

BLAENAU GWENT LOCAL DEVELOPMENT PLAN EXAMINATION

HEARING SESSION 18

MINERAL SITE ALLOCATIONS

SUBMISSION ON BEHALF OF GRYPHONN QUARRIES

BY

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1. INTRODUCTION

- 1.1 These submissions has been prepared on behalf of Gryphon Quarries in response to the following question set by the planning inspector :-
- 1.2 What are the consequences of identifying land adjacent to Trefil Quarry (M4.1) for expansion on the local environment including heritage interests and the Brecon Beacons National Park? Is this site allocation soundly based?
- 1.3 Following the receipt of the document entitled "*Assessment of Mynydd Llangynydir As a Potential Site of Scientific Interest*" from CCW Gryphon Quarries instructed Dr. Alan Thompson of Cuesta Consulting Limited, to review the document and provide specialist geological advice in relation to the need for the proposed quarry extension and to suggest ways in which the mineral resource can be extracted whilst protecting the geological resource as far as is reasonably possible. Dr. Thompson is the author of the document "*Former Gwent Aggregates Safeguarding Study*" the purpose of which was to provide the geological input required by the three MPAs in order for them to address the aggregate mineral safeguarding and apportionment requirements of the Regional Technical Statement published in 2008. Dr. Thompson has made a separate submission for Session 18 and will appear at the Examination on behalf of Gryphon Quarries.

2. BACKGROUND

- 2.1 Trefil Quarry is a sustainable source of aggregates in the context of its location in relation to its main customers and overall catchment area. Approximately 73% of the prime product (dust and aggregates) produced at Trefil goes directly to Gryphon's own production plant at Pontllanfraith and Hengoed and to committed concrete mix contracts including the Topmix plant adjoining Trefil Quarry.
- 2.2 Gryphon is a long established company and its customers expect a high degree of consistency in its product range which is maintained by its reliance on a single source of supply from Trefil Quarry. If the quarry were to close alternative sources of supply of the same quality within a reasonable transporting distance are not readily available.
- 2.3 Gryphon makes an important contribution to the local economy and its continued viability is dependent on continued quarrying at Trefil with implications for the security of the jobs the company provides. Gryphon employs 13 people directly at the quarry with a further 13 indirect jobs with many further jobs in haulage, engineering and industry consulting areas. Another 24 people are employed are directly employed at the two Gryphon production plants with similar numbers of indirect jobs.
- 2.4 The quarry also supplies the adjacent Topmix plant with the stone being moved via a private haul road directly from the quarry. If the quarry were to cease production stone would have to be imported to the Topmix plant with increased lorry movements through Trefil village which would increase costs, have an effect on the residents' amenity and extend the carbon footprint of the plant.

3. PLANNING HISTORY

- 3.1 Gryphon Quarries reopened Trefil Quarry in 1995 shortly after receiving planning permission in 1994 (Ref. 94/0369) which is limited to a period ending in 2024. However during the course of the operations Gryphon Quarries found that the amount of useable stone at the quarry was far below that which was originally anticipated and on the basis of surveys and calculations carried out in March 2006 found that the useable stone remaining to be worked in the area with planning permission represented approximately 4.6 years supply. Consequently, in July 2008 (ref 2008/0338) Gryphon Quarries submitted a planning application to deepen the quarry which was approved in January 2009. It was calculated that the deepening of the quarry would provide an additional 10.2 years supply which was additional to the existing 4.6 years supply providing stone until 2022 prior to the expiry date of the planning permission in 2024.
- 3.2 Paragraph 49 of MTAN1 states that there should be a minimum ten year landbank of crushed rock for the **entire** plan period of each development plan. Paragraph 6.2 of the updated Minerals Background Paper states that at 2009 Blaenau Gwent had 15.63 years supply based on passed extraction rates which means that at the end of the plan period there would be a shortfall of 6.37 years. There is therefore a requirement for Blaenau Gwent to make additional provision to comply with national minerals guidance.
- 3.3 Gryphon Quarries consider that this shortfall can be provided for by a lateral expansion of Trefil Quarry which is the only realistic area where sufficient commercial resources exist in Blaenau Gwent.

4. LDP CONSULTATIONS

- 4.1 Following the submission of the site as a candidate site the Council consulted the Environment Agency Wales (EA), Countryside Council for Wales (CCW) and the Glamorgan and Gwent Archaeological Trust (GGAT). In response to the consultations received from these organisations:
- (i) Meetings have taken place with the Environment Agency to discuss their response and subject to undertaking a water feature survey and hydro-geological risk assessment it is considered that the EA's concerns can be satisfied.
 - (ii) In order to satisfy GGAT a full archaeological desk based assessment including field survey would be undertaken prior to the submission of any planning applications.
 - (iii) Further information has also been submitted to the Council in support of the proposal in relation to the resource and reports on ecology and hydrology.
- 4.2 Gryphon has always acted responsibly in responding to any concerns that have been raised in connection with its ongoing quarrying activities and in considering its proposals for expanding the quarry were well aware of the presence of dolines in defining the boundary of the proposed extension selected an area where their density is low. This can be seen from the attached plan which shows that the density of dolines is far greater in the remainder of the proposed SSSI. Wherever it is practicable dolines are avoided during quarry operations in any event as they have a negative impact on drilling and blasting at the quarry and have the potential to affect quarry face stability.

5. CCW'S CONSULTATION RESPONSE

5.1 CCW's response to the Preferred Area site has not been consistent. The comments submitted on the deposit LDP raised concerns about the site impinging on the Mynydd Llangynidr Geological Conservation Review (GCR). At that time CCW considered that *"any aggregate extraction or associated development within the boundary of the Preferred Area should avoid these areas of geological interest (to meet Test of Soundness CE1)."* A copy of the GCR boundary is attached and shows that there is a gap between it and the edge of the quarry. The changes CCW therefore considered necessary to make the plan sound at that time was to *"amend the boundary of the Preferred Area for mineral development (M4.1)".* CCW also suggested there should be further discussions with the Council to consider the potential to revise the boundary of the preferred area to minimise natural heritage interests.

5.2 After receiving a copy of CCW's consultation response it was suggested to the Council that we should also be present at the meeting to discuss their concerns. A meeting was held in November 2011 and in order to address CCW's concerns Gryphon tabled an amended boundary of the Preferred Area to minimise further the effects on the dolines and to move the site away from the boundary of the Brecon Beacons National Park. This amended area was included in the Focused Changes. At the meeting we suggested to CCW that as MPPW requires local authorities to make provision for aggregates we were willing to work with CCW try and agree a boundary to the Preferred Area which would allow the extraction of the minerals and protect conservation interests. CCW appeared to accept this principle but they did inform us that they had commissioned further research work and would be willing to discuss the matter further when they received this research

5.3 We received a copy of the further work at the end of April 2012 and rather than seeking a balanced approach it not only proposes that the GCR should become a SSSI but also that its boundary should be extended to effectively run adjacent to the existing quarry operations. In further discussions and communications it was made quite clear by CCW that they would not be prepared to consider any compromise to the position of the boundary and as a consequence no further meeting has taken place. It is evident that CCW intend designating the area as a SSSI in order to block any lateral expansion of the quarry and although we don't have a copy of the brief given to Professor John Gunn it is evident that the instruction he was given not only related to the geological resource but also had the objective of preventing the quarry extension. Paragraph 4.4 of the report begins *"Although it is outside the scope of the report.....and later in the paragraph. "It is assumed that this will be waste that will have to be tipped."* Notwithstanding the legitimacy of including this paragraph in the report Gryphon Quarries would like to clarify that this assumption is incorrect – removal of overburden materials together with the ongoing long term and selective separation of soil contaminants within the underlying stone reserve is very much normal in terms of quarry working methodology. Therefore it is not envisaged that the waste factor attached to the proposed area be any more onerous than those of the existing working quarry. Additionally the millstone grit would not be considered as waste.

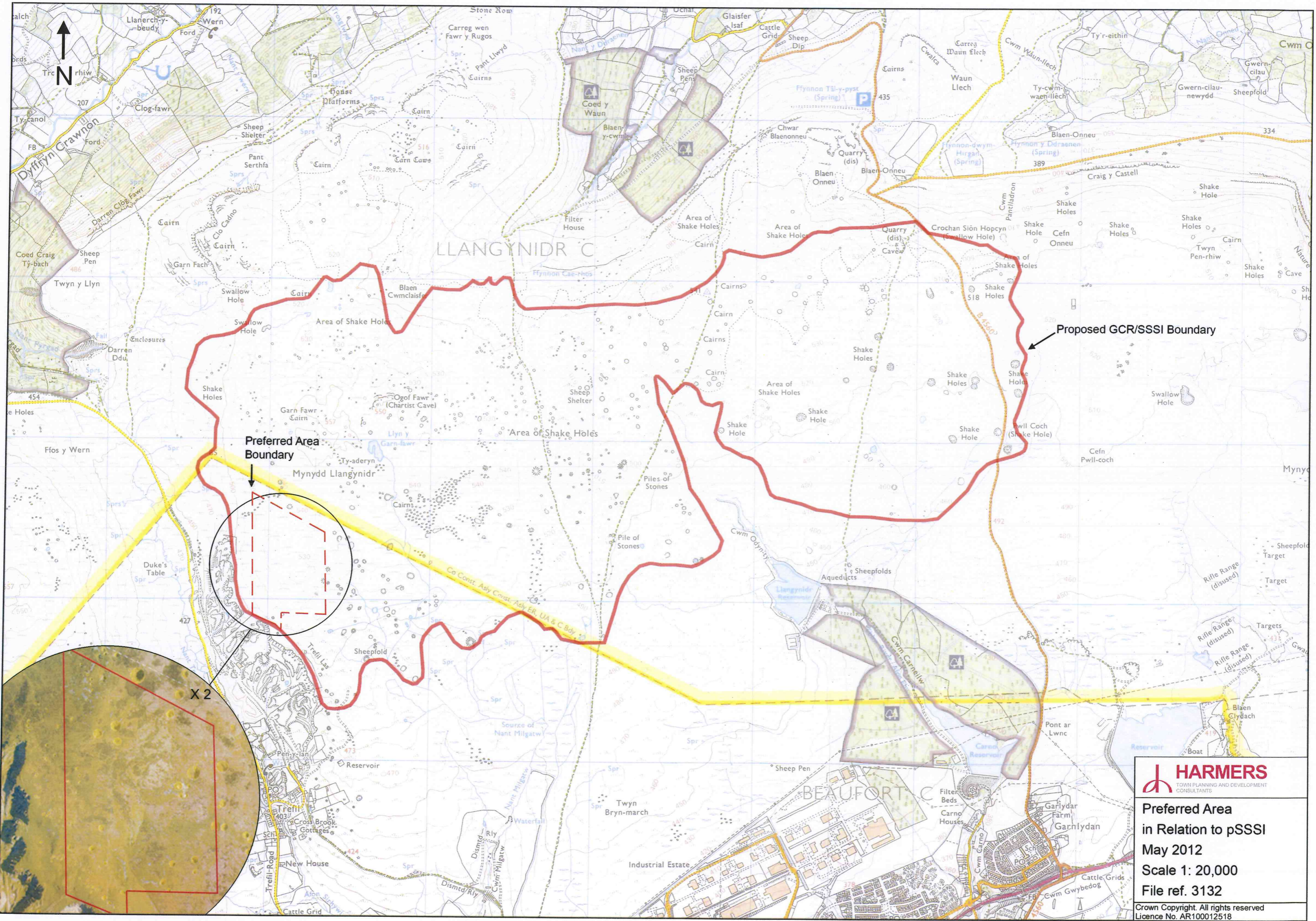
5.4 CCW's position has therefore changed from one of requesting the

boundaries of the Preferred Area to be amended to opposing the area completely as it “contains over 70 caprock dolines and is an integral part of the SSSI”.

6. CONSIDERATION OF CCW'S OBJECTION

- (i) The LDP has been prepared over a number of years and the identification of the Preferred Area has been made following due process which included the submission of the site as a candidate site and its inclusion in the Deposit Plan. The objection from CCW has come very late in the day and has been modified since the consultation response on the Deposit Plan.
- (ii) Whilst Professor Gunn's report recommends that the GCR should be extended and is of SSSI status as yet it is not a SSSI. In order for this to occur CCW will have to carry out its notification procedures consider representations made and gain board approval, a process which could take several months or longer to complete. It is likely that the SSSI notification process will be subject to objection from the land owner and the quarry operator and there is also the potential for judicial review.
- (iii) Minerals Planning Policy Wales (MPPW) advises in paragraph 14 that policies and proposals in development plans should make clear where mineral extraction should, or is most likely to, take place. Preferred Areas are described as those areas of known resources with some commercial potential and where planning permission might reasonably be anticipated.
- (iv) Paragraphs 2.19-2.34 of the “*Former Gwent Aggregates Safeguarding Study*” provides a detailed analysis of the requirements of MPPW and the RTS to consider allocations for future workings. In paragraph 2.26 the report states “*it may be reasonable to deduce that SSSIs can be included within Areas of Search*”. In his submission Dr. Thompson explains the logic behind this equally applies to Preferred Areas.
- (v) Paragraph 25 of MPPW states “*Minerals proposals within SSSIs or likely to affect them should be very carefully considered, and where the impact is likely to be significant they should be subject to the most rigorous examination, and the need for the mineral must be balanced against environmental and other relevant considerations*”. MPPW therefore does not preclude mineral extraction within SSSIs and the inclusion of the Preferred Area at Trefil is therefore in accord with national policy and does not make the LDP unsound.
- (vi) Submissions have been made to the previous Session in relation to the RTS requirement for Blaenau Gwent and the potential for neighbouring authorities to take some of BBNP's share. The RTS requirements will not be met if the Preferred Area is taken out of the LDP.
- (vii) CCW's objection is solely based on the geological resource and does not take into account the requirements of MPPW and the RTS to ensure continuity of supply of minerals.

- (viii) In submitting its objection to the Preferred Area CCW are mistakenly of the view that quarrying should not be allowed within a SSSI which is contrary to the advice in paragraph 25 of MPPW.
- (ix) We consider that it will be possible to develop a scheme which will meet the test of paragraph 25 of MPPW which would be subject to rigorous examination through the planning process and provide an acceptable balance in meeting the need for the mineral when considered against environmental and other considerations.
- (x) If the Preferred Area were to be deleted from the LDP then the opportunity for this rigorous examination will not be available as Gryphon would be unlikely to proceed with a planning application which in effect would lead to the sterilisation of the resource.
- (xi) Dr. Thompson will outline the kinds of procedures that could be followed to make such a proposal acceptable.



Preferred Area Boundary

Proposed GCR/SSSI Boundary

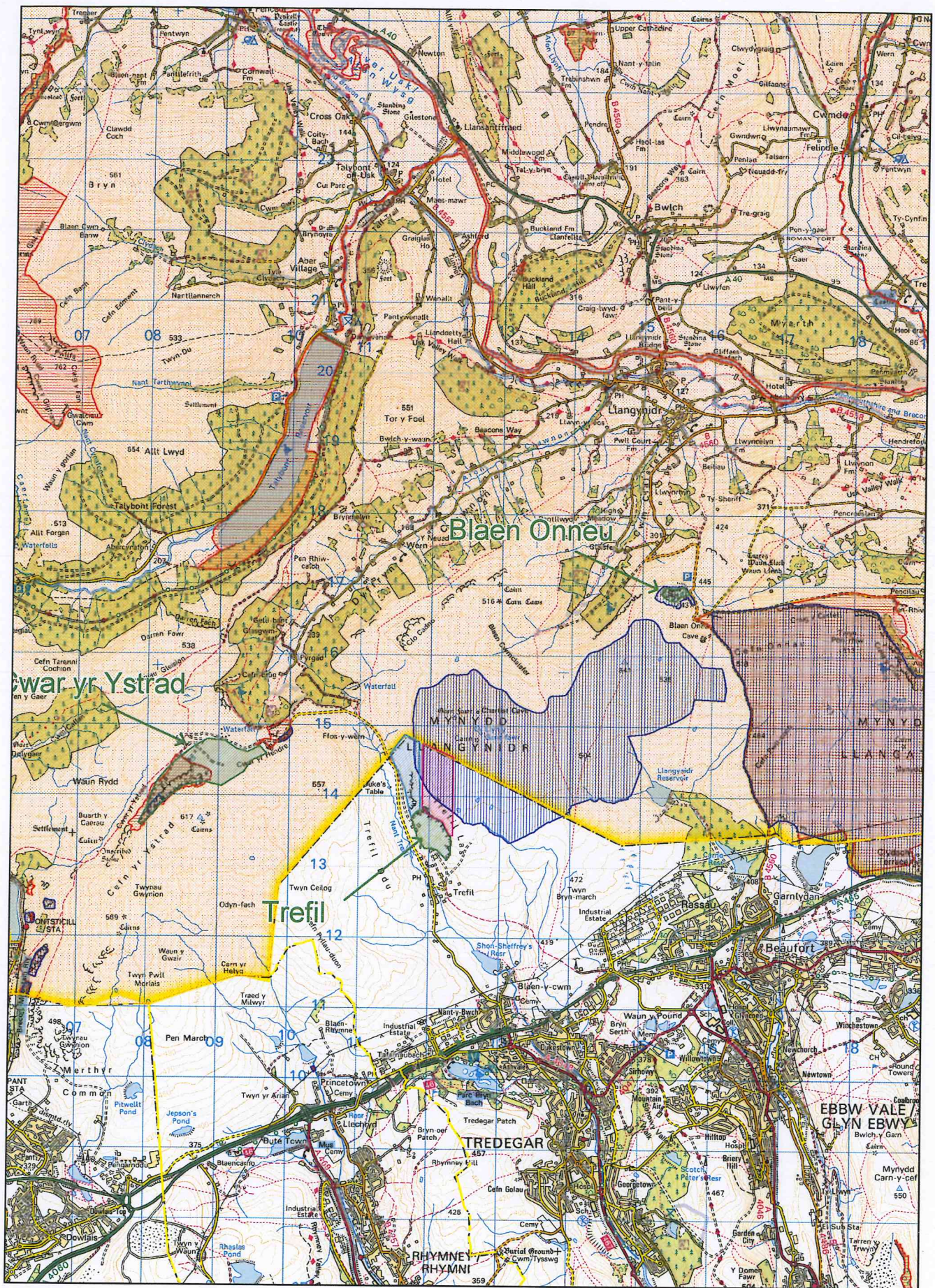
X 2



Preferred Area
in Relation to pSSSI
May 2012
Scale 1: 20,000
File ref. 3132

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Possible alternative allocation - landscape setting



Produced by CCW on: 26 October 2011

Scale 1:50000

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Algyrhyrchir y map hwn o ddeunydd yr Arolwg Ordnans gyda chaniatâd Arolwg Ordnans ar ran Rheolwr Llyfrfa Ei Mawrhydi © Hawffraint y Goron. Mae atgynhyrchu heb ganiatâd yn torri hawffraint y Goron a gall hyn arwain at erlyniad neu achos sifil. Cynogwr Cefn Gwlad Cymru, 100019741 2011.

Cynogwr Cefn Gwlad Cymru
Countryside Council for Wales

Appendix 1

A Report prepared by Dr Alan Thompson in response to the submission of CCW's Technical Report (ES18.2)



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May 2012

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1. INTRODUCTION

- 1.1 This submission has been prepared on behalf of Gryphonn Quarries by Dr Alan Thompson, Director of Cuesta Consulting Limited, in response to the following question set by the planning inspector :-
- 1.2 What are the consequences of identifying land adjacent to Trefil Quarry (M4.1) for expansion on the local environment including heritage interests and the Brecon Beacons National Park? Is this site allocation soundly based?
- 1.3 Following the receipt of the document entitled “*Assessment of Mynydd Llangynydir As a Potential Site of Scientific Interest*” from CCW, I was instructed by Gryphonn Quarries to review the document and to provide specialist geological and geomorphological advice in relation to the need for the proposed quarry extension and to suggest ways in which the mineral resource can be extracted whilst protecting and enhancing the geodiversity resource as far as is reasonably possible.
- 1.4 As the Director of Cuesta Consulting Limited I was the author of the “*Former Gwent Aggregates Safeguarding Study*” (Examination Document Reference SD99) the purpose of which was to provide the geological input required by the four MPAs in order for them to address the aggregate mineral safeguarding and apportionment requirements of the South Wales Regional Technical Statement, published in 2008.
- 1.5 I am a Chartered Geologist and Fellow of the Geological Society of London, with a first degree in Physical Geography and Geology, a PhD in Geomorphology and more than 28 years’ research and consultancy experience in the practical application of these skills. I have worked extensively within the fields of minerals planning and geological conservation, for both private and public sector clients. In addition to the ‘Former Gwent’ study referred to above, I have led major geological and minerals planning research projects for the Welsh Assembly Government; provided arguments relating to the need for mineral extraction for both quarry operators and mineral planning authorities; advised on innovative excavation and restoration design to optimise environmental benefits in major limestone quarries; and was lead author of the 2006 guide to good practice on creating Geodiversity Action Plans for aggregate companies.

2. THE FORMER GWENT AGGREGATES SAFEGUARDING STUDY

- 2.1 The ‘Former Gwent’ report (Examination Document Reference SD99), prepared by Cuesta Consulting Limited, was commissioned jointly by the four Mineral Planning Authorities (MPAs) which comprise the former County of Gwent: Torfaen Borough Council, Blaenau Gwent Borough Council, Newport City Council and Monmouthshire County Council. The report was issued in May 2009.
- 2.2 The aim of the study was to provide the geological input required by the MPAs in order for them to address the aggregate mineral safeguarding and apportionment requirements of the first edition of the South Wales Regional Technical Statement (RTS), published in 2008.

- 2.3 Although the study focused largely on the safeguarding of mineral resources, so that they are not unnecessarily sterilised, it also covered the issue of identifying potential allocations for future working, as required by Minerals Planning Policy Wales (MPPW) and the South Wales RTS. Such allocations are required to be identified as 'Preferred Areas' and/or 'Specific Sites', where sufficient detailed information exists, or broader 'Areas of Search'
- 2.4 Although MPPW provides broad definitions of these various terms, it does not prescribe what criteria should be used to identify them on the ground. In the absence of such guidance, sections 2.24 to 2.34 of the Former Gwent Aggregates Safeguarding Study provided reasoned arguments regarding which areas should be included in each type of allocation, based on the consideration of both opportunities (the availability of resources) and potential constraints (including environmental designations).
- 2.5 The report argued that, although high level designations such as National Parks, AONBs and European conservation sites should be excluded from Areas of Search, this should not apply to 'lesser designations', including Sites of Special Scientific Interest (SSSIs). This was on the basis that, whilst SSSIs are national designations, they do not have such a clear presumption against mineral extraction. The report noted that "*Many SSSIs were created by former mineral workings and, in some cases at least, it may be possible for extraction to continue or recommence without necessarily causing adverse impacts. Even where impacts are likely to be significant, MPPW para 25 requires only that proposals "should be subject to the most rigorous examination", and that "the need for the mineral must be balanced against environmental and other relevant considerations". In view of the balance of judgment required, in these cases, it may be reasonable to deduce that SSSIs can be included within Areas of Search*".
- 2.6 With respect to the more refined identification of Preferred Areas, the report argued that "*allowance should be made for the fact that many potential impacts of mineral working (e.g. on groundwater, noise, dust, ecology and traffic) can be overcome or mitigated to an acceptable degree through the use of conditions and/or good design (including ideas put forward by operators in connection with proposed sites). For this reason, Preferred Areas should not necessarily exclude areas which are close to national or European designations, or those which are within, close to, or overlapping with any 'lesser' designations*". As noted above, such designations include SSSIs.
- 2.7 The report noted that, with respect to the RTS requirement for Blaenau Gwent to consider making a resource allocation of at least 3 Mt (preferably of limestone) within the LDP, "*the only outcrop of Carboniferous Limestone within the borough is at and around Trefil Quarry, located immediately adjacent to the border with the Brecon Beacons National Park*". For this reason, Blaenau Gwent has identified the lateral extension of Trefil Quarry as a Preferred Area within its emerging LDP.
- 2.8 Although that area is now being considered by CCW as a proposed SSSI, the logic outlined above still applies and this should not preclude the retention of the Preferred Area within the LDP. Given that Preferred Areas do not automatically imply that future working will be permitted, and that detailed concerns regarding environmental impacts would be addressed

through due process at the planning application stage, it would be illogical to exclude the Preferred Area on the basis of SSSI status (whether actual or proposed). Paragraph 25 of MPPW states that “*Minerals proposals within SSSIs or likely to affect them should be very carefully considered, and where the impact is likely to be significant they should be subject to the most rigorous examination, and the need for the mineral must be balanced against environmental and other relevant considerations*”. MPPW therefore does not preclude mineral extraction within SSSIs and the inclusion of the Preferred Area at Trefil is therefore in accord with national policy and does not make the LDP unsound.

- 2.9 As explained in sections 4 and 5, below, a range of mitigation measures can be incorporated into the detailed design of any future quarrying proposals, including features which would enhance rather than detract from the geo-conservation value of the area. A balanced judgement will thus be able to be made by the planning authority, once any specific applications are brought forward by the operator, taking account of both the detailed proposals and the conservation status of the site. To exclude the Preferred Area at this stage would be to prejudice the normal planning and EIA processes and may thus be unsound.

3. LRC REPORT 2012/13 by PROFESSOR JOHN GUNN

- 3.1 This report, on the Assessment of Mynydd Llangynidr as a Potential Site of Scientific Interest was commissioned by CCW and delivered in March 2012. It provides a comprehensive account of the interstratal karst features of the area, drawing on existing reports including the Geological Conservation Review (GCR), aerial photographic evidence and limited additional fieldwork. It also quotes discussions with scientists from other countries regarding the quality and rarity of the features present in this area. It concludes that Mynydd Llangynidr is the best example of its kind (i.e. of interstratal ‘caprock dolines’) in Great Britain, and is of global importance.
- 3.2 We have no reason to dispute this scientific evidence - only its implications for the retention of the Preferred Area within the Blaenau Gwent LDP. The submission by Andrew Muir on behalf of Gryphonn Quarries has separately disputed certain other aspects of the LRC report - including the incorrect assertion that the overburden of ‘Millstone Grit’ would be a waste material requiring disposal.
- 3.3 The LRC report suggests that there are more than 70 dolines within the Preferred Area. This figure is supported by our own independent analysis of the most recent aerial photography of the area, which confirms the existence of numerous large dolines within the outcrop of the Twrch Sandstone (=‘Millstone Grit’) and numerous smaller ones where the underlying Dowlais Limestone is exposed at the surface or beneath a thin cover of superficial drift deposits. The juxtaposition of these different types of doline is, in itself, an interesting geological feature of the area (although the LRC report and its support for the proposed SSSI is focused primarily on the interstratal ‘caprock’ dolines).
- 3.4 It is also evident, however, that there are greater densities of both types of doline, including many examples of very large caprock dolines, within the immediately adjoining areas, outside the suggested boundary of the

Preferred Area. As noted within the report, “*the value of the interstratal karst lies both in the individual landforms and the fact that, within the proposed SSSI (pSSSI) area, the density and variety of caprock dolines is unsurpassed anywhere in Britain*”. It therefore follows that areas of much reduced density of caprock dolines within the pSSSI must be of lower intrinsic value than other parts of that area. This is the case for the proposed Preferred Area, which has been deliberately located to avoid the areas of greatest density of caprock dolines.

- 3.5 The LRC report also demonstrates, in its paragraph 2.12 and Figure 4, that Mynydd Llangynidr forms only a small part of a far more extensive tract of interstratal karst “*which extends, with minor breaks, for 60km between the western end of Black Mountain and the Blorenge area in the east*”. Thus, whilst the Mynydd Llangynidr area might constitute ‘*the most spectacular assemblage of collapse dolines*’ within South Wales, as quoted by Gunn (2012) from Thomas (1974), this does not necessarily apply to the whole of it (and clearly not to those areas of reduced caprock doline density which occur within at least parts of the suggested Preferred Area).
- 3.6 Thus, even if the proposed SSSI becomes designated in due course, we contend that this need not be incompatible with future quarrying, at the very least within the areas that are characterised by more limited features of interest.

4. GEO-CONSERVATION AND QUARRYING

- 4.1 The concept of ‘**Geodiversity**’ (which simply means ‘the variety of geological and geomorphological features’) sits alongside ‘Biodiversity’ (the variety of living things), and the conservation of both is increasingly being recognised in planning policies, in the work of nature conservation bodies such as the Countryside Council for Wales (CCW), and in the operational management of aggregate quarries. “**Geo-conservation**” relates to the conservation of features and sites of geodiversity interest.
- 4.2 Nature conservation, in general, involves both the protection *and enhancement* of existing natural resources, including the creation of new opportunities to access, view, and learn from existing resources.
- 4.3 The importance of quarrying in creating exposures which reveal new scientific evidence is well established (for example in the booklet: “*Geodiversity and the Minerals Industry*”, published jointly by the former English Nature, the Quarry Products Association and the Silica And Moulding Sands Association (2003); and in the more comprehensive *Guide to Good Practice on Geological and Geomorphological Conservation* (English Nature, 2006), which incorporates a large number of site-specific case studies. Quarries are particularly good in this respect because (unlike many road cuttings, for example) they enable fresh exposures to be maintained over a long period of time, thus giving scientists much greater opportunities to examine and record the evidence.
- 4.4 In most cases, the constantly changing nature and position of these exposures as a quarry face is worked is seen as an advantage for geological research rather than as a disadvantage. On occasions, however, it may be important to preserve the ‘integrity’ of a particular exposure, rather

than continuing to quarry it indefinitely. This is particularly likely in situations, such as the caprock dolines of South Wales, where the exposures need to be seen in the context of the landforms with which they are associated. Nevertheless, the partial excavation of such features, within the least important parts of a larger area where the landforms are fully protected, can add considerably to the overall geodiversity interest and scientific knowledge of the features in question.

- 4.5 The *Guide to Good Practice* referred to above (English Nature, 2006) illustrates the wide range of conservation approaches that can be used in different circumstances, depending on the precise nature and conservation priorities of each site. In cases where landform integrity is the most important conservation aspect of a particular designated feature, the Guide notes that the intact preservation of that landform is likely to be the highest conservation priority. However, as noted above, the importance of features such as dolines lies not only in their surface morphology, but also in their three-dimensional relationship to the underlying strata and to the various subterranean geomorphological processes responsible for their formation. For this reason, partial excavation of the least important parts of the area to create new exposures (which can be logged by scientists during excavation), and to create a permanently maintained and accessible exposures once quarrying has ceased, would add considerable scientific value and would thus be entirely in accordance with existing and emerging best practice.

5. GEO-CONSERVATION OPPORTUNITIES AT TREFIL

- 5.1 The Preferred Area at Trefil provides opportunities for the overall net enhancement of the geological interest associated with the karstic features of Mynydd Llangynidr. Whilst quarrying would inevitably change the landscape and physically remove some of the features of interest, these adverse effects could be minimised by thoughtful location and design, and a wide range of geodiversity benefits could be provided to mitigate these limited impacts.
- 5.2 Although the precise details of such mitigation measures and enhancement would need to be developed in conjunction with more specific development proposals at some future date, they could include:
- a. Development of a Geodiversity Action Plan (GAP) for the site, based on the guidance contained in the MIRO publication: *Geodiversity Action Plans for Aggregate Companies: A Guide to Good Practice* (Thompson *et al*, 2006). This would entail consultation with CCW and other interest groups, and setting out clear intentions for the geodiversity initiatives to be included in the development of the site, subject to planning permission being obtained;
 - b. Company support for detailed pre-extraction research of dolines within the area of proposed extraction, comparable to pre-extraction archaeological surveys, to ensure that these are thoroughly investigated and documented (again, subject to planning permission being obtained);
 - c. Careful location of future quarrying, within the Preferred Area, focusing on areas of reduced doline density, so as to limit the number

- of dolines affected;
- d. Development of a detailed excavation design which specifically optimises geodiversity and related benefits (including links to landscape, biodiversity and archaeology within / surrounding the site and to other geodiversity sites within the area). As an integral part of this, the excavation boundary could incorporate innovative design features which facilitate 'blending-in' the excavation with the surrounding landscape through the use of irregular, gradational margins;
 - e. Provision of ongoing controlled access (subject to health and safety requirements), for scientists and other visitors (e.g. schools) to temporary geological exposures created during active quarrying operations, to include research which builds on the pre-extraction surveys, adding cross-sectional detail;
 - f. Development of a restoration plan, building on the innovative excavation design, which incorporates permanent safe access to geodiversity features created at the quarry margins, to include some or all of the features detailed below, linked by a geodiversity trail and supported by interpretation boards, booklets and website information;
 - g. Exposing the general stratigraphic succession of the Dowlais Limestone, unconformably overlain by Twrch Formation sandstone (Millstone Grit);
 - h. Revealing, in these sections, the variations in hydrogeological conditions which have facilitated the process of limestone dissolution and the formation of dolines, including variations in bedding and conduit formation within the limestone (including stages in the formation and collapse of solution cavities leading to doline formation) and relationships to joints and faults within the overlying sandstone;
 - i. Providing specific cross-sectional exposures through dolines of various types, including simple, small solution dolines on the limestone outcrop and larger caprock dolines within the sandstone outcrop; and
 - j. Possible illustration of groundwater flow within the unsaturated zone (such flow to be intercepted and diverted back into the aquifer down-gradient of the quarry).

5.3 It is argued here that carefully controlled quarrying, along the lines suggested above, would not be incompatible with, and could actually enhance, the scientific interest of the proposed SSSI designation. By minimising its impact on the main areas of dolines, and by optimising benefits in terms of generating new knowledge and learning opportunities, quarrying could potentially add considerably to the geodiversity value of this area. It could thus be a beneficial aspect of the proposed SSSI - greatly enhancing the benefits which would otherwise be achieved by simple preservation of existing features. This would be in keeping with the fact that a high proportion of inland geological exposures, including SSSIs and other GCR sites are located within active or disused quarries.

6. CONCLUSIONS

- 6.1 Mynydd Llangynidr undoubtedly provides a spectacular assemblage of interstratal karst landforms. The features are not unique to this area, however, and even within the proposed SSSI there are areas of much lesser geological interest which could be enhanced through carefully controlled and well-designed quarrying operations. It is argued that this would add considerably to the overall geological conservation interest and scientific value of the area.
- 6.2 MPPW does not preclude mineral extraction within SSSIs and the inclusion of the Preferred Area at Trefil is therefore in accord with national policy and does not make the LDP unsound.
- 6.3 There is no justification for the exclusion of SSSIs (whether actual or potential) from Preferred Areas for future aggregates extraction. The acceptability or otherwise of mineral extraction within such areas needs to be assessed through the due processes of the planning system, including environmental impact assessment related to submitted planning applications. To exclude the Preferred Area at this stage would be to prejudice the normal planning and EIA processes and may thus be unsound.

7. REFERENCES

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