

# **Bridgend Local Development Plan Examination**

## **Session 10 – Minerals**

### **Statement of the Mineral Products Association**

#### **4. OTHER MINERALS**

**Qn4a. Has the Council had appropriate regard to cross boundary issues?**

**Qn4b. Is there evidence to support the shortfall in reserves in the Vale of Glamorgan?**

1. The Mineral Products Association (MPA) did not make a representation on this matter because it was tucked away in an appendix to the Minerals Background Paper and we were unclear of its implications until Vale of Glamorgan (VoG) published its Draft LDP. We then made representations to the VoG Plan because the industry felt that there had been insufficient regard to the effects of the new policy on productive capacity and competition and because to our knowledge, no consultation had been carried out with the industry prior to the arrangements being settled by the two authorities.
2. In our view, there are serious flaws in the arrangement which we shall explore in the examination of the VoG Plan but for the information of the Inquiry I reproduce the MPA's objections on the VoG apportionment proposal as Appendix 1.
3. The situation (which was recognised by the RTS) is that whilst for reporting purposes Bridgend and VoG have a joint apportionment, the vast majority of the reserves are in Bridgend whilst the major part of the production is in VoG. Historically, the production from VoG has been of the order of twice that from Bridgend but we understand the current situation resembles more of a parity. The VoG Mineral Background Paper (Appendix 2) describes how the largest aggregates quarry in the District will become exhausted in 2016 followed closely by another leaving a capacity shortfall of about half the long term average of just over 1 Mtpa. That is just three years away.
4. It is extremely unlikely that the capacity shortfall will be taken up by the other active quarries in VoG since large increases in production will probably cause excessive depletion of reserves in the largest units and lead to further headaches for operators in seeking replacement resources, whilst the others are small operations that do not have the capacity to expand at the rate required. VoG hope that the demise of the largest quarry will be balanced by a dormant site of 6 Mt coming on steam, but have not provided any evidence of operator intent,

or capability to do that. In any case, it is not an especially large reserve and will not go far at the required rate.

5. Which leaves the potential transfer of apportionment to Bridgend. Bridgend's aggregates production is dominated by one site, the largest in South Wales, supplemented by a much smaller independent operation of limited capacity and reserves. VoG state that if the sharing is pursued there are questions about the required capacity of the Bridgend sites and it will lead to greater transport costs to bring material to the Cardiff market, not to speak of the increase in Carbon miles and the unsustainable contribution to climate change impacts. Bridgend have been silent on the impacts of the apportionment switch apart from a simple statement that the reserves are large enough to accommodate the shortfall from VoG and we find their rather sanguine reaction very complacent. No evidence is proffered on whether it will work, and what the effect would be of such a dramatic increase in production and on the consequent availability of industrial mineral.
6. What VoG and Bridgend have agreed does not appear to have had regard to the RTS requirement (Box 1) to examine factors not apparent from the bare figures alone. In our view, the matter should have been put before the RAWP for discussion, consultation with the industry and pursuit of a consensus before going this far.
7. In addition, the way in which the apportionment has been calculated using the last three years data makes it a volatile measurement given we are in the trough of the deepest recession this country has seen for 70 years. At some stage, construction will bounce back, aggregate production levels will rise and the landbank will plummet. It would have been prudent in our view to carry out a sensitivity analysis of different demand scenarios and seek the views of the RAWP.
8. The aggregates industry are no strangers to changes in supply patterns; indeed, the industry has responded well to a number of initiatives to do just that, for example, the development of recycling and secondary aggregate resources to 25% of the aggregates market, and earlier, the development of rail based and marine aggregate sources to serve major urban centres. All of these are examples of a co-operative approach in which the industry was fully involved and which they consented to as achievable. What the industry abhors are rapid changes to supply patterns of great magnitude and consequent disruptions to carefully constructed downstream integrated businesses, which is what a modern large scale aggregates operation is essentially.

9. We are disappointed that there has been so much reliance on a purely arithmetic approach to aggregates planning based on a rigid adherence to national policy maxima without consideration of the supply pattern which RTS specifies as balancing criteria when looking at the need for allocations. The VoG and Bridgend quarries represent a nationally important supply of construction materials for the Welsh economy and they deserve a treatment consistent with that status.
10. The questions about productive capacity in the two districts are such as to place the shared apportionment arrangements between the authorities in doubt and to render their Plans unsound by reason of an inadequate evidence base. The Plan should more fully justify its approach with evidence and consultation with the RAWP before proceeding with its strategy.

**Qn4b. If the Council has identified landbanks for both aggregates and non-aggregates, and having regard to MPPW paragraph 71, should Policy SP6 include a specified landbank for non-aggregates separate from the 10-year landbank for aggregates?**

**Qn4c. What do the Representors consider to be the present extent of the landbanks for aggregates and for industrial limestone and what landbanks should the LDP seek to maintain?**

**Qn4d. What evidence supports the Representors' claim that additional permission for extensions to Cornelly Quarry will be required to maintain a 10-year landbank?**

**Qn4e. Would that require an allocation?**

**Qn4f. Are dormant reserves of aggregates identified in the Plan and shown in the landbank calculations as a separate category as required by MTAN1 para. 47?**

1. We are of the general opinion that if separate landbanks (or stocks of permitted reserves for each site in the case of industrial minerals) can be identified, then there is a good case for reflecting this in policy. The long term provision of industrial minerals is often demanded by customer requirements for long term security of supply. As such, the justification for such security is determined by the capital invested in the customer's plant and the importance of the end use to the economy, as well as by the capital invested in the quarry itself. Security of supply gives confidence in investment decisions and means that both supplier and customer can plan for the long term. The Council's response seems a little complacent in the circumstances. Policy in England recognises that industrial minerals do need to be planned for over a longer timescale than aggregates (NPPF para 146) and advises that in the case of cement works (the largest industrial users of mineral in England) quarry supplies need to be supplied over a period of 25 years. This is not unreasonable given the invested capital in such sites, and I would suggest this is a comparable situation in Bridgend.

## 9. RECYCLING OF COMMERCIAL AND DEMOLITION WASTE

### **Qn9a. Does ENV16 suitably provide for facilities for recycling commercial and demolition waste?**

1. It is well known that the recycling of construction and demolition waste is often unsuited to light industrial locations that other waste land uses can occupy with ease. The extensive and open nature of the activity, its potential for fugitive dust and noise emissions, and unsightly plant and stockpiles, together with landowner prejudice, and the wide range of uses now allowed in the B2 category, all make it difficult to establish this activity on industrial sites, particularly if they are part of an aspirational business park. Conversely, such activity can happily co-exist on mineral sites for the duration of the extractive activity, because the latter tend to process material with similar characteristics and are obviously geared up to deal with the adverse effects of processing this sort of material.
2. Our comments on the plan were driven by mystification about why it contained a strategic aim that didn't seem to be followed through in policy. We are not trying to stop the activity; indeed, it is an important part of our members' businesses accounting for 25% of the UK market for aggregates and we want to encourage it.
3. In respect of the assertion that inert waste recycling is comprehensively covered by Policy ENV16, the Council say that MRFs often include inert waste recycling facilities, and that that is sufficient reference to the subject in a policy. However, the Council's rejoinder would be more convincing if the Plan's Glossary contained a definition of an MRF that incorporated their view or the supporting text said as much. The only possible (oblique) reference that I can find is in para 4.5.6 but it is vague and unhelpful. Nowhere that I can see, is there any indication that the traditionally greatest fraction of waste by weight, i.e. CDW, is catered for in the Plan. This robs the user of any clear advice about where best to site an inert waste recycling operation which makes the Plan incoherent because there is no clear link between a strategic aim and proposals for its implementation.
4. The position is still unclear when reading Policy SP7 for the allocated sites in that the supporting text seems to imply that the RWP provision is for in-building demand only (para 4.5.1). Moreover, the text implies that the allocations are being provided for large facilities (para 4.5.4) of regional significance alongside forms of energy recovery. This does not suit a description of the typical CDW recycling facility. I have no local knowledge of any of the allocated sites and cannot therefore comment on whether they would be suitable for the location of CDW recycling, or whether only parts of an allocated site might be available (inert

waste recycling often only needs about 1 ha) rather than the whole. My view is that it is up to the plan to make it clear whether such uses could be accommodated on these sites.

5. In summary, it seems to me that it is not apparent from either SP7 or ENV16 or their supporting text that the specific needs of CDW recycling is being catered for. However, it could easily be remedied by either the inclusion of a new policy which does justice to the strategic aim, or by amending an existing policy to make it clear that CDW waste is included within the terms of the policy.

**Qn9b. What provision does the Representor seek for temporary facilities and how does this differ from the Plan's provisions for permanent facilities?**

1. The Council seems relaxed about the location of temporary facilities on minerals sites. As I have explained, this makes good sense although not all mpas would agree. The other type of site I suggest are major redevelopment areas. Such facilities might take the form of a central processing hub which takes material from a wide spread of satellite feeder sites, processing material on a campaign basis. This might be particularly useful if there is a lot of material to process, it is near other sensitive land uses and the developer and Council want to avoid large stockpiles and to get on with building work.
2. The major difference between such temporary facilities and a more permanent network is the flexibility of location that a temporary facility allows. Mineral workings are clearly a temporary use (even if over extended timescales) and the land can be returned to its former state when the primary purpose of the development ceases. The same is true of redevelopment sites; for the land will ultimately be returned to another urban use, or even revert back to a rural use. Thus they are not constrained by having to be allocated; they do not even have to be on B2 land. They can be of any size and any duration. They can be one-offs or intermittent. They can produce adverse amenity effects for a short time and be tolerated. Flexibility is the key.
3. What we are trying to achieve is a recognition that such temporary facilities have a place in the promotion of the strategic aim of encouraging the use of recycled aggregates. At present the plan does not seem to present a coherent and clear strategy for meeting a strategic aim within it, and we suggest that the policy wording in our representations should be included either as a new policy, or an amendment to an existing one, perhaps ENV 14.

## Vale of Glamorgan Deposit Draft Local Development Plan

### Comments by Mineral Products Association

#### Policy SP 9 Minerals

We object to this policy on the grounds that it is UNSOUND by reason of being INCONSISTENT (Reason C1), INCOHERENT and INEFFECTIVE (reasons CE1, CE2, CE3).

Policy SP9 refers to an "extended landbank" which includes 6 million tonnes at a dormant site ( Ruthin -see 4.1 of MBP ). Even with the inclusion of these dormant reserves the statement in Policy SP9 that ' a minimum of 10 years extended landbank will be maintained throughout the plan period " conflicts with para. 5.1 of the MBP which states at 5.1 that ' Whilst existing reserves would be adequate until 2032, six years beyond the end of the LDP period, they do not at present meet the MTAN 1 objective of having a 10 year landbank throughout the LDP period'. The statement in SP9 would only be true if additional new reserves were allocated in the LDP and identified on the proposals Map.

The RTS advice for Vale of Glamorgan says, "Landbanks, for limestone should be monitored particularly carefully and the possibility of allocating additional reserves to cover any impending shortfall should be kept under review. In preparing Local Development Plans, consideration should be given to whether the factors in Box 1 above give rise to any requirement for resource allocations."

Box 1 advises that the RTS assessment "...does not take fully into account factors that may be material to the ensuring (sic) an adequate supply of aggregates obtained from appropriately located sources. Such factors include:-

- The technical capability of one type of material to interchange for another.
- The relative environmental cost of substitution of one type of material by another.
- The relative environmental effects of changing patterns of supply.
- Whether adequate production capacity can be maintained to meet the required supply."

In our view that Deposit LDP does not give adequate attention to the last of the factors listed, that of maintaining adequate production capacity.

The RTS puts Bridgend and Vale of Glamorgan together for apportionment purposes, which it is stated is done for the purpose of preserving confidentiality. Although authorities are urged to collaborate on sharing apportionments, there is no suggestion in RTS that there is any market

related, geological or other intrinsic reason for the pattern of apportionments suggested. It is merely a convenience. The RTS analysis also notes that “...the bulk of reserves are in the Bridgend and the greatest production is in the Vale of Glamorgan. On a per capita basis, both have adequate reserves, but on the basis of existing shares Bridgend is well provided for, but the Vale of Glamorgan is close to the limit.”

Vale of Glamorgan also uses the last three years’ sales figures to calculate its landbank and concludes that this is sufficient. However, the authority has given insufficient attention to the fact that such figures represent the longest and most severe economic conditions this country has faced since the Second World War. In other words, it is atypical. We believe the authority has been complacent in its assessment of likely future trends in sales. We are concerned that overreliance on a current sales average coupled with no flexibility in provision could leave the South Wales economy vulnerable to shortages of vital construction materials in an upturn. Vale of Glamorgan propose to leave any future assessment of need in the event of an upturn to later in the plan period, but we are concerned that if an important quarry is due to close in 2016, this approach will leave a shortage of available options since once production capacity is lost it will be difficult if not impossible for it to be regained.

Vale of Glamorgan admits that there is an unequal distribution of reserves between sites, and mentions that one site in particular, which has traditionally been the largest producer in the district, will be exhausted by 2016. Nevertheless, Vale of Glamorgan is not proposing any new allocations for limestone working, assuming that either other quarries in the area are capable of increasing production to compensate, or that inactive quarries will take up the shortfall, or that Bridgend will take up any shortfall.

There is no evidence that other producers are capable of increasing capacity to compensate or that they would even if they could. The plan takes a naïve view of modern mineral operations. A large limestone quarry is an integrated operation typically serving several downstream businesses such as coated stone plants and concrete production units. Typically, only a minority of stone is sold on the open market at the gate. If a company runs out of mineral to serve its fixed outlets it merely switches supply to one of its other quarries. Thus only if the substitute quarry is in the same ownership will the lost production be taken up by other units. Experience shows that when capacity is lost in any area, only some is shared between other quarries in the area. What usually happens is that production is likely to be either permanently lost or will transfer permanently to another area in the same ownership.

The mpa assumes that either of two quarries will take up the shortfall but it admits that one quarry is currently held in reserve for industrial purposes and one is held in reserve by a current producer. There appears to be an assumption that it is a simple matter to increase production at a site depleting it a more rapid rate and shifting production to another site at an equally rapid rate whilst ignoring the fact that to do so will undoubtedly affect the return on capital invested in those sites. In other words, there is no evidence that the industry will be willing to respond in the way that the authority assume.

Whilst Bridgend does have a surfeit of reserves, these are overwhelmingly contained in one site which is already the largest in South Wales. It is subject to an ongoing mineral review and it is admitted by the mpa that constraints on existing production capacity may limit the contribution that Bridgend can make. In these circumstances, we believe the authority's strategy is fundamentally flawed and that the outcome of its decision not to replace lost production capacity either with extensions or a new site, will be to permanently affect the ability of the district to supply a steady and adequate supply of aggregates in the long term contrary to the advice of the RTS.

We therefore propose, that the policy be amended as follows, (insertions in **bold**; deletions in ~~strikethrough~~)

#### **POLICY SP 9 – MINERALS**

IN MEETING LOCAL AND REGIONAL NEED FOR THE PROVISION OF AGGREGATES, THE PLAN ENSURES THAT A MINIMUM OF 10 YEARS EXTENDED LAND BANK WILL BE MAINTAINED THROUGHOUT THE PLAN PERIOD. THIS IS ACHIEVED THROUGH:

1. **MAINTAINING ADEQUATE PRODUCTION CAPACITY AT EXISTING SITES TO MAINTAIN THE IDENTIFIED SUPPLY AND BY ALLOCATING ADDITIONAL RESERVES TO COVER ANY IMPENDING SHORTFALL.**
2. SAFEGUARDING EXISTING PERMITTED RESERVES OF LIMESTONE FROM DEVELOPMENT THAT WOULD PREJUDICE THEIR FUTURE EXTRACTION;
3. FAVOURING PROPOSALS WHICH PROMOTE THE SUSTAINABLE USE OF MINERALS AND ENCOURAGE THE USE OF SECONDARY AND ALTERNATIVE RESOURCES AND
4. THE SAFEGUARDING OF RESOURCES OF LIMESTONE, SAND AND GRAVEL WHERE THESE COULD BE WORKED IN FUTURE WITHOUT UNACCEPTABLE DETRIMENT TO THE ENVIRONMENT OR RESIDENTIAL AMENITY.

Consequential changes will also need to be made to paragraph 7.98.



VALE OF GLAMORGAN  
LOCAL DEVELOPMENT PLAN  
**2011-2026**

**MINERALS**  
Background Paper

November 2011



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## 1. Introduction

- 1.1 This background paper is one of a series produced by the Vale of Glamorgan as part of the evidence base for the Deposit Local Development Plan (LDP). Each topic paper can be read in isolation or together to gain a wider understanding of how the policies and/or allocations in the LDP have been developed to address issues facing the Vale of Glamorgan. The purpose of this paper is to provide further information on the policies relating to Minerals contained within the Deposit LDP.

## 2. Background

- 2.1 The Vale of Glamorgan is an important regional supplier of Carboniferous limestone for general aggregates use and Carboniferous and Liassic limestone for cement manufacture. In 2009 the seven active Vale quarries produced 0.62 million tonnes of aggregates, with a further 0.41 million tonnes being produced from three sites for non-aggregate (almost entirely cement) use. Aggregate production was almost 60% lower than in 2007 as a result of the economic downturn. In addition the Vale has an extensive secondary aggregate resource in pulverised fuel ash (pfa) and furnace bottom ash (fba) from Aberthaw Power Station.
- 2.2 Regular landings of marine dredged sand and gravel at Barry Docks ceased in 2003. Various areas of potential land-based sand and gravel resources have been identified, mainly in the Ely and Thaw valleys, but historically this resource has not been exploited. Coal does not occur in the Vale of Glamorgan.

## 3. Planning Policy Context

- 3.1 **Minerals Planning Policy Wales (2000) (MPPW)** sets out national policy guidance for mineral extraction. The guidance makes positive provision for mineral working to meet the needs of society and advocates the identification of future working areas (where practicable) and the safeguarding of mineral resources from permanent development that would prevent their future working.
- 3.2 **Minerals Technical Advice Note 1: Aggregates (2004) (MTAN 1)** advises (paragraph 49) that

*' a minimum 10 year landbank of crushed rock...should be maintained during the entire plan period of each development plan except within National Parks and AONBs...Where landbanks already provide for more than 20 years of aggregates*

*extraction, new allocations in development plans will not be necessary, and Mineral Planning Authorities should consider whether there is justification for further extensions to existing sites or new extraction sites as these should not be permitted save in rare and exceptional circumstances.'*

- 3.3 The Vale of Glamorgan Local Development Plan covers the period 2011 to 2026, so to meet the MTAN 1 guidance a landbank to cover the period to 2036 is required.
- 3.4 The **South Wales Regional Aggregates Working Party's Regional Technical Statement 2008 (RTS)** on aggregates seeks to achieve a more sustainable approach to aggregates provision than the traditional 'predict and provide' process, by maximising the use of secondary and recycled materials and mineral wastes whilst safeguarding minerals that may be needed in the long term. The RTS acknowledges that, where the principles of sustainable development can be achieved, the extension of existing aggregate quarries is likely to be acceptable and that if new areas of aggregate supply are needed they should be in locations with low environmental restraints and take into account transport implications.
- 3.5 The RTS assumes low regional growth in primary aggregates use and that any additional demand will be met from secondary or recycled aggregate, although the potential for substantial increases from such sources may be limited.
- 3.6 The RTS makes an apportionment of regional primary aggregates supply from the Vale of Glamorgan and Bridgend County Borough jointly of between 31.1 and 32.9 million tonnes over the period 2007-2022, based on a continuation of the current pattern of regional supply. This would fall to only 15 million tonnes if supply was spread across the South Wales region on a per capita basis, but taking into account the limited geological occurrence of suitable minerals and the current geographical range of small to medium size quarries it is concluded that the present pattern of supply is unlikely to change significantly over the period of the LDP.
- 3.7 The Regional Technical Statement was endorsed by the Council in February 2008 and by the RAWP in October 2008.

#### 4. Aggregate Landbanks

Site name	Stone type	Primary end-use
Aberthaw	Liassic	Cement
Ewenny	Carboniferous	Aggregates
Forest Wood*	Carboniferous	Aggregates
Pant	Carboniferous	Cement/Aggregates
Pantyffynnon	Carboniferous	Aggregates
Longlands	Carboniferous	Aggregates
Lithalun	Carboniferous	Aggregates
Wenvoe	Carboniferous	Aggregates

\*Shared with Rhondda Cynon Taff

- 4.1 The Vale of Glamorgan landbank of reserves with planning permission at active aggregate-producing sites (as estimated by the quarry operators) was 17.4 million tonnes at January 2010. A number of dormant sites also have valid mineral extraction permissions, but only one (Ruthin Quarry) has reserves that would make more than a minimal difference to the landbank. The inclusion of that site, owned by a quarry company and currently held in reserve, in the landbank increases aggregate reserves to approximately 23.4 million tonnes, adequate for almost 22 years - i.e. until 2032 - on the basis of a continuation of the 2007 - 2009 average production level.
- 4.2 One other currently inactive Carboniferous limestone site (Garwa Farm Quarry) also contains substantial reserves, estimated by the Council at approximately 12 million tonnes. Stone from this site has historically been used only for cement manufacture due to its particularly high calcium carbonate content, and is held in reserve by the owning company for that purpose. It is therefore not included in the aggregates landbank, although there appear to be no technical reasons preventing its use as aggregate.
- 4.3 Reserves of Liassic limestone, used entirely for cement manufacture, are limited to one active site (Aberthaw Quarry) but are sufficient for over 40 years at recent (2007 – 2009) production levels.
- 4.4 Approximately 0.5 million tonnes of pulverised fuel ash and furnace bottom ash combined are generated annually at Aberthaw Power Station. Ash is actively marketed as an alternative to natural aggregates but sales fluctuate dependent on demand, with normally a large surplus being land filled. A recently-constructed ash processing plant, designed to separate high and low carbon-content ash at up to 200,000 tonnes per year, will increase the range of suitable uses for this material.
- 4.5 The uneven distribution of aggregate reserves between sites means that estimation of a theoretical exhaustion date is not straightforward. In particular, for many years Wenvoe Quarry has produced in the order of 50% of all Vale aggregates but its reserves will be exhausted by 2016 at present (2007 – 2009 average) extraction rates. It is also likely that Pantyffynnon Quarry will be worked out by that date. Beyond 2016 the continuation of recent Vale production levels will depend on either substantial increases in production, and therefore faster depletion, at other currently-active sites or the resumption of quarrying at Ruthin and/or Garwa Farm Quarries.
- 4.6 With the exception of Wenvoe Quarry, none of the Vale aggregate quarries are well placed to serve the major Cardiff market. Again, if Wenvoe closed, transportation costs and haulage mileage to that market from sites further west would increase substantially. None of the Vale aggregates quarries (with the possible exception of Ewenny Quarry) has any potential for rail transport.

## 5. Conclusions regarding limestone aggregates

- 5.1 At current extraction rates existing reserves are adequate for in excess of 20 years and in line with MTAN 1 guidance no further allocations are therefore necessary. Whilst existing reserves would be adequate until 2032, six years beyond the end of the LDP period, they do not at present meet the MTAN 1 objective of having a 10-year landbank throughout the LDP period.
- 5.2 In terms of the RTS the Vale of Glamorgan alone cannot meet the joint Vale/Bridgend apportionment target of approx. 32 million tonnes over the period to 2022 on the basis of current reserves, with a shortfall of some 8.6 million tonnes. However, permitted aggregate reserves in Bridgend County Borough (48 million tonnes at January 2009), are more than adequate to make up the shortfall, although the location of those reserves remote from the important Cardiff market would again result in considerably increased transport costs. Constraints on existing production capacity at the two currently active Bridgend aggregates sites may limit the contribution those sites could make to the Vale shortfall.
- 5.3 Aggregates production has been severely depressed since 2007 as a result of the economic downturn. Whilst informal comments from quarry operators indicate that the situation has not improved markedly in 2010, it should be noted that an immediate return to the long-term pre-downturn (1997 – 2007) average production rate of 1.29 million tonnes would result in reserves being exhausted by 2028, six years beyond the LDP period and just below the MTAN 1 20-year criterion. On the basis of current trends it is considered that such an immediate upturn is unlikely although a more gradual increase is probable over a number of years. This does not affect the conclusion that there is currently no need for further aggregates allocations in the LDP although the situation may need to be reviewed toward the end of the Plan period.

## 6. Limestone for non-aggregate purposes

- 6.1 Reserves of Liassic limestone at Aberthaw Quarry, used entirely for cement production at the adjoining cement works, are adequate for well beyond the LDP period and no further allocation is necessary. Reserves of 'cement-quality' Carboniferous limestone at Garwa Farm Quarry (currently inactive and held in reserve) are extensive although not easy to extract due to the depth of overburden. The planning permission at Garwa Farm expires in 2019 and it is highly unlikely that current reserves will be exhausted by that date. The site has good road access and few environmental constraints, and a continuation of the existing planning permission beyond 2019 would secure those reserves for the remainder of the LDP period and beyond.
- 6.2 No further allocations for non-aggregate stone are therefore considered necessary during the Plan period.

## 7. Dormant sites

Site name	Stone type	Last worked
Argoed Isha	Carboniferous Ist	1984
Beaupre	Carboniferous Ist	1950's
Cnap Twt	Carboniferous Ist	1950's
Cosmeston	Liassic limestone	1960's
Cross Common	Liassic limestone	1960's
Downswood	Liassic limestone	1960's
Ely Brickworks**	Triassic marls	1950's
Garwa Farm	Carboniferous Ist	2006
Lavernock	Carboniferous Ist	1950's
Ruthin	Carboniferous Ist	1986
St Andrews	Carboniferous Ist	1973
Southerndown Road	Liassic limestone	1950's

\*\*= Shared with Cardiff

- 7.1 With the exceptions of Garwa Farm and Ruthin Quarries, both of which contain considerable reserves and are held in reserve for the future, none of the long-dormant sites listed in Table 2 are considered suitable for quarrying by modern standards. Many of the sites have re-generated naturally, have been put to alternative uses or are constrained by nearby development. For example, Cosmeston Quarry flooded to a depth of over 20 metres when quarrying ceased in the 1960's and has since been incorporated into Cosmeston Country Park, Lavernock and Southerndown Road Quarries have been used as waste disposal sites and Ely Brickworks has been largely covered by the Ely Link Road.
- 7.2 Despite these long periods of disuse or alternative uses, planning permissions for mineral extraction remain extant at the Table 2 sites. Many of these sites have been effectively abandoned by the minerals industry and any reserves remaining in them have not been included in the landbank. With the exceptions of Garwa Farm and Ruthin Quarries, which are both acknowledged as containing substantial reserves that are likely to be worked in future, further extraction at the remaining Table 2 sites should be prohibited formally to remove any doubt over the possibility of quarrying resuming and, where appropriate, the sites should be restored.

## 8. Safeguarding of resources

- 8.1 Carboniferous limestone outcrops in several blocks in the Vale of Glamorgan, particularly in the Wenvoe/St Andrews Major, Ewenny/St Brides Major and St Mary Hill/Llansannor areas, with smaller areas along the central 'spine' between St Nicholas and St Hilary. Although the overall reserve situation is healthy for the LDP period, in view of the varying depletion rates and likely 'work-out' dates of the current active quarries consideration has been given to the need to safeguard further limestone resources to meet future local shortages.
- 8.2 The adopted Vale of Glamorgan Unitary Development Plan, and prior to that the unadopted Mid and South Glamorgan Minerals Local Plans, identified limited areas adjoining Forest Wood, Lithalun, Pant, Pantyffynnon, Ruthin and Wenvoe Quarries as containing limestone resources that could be worked without undue detriment to the environment or residential amenity. Of those, the area adjoining Lithalun Quarry has subsequently been granted planning permission for quarrying whilst an application at Forest Wood is currently being processed. Two applications for quarrying in the area identified at Wenvoe have been withdrawn (in 2008 and 2010) due to difficulties that have arisen due to the discovery of European Protected Species on the site.
- 8.3 An analysis of the limestone outcrop has shown that there are no areas suitable for the establishment of a new quarry of a size sufficient to make any long-term contribution to aggregates supply with reasonable access to the strategic highway network if Grades 2 and 3a (where differentiated) agricultural land, the Glamorgan Heritage Coast and residential amenity are to be protected. In view of the long-term adequacy of existing permitted reserves there is considered to be no justification for broad safeguarding of the entire limestone outcrop.
- 8.4 However, the areas previously identified adjoining Forest Wood, Pant, Pantyffynnon and Ruthin Quarries remain free of the constraints in paragraph 7.2 and are therefore protected from any forms of permanent sensitive development so that the resources in them are not made unavailable by other permanent developments on or adjoining them. The area adjoining Wenvoe Quarry is no longer safeguarded for quarrying due to the presence of European Protected Species.

## 9. Buffer Zones

- 9.1 MPPW and MTAN 1 support the principle of Buffer Zones around established and allocated mineral sites. Development plans must indicate the boundaries of the Buffer Zones, within which no new sensitive development or mineral extraction should be approved. Sensitive development includes any building occupied by people on a regular basis and includes dwellings, schools and hospitals.
- 9.2 Whilst a quarry can affect its surroundings in a variety of ways, many of the effects, for example unacceptable noise or excessive dust, are normally restricted to areas within or very close to the site. The impact of blasting using explosives, however, whilst infrequent and transitory, can create disturbance over a wider area than other factors and generates the majority of complaints about the industry. Those complaints generally relate to concern over the structural integrity of buildings and the 'startle' effect of unexpected ground vibration and air overpressure (the 'sonic boom' effect that can cause loose windows to rattle). Explosives are used routinely at all the Vale quarries.
- 9.3 Air overpressure can be measured but is very difficult to predict as atmospheric conditions can cause wide variations in levels. MTAN 1 (paragraph 81) advises that planning conditions to control it are unlikely to be enforceable. Whilst ground vibration depends on a variety of factors, including underlying geology and blast geometry, the most significant influences are the weight of explosive detonated instantaneously (the Maximum Instantaneous Charge or MIC) and the distance of the monitoring site from the blast. Calculations based on the measured vibration levels for each site can predict with a high degree of confidence the expected level of vibration for a given MIC at any distance from the blast. MTAN 1 recommends that a maximum 'peak particle velocity' (ppv) of 6 millimetres per second (mm/s) should not be exceeded at dwellings in 95% of blasts over any six-month period, with none of the remainder exceeding 10 mm/s, if justified complaints of unreasonable nuisance are to be avoided. Levels for structural damage are far higher, in the order of 50 mm/s even in frail structures. A more detailed summary of Buffer Zone methodology is given as Appendix 1.
- 9.4 The Buffer Zone dimensions given in Table 3 below are derived from monitoring results from each site (listed in Appendix 2), assume the use of the currently-permitted MIC at the site boundary and reflect the 6 mm/s 'nuisance threshold'. As these circumstances rarely occur in practice, this effectively adds a further margin of safety to the calculations. The Buffer Zones are extended around the various safeguarded areas identified in paragraph 7.4 above.

Site	Max. charge (kg)	Buffer Zone dimension (m)
Aberthaw	90	300 <sup>1</sup>
Ewenny	35	384
Forest Wood	75	355
Garwa Farm	90	300 <sup>2</sup>
Lithalun	n/a	350 <sup>3</sup>
Longlands	65	363
Pant	n/a	315 <sup>4</sup>
Pantyffynnon	90	427 <sup>5</sup>
Ruthin	n/a	300 <sup>6</sup>
Wenvoe	136	500

9.5 In some cases, individual dwellings or areas of housing already lie within the Buffer Zones. The Council has consistently taken the view that whilst no new dwellings should be permitted in locations where they would cause mineral extraction to be constrained, it would not be reasonable to resist infilling within an existing group of dwellings that already form a constraint to quarrying. The Buffer Zones as defined on the Proposals Map are therefore drawn to exclude such areas.

<sup>1</sup> Aberthaw: Insufficient monitoring data for calculation since relocation of extraction to new area. Previous buffer zone of 300 metres maintained as a precaution.

<sup>2</sup> Garwa: Currently inactive. Previous buffer zone of 300 metres maintained as a precaution pending further monitoring.

<sup>3</sup> Lithalun: No control on maximum charge. Closest dwelling, 350 metres from boundary, must be taken into account in designing blasting so this distance is adopted as buffer zone to prevent any sensitive buildings being constructed closer to the quarry.

<sup>4</sup> Pant: No control on maximum charge (review application pending). Closest dwelling, 315 metres from boundary, must be taken into account in designing blasts so this distance is adopted as buffer zone to prevent any sensitive buildings being constructed closer to the quarry.

<sup>5</sup> Pantyffynnon: Control on maximum charge on part of quarry only but resulting buffer zone distance adopted around whole site as a precaution.

<sup>6</sup> Ruthin: Currently dormant. Updated planning conditions to be approved prior to quarrying resuming. Previous buffer zone of 300 metres maintained as a precaution.

## 10. Sand and Gravel

- 10.1 South Wales is highly dependent on marine-dredged aggregates to supply sand and gravel. The Welsh Assembly Government's **Interim Marine Aggregates Dredging Policy – South Wales** (2004) (IMADP) aims to focus marine dredging in offshore areas to the west of the Bristol Channel in accordance with the principles of sustainable development. Consistent with this, the licence for dredging on Nash Bank ended in 2010. At present, uncertainty remains about the continued availability of dredged aggregates to serve local construction needs.
- 10.2 The RTS advises that *'existing and potential wharves should be protected in the LDP to ensure that marine sand and gravel supply routes into the area continue.'* Sand has not been landed in any substantial quantities in the Vale since 2003: any future wharf would have to be located within the extensive operational area of Barry Docks, but with the cessation of the industry locally, protection of a specific wharf site is not considered necessary at present.
- 10.3 MTAN 1 (paragraph 32) advises that whilst land-based extraction is not considered appropriate at present, the regionally limited land-based resources of sand and gravel must be safeguarded in development plans for potential future use. Eleven such areas have been identified in the Vale, which are therefore protected from permanent development that would sterilise or hinder the extraction of potential mineral resources if a need for them is proved. That protection does not imply acceptance of the working of any of the sites, many of which are in sensitive rural locations.

## 11. Alternative aggregates

- 11.1 Ash arising from Aberthaw Power Station has a range of potential uses as a replacement for natural aggregates. Sales have historically fluctuated widely from year to year, but averaged 75,000 tonnes over the period 2003 – 2008 (no return for 2005).
- 11.2 Since publication of the RTS a new processing plant has been constructed, capable of processing up to 200,000 tonnes annually of 'fresh ash' arising from the power station. Following treatment, 30% is returned to the power station as fuel with the remainder being sold as aggregate, mainly as a substitute for primary aggregates in the cement industry. The remainder of the annual ash arising is disposed of as landfill in the nearby Aberthaw Quarry, with a further very large landscaped mound of ash being located adjoining the power station. Whilst there are no current planning permissions for removal of ash from the quarry or mound, this material remains available for any bulk fill or other uses that may arise. Due to the high local tidal range it appears that any wharf could be located only in Barry Docks, where again the current lack of demand means that a specific allocation is unnecessary at present.

## 12. Disused Mineshafts

- 12.1 The Vale of Glamorgan contains a number of areas where underground working for metalliferous minerals (mainly iron, lead and silver) has taken place. Most of these mines were small scale and ceased operations in the 19<sup>th</sup> century, with records being incomplete, but a number of old shafts are known to exist. Whilst the Council holds no definitive records of these sites, and although there is no prospect of any renewed interest in extracting minerals from them, any works designed to identify and make safe the disused workings will be considered favourably subject to assessment of the environmental impact of those works.

## 13. Conclusions

- 13.1 In view of the quantities of reserves with planning permission at existing sites, there is no justification for allocation of any further areas for limestone extraction within the Local Development Plan period.
- 13.2 Although wide areas of the Vale of Glamorgan contain Carboniferous or Liassic limestones, there are no areas of sufficient size for a new quarry with reasonable access to the strategic highway network that could contribute substantially to future reserves that are not already constrained by residential or other sensitive development, high grade (3a and above) agricultural land or environmental designations (e.g. Glamorgan Heritage Coast). However, a number of areas adjoining existing quarries contain resources that could be worked without undue detriment to the environment, and those areas are protected from development so that the resources are not rendered incapable of extraction in future.
- 13.3 Whilst there is no history of sand and gravel extraction in the Vale, several areas have been identified as containing resources that may be of value as aggregates in future. Those areas are identified on the Proposals Map and are again protected from permanent development that could sterilise or hinder their future extraction.
- 13.4 In order that housing and similarly sensitive development is not unreasonably affected by mineral working and vice versa, it is essential to preserve a Buffer Zone between them. The widths of the zones vary depending on the measured environmental impact of each site and the derivation of the dimensions is provided at Appendix 1 and 2

Appendices

## Appendix 1

### Buffer zone determination

1. The environmental effects of quarrying are important factors in determining where further working can reasonably take place. Usually, the most widespread effects are those caused by blasting, and careful management of this can considerably reduce its impact. Blasting causes a shock wave both in the ground and in the air. Both effects are influenced by a number of factors, including blast geometry and geology, but the most significant is the amount of explosive detonated at any instant in time.
2. Ground vibration from blasting is the most common cause of complaints and it is known that certain levels of vibration from blasting (taking into account both the amount and frequency of the ground movement) can affect nearby buildings. If the rate of ground movement (peak particle velocity or ppv) exceeds 100 mm per second it could cause minor structural damage (eg diagonal cracking of plaster) in frail structures. In order to give protection against freak conditions, a safety factor is recommended by various researchers so that vibration levels in the vicinity of structures should not exceed 50 mm per second. However, although there is little likelihood of structural damage at this level there will inevitably be considerable nuisance to local residents.
3. To protect against such nuisance Minerals Technical Advice Note 1: Aggregates (para. 83) advises that ground vibration at sensitive locations should not exceed a ppv of 6 mm per second in 95% of all blasts measured over a six-month period, with no individual blast exceeding 10 mm per second.
4. Analysis of blast vibration monitoring carried out regularly by the Council at all working sites enables the likely future impact of blasting operations to be calculated, by relating measured vibration levels to a combination of charge weight and distance from the blast (the 'scaled distance' approach. Similarly, the Buffer Zone for each quarry is defined as the distance from the quarry beyond which the 6 mm per second threshold will not be exceeded, assuming the use of the maximum instantaneous explosive charge permitted at each site.
5. The airborne shock wave or 'air overpressure' is much more difficult to predict and can vary considerably due to weather conditions, cloud cover and wind direction. Minerals Technical Advice Note 1: Aggregates (paragraph 81) advises that due to this unpredictability planning conditions to control air overpressure are unlikely to be enforceable, and for the same reasons air overpressure is not used as a factor in Buffer Zone calculations.
6. The results of blast monitoring over many years have shown that blast vibration impact differs between quarries. This may be due simply to differences in permitted explosive charge or may be caused by more subtle differences in blast geometry, underlying geology and other factors. These differences result in the dimensions of the Buffer Zones derived from the monitoring results varying from one site to another. The calculated Buffer Zone dimensions for Vale of Glamorgan quarries are given in Table 3 of the main report.

## Appendix 2

### Blast monitoring results used in Buffer Zone calculations

PPV = Peak Particle Velocity of ground vibration (maximum of three mutually-orthogonal measurements) in millimetres per second.

SDIST = Scaled Distance (distance from blast to receiver in metres divided by square root of the maximum instantaneous explosive charge weight in kilograms)

PANT			
PPV	SDIST	PPV	SDIST
2.11	49.42	0.5	125.22
2.26	41.96	0.97	54.08
1.83	55.95	0.74	93.25
1.8	44.76	1.83	42.9
1.56	52.2	0.86	79.2
1.36	53.15	0.7	78.03
0.7	80.33	0.58	78.3
1.91	55.7	0.97	41.5
0.46	133.5	3.63	35.25
1.13	67.41	0.46	100

FOREST WOOD			
PPV	SDIST	PPV	SDIST
4.8	32.5	4.6	36.9
4.7	25.3	2.7	35.8
11	26.8	4.6	34.99
1.1	38	6.5	28.8
6.5	22.9	1.2	64.23
4.1	27	4.2	27.6
4.4	33.5	5.1	30.7
7.1	16.9	16.3	28.3
5.2	26.02	8.9	24
2.4	28.5		

ABERTHAW			
PPV	SDIST	PPV	SDIST
2.89	53.26	4.56	48.54
1.29	88.06	1.31	143
0.9	68.28	1.68	58.3
1.52	85.72	1.56	53.24
2.23	109.47	2.38	63.38
1.68	52.6	1.52	110.31
2.81	32.9	2.97	37.1
0.82	113.26		

PANTYFFYNNON			
PPV	SDIST	PPV	SDIST
3.17	57.7	16.3	16
1.09	69.28	7.4	18.7
2.54	58.9	0.5	86.4
2.5	46.4	16.1	12
3.8	22.24	0.6	101.7
9	29.5	0.8	92.3
23.5	10.26		

GARWA FARM					
PPV	SDIST	PPV	SDIST	PPV	SDIST
2.11	32.67	1.01	30.04	0.5	50.9

WENVOE							
PPV	SDIST		PPV	SDIST		PPV	SDIST
72.4	6.5		11.19	20.8		4.73	8.76
49.6	8.56		10.68	14.73		2.23	49.19
14	19.49		12.05	13.89		5.08	31.37
6.03	23.67		2.81	40		2.03	42.3
5.6	28.89		9.19	18.22		1.72	44.72
3.98	36.22		20.03	13.55		4.3	33.33
1.12	46.11		1.29	42.96		13.81	12.6
0.5	57.44		11.62	11.78			
2.2	38.33		9.23	5.93			

LITHALUN							
PPV	SDIST		PPV	SDIST		PPV	SDIST
16	19.48		9.1	28.64		12.5	20.08
10.7	14.6		16	27.16		0.54	89.44
9.8	14.6		3.5	27.7		0.43	112.25
10.7	13.03		7.3	27.7		1.4	59.4
10.5	33.37		7.5	19.07		2.11	39.7
6.4	34.5		2.9	3.37		0.97	37.18
14.1	31.71		6.7	38.14		0.62	92
16.1	31.71		1.52	44.22		1.44	29
11	26.53		5.83	37.96		1.25	44.27
16.9	7.41		4.42	29.82		1.33	52.7
14	12.34		18.3	20.54		0.78	67.13
12	22.22		6.77	24.64			

LONGLANDS							
PPV	SDIST		PPV	SDIST		PPV	SDIST
6.37	25.3421		0.46	116.2755		0.97	81.86292
1.91	52.47306		0.78	116.2755		2.62	27.28764
3.95	52.17492		0.66	111.8034		3.15	31.00868
3.36	56.64706		2.81	38.75851		1.09	93.53074
9.7	28.32353		0.5	129.9901		0.86	71.59143
3.36	56.64706		3.09	29.81424		2.54	32.33162
9.7	28.32353		3.04	29.81424		4.73	23.67136
3.4	53.66563		0.93	99.8777		1.68	32.10067
4.42	31.30495		1.68	47.70278		0.9	86.77218
8.61	31.30495		4.34	29.81424		3.24	30.37026
2.15	49.1935		2.66	49.1935		1.76	56.40192
3.01	43.23065		0.93	88.99438		1.56	37.4205
0.58	96.34759		2.42	35.32807		6.49	24.947
2.89	50.68421		3.07	49.48627		3.71	31.58342

EWENNY							
PPV	SDIST	PPV	SDIST	PPV	SDIST	PPV	SDIST
0.66	114.4867	3.52	66.14951	1.09	53.96407	1.29	81.8165
0.78	89.81074	1.56	66.14951	1.56	69.63106	0.66	85.29805
0.9	87.7058	1.72	53.61592	1.29	64.40873	1.68	62.66796
0.74	102.0896	1.52	62.66796	2.07	80.07572	0.66	83.55727
3.95	37.18726	2.19	62.66796	0.9	78.33495	1.13	77.75419
3.91	37.18726	0.93	64.06058	1.56	66.14951	0.74	95.74271
1.52	87.03883	1.29	64.40873	2.07	55.70485	3.13	53.96407
1.36	85.29805	1.83	66.14951	1.56	97.48349	1.52	59.1864
0.82	83.55727	2.81	53.61592	1.17	71.37184	0.62	73.11262
1.25	81.8165	1.48	53.96407	2.03	78.33495	2.42	67.89029
1.25	80.42388	1.64	60.92718	1.6	65.27912	1.09	51.17883
1.17	78.33495	1.52	52.2233	1.05	90.52038	3.05	55.70485
0.82	87.90922	1.95	57.44563	1.05	97.48349	0.62	73.11262
1.83	74.85339	0.97	60.05679	1.25	76.59417	0.66	90.52038
1.17	70.84961	1.52	55.70485	1.09	74.85339	1.17	71.37184
1.48	69.63106	1.05	55.70485	1.25	87.03883	2.66	50.70926
1.09	67.89029	0.93	57.44563	0.93	57.44563	0.58	104.7991
1.05	67.36805	0.58	57.44563	1.25	81.8165	1.17	50.70926
0.93	67.89029	2.3	69.63106	1.13	76.59417	1.09	67.61234
1.76	65.27912	1.33	60.92718	1.13	83.55727	1.21	77.75419
0.62	106.1874	2.19	64.40873	1.05	72.76446	1.21	67.61234
1.05	61.79757	1.25	64.40873	0.66	90.52038	1.21	54.93503
1.99	56.57524	1.4	52.2233	1.25	54.83446	1.29	69.30265
1.87	52.2233	0.74	81.8165	1.76	74.85339	1.48	54.08987
2.38	52.2233	0.27	92.26116	1.13	84.42766	1.56	60.85111
0.78	53.96407	2.77	76.59417	0.9	83.55727	2.38	69.30265
1.44	64.40873	1.25	83.55727	0.78	99.22426	2.07	79.4445
1.76	59.88271	0.82	77.46456	1.99	72.24223	1.4	55.78018
1.83	52.2233	0.7	78.33495	0.86	81.8165	0.78	58.31564
1.72	64.40873	1.29	66.14951	1.21	62.66796	1.29	76.06388
2.15	64.40873	1.25	53.96407	1.83	59.1864	0.97	52.39956
1.87	64.40873	3.13	90.52038	1.36	87.03883	1.44	53.24472
1.01	92.26116	1.36	53.96407	0.74	74.85339	0.82	84.51543
1.17	52.2233	0.93	60.05679	2.15	73.11262	1.64	81.13481
1.72	54.31223	0.78	58.14194	2.93	65.92203	1.64	79.4445
1.99	75.72378	1.29	52.2233	2.66	57.44563	1.56	52.39956
1.36	59.1864	1.13	66.14951	0.5	106.1874	1.25	126.7731
1.52	53.96407	1.13	73.11262	0.66	85.29805	2.66	64.40873