outset in the context of the planning policy framework that these proposals are for an extension of the working area of an existing quarry in order to maintain the provision of a locally important stone which is a substantial element of the built character of the area. The proposals are not for an increase in the level of activity at the quarry or increased vehicle movements.

5.4.2 The National Planning Policy Framework sets out a presumption in favour of sustainable development and reaffirms the legal requirement that planning decisions should be made in accordance with the development plan unless material considerations indicate otherwise.

5.4.3 With regard to mineral development there is a general presumption against new quarrying in National Parks as this does not accord with their strategic/national purpose. However policy provision is made for Mineral Development, including specifically, **small scale quarrying of traditional building stone where it would not cause damage to matters of acknowledged importance**.

5.4.4 Planning application 0667/13 was refused on 14th July 2014 on the following grounds:

5. *The Environmental statement dated 22November 2013 is insufficient for the proposed development as it fails to assess the likely impacts of the development at the proposed upper limits of 10,000 tonnes per annum and 60 vehicle movements per week. It is not therefore possible to assess the proposal in terms of the NPPF (Para115 & 116) and policies COR22 and M4 of the Development Plan.*

6. *The proposed extension would perpetuate the quarry and the related impacts in the long term until 2025. The development is major and there is no overriding need for the development, or exceptional circumstances demonstrated which would justify permitting that development in the National Park. In this respect the proposal is contrary to the NPPF (para 115 & 116) and policies COR22 and M4 of the Development Plan.*

7. *Acceptable alternative sources of stone exist to meet the demand currently met by the quarry. The alternative option for the quarry itself would be its restoration on exhaustion of the permitted reserves, thus reducing the current landscape impact, and enhancing the landscape. In this respect the proposal is contrary to the NPPF (para 115 & 116) and policies COR22 and M4 of the Development Plan.*

8. *The proposed development would have an unacceptable impact on the special qualities of the National Park, particularly in terms amenity use, landscape and tranquillity. In this respect the proposal is contrary to the NPPF (para 115 & 116) and policies DMD5, COR1, COR3 and M4 of the Development Plan.*

5.4.5 The planning refusal raises a number of substantive issues with regard to the clarity of information provided within the ES and the landscape strategy and impacts. However the key issue running through all of the reasons for refusal is the question of judgement of scale and the application of appropriate tests against which the judgement should be made. At the heart of this is the use of the term "major" and its definition particularly in respect of an application for an extension to a building stone quarry.

5.4.6 In assessing the application the subject of the planning refusal it would appear from the officer's report and internal correspondence that the starting position of the DNPA was that the application was a "major" proposal. The report makes reference to the Development Management Procedure Order (DMPO) which defines all mineral extraction as major development. This reliance on the DMPO to provide a definition of major in the context of Policy COR22 is incorrect. (Aston and another v SOSCLG and others [2013] EWHC 1936 9Admin)). The DMPO sets out a procedure to be followed by

different types of application, it does not prejudge how an application should be considered in a policy context.

5.4.7 The report to the DNPA Planning Committee does refer to COR22 on the basis that the policy does refer to small scale and therefore it is appropriate to consider whether the proposal is major with reference to the Core Strategy. The report goes on to state:

> *"Given the size of the site and the proposed extension, the tonnage arising, the operating parameters and the location of the site in the National Park it is considered that the proposal is major".*

5.4.8 Considerable changes have been made to the proposal in order to reflect the underlying concerns behind this statement, however as a matter of principle the starting position behind this assumption with regard to the previous application is incorrect as a matter of law, definition and policy.

5.4.9 In respect of this later point there is no evidence to suggest that a "minor or intermediate" view of the quarry has been taken or considered, particularly as the purpose of the quarry is to provide building stone and not minerals or aggregate and it is surprising that there is no discussion of this point in the committee report.

5.4.10 There are three elements to Policy COR22 which provide for an assessment of a stratum of quarrying operations; *major, other and small.* That the Policy COR22 is expressed in its current adopted form arises from concern expressed at the Examination of the Core Strategy that there was a potential lack of consistency between the Core Strategy Policy and the then National Policy. DNPA proposed the introduction of the term major into the first part of COR22.

> *"This would differentiate the large scale minerals development from 'small scale quarrying,' which would be addressed by the second part of that policy." (Public hearings matter 7 evidence of DNPA).*

5.4.11 The DNPA evidence goes on to state:

> *"With the proposed introduction of 'major' to the first part of policy COR22 and the focus of the second part of the policy being a positive approach to 'small scale quarrying of traditional building stone', there is an apparent policy gap regarding those minerals proposals falling between the two scales of development. MPS1 provides guidance on this point, stating that decisions on such proposals (in NPs) should:*

> *--be carefully assessed, with great weight being given in decisions to the conservation of the natural beauty of the landscape and countryside, the conservation of wildlife and cultural heritage and the need to avoid adverse impacts on recreational opportunities. (MPS1 #14, bullet point two, third paragraph).*

Saved policy M4 of the Minerals Local Plan addresses this scale of development, setting out a comprehensive range of factors, including those referred to in MPS1, which will be 'rigorously examined' in coming to a decision. It is considered therefore that the policy gap which exists in the Core Strategy is filled by this saved policy. That policy will be reviewed as part of the preparation of the Minerals and Waste DPD."

5.4.12 In respect of discussion on the term major and its purpose the DNPA provided the following justification:

"There should be a differentiation in the policy principles used to determine large scale minerals development as opposed to smaller operations to supply local building stone or heritage materials. It is proposed therefore to introduce the term "major" to policy COR22, to be applied to those proposals considered to be major development by the Authority and which would be determined using the 'exceptional circumstances' tests.

5.4.13 And in respect of small scale mineral working to meet local needs the following:

"Part 2 of policy COR22 allows for small scale mineral working subject to a reasonable set of environmental, amenity and access considerations. However, while the quarried stone is per se a local material ***there is no caveat in the policy that this material should be for local needs only****. The supporting text does indicate at paragraph 5.14.3 that:*

> *'This provision can make a valuable contribution to the maintenance of the character and quality of the National Park's built environment'.*

However, this should not be considered as the exclusive use of the material. There may be occasions where Dartmoor stone may be needed to restore, repair or enhance traditional buildings outside the National Park. English Heritage is keen that efforts be made to record and protect heritage quarries where stone has been won in the past for the construction of significant buildings, to ensure that additional supplies may be kept potentially available for future needs."

5.4.14 It appears clear from these statements that DNPA believed that Policy COR22 provided for a stratum of mineral extraction differentiated by scale and type. (Note the use of

terms such as mineral extraction and quarrying; the latter used in respect of building stone.) This view of differentiated scale is supported by the descriptions of each quarry set out in Part 4 of the Dartmoor National Park Local Plan Review 2004 and reinforced by the quarry area boundaries plan shown in Chapter (Figure 4/01). Furthermore it is clear from these statements and the policy that there is no requirement for the building stone to be used within the national park.

5.4.15 In response to the evidence provided for the Core Strategy Examination the Inspector made changes to the policy as in its current adopted form. The Inspector's reasoning makes clear the purposes of the various elements of the policy as follows:

> *'Whilst it could be argued that there is no need to repeat national policy at the LDF level, other than a reference to it, I accept that there is sufficient local distinctiveness here to demonstrate DNPA's support of the minerals industry and make this clear at the local level. I recommend Changes to COR22 to reflect national policy.*
>
> *The Changes to COR22 leave a policy void in the CS concerning mineral proposals that fall between 'major' and 'small scale'. Although covered in the 'saved' LP policies, for consistency and ease of understanding I recommend a further Change to COR22 to provide the full picture'.*

5.4.16 There is no evidence that the DNPA or their advisor made an assessment against this policy in the terms set out in the DNPA evidence or the Inspector's reasoning. Whilst deficiencies in the previous application are acknowledged it is fundamental to the assessment of this application that it is objectively assessed against the three strands of Policy COR22.

5.4.17 It is noted that Policy M4 of the Local Plan Review, which provides a template for the issues that an application for the extension of mineral extraction must address, formed part of the reason for refusal. It is a moot point as to whether or not the use of this policy is appropriate to this application given that Policy M3, which was specifically superseded by Policy COR22, contained a presumption in favour of small scale building stone quarries, subject to what may be considered a lesser series of tests.

5.4.18 Both the NPPG and the Development Plan separate small scale building stone quarries from mineral extraction. Furthermore both provide a clear set of criteria for the assessment of the latter but nothing specific in respect of the former. It is acknowledged that this may be a semantic point but it is nevertheless an apparent policy gap. However

elsewhere in the Development Plan (and NPPF and NPPG) is the need for development to meet particular policy requirements and each of these matters is the subject of detailed examination and separate reports. These are set out in the main body of the Environmental Statement and addressed in the individual sections.

5.4.19 Collectively the policies provide a number of key tests against which the proposals for an extension to the working area at Yennadon Quarry will of necessity need to be judged. Critical amongst these are:

- The protection of the National Park per se for its beauty, wildlife and cultural heritage.
- Support for the socio-economic vitality of the National Park.
- Need to maintain the source of local stone in the context of rigorous examination of the impacts and that the need cannot be met in other ways.
- Maintenance and enhancement of character and appearance via the use of local materials
- Protection of amenity
- Accessibility and sustainability

5.4.20 On the matter of economic impact where the NP has sought to demonstrate that they should only have regard to an internalised economy the following also formed part of the DNPA evidence at the Core Strategy Examination:

> *"With regard to the local economy test, it is considered that this would add little materially to the determination of minerals applications. It has not historically been a component of the Authority's approach to minerals planning nor is there any reference within DSP or draft RSS policy. The latest version of the Dartmoor Economic Model (Core Document CD10/10) shows the relatively small contribution of 'mining & quarrying' to the Dartmoor economy - 1.5% of total Dartmoor GVA in 2004. Hence, local financial considerations are likely to be very low in the overall order of importance of criteria used in decision-making. However, the socio-economic 'object of duty' ('to seek to foster the economic and social well-being of local communities') set out in the Environment Act 1995 means that the Authority should always have regard to these considerations in making decisions."*

5.4.21 This would appear to be a slightly different interpretation than that set out in the committee report. The Inspectors response was as follows:

"The LDS includes the preparation of a Minerals and Waste Development DPD which will include policies relating to mineral safeguarding areas. In the interim, the relevant policies in the adopted Minerals LP are 'saved'. I see merit in the reasoned justification making this clear and recommend changes accordingly. Similarly, although fostering the economic and social well-being of local communities is a statutory duty of the NPA, I consider it important to recognise the local significance of the minerals industry in the reasoned justification and I recommend Changes to reflect national policy in ¶ 14 of MPS1 (test 4).

5.4.22 Whilst MPS1 is no longer extant the same socio economic requirement is a key plank of the NPPF. Of further importance is the question of need and the availability of additional or alternative sources of suitable stone. Put simply "why do this here in the National Park and not elsewhere". These matters are examined in detail within the Socio Economic Chapter of this Statement in the reports prepared by Vickery Holman, John Grimes Partnership and Clifton Emery Design. (Appendices 6a, 6b and 6c respectively.) From these two reports it can be seen that:

- There are a limited number of quarries serving the building industry with building stone in Devon and Cornwall.
- Of the existing quarries none produce a stone of the right quality with regard to strength, colour, bedding planes and rustic finish. The unique qualities of the stone from Yennadon Quarry arise from its position within the Tavy Formation and the contact metamorphosing that has taken place as a result of the nearby granite intrusion.
- Yennadon quarry stone complies with Building Regulation requirements as a construction stone.
- Alternative but as yet untapped sources also lie within the Dartmoor National Park.
- Planning policy and design guidance within the National Park and surrounding districts has a presumption in favour of maintaining the character of the area, particularly in conservation areas, via the use of natural and local materials.
- It is the stone of choice for many builders and local authorities alike with it being specified for a large number of local developments and via materials conditions on a number of planning consents.
- Critically Yennadon is the only quarry that can provide natural quoins and is also the first stone of choice as a replacement for Hurdwick stone which is the principle stone in Tavistock.
- Yennadon stone is a very significant element in defining the character of the communities on the western fringes of the moor.

5.4.23 The above sets out in brief the reasons why permission should be granted for the extension of the working area to the existing quarry.

5.4.24 As previously stated detailed information on each of the matters of acknowledged importance is contained in the relevant sections of the environmental statement. These proposals seek an extension of the working area of the quarry in a northerly direction within the context of a substantially revised landscape strategy. They do not seek or will bring about a change in working hours, vehicle movements, number of employees, rates of extraction, etc. Consequently matters with regard to noise, dust, etc. should remain unchanged.

5.4.25 The public consultation event associated with the previous application highlighted two areas where improvement could be made. The first of these was noise which was associated with a particular piece of equipment which has now been replaced and also when working on the upper levels of the quarry, a matter addressed by a proposed extension to the bund.

5.4.26 The second was visual impact and this has fed through to an extension to the proposed height and length of the bund. Following the previous refusal a comprehensive review of the landscape approach has resulted in a reduced working area and enhanced landscape area and strategy which addresses these matters.

6.0 SOCIO ECONOMIC IMPACT

6.1 Introduction

6.1.1 Three socio-economic related studies have been undertaken to determine the potential impact of the proposed quarry extension on a range of social and economic factors.

- Yennadon Quarry: Socio-Economic Report. Vickery Holman Property Consultants. February 2012. Ref: AME/CLR/29119.
- Yennadon Quarry: Product and Alternative Sources. John Grimes Partnership Ltd. June 2015. Ref: 7397/AS Rev.D.
- Yennadon Stone and the built environment: A review of the important role that stone from the quarry plays in maintaining the character and appearance of the local area. Clifton Emery Design. June 2015. Ref: 141004 R01.

6.1.2 The existing quarry operations are close to the boundary limits of the currently permitted working area. Yennadon Stone Ltd. has indicated that the remaining extractable resources within the existing quarry boundary will not sustain the production rates currently achieved by the quarry. The dimension stone from Yennadon Quarry has a proven demand in the construction industry and makes a significant contribution to the character and appearance of the built environment. Should planning permission be refused, the operators intend to continue production up to 2025, however production levels will decline, resulting in a negative impact on employment and significantly reduce the availability of local high quality building stone.

6.1.3 The proposed extension will simply enable economic activity and full employment to be maintained. The extended quarry operation can be serviced by the existing roads and infrastructure.

6.1.4 Whilst areas of the 'high moor' are mostly associated with the use of granite in the construction of buildings and other structures, the 'moorland fringe' has a legacy of building using metamorphic stone that is more consistent with the geology of these areas. The use of such slate stone, as opposed to granite, in the 'moorland fringe' settlements is very evident in the fabric of buildings, walls and other structures. Yennadon is the only remaining operational quarry supplying local slate dimension stone within the boundary of the National Park.

6.1.5 The quarry provides an invaluable source of building stone for local building projects as well as projects in other parts of Devon and Cornwall. It has supplied stone for local building construction for approximately 150 years and as such it has made, and continues to make, a significant contribution to the character and appearance of the built environment.

6.1.6 As well as providing an important source of local stone, the quarry also represents part of the cultural legacy of the moor. It contributes to its diverse human landscape and industrial heritage.

6.2 Methodology

6.2.1 The data for the Socio-Economic Report (Appendix A6a) was conducted by property consultants Vickery Holman (Ref: AME/CLR/29119). This study considered the baseline conditions under the existing consent, including identification of current legal rights and activities of both the quarry operators, commoners and members of the public.

6.2.3 The second report 'Yennadon Quarry Product and Alternative Sources' was produced by John Grimes Partnership Ltd (Ref: 7397/AS.Rev.D), to provide additional information on the stone produced at Yennadon Quarry and its market, as well as considering the alternatives should the quarry cease operation. This report is provided in Appendix 6b.

6.2.4 The purpose of the third report 'Yennadon Stone and the built environment: A review of the important role that stone from the quarry plays in maintaining the character and appearance of the local area' Clifton Emery Design (Ref: 141004 R01), is to explain the important role that the quarry plays supplying stone that supports the quality of building design and historic building conservation in the local area and moreover within the National Park itself.

6.2.5 The report also provides a background to the stone from Yennadon Quarry; an historical perspective on the quarry and the use of stone from it in shaping the local built environment; how planning design policy provides a context for supporting the use of locally sourced stone; the qualities of the stone from a structural and aesthetic viewpoint; the absence of a viable alternative stone; the contemporary use of the stone; and finally the consequences of the quarry closing.

6.2.6 This Chapter provides a summary of all three reports and provides an assessment of:

- Geology of Yennadon Quarry

- Socio-economic history of the quarry
- Baseline Conditions
    - Current product market
    - Employment
    - Security
    - Highways and access
    - Designation of Little Yennadon as Common Land
- Alternative sources
- Potential impacts of the proposed development
- Mitigation and
- Residual effects

6.3 Geology of Yennadon Quarry

6.3.1 The rock formation in which Yennadon Quarry is located is known as the Tavy Formation, which is part of the Tamar Group of Devonian sedimentary rocks. The Tavy Formation mainly comprises pale green and grey-green-blue slatey silty MUDSTONE, which has undergone regional low-grade metamorphism. At Yennadon Quarry, the Tavy Formation has also been altered by the nearby Dartmoor Granite intrusion (i.e. contact metamorphosed), which has altered the mudstone into an **Hornfelsed Slate**, which has resulted in the stone being particularly strong and durable in comparison to slates from outside the metamorphic aureole[1].

6.3.2 The stone produced from Yennadon Quarry is a Dartmoor Rustic Stone. "Rustic Stone" is the trade term for the regional iron stained slates and meta-sedimentary rocks. Yennadon Rustic Stone is well suited to and favoured as a building stone due to its indigenous appearance, and resistance to both frost and weathering. It has an established reputation in the market place as a good, flexible, high quality building product.

6.3.3 Yennadon Stone has distinct characteristics that make it unique. Yennadon Stone has distinct subtleties in colour, tone and patina creating a variegated overall appearance when seen in a wall. Its colour ranges between yellowy brown hues, some with iron oxide staining on joint faces, through to bluish grey tones on the cut faces.

[1] Metamorphic aureole: a zone of rock surrounding an igneous intrusion where the rock has been recrystallized as a result of the heat from the intrusion; also known as contact metamorphism.

6.3.4 Dimension stone needs to have a vertical face of good appearance. The natural jointing (fractures) within the rock mass at Yennadon are generally at right-angles, which results in the Rustic Stone forming premium value natural faced rectangular blocks. Yennadon Quarry is unique locally for being able to supply developers with commercial quantities of the much sought after 'natural quoins'; i.e. all the faces on the block has the rustic colouring. Yennadon Stone can also provide cut blocks with a textured face. The cut faces provides a more bluish-greenish grey colour and due to its relatively high strength and durability is now commonly used as a replacement for the locally important Hurdwick Stone in extensions, renovations and repairs. Hurdwick Stone was extensively used in Tavistock and the surrounding area and was the dominant building stone for many of Tavistock's historic main buildings, including the Bedford Hall, Guildhall, Town Hall and Police Station.

6.3.5 Yennadon is a strong and durable slate stone. It is not prone to weathering and as a result does not tend to flake or delaminate, unlike some other slate stone types in the region. The Product and Alternative Sources Report (Appendix 6b) provides a detailed assessment of Yennadon Stone compared to a similar rustic stone from Lantoom Quarry (Saltash Formation).

6.3.6 The quality of Yennadon Stone is borne out by observing historic stone in existing settlements where it has been used. Generally the stone appears to hold on to its structural integrity. These attributes can be seen most particularly in local villages, such as Meavy, parts of Yelverton and Dousland, where the stone is very much a defining feature because it is used so extensively in boundary walls, structures and buildings. As a result of this and good practice by the quarry Yennadon Stone has an established reputation in the market place as a good, flexible, high quality building product.

6.4 The Socio-Economic History of Yennadon Quarry

6.4.1 The history of the quarry is not well documented and as a result there is a degree of informed speculation that needs to be applied in order to understand the role that it has played historically in providing stone for local use and in turn contributing to the character and appearance of the built environment. Appendix 6c assesses the existing settlements within the moorland fringe and illustrates beyond question that Yennadon stone and/ or stone similar to it have been used in the local area for many centuries.

6.4.2 As discussed in Chapter 7, the quarry is first recorded on the First Edition OS map of 1886. In addition, letters contained in the West Devon Records office dating from 1865 refer to

the quarry. During the Nineteenth Century Yennadon Quarry was typical of the scores of quarries that were on Dartmoor, during which time the area was characterised by lively small-scale industrial activities. The 1886 OS map illustrates that there were other quarries, operational leats, mines and railways/tramways all establishing a particular character around the quarry and the Dousland area.

6.4.3 As industrial activities have ceased to operate through the Twentieth Century, Yennadon Quarry has become the only remaining working example of the former industrial landscape. Although it is now often perceived to be set within a predominantly 'natural' landscaped environment – there is considerable evidence on the ground of the industrial activities that have characterised the area in the past – it is an area rich in industrial archaeology. Yennadon Quarry has been a feature of this moorland for approximately the last 150 years.

6.4.4 Yennadon remains an important part of our cultural legacy and makes a contribution to our diverse human landscape. It is the last active stone quarry on moorland Dartmoor and as such a living example of cultural heritage – the only remaining example of industrial archaeology.

6.4.5 In addition to being an integral feature of the local landscape, the stone from the quarry has clearly played a significant role in creating the local built environment and helping to establish its particular sense of place. Historically stone from the quarry was transported via the tramway/railway further afield; just as stone from the quarry is used for projects throughout Devon and Cornwall today. During the Nineteenth Century, markets further afield may well have played an important role in ensuring that the operation of the quarry remains viable and that its stone is therefore available for local projects – as indeed it does today.

6.4.6 The built environment in the moorland fringe in the surrounding area is characterised by metamorphic slate stone rather than granite, which is more commonly used on the 'high moor'. Appendix 6c identifies that slate stone is a predominant building material throughout in the settlements on the fringe of the moor. Within The Maristow Estate (which during the Nineteenth Century included Buckland Monachorum, Meavy, Sampford Spiney, Shaugh Prior, Sheepstor, Walkhampton and Whitchurch), stone used was sourced either from Yennadon or from a quarry producing a very similar slate stone. Within the National Park slate building stone has had a major role in the makeup of the historic built fabric in many local settlements including: Ashburton, Yelverton, Dousland,

Sheepstor, Brisworthy, Horrabridge, Buckfastleigh, South Brent, Walkhampton, Meavy, Burrator, Sampford Spiney, Mary Tavy, Peter Tavy, Buckland Monochorum, Crapstone, Milton Combe, Shaugh Prior, Hoo Meavy, Clearbrook, Lovaton, Wotter and Roborough. Outside of the National Park, settlements such as Tavistock, Okehampton, Plymouth, and Ivybridge, as well as numerous smaller hamlets, building groups, farmsteads and one off buildings, boundary walls and agricultural structures, use slate stone that is similar to that sourced from the Yennadon Quarry.

6.5 Baseline Conditions

Current Product Market

6.5.1 Whilst areas of the 'high moor' are mostly associated with the use of granite in the construction of buildings and other structures, the 'moorland fringe' has a legacy of building using metamorphic sedimentary stone that is more consistent with the geology of these areas. Some of these settlements characterised by this stone fall within the current administrative boundary of the National Park and some do not.

6.5.2 The use of slate stone as opposed to granite in 'moorland fringe' settlements is very evident in the fabric of buildings, walls and other structures. Yennadon Stone is the only remaining source of metamorphic stone still quarried in the National Park today and the only source within Dartmoor's 'metamorphic aureole'.

6.5.3 Historically metamorphic sedimentary stone was supplied from a variety of quarries in the 'moorland fringe' area and there are variations in the appearance of stones from these different quarries. Whilst colours, tones and textures do vary; for example Hurdwick stone has a distinctive green tinge, there is an overall consistency in the appearance of metamorphic stone from the quarries surrounding the granite area of the moor – stone sourced from Yennadon has this character and appearance and this makes it a good stone to use in the local area (where granite is not the prevailing material).

6.5.4 Yennadon Stone is specified by architects, builders, land owners, planners and conservation officers as an appropriate facing material in parts of Dartmoor and the moorland fringe (including larger settlements such as Ivybridge, Tavistock (World Heritage Site) and Okehampton for example), where historically stone has been quarried and used for building and wall construction. It has also been specified and used in neighbouring local authority areas; including the South Hams, Teignbridge, West Devon, Plymouth and parts of Cornwall where Yennadon stone is close to the appearance of slatey stone that has been used historically in such areas. Many of the sites and places

where the stone is specified are designated for their importance as historic buildings, structures, environments or settlements – conservation areas, listed buildings, ancient monuments, Areas of Outstanding Natural Beauty and National Parks for example.

6.5.5 Yennadon Quarry is renowned for providing a high quality stone that complies with Building Regulation requirements. Yennadon Stone has the right appearance as a natural stone product that can be used both locally and regionally to comply with planning and conservation requirements. It is used in:

- The patching/repairs of existing buildings/structures
- New developments (buildings/structures/paving).

6.5.6 Planning policies continue to encourage the use of local materials. Appendix 6c considers in depth planning policies and practice that identify the importance of sourcing and utilising appropriate local stone in the design of new buildings and structures throughout the local area and within the National Park. It is clear that the use of appropriate local stone is key to the delivery of a plethora of planning policy requirements in the DNPA area and in surrounding local authorities, including the Tavistock World Heritage site.

6.5.7 Stone from the quarry provides a local source of metamorphic slate stone that has been used historically in developing the historic built fabric in the locality. As such it is very much part of the local scene and a distinctive feature of the character and sense of place in many settlements in the 'moorland fringe area'.

6.5.8 Planning policy governing and guiding the quality of development in the DNPA area stresses the importance of using local stone in the design, construction and restoration of buildings in order that the distinctive character of the National Park is conserved and enhanced into the future. These policies are in accordance with the primary purpose of National Parks as set out in the National Parks and Access to the Countryside Act 1949:

> *'To conserve and enhance the natural beauty, wildlife and cultural heritage (of national parks); and to promote opportunities for the understanding and enjoyment of the special qualities (of the National Parks) by the public.'*

6.5.9 Current planning policy and guidance that supports the use of appropriate local stone either directly or indirectly includes; national guidance in the National Planning Policy Framework; regional guidelines in the Devon Structure Plan – Devon to 2016, and local planning policy and guidance in the DNPA Core Strategy 2008, the DNPA Local Plan First

review 2004, the DNPA Development Management and Delivery DPD 2014, the Dartmoor National Park – Design Guide 2011, Local Conservation Area Character Area Appraisals.

6.5.10 In addition to adopted national, regional and local planning policy there is also a range of specific guidelines concerning the use of local stone in the built environment. Guidance from Historic England, the Society for the Protection of Ancient Buildings (SPAB), and the Council for Architecture and the Built Environment (CABE), alongside other organisations advocate the use of appropriate local stone as a means for achieving locally distinctive development and/ or suitable conservation.

6.5.11 The availability of Yennadon Stone supports the objective of conserving the landscape and scenic beauty of Dartmoor. Moreover, as it is the only remaining source of appropriate quarried stone, it is the only way in some instances/places that suitable conservation of the built environment can be achieved to a high standard.

6.5.12 Section 7 of the NPPF concerns 'Requiring Good Design':

'The Government attaches great importance to the design of the built environment. Good design is a key aspect of sustainable development, is indivisible from good planning, and should contribute positively to making places better for people.'

'It is important to plan positively for the achievement of high quality and inclusive design for all development, including individual buildings, public and private spaces and wider area development schemes.'

'Local and neighbourhood plans should develop robust and comprehensive policies that set out the quality of development that will be expected for the area. Such policies should be based on stated objectives for the future of the area and an understanding and evaluation of its defining characteristics. Planning policies and decisions should aim to ensure that developments:

- *will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;*
- *establish a strong sense of place, using streetscapes and buildings to create attractive and comfortable places to live, work and visit;*
- *optimise the potential of the site to accommodate development, create and sustain an appropriate mix of uses (including incorporation of green and other public space as part of developments) and support local facilities and transport networks;*

- *respond to local character and history, and reflect the identity of local surroundings and materials, while not preventing or discouraging appropriate innovation;*
- *create safe and accessible environments where crime and disorder, and the fear of crime, do not undermine quality of life or community cohesion; and*
- *and are visually attractive as a result of good architecture and appropriate landscaping.'*

6.5.13 The availability of stone from the quarry contributes positively to the stated objectives of the NPPF in relation to 'Requiring Good Design'. The absence of a source of local stone from Yennadon would hinder the ability for good design to be achieved in the National Park and beyond because there are no viable alternative sources of stone with the same visual characteristics.

6.5.14 In addition to attaching great importance on achieving good design, the government also set out policies in the NPPF for conserving and enhancing the historic environment (section 12 refers).

'In determining planning applications, local planning authorities should take account of:

- *the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;*
- *the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and*
- *the desirability of new development making a positive contribution to local character and distinctiveness.'*

6.5.15 The availability of stone from Yennadon makes achieving development that supports 'local character and distinctiveness' eminently more achievable. Furthermore, availability of stone from the quarry ensures that the DNPA and surrounding local authorities are in a better position to conserve heritage assets in a manner that is appropriate to their significance:

'Local planning authorities should set out in their Local Plan a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. In doing so, they should recognise that heritage assets are an irreplaceable resource and conserve them in a manner appropriate to their significance. In developing this strategy, local planning authorities should take into account:

- *the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;*
- *the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;*
- *the desirability of new development making a positive contribution to local character and distinctiveness; and*
- *opportunities to draw on the contribution made by the historic environment to the character of a place.'*

6.5.16 The government also places on emphasis facilitating the sustainable use of minerals recognising that:

> *"Minerals are essential to support sustainable economic growth and our quality of life. It is therefore important that there is sufficient supply of material to provide the infrastructure, buildings, energy and goods that the country needs. However, since minerals are a finite natural resource and can only be worked where they are found, it is important to make best use of them to secure their long-term conservation."*

6.5.17 It is important that the positive contributions made by quarrying from Yennadon are given appropriate weighting in this context. Ensuring that stone continues to be quarried will maintain the positive contribution that the availability of the stone makes towards good design and conservation. This ES demonstrates that this can be achieved in a manner that does not raise concerns from an environmental perspective.

Dartmoor National Park Authority (DNPA) Policies

6.5.18 Local planning policies for the National Park are principally contained within the DNPA Core Strategy 2008, the DNPA Local Plan First Review 2004, and the DNPA Development Management and Delivery DPD 2014. The policies in these plans provide a strong foundation for encouraging the quality of good design, appropriate conservation and local distinctiveness in line with the objectives set out in national and county planning policy.

6.5.19 Policy COR1 of the Core Strategy sets out the DNPA general approach to development. Criteria have been underscored that would be clearly secured because of the continued operation of Yennadon Quarry resulting from a grant of planning consent for its proposed extension.

6.5.20 Policy COR3 of the Core Strategy requires that development will conserve and enhance all factors contributing to the character of Dartmoor's landscape and environmental quality. The availability of appropriate local stone is an important aspect of making this possible aspect.

'Dartmoor's built environment has a number of well-defined vernacular traditions reflecting historical building methods, local availability of materials and economic, social and climatic influences. These traditional buildings add texture to the historic built environment of the National Park and contribute greatly to its special qualities. The character and distinctiveness of the built heritage of the National Park depends greatly on these influences.'

'The use of good quality materials for construction will help ensure that new buildings or conversions or alterations of existing buildings make a positive contribution to the local built environment and will remain fit for their roles in the long term.'

6.5.21 Policies COR4 and COR5 of the Core Strategy concern conserving the historic built environment.

'The buildings of Dartmoor are for the most part in the vernacular tradition, constructed from locally derived materials (granite, cob, slate, thatch) and in locally distinctive styles.'

6.5.22 Policy COR4 states that:

'Development proposals will be expected to conform to the following design principles:

a) demonstrating a scale and layout appropriate to the site and its surroundings, conserving or enhancing the quality and distinctiveness of the built environment and local landscape character;

b) using external materials appropriate to the local environment …'

6.5.23 The following conservation areas are designated with the DNPA area and as such are identified in the Core Strategy. Those in bold lie within areas characterised by a metamorphic slate stone geology thus highlighting the importance of an appropriate stone being available for development and conservation:

Ashburton, **Buckfastleigh**, Chagford, **Crockernwell**, **Drewsteignton**, Dunsford, **Horrabridge**, **Islington**, Lustleigh, **Lydford**, Manaton, **Mary Tavy**, **Meavy**, Morenthampstead, **Murchington**, North Bovey, **North Brentor**, Princetown, **South Brent**,

South Tawton, South Zeal, **Sticklepath**, Trowleigh, **Walkhapmton**, Widecombe-in-the-Moor.

6.5.24 Within the DNPA Development Management and Delivery DPD 2014 policies DMD1b (protecting Dartmoor's special qualities), DMD5 (protecting Dartmoor's landscape), DMD7, DMD8, DMD9, DMD10 and DMD12 (reinforcing the distinctive qualities of place including the use of materials) are particularly relevant to the proposal.

Dartmoor National Park Design Guide 2011

6.5.25 The Dartmoor National Park Design Guide was adopted in November 2011. It is useful in that it describes the character of the area in which the quarry is located within and identifies the importance of local stone as part of the local scene.

6.5.26 The description of landscape and the built environment is separated into two distinct character types; the 'high moor' and the 'moorland fringe'. It is apparent that Yennadon Quarry falls within the 'moorland fringe'.

6.5.27 The 'moorland fringe' is described as:

'At the edges of the 'high moor' the land quickly descends into the steep wooded valleys of the 'moorland fringe'. As the valleys level out, the landscape becomes an undulating mixture of farm, wood and river giving it a rich mosaic appearance.'

'When compared with the 'high moor', this landscape appears busy with human activity and movement.'

'Settlements and buildings in the 'moorland fringe' increase in scale, size and complexity as the shelter of the lower valleys is reached. The typical isolated farm of the 'high moor' gives way to sheltered hamlets containing two, three or four farms grouped together. This transition is less marked on the western fringes, which even at lower altitudes, are still so exposed to the harsh winter weather that they reproduce some of the robust forms of the 'high moor'.'

'The underlying geology is very varied and this reflected in the building stones of settlements. Granite the universal stone of the 'high moor' and the area adjacent to it, gives way to a mix of other stones at lower levels.'

6.5.28 The Design Guide makes a clear distinction between the landscape of the 'high moor' and the landscape of the areas around the fringes. The quarry falls in the area of transition between the two. There is a natural fit with the quarry operation.

6.5.29 In its section on the use of external building materials the Design Guide identifies the importance of natural stone as part of the local scene. Indirectly it highlights the importance of quarries that still supply stone.

'Most local building stones are no longer quarried in the National Park but mudstone and limestone for example are still available from local working quarries.'

6.5.30 Yennadon Quarry is unique in that it is the only remaining historic quarry on the moor and more specifically in the 'moorland fringe' that supplies local building stone that has historically been used as an external facing material on buildings and structures in the locality.

'The underlying geology is very varied and this is reflected in the building stones of the settlements. Granite the universal stone of the high moor and the area immediately adjacent to it, gives way to a mix of other stones at lower levels. To the west around Mary Tavy and Tavistock, buildings are constructed of slate and mudstone walls with slated roofs.'

6.5.31 The Design Guide recommends that it is best to use local stone in order to maintain the integrity and appearance of the local scene. Clearly the economic sustainability of the quarry and its continued operation and therefore supply of stone is critical to maintaining the availability of local stone in repair, restoration and construction.

'Use local sources where practical and relevant to the traditions of the locality. Where stone is used, lay it on its natural bed with uncut faces exposed and coursed.'

<u>Conservation Area Appraisals</u>

6.5.32 DNPA has produced a series of Conservation Area Appraisals. These all include a section concerning 'building types, materials and styles' and 'local details and street furniture'. It is clear by the appraisals that many of the settlements are characterised by the extensive use of metamorphic slate stone rather than granite as the principal stone. Granite is often incorporated in building details or in some places alongside slatey stone in random wall construction.

6.5.33 Whilst Yennadon Stone may not have been used in all settlements where metamorphic slate is the principal stone, it does provide an appropriate construction material and in fact the only option that is available.

6.5.34 Strategic Housing Land Availability Assessments (SHLAA) have been produced by DNPA and neighbouring planning authorities to identify where land is available to deliver housing into the future. The SHLAA informs planning policy and in turn provides a foundation for planned housing development. Within the National Park's Assessment about 40% of the 90 sites identified as being available for housing are within localities that are characterised geologically as being slatey stone areas.

6.5.35 The availability of a high quality source of locally appropriate stone will be important to achieving successful developments that are locally distinctive and which have regard to the intrinsic character of the moor. This becomes increasingly difficult if the principal sources of local stone are not available – a viable and operational Yennadon Quarry is crucial to ensuring that the appropriate local stone is available for the design and construction of these developments.

Product Sales

6.5.36 The main source of demand for the material comes from the construction industry, from which facing stone for new buildings, extensions, boundary walls and building repairs is the principal requirement. The supply statistics of Yennadon Stone have been reviewed in Appendix 6b on the basis of delivery location, type (building or walling stone) and size of order. The latter provides an indication of the size of development; i.e. <10t is likely to be for renovations or small extension; 10t to 100t is likely to be for a small to medium developer; and >100t is likely to be for a moderate to large housing or commercial development. It illustrates the important role Yennadon Stone has as a building material in the southwest region.

6.5.37 Yennadon Stone Limited is renowned by developers for their prompt delivery and dependable supply. Projects vary in scale and nature; house building projects constitute a significant part of the market for the stone and in addition modest and small-scale building projects generate a significant demand.

6.5.38 The market for the stone is principally throughout Devon and Cornwall with just 1% of supply going further afield. South Devon provides the biggest single market (37%)

followed by demand in East and North Cornwall (17%). Dartmoor and the moorland fringe is the third biggest area of demand (8%).

6.5.39 Whilst demand in the Dartmoor area is relatively modest as an overall percentage of stone supplied in Devon and Cornwall, this is to be expected because within the National Park, in part as a result of the restrictions on building, there are fewer building projects and those that do take place are generally smaller in scale. This is illustrated by the fact that 64% of the projects using Yennadon stone in the area involve a supply of less than 10 tonnes (small/ medium scale). This suggests building projects for; modest extensions to existing buildings, boundary walls, repairs and other conservation works.

6.5.40 Importantly, the availability of Yennadon Stone provides a key source of building material for developments in the National Park and in the moorland fringe. The supply of stone to other parts of Devon and Cornwall helps to ensure that the quarry remains a viable economic proposition.

6.5.41 Yennadon is a key source local stone that is used regularly in the repair, restoration and extension of historic buildings and the construction of new civic buildings and structure. In areas of slatey stone geology around the high moor it is the best and only stone available.

6.5.42 Recent projects using Yennadon stone include for example in Dartmoor and in the moorland fringe such as: Gem Bridge at Grenofen; the new bridge at Peekhill, Dousland; stone wall repair in Horrabridge; works at Duchy Square, Princetown; numerous projects within the Tavistock World Heritage Site; many repairs to buildings on the Maristow Estate including grade II listed buildings; Tiddy Brook Meadow housing development, Whitchurch, new housing at Yelverton, the restoration of Newnham House (a grade II* listed building), numerous garden walls, landscaping, decorative features, and Devon banks; Lidl store, Tavistock; works at Cotehele House and Buckland Abbey.

6.5.43 In addition, Yennadon is also the principal supplier of cut stone for buildings and walling to many local building suppliers providing a source of material for small scale domestic projects, as detailed in Appendix 6b.

<u>Employment:</u>

6.5.44 Yennadon Quarry is an established employer within an area of Devon which offers limited opportunities outside of the service, agricultural and tourism industries. The quarry

currently employs 27 people including the two directors; this represents an increase in jobs since 2012 when the Socio-Economic Report (Appendix 6a) was produced. Eleven persons are aged between 18 and 24 with a further nine aged between 25 and 30, making up the majority of the staff employed. Against the general economic background the preservation of opportunities for youth employment as skilled labourers and the retention of employment for older skilled workers should be a paramount consideration. This is particularly relevant in a rural economy, such as West Devon/ Dartmoor/South Hams/South East Cornwall, where 12 of the employees reside.

6.5.45 The loss of the 27 jobs at Yennadon Quarry will have ramifications on the local economy through the loss of the economic activity of those employees, a measure of which is Gross Value Added (GVA). GVA is a measure of the value of the goods and services produced in the economy. It is primarily used to monitor the performance of the national economy and is now the measure preferred by the Office for National Statistics (ONS) to measure the overall economic well-being of an area.

6.5.46 The 2009 rate for GVA per head for the West Devon district alone would imply that, on closure of the quarry, there would be an annual loss of £159,264 from the West Devon and Dartmoor economies (based on 2012 employment figures). As there are very limited opportunities for these workers to identify other similar employment within a 30 mile radius it is reasonable to expect that, this economic benefit will be lost completely.

6.5.47 If the impact of the quarry closure is assessed as a whole (based on GVA per person), then it would mean a total annual loss of over £314,723 from the local economy. These totals are based upon the assumption that every member of the populace is contributing to the economy. However, in reality this is not the case and the correct multiplier should be those detailed as GVA per job. Applying this rate suggests an actual loss to the economy of £827,075 (based on 2012 employment figures), which is a much more substantial consideration.

6.5.48 Whilst this is a small percentage of the region's total output, under current economic conditions any potential loss to the economy should be resisted unless planning policies dictate to the contrary.

6.5.49 The current workforce of 27 is adequate to operate the extended quarry on the basis of the maximum permitted production level of 10,000 t/a. There is, consequently, no

suggestion that the grant of permission will create the immediate opportunity for new jobs.

Security:

6.5.50 The existing quarry operation is fenced along all boundaries to prevent third parties and grazing stock from entering the operational area. It is possible that curiosity could lead people to view over the boundary, as is currently witnessed within the existing operation. The current quarry has an exemplary record of safety such that no member of the public nor any animal has been injured in or around the site due to the quarry operation.

6.5.51 The present proposals include the provision of security fencing around the new extension to ensure continued safety measures at the quarry. It is understand these measures have provisionally been approved by the Health & Safety Executive (HSE) following enquiries.

Highways and Access:

6.5.52 The current practice for loaded lorries on leaving the quarry is to travel south onto Iron Mine Lane, then along Burrator Road and then the B3212. This in turn leads south to the A38. By utilising this route it minimises the direct impact on residential dwellings.

6.5.53 The current planning consent allows for 14,000 tonnes of material per year to be removed from the quarry with no more than 35 lorry trips to originate from the site per week. Output has always been substantially below the permitted level. Since 2004 when Yennadon Stone bought the quarry, it has been operated on a more professional basis and although output has increased it is still well below the maximum permitted. The proposed development does not require an increase in the permitted annual output rate; instead the proposal seeks a reduced 10,000 tonne annual limit, which will still allow flexibility in the operation of the business. Similarly it is intended to reduce the lorry movements to no more than 30 trips per week.

6.5.54 The daily commute by employees would remain unchanged as, should planning be granted for the extension, it would serve to preserve rather than create employment.

6.5.55 The existing planning consent restricts lorry movements to periods between 0800 to 1800 Monday to Friday and 0800 to 1300 on Saturdays. No variation of these periods is sought as part of this proposal. Thus the impact on local residents will be minimised and controlled within acceptable limits.

6.5.56 In consideration of the above, the proposed quarry expansion will not place any additional pressures on the existing transport network. A detailed assessment of the transport conditions at the site is provided in Chapter 13.

Designation of Little Yennadon as Common Land:

6.5.57 The site is part of the area designated as Common Land, and therefore general public rights of access are available. Yennadon Down is bisected by a number of defined paths and tracks that are routinely used by the public although they are free to roam over the whole of the Down. There is in particular a footpath which runs north to south across the Down. This footpath comes within 100 metres of the south eastern corner of the existing approved quarry. All other public footpaths are further from the quarry.

6.5.58 The proposed development will not impinge on the existing footpath and the boundary of the quarry extension land will be at least 130 metres from the footpath. The proposed extension will be located on the western periphery of the Down with little or no historical, ecological or aesthetic interest, and therefore there should be little demand from the public to access this specific area of Yennadon Down.

6.5.59 The designation as common land brings rights for commoners to graze the land, as discussed in Section 3.3 and Appendix A3. Yennadon Down extends to over 100 ha. Thus the extension area represents approximately 1% of the common grazing land.

6.6 Alternative Sources

6.6.1 There are a variety of different 'slate' stone types that have historically been quarried throughout Devon and Cornwall. The character and appearance of these indigenous stones has played a significant role in contributing to the local distinctiveness of the built environment in different parts of the counties. The term 'slate' for building stone is loosely applied to mudstones and siltstones that have undergone various grades of metamorphism. The nature and appearance of these stones varies greatly. Stones can be weak or strong, durable or non-durable, dark or light grey, have green, to yellow, to red hues, and be characterised by brown iron oxide and/ or quartz veining.

6.6.2 Most other existing 'slate' quarries in the region produce a dark grey "Blue" slate (which can be used as both traditional roofing slate and dimension stone, etc.). There are limited other sources of 'Rustic Stone' within the Southwest. Whilst there are slates that share some 'characteristics' with Yennadon Stone, none extract the high quality Hornfelsed

Slate produced at Yennadon. As such, there are none that can provide exact and viable alternatives in terms of stone type, quality, colour, strength and durability that exist.

6.6.3 There are just two other sources of a similar rustic stone available within a 30 mile radius of Yennadon, namely Mill Hill Quarry and Lantoom Quarry. Neither provide appropriate replacements with regard to stone type, quality, colour, strength and durability. These quarries are discussed further below.

6.6.4 There are other small slate stone quarries in Cornwall, Callywith, Trecarne and Tredinnick. Callywith and Trecarne do produce a cut dimension for building / facing stone, however, Tredinnick Quarry only produces an unprocessed product suitable for hedging stone. None of these three quarries are considered to be a viable production alternative source as their 'rustic' stone does not have a similar colouring to Yennadon, Mill Hill or Lantoom; and could not provide the required production capacity should Yennadon cease operation.

Mill Hill

6.6.5 Mill Hill Quarry does produce a comparable cut facing stone from an appearance point of view, however, it is not entirely the same stone. Production is sporadic and on a relatively small scale in comparison with Yennadon Quarry. As detailed in Appendix 6b, Mill Hill Quarry could not viably increase production to supply demand should Yennadon Quarry reduce or cease production; and is therefore not a viable alternative source.

Lantoom Quarry

6.6.6 Lantoom Quarry produces a stone that has some similarities in appearance but many differences in terms of strength and durability. Laboratory testing was carried out in order to provide an indication of the difference in the performance of Yennadon Stone with that of Lantoom Stone (as a possible alternative source), a number of samples from both quarries were sent to an independent UKAS accredited laboratory for the following comparative tests:

- Compressive Strength;
- Water Absorption; and
- Resistance to Salt Crysatllisation

6.6.7 The results are provided in Appendix 6b and demonstrate that Yennadon Stone is stronger, more durable and less prone to damage (flaking and delamination) due to weathering than stone quarried from Lantoom. There are also key differences in colour

and tone. Whilst natural faces from Yennadon predominantly ranges from mellow yellow to brown hues with some hints of bluish grey; natural facing from Lantoom tends to have more dark yellow to orange brown hues. It is also quite different as a cornering material, Lantoom Stone needs to be cut to work at right angles to produce a quoin. Unlike Yennadon Stone which produces natural quoins.

6.6.8 The main reason for these differences is that the two quarries fall within different underlying geological areas; Yennadon in the Tavy Formation and Lantoom in the Saltash Formation.

6.6.9 In addition to the differences identified, Lantoom Quarry also does not have the production capacity that Yennadon has (as indicated by Wills Accountants report appended to Appendix A6b). It is considered likely that Lantoom Quarry would be the main alternative source should Yennadon Quarry reduce capacity. Given that Lantoom Quarry has experienced delivery problems in the past and is considered unlikely to meet future demand in its present financial form, it is considered that sustainable alternative sources of rustic stone are scarce.

6.6.10 The net effect is that if Yennadon Quarry reduces capacity, then apart from the alternative stone at these two small-scale quarries, the only other sources of the same type of stone are to be found in North Wales and China, which would have a significant transport and carbon footprint cost. Delivery times for developers will also significantly increase, and could potentially cause significant delays in construction. As a result either costs of construction will increase or customers will seek alternative building styles, such as render or brick, adversely impacting on the policies for preserving local character in new design.

Sources of Local Hornfelsed Slate

6.6.11 The Hornfelsed Slate deposit that Yennadon Stone quarries lies almost predominantly within the boundary of Dartmoor National Park (detailed in Appendix 6b). Therefore, alternative sources of Rustic Stone from high grade Hornfelsed Slate are very limited outside the National Park and opening a new quarry within the National Park is not considered viable.

6.7 Assessment of Impacts

6.7.1 This assessment considered a number of social and economic factors affected by the proposal to expand the Yennadon Quarry site in order to extend the lifespan of

commercial operations. The aim of these considerations is to assess the likely impact of the proposal and determine whether the proposal should be viewed as acceptable. The following table summarises the assessment of the potential impacts, which are discussed in detail below.

Element	Geographical	Nature of Impact	Duration	Significance
Economy	Local	Beneficial	Long Term	Major
	Regional			Minor
Traffic	Local	Neutral	Long Term	Insignificant
Security	Local	Neutral	Long Term	Insignificant
Loss of Common Land	Local	Adverse	Long Term	Minor

Table 6/01: Assessment of Impacts

Economy:

6.7.2 The economic impacts of the proposal largely surround the consequences of the existing operation closing prematurely. Should the consent not be granted then it has been estimated that, at the current rate of extraction, it will become unviable to operate within the next 3 years. That is close to 10 years before the expiration of the existing planning consent.

6.7.3 The type of stone extracted from Yennadon Quarry is in high demand as it has a number of advantageous qualities for the building industry, which sets it apart from competing products. This need is partly created through existing planning policies adopted by Local Authorities requiring local stone to be used in new build projects. Alternative sources of this product are scarce, with only two quarries within a 30 miles radius able to provide a similar type of stone. These sources are already stretched; a situation which will exacerbate should Yennadon Quarry close. This will require customers to source from further afield, with quarries in North Wales and China being the only alternative. These alternative sources will clearly involve an increase in delivery times, transport costs and carbon footprint, which will lead to use of this type stone becoming both economically and environmentally unviable.

6.7.4 Whilst it is impossible at this stage to quantify the impact of the quarry closure on product prices, as it is in operation the impact on the local economy resulting from the loss of 27 jobs can be quantified. Given the limited opportunity in the locality for skilled quarrying jobs, on closure of the quarry the jobs will be lost from the economy. In using GVA figures (per person), this would result in a potential loss of £159,264 per year from rural

communities, and £250,000 from the region (based on 2012 employment figures). This increases to £827,075 if we apply the GVA per job across the region, which is arguable a more appropriate measure. As a result, it is considered that the loss of this quarry would have a substantial economic impact on the region.

6.7.5 Clearly the proposal would have a significantly **positive/beneficial** impact on the area in terms of the economy. On a **local** basis the significance of this positive impact is considered to be **major**; whilst on a **regional** basis the significance is considered to be **minor**.

Social impacts – Traffic:

6.7.6 Traffic movements will remain the same through the retained extraction rate; therefore the proposed expansion will have no greater impact on the wider area; i.e. the impact will be **neutral**.

Social impacts – Security:

6.7.7 The proposal will only have an impact on the area within the immediate vicinity of the quarry. Whilst, it is not proposed that the quarry face encroaches closer to principle footpaths over Yennadon Down, there remains the potential for members of public to walk to the boundaries of the site. The existing security measures will be expanded as part of the proposal, with fencing erected around any exposed faces. It is considered that the impact on security will be **neutral**.

Social impacts – Loss of Common Land:

6.7.8 The main social impact arises from the loss of common land itself, as the area of land open for access and grazing by commoners is lost. It has been established that the proposed extension will only result in a loss of approximately 1% of the common land. The Land Agent report (Appendix 3) indicates that a flailing/swiping programme on 14 acres (5.67ha) of gorse and bracken overgrowth to return it to grazing land would more than compensate for the loss of the land by the proposed extension. Therefore, it is considered that although the loss of Common Land is **adverse**, as the area that is affected is small (less than 1%) the overall significance is **minor**.

6.7.9 In light of the above, it is considered the positive economic benefits, represented by the proposal to extend the quarry, far outweigh the social impacts. This has particular relevance as it is possible to mitigate against a number of the negative aspects of the application, as detailed below.

6.8 Mitigation and Residual Effects

6.8.1 The following mitigation measures are suggested for the social impacts identified:

6.8.2 Traffic: It is proposed that the existing traffic management arrangements will continue to be operated as existing. Details of these are provided in Chapter 13.

6.8.3 Security: It is proposed that the existing security measures are expanded with fencing erected around any exposed faces. No other mitigation measures are suggested.

6.8.4 Loss of Common Land: To mitigate the impact of the extension, it is proposed to undertake a flailing/swiping programme on 14 acres of gorse and bracken overgrowth to return it to grazing land would more than compensate for the loss of the land by the proposed extension. In addition, the proposals include the infilling of the depleted part of the quarry in a phased manner concurrently with the on-going excavation (the phased restoration plan is provided in Appendix A4). The proposed landscaping includes seeding and planting of native species (as detailed in Appendix A14) and has been designed to reduce visual impacts from surrounding viewpoints (Appendix A15). The restoration will create habitat for local species and will be accessed by National Park visitors.

Residual Effects

6.8.5 The implementation of the mitigation measures described above will ensure that there will be no residual effects of the development upon social impacts. It is anticipated therefore that there will be temporary minor impacts with regard to the loss of common land during the operation of the quarry extension. These impacts would cease upon reinstatement of the site to moorland. No permanent residual effects are anticipated.

6.9 Conclusions

6.9.1 Whilst the quarry remains viable and stays open for business, the availability of Yennadon stone means that the tradition of using high quality and locally appropriate local stone in new buildings and in the conservation and restoration of historic structures can be maintained into the future. It also means that an important aspect of life on Dartmoor can continue.

6.9.2 It is important to note that current levels of supply from the quarry underpin the viability of the operation. A key role of Yennadon is making stone available for use on Dartmoor in areas where it has been used historically and is an integral part of the local scene.

However, if the quarry only supplied stone to projects in the National Park then it would be unviable and cease to operate. Making stone available for building projects further afield directly affects the ability of the quarry to make local stone available – this has been the case historically.

6.9.3 Yennadon Stone is an important historic building material on parts of Dartmoor and the moorland fringe. Moreover, the quarry plays an important role in making appropriate building stone available for building and conservation projects in these areas. There is a widespread requirement for the stone which is critical to maintaining quality and local distinctiveness in the local built environment and furthermore, elsewhere in Devon and Cornwall. This is acknowledged in the existing (1991) planning conditions (condition b), which states: "*A minimum of 75% of the total tonnage of stone leaving the quarry each year shall be building and walling stone* ***to ensure that the output from the quarry contributes to the achievement of conservation objectives in the area***".

6.9.4 Closure of the quarry would not only mean that the cultural legacy it represents would be lost (over 150 years of quarrying on the moor) but that the important resource it supplies would no longer be available for use in local building projects of different types and scales. As has been identified in this report there are not any viable alternative sources of stone available that are of a similar appearance, strength and durability and are from quarries that have equivalent production capabilities.

6.9.5 There is an overriding strategic imperative for Yennadon quarry to continue to be operational as the only remaining supplier of an important local stone resource for parts of Dartmoor and the moorland fringe. This is in itself in the public interest.

6.9.6 Whilst the reasons for refusal in relation to the 2014 planning application point to there being no overriding need nor exceptional circumstances to justify the proposed extension to the quarry and that as such the proposal is contrary to the NPPF (paragraphs 115 & 116) and policies COR22 and M4 of the DNPA Development Plan, the Clifton Emery Design report clearly identifies the importance of maintaining the supply of Yennadon Stone in order to ensure that it can be used in local building projects in Dartmoor, the moorland fringe and further afield – there are no viable alternatives.

6.9.7 Yennadon Quarry has historically played and continues to play an important role in supplying stone for building and conservation projects in Dartmoor and the moorland fringe – as well as further afield throughout different parts of Devon and Cornwall.

6.9.8 Notwithstanding the benefits of maintaining the viability of the quarry from a building design and conservation perspective, there are many wider socio-economic benefits that are associated with the continued operation of the quarry – not least of which would be the continued operation of an important part of Dartmoor's cultural heritage.

6.9.9 It is considered that should the proposed extension be refused planning permission then this would affect the viability of the quarry and consequently would significantly reduce the availability of Yennadon Stone to the local building industry.

6.9.10 The most pertinent key points in support of the proposed extension are:

- Yennadon is an historic quarry in the Dartmoor National Park and has existed for approximately 150 years. It is part of the living cultural heritage of Dartmoor.
- Yennadon stone and similar slate stone have been used historically within areas of the National Park and the moorland fringe and this can be evidenced in buildings, walls and other structures in many Dartmoor settlements (including for example; Yelverton, Meavy, Horrabridge, Dousland, Walkhampton, Tavistock, Lydford, Mary Tavy, and Whitchurch).
- The quarry continues to supply high quality slate stone used in the repair, restoration and construction of buildings in Dartmoor and the moorland fringe.
- There are no viable alternatives sources of stone of the same colour, shape and size, quality and type to that supplied from Yennadon Quarry.
- The quarry currently employs 27 people. Their jobs will be lost if the quarry closes. There will also be negative socio economic impact upon companies that do business with the quarry.
- Whilst areas of the 'high moor' are mostly associated with the use of granite in the construction of buildings and other structures, the 'moorland fringe' has a legacy of utilising metamorphic stone that is more consistent with the geology of these areas.
- The planning permission sought is for a temporary period of operation ending in 2025 and includes a plan for the restoration of the landscape.
- The proposed extension to Yennadon Quarry can be achieved without adverse environmental impacts as demonstrated by the Environmental Statement that accompanies the planning application.
- Planning policy for the Dartmoor National Park encourages the use of appropriate local stone in the construction of new buildings and structures in order to maintain the distinctive local character of the moor.

- Design guidance in the adopted Dartmoor National Park Design Guide 2011 and related Conservation Area Appraisals identifies the importance of using local metamorphic stone in construction projects in 'moorland fringe' areas.
- The SHLAA for the DNPA area identifies nearly half of its sites that are available for housing in areas that have an underlying geology that is slatey and therefore generally appropriate for use of Yennadon stone.
- National and regional planning policy stresses the importance of local distinctiveness in the design and construction of new development.
- Building stone from Yennadon Quarry has been used historically in projects in and adjacent to the National Park.
- Building stone from the quarry is of an appropriate quality to ensure it meets the standards required by the Building Regulations and other industry quality controls requirements. It has strong and durable characteristics when compared with many other slate stones.
- There are many thousands of new homes and associated development and infrastructure planned to be built in neighbouring local authorities (allocated in local plans or emerging plans for West Devon, South Hams, Teignbridge, Plymouth and Cornwall) over the next 10 years or more. Many of the sites/ areas are in areas where Yennadon stone would be an eminently appropriate high quality natural stone facing material.

7.0 ARCHAEOLOGY

7.1 Introduction

7.1.1 This archaeological assessment has been undertaken to determine the potential archaeological impact of the proposed extension to Yennadon Quarry, Meavy (NGR SX 5430 6885) and suggest appropriate mitigation in response.

7.1.2 This updated archaeology chapter also gives consideration to the DNPA's concerns and recommendations in respect of the previous application, namely:

- A scheme to protect the track of the Plymouth and Dartmoor Tramway from plant movements during creation of the bund; and
- The inclusion of a watching brief condition to mitigate against the risk of a possible field system or other possible unrecorded features being present within the proposed extension area, to include a scheme to record any features encountered.

7.2 Methodology

7.2.1 The data for the archaeology assessment of existing conditions was conducted by Exeter Archaeology. Their Archaeological Assessment report (Report No. 11.42) is provided in Appendix A7.

7.2.2 The assessment comprised a desk-based study of the proposed extension area and surrounding land, and a site inspection. The desk-based study included land within 1km of the site in order to understand the wider archaeological and historical context of the site.

7.2.3 The following sources of information were consulted during the assessment:

- Dartmoor National Park Authority (DNPA) Historic Environment Record (HER);
- Devon Record Office (cartographic and documentary sources);
- Westcountry Studies Library (cartographic and secondary sources);
- English Heritage listed buildings website;
- English Heritage Scheduled Monuments website;
- Exeter Archaeology archives and previous reports; and
- Borehole logs produced by John Grimes Partnership Ltd.

7.2.4 The assessment has been undertaken with regard to relevant national and local legislation and policy, and professional good practice guidance.

7.2.5 Geophysical survey of the site was considered as part of the assessment, but the site visit demonstrated that the height and density of vegetation, with a number of areas colonised with gorse, and numerous gorse stumps, would not allow adequate mobility.

7.3 Site Description

7.3.1 The proposed extension area is sited immediately to the north of the existing quarry, the boundary of which is delineated by a wooden post and wire fence. The land slopes down moderately from east to west and is covered by grass with patches of tall gorse (1-2m in height) and stumps of gorse, across most of the site. A number of former trackways are evident as hollow linear features, including wheel ruts, in the area to the north of the existing quarry, both within and outside the proposed extension area. It is possible that some of these are of relatively recent origin.

7.3.2 Borehole logs - Examination of borehole logs from boreholes sunk in each of the four corners of the proposed extension area indicate the following general layer sequence: a 0.2m–0.5m layer of clayey slate gravel (topsoil), over a 2.3–3m layer of clayey gravel overburden, over slate. There is no indication within the borehole logs of the presence of peat in this area, and nothing to suggest that the boreholes have penetrated any archaeological features or deposits.

7.4 Statutory and Other Designations

7.4.1 No archaeological statutory designations have been identified for the site itself.

7.4.2 A late medieval wayside cross is located at a crossroads some 550m to the north-east of the site. The cross is a Scheduled Monument and is also Listed Grade II. There are no other Scheduled Monuments within more than 1km of the site. To the east of Yennadon Down, Burrator Lodge at SX 55139 68461 is a Listed Grade II building.

7.4.3 The site is not in a Conservation Area. The Conservation Area of Meavy village lies some 1.4km to the south of the site. The historic core of Walkhampton, c. 1km to the north-west, was being considered for designation as a Conservation Area in 2009.

7.5 Archaeological and Historical Background

7.5.1 Prehistoric - The site lies on Yennadon Down on the western edge of Dartmoor. Dartmoor preserves a considerable number of archaeological features associated with settlement and use of the moor in prehistory (and later). In the upland areas to the north, east and south of Burrator Reservoir, there are extensive remains including Bronze Age fields

systems, hut circles, enclosures, cairns (burial mounds) and standing stones. Many of the features are protected as Scheduled Monuments. On Yennadon Down itself (outside of the extension area), part of a reave (Bronze Age field boundary), the site of a cairn, and a possible prehistoric field system have been identified.

7.5.2 Medieval and post-medieval - Yennadon Down, which comprises common land that forms part of Meavy Common, is situated on the northern edge of the historic parish of Meavy, just south of the parish boundary with Walkhampton. The name Yennadon is first recorded as Yhanedouna in a 13th-century deed and Yanedonecrosse is referred to in 1291. The name derives from 'Eana's hill.' It is not known if this early reference is associated with a settlement, but the house called Yennadon (now Yennadon House), as depicted on the OS 1885 map, was built only in the late 19th century, apparently on a previously undeveloped site.

7.5.3 The place name of Meavy is documented, as Maewi, in 1031; the settlement taking its name from the name of the river (Mewy, later Meavy). To the west of the down, Sparkatown is referred to in 1589 and Lake in 1291. The name Dousland is associated with Walkhampton parish to the north, where it is documented in a late 13th-century deed. The present village of Dousland is of early 20th-century origin although Manor Farm is earlier.

7.5.4 The earliest map showing the area in some detail is the OS surveyors' drawing of 1784, which marks 'Yannaton Down' and depicts the surrounding fields. The lines of Devonport Leat and Plymouth Leat are shown clearly on the southern edge of the down. On the Tithe Map the area is marked as 'Yennadon alias Great Yennadon', owned by Sir Ralph Lopes, Baronet, and occupied by 'Sundry tenants' presumably referring to tenants with grazing rights. The Plymouth and Dartmoor Railway is also depicted, as are workings on the site of Yennadon Mine. The two fields at the north-east corner of the Down appear to have been enclosed from the Down and the 'newtake' names recorded in the Tithe Apportionment confirm this. The fields immediately west of the Down have straight boundaries and may also represent relatively late enclosure.

7.5.5 The OS maps of 1885 and 1888 show Yennadon Quarry, although it is not named as such. To the south, Yennadon Mine is marked as disused and the house called Yennadon has been built on part of the site. A further quarry is shown to the south; footpaths and a track across the Down are also depicted. There is a reference in 1755/6 to stone from

Yennadon for Plymouth leat. The whereabouts of this quarry is not known, but it may refer to a granite quarry, rather than slate.

7.5.6 In the late 19th century Dartmoor was being considered as a site for military training manoeuvres. In 1873 over 12,000 troops and 2,000 horses came by rail to Exeter and marched across the moor to Yennadon, Ringmoor and Roborough Downs. The exercises were, however, curtailed as a result of wet and boggy conditions due to bad weather. No records of features associated with this activity have been identified.

7.5.7 The village of Dousland appears to have developed in the early 20th century around the crossroads at the junction of Burrator Road with the B3212 (in Walkhampton parish). The OS surveyors' drawing of 1784 depicts only a single property to the south-east of this junction. By 1907 there were buildings at all four corners of the junction and extending to the west, and the place is marked as 'Dousland'. By 1954 the settlement had extended south into Meavy parish, mainly as a ribbon development along the west side of the railway. It is not known whether the earliest property, shown on the 1784 map, is associated with the Dousland documented in 1291.

7.5.8 Dousland Reservoir is depicted on the OS map of 1954, but is not shown on the OS 1:10560 map of 1907. The reservoir was apparently established soon after the installation of a water pipeline from Roborough to Dousland in 1907-8.

7.6 Baseline Conditions

7.6.1 Three sites (site 1 - Yennadon Quarry; 2 - Dartmoor Tramway; and 3 - Field system) have been identified within or significantly close to the proposed extension area. Sites identified within the wider study area are detailed in Appendix A7.

7.6.2 <u>Site 1: Yennadon Quarry SX 5429 6875 (HER No. 28259)</u>

Yennadon Quarry is recorded on the HER, although no detail is given. No reference to the quarry could be found in late 19th- and early 20th-century directories. The quarry is not depicted on the Tithe Map (1840) but is shown on the OS map of 1885, so was presumably established at some time between these two dates. The OS 1885 map depicts a siding of the Plymouth and Dartmoor Tramway running into the quarry.

7.6.3 By 1905 the quarry had expanded to the east, and west, the latter area apparently extended beyond the tramway, which had gone out of use (shown as 'old tramway'). There appears to have been further expansion to the north by 1953, by which time it is

marked 'Old Quarry'; it is also marked as disused on the OS 1:10560 map of 1980. Despite being marked as disused the quarry had, however, apparently been re-opened in the 1950s by the Trembath family who worked it for many years. Following a short period of closure it was re-opened, under different management, in 2005. The quarry produces a 'hornfelsed slate' dimension stone for building purposes.

7.6.4 Site 2 - Tramway SX 5425 6887 (HER No. 22561 & 2353)

The horse-drawn Plymouth and Dartmoor Railway, which ran from Sutton Harbour to Princetown, opened in 1823. Stone from various quarries would have been brought down the line and coal, lime, sea sand and building materials were taken up. The tramway was never profitable and in 1880 the Dartmoor section was reconstructed to form the Princetown-Yelverton railway (HER 2353). The tramway is depicted on the Tithe Map and early OS maps. On Yennadon Down the route appears to be preserved as the north-south trackway that passes to the west of Yennadon Quarry. A siding from the tramway ran into Yennadon Quarry, as depicted on the OS 1885 map.

7.6.5 In 1999 it was reported that there were granite setts of the former railway in the trackway to the quarry. During the site visit a section of the railway was seen in the trackway to the west of the quarry. This consisted of 11 setts over an area of c. 12m (with one further sett isolated to the north), located some 50m north of the quarry entrance at SX 54249 68798. This section relates to the main railway track rather than the siding, the latter of which was sited in the south part of the quarry, including beneath the quarry entrance. It is not known if anything of the siding survives.

7.6.6 The track of the railway was 4 feet six inches gauge (c. 1.37m), with cast iron rails fixed onto granite blocks, which acted as sleepers. Iron rails were not used, however, for the sidings, which instead consisted of heavy granite blocks, about 4 feet by 1 foot (1.22m by 0.35m), with inner edges specially cut to take the wheels.

7.6.7 Site 3 - Field system SX 545 686

On modern aerial photographs, elongated linear features of varying widths, on a roughly east-west alignment (slightly west-north-west to east-south-east), are visible over a wide area of Yennadon Down. Areas include that immediately to the south-east, east, and north-east of Yennadon Quarry (although not noted within the subject site/proposed extension area). These features appear to represent former medieval fields (some of which have a characteristic curving boundary) and/or perhaps post-medieval fields. It is not known if they represent a continuation of the field system identified under HER No.

20588 (see site 11 in Appendix A7); although these were believed to be of possible prehistoric origin. The features were not detectable in the area during the site visit.

Summary of Other Sites (see Appendix A7 for details)

7.6.8 The site of a cairn (site 4) and a reave (site 5) of prehistoric origin, as well as a road (site 6) of possible Saxon origin lie to the north of the subject site.

7.6.9 A possible prehistoric field system (and possible cairn/hut circles) (site 11) lies to the east.

7.6.10 The names of Yennadon and Meavy, and a number of the surrounding farms, are documented in the medieval and post-medieval periods and Yennadon Down presumably represents a remnant of early common land, although apparently enclosed and cultivated at some time (site 3). The parish boundary (site 10) is likely to be of medieval or earlier origin and there are two medieval wayside crosses in the vicinity (site 7 and 28).

7.6.11 Industrial activity in the area includes mining, which was taking place on Yennadon Down by the early 19th century (site 19, 16, 17, 20) and tin working (site 13). Many quarries are depicted on the later 19th-century maps, including Yennadon Quarry (1, 8, 17, 25), and the Dartmoor Tramway was built by 1823. Remnants of the tramway survive in the trackway to the west of Yennadon Quarry, and possibly elsewhere along its route.

7.6.12 The village of Dousland is a fairly recent settlement (20th century) although Manor Farm (site 27) is earlier. Yennadon Down was utilised during WWII by an anti-aircraft battery; a searchlight is also recorded (sites 15 and 18).

7.7 Assessment of Impacts

7.7.1 Three sites (sites 1, 2 and 3) have been identified within or significantly close to the proposed extension area. Sites identified within the wider study area, however, give an indication of other types of site that may also exist as buried features within the proposed extension area, but are not visible on the surface.

7.7.2 It should be noted that in the assessment of the archaeological significance of the impact on the sites, an archaeological resource is finite and cannot be replaced or re-located. Any impact is therefore adverse and permanent.

7.7.3 The following table summarises the assessment of the potential impacts.

Element	Geographical	Nature of Impact	Duration	Significance
Site 1 Yennadon Quarry	Local	Adverse	Permanent	Minor
Site 2 Dartmoor Tramway	Regional	Adverse	Permanent	Minor / Moderate
Site 3 Field system	Local / Regional	Adverse	Permanent	Minor / Moderate
Potential unidentified sites	Unknown	Adverse	Permanent	Unknown

Table 7/01: Assessment of Impacts (without mitigation measures)

7.7.4 Site 1 - Yennadon Quarry - is of local importance and the significance of the impact is **minor**. With the exception of the main tramway and siding, no features or structures of archaeological significance have been identified within the present quarry. The 19th-century quarry forms the southern part of the modern quarry, away from the area of proposed expansion.

7.7.5 Site 2 - Dartmoor Tramway - is of regional importance. Disturbance of this feature should be avoided. The significance of any impact could be minor/moderate depending on the degree of disturbance/damage. Historic mapping suggests that the tramway siding lies beneath the present quarry entrance and within the southern part of the quarry. It is not known if any part of the siding survives above or below ground within the quarry.

7.7.6 The tramway passes immediately west of the present quarry and proposed extension, and its route appears, at least in part, to be represented by the current north-south trackway, which is utilised by vehicles. A number of granite setts and fragments of rail are visible in the trackway to the west of the quarry, and it is possible that these, and other components, continue below the present ground surface in this area and elsewhere along its route. The tramway is an important feature in the landscape and surviving elements should be preserved.

7.7.7 The significance of the impact is considered to be **moderate** to **minor** and would depend on whether the access road and trackway is significantly altered / disturbed and if any other tramway components are present beneath the track. It should be noted that there are no proposed alterations to these areas.

7.7.8 Site 3 - Field system - is of local or regional importance depending on the date of origin. It should be noted that the field system, while a recognised heritage asset, is not a

'designated' heritage asset (such as a Scheduled Monument). It is not known whether any of the field system extends into the area of the proposed extension. The significance of the impact, *if* features are present within the proposed extension area, is **minor** to **moderate** dependant on the extent of survival of any features.

7.7.9 Potential unidentified sites - are by definition of unknown significance, both in their archaeological value and the significance of any impact upon them. Features of Prehistoric date, such as the cairn and reave identified in the wider study area (sites 4 and 5), would be of regional or perhaps national archaeological significance (depending on the type of feature) if existing within the proposed extension area and the significance of the impact would be major.

7.8 Mitigation and Residual Effects

7.8.1 The following mitigation measures are suggested:

7.8.2 Site 1 - Yennadon Quarry - With the exception of the site of the tramway and siding (see below) no features of archaeological or historical interest have been identified within the quarry itself. No mitigation measures are therefore suggested.

7.8.3 Site 2 - Dartmoor Tramway – The trackway to the west of the quarry, which incorporates, or represents, the former tramway. The section to the north – northwest of the quarry entrance, where sections of the original tramway are evident, will not be used to access the proposed extension area in order to avoid further damage and erosion of the tramway and associated features (exposed granite setts). Access to the proposed extension area will be via ramps constructed within the existing quarry (see Appendix A4), so that there will be no requirement for plant to use the trackway either during construction of the bund or during operation of the quarry extension. As the existing quarry entrance will continue to be used, no mitigation measures are suggested for the trackway to the northwest, with the exception that it should not be used by heavy machinery. The remainder of the trackway, which is used as the access track, should remain undisturbed as it is not known if remains of the tramway are present beneath the ground.

7.8.4 The site of the tramway siding lies within the southern part of the quarry. No disturbance to this area is proposed as part of the works. No mitigation is therefore suggested.

7.8.5 Site 3 - Field System (possibly medieval and/or post-medieval) - No above-ground features associated with the field system were identified within the area of the proposed extension. The impact on potential surviving remains of any field system, if present in the extension area, could be mitigated by geophysical survey following the clearance of vegetation. Depending on the results, further work might include:

- excavation of evaluation trenches to target any identified anomalies;
- an appropriate level of area excavation;
- undertaking an archaeological watching brief during removal of topsoil.

7.8.6 Potential unidentified sites - The impact on any potential unidentified sites would be mitigated by the geophysical survey and archaeological watching brief proposed as part of the mitigation works described above (in paragraph 7.8.5).

Residual Effects

7.8.7 Should no archaeological features be identified following geophysics and the archaeological watching brief, no permanent residual effects are anticipated.

7.9 Summary

7.9.1 The concerns and recommendations in respect of the previous application, namely:

- Protection of the track of the Plymouth and Dartmoor Tramway: During the creation of the new bund, a new haulage ramp will be created within the existing quarry so that the extension area will only be accessed from within the quarry (i.e. no plant will use the old tramway north of the quarry entrance).

- Mitigation Measures: A *Written Scheme of Investigation* will be provided to the DNPA's archaeological officer by the archaeological contractor for approval prior to any stripping of soils. The scheme will include details of the geophysical survey strategy, how anomalies will be further investigation, a watching brief plan and how any features (if encountered) will be recorded.

8.0 PROCESS POLLUTION

8.1 Introduction

8.1.1 An assessment of the quarry processes at Yennadon Quarry and associated process pollution has been prepared by John Grimes Partnership Ltd. The Assessment of Process Pollution report is provided in full in Appendix A8.

8.2 Assessment Aims and Methodology

8.2.1 Dartmoor National Park Authority (DNPA) set out in their Scoping Opinion that the Process Pollution Statement should:

- Assess the adequacy of the existing quarry arrangements [to control pollution]; and
- Assess the potential for the proposal to result in an increase in dust generation.

8.2.2 The data for the assessment of existing conditions was obtained from a review of current quarrying activity at Yennadon Quarry (described in Appendix A8), which over the past seven years has produced on average approximately 5,500 tonnes per annum. A maximum potential future production level of 10,000 tonnes per annum has been proposed, a reduction from 14,000 tonnes per annum stipulated in the current planning conditions. The report provides an assessment of the quarry process, with consideration given to controlling air emissions and other potential sources of pollution associated with the quarry process. This chapter provides an assessment of any potential impacts associated with the development of the proposed quarry extension based on a maximum potential output of 10,000 tonnes per annum. Mitigation measures have been considered based on Best Available Techniques (BAT) for preventing or reducing air emissions.

8.3 Baseline Conditions

8.3.1 Yennadon Stone operates a "Hard Rock" quarry that produces dimension stone for natural stone building material and walling purposes. The quarrying operation maximises the material suitable for sale, with currently between 40% and 50% of the stone excavated being non-saleable waste. Small quantities of waste stone are sold; however, most of the waste stone is stockpiled on site and will be used for landscaping during phased site restoration.

8.3.2 Yennadon Quarry uses low technology extraction and processing methods. It does not employ 'prescribed[1]' quarry processes that necessitate Local Air Pollution Control (LAPC) or Local Air Pollution Prevention and Control (LAPPC) permits.

8.3.3 The quarry process at Yennadon Quarry is described in full in Appendix A8. The whole process is contained within the quarry confines. Yennadon Quarry can be divided into three working areas:

1. Main Quarry / Extraction Area
2. Processing Area / Saw Shed
3. Office Compound (including welfare unit, workshop and storage container).

8.3.4 Within the main quarry area, stone is removed by tracked excavators with either ripper or pecker attachments, supported by similar machines with bucket attachments. For efficient operation, two working faces are advanced at the same time. Stone is pre-sorted by hand at the face before being loaded by hand into an excavator bucket which transfers the stone into a small dumper truck. The stone is then transported either to a stockpile or directly to the processing area.

8.3.5 Within the processing area, each slate block is cut using circular saws under constant water spray to reduce dust. There are five cutting tables in the saw shed, with small conveyor belts to reduce manual handling. Cut stone is stockpiled onto pallets or in dumpy bags; whereas loose walling stone is placed into dumpy bags or into 1.5t tipping skips. The stone is taken by forklift from the processing area to the site office compound where it is loaded onto the non-articulated HGV and transported off-site.

8.3.6 The surfaces in the office compound area are covered in compacted crushed rock, which can be muddy following wet weather. There is also a visitor and employee car park area adjacent to the quarry entrance, which also comprises compacted stone. Yennadon Stone Ltd currently employs 27 full time operatives at Yennadon Quarry including face workers, saw operators and excavator drivers. The number of operatives and plant are not expected to increase to achieve the proposed new maximum output of 10,000 tonnes per annum.

[1] Prescribed quarry processes include drilling and blasting techniques, mechanical crushing and screening plant and transportation of stone using conveyor belts and chutes.

8.4 Assessment of Impacts from Process Pollution

8.4.1 A site conceptual model was produced (detailed in Appendix A8) that describes the potential pollutants associated with the quarry process at Yennadon Quarry, including the development of the proposed quarry extension. The following table provides a summary of the significant potential pollutants identified in the site conceptual model and the significant linkages to sensitive receptors.

Source	Pathway	Critical Receptor	Significant Pollutant Linkage
Nuisance Dust	Airborne	Employees	*No significant linkage* identified: Employees to wear suitable PPE where required.
		Local Residents	***Potential linkage*** - Assessed in Chapter 9.
Exhaust Fumes	Airborne	Employees	*Minor linkage* identified: Effective preventative maintenance is currently conducted on all plant and HGV to control emissions. Employees to wear appropriate PPE where required.
		Local Residents	*No significant linkage* identified: All plant (excluding HGV) contained within quarry; HGV undergoes effective preventative maintenance to control emissions.
		Environment	*No significant linkage* identified: No significant impact is expected on local or regional air quality.
Noise	Airborne	Employees	*No significant linkage* identified: Employees to wear suitable PPE where required.
		Local Residents	***Potential linkage*** - Assessed in Chapter 12.
Vibration	Through the ground	Local Residents	*No significant linkage* identified: Pecking equipment used within quarry area is unlikely to result in significant vibration to nearest receptors.
Light	Radiation	Local Residents	*No significant linkage* identified: All lighting is contained within quarry (i.e. no direct line of site to nearest receptors) - No floodlights are in operation within the extraction area. Lighting is only used in the processing area and offices during winter months within working hours and only when required.
Litter	Wind-blown	Environment	*No significant linkage* identified: Good housekeeping ensures all litter is binned and skipped. All paper and general waste is kept within the canteen / site office area. This policy keeps wind-blown litter to a minimum.
Hydrocarbon Contamination	Infiltration into ground	Environment	*Low risk of significant linkage* identified: Fuel / oils are stored in appropriate bunded areas and are frequently monitored. Appropriate spill kits are kept adjacent to the tank and are taken with the portable fuel cans during re-fuelling. All plant are maintained and controls implemented during maintenance.

Table 8/01: Summary of Significant Potential Pollutants Identified in Site Conceptual Model

8.4.2 Summary of Potential Impacts: Dust and noise are assessed as having the most significant potential impacts and are addressed separately in Chapters 9 and 12 respectively. The significance of the remaining potential impacts are summarised below.

Element	Geographical	Nature of Impact	Duration	Significance
Exhaust Fumes	Local	Adverse	Long-term	Minor
	Regional	Not significant	Long-term	Insignificant
Vibration	Local	Not significant	Long term	Insignificant
Light	Local	Not significant	Long-term	Insignificant
Litter	Local	Not significant	Long-term	Insignificant
Hydrocarbon Contamination	Local	Adverse	Long-term	Minor

Table 8/02: Assessment of Impacts

8.5 Mitigation Strategies

8.5.1 Control measures to address the potential impacts of nuisance dust and noise are detailed in Chapters 9 and 12 respectively.

8.5.2 Yennadon Quarry must ensure that its employees comply with its Environmental Management Strategy (EMS). It is recommended that the EMS continues to be adhered to and is regularly reviewed to ensure environmental impacts are managed. Relevant control measures within the EMS relevant to the potential impacts identified in Table 8/02 include:

- Maintain proper management, supervision and training of quarry operatives, with particular emphasis given to control procedures during start-up, shut down and abnormal conditions;
- Ensure staff at all levels have the necessary training and instruction in their duties and the proper use of equipment;
- Conduct effective preventative maintenance on all plant and equipment concerned with the control of emissions;
- Maintain a high standard of housekeeping; and
- Any spillages should be cleaned up promptly using appropriate spill kits and handling methods.

8.5.3 In addition to the above, it is recommended that the location of the site offices and processing areas are kept as existing following development of the proposed quarry.

8.6 Residual Effects

8.6.1 The implementation of the above mitigation measures will provide sufficient mitigation of the potential impacts of process pollution.

8.6.2 It is anticipated that there will be only temporary insignificant impacts on sensitive receptors from the quarry process during the operation of the quarry extension. These impacts would cease upon reinstatement of the site to moorland. No permanent residual effects are anticipated.

9.0 EMISSIONS

9.1 Introduction

9.1.1 An assessment of emissions from Yennadon Quarry has been prepared by John Grimes Partnership Ltd on behalf of Yennadon Stone Ltd. The Emissions report is provided in full in Appendix A9. The Process Pollution Report (Chapter 8) identified dust generated by the quarry as being potentially a source of nuisance dust to local residents (medium sensitivity). No other significant sources of air-borne emissions were identified.

9.1.2 Yennadon Quarry is currently active. It is proposed to extend the working area of the quarry to the north of the existing working area. In production terms, the extraction, processing and transport processes that have the potential to generate emissions are to remain identical to the existing operation.

9.1.3 This dust assessment quantifies the level of dust across the environs as existing and considers the likely impact of the proposed extension to Yennadon Quarry. This report has been prepared with reference to relevant guidelines.

9.1.4 In the previous submission, the Environmental Health Officer (EHO) for West Devon Borough Council raised no objections to the application. With regard to dust, the EHO stated that unsubstantiated dust complaints had been received in the past and that should permission be granted that a dust management scheme should be established and should include the access road. In April 2015, Yennadon Quarry formalised their dust management arrangements into a Dust Management Plan, which is summarised within this Chapter.

9.2 Assessment Aims and Methodology

9.2.1 In line with the scoping requirements, the purpose of this Emissions Assessment is to:

- Consider the existing site arrangements in terms of emissions (nuisance dust has been identified as the potential significant source of emissions) and the current impact on the surrounding environs; and
- Assess the potential for the proposed quarry extension to result in an increase in emissions (nuisance dust).

9.2.2 The data for the assessment of existing conditions was obtained from a dust monitoring survey carried out by John Grimes Partnership Ltd. A site-specific monitoring scheme was designed utilising both directional and non-directional monitors. This enabled a semi-

quantitative measurement of depositional rates to be established. Dust levels were monitored at five locations around the quarry over a four week period from 10th August 2011 until 7th September 2011. Meteorological data was obtained for this period from Plymouth University and Plymouth Airport.

9.2.3 The GoodQuarry Guide describes dust as airborne solid matter originating from either surface mineral workings or vehicles, which usually becomes airborne by some external force such as wind or mechanical disturbance, e.g. vehicle wheels. BS 6069 (Part 2) defines dust as solid particulate matter ranging in size from 1-75µm in diameter. Above this size, particles are classified as grit. Particles between 1µm and 10µm in size are referred to as PM_{10}.

9.2.4 The Government's Minerals Policy Statement 23, 2005 (MPS2) gives some guidance for control purposes and states "Larger particles, typically greater than 30µm in size, fall out of the atmosphere quickly under gravity and settle within 100m of the source. Intermediate size particles (10 – 30µm) are likely to travel up to 200 – 500m. Smaller particles (less than 10µm; i.e. PM_{10}) which make up a small proportion of the dust emitted from mineral workings are only deposited slowly but may travel 1000m or more". MPS2 refers to the potential for the larger particle size dust generated from mineral activities to be a "nuisance". The visual perception of dust mainly relates to particles greater than 10µm in size. There are no nationally recognised standards for limiting dust having a particle size greater than 10µm. Therefore, the data from the dust monitoring survey was assessed using 'acceptable levels' guidance within the GoodQuarry Guide.

9.2.5 Guidance on acceptable limits for PM_{10}, which are designated a risk to health, is given in the UK National Air Quality Strategy. PM_{10} particles typically found in the atmosphere are composed of a wide range of materials arising from a variety of sources including combustion sources (such as road traffic); secondary particles (mainly sulphate and nitrate formed by chemical reactions in the atmosphere); and dust that can often be transported from far across Europe. This guidance sets objective levels for emissions to atmosphere for PM_{10} particulate matter as follows:

Particles (PM_{10}) (gravimetric)	50 µg m^{-3}, not to be exceeded more than 35 times a year	Daily mean
	40 µg m^{-3}	Annual mean

Table 9/01: Air Quality Objectives for PM_{10} Particulate Matter.

9.2 BASELINE CONDITIONS

9.2.1 The quarry process is described in detail in Appendix A8. Operational activities and features with the potential to create dust emissions are identified below:

i. Excavation / extraction of stone (pecking and ripping)
ii. On-site transfer of materials (loading/unloading and transportation)
iii. Material processing
iv. Roadways (on-site and compacted gravel access road)
v. Uncovered/Un-vegetated stockpiles / bunds
vi. Rock falls

Meteorological Data

9.2.2 Prevailing weather patterns within a particular area have a significant influence on the generation, transport, deposition and suppression of airborne dust. In order to assess how the local climate around Yennadon Quarry may influence the potential dust impact, wind speed and direction data has been obtained from the University of Plymouth and Plymouth Airport. Details of meteorological data are provided in Appendix A9.

9.2.3 The wind rose data for Plymouth covers a ten year period from January 1992 – December 2001 demonstrates that south-westerly winds are prevalent throughout this period. The monthly averages show wind speeds are significantly lower from May through until August. Typically wind speeds in the range from calm to gentle breeze (0 to 10 knots) occur for over six months per year. The data shows that wind speeds classed as moderate breeze (described as sufficient to raise dust and loose paper) or above occur for 47% of the time.

9.2.4 Regional rainfall data for Plymouth shows that the region is an area of the UK with comparatively high rainfall of around 2,000mm per annum. More specifically for Dartmoor there are approximately half the days in the year when the rainfall is 1mm or greater and reference to MPS2 shows this is above the amount needed to suppress wind-blown dust and emissions. Consequently, there should be a significant degree of dust suppression by surface wetting and removal of entrained dust from the atmosphere.

9.2.5 During the four week dust monitoring period, south-westerly winds were prevalent, with typical wind speeds recorded being in the light to a gentle breeze range (1 to 9 knots). Rainfall fell on 15 days out of the 28 days of the dust monitoring period, with more than 1mm of rainfall falling on 13 days. Levels of daily rainfall greater than 1mm acts to

suppress dust. Therefore the levels of rainfall during the four week dust monitoring programme would have had an impact on measured dust levels.

Local Topography

9.2.6 The local topography around Yennadon Quarry will have a significant impact on the emission and dispersal of site dust. The quarry is located on the western flank of Yennadon Down, which forms an elongate hill with contours orientated approximately north-south. The highest point on Yennadon Down is 301m AOD to the east of the quarry. The topography at the site slopes from around 269m AOD in the east to around 247m AOD in the west. Although the prevailing wind direction is from the south-west, the topography of Yennadon Down influences the low-level wind patterns, resulting in a predominantly southerly local wind pattern at the actual quarry. The site is also relatively sheltered from easterly winds by the topography.

9.2.7 Yennadon Down currently comprises open moorland. The Down is flanked on its northern boundary by Dousland Plantation and farmland. To its east is Yennadon Plantation, beyond which is Burrator Reservoir. Land to the southwest of Yennadon Down (the prevailing wind direction) is predominantly farmland. Although Bowdens Plantation lies directly south of Yennadon Down, there are no significant wooded areas upwind of the site that particularly influence local wind patterns. To the immediate west of Yennadon Down is a strip of fields used for grazing, beyond which is the village of Dousland, which lies at an elevation of approximately 200m AOD to 230m AOD. Dousland is the nearest residential community some 300m to the west. The closest house (Higher Yennadon) lies some 142m to the north-west of the existing quarry. The proposed extension will bring the north edge of the quarry to within 90m of Higher Yennadon.

Dust Monitoring

9.2.8 In order to establish existing baseline conditions at the site a dust monitoring programme was undertaken. Dust was monitored on a weekly basis for a total of four weeks from 10th August 2011 until 7th September 2011. Five monitoring points were installed, three of which were directional and two were depositional (non-directional). Details of the dust monitors, monitoring locations and monitoring results are provided in Appendix A9.

9.2.9 The gauges are designed to measure the tendency of an object to become dirty in a dusty atmosphere and collect the dust that is likely to impinge on objects on the earth's surface. Each of the three directional gauges was aligned to a compass point to

measure dust flux rates from a particular quadrant. The directional gauges give an indication of directionality of any significant dust source.

9.2.10 The dust monitoring results were evaluated against 'Acceptable Levels' guidance within the GoodQuarry Guide, which provides recommendations for 'acceptable levels' based upon the public response to dust depositional rates. These 'acceptable levels' indicate that typical background levels of dust in a rural location can vary from 0.01% Effective Area Coverage (EAC)/day to 0.5% depending on the season (i.e. farming activity such as ploughing, increases during the summer months). Dust levels typically become noticeable by the public at 0.2% EAC/day, with complaints generally arising at 0.5% EAC/day.

9.2.11 The dust monitoring also evaluated Absolute Area Coverage (AAC) over the seven-day period and assessed the measured AAC levels in accordance with the DustScan Ltd Significance Levels as follows:

Over 7-day test period		AAC – Significance Level				
		<80%	**80% - 95%**	**95%-99%**	**99%-100%**	**100% for 45°**
EAC Nuisance Potential	<2.5%	V. Low	V. Low	V. Low	Low	Medium
	2.5% - 5%	Low	Low	Low	Medium	High
	5% - 15%	Medium	Medium	Medium	High	High
	15% - 25%	High	High	High	High	V. High
	>25%	V. High	V. High	V. High	V. High	V. High

Table 9/02: Assessment Matrix for Potential Impact

9.2.12 A summary of the individual dust monitoring points and their results are provided below.

- **Monitoring Point DD1**: This was a non-directional control monitor located approximately 450m to the south of the site, with predominantly rural land upwind. This monitoring point was an off-site control. A maximum EAC/day value of 0.1% was measured. This level is considered as being the typical background rural level. The AAC levels over a 7-day monitoring period ranged from15.7% to 22.5%; and the EAC/7-day levels were 0.2% to 0.4%, which equates to very low impact.
- **Monitoring Point DS2**: This directional monitoring point was located on the western side of the site's access road to the south of the quarry. This road comprises compacted stone (gravel and sand sized aggregates with very low fines) and vehicular movements have the potential to generate "nuisance" dust (predominantly large sized particles). Measured levels of dust were very low (maximum of 0.2% EAC/day). The maximum AAC/7-day interval was 35.8% and the maximum EAC/7-day was 1.3%, which equates to very low impact. The dust rose diagrams indicate that the dust

does not appear to originate from a single source. The maximum measured EAC/day value would have to increase three-fold for the levels to be considered to cause a possible complaint and four-fold to be considered objectionable. Considering the dust originated from more than one source, the impact from dust generated along the access road, should the quarry operate at proposed full capacity, is considered to be low.

- **Monitoring Point DS3**: This directional monitoring point was installed within the Water Treatment Works 300m west of the quarry, at the eastern edge of the main residential area of Dousland. This monitoring point was an off-site control. The results indicate that there is no single source of dust. The average weekly EAC%/day values range from 0.0 to 0.1%. These levels are considered typical background level for a small town. The maximum AAC/7-day interval was 61.3% and the maximum EAC/7-day was 2.3%, which equates to very low impact. The highest levels of dust were generated from the south-west; west and north-west. The highest EAC%/day of 0.3% was measured at this location.
- **Monitoring Point DS4**: This directional monitoring point was installed 300m north of the quarry. The results indicate that there appears to be no single source of dust. The levels are very low, with a maximum EAC/day value of 0.2%, with the highest levels being generated from the north. The maximum AAC/7-day interval was 42.7% and the maximum EAC/7-day was 1.1%, which equates to very low impact. Again, the maximum measured EAC/day value would have to increase three-fold for the levels to be considered to cause a possible complaint and four-fold to be considered objectionable. Considering the monitoring indicated that the dust originated from more than one source, the impact from dust generated from the quarry, should it operate at proposed full capacity, is considered to be low.
- **Monitoring Point DD5**: DD5 was a non-directional control monitor located adjacent to the north western quarry edge. The monitoring point recorded a maximum EAC/day value of 0.1%. The maximum AAC/7-day interval was 25.2% and the maximum EAC/7-day was 0.6%, which equates to very low impact. The maximum measured EAC/day value would have to increase five-fold for the levels to be considered to cause a possible complaint and seven-fold to be considered objectionable. Given this monitoring point was located adjacent to the quarry, it is considered that the impact from dust generated from the actual quarry, should it operate at proposed full capacity, would be very low.

9.2.13 Although the highest recorded EAC/day value of 0.3% is regarded as being 'noticeable', it is below the 0.5% EAC/day level that typically gives rise to a 'possible complaint'. All of the results fall into the 'very low potential impact' category.

9.2.14 The directional dust gauges give no strong indication that dust from Yennadon Quarry predominates. Taking into account the prevailing wind direction and local topography, the residents north of the quarry are considered at most risk from nuisance dust from the quarry. However, the monitoring has shown deposited (nuisance) dust levels north of the quarry are at least three times below the guidance level for the onset of complaints. It is considered that should the quarry operate at the proposed full capacity of 10,000 tonnes per annum compared to the current average of approximately 5,500 tonnes per annum, the level of nuisance dust generated from the quarry are likely to be below the threshold that could give 'possible complaint'. Therefore, the risk of nuisance dust affecting the residents is considered to be low.

PM10 fraction

9.2.15 A preliminary assessment of the potential impacts of PM_{10} from Yennadon Quarry has been carried out in accordance with the framework given in Technical Guidance to the National Planning Policy Framework (2012) and shown in Figure 9/01.

9.2.16 With regard to residential properties and other dust sensitive receptors within 1km of the site; the surrounding area is considered to be predominantly low sensitivity (i.e. rural farm land and open moorland), with some medium sensitivity land-uses (residential areas). No high sensitivity land-uses are present within 1km. Of the residential areas, the village of Dousland is the nearest residential community, with the majority of dwellings located approximately 300m to the west beyond a strip of fields used for grazing. There are only five residential dwellings downwind of the quarry within 500m, the closest being Higher Yennadon, which lies some 142m to the north-west of the existing quarry. The proposed extension will bring the north edge of the quarry to within 90m of Higher Yennadon.

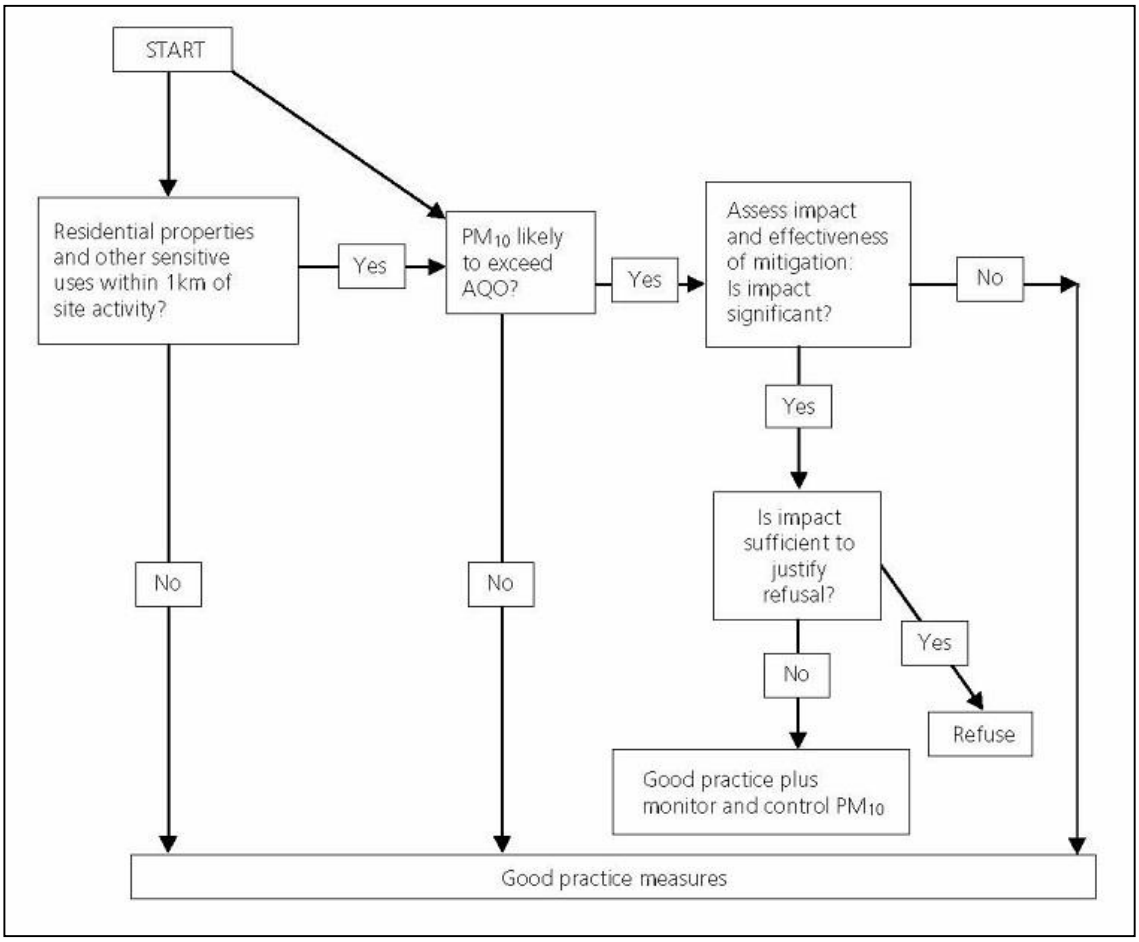


Figure 9/01: Site Assessment Flow Chart for Air Quality Objectives (AQO)

9.2.17 The background levels of PM_{10} in the area are indicated to be well below Air Quality Objectives (from data published on DEFRA and West Devon Borough Council websites). It is considered unlikely that PM_{10} particulates from Yennadon Quarry will result in Air Quality Objectives being exceeded as the dust monitoring programme has indicated that the overall dust levels are very low and are likely to remain low should production levels increase. In addition, the quarry processes (extraction of dimension stone) does not require LAPPC (Local Air Pollution Prevention and Control) permits as it does not employ crushing/screening/drilling/blasting, which are the main source of fine dust (PM_{10}) particulates.

9.2.18 It is considered that good practice measures (as discussed in Section 9.4) would ensure that dust emissions are controlled.

9.3 Assessment of Impacts

9.3.1 The extension of the quarry will not require the construction of any new structures (i.e. existing site offices and processing areas are to remain). As part of the planning proposal Yennadon Stone wish to reduce the maximum permitted amount of material removed from 14,000 tonnes per annum (t/a) down to 10,000 t/a; as well as reducing the permitted HGV trips from 35 in any week down to 30. Although there are no plans to increase current production levels, which currently average approximately 5,500 tonnes per annum, the assessment of impacts has taken into account the potential level of dust generated should production reach 10,000 tonnes per annum, The monitoring assessment has indicated dust levels would need to increase at least three-fold for the level of nuisance dust generated from the quarry and access road to give rise to a 'possible complaint'.

9.3.2 The operation methods at Yennadon Quarry that have the potential to generate nuisance dust will essentially remain unchanged during the working of the proposed extension. The only variations would be the requirement to remove / strip topsoil and overburden, the construction of a new bund; and a slight increase in the length of the internal haulage road from the quarry face to the material processing area. Therefore, the potential sources of dust during the operation of the proposed extension are as follows:

- Stripping of topsoil / overburden during the development stage of the proposed extension - There is the potential that the stripping of topsoil and overburden may result in the generation of wind-blown dust during dry weather. All stripping works should be conducted in accordance with good practice guidelines (MAFF 2000: Good practice guide for handling soils) to minimise dust generation.
- Pecking / ripping in the quarry extraction area – Extraction of stone using a pecker has the potential to produce insignificant amounts of wind-blown dust.
- Rock falls – Any major rock falls have the potential to generate isolated moderate to high levels of wind-blown dust for a very short duration. There is no increase in the risk of potential rock falls associated with the proposed extension providing current inspections/appraisals are continued.
- Un-vegetated stockpiles / bunds – The spoil produced from quarry waste is generally cobble-sized slate fragments (i.e. very little fines) and is considered unlikely to generate excessive airborne dust. Spoil within the quarry area should not give rise to visible dust emissions. However, the topsoil and overburden material, which will be used for restoration, contains more fine material and can be a potential source of dust prior to becoming vegetated. Guidance in MAFF 2000 (Good practice guide

for handling soils) should be followed to reduce wind whipping of particles and minimise dust generation.

- On-site transfer of materials (loading, unloading and transportation) – There is the potential for minor amounts of dust to be generated by materials handling on-site. The stone material excavated is generally cobble to boulder-sized pieces of slate, which are unlikely to generate excessive airborne dust. The quarry process utilises minimal mechanical handling. No material is dropped from excessive heights. There is not expected to be any significant increase in the level of on-site transfer of material as a result of the quarry extension.
- Roadways (including haulage roads) – Within the quarry extraction area, haulage roads have the potential to produce minor amounts of dust. The haulage roads comprise stone material predominantly of cobble to boulder-sized pieces of slate, which are unlikely to generate excessive airborne dust. At the deeper levels within the quarry, groundwater issues usually result in the ground and lower haulage roads being damp. The increased length of haulage roads within an extended quarry are not expected to result in any significant increase in dust production as they comprise predominantly coarse stone material. Within the processing area, the water used in the saw sheds result in the ground and access road to the front of the processing area being wet throughout the year, which prevents significant dust generation by vehicles. The compacted stone access track has the potential to produce visible dust emissions following vehicle movements during prolonged dry weather.
- Processing – All stone cutting is conducted under a water spray, which reduces dust generation. However, tailings removed from the processing area and placed on spoil heaps can be a source of dust once dried. Yennadon Stone currently covers the tailings with larger waste rock to mitigate the risk of wind-whipping. The current dust suppression methods are considered to be effective in mitigating dust generation in the processing area. There is not expected to be an increase in the amount of tailings produced as a result of the quarry extension.

Significance of Impacts

9.3.3 The significance of the assessed impacts has been evaluated as summarised below.

Element	Geographical	Nature	Duration	Significance
Impact of dust affecting Local Residents	Local	Adverse	Long-term	Insignificant

Table 9/03: Summary of the Assessment of Potential Impacts

9.3.4 The geographical impact of nuisance dust is considered to be local. The prevailing wind direction is from the south-west. However, the local topography (the quarry lies on the western flank of Yennadon Down) will affect the low-level winds, which will direct the winds to the north. Local residents most likely to be affected by potential dust would be located to the north of the quarry. Residents to the west of the quarry could potentially be affected by easterly winds directing nuisance dust to the west. It is considered that wind-whipped dust could potentially be generated from uncovered/un-vegetated spoil heaps/bunds and from the compacted stone access track.

9.3.5 The nature of the impact of nuisance dust if occurring at significant levels is considered to be adverse.

9.3.6 The duration of the effect is considered to be long-term (greater than five years), but would cease on closure of the quarry and site restoration.

9.3.7 The dust monitoring programme demonstrated that there were several local sources of dust, with the off-site control to the west of Dousland measuring the highest levels of dust from the southwest, west and northwest (i.e. not from Yennadon Quarry). Levels adjacent and downwind of the quarry were not significantly elevated above the control monitors and typical background levels. The baseline conditions at the site indicate that levels of dust currently generated at the site are within 'Acceptable Levels'. Although these current dust levels are considered insignificant; the stripping of topsoil/overburden and the construction of bunds (prior to them being vegetated) have the potential to generate wind-whipped dust. Also during prolonged dry weather, the access track has the potential to generate wind-whipped and traffic / livestock generated dust. It is considered that potential levels of nuisance dust are unlikely to exceed a significance level of low to medium (Table 9/02). Therefore, the significance of the effect of nuisance dust is considered to be minor.

9.4 Mitigation Measures

9.4.1 The control of dust emissions from surface mineral extraction in accordance with the recommendations of MPS2 is ideally by the implementation of an appropriate dust control management system. Yennadon Quarry has implemented a Dust Management Plan, which includes the following dust suppression arrangements:

- Using water sprays within the saw sheds (processing area) to prevent dust being generated.

- Speed restrictions are currently employed by Yennadon Stone staff to minimise wheel generated dust along the access track. Employees of Yennadon Stone should continue to adhere to the **5 mph** speed limit on the access track. This speed limit is instructed during inductions, is stated in their employee manual and posted on site notice boards.
- Tailings are regularly cleared up and placed on stockpiles, which are immediately covered with larger cobbles to prevent wind-whipping of dust.
- Grassing/planting of bunds and open areas to minimise erosion.
- Visually monitor the processes within the quarry to ensure that no excessive dust is being generated.
- Monitor the amount of visual dust being generated on the compacted stone access track. Reviews should be carried out as to amount of dust being generated. Repairs or re-surfacing of the track should be carried out using very low-fines aggregate.
- Topsoil stripping and storage should be carried out in accordance with good practice guidelines (MAFF 2000: Good practice guide for handling soils) to minimise dust generation. Wind speed and direction will be taken into account during such activities. Dust monitoring will be undertaken during stripping of overburden to ensure mitigation measures are effective. Water suppression techniques could also be utilised during prolonged dry periods for wetting tip/restoration work areas if required.
- Soil storage areas, soiled bunds and restored areas will be seeded and vegetated as soon as practicable. Guidance in MAFF 2000 (Good practice guide for handling soils) should be followed to reduce wind whipping of particles and minimise dust generation during bund construction. Trees, bushes and vegetation to be planted on bunds as appropriate to form wind breaks/dust screens.
- Positioning of stock piles to take advantage of shelter from the wind.
- Observation of weather forecasts and wind speed to decide on preventative/ mitigation measures.
- Dust control measures to form part of employees and contractors induction.

9.4.2 The Dust Management Plan includes an action plan, which includes the investigation and implementation of any corrective action required. Any incidents and complaints are recorded in a 'Dust Management Logbook'.

9.5 Residual Effects

9.5.1 The on-going quarrying activities at Yennadon Quarry will inevitably give rise to some dust emissions although the potential impact at the nearest residential properties is not considered to be of any significance (assuming normal conditions and wind distribution

patterns). Implementation of the mitigation measures described above will ensure that there will be no significant residual effects of the proposed quarry extension on local residents from dust.

9.5.2 It is anticipated that there will be temporary minor impacts on the local residents during the operation of the quarry extension. No permanent residual effects are anticipated.

9.6 Conclusions

9.6.1 The key findings of the Emissions Assessment are:

- The dust monitoring programme has determined that levels of dust currently being detected are well within 'Acceptable Levels' and are typical of levels expected within a rural area within summer months.
- The off-site 'control' dust monitors have identified that there are several sources of dust being generated in the surrounding area.
- Operations at Yennadon Quarry that have the potential to generate nuisance dust will essentially remain unchanged during working of the proposed extension. The only variations would be the requirement to remove / strip topsoil and overburden, the construction of a new bund; and a slight increase in the length of the haulage road from the quarry face to the material processing area [the latter comprises coarse stone, which has minimal potential to generate dust]. Any increase in production rates to the maximum proposed level of 10,000 tonnes per annum are unlikely to result in dust emission levels exceeding acceptable levels.
- Proposed mitigation measures that have been recommended to minimise dust emissions during development and operation of the proposed quarry extension, will ensure that there will be no significant residual effects.

10.0 SURFACE WATER DRAINAGE

10.1 Overview

10.1.1 This Surface Water Management Assessment has been prepared by John Grimes Partnership Ltd on behalf of Yennadon Stone Ltd as part of the Environmental Statement in support of the extension to Yennadon Quarry. It has been prepared with reference to relevant guidelines.

10.1.2 This chapter describes the existing surface water management regime at the site and considers the impacts of the proposed quarry extension.

10.2 Assessment Aims and Methodology

10.2.1 In line with the scoping requirements, the purpose of this assessment is to:

- Assess the adequacy of the existing surface water management arrangements.
- Assess the potential for the proposal to:-
  a. result in changes to the local drainage regime;
  b. impact on surface water management.
- Identify any avoidance or mitigation measures necessary.

10.2.2 This assessment does not consider geology and hydrogeology, which is covered separately in Chapter 11.

10.2.3 The data for the assessment of existing conditions was obtained from desktop study and site investigations of the development area including:

1. Phase I Geo-Environmental Desktop Report (dated 28/09/2011);
2. Ground Investigation Report based on the four boreholes drilled within the subject site;
3. Site walkover survey.

10.2.4 The results of these studies are contained in Appendices A10 and A11.

10.2.5 The assessment has been undertaken with reference to the National Planning Policy Framework (NPPF) and The SUDS Manual[1].

[1] CIRIA Report C697 – The SUDS Manual (CIRIA 2007)

10.3 Baseline Conditions

Site Description and Location

10.3.1 The Yennadon Quarry site is described in detail in Section 3 of this Environmental Statement and the site location is shown on Figure 01.

10.3.2 The slate quarry is surrounded by open moorland, with an unmetalled access road along its western edge. The floor of the quarry is approximately at the same level as the access track at the site entrance. The existing quarry workings are above the water table and are generally un-vegetated.

10.3.3 The area of the proposed quarry extension (subject site) is currently undeveloped open moorland and lies immediately adjacent to the north of the existing quarry.

Soils

10.3.4 The 1:250000 Soil Survey of England and Wales classifies the soil type at the site as being 612a, described as '*Well drained loamy soils over rock with a humose or peaty surface horizon. There may be some peaty topped slowly permeable seasonally waterlogged loamy soils*'.

10.3.5 The Ground Investigation recorded topsoil depths of 0.2 – 0.5 metres, with thickness generally increasing towards the east of the site. The topsoil is described in the borehole logs as red/brown clayey slate gravel. No peat was encountered.

Existing Drainage and Run-off

10.3.6 The natural topography of the overall area drains from east to west. An assessment of the catchment and drainage pathways for the western flank of Yennadon Down has been modelled using topography (LIDAR) data (see Figure 10/01). The model clearly demonstrates that surface water flow paths along the western flank are generally perpendicular to the slope and that no significant flow emanates from the quarry or along the access road adjacent to the quarry.

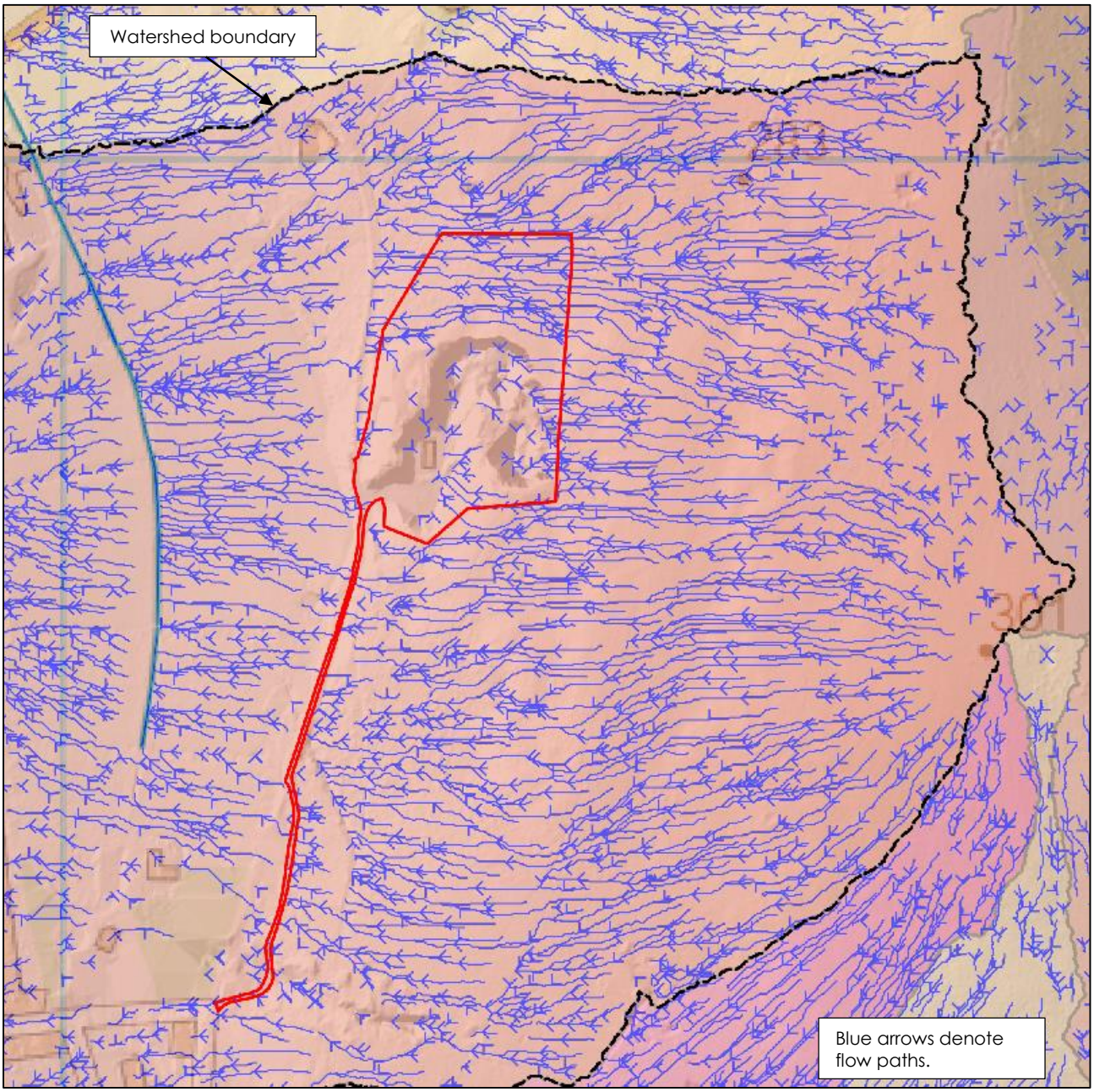


Figure 10/01: Watershed boundaries and flow paths modelled based on LIDAR topography.

10.3.7 Surface water run-off from the proposed quarry extension area is generally limited due to the natural, permeable surfaces that dominate the area; the majority of rainfall soaks away locally where it falls and there are generally no notable surface water discharges from the subject site. During exceptionally prolonged heavy rainfall in late January / early February 2014 the ground was particularly saturated so that on the 5th February 2014 notable surface water run-off was generated across the Down as a whole (see photographs 10/P1 to 10/P3).

Plate 10/P1: View east of the Down north of the proposed quarry extension area showing surface water run-off flowing down slope onto the tramway.

Plate 10/P2: View south along the tramway to the north of the proposed quarry extension area. Surface water run-off from the Down collecting in ruts on the tramway.

Plate 10/P3: View north along western side of tramway showing surface water run-off flowing down the tramway ruts from north of the existing quarry then flowing downslope towards the Leat.

10.3.7 Surface water within the working quarry area naturally drains towards the quarry base and collects in storage ponds before infiltrating into the slate rock below. During the prolonged heavy rainfall in early 2014, no significant run-off issued from the quarry entrance (see photographs 10/P4 and 10/P5 below).

Plate 10/P4: View of quarry entrance showing minimal surface water run-off compared to plates P1 to P3.

Plate 10/P5: Access road adjacent to quarry entrance showing no significant surface water run-off.

10.3.8 There are no natural surface water bodies within the existing quarry or the subject site and both areas are located outside of any floodplain.

10.3.9 South West Water records indicate that there are no public sewers within or surrounding the site and there are no discharges of surface water from the quarry to sewer or to a watercourse. There is an existing soakaway located within the main spoil area in the northwest of the site. The soakaway is located upon approximately 12 metre depth of free-draining material.

10.3.10 The only impermeable surfaces within the existing site are the roofs and hardstandings of the site offices and the saw shed, which total approximately 450m^2. Surface water from these surfaces, as well as water derived from the processing area, drains to the infiltration

pond in the quarry base. There are no sealed roads, footpaths or paved areas present within the existing site.

10.3.11 Water from the surface water storage pond is also recycled and pumped through a 'silt-buster' to removes any fines and back to the saw shed for use in the stone processing. This recycling acts as a supplement or alternative to the groundwater abstraction. Excess water from the quarry base infiltration pond is pumped out to discharge into the quarry soakaway.

10.3.12 Groundwater and surface water is used in the saw shed to provide continuous wetting to the saws cutting the quarried stone. The water discharging from the saw shed is collected in gulleys and drains to a sump. A proportion of the water is recycled for re-use in the processing area and the remainder is pumped to discharge into the soakaway.

10.3.13 The existing water management arrangements utilise the surface and groundwater that is naturally available within the site. Surface water is contained and managed within the quarry works; there is no discharge of surface water off-site. Surface water is returned to ground either through natural percolation into the quarry base or by pumping into the soakaway within the quarry. This arrangement provides an adequate and sustainable approach to the management of surface water at the site.

10.4 Surface Water Drainage Principles and Objectives

General Principles and Objectives

10.4.1 The objectives of surface water management is that any surface water arising from a developed site should, as far as is practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to development. In addition, surface water drainage arrangements for any development site should be such that the volumes and peak flow rates of surface water leaving a developed site are no greater than the rates prior to the development.

10.4.2 Planning policy encourages the use of Sustainable Drainage Systems (SuDS) to meet these objectives. The SuDS Manual provides guidance on the use of SuDS to manage surface water run-off. The Manual advises that '*SuDS objectives, are, therefore to minimise the impacts from the development on the quantity and quality of the run-off, and maximise amenity and biodiversity opportunities*.'

Site Specific Objectives

10.4.3 The existing surface water management arrangements already utilise SuDS by discharging surface water by infiltration and soakaway. In addition to the general objectives above, the site specific objectives are to:

- Minimise the impact on the local drainage regime;
- Ensure that the quarry remains operational and safe during times of flood.

10.5 Assessment of Impacts

10.5.1 It is intended that the site will be quarried in phases until 2025 when planning permission expires. The existing quarry and extension is to be sequentially infilled and restored to open moorland as excavations progress.

10.5.2 Excavations within the existing quarry and the extension cannot be practicably extended in depth due to working restrictions; therefore it is unlikely that sub-water table quarrying will take place within the extended quarry.

10.5.3 Surface water will continue to be managed in the same manner as the existing operation, utilising infiltration and soakaway to discharge surface water within the site.

10.5.4 No new buildings or sealed surfaces are proposed as part of the extension, therefore there will be no increase in the area of impermeable surfacing at the site. Consequently, and given the proposed sequential phasing of extraction and reinstatement, the proposed extension is not expected to result in an increase in surface water run-off from or within the site.

10.5.5 The following table summarises the assessment of the potential impacts.

Element	Geographical	Nature of Impact	Duration	Significance
Local Drainage Regime	Local	Not Significant	Long	Insignificant
Surface Water Bodies	Local	N/A	N/A	N/A
Groundwater	Local	Not Significant	Long	Insignificant
Flood Risk at Site	Local	Not Significant	Long	Minor
Flood Risk Downstream	Local	Neutral	Long	Insignificant
Surface Erosion	Local	Adverse	Short	Minor

Table 10/01: Assessment of Impacts

10.5.6 During operation the quarry workings will cause some change to the natural local drainage regime due to the temporary changes to the topography from excavations. The pattern of surface water drainage over the landscape may change locally as a consequence during the phased operation of the site. Once the quarry operations cease and the site is restored to open moorland the local drainage regime will be re-establish to a natural state. The potential impact on the local drainage regime is therefore considered to be insignificant.

10.5.7 There are no natural surface water bodies within or adjacent to the quarry site therefore no impacts to surface water bodies are anticipated.

10.5.8 During operation the quarry workings may cause some change to the natural groundwater regime due to the infiltration of surface water into the quarry base and into the soakaway, as opposed to the pattern of infiltration to ground that would occur in the natural state. However the use of infiltration and soakaway to discharge surface water within the site is a sustainable drainage technique that seeks to mimic the natural drainage as far as practicable, and which provides cleansing of the surface water discharging to ground. Once the quarry operations cease and the site is reinstated to open moorland the local drainage regime will re-establish to its pre-developed state. The potential impact on groundwater is therefore considered to be insignificant.

10.5.9 The base of the quarry workings may be at risk of flooding in the event of severe rainfall events that exceed the storage capacity of the infiltration ponds and/or the failure of the pumping system to carry excess surface water to the soakaway. Flooding could cause a brief temporary interruption to the quarry operations, but with the provision of safe access routes and warning systems and the maintenance of surface water management equipment, such an event would be unlikely to pose a risk to health and safety at the site. The potential impact of development on flood risk at the site is considered to be minor and can be mitigated by good surface water management practice.

10.5.10 The proposed continuation of surface water management within the site by discharge to infiltration and soakaway will mean that there will be no notable surface water discharges from the site to downstream environments. The potential impact of development on flood risk downstream of the site is therefore considered to be insignificant.

10.5.11 As each phase of quarrying is undertaken, areas of vegetation clearance, soil stockpiles and areas of newly reinstated soil will be exposed and prone to erosion by surface water until natural vegetation cover becomes established. The potential impact of development on erosion is considered to be minor and can be mitigated by the phasing, design and implementation of landscape reinstatement and the careful handling and temporary storage of topsoil.

10.6 Mitigation Measures and Residual Effects

Mitigation Measures

10.6.1 It is proposed that the existing surface water management arrangements will continue to be operated; with some surface water utilised in the stone processing and the excess being returned to ground via the existing soakaway.

10.6.2 The existing quarry and proposed extension is to be sequentially infilled and restored to open moorland as excavations progress. This approach will limit the area of open quarry works at any one time and enable restoration of sections of quarry to moorland as soon as practicable.

10.6.3 The following surface water management measures are recommended to mitigate the potential impacts of the quarry extension:

- Continue to monitor and manage the water levels in the quarry base; adjust the position and arrangement of the water pumps to suit any future variation in the location of the infiltration ponds in the quarry base.
- Monitor and maintain the performance of the existing soakaway. Extend the existing soakaway or supplement it with additional soakaways if the performance of the soakaway deteriorates and the rate of infiltration becomes insufficient.
- Maintain access routes to the quarry base to ensure a safe egress is available in the event of flooding in the quarry base due to extreme weather conditions.
- As each phase of excavation is undertaken, topsoil should be carefully handled, stored and protected to prevent wash-out and surface erosion.
- As each phase of restoration is undertaken, areas of newly reinstated soil will be exposed and prone to erosion by surface water until natural vegetation cover becomes established. Landscaping of reinstated areas should provide suitable slopes, planting, seeding and erosion protection to prevent washout of soil and encourage infiltration of surface water.
- An investigation should be carried out to the camber of the access road and the requirements for any drainage at its southern end close to Iron Mine Lane, where

surface water run-off from the moor is reported to be channelled by the access road towards residential properties. Any drainage improvement scheme would need to be designed as not to impact on any potential archaeological remains of the tramway underlying the access road. The scheme would need to be submitted to the local authority for approval prior to any works commencing. Yennadon Stone Ltd have indicated that they will undertake the investigatory works and approved improvement works as part of their track maintenance requirements.

10.6.4 When the quarry operations cease the site will be restored to a natural condition and topography and surface water run-off will occur at natural Greenfield rates. Any artificial drainage infrastructure should be removed prior to reinstatement.

10.6.5 Landscaping of the reinstated site should provide suitable slopes, planting, seeding and erosion protection to prevent washout of soil and encourage infiltration of surface water.

Residual Effects

10.6.6 The implementation of the mitigation measures described above will ensure that there will be no residual effects of the development upon flood risk or surface erosion. The measures will provide partial mitigation of the potential impacts of development on the local drainage and groundwater regime. It is anticipated therefore that there will be temporary insignificant impacts on the local drainage and groundwater regime during the operation of the quarry extension. These impacts would cease upon reinstatement of the site to moorland at which time the natural drainage patterns would re-establish. No permanent residual effects are anticipated.

10.7 Conclusions

Existing Surface Water Management Arrangements

10.7.1 The existing quarry operation manages surface water within the site by collection in infiltration ponds in the quarry base, supplemented by pumped discharge to soakaway. This arrangement utilises SuDS techniques and based on performance to date, is considered to be an adequate and appropriate arrangement.

Proposed Surface Water Management

10.7.2 It is proposed that the existing surface water management arrangements will continue to be used for the extension of the quarry. There will be no increase in the area of impermeable surfaces as a consequence of the quarry extension.

10.7.3 There are no natural surface water bodies within the existing quarry or the subject site and both areas are located outside of any floodplain. Future quarry workings are expected to be above the water table hence the site will not be susceptible to ground water flooding.

Proposed Mitigation Measures

10.7.4 It is proposed to mitigate the potential impacts of the quarry extension by:

- Continuing the existing surface water management arrangements, ensuring that the systems performance is monitored and maintained.
- Maintaining access/egress routes and pumping equipment and monitoring weather conditions and pond levels.
- Planning and implementing a phased sequence of excavations and reinstatement to minimise the extent of un-vegetated quarry workings at any one time and to reinstate to moorland as early as practicable.

Principles and Objectives

10.7.5 The existing and proposed use of infiltration ponds and soakaway to manage surface water at Yennadon Quarry is in accordance with the general principles of planning policy guidance and the SuDS Manual. The discharge of surface water to ground seeks to mimic, as far as practicable, the infiltration of surface water that would occur prior to development. The arrangement also ensures that there are no point discharges of surface water from the site and that the overall volume and peak flow rates of surface water leaving the site are no greater than the rates prior to the development.

10.7.6 The proposed discharge of surface water to ground within the site (by infiltration and soakaway) together with the proposed phasing of quarrying and reinstatement seeks to minimise the impact of the development on the local drainage regime.

10.7.7 The proposed provision of infiltration ponds, pumping equipment and safe access routes to the quarry base, together with good maintenance and monitoring practice will ensure that the quarry remains operational and safe during times of flooding due to extreme rainfall.

Impacts and Residual Effects

10.7.8 It is concluded that, with mitigation, the proposed development will have no permanent or significant impacts upon local drainage. There will be no impacts upon surface water bodies.

10.7.9 The potential impacts of development of flood risk and surface erosion can be fully mitigated through good management practices.

10.7.10 It is anticipated that there will be temporary insignificant impacts on the local drainage and groundwater regime during the operation of the quarry extension. These impacts would cease upon reinstatement of the site to moorland at which time the natural drainage patterns would re-establish. No permanent residual effects are anticipated.

11.0 GEOLOGY AND HYDROGEOLOGY

11.1 Introduction

11.1.1 This Geological and Hydrogeological Assessment was prepared by John Grimes Partnership Ltd. The assessment describes the geology and existing hydrogeology (groundwater) regime in the area and any potential impacts of the proposed quarry extension on the local hydrogeology.

11.1.2 In line with the scoping requirements, the purpose of this assessment is to:

- Assess the existing geology and hydrogeological conditions at the site and determine the effects of extending the quarry on the hydrogeological regime.
- Specifically, these relate to-

i) Effects of the development on underground water (the site is identified as being on an Aquifer of Intermediate Vulnerability);

ii) The quarry lies 450m from an inner catchment Groundwater Source Protection Zone 1 and 200m from the Devonport Leat (nearest surface water feature).

11.2 Methodology

11.2.1 The data for the assessment of existing conditions was obtained from the following geotechnical and geo-environmental investigations of the development area (provided in Appendices A10 and A11):

1. Phase I Geo-Environmental Desktop Report (dated 28/09/2011); and
2. Ground Investigation for Yennadon Quarry Extension: Factual and Interpretive Report (January 2011) based on the four boreholes drilled within the subject site.

11.2.2 This report does not consider site surface water management and drainage, which is covered separately (Section 10).

11.3 Baseline Conditions

Site Description and Location

11.3.1 Yennadon Quarry is located approximately 300m to the east of Dousland [Grid Reference SX 543 688]. It lies just within the western boundary of the south western confines of Dartmoor National Park. Access to the existing quarry is gained from Iron Mine Lane via an unmetalled road that runs along the quarries western edge.

11.3.2 The proposed quarry extension (subject site) is currently undeveloped and lies immediately adjacent to the north of the existing quarry. It is intended that the site will

be quarried in phases until 2025 when planning permission expires. The existing quarry and extension is to be infilled and restored as excavations progress.

11.3.3 The floor of the quarry is approximately at the same level as the access track at the site entrance. The existing quarry workings are approximately 2m to 10m above the present groundwater level, dependent on seasonal variations. Excavations within the existing quarry and the extension cannot be practicably extended in depth due to working restrictions; therefore it is unlikely that sub-water table quarrying is likely to take place within the extended quarry.

Drift and Solid Geology

11.3.4 The relevant Geological Survey sheet of the area indicates that there are no significant superficial deposits present on the site. The intrusive site investigations which have been undertaken on the site would indicate that the natural soil profile on the site comprises:

- Topsoil (between 0.2m and 0.5m in depth)
- Subsoil (gravelly Clay extending down to between 2.5m and 3.5m below ground level)
- Slate bedrock (Moderately to highly fractured).

11.3.5 The 1:2500 000 Soil Survey of England and Wales (Sheet 5 South West England) indicates the soils beneath the site are type 612a, which are described as well drained loamy soils over rock with a humose or peaty surface horizon. There may be some peaty topped slowly permeable seasonally waterlogged loamy soils. In general they form dry acid grassland habitats in the South West.

11.3.6 The relevant British Geological Survey (BGS) map (Sheet No 338) indicates that the site is recorded to be underlain by the Upper Devonian Tavy Formation, which comprises hornfelsed slate. The site is shown to lie within the metamorphic aureole surrounding the Carboniferous Dartmoor Granite. The limit of the metamorphic aureole is shown to lie approximately 99m west of the site.

11.3.7 Given the limited exposure of rock outcrop across the subject site (area of proposed quarry extension), it is considered of minimal geological education potential. The site lies within Dartmoor National Park and lies within an Environmentally Sensitive Area.

11.3.8 The geotechnical site investigation (Appendix A11) has demonstrated that the Slate rock mass beneath the site, although variable in colour and structure, has similar

characteristics and qualities to that seen in the existing quarry faces south of the subject site.

11.3.9 The current practice of the quarry is to work multiple quarry faces simultaneously in order to satisfy demand for various colours and sizes of stone. It is expected, from the findings of the investigation that this practice can continue on the subject site.

Made Ground

11.3.10 The published Geological Map (Sheet 338) does not indicate any historic Made Ground present on the site, or within 500m of the site. However, as no slate spoil is removed from site, there are several areas within the existing quarry where waste spoil is stored. Most of this waste is stored as a bund along the western quarry boundary. This main tipping area comprises quarry waste of coarse angular slate gravel and irregular cobbles with occasional boulders. The bund is stable resting at its natural angle of repose, which is approximately 40° to 45°. The material within the pile has good interlocking properties and poses very low potential for movement.

11.3.11 There are also several other smaller tipping areas located within the quarry, all comprising quarry waste of coarse angular slate gravel and cobbles with frequent boulders.

Hydrogeology

11.3.12 The Environment Agency advises that the slate underlying the site is designated as a Secondary (A) Aquifer (previously termed a 'Minor Aquifer' of Intermediate Vulnerability). These formations have permeable layers capable of supporting water supplies at local rather than strategic scale, and in some cases forming an important source of base flow to rivers. The slate is recorded to have a low permeability, with flow type being fracture controlled. The BGS Memoir indicates that individual yields from sources within the Devonian Slates are generally small, with yields commonly less than 1 l/s.

11.3.13 No notable groundwater strikes were recorded during the geotechnical site investigation (Appendix A11/2), which was conducted in the area of the proposed quarry extension. Following the completion of the drilling works, groundwater levels were monitored on two occasions using a Geosense 50m dip meter with the results summarised below.

Borehole Number	Depth to Groundwater m bgl (mAOD)	
	13/12/2010	**16/12/2010**
BH1	Borehole Dry	18.20m bgl (229.90mAOD)
BH2	Borehole Dry	Borehole Dry
BH3	Borehole Dry	31.61m bgl (233.79mAOD)
BH4	31.00m bgl (235.60mAOD)	25.40m bgl (241.20mAOD)

Table 11/01: Results of Groundwater Monitoring

11.3.14 Information from the groundwater monitoring suggests that the groundwater table drops towards the northwest, which is consistent with the topography.

11.3.15 Within the existing quarry, groundwater seepages are noted along the eastern and north-eastern faces within 5m of the quarry floor. The magnitude of these seepages usually reflects rainfall patterns (i.e. heavy seepage during prolonged rainfall). Water ponds within the lowest point of the quarry (approximately 242m AOD) and slowly percolates away. This would suggest the base of the quarry is close to groundwater level.

11.3.16 There are two Environment Agency 'Inner Catchment' Groundwater Source Protection Zones recorded within 500m of the site. An EA Source Protection Zone (SPZ) defines an area around a water abstraction point that can potentially be at risk from contamination. An Inner protection zone (SPZ1) is defined as the 50 day travel time from any point below the water table in that zone to the abstraction point. The limits of these SPZs are located 407m southeast and 420m east of the site respectively. The two SPZ1s are associated with surface water and potable water abstraction licences located 751m southeast of the site (from Devonport Leat) and from Burrator Reservoir located 1023m southeast of the site. There is also a groundwater abstraction licence from a spring (for 'general use') located 812m east of the site.

11.3.17 Given the groundwater monitoring results and topography it is assumed that groundwater flow beneath the site is towards the west. Therefore, groundwater at Yennadon Quarry, including the extension area, would migrate away from the SPZs.

11.3.18 The hydrogeological regime is influenced by both soils and bedrock; i.e. rainfall infiltrates along different pathways through topsoil, subsoil, the interface between subsoil and bedrock, shallow bedrock and deeper bedrock. It is considered that due to the depth of the groundwater level, the excavation of the quarry will have a minimal effect on the groundwater regime; i.e. the quarry extension will not significantly affect groundwater recharge.

11.3.19 It is likely that groundwater protection (i.e. environmental management) similar to that in the existing quarry will be required in the proposed extension area.

Hydrology

11.3.20 Although surface water management at the quarry is assessed in Section 10; this section must consider the effect of groundwater base flow to surface water features. Minor aquifers can in some cases form an important source of base flow to rivers.

11.3.21 At the site, there is a low groundwater flow rate, which is fracture controlled. Flow is towards the west and would migrate towards the western branch of the Devonport Leat (nearest surface water feature). At its nearest point, the Devonport Leat comes within 200m of the of the western site boundary of the proposed extension. However, this branch of the Leat is disused and truncated at Iron Mine Lane. It currently forms a dry ditch to the west of the site. Only the section of the Devonport Leat to the east – southeast is operational. This operational section of the Leat is some 750m southeast of the existing quarry at its closest point. The operational part of the Leat terminates close to Burrator Dam where it is diverted via underground pipes to the water treatment works (WTW) at Dousland, with the excess going into the Burrator Reservoir.

11.3.22 It is considered that the disused section of the Devonport Leat to the west of the subject site would only carry water associated with surface water run-off from surrounding farmland. Groundwater levels at the site are between 18m to 32m below ground level. Taking into account local topography, it is considered that groundwater would be at least 10m below the level of the Leat. Any groundwater flow from the existing quarry and from the proposed extension would not provide base flow to the Devonport Leat.

Contamination

11.3.23 The findings of the Geo-Environmental Desk Study by John Grimes Partnership Ltd (Appendix A10) indicate:

1. BGS data provided in the GroundSure® GeoInsight report indicates that the estimated background soil chemistry for arsenic, cadmium, chromium, nickel and lead are relatively low compared to current soil guideline values (SGV) for commercial land use.
2. No sources of contamination have been identified on site or in the immediate vicinity of the site that could pose a significant risk to the proposed development.

11.3.24 The quarry process, as described in Section 8, highlights a low risk of accidental fuel spillage, such as during re-fuelling of site machinery. Any spillage would present a risk to groundwater. However, the quarry has emergency procedures in place for such an event; including several spill kits and staff trained in their use, as well as regular inspections of plant and the bunded fuel tank. It should be noted that a maximum of 2,500 litres of fuel can be stored on site.

11.3.25 No significant impacts have been identified with respect to existing soil quality or contamination that would affect the proposed development. However, a minor risk to groundwater has been identified from the quarrying process (i.e. accidental fuel spillage).

11.4 Assessment of Impacts

11.4.1 Geology: The geology will be directly impacted by the quarry extension. However, the geographical effect is local due to the limited area. The nature of the impact is considered to be not significant as the area of the proposed extension is small compared to the area of the Tavy Formation as a whole. Also, the site does not lie within an area of geological interest and there are currently no significant rock exposures within the area of the proposed extension. Taking the above into account, the effect of the proposed extension on the geology is considered insignificant.

11.4.2 Soil quality: There are no potential contaminants identified that will affect soil quality in the area of the proposed extension. Soil is to be stripped and placed in bunds or used in site restoration. It is considered that disturbance of the soil on site would have a neutral effect on soil quality. The significance of the effect would be minor if proper soil handling procedures are adopted, as it is considered that good soils conditions, to allow vegetation and soil organisms to continue to grow, will be maintained.

11.4.3 Hydrogeological Regime: The site lies on a minor aquifer, with low groundwater flow being controlled predominantly by fracture flow, which is considered to be towards the west, i.e. would migrate away from the identified groundwater Source Protection Zones and Devonport Leat (nearest surface water feature). The proposed extension will not result in any increase of groundwater recharge from surface water discharge; therefore will have a negligible effect on stream base flow to surface water courses. The duration of the effect will be permanent as the quarry extension will alter the geomorphology of the site. However, the effect is considered insignificant as it is considered the development will not result in a perceptible change in groundwater flow or base flow.

11.4.4 Hydrogeological Quality and impact on SPZs: A minor risk has been identified from localised accidental fuel spillage, which would have an adverse effect on groundwater quality. However due to the anticipated direction of groundwater flow beneath the quarry being to the west, any accidental spillage would not affect the SPZs. The duration of the effect will be long term. As the risk of accidental spillage is low and is unlikely to affect the SPZs, the effect is considered minor.

11.4.5 Impact on Devonport Leat (disused section to west of site): The proposed extension will not result in any increase of groundwater recharge; therefore will have a negligible effect on stream base flow to surface water courses. In addition, groundwater level will be at least 10m below the level of the Leat and therefore, will have a negligible impact on the Leat. The duration of the effect will be permanent as the quarry extension will alter the geomorphology of the site. However, the effect is considered insignificant as it is considered the development will not result in a perceptible change in groundwater flow or base flow.

11.4.6 The following table summarises the assessment of the potential impacts.

Element	Geographical	Nature	Duration	Significance
Impact on geology	Local	Not Significant	Permanent	Insignificant
Impact on soil quality	Local	Neutral	Long term	Minor
Impact on hydrogeology	Local	Not significant	Permanent	Insignificant
Impact on groundwater SPZs	Local	Adverse	Long tem	Minor
Impact on Devonport Leat	Local	Neutral	Permanent	Insignificant

Table 11/02: Assessment of Impacts

11.5 Mitigation Strategies

11.5.1 Soil Handling Strategy: The sustainable use of soil on site will be undertaken, with the topsoil and subsoil being safeguarded for use in the construction of the bunds, as well as in the phased site restoration. Appropriate techniques for stripping, storing and spreading soils should be adopted. Appropriate guidance is given in *Good practice guide for handling soils*, MAFF (2000).

11.5.2 Environmental Management: The implementation of the quarry's environmental management plan will militate against the risk of groundwater being accidentally contaminated by accidental spillages, such as from re-fuelling site equipment. This includes regular inspection of the fuel tank, inspections and maintenance of all plant and

training of staff on re-fuelling and use of emergency spill kits. It is recommended that the environmental management plan is regularly reviewed by management.

11.6 Residual Effects

11.6.1 Residual Effects: The implementation of the mitigation measures described above will ensure that there will be no significant residual effects of the development upon soil quality or hydrogeology. The measures will provide partial mitigation of the potential impacts of development on the soil quality and groundwater regime. These impacts on soil quality and the SPZs would cease upon reinstatement of the site to moorland. The removal of stone from the quarry will result in a permanent residual effect to the geology and the hydrogeological profile.

12.0 NOISE

12.1 Introduction

12.1.1 An initial Environment Noise Impact Assessment was prepared by Peter Ashford Bsc MIOA (then of Ian Sharland Ltd. in 2011). An addendum report was produced by Mr Ashford (of Acoustic Associates South West Ltd) in March 2014 in order to provide additional information requested by DNPA during the consultation period. These assessments quantify the level of environmental noise across the environs as existing and, by reference to relevant planning policy guidance, considers the likely impact of the quarry extension and any mitigation that should be applied.

12.1.2 In line with the scoping requirements, the purpose of this assessment is to:

- Asses the adequacy of existing arrangements and provide an assessment of the potential for the proposal to result in an increase in noise generation; and any potential impact on sensitive receptors.

12.1.3 In the previous submission, the Environmental Health Officer (EHO) for West Devon Borough Council raised no objections to the application. With regard to noise, the EHO confirmed that the noise survey in the previous submission was satisfactory and that it demonstrated that the site would not constitute a statutory nuisance. It was noted that no noise abatement notices have been served, although a small number of noise complaints had been received. A large proportion of letters of objection associated with the previous submission raised the issue of noise levels.

12.1.4 The EHO recommended that, if planning permission was granted, that planning conditions should include:

- the construction of a 4m high bund;
- a noise limit of 50dB L_{Aeq} 1 hour at the boundary of noise sensitive properties; and
- working hours controlled as they currently are.

12.1.5 This updated chapter also gives consideration to the DNPA's concerns regarding tranquillity, which is also considered further in Chapter 15.

12.2 Methodology

12.2.1 The data for the assessment of existing conditions was obtained during a 7 day noise survey conducted by Ian Sharland Ltd. Their Environmental Noise Impact Assessment report and the addendum report by Acoustic Associates South West Ltd. are provided in

Appendix A12. The noise assessment has been undertaken with regard to relevant national and local legislation and policy, and professional good practice guidance.

12.2.2 In evaluating tranquillity, the Campaign to Protect Rural England (CPRE) report[1] on mapping and assessing tranquillity and what contributions to a high sense of tranquillity has been used to assess conditions at the site and local environs.

12.3 Baseline Conditions

12.3.1 The quarry lies to the east of Yelverton on the edge of the moor, Dousland is the nearest residential community some 300m to the west. The closest house (Higher Yennadon) lies some 142m to north-west of the existing quarry (see Figure 12/01 below).

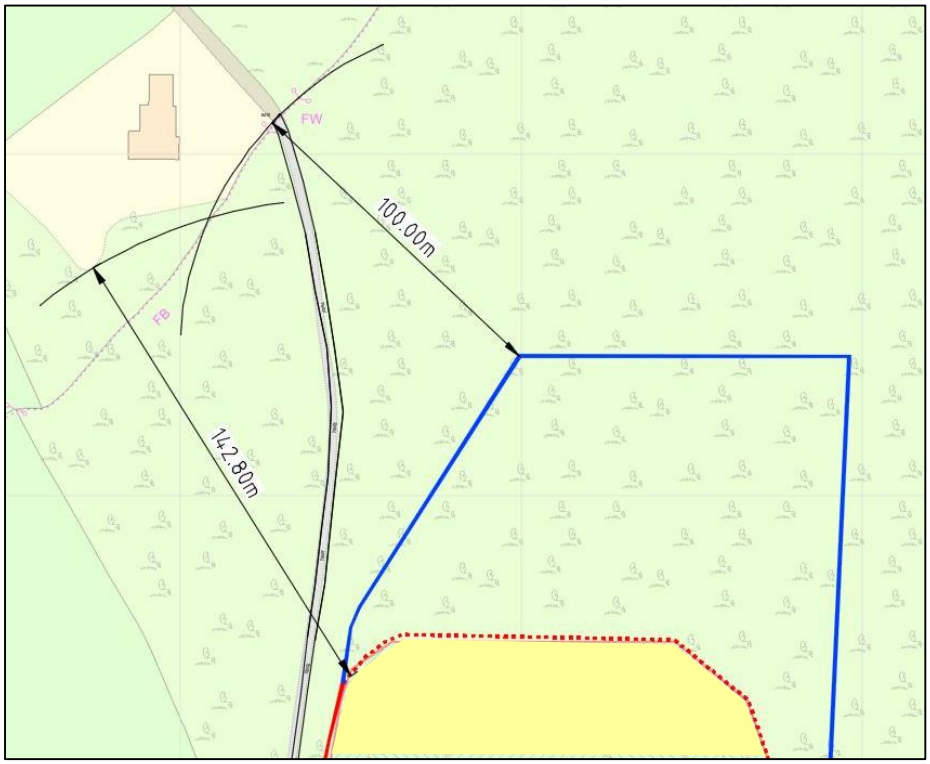


Figure 12/01: Sketch Showing Location of Higher Yennadon in relation to Existing and Proposed Quarry Boundaries.

12.3.2 Figure 12/01 indicates that the proposed extension will bring the north edge of the quarry boundary to within 100m of Higher Yennadon. Although the actual extraction area will be further from Higher Yennadon, during construction of the new bund the closest workings to Higher Yennadon will be 100m at its closest point. The original noise

[1] *Mapping Tranquillity: Defining and Assessing a Valuable Resource*. CPRE. March 2005. ISBN 1 902786 77 7

assessment was carried out on a conservative distance of 90m. Therefore, the consideration of the "90m position" in the noise assessment remains valid.

12.3.3 The photographs below show that Higher Yennadon can be seen through the trees located along the boundary from the existing bund and that this property is set at a lower level than the quarry and adjacent Down. Currently the quarrying activity is shielded by the existing bund and is at a sufficient depth that it is completely screened from view of Higher Yennadon.

View from top of existing bund towards Higher Yennadon.

View of Higher Yennadon set at lower level than adjacent Yennadon Down.

12.3.4 The proposed northern extension to the quarry will not be overlooked by any of the neighbours as the quarry is on higher ground and the line of sight from the houses to the quarry is interrupted by contours of the ground between.

12.3.5 Two unattended sound level meters were set-up close to the subject site. The first meter was located just above the southern garden wall of Higher Yennadon (nearest receptor); and the second meter on open ground between Higher Yennadon and the quarry, some 90m from the quarry edge. The purpose of the 90m open ground measurement position was to get a representation of what quarry noise activity levels would be at Higher Yennadon with the quarry extended.

12.3.6 The meters were set to record the following noise parameters every hour from 2pm on Monday 22nd through to 12am Tuesday 30th August 2011:

- L_{Amax} (maximum event noise during the 5 minute period)
- L_{Aeq} (the equivalent continuous energy level)
- L_{A90} (the level exceeded for 90% of the time and is usually used to describe background noise)

12.3.7 The weather during the survey period was largely fine and dry. At the time of setting up the meters the contributors to the noise environment were bird song, distant traffic noise, over flying planes and intermittent quarry activity noise. Both meters were calibrated before and after the survey with no significant variance observed. The levels recorded are detailed in Appendix A12.

12.3.8 The week long noise survey has demonstrated that the noise levels at the nearest residential dwelling (Higher Yennadon), some 142m from the current northern edge of the quarry fell between 36 & 57 dB L_{Aeq} during week day working hours. Day time levels recorded over the Bank Holiday weekend (when the quarry was shut) fell into a very similar range of 40-57 dB L_{Aeq}.

12.3.9 Measurements at the "90m position" were rarely higher than at Higher Yennadon and across the working week this only occurred in five separate hours. The highest hourly level at the "90m position" was 51 dB L_{Aeq} recorded at 5pm on Wednesday 24th August when the quarry reported a slew was working on top of the spoil mound on the north west edge of the quarry, where the slew would be in a direct line of sight of both the measurement locations.

12.3.10 Typically day time noise levels at the "90m Position" were somewhere between 45 & 50 dB L_{Aeq} and is considered to be indicative of the likely noise level at Higher Yennadon if the quarry was to be extended to the north as per the proposals.

Tranquillity

12.3.11 A detailed assessment of tranquillity has been undertaken as part of the landscape and visual impact assessment (Chapter 15) as tranquillity is one of the factors that needs to be considered when assessing the sensitivity of viewpoints. The assessment concluded that Yennadon Quarry is located within an 'Area of Heavy Recreation Use' (see Figure 12/02) and based on the Campaign to Protect Rural England (CPRE) report, the area as a whole has a relatively low sense of tranquillity. The CPRE research identifies what people regard as contributing to Tranquillity (see Figure 12/03 below), from which it is apparent that noise in fact contributes a small part of overall tranquillity (20% of the weight given to positive factors) while the presence of people accounts for 60% of the negative weighting.

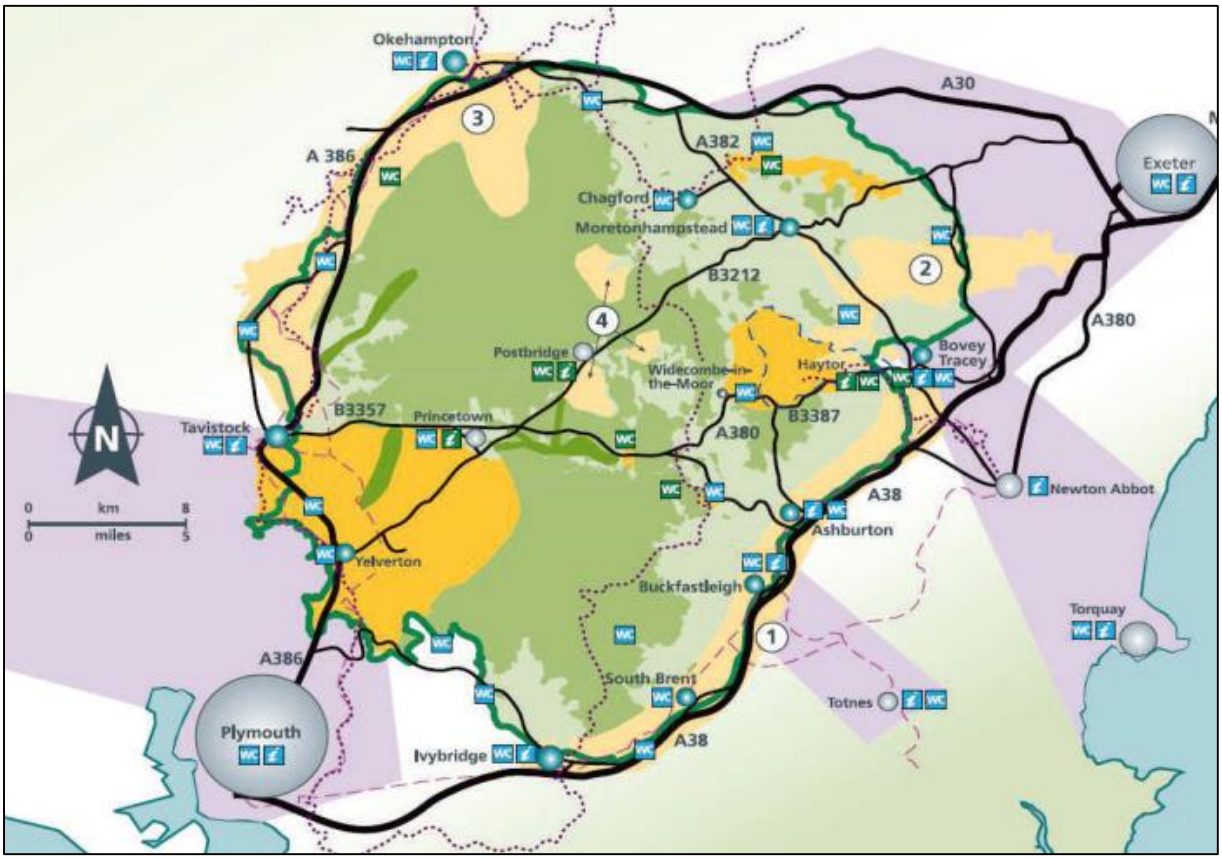


Figure 12/02: Extract from DNPA Management Plan. Yennadon Quarry lies within an 'Area of Heavy Recreation Use'.

Positive factors	Weight
Openness of the landscape	24%
Perceived naturalness of the landscape	30%
Rivers in the landscape	21%
Areas of low noise	20%
Visibility of the sea	6%
Total of positive factors	100%
Positive Scores as a percentage of the overall scores	**44%**
Negative factors	**Weight**
Presence of other people	60%
Visibility of roads	12%
General signs of overt human impact	10%
Visibility of urban development	8%
Road, train and urban area noise	7%
Night time light pollution	3%
Aircraft noise	1.5%
Military training noise	<1%
Total of negative factors	100%
Negative Scores as a percentage of the overall scores	**56%**

Figure 12/03: Extract from Campaign to Protect Rural England (CPRE) report on Factors that Contribute to Tranquillity.

12.3.12 In addition, researchers at the Bradford Centre for Sustainable Environments[1] (BCSE) developed a methodology by which the perceived Tranquillity Rating (TR) of an amenity area such as park, green or urban square can be measured, on a 0 - 10 scale. The research reached a similar conclusion to that of the CPRE in that average daytime noise level (be it natural or man-made) is only one element of the "Tranquillity Rating". Therefore, tranquillity is a concept which is reasonably difficult to define in decibels.

12.4 Assessment of Impacts

12.4.1 The noise levels have been assessed in accordance with the 2005 guidance on noise and mineral extract in Annex 2 of Mineral Policy Statement (MPS2), which suggests an upper limit of 55 dB L_{Aeq} from quarry activity at the closest neighbours for week day working.

12.4.2 The NPPF includes a technical annex which specifically aims to address noise issues at minerals sites, which states:

'Subject to a maximum of 55dB(A)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 10dB(A). It is recognised, however, that in many circumstances it will be difficult to not exceed the background level by more than 10dB(A) without imposing unreasonable burdens on the mineral operator. In such cases, the limit set should be as near that level as practicable during normal working hours (0700-1900) and should not exceed 55dB(A) L_{Aeq}, 1h (free field)'

12.4.3 The noise survey shows that the noise levels at the recording points are similar when the quarry is operating and when it is closed. During week day working hours the levels were between 36 – 57 dB L_{Aeq}. During a weekend when the quarry was not operating the levels were 40 – 57 dB L_{Aeq}. It can be concluded that there are noise sources affecting properties other than the quarry.

12.4.4 The current and predicted noise levels are all under 55dB and do not exceed 10dB above the background noise levels. In this respect the development proposed is compliant with the NPPF. Given that the working hours of the quarry are already limited by Planning Condition to week days 7am to 6pm, 8am to 1pm Saturdays and no working on Sundays

[1] Greg. R. Watts., Rob. J. Pheasant and Kirill. V. Horoshenkov. 2010. Journal of Environment and Planning B. Predicting perceived tranquillity in urban parks and open spaces. In-Press; and R. J. Pheasant., G. R. Watts and K. V. Horoshenkov. Validation of a tranquillity rating prediction tool. Acta Acustica United with Acustica, 95, 1024 - 1031 (2009)

or Bank Holidays then it can be seen that the MPS2 55 dB L_{Aeq} criterion can be complied without mitigation.

12.4.5 However, the noise survey results does show that ambient noise levels can fall just below 40 dB L_{Aeq}. Therefore, a limit of 55 dB L_{Aeq} on noise from the quarry extension could be more than 10 dB greater than ambient levels, which would give a limit of 50 dB L_{Aeq}. Yennadon Stone Ltd have proposed a more restrictive upper noise limit of 50dB LAeq be applied (with exceptions for limited periods of works close to the surface, for example the creation of the proposed bund) to ensure that the amenity of the neighbour is protected.

12.4.6 The quarry operators are not proposing to change working practices (i.e. no increase in plant numbers are required to achieve proposed maximum permitted production levels) and that operating hours are to remain as existing. Therefore, it is considered that there will be no significant increase in noise generation and the limit of 50 dB L_{Aeq} can be achieved during normal operating conditions. However, it is considered that there will be a temporary increase in noise generation to the nearest receptor during the construction of the new bund (due to it being carried out at high level); although noise levels should remain within the limit of 55 dB L_{Aeq}.

Tranquillity:

12.4.5 The potential impact of noise on tranquillity for visitors to the National Park has also been evaluated. As discussed above, both the CPRE and BCSE research indicates that noise is in fact a small part of overall tranquillity. Considering the quarry is in an area defined by the National Park as an "Area of Heavy Recreation Use", sensitivity to change can be considered to be already relatively low.

12.4.6 In the previous submission, the DNPA's case officer stated "The quarry working will be at a similar level to the existing operation and noise levels will be at the same level which means its impact on tranquillity will be no worse, although initially noise level will be higher (during formation of the bund)."

12.4.7 As tranquillity takes into account visual aspects of the landscape, the revised proposed working and restoration scheme (which will result in an immediate rolling restoration programme) is considered to be relevant in assessing the impact of the proposals on overall tranquillity. The proposed restoration provides positive tranquillity factors including improving "the naturalness of the landscape" (30% of positive weighting, CPRE) and "openness of landscape" (24% positive weighting, CPRE).

12.4.8 Considering predicted noise levels from the quarry are acknowledged to remain as existing and the revised proposed working and restoration scheme will reduce visual impacts (over existing) and provide long-term landscape improvements, the proposals can be considered as enhancing levels of tranquillity. The nature of the impact of the proposed development as a whole on tranquillity is considered to be beneficial. The nature of the impact of noise on tranquillity is considered to be neutral as it only comprises one aspect of how tranquillity is assessed and is therefore considered to be insignificant.

Significance

12.4.8 The assessment of the potential impacts of noise on Higher Yennadon (nearest receptor), and on its effect on tranquillity are summarised in the following table.

Element	Geographical	Nature	Duration	Significance
Impact of noise on nearest receptor	Local	Adverse	Long-term	Minor
Impact of noise on tranquillity	Local	Neutral	Long-term	Insignificant

Table 12/01: Assessment of Impacts

12.5 Mitigation

12.5.1 To help protect the amenity of the neighbour to the north it is recommended to construct a bund, at least 4m high, so as to screen the quarry workings. This bund will be constructed along the northern side of the proposed quarry extension prior to any extraction works in the proposed quarry extension.

12.5.2 The new bund would increase screening losses by at least 5 dB and therefore it would not be unduly constrictive to consider the imposition of a noise condition of 50 dB L_{Aeq} (free field) at the nearest neighbouring property.

12.5.3 A Good Practice guide in Noise Reduction for surface mineral operations is provided in Appendix A12. It is recommended that Yennadon Stone should consider and implemented these guidelines where appropriate.

12.6 Residual Impacts

12.6.1 Current planning permission expires in 2025. This current application is intended to enable production to continue at current (up to maximum permitted) rates until 2025. On completion of quarry in 2025, no residual impacts are anticipated with regard to impacts from quarry related noise.

12.7 Summary

12.7.1 A detailed noise survey has been carried out on existing quarry activity noise at the boundary of the nearest neighbour, Higher Yennadon, some 142m from the north-western edge of the existing quarry. Noise levels were also monitored 90m from the edge of the quarry, which would effectively be the distance from the extended quarry to Higher Yennadon.

12.7.2 The survey has shown that noise levels are typically higher at Higher Yennadon than they are at the closer "90m position" and this suggests that quarry activity noise does not control the noise climate at the neighbours.

12.7.3 Typically noise levels at the "90m position" fell in the range of 45-50 dB L_{Aeq} during the working day. The highest hourly level was 51 dB $L_{Aeq,1hr}$ which was recorded whilst a 360° slew worked on top of the spoil mound, to the north west of the quarry, in direct sight of the measurement positions.

12.7.4 Government Guidance offered in MPS 2 Annex 2 suggest that mineral extract noise should be limited to no more than 55 dB L_{Aeq} when measured at the nearest neighbour; however it does also point out that if this is more than 10 dB higher than ambient levels a lower limit might be more appropriate.

12.7.5 The noise assessment therefore proposes that with the aid of a substantial bund constructed on the northern edge of the proposed quarry extension, noise from the extended quarry could be controlled to no more than 50 dB L_{Aeq}.

12.7.6 With regard to tranquillity, there are a number of factors that contribute to how tranquillity is assessed, including factors such as noise, landscape and visual impacts. Considering predicted noise levels from the quarry are acknowledged to remain as existing and the revised proposed working and restoration scheme will reduce visual impacts (over existing) and provide long-term landscape improvements, the proposals can be considered as enhancing levels of tranquillity: i.e. the nature of the impact of noise on tranquillity is considered to be neutral ; whereas the nature of the impact of the proposed development as a whole on tranquillity is considered to be beneficial.

13.0 TRANSPORT

13.1 Introduction

13.1.1 An assessment of transport has been prepared by John Grimes Partnership Ltd. It describes the existing traffic conditions and characteristics of the area and the impacts of the proposed quarry extension. This Transport Statement is provided in Appendix A13.

13.1.2 The quarry is currently in operation with existing planning constraints imposed. This current application concerns proposals to extend the quarry area. In transport terms, the operation method, employee numbers, and delivery route for the proposed extension will remain identical to the existing operation. The existing site vehicular access (the compacted stone track), parking area, site offices and processing area will also remain as existing.

13.1.3 Dartmoor National Park Authority (DNPA) set out in their Scoping Opinion that the Traffic Statement should consider in detail the adequacy of existing arrangements and an assessment of the potential for the proposal to result in an increase in traffic generation. Therefore, in line with the scoping requirements, the purpose of this assessment is to:

- Consider the existing local conditions in terms of public transport, walking and cycling, safety and local highway conditions for the agreed route which the quarry traffic use to access the strategic road network;
- Consider access and movement to and from the site by all modes, including walking, cycling, public transport and commercial vehicles, having regard to existing and future year travel demand;
- Determine the likely effects of the quarry traffic on the surrounding transport network.

13.2 Methodology

13.2.1 The data for the assessment of existing conditions was obtained from a transport survey carried out by John Grimes Partnership Ltd in July 2011. This focused on Burrator Road, either side of the crossroads with Iron Mine Lane. This was supplemented by survey data obtained by Devon County Council, which included:

- Average Annual 24hr Data Traffic (AADT) Flows for 1990 and 2000 on the B3212;
- 24hr Weekday HGV flows for HGVs in 2000 on the B3212;
- Weekly Volume and Speed Reports for Burrator Road; and
- Personal Injury Accident (PIA) data for 01/01/2008 to 31/12/2010 from Iron Mine Lane to Yelverton roundabout (A386).

13.3 Baseline Conditions

13.3.1 The operating hours of the quarry are restricted to periods 0700 to 1800 Monday to Friday and 0800 to 1300 on Saturdays (as stated in the conditions of the existing Planning Permission). The existing Planning Permission also stipulates that lorry movements are restricted to periods 0800 to 1800 Monday to Friday and 0800 to 1300 on Saturdays; and the permitted total number of lorry / HGV trips (return journeys) per week is 35 (i.e.: 70 movements).

13.3.2 Of the permitted 35 HGV trips per week, in the region of 15 are currently used for transport of stone, with a further five for miscellaneous deliveries, such as diesel, etc. The quarry only operates one HGV for deliveries of stone to customers, which would be sufficient should production reach the proposed new maximum of 10,000 tonnes per annum. As the permitted number of HGV trips per week (currently in the order of 20) falls well below the 35 currently allowed, the new proposals seek to reduce the number of HGVs to a maximum of 30 in any week.

13.3.3 The site currently employs 27 staff. All employee vehicles are parked in the staff / visitor car park adjacent to the site entrance. Many staff also car share. As there are no proposals to increase the number of employees; the number of employee vehicles is not expected to alter significantly.

Local Highway Network

13.3.4 The existing quarry access is via a private compacted stone track that extends for approximately 400m before adjoining the highway network at Iron Mine Lane.

13.3.5 The majority of HGV traffic associated with Yennadon Quarry operates along a specific route due to characteristics of the local road network. The route is described in detail in Appendix A13 and comprises:

13.3.6 **Link 1 - Iron Mine Lane:** This is a narrow (3m to 4.5m wide), single carriageway, 2-way residential road that runs from Burrator Road in the west to the edge of Yennadon Down in the east (approximately 220m). There is a cattle grid on Iron Mine Lane approximately 150m east of Burrator Road. With the exception of the junction markings at Burrator Road, no lane markings or other road markings exist. The entire stretch of carriageway has a 30mph speed limit. There are no footways, street lights or parking restrictions in place along the entire carriageway.

13.3.7 **Link 2 - Burrator Road**: This is a narrow (3m to 4m wide) single carriageway, 2-way highway, subject to the national 30mph speed limit. Burrator Road runs roughly in a north-south direction. The junction with Iron Mine Lane is a crossroads; with Iron Mine Lane extending to the east and Link Lane extending to the west. There is one street light at this crossroads. There are no footways along the carriageway except for a short section either side of the junction with Manor Park. There are no parking restrictions along the entire carriageway.

13.3.8 **Link 3 - B 3212 [Dousland Road] to A386 [Yelverton roundabout]**: The primary HGV route extends from Burrator Road southwest to the A386, which avoids Dartmoor National Park. The B3212 is a single carriageway, 2-way highway, which is subject to national speed limits: 60mph or 30mph at Dousland and Yelverton. The carriageway ranges from 3m to 5m wide. There are no footways along the carriageway except for short sections at Yelverton. The only street lights along the B3212 link are at Yelverton

13.3.9 From the Yelverton roundabout [A386], the HGV route depends on the client delivery location.

13.3.10 The A386 Tavistock Road to the southwest is the principal route linking Yelverton to Plymouth and the A38 Devon Expressway. The A386 Tavistock Road is congested during the a.m. and p.m. peak hours, particularly at Derriford roundabout and to a lesser extent at The George junction.

13.3.11 To the northwest of the Yelverton roundabout, the A386 is the principal route linking Yelverton to Tavistock.

Traffic Volume

13.3.12 An Automatic Traffic Count (ATC) undertaken by Devon County Council between 29th April 2006 and 1st May 2006 indicated that Burrator Road has an Average Daily Traffic flow (ADT) of approximately 1,874 vehicles. The average (mean) vehicle speed recorded over this period was 31.7mph.

13.3.13 The traffic survey conducted by John Grimes Partnership on Burrator Road at the crossroads with Iron Mine Lane on 22nd July 2011 indicated that HGVs and small lorries (including buses) made up 3% of the traffic on Link 2 [Note: rubbish collection took place on this day and accounted for two HGV movements in both directions]. Other commercial vehicles made up approximately 5% of the traffic.

13.3.14 A permanent ATC site at Dousland on the B3212 to the southwest of the junction with Burrator Road indicated an Average Annual 24hr Day Traffic Flow (AADT) of 3,750 vehicles for 2000. Of these 70 were HGVs (>3 tonnes including buses and coaches). The 1990 AADT figure was 3,930 vehicles in total.

Safety Data

13.3.15 A review of personal injury accident (PIA) data for the past three years (01/01/2008 to 31/12/2010) established that one PIA occurred at the crossroads of Iron Mine Lane and Burrator Road. This incident occurred on a Sunday (01/03/2009) at 13:40 and involved two cars and was rated as only slight in severity. Car V1 was attempting to pull out of Iron Mine Lane and turn right. As V1 pulled out car V2 came into view and the vehicles collided. The PIA data notes that the junction has a very poor line of sight to the right. However, it is considered that this junction provides adequate visibility providing vehicles adhere to the speed limit.

13.3.16 Four PIAs were recorded along the B3212 and two PIAs were recorded at the roundabout / junction with the A386. Five incidents were recorded as being slight and one as serious. None of these incidents involved HGVs. No other PIAs were recorded along links1, 2 and 3 in this period.

Public Transport and Cycling

13.3.17 Dousland has limited accessibility to public transport, with one bus service provided in Burrator Road. The closest bus stop to Iron Mine Lane is located in Burrator Road immediately south of the junction with Iron Mine Lane (approximately 220m from the access track and 620m from the quarry entrance). Dousland is served by buses with only limited frequency. There are no direct bus services to Plymouth City Centre. During the weekday, no services currently pass Iron Mine Lane prior to 08:00. As site working hours at Yennadon Quarry are 0800 to 1800 Monday to Friday and 0800 to 1300 on Saturdays, public transport is not suitable as 'Sustainable Access' for employees.

13.3.18 Burrator Road and the nearby Burrator Reservoir is a popular cycle route. Devon Online advertises the Burrator Reservoir Cycle Route, with the start point being along Burrator Road. There are no designated cycle lanes in the vicinity.

Existing Traffic Management Arrangements

13.3.19 Yennadon Quarry currently implements the following traffic management arrangements:

- Vehicle maintenance plan for HGV comprising basic daily inspections and frequent thorough maintenance checks. Six weekly VOSA safety inspections are a legal requirement.
- The HGV remains in the site office compound area and does not enter the quarry processing area or working area where excessive mud can occur. The compound comprises areas of concrete hardstanding and compacted stone fill, which during wet weather has a thin layer of mud across the area. The amount of mud in compound area and staff / visitor car park is monitored and cleaning / maintenance carried out when excessive mud accumulates.
- The compacted stone access track effectively removes any mud / debris from the HGV tyres prior to it joining the local highway network. Yennadon Stone maintains the access track to a condition suitable for their use. There is a 5mph speed limit imposed on all Yennadon employees using the access track, including the HGV.

13.3.20 Stone is weighed prior to placing on the HGV, which mitigates the requirement for a weighbridge at the site.

13.4 Assessment of Impacts

Traffic and Operational Assessment

13.4.1 The maximum number of HGV trips permitted per week is proposed to be reduced to 30. The proposed extension will not involve the construction of any new structures (i.e. existing site offices and processing areas are to remain) therefore there will be no requirement for construction traffic to attend site.

13.4.2 Concerns raised by local residents during the public consultation on 23rd April 2013 included a perceived increase in the volume of traffic and speed of vehicles along Iron Mine Lane. Although quarry traffic was a concern, other vehicles (such as horse boxes) were included within the complaints. With regard to the volume of private vehicles, employee's vehicle numbers are not expected to increase under the proposed development. Due to the rural location, limited public transport and distance employees travel to their workplace; sustainable modes of travel for employees are considered to be impracticable. A number of employees already car-share. Employees are required to follow the speed limit on the private access road and are encouraged by the quarry management to be considerate to residents while using the public highways. Employee vehicles are considered to make up a small volume of the traffic using the local public highways.

13.4.3 The traffic survey during the hours of operation of the quarry counted 1179 vehicle trips in 10 hours. Of these, 28 where HGV or small lorries (including buses and waste collection vehicles) equating to 2.4% of traffic on Burrator Road. The quarry currently accounts for approximately 20 HGV lorries per week (which currently include 15 return trips for stone delivers and five miscellaneous deliveries per week), and operates 5.5 days per week. At these levels the current quarry operation contributes 3.63 HGV vehicles per day or 7.26 HGV trips per day or 0.62% of traffic on Burrator Road. Increasing HGV trips to 30 per week equates to 5.45 HGV vehicles per day or 10.9 trips per day or 0.92% of traffic on Burrator Road. The increase in traffic is 3.64 HGV trips per day. This represents an increase of traffic on Burrator Road of 0.3% associated with the proposal. Therefore, any increase in HGV traffic as a result of the proposed quarry extension on the local public highways is considered to be negligible.

13.4.4 The accident history does not raise any significant accident concerns, and the proposed quarry extension is not expected to increase accident rates on the highway.

13.4.5 Road noise is also considered to be an issue and appears to be predominantly resulting from when the empty HGV 'rattles' when going over potholes in the access road and the cattle grid in Iron Mine Lane. The quarry operators currently maintain the access road and infill potholes as and when required. Traffic calming measures, such as speed bumps, are not considered appropriate along Iron Mine Lane or Burrator Road as these would result in an increase in noise levels from the HGV.

Evaluation of Significance

13.4.6 The evaluation of significance of assessed impacts has been judged on the criteria given in Section 3.0 of this Environmental Statement and is summarised in Table 13/01.

Element	Geographical	Nature	Duration	Significance	Mitigation
Volume of quarry related traffic	Local	Not significant	Medium / Long	Minor	Maintain traffic management
Road noise related to quarry traffic	Local	Not significant	Medium / Long	Minor	Repair potholes

Table 13/01: Summary of the assessment of potential impacts

13.4.7 With regard to the volume of traffic generated by the proposals, the geographical impacts are **local**, since their impacts are limited to Iron Mine Lane, Burrator Road and the B3212. The potential impact on the local highway network of a 0.3% increase in HGV trips per day is likely to be **not significant**. Furthermore, reducing the maximum permitted number of vehicles associated with the operation of the quarry reduces the potential

impact of the quarry operation as compared to the current planning permission. Their duration can be considered to be **medium** to **long-term** impacts since the development will cease by 2025 when the current planning permission expires. Therefore, the overall significance of the proposed quarry extension on the transport network is considered to be **minor**.

13.4.8 With regard to road noise generated by the proposals, the geographical impacts are considered to be **local**. The potential impact on the local highway network of a 0.3% increase in HGV trips per day is likely to be **not significant**. The duration can be considered to be **medium to long-term** impacts since the development will cease by 2025 when the current planning permission expires. Therefore, the overall significance of the proposed quarry extension on the levels of road noise is considered to be **minor**.

13.5 Mitigation and Residual Effects

Mitigation

13.5.1 It is proposed that the existing traffic management arrangements will continue to be operated as existing. The following traffic management measures are recommended to mitigate the potential impacts of the quarry extension:

- Continue vehicle maintenance plan for HGV (i.e. basic daily inspections and frequent thorough maintenance checks).
- Monitor the amount of mud in compound area and staff / visitor car park; carryout cleaning / maintenance if excessive mud accumulates.
- Maintain access routes to the quarry to prevent the significant development of potholes and to ensure the excess track effectively removes mud from HGV tyres.
- Ensure all staff receive training and guidance on the speed limit along the access road.

13.5.2 As the junction at the end of Iron Mine Lane has a very poor line of sight to the right onto Burrator Road, it is recommended that consultation is undertaken with the Highways Authority as to the feasibility of erecting additional signage on Burrator Road warning of HGVs turning. This could encourage vehicle users to reduce speed prior to the crossroads.

13.5.3 Due to the limited nature of the local public transport system, it is considered that public transport is not suitable as 'Sustainable Access' for employees.

Residual Effects

13.5.4 The implementation of the mitigation measures described above will ensure that there will be no significant residual effects of the development upon the existing local highway network users. The measures will provide mitigation of the potential impacts of development on the local highway network. It is anticipated therefore that there will be temporary insignificant impacts on the local transport network during the operation of the quarry extension. These impacts would cease upon final restoration and closure of the site. No permanent residual effects are anticipated.

13.5.5 In summary, the key residual effects are:

- The impact of the vehicle trips associated with the operation of the proposed quarry extension on the existing highway network users is expected to be negligible;
- The existing quarry access is expected to continue to operate efficiently and safely;
- The accident history does not raise any significant accident concerns, and the proposed quarry extension is not expected to increase accident rates on the highway;
- The existing arrangements are expected to remain effective in minimising debris being tracked onto the highway;
- The proposed extension is expected to have a negligible impact on the local highway network.

14.0 ECOLOGICAL HABITATS AND BIODIVERSITY

14.1 Introduction

14.1.1 This section of the Environmental Statement has been prepared by Acorn Ecology Ltd and assesses the ecological effects of the proposed quarry extension at Yennadon Quarry.

14.1.2 This chapter follows the procedure of ecological impact assessment with reference to guidance produced by the Institute of Ecology and Environmental Management (IEEM). It covers the methods used to gather baseline ecological data, the results of those studies, assessment of impacts, mitigation strategies and residual effects.

14.1.3 Technical ecological survey reports including the Phase 1 habitat survey report and separate species reports are given in Appendix A14. In addition, a site-specific biodiversity mitigation and enhancement plan (BMEP) has been produced as part of the restoration plan and is also provided in Appendix A14. Verification Surveys were carried out in May 2013 and October 2014, which established that there were no significant changes in the habitats present. The overall potential for protected species to be present remained unchanged to when the 2010/2011 surveys were undertaken.

14.2 Methodology

Desk Study

14.2.1 A desk study was undertaken by obtaining a biological records search through the Devon Biodiversity Records Centre (DBRC) during November 2010. The data search identified records of statutory and non-statutory sites (such as Special Areas of Conservation (SACs), Sites of Special Scientific Interest (SSSIs) and County Wildlife Sites (CWSs)) and legally protected or notable species within 2km of OS grid reference SX 542 687.

14.2.2 Due to the mobility of bat species an additional data search for records of bat species was undertaken through DBRC to a radius of 4km of the site. A search on the National Biodiversity Network website (www.nbn.org.uk) for records of high brown fritillary (*Argynnis adippe*) was also undertaken.

14.2.3 A Phase 1 habitat survey report for the site produced by *Rural Arisings* (August 2006) was also referred to during the study.

Field Survey

14.2.4 The various field survey methodologies undertaken are discussed below:

14.2.5 ***Extended Phase 1 Habitat Survey:*** A Phase 1 Habitat survey was undertaken on the 9th November 2010 by Ecologist Adam Bratt BSc (Hons), AIEEM. The standard methodology for identifying habitats as published by the JNCC (2010) was followed. In addition to this signs of and potential for protected species was noted.

14.2.6 ***Badger Survey:*** Signs of badgers (e.g. setts, latrines, foraging signs etc.) were surveyed for during the Phase 1 Habitat survey on the 9th November 2010. This was supplemented with additional checks on the activity level of setts present during surveys for other protected species during the period April to August 2011.

14.2.7 ***Bat Survey:*** Potential for the quarry to be used by bats for roosting was identified during the Phase 1 Habitat survey on the 9th November 2010. This was followed by two transect surveys at the quarry (undertaken in June and July 2011) by Adam Bratt and Sarah Candlin following guidelines published by the Bat Conservation Trust (2007). One survey was conducted at dusk and one at dawn. Surveyors were equipped with duet and Anabat SD1/SD2 bat detectors. Routes were walked around the quarry to incorporate areas where bats could potentially be roosting. Stopping locations were incorporated into the routes taken to watch areas where bats may emerge (or re-enter) potential roost sites. The number of bat passes was recorded during each survey. Bat passes do not equate to the number of bats present (and as a single bat may make several passes, and passes are often much higher than the number of bats encountered) but do give an indication of levels of bat activity present on a site.

Survey Date	16th June 2011
Lead Ecologist	Sarah Candlin BSc (Hons), AIEEM - *NE Bat Survey Licence 20112238*
Assistant	Charlotte Bellamy BSc (Hons)
Time of sunset	21:30
Start time	21:20
Finish time	23:25
Weather conditions	12°C, 45% cloud cover, wind force 2/3, dry

Table 14/01: Bat Survey 1 Details (Dusk)

Survey Date	26th July 2011
Lead Ecologist	Adam Bratt BSc (Hons), AIEEM - *NE Bat Survey Licence 20113708*
Assistant	Ele Cooper BSc (Hons), MSc
Time of sunrise	05:32
Start time	03:45
Finish time	05:30
Weather conditions	14°C, 80% cloud cover, wind force 2/3, dry

Table 14/02: Bat Survey 2 Details (Dawn)

14.2.8 ***Botanical survey:*** A botanical list was compiled during ecological survey visits between November 2010 and September 2011. A specific botanical survey was compiled by Senior Ecologist Sue Searle BSc (Hons), PGDip (Ecology), MIEEM on the 22nd September 2011.

14.2.9 ***Breeding Bird Survey:*** An assessment of the breeding bird assemblage surrounding the quarry was undertaken by Adam Bratt BSc (Hons), AIEEM following a methodology similar to the British Trust for Ornithology (BTO) Common Bird Census (CBC). A transect was walked around the site and birds (and their activity) recorded onto a map of the survey area. Three visits were undertaken during suitable conditions (one in April, May and June 2011). The survey information allowed an assessment of which species were breeding within the survey area, and an estimation of the number of pairs present.

Survey date	Sunrise time	Start time	Finish time	Weather conditions
07.04.11	06:30	06:20	08:20	10°C, dry, <10% cloud cover, wind force 0-1, dry
13.05.11	05:30	05:30	07:45	8°C, dry, 10% cloud cover, wind force 1-2, dry
14.06.11	05:03	06:15	07:45	8°C, dry, 10% cloud cover, wind force 0-1, dry

Table 14/03: Bird Survey Details

14.2.10 ***Butterfly Survey:*** A survey for larval food plants of the high brown fritillary was undertaken by Adam Bratt on the 7th April 2011. The area of proposed new quarry was walked and the presence of violets noted. The frequency of occurrence of violets within the survey area was assessed against the DAFOR scale (dominant, abundant, frequent, occasional and rare).

14.2.11 A survey for larva of the high brown fritillary was also undertaken by Adam Bratt on the 7th April 2011. Thirty patches of bracken litter (each approximately 2 m^2) within the area of proposed new quarry were visually inspected. Each patch of bracken was inspected for between 1-2 minutes for the presence of larvae (caterpillars). Weather conditions were 14°C; dry and 50% cloud cover.

14.2.12 Three walked transect surveys were conducted between July and August 2011 to determine the presence of adult butterflies within the area of proposed new quarry. Surveys were carried out based on methodology used in the UK Butterfly Monitoring Scheme. The transect comprised seven sections throughout the area of proposed new quarry and the immediate surrounds, totalling approximately 1km in length and covering a representation of the habitats present. The habitat within each section was described using the habitat classification for butterfly transects produced by the UK Butterfly

Monitoring Scheme. Surveys were undertaken during suitable weather conditions (either 13-17°C with at least 60% sunshine or over 17°C and not raining) and where possible between the hours of 10:45 and 15:45 hours. Transects were walked at a steady, slow pace to enable identification of butterflies seen. All butterflies within 2.5m either side of the surveyor (and 5m in front) were recorded. Binoculars were available to aid with identification.

Survey type	**Date**	**Surveyor***	**Weather conditions and times** (where appropriate)
Larval food plant survey	7th April 2011	AB	14°C, 50% cloud cover, dry.
Larval survey	7th April 2011	AB	14°C, 50% cloud cover, dry.
Transect survey 1	15th July 2011	AB	Start time: 11:30. 18°C, 100% cloud cover, dry.
Transect survey 2	27th July 2011	AB	Start time: 14:45. 25°C, 20% cloud cover, dry.
Transect survey 3	9th August 2011	SS	Start time: 16:45. 18°C, 15% cloud cover, dry.

*AB Adam Bratt BSc (Hons), AIEEM
SS Sue Searle BSc (Hons), PG Dip (Ecology), MIEEM

Table 14/04: Details of Butterfly Surveys undertaken at Yennadon Quarry

14.2.13 ***Reptile Survey:*** Standard methods for conducting reptile surveys were employed, including refugia surveys and walked transects aimed at identifying basking reptiles. 34 reptile refugia (either bitumen roofing felt squares or sheets of corrugated bitumen or metal, measuring at least 0.5m^2) were placed in suitable habitat within the area of proposed new quarry to the north of the existing quarry in April 2011. Tiles were then checked on seven occasions for presence of reptiles during suitable weather conditions. Four walked transect surveys were conducted between April and June 2011 to determine the presence of reptiles basking in areas of the site other than under or on top of reptile tiles. Each survey consisted of walking four North/ South routes through the proposed new quarry area and identifying any reptiles basking.

Survey type	**Date and Time**	**Surveyor***	**Weather conditions**
Transect Survey 1	7th April 2011 11:00	AB	14°C, 50% cloud cover, dry.
Refugia Survey 1	19th April 09:15	EC	18°C, 20% cloud cover, dry.
Refugia Survey 2	21st April 2011 08:50	EC	18°C, 5% cloud cover, dry.
Refugia Survey 3	26th April 2011 08:50	EC	14°C, 20% cloud cover, dry.
Refugia Survey 4 Transect Survey 2	10th May 2011 09:10	EC	13°C, 70% cloud cover, dry.
Refugia Survey 5 Transect Survey 3	13th May 2011 08:30	AB	12°C, 100% cloud cover, dry.
Refugia Survey 6 Transect Survey 4	14th June 2011 08:00	AB	12°C, 0% cloud cover, dry.
Refugia Survey 7	15th July 2011 10:45	AB	16°C, 100% cloud cover, dry.

*AB Adam Bratt BSc (Hons), AIEEM
EC Eleanor Cooper BSc (Hons), MSc

Table 14/05: Details of Reptile Surveys undertaken at Yennadon Quarry

Method of Ecological Evaluation

14.2.14 When assessing the ecological value of the site, regard has been given to the Guidelines for Ecological Impact Assessment in the United Kingdom published by the Institute of Ecology and Environmental Management (IEEM 2006).

Assigning Ecological Value

14.2.15 Assigning value to ecological features is a key part of the assessment process, but one that is both complex and subjective and which the guidelines recognise requires a level of professional judgement. Consideration is given to a range of factors including geographic frame of reference, designated sites, biodiversity value, potential value, secondary or supporting value, social value and legally protected sites and species. The UK and Dartmoor Biodiversity Action Plans have been referred to in this process where appropriate.

14.2.16 For each habitat or species (or species group) present, their importance has been given in a geographical context using the following hierarchy:

- International
- National (UK)
- Regional (Southwest)
- County (Devon)
- District (Dartmoor National Park)
- Local (Parish)
- Site

Predicting and Characterising Ecological Impacts

14.2.17 In addition to determining ecological value of features, the anticipated level of impact arising from proposals is also considered. When considering impacts consideration is given to a number of factors including whether impacts are positive or negative, the magnitude of impact, the extent, duration, reversibility, timing and frequency. Using these factors to characterise impacts allows an assessment of significance to be employed with reference to impacts.

Significance of Ecological Impacts

14.2.18 An "ecologically significant impact is defined as an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area" (IEEM 2006).

14.2.19 A judgement has therefore been given based on whether the effects on the integrity or conservation status of each ecological feature will be significant. The impact significance is determined at the appropriate geographical level. For example, although the impact on a feature may be limited or negligible at a county level, they may be significant at a local level.

14.3 Baseline Conditions

14.3.1 This section outlines and summarises the findings of the ecological surveys undertaken at Yennadon Quarry. Full details of the desk and field studies undertaken are provided in the survey reports within Appendix A14 of this report.

14.3.2 ***Statutory Designated Sites*:** The site is not within any statutory sites of nature conservation interest, however the site is fully within Dartmoor National Park. There is one Site of Special Scientific Interest (SSSI) located within 2km. This is Burrator Quarries SSSI located approximately 1.2km to the southeast of Yennadon Quarry (grid reference SX549677). Burrator Quarries have been designated due to their geological (and not ecological) interest.

14.3.3 ***Non-Statutory Designated Sites*:** The site does not lie within any non-statutory sites of nature conservation interest. There are four County Wildlife Sites (CWS) and two Unconfirmed Wildlife Sites (UWS) within 2km of Yennadon Quarry. These include sites with semi-natural ancient woodland, acid flush and unimproved and semi-improved acid grassland. The closest of these sites is Bowden Plantation CWS (grid reference SX551677) located approximately 1.1km to the southeast, comprising of semi-natural and ancient woodland.

14.3.4 ***Protected and Notable Species*:** The records search with the Devon biodiversity Records Centre (DBRC) returned fifty three records of legally protected or notable plant and animal species within 2km of Yennadon Quarry. Protected and notable species include common lizard, badger, dormouse and butterfly and moth species. An additional search for bats (within 4km of the site) included results for common pipistrelle, brown long-eared, lesser horseshoe and noctule. None of these records are within the survey area. However, this is potentially due to lack of survey effort or non-submission of records.

<u>Habitats</u>

14.3.5 Details and locations of habitats can be seen within the Phase 1 Habitat survey report, including a Phase 1 Habitat map (Appendix A14).

14.3.6 ***Unimproved acid grassland:*** Land to the north of the existing quarry (and proposed quarry extension) comprises of a mosaic of unimproved acid grassland, gorse and bracken. Vegetation in this area is maintained at a very short sward height by the extensive grazing of livestock (sheep, ponies and cattle). Grass species present include purple moor grass *Molinia caerulea*, common bent *Agrostis capillaris*, bristle bent *Agrostis curtisii*, wavy hair grass *Deschampsia flexuos,* cock's-foot *Dactylis glomerata*, and fescues *Festuca* sp. Other plant species include tormentil *Potentilla erecta*, heath bedstraw *Galium mollugo*, common mouse ear *Cerastium fontanum*, common sorrel *Rumex acetosa*, sheep's sorrel *Rumex acetosella*, heath milkwort *Polygala serpyllifolia*, common dog violet *Viola riviniana*, foxglove *Digitalis purpurea*, bell heather *Erica cinerea* and heath wood-rush *Luzula multiflora*.

14.3.7 ***Bracken:*** Bracken *Pteridium aquilinum* covers in excess of 50% of the area of proposed quarry extension. The densest areas of bracken cover the western part of the new quarry area extending towards the hedgerow at the western boundary of the site. Bracken covers areas of unimproved acid grassland (as described above).

14.3.8 ***Scrub:*** Scattered gorse scrub covers areas to the north of the existing quarry. The majority of gorse present is European gorse *Ulex europaeus*, although western gorse *Ulex gallii* is present in small quantities too. Dense European gorse is also present surrounding the active quarry (primarily on the southern periphery of actively worked areas). Scrub consisting of bramble *Rubus fructicosus*, blackthorn *Prunus spinosa* and small amounts of buddleia *Buddleia davidii* is also present surrounding the active quarry area.

14.3.9 ***Scattered trees:*** Scattered trees including sessile oak *Quercus petraea* and hawthorn *Crataegus monogyna* are present in areas of dense bracken to the north and west of the quarry. Several small planted specimens including ash *Fraxinus excelsior*, silver birch *Betula pendula* and beech *Fagus sylvatica* are present amongst dense scrub immediately to the west of the quarry.

14.3.10 ***Hedgerow:*** An intact, species-rich hedgerow is located to the west of the quarry running in a north/south direction. This hedgerow marks the boundary between enclosed pasture to the west and unenclosed and unimproved acid grassland to the east. Woody species present include sessile oak, hazel *Corylus avellana*, alder *Alnus glutinosa*, blackthorn, holly *Ilex aquifolium*, elder *Sambucus nigra* and European gorse. Other plant species include foxglove, bilberry *Vaccinium myrtillus* and ferns *Dryopteris sp*.

14.3.11 ***Quarry:*** Yennadon quarry is an active slate quarry comprising exposed rock and spoil piles consisting of broken aggregate. Although some of the older spoil piles to the south and west have been colonised by scrub, the majority of recent piles are moved relatively regularly and are not vegetated. The northern (and to some extents eastern) faces are those most worked during 2011 and include steep vertical rock faces up to approximately 15m in height.

14.3.12 ***Buildings:*** An open-fronted wooden building used as a stone cutting shed is present within the quarry. Offices in Portakabin/metal containers are present at the southern end of the quarry.

Protected Species

14.3.13 Detailed reports concerning each of the following species/ species groups can be read within the technical reports in Appendix A14.

14.3.14 ***Badgers:*** Two badger setts (consisting of one and two entrances respectively) were identified in the hedge bank of the hedgerow to the west of Yennadon Quarry. These setts have shown evidence of current use during the entire survey period (November 2010 to August 2011) and despite its relatively small size the larger sett may be used for breeding and therefore may be a main sett for badgers. The amount of spoil associated with the sett entrances indicates that the setts present are small, and likely to be restricted to the hedge bank. Two other mammal burrows with single entrance holes were identified to the north of Yennadon Quarry (within the proposed quarry extension area). Although large enough for a badger to access, neither of these entrances showed signs of current use by badgers during the survey period.

14.3.15 ***Bat species:*** During the Phase 1 habitat survey no obvious bat roost sites were noted. Trees to the north of the quarry comprise of relatively small hawthorn trees with no potential to be used by bats for roosting. The buildings on site (Portakabins and open fronted cutting shed) are considered largely unsuitable to be used by roosting bats either due to high light levels, high levels of noise disturbance or lack of suitable crevices for roosting. Although the quarry faces have no obvious large crevices, bat activity surveys were used to determine whether a roost was present within the quarry.

14.3.16 The dusk survey conducted in June 2011 did not identify any bats emerging from roost sites within the quarry. Passes by both common pipistrelle *Pipistrellus pipistrellus* and

noctule *Nyctalus noctula* bats were recorded during the survey both within and on the edge of the quarry.

14.3.17 The dawn survey conducted in July 2011 did not identify any swarming behaviour by bats or re-entry to roost sites. Small numbers of passes by common pipistrelle bats were recorded both within and on the edge of the quarry. The following tables show the number of bat passes recorded during the two surveys.

Time	Species	No. of bat passes		Time	Species	No. of bat passes
21:53	Common pipistrelle	1		22:11	Noctule	1
21:54	Common pipistrelle	4		22:13	Common pipistrelle	1
21.55	Common pipistrelle	4		22:15	Noctule	4
21:56	Common pipistrelle	3		22:16	Noctule	3
21:57	Common pipistrelle	4		22:18	Noctule	2
21:58	Common pipistrelle	4		22:18	Common pipistrelle	1
21:59	Common pipistrelle	4		22:21	Noctule	1
22:00	Common pipistrelle	3		22:21	Common pipistrelle	3
22:01	Common pipistrelle	4		22:22	Noctule	2
22:02	Common pipistrelle	4		22:23	Noctule	1
22:03	Common pipistrelle	4		22:24	Common pipistrelle	1
22:04	Common pipistrelle	4		22:28	Noctule	1
22:05	Common pipistrelle	2		22:30	Noctule	1
22:06	Common pipistrelle	4		22:30	Common pipistrelle	1
22:07	Common pipistrelle	4		22:39	Common pipistrelle	1
22:08	Common pipistrelle	4		22:54	Common pipistrelle	1
22:09	Common pipistrelle	2		23:09	Common pipistrelle	1
22:10	Common pipistrelle	1				

Species: Common pipistrelle (*Pipistrellus pipistrellus*); Noctule (*Nyctalus noctula*)

Table 14/06: Bat Passes Recorded during the Survey (16th June 2011)

Time	Species	No. of bat passes		Time	Species	No. of bat passes
03:49	Common pipistrelle	2		04:52	Common pipistrelle	1
03:51	Common pipistrelle	1		04:53	Common pipistrelle	1
04:19	Common pipistrelle	4		04:54	Common pipistrelle	1
04:20	Common pipistrelle	2		05:04	Common pipistrelle	1
04:29	Common pipistrelle	1				

Table 14/07: Bat Passes Recorded during the Survey (26th July 2011)

14.3.18 ***Botanical species:*** The botanical survey did not identify any legally protected or notable plant species in the area of the proposed new quarry. Plants identified are described in the relevant habitat descriptions. It is possible that other areas of Yennadon Down do support notable plant species.

Common name	Latin name	Conservation status			Status on site[4]	Est. no. of pairs[5]
		Schedule 1[1]	BOCC[2]	UKBAP[3]		
Hobby*	*Falco subbuteo*	Yes	Green	-	Not breeding	-
Linnet	***Carduelis cannabina***	**-**	**Red**	**Yes**	**Probably breeding**	**3**
Skylark	***Alauda arvensis***	**-**	**Red**	**Yes**	**Probably breeding**	**3**
Yellowhammer	***Emberiza citrinella***	**-**	**Red**	**Yes**	**Probably breeding**	**1**
Song thrush	*Turdus philomelos*	-	Red	Yes	Probably breeding	1
House sparrow	*Passer domesticus*	-	Red	Yes	Possibly breeding	-
Spotted flycatcher*	*Muscicapa striata*	-	Red	Yes	Not breeding	-
Dunnock	*Prunella modularis*	-	Amber	-	Confirmed breeding	2-3
Stonechat	***Saxicola torquata***	**-**	**Amber**	**-**	**Probably breeding**	**4**
Meadow pipit	***Anthus pratensis***	**-**	**Amber**	**-**	**Probably breeding**	**2-3**
Willow Warbler	*Phylloscopus trochilus*	-	Amber	-	Probably breeding	1-2
Swallow	*Hirundo rustica*	-	Amber	-	Not breeding	-
House martin	*Delichon urbica*	-	Amber	-	Not breeding	-
Coal tit	*Periparus ater*	-	Green	-	Confirmed breeding	1
Blackbird	*Turdus merula*	-	Green	-	Probably breeding	2-3
Pied wagtail	*Motacilla alba*	-	Green	-	Probably breeding	2-3
Wren	*Troglodytes troglodytes*	-	Green	-	Probably breeding	2
Chaffinch	*Fringilla coelebs*	-	Green	-	Probably breeding	2
Blue tit	*Cyanistes caeruleus*	-	Green	-	Probably breeding	1-2
Robin	*Erithacus rubecula*	-	Green	-	Probably breeding	1-2
Greenfinch	*Carduelis chloris*	-	Green	-	Probably breeding	1-2
Great tit	*Parus major*	-	Green	-	Probably breeding	1
Chiffchaff	*Phylloscopus collybita*	-	Green	-	Probably breeding	1
Carrion crow	*Corvus corone corone*	-	Green	-	Possibly breeding	-
Goldfinch	*Carduelis carduelis*	-	Green	-	Possibly breeding	-
Great spotted woodpecker	*Dendrocopos major*	-	Green	-	Possibly breeding	-
Jackdaw	*Corvus monedula*	-	Green	-	Possibly breeding	-
Long-tailed tit	*Aegithalos caudatus*	-	Green	-	Possibly breeding	-
Magpie	*Pica pica*	-	Green	-	Possibly breeding	-
Rook	*Corvus frugilegus*	-	Green	-	Not breeding	-
Woodpigeon	*Columba palumbus*	-	Green	-	Not breeding	-

*Hobby and Spotted Flycatcher were both incidental results gathered during other ecological surveys undertaken in June 2011. A single hobby was seen flying to the north of the survey area and a spotted flycatcher foraging on the edge of woodland to the north of the site. Neither species is considered to be breeding on site.
Calls of Cuckoo (*Cuculus canorus*) were heard in the distance during the May survey towards Burrator reservoir to the east.
[1]Schedule 1: Refers to birds listed on Schedule 1 of the Wildlife and Countryside Act, 1981 (as amended).
[2]BOCC: Refers to Birds of Conservation Concern (2009).
[3]UKBAP: Refers to species listed on the UK Biodiversity Action Plan www.ukbap.org.uk (for selection criteria see Appendix A14).
[4]Status on site: Breeding status on site -
Possibly breeding: species seen in suitable habitat.
Probably breeding: species seen in suitable habitat with behaviour suggestive of breeding nearby (e.g. territorial male song, carrying nesting material or food or leaving potential nest site, pair of opposite sex).
Confirmed breeding: Bird on nest or dependant juveniles seen.
[5]Estimated number of pairs: An estimation based on the number of pairs or number of calling males recorded on each survey for species confirmed as breeding or probably breeding on site (- = unconfirmed breeding and numbers).

Table 14/08: Bird Species Recorded during Surveys

14.3.19 ***Bird species:*** In total 31 species of bird were recorded either on site or passing over the site during breeding bird surveys and other incidental records (Table 14/08). Birds

recorded were associated with a variety of habitats including woodland to the north of the site, the hedgerow along the western boundary of the site and more open grassland and gorse scrub habitats across Yennadon Down. Those species noted as using the habitat type in the proposed new quarry extension (acid grassland, bracken and scrub mosaic) are in bold.

14.3.20 Eighteen bird species were either confirmed breeding or considered probably breeding on (or adjacent to) the site. These included four red listed bird species of high conservation concern (linnet *Carduelis cannabina*, skylark *Alauda arvensis*, yellowhammer *Emberiza citrinella*, song thrush *Turdus philomelos*) and four amber listed species of medium conservation concern (dunnock *Prunella modularis*, stonechat *Saxicola torquata*, meadow pipit *Anthus pratensis*, willow warbler *Phylloscopus trochilus*) (Eaton *et al.* 2009). A single hobby (listed on Schedule 1 of the Wildlife and Countryside Act, 1981 (as amended) was seen flying to the north of the site during another ecological survey in June. This species was not considered to be nesting on site.

14.3.21 ***Butterfly species:*** Surveys specifically aimed at determining the presence (or likely absence of) high brown fritillary and other fritillaries were undertaken. Food plants of the high brown fritillary (Common dog violets *Viola riviniana*) were identified within the bracken and acid grassland mosaic of the area of proposed new quarry. The frequency of occurrence for violets throughout the site was assessed as being 'Occasional'. No caterpillars of the high brown fritillary were identified during the larval survey. No high brown fritillary (or other legally protected butterfly species) were identified during the transect surveys. Seven species of butterflies were identified during the surveys including individuals or small numbers of speckled wood *Pararge aegeria*, meadow brown *Maniola jurtina*, gatekeeper *Pyronia tithonus*, large white *Pieris brassicae*, small copper *Lycaena phlaeas*, ringlet *Aphantopus hyperantus* and small heath *Coenonympha pamphilus*.

Species	Transect survey 1	Transect survey 2	Transect survey 3
Speckled wood (*Pararge aegeria*)	-	1	5
Meadow brown (*Maniola jurtina*)	2	7	1
Gatekeeper (*Pyronia tithonus*)	-	1	-
Large white (*Pieris brassicae*)	-	4	-
Small copper (*Lycaena phlaeas*)	-	1	1
Ringlet (*Aphantopus hyperantus*)	-	1	-
Small heath (*Coenonympha pamphilus*)	-	-	1

Table 14/09: Numbers of Butterflies Recorded during each Survey

14.3.22 ***Reptile species:*** Surveys of reptile refugia (tiles) resulted in a single adult male common lizard being identified under a reptile tile on the 13th May 2011. No other reptiles were

identified under refugia during the other six surveys. Walked transect surveys identified individual adult common lizards on two occasions.

	19/04/11	21/04/11	26/04/11	10/05/11	13/05/11	14/06/11	15/07/11
Common lizard	-	-	-	-	1 adult	-	-

Table 14/10: Reptile Refugia Survey Results

	07/04/11	10/05/11	13/05/11	14/06/11
Common lizard	1 adult	-	-	1 adult

Table 14/11: Reptile Transect Survey Results

14.4 Assessment of Impact

14.4.1 ***Statutory Designated Sites:*** There is one SSSI within 2km of Yennadon Quarry (Burrator Quarries). The site is designated for geological and not ecological importance. No impacts to this site are predicted.

14.4.2 ***Non-Statutory Designated Sites:*** There are four County Wildlife Sites (CWS) and two Unconfirmed Wildlife Sites (UWS) within 2km of Yennadon Quarry. No impacts to non-statutory sites are predicted.

Habitats

14.4.3 ***Hedgerows:*** The hedgerow to the west of the site and buildings present are not anticipated to be affected by the proposed quarry extension. Therefore, they have been omitted from impact assessment.

14.4.4 ***Unimproved acid grassland, bracken scrub mosaic:*** The unenclosed and unimproved acid grassland, bracken and scrub mosaic of Yennadon Down comprises part of the Dartmoor Biodiversity Action Plan for 'Moorland'. It is likely that Yennadon Down was once largely upland heathland (vegetation with greater than 25% heather, bilberry or western gorse), which is undergoing a transition into 'grass moor' with frequently occurring European gorse. Only very small amounts of heather are present and the grassland is not considered particularly botanically valuable (due to the absence of nationally rare or legally protected plant species).

14.4.5 Objective 6 of the Dartmoor Biodiversity Action Plan (2007) aims to reduce the loss of upland heathland to grass moor. This makes Yennadon Down a good candidate area for habitat improvement. This could take the form of a reduction in grazing intensity or re-establishment of plant species such as heather when the quarry restoration takes place.

Despite the continued conversion of this habitat into that of less ecologically valuable 'grass moor', Yennadon Down is assessed as being of district ecological importance. However, the extension of Yennadon Quarry will result in the loss of approximately 1.0 ha of unimproved acid grassland, bracken and scrub mosaic. Yennadon Down is part of a complex of open common ground of similar unenclosed unimproved acid grassland totalling approximately 408 ha. The **adverse** impact arising from the loss of approximately 1 ha of grassland, bracken and scrub mosaic is considered only significant at the **local** level.

14.4.6 ***Scattered trees:*** Small numbers of scattered hawthorn trees (approximately 10) are present in the area of the proposed quarry extension. Hawthorn trees are frequently occurring across the lower and more sheltered areas of Yennadon Quarry, especially alongside the access track. These are assessed as being of site interest only. The loss of small numbers of small scattered hawthorn trees is considered **adverse** and significant at the **site** level.

14.4.7 ***Quarry:*** Quarries form part of the Dartmoor Habitat Action Plan for 'Rocks'. Yennadon Quarry is an active slate quarry with the worked rock faces regularly disturbed due to quarrying activities. The active quarry faces are largely absent of vegetation and the quarry is not identified as an important site for rare or protected plant or animal species. Therefore Yennadon Quarry is only identified as ecologically important at the **site** level.

14.4.8 The extension of the quarry will include extension to the north and continued working of the northern quarry face. This is anticipated to have a **neutral** ecological impact on the current quarry face.

Protected Species

14.4.9 ***Badgers:*** Badgers are protected under the Protection of Badgers Act 1992. This includes protection from being killed, their setts are protected from damage or destruction and badgers are protected from disturbance whilst occupying a sett. Two badger setts (consisting of one and two entrances respectively) were identified in the hedge bank of the hedgerow to the west of Yennadon Quarry. These setts have shown evidence of current use during the entire survey period and despite its relatively small size it is concluded that the larger sett may be used for breeding and therefore a main sett for badgers. Badgers are widespread and common in Britain, particularly in the southwest of England. The use of the site by badgers is therefore assessed as being of **local** ecological importance.

14.4.10 At present the nearest boundary of the quarry is approximately 80m from the nearest badger sett entrance. The new margin of the extended area of quarry will not encroach within 50m of these sett entrances. The works associated with the extension of the quarry are not anticipated to result in the damage or destruction of badger setts within the hedgerow to the west of the quarry. As works during quarrying will not encroach on these setts closer than what is experienced at present it is considered unlikely that disturbance to badgers (by noise and vibration) will significantly exceed that which they are currently exposed to. There is also not anticipated to be an increase in traffic movements to and from the quarry (or increase in traffic after dusk) and therefore potential harm to badgers due to vehicle collision is not expected to increase.

14.4.11 The medium to long term (<13 years to 2025) loss of approximately 1ha of open acid grassland, scattered gorse scrub and bracken is expected to result in a negligible loss of foraging habitat for badgers (as badgers are anticipated to spend more time foraging alongside the hedgerow, and in improved pastures to the west or in the surrounding woodland). In summary the impact of disturbance and loss of foraging opportunities on badgers is anticipated to be **negligible**.

14.4.12 ***Bat species:*** British bat species are protected under the Wildlife and Countryside Act (1981) and Conservation of Habitats and Species Regulations (2010). These make it illegal to kill, disturb or injure a bat, or damage or destroy a roosting site (amongst other things). No bat roost sites were identified within the quarry. However, the quarry and its immediate surrounds are used for foraging by both common pipistrelle and noctule bats. Both of these species are considered widespread and fairly common. The use of the site by bat species is therefore assessed as being of **local** ecological importance.

14.4.13 It is not anticipated that works to extend the quarry will harm bats or damage or destroy a roosting site. The medium to long term loss of approximately 1 ha of open acid grassland, scattered gorse scrub and bracken is expected to result in a minimal loss of foraging habitat to bat species in the locality and it is not anticipated to disrupt a well-used flight route used by bats. There is no anticipated addition in artificial lighting on site or working at night (with lights) during quarrying activities. In summary the impact of loss of foraging opportunities for bat species is anticipated to be **negligible**.

14.4.14 ***Bird species:*** Bird species are protected under Section 1 of the Wildlife and Countryside Act, 1981 (as amended). This makes it an offence to take, damage or destroy the nests of wild birds whilst being built or in use. Certain species which are listed in Schedule 1 of

the Wildlife and Countryside Act (1981) receive special protection. In these cases any form of intentional or reckless disturbance when they are nesting or rearing dependant young, constitutes an offence. In total eighteen bird species were considered to be breeding or probably breeding within the survey area (which exceeded the area of the proposed quarry extension). This included bird species listed on both the Red and Amber lists of Birds of Conservation Concern (Eaton *et al.* 2009) and listed on the UK Biodiversity Action Plan as priority species. No birds listed on Schedule 1 of the Wildlife and Countryside Act, 1981 (as amended) were recorded as breeding on site. Using criteria developed by Fuller (1980) and adapted by IEEM, the assemblage of breeding birds on the site is assessed as being of local importance.

14.4.15 The medium to long term loss of 1ha of grassland, bracken and scrub mosaic is anticipated to result in the loss of potential nesting habitat for five bird species; linnet, skylark, yellowhammer, stonechat and meadow pipit. Extensive suitable habitat is available for these species beyond the site on Yennadon Down. If works to clear vegetation (including grassland) were to be undertaken during the breeding season then nesting birds or dependant juveniles could be harmed. This would lead to an offence under the Wildlife and Countryside Act (1981). Therefore works to clear vegetation which could be used by birds for nesting is recommended to be removed outside of the nesting season. In summary the impact of loss of 1ha of potential nesting habitat for five bird species is anticipated to be an **adverse** impact and significant only at the **site** level.

14.4.16 ***Butterflies:*** Several butterfly species (including the high brown fritillary) are listed on Schedule 5 of the Wildlife and Countryside Act, 1981 (as amended). Other butterfly species are listed on the UK Biodiversity Action Plan. The principle reason for undertaking butterfly surveys were due to the potential for high brown fritillary butterflies to be present within the area of the proposed quarry extension. No high brown fritillary (or other legally protected butterfly species) were identified during either the larval survey or transect surveys for adult butterflies. Six widespread and common butterfly species were identified and a single small heath (a UK BAP species) was also identified during a transect survey. The site is assessed as being of local ecological importance for butterfly species. The medium to long term loss of approximately 1ha of open acid grassland, scattered gorse scrub and bracken is expected to result in a small loss of habitat for common butterfly species and one UK BAP Species (small heath). The **adverse** impact of this loss is anticipated to be significant at the **site** level.

14.4.17 ***Reptiles:*** Widespread reptile species (including common lizards) are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are protected from being killed or injured. Individual common lizards were identified on three occasions. The suitability of habitat throughout the survey area (and beyond the survey area across Yennadon Down) indicates that the site supports a small and widespread population of common lizard. The use of the site by reptile species is assessed as being of **site** importance.

14.4.18 The medium to long term loss of 1ha of grassland, bracken and scrub mosaic is anticipated to result in the loss of a relatively small amount of habitat for common lizards when compared to the total available habitat across Yennadon Down. However, works to clear the site have the potential to kill or injure common lizards and therefore have potential to result in an offence under the Wildlife and Countryside Act, 1981 (as amended). Therefore, a strategy to protect reptiles during site clearance has been formulated. In summary the **adverse** impact of loss of 1ha of habitat suitable for a small population of common lizards is anticipated to be significant at the **site** level.

Element	Geographical	Nature of Impact	Duration	Significance
Statutory sites (Burrator Quarries SSSI)	National	None	N/A	N/A
Non-statutory sites (various)	County	None	N/A	N/A
Unimproved acid grassland, bracken and scrub mosaic	Local	Adverse	Long	Moderate
Scattered hawthorn trees	Local / Site	Adverse	Long	Moderate
Quarry	Local / Site	Neutral	Long	Insignificant
Badgers	Local	Negligible	Long	Insignificant
Bat species	Local	Negligible	Long	Insignificant
Bird species	Local / Site	Adverse	Long	Moderate
Butterfly species	Local / Site	Adverse	Long	Moderate
Reptile species	Local / Site	Adverse	Long	Moderate

Table 14/12: Assessment of Impacts

14.5 Mitigation Strategies

14.5.1 The following mitigation strategies have been developed to avoid any offences under wildlife legislation and reduce impacts to habitats and species identified within the previous section. Measures have also been implemented to enhance the biodiversity value of the site in line with National Planning Policy Framework (NPPF) which states: "*planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests. In taking decisions, local planning authorities should ensure that appropriate weight is attached to designated sites of international,*

national and local importance; protected species; and to biodiversity and geological interests within the wider environment".

14.5.2 Specific details of these measures have been finalised within a specific biodiversity mitigation and enhancement plan (BMEP) provided in Appendix A14). This document provides a programme of mitigation, compensation and enhancement measures to ensure that the development has due regard for protected species and that the site is enhanced appropriately to benefit biodiversity. This therefore has regard for the NPPF. The BMEP provides a description of mitigation and enhancement measures that will be implemented to ensure that the residual effects of the proposed quarry extension will either be neutral, negligible or beneficial.

14.5.3 ***Site clearance*:** Site clearance will be undertaken in a manner (and at a time of year) which will avoid harm to nesting birds or reptile species. The works programme will also highlight the location of badger sett entrances and avoid vehicle movement or digging operations within a distance which would either damage a sett or cause disturbance to badgers.

14.5.4 ***Reptile translocation*:** Prior to ground works commencing (e.g. turf stripping) a translocation of reptiles will be implemented by a suitably experienced ecologist. A translocation will comprise of setting out of reptile refugia (e.g. tiles) within the areas of work and relocating any reptiles beneath to adjacent habitat. Temporary reptile barrier fencing will be required to prevent recolonisation of the new quarry area prior to works commencing.

14.5.5 ***Bund creation*:** A bund will be created along the northern and western edge of the proposed new quarry extension in order to screen quarrying operations. This will be seeded with species-rich locally sourced seed of locally typical grass and flower species suitable for the acidic soil type present. Also dog-violet and heath dog violet seedling plugs can be planted to give larval food plants for fritillary butterflies. After establishment the bund will be managed in order to create a mosaic of scrub (gorse and/or heather) and more open grassy and flower-rich areas either through light grazing by livestock or seasonal mowing.

14.5.6 ***Restoration of spoil piles*:** Long-term redundant spoil piles from previous quarrying activities on site will be manipulated to restore the original ground profile. At this time these spoil piles will be capped with locally sourced topsoil and seeded with a seed mix

of species-rich locally typical grass and flower species. After establishment restored spoil piles will be managed to provide a mosaic of habitats including scrub (gorse and/or heather) and more open grassy and flower-rich areas for the benefit of a variety of local species including birds, reptiles and invertebrates including butterflies. In addition dog-violet and heath dog violet seedling plugs can also be planted to give larval food plants for fritillary butterflies.

14.5.7 ***Tree planting*:** Ten hawthorn trees will be planted on the newly created bund. These will be planted in a randomised way to give the appearance of scattered and naturally self-sown trees, rather than a straight formal line, evenly spaced. Young trees will be protected by tree guards until established to prevent damage by rabbits and livestock.

14.5.8 ***Creation of two reptile hibernacula on earth bund*:** Two reptile hibernacula will be constructed on the new earth bund prior to seeding. These will consist of two hibernacula following guidelines on Page 45/46 of the Reptile Habitat Management Book (Amphibian and Reptile Conservation 2010). Hibernacula comprise features of rock and log piles under turf where reptiles can both overwinter and bask on top of.

14.5.9 ***Provision of nest boxes for bird species*:** New nesting opportunities will be provided for woodland bird species by the installation of four nest boxes (two robin boxes and two tit boxes) on mature trees within the vicinity of the quarry. Trees alongside the access track offer numerous opportunities to be enhanced for nesting birds.

14.5.10 ***Provision of bat boxes for bat species***: New roosting opportunities will be provided for bat species by the installation of four bat boxes on mature trees within the vicinity of the quarry. Trees alongside the access track offer numerous opportunities to be enhanced for roosting by bat species.

14.5.11 ***Biological monitoring*:** A biological monitoring programme should be established to determine the success of establishment of any habitat creation and effects on species groups. It is suggested that monitoring for species, in particular birds and butterflies, and the establishment of planting, is carried out annually for the first 3 years after start of works and alternate years for the next 4 years giving a total of 7 years of monitoring. This is in order to ensure the site mitigation and enhancement measures are establishing correctly and that populations are returning to or increasing from the baseline levels.

Detailed Proposals

14.5.12 In accordance with the recommendations made by the Local Authority Ecology Officer in the July 2014 Planning Officers Report, detailed proposals for the following will be submitted for approval prior to development and restoration:

1. Grassland habitat creation and management statement (including species mixes, management regimes and habitat provision for ground nesting birds);
2. Pond Creation and Management Statement (including provision for fairy shrimp); and
3. Post quarry restoration habitat and species management plan.

14.6 Residual Effects

14.6.1 This section describes, assesses and summarises the likely impacts of the quarry extension based on the proposed mitigation, compensation and enhancement measures proposed.

14.6.2 ***Statutory Designated Sites:*** There is one SSSI within 2km of Yennadon Quarry (Burrator Quarries). The site is designated for geological and not ecological importance. No impacts to this site are predicted.

14.6.3 ***Non-Statutory Designated Sites:*** There are four County Wildlife Sites (CWS) and two Unconfirmed Wildlife Sites (UWS) within 2km of Yennadon Quarry. No impacts to non-statutory sites are predicted.

Habitats

14.6.4 ***Unimproved acid grassland, bracken scrub mosaic:*** The adverse impact arising from the medium to long term loss of 1 ha of grassland, bracken and scrub mosaic prior to mitigation and compensatory strategies being employed is considered significant at the local level. After restoration of existing spoil piles and creation of a new bund, which will be seeded and managed as acid grassland and scrub mosaic with locally typical plant species, it is anticipated that the residual impacts will be adverse and significant at the site level in the first 3-4 years. However, post restoration, once the grassland has established, there should be an increase in species, which would constitute an **enhancement** for biodiversity.

14.6.5 ***Scattered trees:*** Loss of small numbers of small scattered hawthorn trees prior to mitigation and compensatory strategies being employed is considered adverse and significant at the site level. After compensatory planting of hawthorn trees and measures to ensure

their successful establishment are implemented, the residual effects are anticipated to be **negligible**.

14.6.6 ***Quarry:*** Extension of the quarry will include extension to the north and continued working of the northern quarry face. This is anticipated to have a **neutral** ecological impact both before and after mitigation and compensatory strategies are employed.

Protected Species

14.6.7 ***Badgers:*** The impact of disturbance and loss of foraging opportunities on badgers is anticipated to be **negligible** both prior to and after mitigation and compensatory strategies have been employed.

14.6.8 ***Bat species:*** The negative impact of loss of foraging opportunities for bat species is anticipated to be negligible prior to mitigation and compensatory strategies being employed. After restoration of existing spoil piles and creation of a new bund which will be seeded and managed as acid grassland and scrub mosaic, it is anticipated that the residual impacts will be **neutral**.

14.6.9 ***Bird species:*** The impact of the medium to long-term loss of 1ha of potential nesting habitat for five bird species is anticipated to be significant at the site level prior to mitigation and compensatory strategies being employed. After restoration of existing spoil piles and creation of a new bund which will be seeded and managed as an acid grassland and scrub mosaic, it is anticipated that the residual effects will be **negligible**.

14.6.10 ***Butterfly species:*** The medium to long-term loss of approximately 1ha of open acid grassland, scattered gorse scrub and bracken is expected to result in a small loss of habitat for common butterfly species and one UK BAP Species (small heath). The impact of this loss prior to mitigation and compensatory strategies being employed is anticipated to be significant at the site level. After restoration of existing spoil piles and creation of a new bund which will be seeded and managed as a species rich acid grassland and scrub mosaic, it is anticipated that the residual effects will be **positive.**

14.6.11 ***Reptile species:*** The impact of the medium to long-term loss of 1ha of habitat suitable for a small population of common lizards (and potential for small numbers of common lizards to be killed) is anticipated to be negative and significant at the site level prior to mitigation and compensatory strategies being employed. After implementation of mitigation and compensatory strategies (including translocation of reptiles from the

footprint of the new quarry area; restoration of existing spoil piles; creation of a new bund which will be seeded and managed as acid grassland and scrub mosaic and creation of two new reptile hibernacula on the new earth bund) the residual impacts on reptile species are anticipated to be **negligible** and possibly positive.

Element	Predicted residual effects	Confidence
Statutory sites (Burrator Quarries SSSI)	None	High
Non-statutory sites (various)	None	High
Unimproved acid grassland, bracken and scrub mosaic	Beneficial*	High
Scattered hawthorn trees	Negligible	High
Quarry	Neutral	High
Badgers	Negligible	High
Bat species	Neutral	High
Bird species	Negligible	High
Butterfly species	Beneficial*	High
Reptile species	Negligible	High

* Once grassland has established post restoration, there should be an increase in species, which will enhance biodiversity.

Table 14/13: Summary of Residual Effects

15.0 LANDSCAPE AND VISUAL IMPACT

15.1 Introduction

15.1.1 This section of the Environmental Statement has been prepared by Chris Britton Landscape Associates and assesses the likely landscape and visual impacts of the revised proposals for the extension to Yennadon Quarry.

15.2 Assessment Aims and Methodology

15.2.1 This assessment has been carried out by a chartered member of the Landscape Institute. It was undertaken using a methodology that conforms with the "Guidelines for Landscape and Visual Impact Assessment" (GLVIA) published jointly by the Landscape Institute and the Institute of Environmental Assessment, Third Edition 2013. This describes landscape effects and visual effects in the following manner:

- '*Landscape effects derive from changes in the physical landscape, which may give rise to changes in its character and how this is experienced. This may in turn affect the perceived value ascribed to this landscape.*'
- '*Visual effects relate to the changes that arise in the composition of available views as a result of changes to the landscape, to people's responses to the changes, and to the overall effect with respect to visual amenity*'.

15.2.2 The GLVIA emphasises the aspects that are essential to a successful landscape and visual impact assessment: *proportionality* to ensure relevant weight is given to the most important elements; *transparency* of professional judgement; to allow others to see how judgements have been reached and *what reasoning* has been applied by the assessor and *communication* and *presentation*, so that those reading the LVIA can understand it.

15.2.3 The third edition of the GLVIA emphasises the need to build the assessment around a consistent framework of factors, ensuring a clear judgement and transparency. It follows the guidance of EC directives, which require the identification of 'likely significant effects' rather than any or all effects. The GVLIA emphasises that the work that is carried out in LVIA should be proportional to the scale and nature of the proposed development. Landscape professionals have responsibilities to the character and quality of the environment. Change in the landscape must be managed for the benefit of existing and future generations, seeking to enhance the diversity of the natural environment to enrich the human environment, and to improve them in a sustainable manner. The assessment criteria are set out in Appendix A15.

15.2.4 In line with the Scoping Opinion provided by Dartmoor National Park Authority (DNPA) for the previous application, this landscape and visual impact assessment considers the likely impacts during and after operation of the proposed extension, and then approximately 10-15 years later when the mitigation measures will be fully established. Representative viewpoints have been selected that illustrate the existing character and condition of the landscape around the application site, the visibility of the existing quarry and the contribution that it makes to local character. The same viewpoints have then been used to assess the potential landscape and visual impacts of the revised proposals.

15.2.5 The potential landscape and visual impacts of the revised proposals are assessed against the current baseline situation and the changes that will occur as a result of the existing planning permission, details of which are set out at 4.1.3 of this document. Conclusions are reached as to whether the revised proposals would result in a betterment compared to the provisions of the existing permission and consequently whether the residual impacts of the revised proposals would 'conserve and enhance' the natural beauty of the National Park.

15.2.5 The full Landscape and Visual Impact Assessment (LVIA) forms Appendix A15. All references to figure numbers within this chapter relate to the plans and photographs within the full LVIA. This comprises:

1) **Introduction** - the background to the report; the purpose of the LVIA and the methodology used
2) **Baseline Assessment** – the Planning and Landscape Character Context; assessment of the essential characteristics of Dartmoor; the existing Tranquillity around the site and the Historic Context
3) **Site Assessment** – Existing Site Attributes; Existing impacts of Yennadon Quarry; the Restoration to be completed by the Existing Permission and the Proposals submitted by the Previous Application.
4) **Landscape and Visual Appraisal** – Local landscape Character; Local views towards the Site; Distant views towards the Site and Summary of Conclusions.
5) **Site Proposals** – Revised Landscape Strategy; Revised Site Proposals; Phasing of Proposals and Final Landscape restoration
6) **Assessment of Impacts** – Landscape Impacts; Visual Impacts; Impacts on Tranquillity; Impacts on Landscape Character
7) **Summary and Conclusions** – Compatibility with Planning Policy and Conclusions

15.3 Landscape Policies and Guidelines

15.3.1 All planning decisions are required to be taken in the context of the appropriate Development Plan. This is set out in Chapter 5: Planning Policy Context. In order to avoid unnecessary duplication, only the policies that are relevant to the consideration of landscape and visual issues are considered in detail by the LVIA and this chapter.

15.3.2 Yennadon Quarry lies within the Dartmoor National Park Authority (DNPA) and, as a consequence, it is not subject to the Devon County Mineral Local Plan as would normally be the case with a district planning authority. Detailed Minerals Policy is contained in the DNPA Core Strategy and DNPA Local Plan until such time as this is superseded by more up to date planning policy documents.

15.3.3 The following documents provide the landscape planning context for the site:

- **National Planning Framework (NPPF):** this has replaced the previous Planning Policy Statements. Mineral Planning Guidance is now provided within the National Planning Practice Guidance.

- **Devon Structure Plan:** The Devon Structure Plan has now been revoked, but the following policies provide the context for the policies in the Local Plan and the Core Strategy:
  (a) Policy CO2;
  (b) Policy MN2 (Policy E15 revised);
  (c) Policy MN3 (formerly Policy E16) Mineral Development in National Parks; and
  (d) Policy COR3 (Landscape and Environment).

- **Dartmoor National Park Minerals Local Plan:**
  a) Para 4.4.4 – Devon Structure Plan First Review 1995-2011 policy E16
  b) Key Minerals Local Plan Policy
     Policy M1
     Policy M2
     Policy M3
     Policy M4
  c) Table 7, which refers to Yennadon Quarry (reproduced below):

Site	Mineral	Main Planning Permissions	Scale of Operation	Notes
Yennadon nr. Dousland	Metamorphic	1990	Small	Long established quarry. Building, walling and ornamental stone. Comprehensive conditions

Table 15/01: Extract from Table 7 – Dartmoor National Park Minerals Local Plan

- **DNP Core Strategy Development Plan:** Policies COR1, COR3 and COR22

- **Dartmoor National Park Authority Development Management and Delivery Development Plan Document (DMDDPD) (July 2013):** Policy DMD5: Protecting the character of Dartmoor's landscape.

- **The Landscape Character Assessment of Dartmoor National Park**

- **DNPA Management Plan (2014-2019)**

15.3.4 The full LVIA forming Appendix A15 concentrates on the implications of the landscape policies identified in the 'Reason for Refusal' given for the previous application.

15.3.5 Following a formal Screening Opinion for the previous application, the Dartmoor National Park Authority indicated there is a need to establish, through EIA, the significance of the potential impacts the proposals on the landscape character and visual amenity of the National Park.

15.3.6 Following refusal of the previous application, the scheme was reviewed in order to identify ways to address Dartmoor National Park Authority's (DNPA) concerns. This led to a pre-application meeting with the DNPA Trees and Landscape Officer on 5th November 2014. The following items were identified for detailed consideration:

(i) The need to consider the proposals in the light of the on-going operation of the existing consent (*the previous reasons for refusal incorrectly assumed that the quarry would cease production and be restored if permission was refused*);

(ii) The need to demonstrate how the scheme would 'conserve and enhance' the natural beauty of the National Park (compared to the impacts that would remain as a result of the Existing Permission);

(iii) The need for the Landscape Strategy to explain how the works would be progressively restored, and how this would differ from the situation under the existing consent;

(iii) To give closer consideration to the DNPA Landscape Character Assessment and the implications of Policy DMD5; and

(iv) To consider the potential impacts of the revised proposals on the existing tranquillity of the surrounding area.

15.4 Baseline Conditions

15.4.1 The quarry at Yennadon is set on the western slope of Yennadon Down, approximately 300m to the east of the settlement of Dousland, within the south western confines of Dartmoor National Park. Access to the quarry is gained from Iron Mine Lane via an unmetalled road. The site is surrounded by common land (part of Meavy Common) but there are no rights of access to the existing quarry area itself. Stone has been extracted from Yennadon Quarry for more than 150 years, and as such the quarry forms part of the history of the local landscape. The land under the Applicants' control rises from the access track at around 240m AOD to a level of approximately 268m AOD on its higher eastern boundary. The overall character of the landscape surrounding the application site is illustrated by Figure 2: Site Context Plan in Appendix A15.

The Landscape Character

15.4.2 The landscape character of the area surrounding the site has been considered by a hierarchy of National, County and Local assessments. At the national level, the site lies within National Character Area 150: Dartmoor National Park (as outlined in 'The Landscape of England' produced by English Nature). This is identified as "Extensive unsettled moorland with broad ridges, expansive panoramic views and an overwhelming sense of remoteness and wildness that rises above the surrounding small-scale, enclosed, predominantly pastoral landscape." The NCA profile states that the granite core unites and characterises the entire NCA, with the distinctive tors creating key landscape features and providing focal points for visitors. It concludes that "*the essence of Dartmoor, and the reason many people visit, is the ability to escape modern infrastructure and find tranquility and remoteness*". The LVIA in Appendix A15 presents photographs that illustrate these typical characteristics.

15.4.3 At the local level, the landscape character within the National Park is analysed by the Dartmoor Landscape Character Assessment (DLCA). This was completed in 2010 in order to form part of the evidence base for the National Park Authority's emerging Local Development Framework (LDF) and to guide the revision of the National Park Management Plan. The application site is situated on the western edge of Landscape Character Type (LCT) 1L: Upland Moorland with Tors, just to the west of the boundary with LCT 2D: Moorland Edge Slopes. The DLCA identifies the key characteristics of these character types. These are set out as part of the baseline assessment in Appendix A15.

15.4.4 It is evident from the national and local LCAs that the essential or iconic qualities of Dartmoor are provided principally by the open, windswept upland moors with their wide

views and sense of remoteness and wildness. However, it is noted that former mineral workings and quarries are identified among the key characteristic for both the landscape character types adjacent to the application site. Photographs showing the contribution made by quarries to the local character and 'special qualities' of the Dartmoor landscape, are presented in Appendix A15.

15.4.5 The Core Strategy and the Dartmoor Landscape Character Assessment identify that many areas of Dartmoor have a rich and varied archaeological and built heritage. Within the area around the site this is most clearly expressed in the remains of the former transportation features used to exploit the natural assets of the higher parts of Dartmoor. It is evident that the Plymouth and Dartmoor Railway (or Tramway, as it was horse-drawn), is one of the principal reasons why the quarry was originally established.

15.4.6 The following key conclusions were reached by the baseline assessment:

- Yennadon Quarry has been in existence for at least 150 years, and probably since the Plymouth and Dartmoor Tramway was constructed. It pre-dates the settlement of Dousland and is one of the historic features that contributes to local character or 'sense of place';
- Quarries are an important and often highly visible part of the Dartmoor landscape. They form focal points and places of historic interest and can contribute positively to the special qualities of the National Park;
- The area surrounding the quarry is not part of the remote upland moorland that contribute strongly to the 'iconic' vision of Dartmoor, and the area does not exhibit the key properties or remoteness or high tranquillity; and
- The 'upland fringe' adjacent to the site is characterised by naturally re-generating small trees. These provide opportunities to assimilate the site into the local landscape that do not exist at more elevated locations.

15.5 Brief Description of the Site

15.5.1 The character and condition of the existing quarry site and the area of the proposed extension is illustrated by Figure 14: Site Assessment Plan and by reference to the photographic survey presented in Appendix A15. Where appropriate, these photographs have also been used to help identify potential viewpoints and private receptors that may have views towards the site.

15.5.2 The conclusions reached by the Site Assessment are summarised below in terms of the existing impacts of Yennadon Quarry and the opportunities for enhancements that could be incorporated into the revised proposals:

- The well-established vegetation on the original spoil heap to the north of the site entrance screens views into the existing quarry and integrates the bund into the landscape. This area should be retained as part of the revised proposals;
- The un-vegetated northern part of the existing spoil mound stands approximately 10m above surrounding ground levels and forms a prominent and highly intrusive feature on the skyline in views from the trackway along the western boundary. The height and profile of this feature will remain unchanged under the existing permission. There are clearly opportunities to re-profile, topsoil and plant this feature during the initial phases of the revised proposals:
- There is a well-worn pathway around the upper side of the existing site area that is regularly used by walkers keen to view operations within the quarry. This should be retained as part of the revised proposals;
- The scale and depth of the existing quarry is readily apparent from viewpoints around the existing working area. The vertical rock faces along the eastern side of the quarry form the most prominent features;
- While the quarry occupies its original historic location within the landscape, the modern extraction methods mean that the internal character of the site differs from the other disused quarries seen within the local area;
- Due to the distinctive fall in the landform from east to west, the proposed extension area is located in a markedly lower and less prominent part of the landscape than the top of the eastern rock face defining the edge of the existing working area;
- The existing working area is screened from most viewpoints on Yennadon Down by the landform and the surrounding vegetation, with the upper east-facing part of the western spoil bund being the principle intrusive feature that is visible. There are clearly opportunities to re-profile, topsoil and plant this feature during the initial phases of the revised proposals; and
- No public access will be possible under the existing permission as the upper parts of the quarry will remain as vertical rock faces and the boundary fences retained.

15.5.3 If planning permission for the revised proposals is not granted, Yennadon Stone will continue to operate under the terms of the Existing Permission, which expires in 2025. It is therefore assumed that excavation works will continue, albeit at a somewhat reduced capacity, until 2025. Based on the provisions of the existing permission, the potential impacts of the revised proposals therefore need to be considered in the context of the

anticipated impacts that will arise as a result of the existing Permission. These can be summarised as follows:

- The height and profile of the un-vegetated northern part of the existing spoil mound will remain and will be left to naturally re-vegetate, so this will remain as an alien landform in views towards the site from the west;
- The restoration plans will not be submitted until 2023, so restoration is unlikely to commence until at least 2024/2025;
- The top and east-facing slope of the existing spoil bund is the main feature that is visible from local viewpoints on Yennadon Down. This will remain in its existing position and will be left to naturally re-vegetate at the end of the operational period under the existing permission;
- The upper parts of the eastern rock face are the most visually intrusive elements of the existing quarry. These will remain as prominent near-vertical rock faces as there is insufficient fill available to re-profile them to safe gradients that will allow them to be physically or visually integrated back into the surrounding landscape; and
- Currently there are no common land rights or public access rights to the existing quarry. The Trustees of the Walkhampton Trust have indicated that this will remain the case should planning permission be refused. The quarry will therefore remain fenced off, primarily due to health and safety concerns associated with the remaining vertical quarry faces.

15.6 Landscape and Visual Appraisal

15.6.1 The Landscape and Visual Appraisal establishes the wider landscape and visual context within which the potential impacts of the existing and the proposed excavation works can be considered. The appraisal considered the existing character and condition of the landscape around the site and the contribution that the existing quarry makes to this. The on-going changes in the local landscape and the extent to which the local surroundings exhibit the typical characteristics identified in the Dartmoor Landscape Character Assessment were also considered.

15.6.2 The existing landscape attributes of the area immediately surrounding the site and the typical character of Yennadon Down are illustrated by reference to the Landscape Appraisal Plan and Photographs L1 to L7 in Appendix A15.

15.6.3 It was concluded that the upper parts of Yennadon Down exhibits some of the typical characteristics of the 'Upland Moorlands with Tors' character type, but that the strength of their influence is progressively reduced as the landform falls towards the site. From

lower levels, the character and composition of views is increasingly affected by the areas of existing development to the west, with a corresponding reduction in the overall sense of tranquility. It is evident that the area surrounding the quarry is not part of the remote upland moorland that contributes strongly to the iconic vision of Dartmoor, and it does not exhibit the key properties or remoteness or high tranquillity.

15.6.4 The Landscape and Visual Appraisal of the local area around the existing quarry site is illustrated by LVA Photographs 1-20 in Appendix A15. The conclusions reached are summarised below:

- Yennadon Down falls gently south and westwards from an elevation of approximately 300m AOD along the ridgeline. The upper part of the landform provides opportunities for views north towards the more remote moorland areas forming the upland core of Dartmoor. On the western flanks these views are replaced by views across the lower lying 'settled' landscape of the 'Moorland Edge Slopes'. The existing development in Dousland, Yelverton and Horrabridge forms part of the composition of these views, reducing the overall sense of tranquillity that is experienced;
- The areas of well establish vegetation on the original spoil mound to north of quarry entrance and the existing moorland vegetation to the south of the entrance effectively screen all views into the current working area from the track approaching the site from the south. It would clearly be beneficial to retain this vegetation as part of the revised proposals;
- The trackway along the western boundary of the site follows the alignment of the former Plymouth and Dartmoor Tramway. From this trackway the un-vegetated part of existing spoil mound forms a rather intrusive feature on the skyline that is clearly incompatible with the character of the local landform. The height and position of this feature will be retained under the existing permission;
- The lower, less exposed parts of Yennadon Down to the north and south of the existing quarry are being gradually colonised by areas of naturally re-generating small trees and bracken. These form part of the on-going pattern of landscape change in the area, and will progressively screen views towards the site from the western edge of the Down;
- The mature vegetation defining the edge of Yennadon Down to the south of the old tramway effectively screens views towards site from properties along Iron Mine Lane and the northern edge of Dousland;
- Yennadon Down consists of a mosaic of unimproved acid grassland, bracken and scattered gorse scrub and trees. This vegetation tends to be maintained at a very

short sward height by the grazing of livestock, including sheep, ponies and cattle. Between the clumps of vegetation there is a network of grassland and well used footpaths. This including one that runs around the upper eastern edge of the quarry, providing views into the existing working area;

- The public footpath to the east of the site forms the principal pedestrian and cyclist route across the western part of Yennadon Down;
- The remains of the disused Yennadon Iron Mine to the south of the site are now well integrated into landscape by areas of typical moorland vegetation. Although evidence of past mining activities can still be identified, the mine does not form an intrusive feature in the landscape. This shows how former mining features can be successfully assimilated into the landscape by the native moorland vegetation;
- Several small ponds are located on Yennadon Down. These tend to be surrounded by typical moorland vegetation that integrates them into the local landscape and enhances their bio-diversity; and
- A combination of the mature vegetation around the property to the northwest and the dense woodland in Dousland Plantation predominantly screens more distant views towards the site from the north and northwest, limiting views to those available from Yennadon Down.

15.6.5 Distant views towards the application site are illustrated by LVA Photographs 21-36. From some of these viewpoints it is becoming difficult to distinguish the individual landscape features within the existing quarry with the naked eye due to the distance from the site. In accordance with the guidance produced by the Landscape Institute, zoom views of the area around the existing quarry were included where appropriate in order to more clearly illustrate what is currently visible.

15.6.6 The LVA Photographs were used to illustrate the existing visibility of the quarry and the typical contribution that the surrounding landscape makes to the character and 'special qualities' of the National Park. The following conclusions were reached:

- From viewpoints around Dousland, views into the working area of the quarry are screened by the existing spoil bund, but the un-vegetated part of the bund itself is a rather alien and intrusive feature;
- In more distant views from the northwest, it is only the upper un-vegetated parts of the spoil bund and the rockfaces defining the south eastern corner of the existing quarry that are visible. While the site does not form a highly conspicuous part of these views, it is evident that the landform of the quarry would be even less apparent if the rockface was vegetated like the surrounding moorland.

- From Roborough Down the site is seen as part of the transition zone between the settled and more vegetated 'Moorland Edge Slopes' and the more elevated and exposed moorlands beyond. The vertical rock face defining the upper eastern edge of the site forms the most visually prominent and intrusive part of the existing quarry, but the un-vegetated part of the spoil bund is also visible; and
- From viewpoints to the southwest, the site does not contribute meaningfully to the character or composition of views, but the other disused quarry on the edge of Yennadon Down is clearly visible, demonstrating the typical contribution of quarries to local character.

15.6.7 These conclusions, along with those reached by the Site Assessment, helped to inform the landscape strategy for the revised proposals.

15.7 Site Proposals

15.7.1 Section 5 of the LVIA considers the Landscape Guidelines presented in the Dartmoor Landscape Character Assessment that are relevant to the development of the revised proposals. Figure 24: 'Opportunities for an enhanced Landscape Strategy' shows how the conclusions reached by the Landscape and Visual Appraisal could be incorporated into the new landscape strategy, thereby providing clear enhancements compared to the existing permission.

15.7.2 The revised proposals are described in Chapter 4 of this document and in the 'Revised Development Proposals, Restoration and Aftercare Plan', produced by John Grimes Partnership and submitted as part of the revised planning application. Plans showing the proposed method of working, along with sections through the new and existing parts of the quarry are presented as Figures 25 and 26 in Appendix A15.

15.7.3 The Landscape Restoration Plan (Figure 28) in Appendix A15 shows how the revised landscape strategy would successfully assimilate the proposals back into the local landscape. The plan shows how the areas of new vegetation on the restored landform could be managed to integrate with the existing vegetation pattern around the site, providing linkages with the existing informal pathway across Yennadon Down. Following the establishment of such a restoration scheme, the Maristow Estate has indicated that it would be willing to enter into negotiations with the National Park Authority regarding future public access to the site.

Mitigation Measures

15.7.4 The mitigation measures form an integral and fundamental part of the revised proposals, as the progressive restoration of the existing quarry will be carried out as the works in the extension area are undertaken. Under the revised proposals, the key parts of the mitigation measures will therefore be completed before the end the planning permission at the end of 2025. Following this, the final seeding and planting completed at the end of the process will continue to become fully established, further integrating the site into the local landscape in a manner compatible with the existing character of the surrounding area.

15.8 Assessment of Landscape and Visual Impacts

15.8.1 The assessment of landscape and visual impacts considers the sensitivity of the receptors and the likely magnitude and significance of the effects that will arise as a result of the revised proposals. These impacts are compared to the existing conditions within and around the site and the anticipated future conditions that will arise as a result of the Existing Permission. Both schemes would run until 2025, albeit that the scale of operation under the existing consent would be at a reduced level of production. The impacts are therefore considered at the end of the operational stage at the end of 2025 and then again approximately 10-15 years later, after the planting measures have become fully established. The 'residual impacts' of the scheme are those that remain after the mitigation measures are fully established.

15.8.2 Due to the uncertainties over the precise volumes of material that will be excavated during the operation of the quarry, the planning application includes a substantial contingence volume to ensure that supplies of saleable stone are maintained until 2025. However, it is considered unlikely that maximum production of 10,000t/a will be achieved throughout the lifetime of works, so the maximum depth of the excavation is likely to be significantly less than shown on the drawings. The extent of the excavation will therefore be re-evaluated prior to the commencement of Phase 3. Notwithstanding this, the landscape and visual assessment considers the 'worst case' scenario, and is carried out on the basis of the maximum permitted volume of rock being removed.

Mitigation Measures

15.8.3 The mitigation measures form such an integral part of the revised proposals that it is unrealistic to attempt to assess the impacts of the scheme before and after the key elements are incorporated. However, the seeding and planting undertaken immediately prior to the end of the revised planning permission will be monitored after 2025 to ensure

that the vegetation and habitats become properly established. The residual impacts of the scheme, after the vegetation is fully established, are therefore also assessed 10-15 years after the end of the operational period.

Landscape Impacts

15.8.4 Landscape impacts relate to physical changes to the nature and quality of the individual landscape elements and characteristics on the site itself and the consequential effect of these changes on the landscape character of the surrounding area. It is anticipated that the revised proposals will give rise to the following landscape impacts:

Topography

15.8.5 The site does not lie within an area of geological interest, and given the limited exposure of rock outcrop within the area of the proposed quarry extension, it is considered to be of minimal geological education potential. The key impacts on the topography of the site will therefore relate to the profile and gradient of the landform, and the contribution that this makes to local landscape character.

15.8.6 The site is located on the lower western flanks of Yennadon Down, as part of a gently rounded landform that falls towards the west. The profile of the existing quarry is clearly at odds with the surrounding landform, despite the fact that quarries are identified as one of the typical characteristics of the local landscape. The revised proposals would restore a substantial part of the quarry to a near-natural ground profile.

15.8.7 It is evident therefore that the restoration plans respond to the typical and 'valued attributes' of the local landscape (as is required by **Policy DMD5**) and would result in a clearly noticeable betterment compared to the situation that would arise under the existing permission. With a **high** sensitivity and a **moderate** magnitude of change, it is concluded that the revised proposals would result in a **significant benefit** to the landform within the site.

Vegetation / Ecological Considerations

15.8.8 During the initial operational phase there will be an **adverse** impact arising from the loss of approximately 1 ha of grassland, bracken and scrub mosaic, but this would only be significant at the **local** level.

15.8.9 After restoration of the existing / new spoil bunds, it is anticipated that the short term impacts on the vegetation will be adverse at the site level for the first 3-4 years. However,

once the grassland has established, there should be an increase in species, which would give rise to an **enhancement** in biodiversity by the end of the operational period at the end of 2025.

15.8.10 After the compensatory planting of hawthorn trees, it is concluded that the residual effects on the vegetation within the extension area are likely to be **negligible**. With a Medium / High sensitivity (to reflect the relatively low botanical value of the grassland), it is concluded that the impacts on the vegetation within the new extension would not be significant. However, taking the quarry as a whole and comparing the impacts to those that will occur as a result of the existing permission, there will be a clearly noticeably benefit. This would result in a **moderately significant benefit** across the wider site area.

Public Rights of Way

15.8.11 There are currently no public rights of way across the application site. The surrounding areas are designated as common land and as such the public have the right of access on foot and on horseback, with no requirement to keep to defined public rights of way. However, there are currently no common land rights or public access rights to the existing quarry area and the Maristow Estate have indicated that this will remain the case under the existing planning permission. As a result, the quarry will remained fenced off, primarily due to health and safety concerns associated with the vertical quarry faces that will remain.

15.8.12 If planning permission is granted and the quarry is suitably restored, the Maristow Estate has indicated that it would consider allowing public access. Any future access would be subject to the necessary negotiations between the Maristow Estate (on behalf of the Walkhampton Trust) and the DNPA, but this could promote opportunities for the enjoyment of the enhanced biodiversity and special landscape features within the quarry by the public.

15.8.13 If public access is restored, it is evident that there will be **clearly noticeable** benefits to the provision of rights of way by the proposals. Public access and enjoyment of the special qualities of the landscape is one of the key purposes for the designation of National Parks. Access is therefore regarded as a **high** or **very highly** sensitivity landscape attribute. With the potential for new public access providing opportunities for a clearly noticeable benefit, the proposals have the capacity to result in a **significant benefit** compared to the existing permission.

Watercourses and Drainage

15.8.14 The Surface Water Management Assessment anticipates that there will be temporary insignificant impacts on the local drainage and groundwater regime during the operation of the extension. These impacts would cease upon reinstatement of the site to moorland, at which time the natural drainage patterns would be re-established. Consequently, no permanent residual effects are anticipated.

15.8.15 The pond to be retained in the base of the quarry will provide opportunities for longer term bio-diversity enhancements. The Landscape Appraisal identified that small ponds are an existing feature of Yennadon Down, so the new feature would be compatible with local landscape character. Overall there will be a **slight benefit** to the water features in the landscape, but as ponds are not identified as one of the key characteristics by the Dartmoor LCA, the benefits will **not be significant**.

Archaeology and Cultural Heritage

15.8.16 With the exception of the site of the tramway and siding no features of archaeological or historical interest have been identified within the quarry itself and no cultural heritage mitigation measures are suggested. However, the historic links between the alignment of the Tramway and the history of the quarry have been reflected in the assessment of the sensitivity of views from the trackway in the Visual Appraisal.

15.8.17 In order to "*promote the understanding and enjoyment of the special qualities of the National Park*" it is proposed that an information board will be erected close to the entrance of the quarry describing the link between the Tramway, Yennadon Quarry and the history of quarrying on Dartmoor. This will provide a **benefit** compared to the provisions of the existing permission, in accordance with the primary objectives of the National Park.

Impacts on Tranquillity

15.8.18 The Campaign to Protect Rural England (CPRE) has undertaken research to identify what people regard as contributing or detracting from a sense of tranquillity. Based on this, the CPRE has produced a map showing the 'relative tranquillity' of the whole country. It is suggested that the tranquillity map can be used as an important indicator in helping to protect the countryside.

15.8.19 The research found that the presence of other people is by far the most important negative factor (60%), followed by the visibility of roads (12%), general signs of overt

human impact (10%) and visibility of urban development (8%). As these features are all present in views from around the site, it is understandable why the map shows that the existing tranquillity of the area around the site is relatively low.

15.8.20 The revised restoration scheme will provide a number of positive contributions to tranquillity, including improving 'the naturalness of the landscape' (30% positive weighting) and enhancing the 'openness of landscape' (24% positive weighting).

15.8.21 During the operational period of the quarry, the existing level of noise will remain at its existing level, so the significance of the beneficial effect of the restoration scheme is considered to be **minor.** However, following the cessation of excavation and the establishment of the final restoration, the scheme will result in a clearly noticeable betterment compared to that which would be achieved under the current planning conditions. Consequently, it is concluded that the scheme will have a **beneficial** impact on the existing levels of tranquillity.

Visual Impacts

15.8.22 The sensitivity of the receptors and the magnitude and significance of the likely visual impacts are set out in the Visual Impact Table in Figure 31 in Appendix A15. This concludes that the revised proposals will be equal to or better than the existing permission from every viewpoint considered. The reasoned justification seeks to identify how the sensitivity of the receptors has been identified, but as the assessment has identified benefits from all the viewpoints, any discrepancies in the sensitivity assigned to the receptors will only affect the relative significance of the benefits. A summary version of the Visual Impacts Table is presented in Table 15/02 (refer to Appendix A15 for the full assessment and reasoned justification).

View No.	Location of Viewpoint	Sensitivity of Receptors	Impact of Revised Proposals			Impact relative to Existing Permission
			Magnitude of Impact	Nature of Impact	Significance of Impact	
1	Looking north along access track towards Site Entrance	**Medium / High** In future these will be local walkers using route of old tramway	2025 No Change	Neutral	Not Significant	Slightly Better
			>2035 Slight	Benefit	Slightly Significant	Slightly Better
2	Looking north along trackway adjacent to western bund	**Medium / High** Moderate numbers of local walkers using route of old tramway.	2025 Moderate	Benefit	Moderately Significant	Substantially Better
			>2035 Moderate	Benefit	Moderately Significant	Noticeably Better
3	Looking south towards site entrance from old Tramway	**Medium / High** Moderate numbers of local walkers using route of old tramway.	2025 Negligible	Benefit	Moderately Significant	Similar Impact
			>2035 Slight	Benefit	Moderately Significant	Similar Impact

View No.	Location of Viewpoint	Sensitivity of Receptors	Impact of Revised Proposals			Impact relative to Existing Permission
			Magnitude of Impact	Nature of Impact	Significance of Impact	
4	Looking south east y from alignment of old Tramway	**Medium / High** Moderate numbers of local walkers using route of old tramway.	2025 Moderate	Benefit	Moderately Significant	Substantially Better
			>2035 Moderate	Benefit	Moderately Significant	Slightly Better
5	Looking south east from the trackway along edge of Down	**Medium / High** Moderate numbers of local walkers using route of old tramway.	2025 Moderate	Benefit	Moderately Significant	Substantially Better
			>2035 Moderate	Benefit	Moderately Significant	Slightly Better
6	Looking south from south of Dousland Plantation	**High** Small numbers of walkers using informal trackways on Down.	2025 Moderate	Benefit	Significant	Noticeably Better
			>2035 Slight	Benefit	Moderately Significant	Slightly Better
7	Looking south west towards site from Yennadon Down	**Medium / High** Small numbers of walkers as not part of a route across Down.	2025 Slight	Neutral	Not Significant	Balance of Impacts
			>2035 Moderate	Benefit	Moderately Significant	Noticeably Better
8	Looking into the existing working area from edge of the Quarry	**Medium** Walkers who tend to have positive interest in the Quarry	2025 Substantial	Benefit	Moderately Significant	Substantially Better
			>2035 Substantial	Benefit	Moderately Significant	Substantially Better
9	Looking south west towards the eastern edge of the site	**Medium / High** This is not part of a clear route across Yennadon Down.	2025 Substantial	Neutral	Not Significant	Balance of Impacts
			>2035 Moderate	Benefit	Moderately Significant	Noticeably Better
10	Looking north west from the pathway along top of Quarry	**Medium** Walkers who tend to have positive interest in the Quarry	2025 Moderate	Benefit	Slightly Significant	Noticeably Better
			>2035 Substantial	Benefit	Moderately Significant	Substantially Better
11	Looking north towards the south eastern corner of the Site	**Medium / High** Walkers approaching the upper side of existing Quarry	2025 Moderate	Benefit	Moderately Significant	Noticeably Better
			>2035 Moderate	Benefit	Moderately Significant	Noticeably Better
12	Looking north into the existing working area of the Quarry	**Medium** Walkers with positive interest in what is happening within Site	2025 Substantial	Benefit	Moderately Significant	Substantially Better
			>2035 Substantial	Benefit	Moderately Significant	Substantially Better
13	Looking north west from trackway across Yennadon Down	**Medium / High** Walkers approaching the upper side of existing Quarry	2025 Moderate	Benefit	Moderately Significant	Noticeably Better
			>2035 Moderate	Benefit	Moderately Significant	Noticeably Better
14	Looking north west from trackway on Yennadon Down	**Medium / High** Walkers approaching the upper side of existing Quarry	2025 Moderate	Benefit	Moderately Significant	Noticeably Better
			Moderate	Benefit	Moderately Significant	Noticeably Better
15	Looking north west from Public Footpath across Yennadon Down	**Medium / High** Relatively high numbers of people using public footpath	2025 Moderate	Benefit	Moderately Significant	Noticeably Better
			>2035 Moderate	Benefit	Moderately Significant	Noticeably Better
16	Looking north west from near public footpath	**Medium / High** Relatively high numbers of people using public footpath	2025 Moderate	Benefit	Moderately Significant	Noticeably Better
			>2035 Moderate	Benefit	Moderately Significant	Noticeably Better
17	Looking north west towards the	**Medium / High**	2025 Slight	Benefit	Slightly Significant	Slightly Better

View No.	Location of Viewpoint	Sensitivity of Receptors	Impact of Revised Proposals			Impact relative to Existing Permission
			Magnitude of Impact	Nature of Impact	Significance of Impact	
	Site from Yennadon Down	Relatively high numbers of people on Yennadon Down	>2035 Slightly	Benefit	Moderately Significant	Slightly Better
18	Looking north from near Yennadon Iron Mine	**Medium / High** Relatively high numbers of people on Yennadon Down	2025 Slight	Benefit	Slightly Significant	Slightly Better
			>2035 Slightly	Benefit	Moderately Significant	Slightly Better
19	Looking west from Public Footpath to east of Site	**Medium / High** Relatively high numbers of people using public footpath	2025 Slight	Benefit	Slightly Significant	Slightly Better
			>2035 Slightly	Benefit	Moderately Significant	Slightly Better
20	Looking south west from the Public Footpath to the north east	**Medium / High** Relatively high numbers of people using public footpath	2025 Slight	Benefit	Slightly Significant	Slightly Better
			>2035 Slightly	Benefit	Moderately Significant	Slightly Better
21	Looking south west from Public Footpath to the north east	**Medium / High** Relatively high numbers of people using public footpath	2025 No Change	Neutral	Not Significant	No Change
			>2035 No Change	Neutral	Not Significant	No Change
22	Looking west from top of Yennadon Down	**Medium / High** Relatively high numbers of people on Yennadon Down	2025 No Change	Neutral	Not Significant	No Change
			>2035 No Change	Neutral	Not Significant	No Change
23	Looking south east from gateway on B3212 north of Water Works	**Medium** Principally passengers in passing cars.	2025 Moderate	Benefit	Slightly Significant	Noticeably Better
			>2035 Slightly	Benefit	Moderately Significant	Slightly Better
24	Looking east from entrance to Trading Estate west of Dousland	**Medium** Principally passengers in passing cars	2025 Moderate	Benefit	Slightly Significant	Noticeably Better
			>2035 Moderate	Benefit	Slightly Significant	Noticeably Better
25	Looking south east from car park at Walkhampton Church	**High** Receptors likely to be local parishioners visiting the Church,	2025 Slight	Benefit	Moderately Significant	Slightly Better
			>2035 Slight	Benefit	Moderately Significant	Slightly Better
26	Looking south east from field gateway on minor road to Sampford Spiney	**Medium** Principally passengers in passing cars	2025 Slight	Benefit	Not Significant	Slightly Better
			>2035 Slight	Benefit	Not Significant	Slightly Better
27	Looking south east from the edge of Plaster Down near Riband Plantation	**High** People enjoying the external environment	2025 Slight	Benefit	Moderately Significant	Slightly Better
			>2035 Slight	Benefit	Moderately Significant	Slightly Better
28	Looking south east from car park on Plaster Down	**High** People enjoying the external environment	2025 Slight	Benefit	Moderately Significant	Slightly Better
			>2035 Slight	Benefit	Moderately Significant	Slightly Better
29	Looking south from the moorland below Pew Tor	**Very High** People enjoying the external environment. High relative tranquility	2025 Slight	Benefit	Moderately Significant	Slightly Better
			>2035 Slight	Benefit	Moderately Significant	Slightly Better
30	Looking east from Access Land above Horrabridge at 185m AOD	**Very High** People enjoying the external environment High relative tranquility	2025 Slight	Benefit	Significant	Slightly Better
			>2035 Slight	Benefit	Significant	Slightly Better

View No.	Location of Viewpoint	Sensitivity of Receptors	Impact of Revised Proposals			Impact relative to Existing Permission
			Magnitude of Impact	Nature of Impact	Significance of Impact	
31	Looking east from car park on Roborough Down near Pound	**High** Sense of relative tranquillity reduced by number of people	2025 Slight	Benefit	Moderately Significant	Slightly Better
			>2035 Slight	Benefit	Moderately Significant	Slightly Better
32	Looking east from Roborough Down above Yelverton	**High** Sense of relative tranquillity reduced by proximity to Yelverton	2025 Slight	Benefit	Moderately Significant	Slightly Better
			>2035 Slight	Benefit	Moderately Significant	Slightly Better
33	Looking north east from the A386 through Yelverton Golf Course	**Medium / High** Receptors are likely to be people travelling in cars on major road	2025 Slight	Benefit	Slightly Significant	Slightly Better
			>2035 Slight	Benefit	Slightly Significant	Slightly Better
34	Looking north east from Public Footpath across Callisham Down	**High** People enjoying the external environment	2025 Negligible	Benefit	Slightly Significant	Slightly Better
			>2035 Negligible	Benefit	Slightly Significant	Slightly Better
35	Looking north from minor road on edge of Lynch Common above Meavy	**High** Receptors likely to be people out enjoying the external environment	2025 No Change	Neutral	Not Significant	No Change
			>2035 No Change	Neutral	Not Significant	No Change
36	Looking north from edge of Lynch Down above Smallacombe	**Very High** Receptors likely to be people out enjoying the external environment	2025 No Change	Neutral	Not Significant	No Change
			>2035 No Change	Neutral	Not Significant	No Change

Table 15/02: Simplified Visual Impacts Tables (see Appendix A15 for full table)

15.8.23 The Visual Appraisal has therefore demonstrates that from every viewpoint that was assessed the revised proposals would result in **benefits** compared to the existing permission. It is logical to conclude therefore that this must mean that the proposals would 'conserve and enhance' the natural beauty of the local landscape when the impacts are judged against the baseline conditions.

Residential Amenity

15.8.24 The consideration of 'residential amenity' relates to the on-going 'live-ability' of a property, and the avoidance of potentially 'unneighbourly' developments.

15.8.25 The Revised Restoration and Aftercare Plan acknowledges that there will be a short period during the initial site set-up stage when there will be a slight increase in impacts on the properties with views towards the site. However, this eight week period represents approximately 1.5% of the total length of the existing permission and is therefore a short–term impact that is not considered to be significant. After this time, impacts will return to their existing level, and the re-profiling and planting of the un-vegetated part of the spoil

bund will gradually become evident. It is concludes that there will not be any unacceptable impacts on the residential amenity of the private properties.

Impacts on Landscape Character

15.8.26 The Dartmoor Landscape Character Assessment (DLCA) identifies the application site within the 'Upland Moorlands with Tors' character type, close to the boundary with the 'Moorland Edge Slopes' area. As the site falls within the transition zone between these two character types, it is reasonable to expect that the surrounding area will exhibit some of the typical characteristics of both of the character types.

15.8.27 The baseline assessment identified that the upper parts of Yennadon Down exhibits some of the typical characteristics of the 'Upland Moorlands with Tors' character type, but that the strength of their influence falls with a drop in elevation. From lower levels closer to the site, the character and composition of views is increasingly affected by the areas of existing development to the west, with a corresponding reduction in the overall sense of remoteness and tranquility. Consequently, it is evident that the area surrounding the quarry is not part of the remote upland moorland that contributes strongly to the essential or 'iconic' vision of Dartmoor, and does not exhibit the key properties of remoteness or high tranquillity.

15.8.28 Quarries are acknowledged by the DLCA to be an integral part of the landscape character types adjacent to the site. However, while the existing quarry occupies it historic location within the landscape, the modern extraction methods mean that the internal character of the site differs from the other disused quarries seen within the local area. It is evident therefore that the existing quarry has a somewhat negative influence on views from the lower part of Yennadon Down. The limited restoration of the areas giving rise to these impacts will not start until at least 2025 under the conditions of the existing planning permission.

15.8.29 The Landscape Restoration Plan shows how the revised landscape strategy would successfully assimilate the entire quarry back into the local landscape. The drawing shows a near vertical rock face retained in the least visible north western part of the site. This will maintain the historic presence of the quarry within the landscape, creating a safe and potentially accessible focal point for future visitors, while also providing opportunities for bio-diversity enhancements within the site. However, the key benefit of this approach is that backfilling within the quarry can be concentrated in the most prominent south eastern part of the site.

15.8.30 Under the existing permission there is insufficient material available to regrade this area to a suitable gradient, and the upper parts of the rock faces will remain as conspicuous and somewhat intrusive features in the landscape. As a result, the revised proposals will result in a clear betterment compared to the existing situation and will result in a **clearly noticeably benefit** to local landscape character. The visual appraisal has shown that these benefits will be evident up to 5km from the site, providing opportunities for more than simply local benefits.

15.8.31 Based on the conclusions reached by the Landscape and Visual Appraisal, it is assessed that the sensitivity of the local landscape character is '**high**' (due to it is location within a National Park, but because it does not exhibit the key characteristics of exposure, remoteness or high tranquillity).

15.8.32 With a **high** sensitivity and a **moderate** magnitude of change, it is concluded that the revised proposals will result in a **significant** benefit to local landscape character and a **moderately significant** benefit to the wider character of this part of the National Park.

15.8.33 Following the establishment of such a restoration scheme, the Maristow Estate has indicated that it would be willing to enter into negotiations with the National Park Authority regarding future public access to the site. It is evident therefore, that the revised proposals will 'conserve and enhance' the natural beauty of landscape around the application site in accordance with the primary purposes of National Parks.

15.9 Summary and Conclusion

15.9.1 The 'Revised Development Proposals, Restoration and Aftercare Plan' identifies that the rolling restoration programme within the existing quarry, which will begin as soon as permission is granted, will restore approximately 7,040m^2 of land to moorland. This area is approximately a third larger than the extent of the new extraction area. Under the revised proposals, the total area to be restored to moorland within the existing quarry area (that will not be restored under the provisions of the existing permission) is therefore greater than the new extraction area. This restoration will take place progressively throughout the operational period, and will start at least 8-10 years before any restoration will occur under the existing permission.

15.9.2 It is evident therefore that the proposals will '**conserve and enhance**' the landscape in accordance with the policies and strategic objectives of the National Park.

15.9.3 Consequently, it is concluded that the proposals would not have a detrimental residual impact on the character of the area, and by restoring part of the site to a near natural grade and retaining the presence of the quarry, the proposals will enhance what is special or locally distinctive about the local landscape character. Furthermore, the progressive restoration with provide clear betterment compared to the existing permission, so the revised proposals will enhance rather than harm the wider landscape. Consequently, it is concluded that the proposals would be compatible with policies **COR1 (h) and COR3**.

15.9.4 With regards to policy **DMD5,** the proposals have been developed in accordance with the typical character and special qualities of the local landscape character types, as set out in the Dartmoor Landscape Character Assessment. The proposals will therefore enhance Dartmoor's landscape by respecting and incorporating the 'valued attributes' of the local landscape types. The proposals are therefore also compatible with policy DMD5.

15.9.5 **Policy M2** states that planning permission will be granted for proposals which, after rigorous examination, would effectively reduce the adverse environmental effects of existing workings, mineral waste tipping operations, or approved but unimplemented minerals development. It is clearly evident that the revised proposals would do precisely this, so they would be in accordance with policy M2.

15.9.6 The residual impacts of the revised proposals identified by the Landscape and Visual Impact Assessment are summarised in Table 15/03:

Element	Geographical	Nature of Impact	Duration	Significance
Topography	Local / Site	Benefit	Permanent	Moderate
Vegetation	Local / Site	Benefit	Permanent	Moderate
Public Rights of Way	Local	Benefit	Subject to Agreement	Major
Water features	Local	Benefit	Permanent	Insignificant
Archaeology and Cultural Heritage	Site	Benefit	Permanent	Insignificant
Tranquillity	Local	Benefit	Permanent	Moderate
Local Views	Local	Benefit	Permanent	Moderate
Distant Views	District / Local	Benefit	Permanent	Minor
Local Landscape character	Local / Site	Benefit	Permanent	Major
Wider Landscape Character	District / Local	Benefit	Permanent	Minor

Table 15/03: Assessment of Residual Impacts

15.9.7 It is therefore concluded that the revised proposals would provide betterment compared to the existing permission for the following reasons:

- They would restore a greater area to moorland than would be temporarily required for the extension area;
- They would facilitate the earlier restoration of the most visible and intrusive parts of the existing quarry (the un-vegetated parts of the existing bund and the upper south eastern and eastern faces of the existing quarry);
- They would provide a clear improvement to the final restored landscape of areas with the greater visual impact (the south-eastern and eastern faces will be infilled to near-natural profiles, unlike the existing permission);
- They would provide opportunities for increased bio-diversity and habitat creation within the site;
- The information board to be erected close to the entrance of the quarry will describe the link between the Tramway, Yennadon Quarry and the history of quarrying on Dartmoor, in accordance with the primary objectives of the National Park;
- They would result in an improvement to the visual impacts from every viewpoints considered by the assessment; and
- The suitably restored and accessible quarry could provide future opportunities for the enjoyment of the biodiversity and special landscape features of the restored quarry by the public.

15.9.7 Consequently, no significant adverse impacts would arise as a result of the revised proposals, and the progressive restoration scheme would result in clear **benefits compared to the existing permission**. This would 'conserve and enhance' the natural beauty of the landscape in accordance with the primary purposes of designating land within National Parks. It is concluded therefore that the proposals would be fully compatible with the relevant planning policies and that there are no landscape or visual reasons why planning permission should not be granted.

16.0 ASSESSMENT OF EFFECTS AND MITIGATION

16.1 Introduction

16.1.1 A review of the ES was undertaken to ensure a consistent approach to assessing the impact of the proposals and identifying the inter-relationships between effects. The following table was produced which summarises the assessment of potential impacts and their mitigation.

	Geographical	Nature	Duration	Significance	Mitigation
Effect on human beings, buildings and man-made features					
Economy and employment	Local Regional	Beneficial	Long-term	Major Minor	N/A
Do-nothing effect on economy and unemployment	Local Regional	Adverse	Long-term	Major Minor	N/A
Traffic - Volume change associated with proposed extension	Local	N/S	Medium / Long-term	Minor	Maintain traffic management arrangements
Traffic - effects of the development on local roads and transport.	Local	N/S	Long-term	Insignificant	Maintain traffic management arrangements
Site Security	Local	Neutral	Long-term	Insignificant	Extend existing security measures around new perimeter
Loss of Common Land	Local	Adverse	Long-term	Minor	Undertake flailing / swiping to restore grazing elsewhere on Common
Impact of nuisance dust affecting Local Residents	Local	Adverse	Long-term	Insignificant	Maintain existing dust suppression arrangements; implement additional measures
Levels of other emissions from quarry processes during normal operation (exhaust fumes, light, etc.)	Local	N/S	Long-term	Insignificant	Maintain Environmental Management Strategy (EMS)
Noise - levels and effects of noise	Local	Adverse	Long-term	Minor	Construct bund on western boundary; Adopt Good Practice for Noise Reduction
Change in population arising from proposals and consequential environmental effects	Local	None	N/A	N/A	N/A
Effects on buildings, the architectural and historic heritage and other human artefacts (through pollutants, visual intrusion, vibration)	Local	N/S	Long-term	Insignificant	N/A
Effects on new-builds (continued supply of natural building stone as encouraged in planning policies to maintain the aesthetic appearance)	Local / Regional	Beneficial	Long-term	Moderate	N/A

	Geographical	Nature	Duration	Significance	Mitigation
Effects on Landscape and Visual Impacts					
Public Rights of Way	Local	Benefit	Subject to Agreement	Major	Any future access would be subject to agreement between landowners & DNPA
Water features	Local	Benefit	Permanent	Insignificant	Creation of pond & seasonal wetland.
Archaeology and Cultural Heritage	Site	Benefit	Permanent	Insignificant	Information board erected: history of Tramway, Yennadon Quarry and quarrying on Dartmoor.
Topography	Local / Site	Benefit	Permanent	Moderate	Mitigation measures form an integral and fundamental part of proposals, as progressive restoration of the existing quarry will be carried out as the works in the extension area are undertaken
Vegetation	Local / Site	Benefit	Permanent	Moderate	
Tranquillity	Local	Benefit	Permanent	Moderate	
Local Views	Local	Benefit	Permanent	Moderate	
Distant Views	District / Local	Benefit	Permanent	Minor	
Local Landscape character	Local / Site	Benefit	Permanent	Major	
Wider Landscape Character	District / Local	Benefit	Permanent	Minor	
Effects on archaeology					
Site 1 - Yennadon Quarry	Local	Adverse	Permanent	Minor	N/A
Site 2 - Dartmoor Tramway	Regional	Adverse	Permanent	Minor / Moderate	N/A
Site 3 - Field system	Local / Regional	Adverse	Permanent	Minor / Moderate	Watching brief
Potential unidentified sites	Unknown	Adverse	Permanent	Unknown	Watching brief
Effects on flora, fauna and geology					
Statutory sites	National	None	N/A	N/A	N/A
Non-statutory sites	County	None	N/A	N/A	N/A
Unimproved acid grassland, bracken and scrub mosaic	Local	Adverse	Long-term	Moderate	Implement a site-specific biodiversity mitigation and enhancement plan
Scattered hawthorn trees	Local / Site	Adverse	Long-term	Moderate	
Quarry	Local / Site	Neutral	Long-term	Insignificant	
Badgers	Local	Negligible	Long-term	Insignificant	
Bat species	Local	Negligible	Long-term	Insignificant	
Bird species	Local / Site	Adverse	Long-term	Moderate	
Butterfly species	Local / Site	Adverse	Long-term	Moderate	
Reptile species	Local / Site	Adverse	Long-term	Moderate	
Overall loss of, or damage to habitats, plants and animal species	Local / Site	Adverse	Long-term	Minor	
Geology - Loss of, and damage to, geological, paleontological and physiographic features	Local	N/S	Permanent	Insignificant	N/A
Other ecological consequences	N/S	N/S	N/S	N/S	N/A

	Geographical	Nature	Duration	Significance	Mitigation
Effects on land					
Physical effects of the development (e.g. change in local topography, effect on earth-moving on stability, soil erosion, etc.)	Local	Adverse	Long-term	Minor	Adopt MAFF guidelines on proper soil handling; Implement phased restoration plan
Soil quality	Local	Neutral	Long-term	Minor	Adopt MAFF guidelines on proper soil handling
Contamination risk from quarry process (hydrocarbon spill)	Local	Adverse	Long-term	Minor	Maintain EMS
Land use/resource effects: • alternative uses of the site (including the 'do nothing approach') • on surrounding land uses	Local	Neutral	Permanent	Moderate	N/A
Effects on water					
Hydrogeology - changes to characteristics e.g. ground water level and flow	Local	N/S	Permanent	Insignificant	Maintain EMS
Effect on water quality - Impact on groundwater SPZs	Local	N/S	Permanent	Insignificant	
Impact on Devonport Leat	Local	Neutral	Permanent	Insignificant	Maintain existing surface water management arrangements and implement additional measures
Local Drainage Regime	Local	N/S	Long	Insignificant	
Surface Water Bodies	Local	N/A	N/A	N/A	
Flood Risk at Site	Local	N/S	Long-term	Minor	
Flood Risk Downstream	Local	Neutral	Long-term	Insignificant	
Surface Erosion from run-off during soil stripping, etc.	Local	Adverse	Short	Minor	Adopt MAFF guidelines on proper soil handling
Effects on air and climate from quarry process					
Exhaust Fumes	Local Regional	Adverse N/S	Long-term	Minor Insignificant	Maintain EMS
Dust (particulate matter)	Local	Adverse	Long-term	Insignificant	Maintain existing Management plan & implement additional measures
Overall level and concentration of emissions from quarry and their environmental effects	District/local	Adverse	Long-term	Minor	Maintain existing EMS measures and implement additional measures
Other indirect and secondary effects					
Secondary effects from the interaction of separate direct effects, as above	N/S	N/S	N/S	N/S	N/A

N/S – Not significant; N/A – Not applicable

Table 16/01: Combined Assessment of Impact and Effects

16.2 Scheme Alternatives

16.2.1 Should planning permission be refused, the quarry will continue production up to 2025 when the existing planning permission expires, albeit that production levels will decline significantly.

16.2.2 There are no restoration plans in place for the existing quarry under the current planning conditions, which states that a 'scheme for the after-use and after-care' of the site shall be submitted to the DNPA for approval two years before cessation of working. On this basis, restoration plans would not be required to be submitted until 2023 and restoration is unlikely to commence until 2024/2025.

16.2.3 On completion of quarrying under the existing planning permission, all quarry faces would remain as near-vertical, with backfilling against the lower slopes only. Due to space constraints within the existing quarry, there would be no opportunity for phased landscaping or importation and stockpiling of topsoil for restoration. The pond would remain in the base, however, the remaining ground within the quarry would be left to re-vegetate naturally.

16.2.4 Currently there are no common land rights or public access rights to the existing quarry. The Maristow Estate have indicated that this will remain the case should planning permission be refused; i.e. the quarry will remained fenced off, primarily due to health and safety reasons associated with the quarry faces.

16.2.5 The Landscape and Visual Impact Assessment (Chapter 15) has indicated that the quarry on cessation of works under the existing planning permission would present the following negative impacts:

- The un-vegetated western face of the existing bund forms a rather intrusive feature on the skyline that is clearly incompatible with the character of the local landform. The height and position of this feature will be retained under the existing permission and will be left to naturally re-vegetate, so will remain as an alien landform in views towards the site from the west;
- The top and east-facing slope of the existing spoil bund is the main feature that is visible from local viewpoints on Yennadon Down. The bund will essentially remain as existing with regard to height and size; and will be left to naturally re-vegetate at the end of the operational period; therefore will remain as an alien landform in views towards the site from the east;
- The scale and depth of the existing quarry is readily apparent from viewpoints around the existing working area. The upper parts of the eastern rock face are the most visually intrusive elements of the existing quarry. These will remain as prominent near-vertical rock faces as there is insufficient fill available to re-profile them to safe gradients that will allow them to be physically or visually integrated back into the surrounding landscape; and

- The profile of the existing quarry is clearly at odds with the surrounding landform, despite the fact that quarries are identified as one of the typical characteristics of the local landscape.

16.2.6 Should planning permission be refused the site will become a 'disused quarry' within the landscape and permanently fenced off. There are no other alternative uses for the site.

17.0 CONCLUSIONS AND SUMMARY

17.1 Introduction

17.1.1 On behalf of Yennadon Stone Ltd and in accordance with the Scoping Opinion adopted by Dartmoor National Park Authority, a full environmental impact assessment of the proposed extension to Yennadon Quarry, Dousland, has been undertaken in terms of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.

17.1.2 This planning application is for the extension the quarry along its northern face, in conjunction with phased restoration of the existing quarry. The quarry operators are seeking the extension to enable production to continue, as a minimum at current extraction rates and up to the maximum permitted, until the current planning permission expires in 2025. Granting planning permission to extend the working area of the quarry will enable the quarry to sustain a viable future and continue to provide an invaluable source of local stone for building and restoration projects. Yennadon is an historic quarry in the Dartmoor National Park and has existed for approximately 150 years and is the only remaining operational quarry supplying local dimension stone within the boundary of the National Park. The quarry has made, and continues to make, a significant contribution to the character and appearance of the built environment. As well as providing an important source of local stone, the quarry also represents part of the living cultural heritage and legacy of Dartmoor.

17.1.3 This Environmental Statement (ES) comprises a number of general and environmental topics that, overall, cover the areas of enquiry specified in the Scoping Opinion, as well as gives consideration to Dartmoor National Park Authority's conclusions in respect of the previous application(No 0667/13), which was refused on 14th July 2014. Each of the topics is presented as a chapter and concludes with an assessment of impacts. The detailed technical reports that accompany this ES as Appendices substantiate the findings and conclusions reached in this statement, both for the operational and restoration phases. The need issues of relevant planning policies have also been addressed in the ES.

17.1.4 Where impacts have been identified, they are assessed for geographical effects, nature (adverse, beneficial, etc.), duration of effect and significance.

17.1.5 Where impacts are assessed as "adverse" and other than "not significant", mitigation measures are identified that can reduce or remove the impact on the environment. These mitigation measures can be secured by the imposition of planning conditions or through the completion of a legal agreement under Section 106 of the Planning Act.

17.1.6 The ES has established that with the exception of economic impacts, there are no major impacts that may give rise to issues that would affect the planning decision making process. The significance of the economic impacts is considered to be a major benefit. The ES demonstrates that there is a proven demand for dimension stone in the region from the construction industry. The use of natural building materials is encouraged in planning policies to maintain the aesthetic appearance of the area. The ES has demonstrated that there is a lack of alternative sources of rustic stone of the equivalent stone type, quality, shape, colour, strength and durability with sufficient output within the region to meet the demand. Alternative sources of a similar stone would involve either opening a new quarry within the Dartmoor area or importing similar stone from Wales or China. Alternatively developers will turn to stone of a different type and appearance, or use building styles, such as render or brick, adversely impacting on the policies for preserving local character in new design.

17.1.7 With regard to the local economy, given the limited opportunity in the locality for skilled quarrying jobs the loss of 27 jobs at Yennadon Quarry will have ramifications on the local economy through the loss of the economic activity of those employees. It is considered that the loss of this quarry would have a substantial negative economic impact on the region.

17.1.8 The 'Revised Development Proposals, Restoration and Aftercare Plan'(Appendix A4) identifies that the rolling restoration programme within the existing quarry, which will begin as soon as permission is granted, will restore approximately 7,040m^2 of land to moorland during the initial phases of works. This area is approximately a third larger than the total extent of the new extraction area, which will be extracted in phases. This restoration will take place progressively throughout the operational period, and will start at least 8-10 years before any restoration will occur under the existing permission.

17.1.9 The Ecological Habitats and Biodiversity Assessment (Chapter 14) concluded that the proposed extension during its development and operation will result in adverse impacts to unimproved acid grassland, a small numbers of scattered hawthorn trees, common lizard, nesting habitat for up to five bird species and habitat for butterflies including the

small heath butterfly. However, mitigation measures and the implementation of the Restoration and Aftercare Plan will result in residual impacts on habitats and species being negligible, neutral or in some cases beneficial. In the long-term, the site will be restored for the benefit of ecology and nature conservation.

17.1.10 The Landscape and Visual Impact Assessment (Chapter 15) concluded that no significantly adverse impacts would arise as a result of the revised proposals, and the progressive restoration scheme would result in clear benefits compared to the existing permission. This would 'conserve and enhance' the natural beauty of the landscape in accordance with the primary purposes of designating land within National Parks. The revised restoration scheme provides a clear improvement to the final restored landscape of areas with the greater visual impact (the south-eastern and eastern faces will be infilled to near-natural profiles), unlike under the existing permission. The proposed restoration scheme would result in an improvement to the visual impacts from every viewpoints considered by the assessment. It is concluded therefore that the proposals would be fully compatible with the relevant planning policies and that there are no landscape or visual reasons why planning permission should not be granted.

17.1.11 The positive economic benefits and improved restoration scheme, represented by the proposal to extend the quarry, far outweigh other impacts as it is possible to mitigate against a number of the negative aspects of the application.

17.2 Planning Policy

17.2.1 The Scoping Opinion prepared by DNPA requires assessment of the proposals at Yennadon Quarry against the planning policy context. The ES sets out the planning policy framework germane to the consideration of the planning application and addresses a number of matters raised in the officer report to the planning committee in the previous planning application.

17.2.2 The Planning Policy Framework impacting on Yennadon Quarry has been subject to change during recent years. Key elements are; the introduction of the National Planning Policy Framework (NPPF), which has replaced the previous Planning Policy Statements and Mineral Planning Guidance; the National Planning Practice Guidance (NPPG), which contains technical guidance on Minerals Planning; the replacement (in part) of the Local Plan with a Core Strategy and; the introduction of a Development Management DPD. The manner in which key policy tests have been met is addressed in a number of individual reports that form the ES.

17.2.3 The National Planning Policy Framework sets out a presumption in favour of sustainable development and reaffirms the legal requirement that planning decisions should be made in accordance with the development plan unless material considerations indicate otherwise.

17.2.4 With regard to mineral development there is a general presumption against new quarrying in National Parks as this does not accord with their strategic/national purpose. However policy provision is made for Mineral Development, including specifically, **small scale** quarrying of traditional building stone where it would not cause damage to matters of acknowledged importance.

17.2.5 The planning refusal raised a number of issues. The key issue running through all of the reasons for refusal is the question of judgement of scale and the application of appropriate tests against which the judgement should be made. At the heart of this is the use of the term "major" and its definition particularly in respect of an application for an extension to a building stone quarry. In assessing the application it would appear from the officer report and internal correspondence that the starting position of the DNPA was that the application was a "major" proposal. The report makes reference to the Development Management Procedure Order (DMPO) which defines all mineral extraction as major development. This reliance on the DMPO to provide a definition of major in the context of Policy COR22 is incorrect (Aston and another v SOSCLG and others [2013] EWHC 1936 9Admin)). The DMPO sets out a procedure to be followed by different types of application, it does not prejudge how an application should be considered in a policy context.

17.2.6 The report to the DNPA Planning Committee does refer to COR22 on the basis that the policy does refer to small scale and therefore it is appropriate to consider whether the proposal is major with reference to the Core Strategy. The report goes on to state: "Given the size of the site and the proposed extension, the tonnage arising, the operating parameters and the location of the site in the National Park it is considered that the proposal is major". Considerable changes have been made to the proposal in order to reflect the underlying concerns behind this statement, however as a matter of principle the starting position behind this assumption with regard to the previous application is incorrect as a matter of law, definition and policy. In respect of this later point there is no evidence to suggest that a "minor or intermediate" view of the quarry has been taken or considered, particularly as the purpose of the quarry is to provide building stone and

not minerals or aggregate and it is surprising that there is no discussion of this point in the committee report.

17.2.7 There are three elements to Policy COR22, which provide for an assessment of a stratum of quarrying operations; major, other and small. That the Policy COR22 is expressed in its current adopted form arises from concern expressed at the Examination of the Core Strategy that there was a potential lack of consistency between the Core Strategy Policy and the then National Policy. DNPA proposed the introduction of the term major into the first part of COR22: "This would differentiate the large scale minerals development from 'small scale quarrying,' which would be addressed by the second part of that policy." (Public hearings matter 7 evidence of DNPA). This view of differentiated scale is supported by the descriptions of each quarry set out in Part 4 of the Dartmoor National Park Local Plan Review 2004 and reinforced by the quarry area boundaries plan (Figure 4/01) in Chapter 4 of this ES. Furthermore it is clear from these statements and the policy that there is no requirement for the building stone to be used within the National Park.

17.2.8 It is noted that Policy M4 of the Local Plan Review, which provides a template for the issues that an application for the extension of mineral extraction must address, formed part of the reason for refusal. It is a moot point as to whether or not the use of this policy is appropriate to this application given that Policy M3, which was specifically superseded by Policy COR22, contained a presumption in favour of small scale building stone quarries, subject to what may be considered a lesser series of tests.

17.2.9 Both the NPPG and the Development Plan separate small scale building stone quarries from mineral extraction. Elsewhere in the Development Plan (and NPPF and NPPG) is the need for development to meet particular policy requirements, which were considered in the individual ES chapters and appendices. Collectively the policies provide a number of key tests against which the proposals for an extension to the working area at Yennadon Quarry will of necessity need to be judged. Critical amongst these are:

- The protection of the National Park per se for its beauty, wildlife and cultural heritage.
- Support for the socio-economic vitality of the National Park;
- Need to maintain the source of local stone in the context of rigorous examination of the impacts and that the need cannot be met in other ways;
- Maintenance and enhancement of character and appearance via the use of local materials;
- Protection of amenity; and
- Accessibility and sustainability.

17.2.10 Whilst MPS1 is no longer extant the same socio economic requirement is a key plank of the NPPF. Of further importance is the question of need and the availability of additional or alternative sources of suitable stone. Put simply "why do this here in the National Park and not elsewhere". These matters are examined in detail within the Socio Economic Chapter of the ES, which concludes:

- There are a limited number of quarries serving the building industry with slate building stone in Devon and Cornwall; of these none produce a stone of the right quality with regard to strength, durability, flat bedding planes and rectangular shape, colour and rustic finish. The unique qualities of the stone from Yennadon Quarry arise from its position within the Tavy Formation and the contact metamorphism that has taken place as a result of the nearby granite intrusion;
- Yennadon Stone complies with Building Regulation requirements as a construction stone;
- Alternative but as yet untapped sources also lie within the Dartmoor National Park;
- Planning policy and design guidance within the National Park and surrounding districts has a presumption in favour of maintaining the character of the area, particularly in conservation areas, via the use of natural and local materials;
- It is the stone of choice for many builders and local authorities alike with it being specified for a large number of local developments and via materials conditions on a number of planning consents;
- Critically Yennadon is the only quarry that can provide commercial quantities of natural quoins and is also the first stone of choice as a replacement for Hurdwick stone which is the principle stone in Tavistock (World Heritage site); and
- Yennadon Stone is a very significant element in defining the character of the communities on the western 'moorland fringes'.

17.2.11 The above sets out in brief the reasons why permission should be granted for the extension of the working area to the existing quarry. As previously stated detailed information on each of the matters of acknowledge importance is contained in the relevant sections of the ES. These proposals seek an extension of the working area of the quarry in a northerly direction within the context of a substantially revised landscape strategy. They do not seek or will bring about a change in working hours, vehicle movements, number of employees, rates of extraction, etc. Consequently matters with regard to noise, dust, etc. should remain unchanged.

17.3 Previous Reasons for Refusal

17.3.1 During the previous submission, the main elements of the reasons for refusal were:

1. Failure of the Environmental statement to assess the likely impacts of the development at the proposed upper limits of 10,000 tonnes per annum.
2. The proposed extension would perpetuate the quarry and the related impacts in the long term until 2025. The development is major and there is no overriding need for the development.
3. Acceptable alternative sources of stone exist to meet the demand currently met by the quarry. The alternative option for the quarry itself would be its restoration on exhaustion of the permitted reserves, thus reducing the current landscape impact, and enhancing the landscape.
4. The proposed development would have an unacceptable impact on the special qualities of the National Park, particularly in terms amenity use, landscape and tranquillity.

17.3.2 These reasons for refusal contain a number of elements which Yennadon Stone and their advisors have sought to address or clarify. This revised submission address these issues as follows:

17.3.3 Reason 1: In respect of the accuracy of the information contained in the previous ES it is acknowledged that there was a degree of confusion over the tonnage of quarrying proposed per annum. All of the figures contained with the ES were within the existing permitted extraction rate of 14,000 tonnes per annum. This ES has been revised based on a uniform figure of 10,000 tonnes/annum in each appropriate section. A recalculation of the extraction area required to deliver at this reduced maximum rate until 2025 results in a smaller quarry area which, beneficially, within the proposed application area allows a significantly enhanced landscape strategy.

17.3.4 Reason 2: It was an incorrect assumption on the part of the DNPA that in the absence of a further planning permission the quarry would close before 2025 (The time limit of the existing planning permission.) Without the grant of a further planning permission the quarry will continue to operate albeit with a reduced output and with reducing levels of staff arising from the physical constraints of working within such a tight area.

17.3.5 It was determined by the DNPA that this was a major application arising from a definition within the Development Management Procedure Order (DMPO) which does not apply to the definitions contained with Core strategy Policy 22, the key policy against which the application needs to be tested. Therefore notwithstanding other reasons for refusal

the incorrect starting position in assessing the application arose because of the generalised definition contained in the DMPO.

17.3.6 With regard to the matter of need, Policy COR22 applies this criterion to major mineral development and it is not contained in the elements of the policy dealing with "small scale quarrying of traditional building stone" or "other mineral development". Notwithstanding the policy definitions, significant weight was given to the assertions of Lantoom Quarry without the provision of substantiation. Further work undertaken by advisors to Yennadon Stone demonstrates that the Lantoom Stone is of a lesser quality in a number of respects including: colour, strength, weathering, durability, shape and appropriateness to the character of the area. In this latter respect it is also worth noting that the use of Lantoom Stone would be alien to many of the sites identified in the DNPA SHLAA and also the recommendations of the DNPA Design Guide on the importance of using local metamorphic stone in construction projects in the "moorland fringe" areas. A further area of concern arises from the assertion that Lantoom Quarry could readily take up the production that would be lost at Yennadon. This assertion was untested and detailed evidence now provided within the ES demonstrates that this is unlikely.

17.3.7 Reasons 3 and 4: The question of the availability of alternative acceptable sources of stone is addressed above. With regard to the significant landscape issues identified in these two reasons Yennadon Stone sought the advice of new landscape consultants and a revised extraction and restoration scheme was established, which enhances the visual impact of the landscaping at the same time as reducing the impact of the working faces. The landscape assessment also sets out the betterment arising from the restoration proposals. This will ultimately deliver a greater restored area of moorland, increased biodiversity and the potential for public access over the whole restored quarry area.

17.3.8 The existing permission contains no restoration details only a condition that these are submitted two years prior to the closure of the quarry. The landscape assessment indicates that it is an incorrect assumption that this approach would result in a significantly lower level of impact over that arising from the proposed extension.

17.3.9 In summary, Yennadon is a historic quarry in the Dartmoor National Park and has provided stone for many of the local communities for over 150 years. It is the only remaining operational quarry supplying local slate dimension stone within the boundary of the National Park and represents an important part of Dartmoor's cultural heritage. The proposed extension scheme provides a solution that will sustain the requirement for the

stone, which will be extracted in a manner in which areas previously worked, can be progressively restored.

GLOSSARY

Adopted Local Plan	A Local Plan that has been through all the stages of preparation and has been formally approved by the Local Planning Authority.
Adoption	The final confirmation of a plan as a statutory document by the local planning authority.
Allocations	Land or units (residential, industrial etc.) selected for development in local or informal plans, but as yet without planning permission.
Aquifer	A permeable geological formation which is capable of storing and yielding water.
Backfilling	Placement of material into work-out land in order to recreate a usable land surface.
Biodiversity	The variety of all living things (i.e. biological diversity) embracing species, wildlife habitats and ecological processes.
Brownfield	Land that has been previously built upon e.g. former industrial land, derelict buildings and vacant lots. Some brownfield land may have temporary uses on it such as car parks.
Bund	An extended mound of soils, overburden or structure erected as a barrier to sight, sound or water.
Climate Change	The major shifts in climate that are currently taking place. In particular there is a long-term rise in temperature (at least in part caused by the production of greenhouse gases) which is causing rising sea level, more extreme weather and other changes in weather patterns.
Consultation	Procedures for assessing public opinion about a plan or major development proposal, or in the case of a planning application, the means of obtaining the views of affected neighbours or others with an interest in the proposal.
Decibels (dB)	Unit of measurement of sound.
Density	In the case of residential development, a measurement of either the number of habitable rooms per hectare or the number of dwellings per hectare.
Developer Contributions	See Planning Obligations
Development	The carrying out of building, engineering, mining or other operations in, on, over or under land, or the making of any material change in the use of any buildings or other land.
Development Plan	Documents prepared by local authorities and National Park authorities setting out the authority's policies and proposals for the development and use of land within its area. In Devon it comprises the Devon Structure Plan and Local Plans (including district-wide local plans, minerals and waste local plans). These are replaced under new legislation (Planning and Compulsory Purchase Act) and will consist of Regional Spatial Strategies (RSS) and Development Plan Documents contained within a Local Development Framework (LDF).
Devon Structure Plan	A document prepared by the Strategic Planning Authorities of Devon consisting of policies and proposals and written justification accompanied by diagrams. It contains general policy and proposals illustrating the broad pattern of future land use in Devon. It also apportions development between all District and Unitary Authorities in Devon. The current Structure Plan adopted October 2004 will be saved for a period of 3 years until it is replaced by the Regional Spatial Strategy (RSS) prepared by the Regional Assembly.
Dimension Stone	A natural stone product that has been cut or fashioned to a particular size or shape.
Dust	Any solid matter emanating from mineral working, or from ancillary plant and vehicles, which is borne by the air. Dust particles can vary in size from 1 to 75 microns.

Economic Development	Development relating to the production of goods and services; often resulting in job creation.
Employment Uses	The use (and development) of land for office, research and development, industrial and storage and distribution activities as identified in the Use Classes Order of 1987.
Environmental Appraisal	The process of weighing all the policies in a development plan for their global, national and local implications.
Hectares	A metric unit of area, equal to 2.471 acres or 10,000 square metres.
Infrastructure	Includes services like education and health facilities as well as roads, water supply and sewers.
Integrated Transport	The integration of land-use and transportation planning to allow transport provision and the Strategy demand for travel to be planned and managed together, balancing the use of different modes of transport to encourage easy transfer between them and reduced reliance on the private car.
LAeq	Equivalent continuous sound level over a specified time period.
Landscape Policy Areas	A term used to encompass the principal landscape-related designations in Devon. These include National Parks and Areas of Outstanding Natural Beauty, which are designated by the Countryside Agency; Areas of Great Landscape Value and Coastal Preservation Areas, which are designated by Local Planning Authorities.
Local Development Framework	Under the Planning and Compulsory Purchase Act 2004, this will comprise of a portfolio of Framework (LDF) Local Development Documents that provide a framework for delivering the spatial planning strategy of the area.
Local Development Scheme	Under the Planning and Compulsory Purchase Act 2004, this will set out the programme for Scheme the preparation of the local development documents.
Local Distinctiveness	The positive features of a place and its communities which contribute to its special character and sense of place.
Local Nature Reserve	A site of nature conservation importance owned or managed by a local authority, (LNR) designated in agreement with English Nature.
Local Plan	Sets out the detailed policies and specific proposals for the development and use of land, on a site specific basis using an Ordnance Survey base map. These will be replaced under new legislation (Planning and Compulsory Purchase Act) by Development Plan Documents (DPD) contained within a Local Development Framework (LDF).
Material Consideration	A matter which should be taken into account in deciding on a planning application or on an appeal against a planning decision.
Mixed Use Development	Development that includes a mixture of more than one of the following within a building, on a site or within a particular area: housing, employment, leisure, shops and community facilities.
Mode of transport	A means of travel such as foot, cycle, bus, train, car etc.
National Planning Policy Guidance	Central Government guidance that set out the Government's policy on various planning issues such as housing, transport, employment, etc.
Nature Conservation	The preservation, management and enhancement of natural plant and animal communities, and occasionally modified vegetation, as representative samples of their kind.
Overburden	Rock and / or soil that is of no commercial value, overlying the valuable stone.
Plan Period	The period during which the policies and proposals within the Structure Plan will apply. The plan period of the Devon Structure Plan is 2001-2016.
Planning Gain	The principle of a developer agreeing to provide additional benefits or safeguards, often for the benefit of the community, usually in the form of related development supplied at the developer's expense.

Planning Obligations	Legal agreements between a planning authority and a developer, or offered unilaterally by a developer, ensuring that certain extra works related to a development are undertaken, usually under Section 106 of the Town and Country Planning Act 1990.
Public Open Space	Undeveloped land accessible to the local community that is used for a variety of sport, recreation and leisure purposes, including formal sports pitches, allotments, cemeteries and community woodlands.
Regional Planning Guidance	(RPG) Issued by the Government which aims to provide the framework for the Guidance preparation of local authority development plans in each of the English regions.
Regional Spatial Strategy	Under the Planning and Compulsory Purchase Act 2004, this will be prepared by the Regional Planning Body (i.e. the Regional Assembly). The regional spatial strategy will set out the policies in relation to the development and use of land in the region and will be approved by the First Secretary of State. (PPS 11 provides detailed guidance on the functioning of RSS)
Section 106 Agreement	A binding agreement between a council and a developer associated with a grant of planning permission and regarding matters linked to the proposed development.
Self-Sufficiency	The concept of meeting people's needs locally.
Structure Plan	This consists of a Written Statement accompanied by a key diagram (but not maps). This formulates the general policy and proposals illustrating the broad policy and pattern of future development. The Structure Plan for Devon is prepared jointly by Devon County Council, Plymouth City Council, Torbay Council and Dartmoor National Park Authority. These are replaced under new legislation (Planning and Compulsory Purchase Act 2004) and will consist of Regional Spatial Strategies (RSS).
Sustainable Development	Development which meets the needs of the present generation without harming the ability of future generations to meet their own needs. Social, environmental and economic needs must be fully integrated if sustainability is to be achieved.
Transport Assessment	A study which allows the travel and transport consequences of a proposal to be properly assessed against sustainability objectives. It is a requirement for major development proposals likely to generate a significant amount of travel, to be accompanied by such an assessment.
Transport Statement	A study which allows the travel and transport consequences of a proposal to be properly assessed against sustainability objectives. It is a requirement for development proposals that are likely to have only relatively small travel implications.
Utilities	Water supply, sewerage and sewage disposal, land drainage, gas and electricity supply, waste disposal and telecommunications.