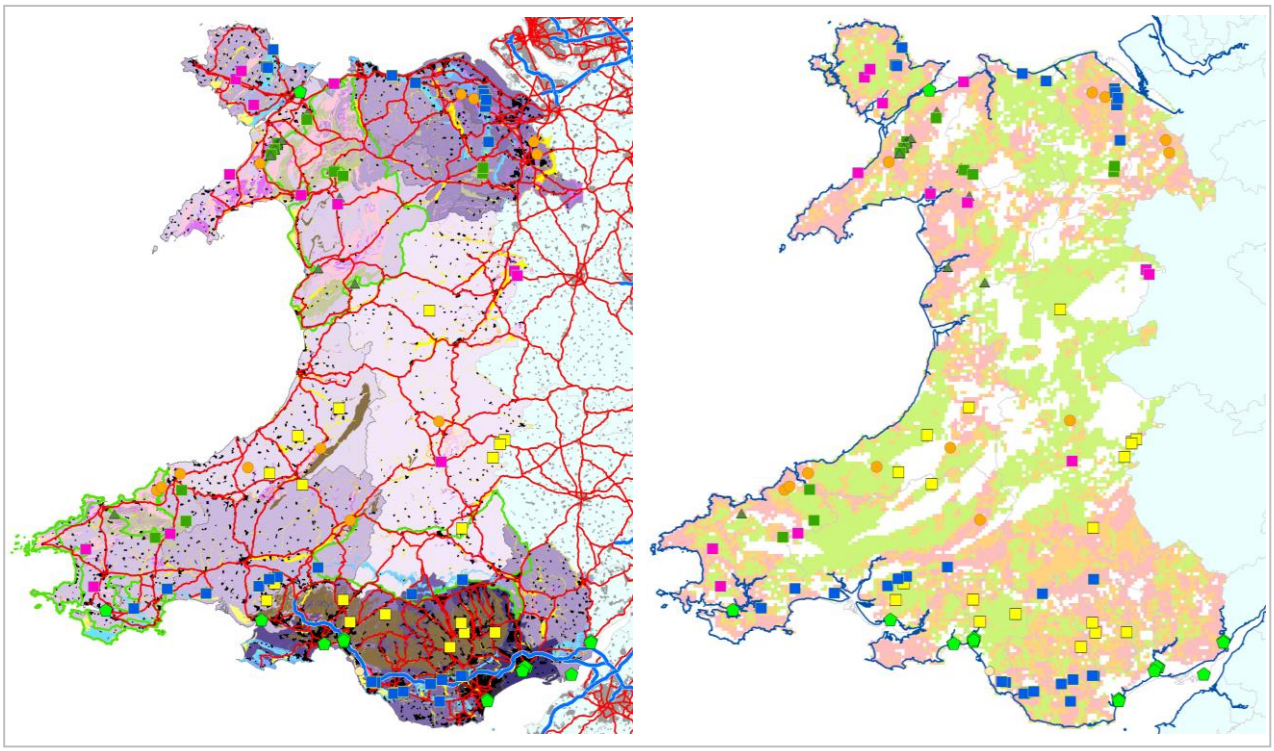
# Regional Technical Statement

for the North Wales and South Wales
Regional Aggregate Working Parties

## - 1st Review -

(Main Document)



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North Wales Regional Aggregates Working Party

Llywodraeth Cymru
Welsh Government

South Wales Regional Aggregates Working Party

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# Foreword

Since the original Regional Technical Statements (RTS) were issued in October 2008, forward planning for minerals has formed an intrinsic part of the Local Development Plan (LDP) process. The LDPs have benefited from the clear direction the RTS has provided on the new sustainable approach to mineral development in Wales. Several LDPs have now been adopted and all have embraced the principal objectives of the RTS to provide adequate reserves of aggregate for the construction and other industries in the most sustainable manner reasonably achievable.

It is particularly satisfying to see certain elements of the RTS, such as the safeguarding of mineral resources, now enshrined in development plans to ensure such resources are protected for future generations. More importantly, new allocations, defined areas of search and preferred areas have also been incorporated into some LDPs.

This First Review of the RTS has been prepared, on behalf of the North Wales and South Wales RAWPs, by Cuesta Consulting Ltd., with advice and peer review from a Steering Group which included representatives from both Regional Aggregate Working Parties (RAWPs), the Mineral Products Association, the British Aggregates Association, Natural Resources Wales and the Welsh Government. The Steering Group provided vital technical information, updating and refining that given in previously published RAWP reports and in the original Regional Technical Statements. The Steering Group also provided or confirmed expert judgement, where this was called for in situations where precise factual detail was not available, and has provided a consensus endorsement of the various recommendations.

The First Review RTS covers the 25 year period up to 2036, but further reviews will still be initiated every 5 years, in accordance with MTAN1, to ensure that the RTS can react to any significant change in circumstances, such as the recent deep recession which has informed this review. This will ensure that any major changes to supply and demand can be addressed and the RTS changed or modified as appropriate. This process underpins the plan, monitor and manage approach to aggregate planning in the UK.

The new edition will continue to be considered as a strategic document for the purposes of Local Development Plan preparation and may be a material consideration in the development control process. We remain confident that all authorities will continue to embrace and implement the recommendations of the revised RTS in their development plans on a voluntary basis, and that WG will not need to have recourse to its powers of direction.

We would like to take this opportunity to gratefully acknowledge the considerable amount of work that has been undertaken to complete the First Review, which includes the significant efforts of the RTS steering group and the diligent work of the consultant appointed to undertake and complete the work on schedule on behalf of the Welsh Government, and the participation of elected Members and other key stakeholders.

The First Review has built on the foundation of the original RTS but now offers greater clarity and is more concise. Most importantly, it provides a strong and improved statement of the desire to ensure that sustainability is at the heart of all future mineral planning in Wales.

*Martin Hooker*

Chair of the South Wales Regional Aggregates Working Party.

*Andrew Farrow*

Chair of the North Wales Regional Aggregates Working Party.

March 2014

# Statement from the Minister for Housing and Regeneration

Our planning system must deliver the growth in homes, jobs and infrastructure that current and future generations need. To do this the construction industry requires an adequate supply of the materials it needs, without detriment to our environment or the amenity of our communities.

We must all play our part in facilitating this. Whilst MTAN1 Aggregates develops the national policy framework set out in Minerals Planning Policy Wales, the Regional Technical Statements provide the additional supporting detail which allows that policy to be implemented. Together they help guide our contribution.

The importance of collaboration – across Governments, between local planning authorities and with wider industry stakeholders – in making an effective contribution cannot be understated. I recognise that collaboration across local authority boundaries, and with wider stakeholders, has been long established in relation to minerals, particularly through the Regional Aggregate Working Parties and through the preparation of Regional Technical Statements. I consider that the approach taken to develop both the original Regional Technical Statements and the 1st Review represents, in principle, the kind of collaborative outcome that I am seeking to encourage. This work illustrates what can be achieved when all parties with an interest come together with a shared aim to gather evidence, address issues and accommodate change.

I am extremely supportive of the established working arrangements between local authorities in relation to minerals and highly commend the Member Forums in taking forward and endorsing this work. Equally, I would also like to extend my thanks to the Regional Aggregate Working Parties for lending their technical expertise to the process.

On this basis, I am pleased to add my endorsement to the statements as an important outcome of collaborative working. I expect the Regional Technical Statements 1st Review will continue be used in a positive manner in taking forward a strategic and sustainable approach to mineral planning for aggregates in Wales as well as being a material consideration when determining relevant planning applications.

# Executive Summary

Minerals Technical Advice Note 1: Aggregates (2004) (MTAN 1) requires the preparation of Regional Technical Statements (RTS) for the areas covered by both the North Wales and South Wales Regional Aggregates Working Parties (RAWPs). Whereas MTAN1 develops the national policy set out in Minerals Planning Policy Wales (MPPW), the RTSs provide the supporting detail which allows this to be implemented. This document and its two Regional Appendices are the outcome of the first review and revision of the original RTSs.

The new ('First Review') edition of each RTS comprises this main document and the corresponding Regional Appendix for North Wales or South Wales, which are issued separately. Together, they provide a strategy for the future supply of construction aggregates[1] within the Region concerned, taking account of the latest available information regarding the balance of supply and demand, and current notions of sustainability, including the proximity principle and environmental capacity. It must be emphasised that the RTS documents and the recommendations within them are of a **strategic** nature. They are not intended to provide site-specific information or guidance.

The RTSs thus provide recommendations to each Mineral Planning Authority (MPA) regarding the quantities of aggregate which need to be supplied from their area (**apportionments**) and the total tonnage of any new **allocations** (areas for future working) which may need to be made in their Local Development Plan (LDP) to ensure that adequate provision is maintained throughout the relevant Plan Period.

The First Review has identified the historical pattern of demand upon each individual MPA for the production of land-based primary aggregates, based on average sales over a 10 year 'baseline' period (2001 to 2010, inclusive). This is a deliberate departure from MTAN 1, which requires landbank calculations to be based on the average of the latest three years' production figures (implying that this provides a suitable measure of ongoing demand). The change to a 10-year average was recommended unanimously by the Steering Group and has been endorsed by the Welsh Government as a pragmatic means of avoiding the risk of under-provision, which would occur if reliance were placed on a three-year average which spanned the recent economic recession.

The review of factors relating to the availability of alternative materials, imports, exports and economic growth has suggested that the historical supply pattern over the baseline period should generally provide a good guide for the determination of future apportionments, both in terms of overall quantities and in terms of broad geographical distribution. No evidence was found of socio-economic 'drivers' which would suggest otherwise. The new apportionments are therefore geared towards meeting an overall level of demand for crushed rock of 5.8 million tonnes per annum (mtpa) in North Wales and 10.47 mtpa in South Wales; together with a total of 1.08 mtpa of land-won sand & gravel in North Wales and 0.33 mtpa in South Wales. The latter figure is low because of the heavy reliance in South-East Wales, in particular, on marine-dredged sand & gravel.

[1] The RTS process deals only with aggregates and therefore excludes data relating to the production of other related products such as cement, building stone, silica sand and industrial limestone.

The review has also found that, in most areas, the existing pattern of supply is sensibly balanced in terms of proximity and environmental capacity, within the restrictions imposed by the distribution of workable resources and the requirements of economic and commercial viability. Where this is the case, the recommended apportionments are guided purely by the historical sales data. However, the review has also identified some areas where there might be merits in adjusting the apportionments and allocations, and thereby slightly modifying the future supply pattern in order to improve sustainability and/or to avoid perpetuating unjustified inequities in the historical balance of supply between neighbouring authorities which share similar resources.

The Review has identified one area, in South West Wales, where apportionments and allocations can only be given for a group of neighbouring authorities, pending further investigations that are needed through collaborative working at that level. More generally, although specific apportionments (and allocations where necessary) have been identified for individual MPAs, collaboration between neighbouring authorities is encouraged in all areas. One of the difficulties with this is that different authorities will always be at different stages with respect to LDP preparation. However, there is not a 'one size fits all' solution to this problem, and the RTS is therefore unable to provide generic guidance on this issue. Rather, it is incumbent on LPAs to work together to resolve such problems, using their own initiative.

Allocations for future working are identified for areas where the existing landbanks (as of the baseline date of 31st December 2010) are insufficient to maintain the required apportionment over the whole of the Plan period, and for 10 years beyond (in the case of crushed rock) or for 7 years beyond (in the case of sand & gravel), in accordance with MTAN 1. In making these calculations, the reserves at dormant sites, and at one site where planning permission is currently suspended, have been excluded from the landbank figures, although they are identified separately. This is a possible second departure from MTAN 1, but again is deliberate. It is supported by a large majority of Steering Group members and has been endorsed as a pragmatic clarification of MTAN 1 by the Welsh Government. In the few authorities where permitted reserves still remain at dormant or suspended sites, the RTS recommends that these are kept under review by the relevant MPA and, where deemed appropriate by them, may be used to offset any RTS requirements for new allocations.

In some cases, the allocations required have already been identified in LDPs and, in others, the shortfall has already been addressed through the granting of new permissions since the baseline date.

Where it is justified by new evidence, it remains open for individual MPAs to depart from the apportionment and allocation figures recommended by the RTS. In doing so, however, an MPA would need to demonstrate that their intended departure would not undermine the overall strategy provided by the RTS itself (e.g. by working together with other MPAs to ensure that sub-regional and regional totals are still achieved) and this would be likely to become a key issue at Examination and/or Public Inquiry.

Where the local authorities involved are unable to reach agreement, or if individual local authorities do not accept the Regional Technical Statement, the Welsh Government will, as

a last resort, consider its default powers to intervene in the Development Plan process (MTAN 1, paragraph A3).

As with the original RTS documents, at this broad level and given the detailed analysis and Plan-making that will be required to implement the RTS through Local Development Plans, it was not considered appropriate or required that Strategic Environmental Assessment (SEA) should be carried out as part of the First Review.

# 1. The Purpose of the RTS

## *Introduction*

1.1 Minerals Technical Advice Note 1: Aggregates (2004) (MTAN 1) requires the preparation of Regional Technical Statements (RTS) for the areas covered by both the North Wales and South Wales Regional Aggregates Working Parties (RAWPs). Whereas MTAN1 develops the national policy set out in Minerals Planning Policy Wales (MPPW), the RTSs provide the supporting detail which allows this to be implemented.

1.2 This First Review of the original RTS documents comprises this main document and the Regional Appendices for North Wales and South Wales, which are issued separately. The two components of the new RTS for each Region (i.e. the main document and the relevant Appendix) are intended to provide a strategy for the future supply of construction aggregates within that Region, taking account of the latest available information regarding the balance of supply and demand, and current notions of sustainability (see below). Together, the two revised RTSs aim to ensure that an adequate and steady supply of aggregates can be maintained throughout Wales (and beyond, in the case of materials that are exported), taking into account the key objectives of sustainable supply outlined in MTAN 1.

## *Sustainability Objectives*

1.3 The fundamental requirements for sustainability in Wales are enshrined within both legislation (Government of Wales Act 2006) and in Policy (Minerals Planning Policy Wales (2000). In line with these requirements, the overarching objective in planning for aggregates provision, as set out in paragraph 7 of MTAN1 is "*to ensure supply is managed in a sustainable way so that the best balance between environmental, economic and social considerations is struck, while making sure that the environmental and amenity impacts of any necessary extraction are kept to a level that avoids causing demonstrable harm to interests of acknowledged importance*".

1.4 Subsidiary objectives in paragraph 29 of MTAN1, which relate to delivering a more sustainable pattern of supply include:

- examining very carefully existing reserves on a national and regional basis to see if they are adequate in the short, medium and long term;
- only granting permission for future extraction to take place in the most environmentally acceptable locations, in accord with development plans that are informed by the Regional Technical Statement which in turn is based on the environmental capacity assessment;
- actively reducing the proportion of primary aggregates used in relation to secondary, recycled or waste materials;
- minimising the transportation of aggregates by road;
- seeking self-sufficiency within regions, thereby avoiding the need to transfer the environmental costs of aggregates extraction to other areas; and

- careful and continual assessment of existing and anticipated future exports of aggregates to areas outside Wales (in consultation with those importing regions outside Wales) to determine whether that supply is the best environmental and practicable option for all.

## *The Scope and Purpose of RTS Recommendations*

1.5 Each RTS provides a mechanism for encouraging the national sustainability objectives to be met by the individual Mineral Planning Authorities (MPAs) within each Region over a period of up to 25 years (for crushed rock) or 22 years, in the case of land-based sand & gravel (sufficient to cover the MTAN1 requirements for maintaining minimum landbanks of 10 years and 7 years, respectively, throughout the full 15-year term of each LDP).

1.6 The Regional Appendix for each RTS provides more specific recommendations to the constituent MPAs regarding the quantities of aggregate which need to be supplied from each area (***apportionments***) and the nature and size of any ***allocations*** which may need to be made in their Local Development Plan (LDP) to ensure that adequate provision is maintained throughout the relevant Plan Period. Paragraph 50 of MTAN1 specifically requires the relevant parts of the RTS strategy to be incorporated into individual LDPs.

1.7 It must be emphasised, however, that each RTS, and the recommendations within it are of a **strategic** nature. The documents are not intended to provide site-specific information or guidance. It is for the individual MPAs to determine how the strategic requirements identified in the new RTS should be met within their areas. This includes identifying allocations (where these are required by the RTS or, in some cases, by other local factors), and setting out corresponding policies within their LDPs to guide the Development Management process for future mineral extraction.

1.8 Moreover, where it is justified by new (e.g. more up to date, more detailed or more precise) evidence, it is open for individual MPAs to depart from the apportionment and allocation figures recommended by the new RTS when preparing their LDP policies. In doing so, however, an MPA would need to demonstrate that their intended departure would not undermine the overall strategy provided by the RTS itself (e.g. by working together with other MPAs to ensure that sub-regional and regional totals are still achieved) and this would be likely to become a key issue at Examination and/or Public Inquiry. Where the local authorities involved are unable to reach agreement, or if individual local authorities do not accept the revised Regional Technical Statement, the Welsh Government will, as a last resort, consider its default powers to intervene in the Development Plan process (MTAN 1, paragraph A3).

1.9 For each Region, the RTS recommendations are informed by the analysis of:

- available resources, reserves, sales and landbanks of primary land-won aggregates;
- the availability and supply of marine, secondary and recycled materials;

- levels of demand upon the region for the supply of aggregates, including exports;
- levels of imports of aggregate into the region;
- the proximity principle, in relation to the transportation of aggregates; and
- the environmental capacity of areas to accept the impacts of future quarrying

1.10 Further details of the key principles and approaches used within this analysis are set out in the next chapter.

## *Strategic Environmental Assessment*

1.11 Whether Strategic Environmental Assessment (SEA) should be undertaken was considered as part of the original development of the Regional Technical Statements. It was felt, however that, as the RTS documents primarily represent a collaboratively prepared evidence base and are neither required nor constitute a plan or programme for the purposes of the SEA Directive, such an assessment was not necessary. As with the original RTS documents, therefore, at this broad level and given the further detailed analysis and Plan-making that will be required to implement the RTS through Local Development Plans (where SEA is a formal requirement), it was not considered appropriate or required that SEA should be conducted as part of the First Review.

## *Glossary and Abbreviations*

1.12 Several of the terms used above (e.g. apportionments, allocations, landbanks, reserves and resources) have very specific meanings with respect to minerals planning, which need to be understood. These are all defined in the Glossary of Terms at the back of this report. Similarly, a number of commonly-used abbreviations, although explained in the text where they are first introduced, are summarised in the list which follows the glossary.

# 2. Key Principles and Approaches

## *The RTS Process*

2.1 A key principle which underpins the overall approach within the RTS and MTAN1 is the need to move away from the old, demand-led system of '***Predict and Provide***' to the more modern concept of '***Plan, Monitor and Manage***'. These terms originated in relation to the planning for housing provision but can also be applied to minerals.

2.2 It is important to recognise, however, that the Plan, Monitor and Manage system still depends, crucially, on an assessment of demand. At the heart of MTAN1 is the aspiration that, once a reasonable estimate of demand has been obtained, any subsequent fluctuations above that level should be accommodated by increased supplies from secondary and recycled sources, rather than being seen as a justification for granting new planning permissions for primary aggregate extraction. Whilst that aspiration is widely supported, there is evidence to suggest that the percentage contribution available from secondary and recycled sources, having risen from around 10% of the total aggregates market in the 1990s to around 28% in 2010 (as a direct result of financial incentives and promotional work to increase acceptability) is now likely to have peaked. As a consequence of this, the future use of recycled/secondary materials is likely to depend mainly on the level of future construction output (since the availability of recycled materials is closely dependent on rates of new construction). It is therefore perhaps more reasonable to assume that secondary and recycled aggregates will continue to provide a high proportion of total aggregate production, but will not be able to be relied upon to fulfil any future peaks in demand on their own: there may also need to be increased contributions from primary aggregate sources.

2.3 The RTS process supports this approach by investigating the likely continued availability of secondary and recycled aggregates from all available sources within each area, and factoring this in to an assessment of the residual demand for land-based primary aggregates, as informed primarily by historical sales data. That residual level of demand is then translated into ***apportionments*** for each local authority, subject to the consideration of other sustainability issues including proximity and environmental capacity (see below).

2.4 An important tool in the ongoing management of the supply of aggregates is the monitoring of ***landbanks***. A landbank, as defined in paragraph 45 of MTAN1, is the stock of planning permissions for the winning and working of minerals at *active* and *inactive* sites[2], at any given point in time and for a given area. Where there is an insufficient landbank of permitted reserves in a particular area to meet the identified demand, over a sustained period of time, the RTS recommends the need for ***allocations*** for future working to be identified in LDPs. Provided that the reserves at *dormant* sites have not already been included in the landbank

[2] Detailed definitions of active, inactive, dormant and suspended sites are given in the **Glossary of Terms** at the back of this report, as are the full definitions of resources, reserves, apportionments, landbanks, allocations and provision.

calculations[3], and where a Mineral Planning Authority considers that such reserves are likely to be capable of being worked within the relevant period (subject to the agreement of modern conditions) it is suggested here that these may be offset against the requirement for new allocations. The same logic applies to sites where permission has been *suspended*, following a stalled IDO or ROMP review (see **Glossary** for full explanations of these various terms).

2.5 Thereafter, by virtue of the Plan-led approach, additional applications for new reserves are unlikely to be granted except within allocated sites or areas, unless there are compelling reasons why fluctuations in demand cannot be met from those locations or from alternative (secondary and recycled) sources. The situation is monitored annually by the RAWPs and managed, as required, through periodic (5-yearly) revisions of the Regional Technical Statements.

2.6 In terms of its overall approach, the RTS concept represents an important modification of the more general Managed Aggregate Supply System (MASS) which had previously operated across both England & Wales for many years. The main difference is that the Welsh system explicitly seeks to incorporate two key principles of sustainability with respect to aggregates supply: the ***proximity principle*** and the notion of ***environmental capacity***, as explained below.

### *The Proximity Principle*

2.7 This relates simply to the objective of minimising unnecessary transportation of bulk materials, particularly by road, by ensuring that sources of supply (e.g. aggregate quarries) are located as closely as possible to the main centres of demand (primarily centres of population and major infrastructure projects). The original Regional Technical Statements aimed to accomplish this by providing 'per capita' apportionments for future aggregate provision (i.e. proportionate to the population within a given area, as a surrogate for the likely distribution of demand). In this revision of the RTSs, general consideration has been given instead to variations in *population density*, but account has also then been taken of a range of other influences, including access routes and transport distances, which neither population nor population density figures are able to reflect. This analysis has, necessarily, been of a qualitative nature because of the complexities involved, and to avoid the spurious precision associated with inappropriate quantitative analysis. Further details are given in Chapter 4 and in the Regional Appendices.

2.8 The proximity principle is also modified by recognition that certain types of 'high specification aggregate' (HSA) serve quite different markets and are therefore required for distribution over much greater distances (Thompson, Greig & Shaw, 1993; Thompson *et al*., 2005). This applies especially to the skid-resistant aggregates derived from the Pennant Sandstones of South Wales (and to a lesser extent from a range of other formations within Powys and elsewhere in Wales), which are essential for road surfacing applications throughout England and Wales.

[3] There are differences of interpretation (of MTAN1 guidance) regarding whether or not the reserves at dormant sites should be included in landbank calculations that are used for the purpose of assessing the need, or otherwise, for new allocations. As explained in the **Glossary**, for the purposes of this review, such reserves, and those at suspended sites, have been excluded.

Separate consideration also needs to be given to the issue of high purity limestone production for use as a metallurgical flux, for chemical production and for the manufacture of cement. Whilst these are all non-aggregate end-uses, they are frequently produced from the same geological resources as crushed rock aggregates, but the quarry locations may be determined or justified primarily by the requirements for the higher value industrial products.

### *Environmental Capacity*

2.9 By comparison, the notion of environmental capacity is a more controversial issue. The basic principle is clear enough: i.e. that quarrying should be focused, as far as possible, on areas which have the greatest capacity to 'absorb' the environmental impacts that may be associated with quarrying activity, and thus to contribute to future supply with a minimum of adverse impacts. The controversy derives from the lack of consensus in terms of how 'environmental capacity' should be defined, and from the way in which the concept was used in the original RTSs.

2.10 In Wales, two previous research projects provided the evidence base for the system that is currently used: **EMAADS** (Establishing a Methodology for Assessing Aggregates Demand and Supply - Arup, 2004) and **IMAECA** (Implementing the Methodology for Assessing the Environmental Capacity for primary Aggregates - Enviros, 2005). These projects resulted in a set of 'traffic light' maps (as they are often referred to) being produced to indicate areas of ***relatively*** high (green), medium (amber) and ***relatively*** low (red) environmental capacity. The thresholds between these categories were arbitrarily set, but the differentiation between them does at least provide a starting point for the consideration of environmental capacity and thereby enables nationally consistent ***strategic*** decisions to be made, by the RAWPs, with respect to future aggregates provision.

2.11 The colours shown on these maps reflect combined scores from the assessment of twelve different 'national environmental indicators' for each square kilometre. These comprised:

(i) Settlements

(ii) Roads

(iii) Land Use

(iv) SSSIs

(v) Heritage

(vi) Public Enjoyment

(vii) Landscape

(viii) Local Landscape

(ix) Watercourses

(x) Spheres of Influence

(xi) Existing Workings

(xii) Cumulative Effects

2.12 It is important to understand that the IMAECA tool was designed to be used ***only*** to inform the Regional Technical Statements and explicitly ***not*** to be used directly in Local Development Plans, Development Management processes and decisions or planning appeal decisions.

2.13 However, despite this information being available, and being described for each MPA within the original RTSs, the environmental capacity results from the IMAECA study had no influence at all on setting the apportionment figures within those reports. That may partially have been due to concerns about not prejudging matters that should properly fall to be dealt with through the Local Development Plan process. This certainly applies to any site-specific judgements but, at a more strategic level, there is both scope and wide support for environmental capacity data to inform and potentially influence the bigger picture.

2.14 The consideration of Environmental Capacity at this strategic level deliberately avoids the direct use of more detailed 'primary' environmental information such as the locations of individual designations (other than National Parks and AONBs). Once again, this is to avoid being site-specific and to avoid prejudging issues which need to be addressed in more detail through LDP and Development Management processes at a local level - either within individual local authorities and/or through joint working between neighbouring authorities. Joint consideration of the relationship between mineral resources and environmental designations on a sub-regional basis would potentially allow more detailed consideration to be given to these important issues at a spatial scale which extends beyond the boundaries of an individual local authority. This could tie-in well with the Area-Based Natural Resource Management Approach being promoted by Welsh Government through the Environment Bill White Paper. National Parks and Areas of Outstanding Natural Beauty (AONBs) are treated differently, in the RTS, to other national designations. This because MTAN 1 specifically notes (at paragraph 49) that landbanks do not need to be maintained in these areas, and (at paragraph 53) that the RAWPs should take into account the need to protect these areas from extraction. This is in line with the Minerals Planning Policy Wales, which states that mineral extraction should not take place in National Parks and AONBs, save in exceptional circumstances.

## *Changing the Pattern of Supply*

2.15 Important consideration also needs to be given to existing patterns of supply. MTAN 1 suggests that these patterns are largely a historical residual and '…*will need to gradually change to reflect current notions of sustainability'*. That may, or may not be the case, however, since the historical supply patterns already have much to commend them: they reflect the ***spatial distribution of available resources*** (which is of fundamental importance, since minerals can only be worked where they are found) and the ***economic imperative*** of industry to establish quarries as close as possible to areas of demand (in order to minimise transport costs), subject to a range of environmental designations, planning policies and other constraints. Over many decades, quarries which have become uneconomic because of changing demand or outdated transport networks and rising costs have

naturally fallen into disuse. Those which remain are generally (though not always) well-placed to serve the current markets although some remain in conflict with designations, environmental concerns or neighbouring land uses which, in many cases, post-date the mineral planning permissions involved. Where this is the case then, unless there are no sensible alternatives in terms of the availability of resources, it may not be appropriate for the historical supply pattern from a given area to be used as a proxy for future supply from that area.

2.16 Together, the implementation of the proximity principle and the notion of environmental capacity, as described above, may gradually induce changes to the existing patterns of supply. But this would only be justified if it is found that, once all aspects of sustainability are taken into account, alternative patterns are seen to have clear advantages over those which currently exist. Even where changes are clearly justified, these cannot generally be immediately implemented, since (unless Prohibition Orders are issued) existing quarries will be able to continue until their existing planning permissions expire and/or until they run out of permitted reserves.

2.17 Nevertheless, the RTS can help to influence future changes in supply pattern, where this is found to be desirable, by adjusting the apportionments given to individual MPAs. This, in turn, will then help to focus new allocations in the areas required, and should eventually result in a shift towards a more sustainable pattern of supply. Chapter 4 of this report presents an overview of the existing supply pattern, highlighting the need for limited adjustments in certain areas, drawing on the more detailed analyses presented in the two Regional Appendices (A and B).

# 3. Assessment of Demand

## *Approach*

3.1 The starting point for the apportionment of future supply requirements for construction aggregates in Wales is to make an assessment of the likely future demand.

3.2 In 2004, MTAN 1 (paragraph 20) initially provided an estimate of likely future demand for all construction aggregates across Wales of 23 million tonnes per annum (mtpa). Taking into account the expected economic growth in Wales, at that time, it was anticipated that the total demand for aggregates would not exceed 23-27 mtpa by 2010. Paragraph 24 of MTAN1 further noted that the proportions of overall primary aggregates production within South Wales and North Wales have remained consistent (63% and 37%, respectively), for many years. As noted in the original RTS documents, targets for the production of alternative aggregates (i.e. secondary aggregates, recycled materials and marine-dredged aggregates) have traditionally been 'top-sliced' leaving a residual demand for land-won primary aggregates. Paragraph 34 of MTAN 1 envisages that any unexpected increase in overall demand beyond the estimated range should be met, wherever possible, by increased production from secondary and recycled aggregate sources, in preference to being used as a justification for new permitted reserves of land-based primary aggregates (or for increased supply from marine aggregate sources).

3.3 As required by MTAN1, the first generation of Regional Technical Statements set about to reassess future demand. Attempts were made to consider changes in overall demand, and in the proportional contributions that could be made from secondary, recycled and marine aggregate sources. However, for the purposes of identifying future apportionments, the main focus was on estimating the future demand for land-won primary aggregate in each region. This was done on the basis of historical sales figures (Method A) and on a 'per Capita' basis (Method B). In each case, the forecasts were based on average production data over a three-year baseline period (2003-2005) with and without a modest (1%pa) level of growth being applied for the period to 2010 (remaining constant thereafter).

3.4 For the purpose of the present analysis, a number of options were considered, in full consultation with the project Steering Group. Given that actual demand has fallen significantly in recent years, the estimates of demand set out in MTAN1 were considered to be unrealistic, except as an upper bound figure. It was also considered that any attempt to forecast future demand through detailed econometric analysis would offer little (if any) advantage, given the uncertainties associated with such work and the unprecedented nature of the recent prolonged economic recession. It was considered essential, however, for there to be some form of realistic 'top-down' analysis, in order to avoid the shortfalls in provision that would almost inevitably arise from a purely 'bottom-up' approach based only on local assessments.

3.5 The preferred approach was to base the assessment of the likely future demand for land-based primary aggregate on historical sales data, taking a longer-term (10 year) baseline period to span a range of conditions before and after the onset of the recent recession. It was agreed that the starting assumption would be that the average annual future demand, over the whole of the period covered by the RTS, would be equivalent to the average annual sales over the baseline period. It was also agreed, however, that this sales-based analysis would need to be modified by taking broad account of any anticipated changes in future economic conditions (e.g. GDP projections, population forecasts, housing growth and major infrastructure projects), and any likely changes in the availability of alternative aggregate sources (marine, secondary and recycled aggregates). Careful consideration would also be needed, however, to avoid perpetuating (through new permissions or allocations) historical patterns which are demonstrably unsustainable or which place unequal burdens on adjoining areas with similar availability of unconstrained resources. All of these factors are likely to vary from one part of Wales to another, and can therefore most usefully be considered at the scale of an individual MPA or at least at a sub-regional, rather than regional or national level. It is at the MPA level, therefore, where the analysis begins. Figure 3.1 illustrates the distribution of MPAs in Wales and their relationship to the two RAWPs. The MPAs include the three National Park Authorities.

## *Historical Sales Data*

3.6 Historical sales figures are published in the annual reports issued by each of the RAWPs. The data is supplied in confidence by the individual mineral operators to the relevant MPA, and is then collated by the RAWP secretaries for the purpose of publication. In some cases, this published data is available for individual MPAs but, in other cases (where there are less than three quarry operators within a given MPA), the data for two or more authorities have to be grouped together in order to maintain confidentiality.

3.7 For the purposes of this review it was suggested by industry representatives on the Steering Group that, rather than relying upon such combined data, in order to determine future apportionments for each individual MPA it would be desirable to know the historical sales figures by individual MPAs. Whilst this could not be done for individual years without breaching confidentiality, the RAWP secretaries agreed that it would be possible to issue sales data for each MPA when averaged over a 10-year period (2001 to 2010), since different combinations of individual quarries would have been active at different times during that period. 10-year averages were therefore compiled by the RAWP Secretaries from annual data originally supplied to them by industry, and refined in a few cases by the author from other public domain information, in order to provide a more detailed breakdown. The results are presented in Table 3.1, below. The effect of using 10-year (rather than 3-year) averages cannot be ascertained at an individual MPA level, because three-year averages are not available, but this is examined at the broader regional and national levels in paragraph 3.47 and Table 3.5, below.

**Figure 3.1: The Distribution of Mineral Planning Authorities (MPAs) between the two Regional Aggregate Working Parties (RAWPs) in Wales**

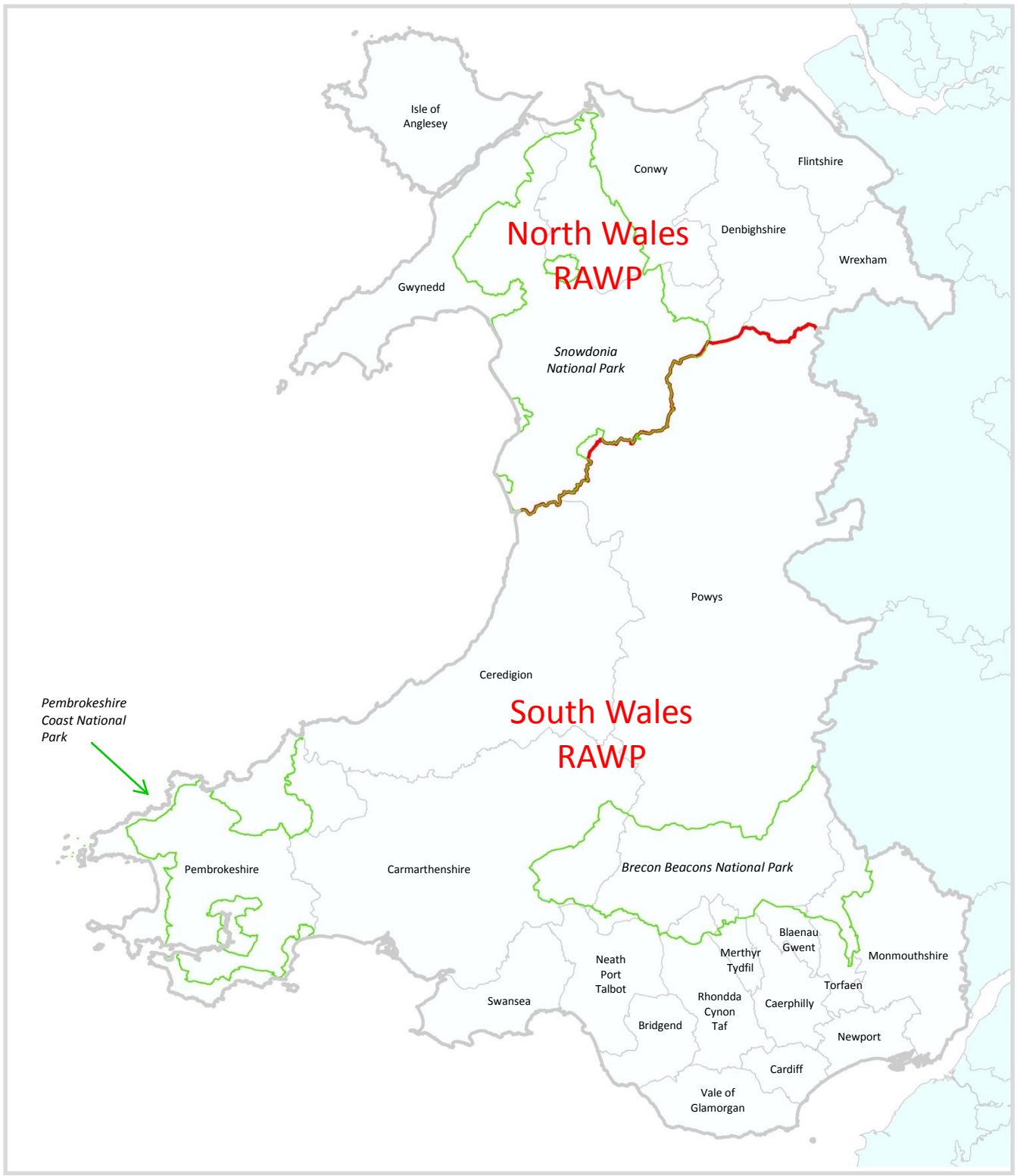


**Table 3.1: 10-year average historical sales figures for land-based primary aggregate production in Wales, 2001 - 2010**

| Mineral Planning Authority | Land-won Sand & Gravel Aggregates (mtpa) | Crushed Rock Aggregates (mtpa) |
|---|---|---|
| Wrexham | 0.58 | 0 |
| Flintshire | 0.31 | 2.94 |
| Denbighshire | 0.02 | 0.89 |
| Conwy + Snowdonia NPA | 0 | 1.23 |
| Anglesey | 0 | 0.38 |
| Gwynedd | 0.17 | 0.37 |
| **Sub-totals, North Wales** | **1.08** | **5.80** |
| Ceredigion | 0.14 | 0.20 |
| Pembrokeshire | 0 | 0.55 |
| Pembrokeshire Coast NPA | 0.16 | 0.29 |
| Carmarthenshire | 0* | 1.07 |
| Swansea | 0 | 0 |
| Neath Port Talbot | 0.03 | 0.59 |
| Powys | | 2.51 |
| Bridgend | 0 | 0.75 |
| Brecon Beacons NPA | 0 | 0.55 |
| Merthyr Tydfil | 0 | 0.27 |
| Vale of Glamorgan | 0 | 1.09 |
| Rhondda Cynon Taf | 0 | 0.69 |
| Cardiff | 0 | 0.86 |
| Caerphilly | 0 | 0.76 |
| Blaenau Gwent | 0 | 0.17 |
| Torfaen | 0 | 0 |
| Newport | 0 | 0 |
| Monmouthshire | 0 | 0.12 |
| **Sub-totals, South Wales** | **0.33** | **10.47** |
| **TOTALS Wales** | **1.41** | **16.27** |

SOURCE: Collated by the RAWP secretaries from MPA data, and refined in some cases from public domain information (e.g. planning applications, Inspectors' reports and LDP documents) to provide a more detailed or updated breakdown. Lists of individual sites within each Region are given in the Regional Appendices (A and B).

*The figure for sand & gravel production in Carmarthenshire is more than zero, but too small to be shown to two decimal places

3.8 The Regional sub-totals and the overall National total shown in Table 3.1 correspond very closely to the Regional and National averages obtained directly from the data published in the annual RAWP reports for this period (see Tables 3.3 and 3.4, later in this chapter), but the new breakdown by MPA is more refined and provides an improved baseline for assessing future demand and apportionments.

3.9 The historical sales figures presented above effectively represent the demand that has been placed *upon* each MPA, in terms of aggregates required within those areas and elsewhere, including exports between the two Regions and to England. Further observations relating to the geographical variations indicated by the sales figures are given in each of the Regional Appendices.

3.10 It is important to note that the historical sales figures also represent only the *residual demand* for land-based primary aggregates, since the overall demand was also satisfied, to varying degrees, by supplies from secondary, recycled and marine aggregate sources, as well as by small amounts of imports from primary aggregate sources in England.

3.11 By default, therefore, using historical sales data as a basis for estimating future demand assumes that the supply of secondary, recycled and marine aggregates will continue as before (with different levels of contribution from each source in each of the various MPAs). It also assumes that the factors influencing the overall scale of construction activity will remain broadly unchanged.

3.12 In practice, however, these assumptions may be incorrect and adjustments may therefore need to be made in order to reflect changes in any of these factors which are considered likely to affect actual demand in future years. These are examined below.

## *Influences on Future Demand*

3.13 Factors which could potentially influence changes in the future demand for land-based primary aggregates, compared with the baseline period, are considered below, under three main headings:

- **supply factors** (relating to the continued availability of alternative materials);
- **import/export factors**; and
- **demand factors** (relating to influences on overall construction activity).

3.14 In each case, the observations which follow (summarised from the more detailed assessments given in the Regional Appendices, A and B) relate to the anticipated changes compared to the average conditions over the 2001-2010 baseline period, and they relate only to the reasonably foreseeable future (no more than 10 years), since longer-term predictions are likely to be increasingly unreliable.

3.15 It is important that these observations are kept under review and adjusted each time the RTS is revised.

### Anticipated Changes in Supply Factors

#### Secondary Aggregates

3.16 Secondary aggregates comprise the by-products of various industrial processes, including metallurgical slags and power station arisings, but also the by-products from certain types of non-aggregate mineral extraction, such as colliery spoil and

slate waste, and from the recycling of glass, ceramics, asphalt planings and rail ballast[4].

3.17 Aggregate production from metallurgical slags occurs only in South Wales. Port Talbot continues to produce both blast furnace (iron) and steel slag, whilst the processing of older stockpiles of blast furnace slag also continues at the former Llanwern steel works (which ceased new production in 2001). Secondary aggregates are produced from all of these materials. At present there are no indications that the total quantity of aggregate produced at either of these sites will change in the foreseeable future, and therefore no foreseen implications for changes in the demand for primary aggregates.

3.18 Coal-fired power station arisings, comprising pulverised fuel ash (p.f.a) and furnace bottom ash (f.b.a) are currently produced only at the Aberthaw Power Station, in South Wales. It is understood that the utilisation of p.f.a. is likely to increase, but that the quantities are small and the use is only for relatively low-grade end uses.

3.19 Small amounts of aggregate minerals (sandstone and occasionally sand) arise adventitiously from the reworking of former colliery spoil tips or from the working of opencast coal. The amounts and their suitability for use as construction aggregates are highly unpredictable, however, and quantities can vary greatly over time. Many former colliery waste tips in Wales have either been landscaped as part of reclamation schemes or utilised for base fill material. Volumes still available are very limited in North Wales but more significant in parts of the South Wales coalfield. The overall potential for producing aggregate from this material is considered to be small, for a combination of local, fiscal and regulatory reasons, but could be locally significant, particularly within Torfaen and Blaenau Gwent. Here, there may be opportunities for the material to make up for the very limited existing and potential sources of primary aggregate production, although the quality of the material and the quantities available for anything other than low grade fill, have yet to be demonstrated.

3.20 Sandstone arisings from new opencast workings have been important as 'windfall' resources at a number of sites within the South Wales coalfield, but these are classed as primary aggregates and are therefore not considered further here.

3.21 Crushed slate, derived either from slate waste (as a by-product of roofing material production) or quarried specifically for use as aggregate, features significantly in the overall pattern of supply with in North Wales (particularly in Gwynedd), but not in South Wales. Slate is included in the overall figures for crushed rock production within the North Wales RAWP reports and, over the 10-year baseline period, has accounted for up to 16.2% of total crushed rock sales in the region, with evidence of a rising trend in both proportion and actual sales up to a peak in 2007. Although output has fallen during the recent recession, the proportions have remained high, suggesting an underlying increase in the market for slate

[4] it might appear more logical to group these recycled materials with aggregates produced from recycled construction, demolition and excavation wastes (CD&EW). However, the coverage of CD&EW is already well defined in terms of survey returns, so those items are included here as secondary aggregates.

aggregate. However, given that slate production is already included in the crushed rock statistics, this trend has no implications for the overall level of future demand for primary aggregates, only for the balance between slate and other types of crushed rock.

3.22 The various sources of secondary aggregate noted above, together with recycled aggregates, as discussed below, are currently exempt from the Aggregates Levy, in a deliberate attempt to minimise the use of primary aggregates.

3.23 In August 2013, HMRC announced that a European Commission investigation into certain exemptions and reliefs contained within the aggregates levy was being undertaken to determine whether or not these amounted to 'State Aid' (Revenue & Customs Brief 24/13). In September 2013, HMRC further announced that it was taking steps to suspend the application of those elements of the levy that now form the subject matter of the formal EC investigation because it is obliged to do so under Article 108(3) of the Treaty on the Functioning of the European Union (Revenue & Customs Brief 27/13). On 10th October 2013, HMRC announced that it intends to make a number of previously exempt materials taxable from 1 April 2014 (Revenue & Customs Brief 30/13). Of particular relevance to Wales, these materials include slate, shale, colliery spoil and (perhaps) aggregates made from metallurgical slag. Most recently, on 18th December 2013, the Government published draft legislation on the suspension of those exemptions, exclusions and reliefs from the aggregates levy which are the subject of the EC State aid investigation (Finance Bill 2014). Final details of the EC investigation are currently awaited but the implication is that they could have significant implications for the balance between primary and alternative aggregates, if the exemptions are found to be unlawful. These implications have not yet had chance to be factored into the following analysis. However, the Government is strongly of the view that the exemptions in question do not give rise to State aid, and is providing information to the Commission to support that view as part of the formal investigation process. The Bill incorporates provisions for secondary legislation to restore any suspended exemptions, if appropriate, following the outcome of the EC investigation.

**Recycled Aggregates**

3.24 Aggregates produced from the recycling of construction, demolition and excavation wastes (CD&EW) form an important contribution to the overall supply of construction aggregates. The 2008 RTSs identified a total output for the whole of Wales of 3.97mt, based on 2005 survey data, and suggested a roughly 3 to 1 split between South Wales and North Wales, based on earlier surveys and population ratios. They also noted that, despite the lack of quantitative detail, it is inevitable that the greatest volumes of CD&EW arisings and usage are in the urban areas. The RTS documents emphasised, however, that all statistics for this sector need to be used with a high degree of caution, because of the low rate of response to the surveys.

3.25 The situation, in terms of available data, has not improved since the original RTSs were published. No new survey data is available, so any observations on recent or future trends can only be regarded as broad approximations. If anything, the

efficiency of recycling is likely to have increased, and the introduction of WRAP's (2005) 'Quality Protocol' for the production of aggregates from inert waste may have increased the proportion and usage of higher value products derived from the various recycled sources. Such improvements, however, represent only small increments on the progress which had previously been made - primarily as a consequence of the price advantages resulting from the landfill tax and, to a lesser extent, the aggregates levy. The industry view is that there is little opportunity for significant further increase in the proportion of construction aggregate likely to be derived from this sector. As noted earlier, the future availability of recycled aggregates seems likely to be inextricably linked to the overall rates of construction activity and economic growth, so the safest assumption is that it will rise and fall in a very similar way to overall demand, and will thus have a neutral impact on the demand for primary aggregates, compared to the baseline period (2001 to 2010).

**Marine-dredged Aggregates**

3.26 Marine-dredged aggregates are of major importance in South Wales, with supplies being sourced from the Severn Estuary and the Bristol Channel, but are of very limited importance in North Wales. In south East Wales, marine-dredged material accounted for more than 96% of all sand & gravel production over the baseline period (2001 to 2010), reflecting the almost complete lack of historical (or current) land-based sand & gravel extraction in that area, despite the existence of potential land-based resources.

3.27 For the time being, it seems reasonable to suppose that marine-dredged aggregates will continue to supply a similar proportion of overall demand as they have done over the last decade, so the demand for land-won aggregates in any of the sub-regions of either South Wales or North Wales is not likely to be affected.

Anticipated Changes in Import/Export Factors

3.28 Wales has always been a net exporter of land-won aggregates. Data on both exports and imports is recorded in the 4-yearly Aggregate Minerals (AM) Surveys, and data for exports in the last three surveys is summarised in Table 3.2, below.

3.29 In North Wales, the main aggregate exports, by far, are those of Carboniferous Limestone which primarily (more than 90% in 2005 and almost 100% in 2009) are supplied to North West England. The AM Survey figures generally show that, as overall sales have fallen in recent years - particularly since 2005, the proportion (as well as the totals) of exports also fell. This implies that, during periods of recession, for general-purpose limestone aggregates, there is a reduced dependence by importing regions on supplies from more distant sources, as would be expected. But the reverse is also likely to be true: as the economy rebounds from the recent recession, the demand for exports from North Wales is likely to increase once again, and more quickly than the overall rate of economic growth.

3.30 In South Wales, the main export is of sandstone, the vast majority (almost 90%) of which is High Specification Aggregate (HSA) - skid-resistant road surfacing material

with a Polished Stone Value (PSV) of 58 or above, and generally much higher (Thompson, Greig & Shaw 1993; Thompson *et al.,* 2005). Reference to Table 3.2 shows that, although there was a reduction in sandstone exports between 2005 and 2009, the difference was much less marked than was the case for limestone exports from North Wales, especially in percentage terms. This reflects the fact that the market for skid-resistant road aggregate has held up better, during the recent recession, than has been the case for more general-purpose limestone aggregate (presumably because of the safety imperative of continuing to maintain skid resistance on major roads).

3.31 In terms of being able to predict future sales, however, there is considerable uncertainty: there could be a higher than average upsurge in demand as road maintenance requirements catch up with the lack of all but essential spending during the recent recession (and particularly with the cumulative resurfacing requirements triggered by recent harsh winters); or there could simply be a continuation of recent levels of demand, as any improved availability of central and local authority funding is diverted to other, more neglected, areas of public finance. There is therefore no evidence that the demand for exports of aggregate from South Wales will be any greater over the next 10 to 15 years than it was over the baseline period of 2001 - 2010.

3.32 Imports of land-based aggregates from England are very minor, by comparison with exports. In North Wales, imports in 2009 amounted to just 0.03mt of land-won sand & gravel, and only 0.653mt of crushed rock, more than 90% of which comprised igneous rock and sandstone from neighbouring South Wales. In South Wales in 2009, land-based imports amounted to 0.064mt of sand & gravel and 0.172mt of crushed rock, primarily from South West England.

3.33 Imports and exports of marine-dredged sand and gravel between England and Wales are only relevant to the RTS apportionment exercise if they affect the continuity of supply of these materials to Wales and thus give rise to increased demand on land-based resources. This is potentially an issue in South East Wales which, as noted earlier, is heavily dependent upon marine aggregates. At present (2013), Wales is a net importer of marine sand & gravel, dredged from the English side of the median line in the Bristol Channel and the Severn Estuary. This is likely to change in the next few years, however, subject to the approval of new licence applications within Welsh waters. In practice, although this will change the balance between imports and exports, the new licences should ensure that there is no disruption of the continuity of supply.

**Table 3.2: Summary of key export statistics for aggregates from recent AM Surveys**

| *Note: all figures exclude sales for non-aggregate use* | **AM2001** (mt) | **AM2005** (mt) | **AM2009** (mt) |
|---|---|---|---|
| **North Wales** | | | |
| Land won Sand & Gravel Sales | 1.342 | 1.192 | 0.589 |
| S&G Exports* | 0.544 | 0.508 | 0.128 |
| **Exports as % of S&G total** | **41%** | **43%** | **22%** |
| Limestone Sales | 6.062 | 4.641 | 2.636 |
| Limestone Exports* | 3.344 | 2.973 | 1.116 |
| **Exports as % of Limestone total** | **55%** | **64%** | **42%** |
| Igneous Sales | 1.136 | 1.022 | 0.610 |
| Igneous Exports* | 0.091 | 0.277 | 0.064 |
| **Exports as % of Igneous total** | **8%** | **27%** | **10%** |
| Sandstone Sales | 0 | 0 | 0 |
| Sandstone Exports* | 0 | 0 | 0 |
| **Exports as % of Sandstone total** | **0%** | **0%** | **0%** |
| Total Crushed Rock Sales** | 7.198 | 5.663 | 3.245 |
| Total CR Exports* | 3.436 | 3.251 | 1.178 |
| **CR Exports as % of CR total** | **48%** | **57%** | **36%** |
| **South Wales** | | | |
| Land won Sand & Gravel Sales | 0.115 | 0.304 | 0.144 |
| S&G Exports* | 0.001 | 0.011 | 0 |
| **Exports as % of S&G total** | **1%** | **4%** | **0%** |
| Limestone Sales | 6.536 | 6.137 | 4.554 |
| Limestone Exports* | 0.262 | 0.154 | 0.052 |
| **Exports as % of Limestone total** | **4%** | **3%** | **1%** |
| Igneous Sales | 0.838 | 1.238 | 1.025 |
| Igneous Exports* | 0.572 | 0.430 | 0.694 |
| **Exports as % of Igneous total** | **68%** | **35%** | **68%** |
| Sandstone Sales | 2.648 | 3.498 | 2.605 |
| Sandstone Exports* | 1.457 | 1.941 | 1.258 |
| **Exports as % of Sandstone total** | **55%** | **55%** | **48%** |
| Total Crushed Rock Sales** | 10.310 | 10.873 | 8.185 |
| Total CR Exports* | 2.302 | 2.527 | 2.003 |
| **CR Exports as % of CR total** | **22%** | **23%** | **24%** |

* 'exports' includes movement between South Wales and North Wales, as well as to other regions (mostly in England).
** crushed rock sales exclude slate

## Anticipated Changes in Economic Demand Factors

3.34 Before considering future changes it is worth considering the relationships between aggregate sales and economic factors over the baseline period (2001 to 2010). The data presented in Table 3.2, above, illustrates the substantial reduction of aggregate sales between the AM surveys of 2005 and 2009, spanning the start of the recent economic recession in 2008. This can be seen in more detail in the annual series of data from the South Wales and North Wales RAWP reports, as shown in Tables 3.3 and 3.4, below.

3.35 Tables 3.3 and 3.4 also show population figures and derived 'per capita' sales (tonnes of aggregate sales per person), the purpose of this being to illustrate the complete lack of correlation between population (which has risen steadily over the period) and aggregate sales, which have generally fallen. The tables also show annual GDP change figures, for the UK as a whole, as a broad indicator of economic activity. These clearly show the onset of the recession in 2008 and 2009, and the modest level of growth in 2010, compared with the earlier parts of the baseline period, broadly tying-in with the sales data.

**Table 3.3: Annual sales of land-won primary aggregate, 2001 to 2010 (N. Wales), compared to population data and annual GDP change**

| NORTH WALES | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 10 year averages* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Crushed Rock * (mt) | 7.2 | 6.52 | 6.3 | 6.51 | 6.1 | 6.29 | 6.3 | 5.51 | 3.90 | 4.48 | **5.91** |
| Sand & Gravel * (mt) | 1.39 | 1.35 | 1.27 | 1.14 | 1.24 | 1.17 | 1.06 | 1.1 | 0.63 | 0.7 | **1.11** |
| **Total * (mt)** | **8.59** | **7.87** | **7.57** | **7.65** | **7.34** | **7.46** | **7.36** | **6.61** | **4.53** | **5.18** | **7.02** |
| Population ** (millions) | 0.66 | 0.67 | 0.67 | 0.67 | 0.67 | 0.68 | 0.68 | 0.68 | 0.68 | 0.69 | **0.68** |
| Per capita Sales (tonnes) | 12.93 | 11.80 | 11.31 | 11.38 | 10.90 | 11.04 | 10.83 | 9.68 | 6.62 | 7.54 | 10.38 |
| Annual GDP change, UK *** | 2.9% | 2.4% | 3.8% | 2.9% | 2.8% | 2.6% | 3.6% | -1.0% | -4.0% | 1.8% | 1.78% |

* SOURCE: Annual RAWP reports for North Wales . Note that the 10 year averages shown here are slightly different from those used in Table 3.1 and elsewhere in this document, which were derived from new figures collated by the RAWP secretaries for the specific purpose of this review.

** SOURCE: Welsh Government population data

*** SOURCE: Eurostat website

**Table 3.4: Annual sales of land-won primary aggregate, 2001 to 2010 (S. Wales), compared to population data and annual GDP change**

| SOUTH WALES | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 10 year averages* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Crushed Rock * (mt) | 9.77 | 9.66 | 11.16 | 11.79 | 10.85 | 11.46 | 12.51 | 11.47 | 8.14 | 7.25 | **10.41** |
| Sand & Gravel * (mt) | 0.34 | 0.20 | 0.20 | 0.40 | 0.44 | 0.28 | 0.24 | 0.30 | 0.14 | 0.12 | **0.26** |
| **Total * (mt)** | 10.11 | 9.86 | 11.36 | 12.19 | 11.29 | 11.74 | 12.75 | 11.77 | 8.28 | 7.37 | **10.67** |
| Population ** (millions) | 2.25 | 2.26 | 2.27 | 2.28 | 2.30 | 2.31 | 2.33 | 2.34 | 2.35 | 2.36 | **2.30** |
| Per capita Sales (tonnes) | 4.50 | 4.37 | 5.01 | 5.33 | 4.92 | 5.08 | 5.48 | 5.02 | 3.52 | 3.12 | 4.63 |
| Annual GDP change, UK *** | 2.9% | 2.4% | 3.8% | 2.9% | 2.8% | 2.6% | 3.6% | -1.0% | -4.0% | 1.8% | 1.78% |

* SOURCE: Annual RAWP reports for South Wales. Note that sales figures are the totals from sub-regions and do not always match with the Regional totals shown in the Annual Reports, due to discrepancies within some of those reports. Also, the resulting 10 year averages shown here are slightly different from those shown in Table 3.1 and elsewhere in this document, which were derived from new figures collated by the RAWP secretaries for the specific purpose of this review.

** SOURCE: Welsh Government population data

*** SOURCE: Eurostat website

3.36 As indicated by footnotes in each of the tables, the 10 year averages shown here are slightly different from those used in Table 3.1 and elsewhere in this document, which were derived from new figures collated by the RAWP secretaries for the specific purpose of this review.

3.37 Since 2010, GDP growth in the UK has fallen back again, to 0.9% in 2011 and 0.1% in 2012. The latest available forecasts for the next few years (from the Economic and Fiscal Outlook report published on 5th December 2013 by the Office of Budget Responsibility) are for 1.4% in 2013, 2.4% in 2014, 2.2% in 2015, 2.6% in 2016 and 2.7% in both 2017 and 2018. These forecasts suggest a slow return to the levels of growth seen in some of the earlier parts of the baseline period, but falling a long way short of the peaks seen in 2003 and 2007. The average of the GDP figures (out-turn and forecast) from 2011 to 2018, as quoted above, is 1.88% per annum. This compares with an average of 1.78% per annum for the 2001 to 2010 baseline period and suggests that demand figures up to 2018 are, if anything, likely to be very slightly higher than those for the baseline period. Consideration also needs to be given, however, to the possibility of a return to more substantial growth in the period beyond 2018. Whist there is currently no evidence to quantify or even suggest such growth, it would be prudent to allow for it, in order to avoid the risk of under-provision.

3.38 Other potential sources of information that have been considered regarding the likely future demand for construction aggregates include population growth forecasts and Local Authority housing forecasts. Population forecasts are published by the Welsh Government and show a continued expansion of the population in all of the sub-regions. As noted above, the demand for aggregates has no significant correlation with population totals - at least not on the scale associated with year-on year variations. A more useful measure, however, may be the average rate of population growth over a period of time. For the 10 year baseline period (2001 to 2010) the average rate for the whole of Wales was 4.8% (i.e. an average of 0.48% per year). For the forecast data, the average growth rates are slightly higher: 0.51% per year for the period from 2011 to 2031 (the furthest date for which figures are currently forecast). Whilst there is no statistical justification for assuming that rates of population growth will correlate with changes in demand for aggregates, they provide the only mechanism for looking further ahead than the current economic forecasts.

3.39 Local Authority housing forecasts provide a link between the Welsh Government's population forecasts and future construction activity. The link is not necessarily a robust one though, since the houses and associated infrastructure will only be built if the necessary funding is made available - either by private sector investment and/or by Local Authorities.

3.40 Aside from predictions of economic growth and associated general construction activity, a further important element in the demand for aggregates is that relating to major infrastructure projects. These are considered further within the Regional Appendices (A and B). However, despite numerous strategic projects being identified, there is no clear evidence to indicate whether or not these are likely to

represent an increase or a decrease in future construction activity, compared with the baseline period. For this reason, they have not been used in the assessment of future demand. For the future, it is essential that there should be improved monitoring of both the completion and forecasting of such large scale projects, in such a way that they can be factored-in to the demand for construction materials.

Summary of Influences on Future Demand

3.41 Subject to the outcome of the formal EC investigation into certain exemptions from the Aggregates Levy (see para. 3.23 above), little justification has otherwise been found for modifying the overall scale of future demand for primary aggregates that has been indicated by the historical baseline sales figures shown in Table 3.1, above. Whilst there is some evidence that short term rates of economic growth are likely to be slightly higher those seen during most of the baseline period (2001 - 2010), implying a slightly increased level of demand in future years, there is also a need to allow for the possibility of further increased growth during later years within the period covered by the revised RTS. That possibility is at least hinted at by future projections of population growth, but is also in keeping with the more general long-term economic cycle of peaks and troughs. If the Aggregate Levy exemptions are suspended, or if the Levy itself is eventually abolished, this could have significant implications in terms of the future demand for primary aggregates. Whilst it would not be justified to rely on such factors in terms of clear predictions, it would be prudent not to ignore them for the purposes of ensuring an adequate level of future provision of construction aggregates.

3.42 All such factors will need to be kept under review between now and the next review of the RTS. It is considered unlikely, however, that any of these would be likely to trigger a need for the RTS to be revised any earlier than the next scheduled five-yearly review. Whilst some circumstances (e.g. a major, unexpected increase in construction activity or the possible abolition of the aggregates levy) may give rise to a marked increase in the demand for primary aggregates, there will generally be sufficient availability of permitted reserves to accommodate these changes in the relatively short term, until the next scheduled review.

3.43 As noted earlier, the historical sales figures represent the demand which has hitherto been placed ***upon*** individual MPAs to supply aggregates for use within those areas and elsewhere, including exports to England. The figures do not equate to consumption within those individual areas.

3.44 Unfortunately there are no detailed statistics available for the consumption of aggregates within individual MPAs in Wales, only within broad sub-regional groupings which provide very limited insight. Inevitably, however, there are geographical imbalances between production and consumption, simply as a consequence of the geographical differences between the spatial distribution of resources and the locations of urban development and infrastructure. Despite those differences, however, there is an economic imperative for quarries to be located as close as possible to the main centres of consumption.

3.45 This is not to say that the current distribution of quarries is perfectly aligned with either the proximity principle or the notion of environmental capacity, however. For this reason, the historical demand/sales figures shown in Table 3.1 do not *necessarily* represent the geographical pattern of apportionments that would ideally be required in future years. Chapter 4 of this report provides an analysis of the proximity and environmental capacity influences which need to be considered, and balanced against practical issues and other aspects of sustainability, before the final apportionments for each MPA can be assessed.

## *Regional Demand*

3.46 At a Regional level, the fine-tuning associated with proximity and environmental factors becomes less significant in determining the geographical balance of supply between the two RAWPs. The two regions are largely independent in terms of the linkages between supply and demand, with only a limited amount of aggregate transportation between them[5]. The main factor in assessing the future demand over the next 22/25 years at this level is therefore assumed to be the average sales of such materials over the baseline period from 2001 to 2010, inclusive, subject to any factors which might influence changes in this demand within the foreseeable future. As noted above, and as explained in more detail within the Regional Appendices, subject to the future of exemptions from the Aggregates Levy, the analysis of these factors has not identified any justification for modifying the future contributions from marine, secondary and recycled sources, or for making adjustments for changes in imports or exports, or future economic trends. The baseline figures for residual primary aggregate production are therefore considered to be valid as they stand.

3.47 The overall demand for land-based primary aggregate production in each of the Welsh Regions over the periods covered by this review can therefore be grossed-up from the analysis of individual MPA figures presented in Table 3.1, and is summarised in Table 3.5, below. This table also shows, for comparison, the three-year averages over the period 2008 to 2010, compiled directly from figures given in the Annual RAWP reports. The comparison reveals the extent to which any reliance on three-year averages would greatly under-estimate the overall levels of provision required, by comparison with the 10-year averages.

[5] In the AM2009 survey, 9.2% (0.6mt) of the crushed rock production in South Wales was transported to destinations within North Wales, whilst only 0.2% of the crushed rock production in North Wales was transported into South Wales.

**Table 3.5: Baseline assessment of Regional demand for land-based primary aggregate production in North Wales and South Wales, 2011 to 2036**

| Region | Aggregate Type | Historical 3-yr sales average, 2008 to 2010 * (mtpa) | Historical 10-yr sales average, 2001 to 2010 ** (mtpa) | Total requirement over 22 years (sand & gravel) or 25 years (crushed rock), based on 10-yr averages (mt) |
|---|---|---|---|---|
| **North Wales** | Land-won Sand & Gravel | 0.81 | 1.08 | 24 |
| | Crushed Rock | 4.62 | 5.80 | 145 |
| | **TOTAL Land-won aggregate** | **5.43** | **6.88** | **169** |
| | | | | |
| **South Wales** | Land-won Sand & Gravel | 0.19 | 0.33 | 7 |
| | Crushed Rock | 8.95 | 10.47 | 262 |
| | **TOTAL Land-won aggregate** | **9.14** | **10.80** | **269** |

* The 3-year sales averages are calculated from the annual figures for 2008, 2009 and 2010, as shown in Tables 3.3 and 3.4 above.

** The 10-year averages shown here are slightly different from those shown in Tables 3.3 and 3.4, as they are derived from the new figures collated by the RAWP secretaries for the specific purpose of this review (as detailed in Table 3.1).

3.48 The figures in the right-hand column of this table represent the total level of provision for aggregates production which needs to be made in each region over the period covered by this review, based on multiples of the historical 10-year averages. The multiples are 22 years for land-based sand & gravel (i.e. 2011 to 2033) in order to maintain minimum landbanks of 7 years throughout the 15 year period of each LDP; and 25 years for crushed rock (i.e. 2011 to 2036), in order to maintain minimum landbanks of 10 years, as required by MTAN1. The sub-Regional apportionment of these figures among individual MPAs is addressed in Chapter 5 of this report, following the assessment of proximity and environmental capacity issues in Chapter 4.

## *National Demand*

3.49 At the National level, the average annual future demand upon Wales over the next 22 or 25 years (as appropriate), for the supply of primary, land-based construction aggregates, is assumed to be equivalent to the average sales of these materials over the baseline period (2001 to 2010, inclusive). As noted earlier, this measure naturally incorporates allowances for the continued production and sales of marine, secondary and recycled aggregates and for the balance between imports and exports over that period and, subject to HMRC's decisions on the future of exemptions from the Aggregates Levy, the foregoing analysis has not found any reason to amend these factors for the purposes of estimating future demand over the next 22-25 years. The National demand for land-based primary aggregate production over the next 22 years (for sand & gravel) or 25 years (for crushed rock), combining the data for the two regions, is therefore as summarised in Table 3.6, below:

**Table 3.6: Baseline assessment of National demand for land-based primary aggregate production in Wales, 2011 to 2036**

| **Aggregate Type** | **Historical 10-yr sales average, 2001 to 2010 *** (mtpa) | **Total requirement over 22 years (sand & gravel) or 25 years (crushed rock)** (mt) |
|---|---|---|
| Land-won Sand & Gravel | 1.41 | 31 |
| Crushed Rock | 16.27 | 407 |
| **TOTAL Land-won aggregate** | **17.68** | **438** |

* NOTE: The totals shown here are slightly different from those shown in Tables 3.3 and 3.4, as they are derived from the new figures collated by the RAWP secretaries for the specific purpose of this review, as detailed in Table 3.1.

## *Assessment of Reserves and Landbanks*

3.50 The final part of the picture which needs to be understood in order to develop sensible apportionments and allocations for future working is that relating to the existing landbanks of permitted reserves.

3.51 The relevant details are shown in Table 3.7, below, and have been compiled from various sources. Most of the data were originally collated by the RAWP secretaries from confidential information supplied by their constituent MPAs, but have since been refined, in some cases, from public domain information (e.g. planning applications, Inspectors' reports and LDP documents) to provide a more detailed breakdown than had previously been possible within the RAWP annual reports, and to exclude the reserves at dormant sites and suspended permissions (see below). The figures quoted are either already in the public domain and/or are totals for active and inactive quarries operated by three or more separate companies at the time in question (December 2010).

3.52 As noted earlier, a landbank (as defined in paragraph 45 of MTAN1) is the stock of planning permissions for the winning and working of minerals at active and inactive sites. Although inactive sites can include those which are dormant (see **Glossary of Terms**), Table 3.7 excludes the reserves at dormant sites, since these are required by paragraph 47 of MTAN1 to be counted separately (see Table 3.8, below). This represents a possible but deliberate departure from MTAN1. The logic for the suggested departure is that dormant reserves, whilst having the benefit of planning permission, cannot be reactivated (and thus provide an effective contribution to the landbank) until they have been through the Review of Old Mineral Permissions (ROMP) process and modern planning conditions have been agreed. For similar reasons, Table 3.7 also excludes the reserves at one site where quarrying has been suspended, pending the resumption and eventual outcome of a stalled ROMP review. Those reserves are included in Table 3.8.

**Table 3.7: Existing permitted reserves and corresponding landbanks as at 31st December 2010**

| Mineral Planning Authority | Land-won Sand & Gravel Aggregates | | Crushed Rock Aggregates | |
|---|---|---|---|---|
| | **Reserves** (mt)* | **Landbank** (years)** | **Reserves** (mt)* | **Landbank** (years)** |
| Wrexham | 15.24 | 26.5 | 0.00 | 0 |
| Flintshire | 3.00 | 9.6 | 74.41 | 25.4 |
| Denbighshire | 0.00 | 0.0 | 22.07 | 24.9 |
| Conwy + Snowdonia NPA | 0.00 | 0.0 | 67.43 | 54.7 |
| Anglesey | 0.00 | 0.0 | 5.69 | 15.2 |
| Gwynedd | 0.70 | 4.0 | 8.51 | 22.9 |
| **Sub-totals, North Wales** | **18.94** | **17.5** | **178.11** | **30.7** |
| Ceredigion*** | 2.41 | 17 | 13 | 64.4 |
| Pembrokeshire | 0 | 0 | 28 | 50.6 |
| Pembrokeshire Coast NPA | 1.65 | 10.3 | 7 | 24.2 |
| Carmarthenshire | 0.26 | 190 | 47 | 44 |
| Swansea | 0 | 0 | 0 | 0 |
| Neath Port Talbot | 0.53 | 17.7 | 9 | 15.2 |
| Powys | | | 119 | 47.4 |
| Bridgend | 0 | 0 | 47 | 62.9 |
| Brecon Beacons NPA | 0 | 0 | 94 | 114.6 |
| Merthyr Tydfil | 0 | 0 | | |
| Vale of Glamorgan | 0 | 0 | 13.7 | 12.5 |
| Rhondda Cynon Taf | 0 | 0 | 13 | 18.9 |
| Cardiff | 0 | 0 | 41 | 47.7 |
| Caerphilly | 0 | 0 | 27.8 | 36.5 |
| Blaenau Gwent | 0 | 0 | 3 | 17.9 |
| Torfaen | 0 | 0 | 0 | 0 |
| Newport | 0 | 0 | 0 | 0 |
| Monmouthshire | 0 | 0 | 11 | 91.7 |
| **Sub-totals, South Wales** | **4.85** | **14.7** | **473.5** | **45.2** |
| **TOTALS, Wales** | **23.79** | **16.9** | **651.61** | **40.0** |

SOURCE: Collated by the RAWP secretaries from MPA data, adjusted in some cases to exclude dormant sites which had previously been included (in the South Wales RAWP reports) and refined in other cases from public domain information (e.g. planning applications, Inspectors' reports and LDP documents) to provide a more detailed or updated breakdown.

* The quoted reserves exclude those at dormant sites and at one stalled ROMP site where planning permission has been suspended. The reserves at those sites are counted separately, as required by MTAN 1, and are presented in Table 3.8, below. As far as possible the reserves quoted above also exclude material that is likely to be utilised for non-aggregate purposes (e.g. cement production, building stone, silica sand or steel making). Lists of currently active and inactive, as well as dormant or suspended sites within each Region are provided in the Regional Appendices.

** Landbanks (including sub-totals and totals thereof) are calculated as total reserves (as presented here) divided by average historical sales during the baseline period (2001-2010), as detailed in Table 3.1.

*** The sand & gravel reserves for Ceredigion include the new permission at Crug yr Eyr, even though this was eventually granted after December 2010

**Table 3.8: Permitted reserves at dormant / suspended sites, as at 31st December 2010**

| Mineral Planning Authority | Land-won Sand & Gravel Aggregates<br>**Permitted Reserves** (mt) | Crushed Rock Aggregates<br>**Permitted Reserves** (mt) |
|---|---|---|
| Wrexham | 0 | 0 |
| Flintshire | 0 | 0 |
| Denbighshire | 0 | 0 |
| Conwy + Snowdonia NPA | 0 | 0 |
| Anglesey | 0 | 0 |
| Gwynedd | 0 | 0 |
| **Sub-totals, North Wales** | **0** | **0** |
| Ceredigion | 0 | 0 |
| Pembrokeshire | 0 | 0 |
| Pembrokeshire Coast NPA | 0 | 0 |
| Carmarthenshire | 0.35 | 17.0 |
| Swansea | 0 | 0 |
| Neath Port Talbot | 0 | 0 |
| Powys | | 0 |
| Bridgend | 0 | 1.0 |
| Brecon Beacons NPA | 0 | 25.0 |
| Merthyr Tydfil | 0 | |
| Vale of Glamorgan | 0 | 7.3 |
| Rhondda Cynon Taf | 0 | 0 |
| Cardiff | 0 | 0 |
| Caerphilly | 0 | 5.2 |
| Blaenau Gwent | 0 | 0 |
| Torfaen | 0 | 0 |
| Newport | 0 | 0 |
| Monmouthshire | 0 | 0 |
| **Sub-totals, South Wales** | **0.35** | **55.5** |
| **TOTALS, Wales** | **0.35** | **55.5** |

SOURCE: Collated by the RAWP secretaries from MPA data. In many cases the reserve figures are estimates

3.53 Lists of currently active, inactive, dormant and suspended sites within each Region are provided in the Regional Appendices.

3.54 For the purposes of this review of the RTSs, and as another deliberate departure from MTAN1 in order to reflect current circumstances, the length of time represented by each landbank is based on the historical 10-year average sales figures for each individual authority (as shown in Table 3.1, above).

3.55 As illustrated in Table 3.7, many parts of Wales already have substantial crushed rock landbanks, even without those at dormant and suspended sites, which is sufficient to maintain the ***existing*** pattern of supply throughout the 25 year period

covered by the revised RTS (i.e. to 2036) and sometimes well beyond. This does not apply everywhere, however. Some authorities would be facing shortfalls where they have insufficient or no permitted reserves, except at dormant or suspended sites.

3.56 In addition, some authorities with seemingly adequate landbanks overall may actually be facing shortfalls in terms of specific aggregate types. General purpose crushed rock aggregates, such as those obtained from granite or limestone, are generally not interchangeable with those required for high specification end uses such as skid-resistant road surfacing materials, which are generally derived from particular types of hard sandstone or dolerite. Similarly, aggregate derived from slate, or slate waste, may not be able to substitute for other rock types in all end uses. Ideally, separate landbanks for different types of aggregate are needed but, in practice, the number of sites in each category would generally be too small for such figures to be presented without breaching confidentiality. This has not therefore been possible.

3.57 More generally, the issue of shortfalls and the need for new allocations cannot be assessed simply on the basis of maintaining the existing supply pattern, without first considering whether or not that pattern may need to change. This might be the case, for example, in any areas where there are marked imbalances between the locations of quarries and the distribution of demand, despite the existence of workable resources in closer proximity to that demand. Equally, it might need to change if historical production has been in one authority, despite the presence of equally suitable resources in an adjoining area; or if existing quarries are in areas of relatively low environmental capacity and there are similar resources in areas of higher capacity which could serve the same markets just as well. One further area of potential concern is the extent to which the 'former Gwent' area of SE Wales is at least partially dependent on imports of Carboniferous Limestone from the neighbouring Forest of Dean in Gloucestershire, England. Whilst a recent planning permission at one of the quarries in that area has extended the timescale over which such supplies can be relied upon, this cannot be assumed to apply indefinitely. This, however, is an issue which can be monitored ad addressed, if necessary, during the next formal review of the RTS.

3.58 All of these issues are examined in Chapter 4, below, and in more detail within the two Regional Appendices. Apportionments, shortfalls and suggested allocations are then addressed, in the light of that information, within Chapter 5.

# 4. Analysis of the Existing Supply Pattern

## *Introduction*

4.1 Having assessed the likely future demand for construction aggregates, MPPW requires that there should be an adequate and steady supply to meet this demand, and that this should be provided as sustainably as possible. This, in turn, requires consideration to be given to the proximity principle and to the notion of environmental capacity, as well as to the historical pattern of supply and the distribution of both existing landbanks and potential new resources.

4.2 In the original (2008) RTSs, proximity was only considered in terms of the 'per capita' demand analysis which, as noted earlier, is difficult to justify. There is little, if any, correlation between aggregate sales and population size. However, population density, together with the location of existing urban development, may at least provide an indication of the geographical areas where new construction is most likely to be concentrated. Proximity to such areas may then be seen as one measure of the sustainability of existing quarries, and a desirable factor in the location of new ones - subject, of course, to the availability of resources in those locations and to the consideration of other practical and environmental factors.

4.3 The concept of environmental capacity was considered, in the original RTSs, only in terms of providing qualitative descriptions for each MPA, based on outputs from the IMAECA analysis. As explained in para. 2.13, above, it had no influence at all on the current apportionments or allocations (although future working within National Parks was discouraged as a more general matter of Policy - MPPW paragraphs. 21 and 22; and MTAN1 paragraphs. 46, 49, 51, 52 & 53).

4.4 For the purposes of this review, a determined attempt has been made to use both the proximity principle and environmental capacity to better effect, in conjunction with an understanding of resource availability and historical supply patterns, in order to enhance, if possible, the spatial distribution of future supply sources.

4.5 In considering such enhancement, it must be remembered that supply patterns are crucially dependent on the availability of suitable resources and on the commercial viability of working them. As already noted, minerals can only be worked where they are found. Moreover, they can only be worked on a commercial scale where quarry operators are willing to invest in their extraction, and in the procedures necessary to avoid (or minimise) potential adverse environmental impacts. In most cases, the economic and commercial factors involved for individual sites cannot adequately be assessed at the strategic level represented by the RTS.

4.6 It must also be remembered that improved proximity might sometimes be at the expense of reduced environmental capacity; whilst improved capacity might be at the expense of increased transportation distances, with consequential increases in carbon emissions and traffic impacts. The two factors therefore need to be considered in combination.

4.7 Consideration also needs to be given to other factors, including the relative merits of extensions to existing quarries as opposed to new 'greenfield sites'; the need to avoid stifling competition between different operators; and the need to maintain productive capacity - particularly at larger or more efficient units. These detailed issues can most effectively be dealt with at a local level, however, once the overall strategy has been established. For this reason, the following analysis begins with a consideration of the broad, National and Regional picture, with more detail being provided in the sub-Regional analyses presented in Appendices A and B. The key findings are then carried through to the assessment of future apportionments and allocations, in Chapter 5.

## *National and Regional Analysis*

Distribution of Quarries and Resources

4.8 As noted above, the distribution of suitable geological resources is of fundamental importance in understanding the distribution of existing quarries, and in understanding the limitations involved in locating potential new ones. Once again, it is important to stress that minerals can only be worked where they are found.

4.9 Figure 4.1, below, shows the distribution of crushed rock quarries in Wales which were active in 2013, together with the outcrops of the key resources. The quarry locations are taken from an updated edition of the BGS 'Britpits' database[6], limiting the selection to those which produce hard rock aggregates, either as a primary product or (in the case of slate waste tips) as a secondary material. Larger scale maps, which show the locations of inactive and dormant, as well as active quarries, are presented in the more detailed analysis contained within the Regional Appendices (A and B).

4.10 The resource outcrops on Figure 4.1 are taken directly from the BGS Mineral Resources Map of Wales (Humpage & Bide, 2010), but are limited to those resources which are important for the production of crushed rock aggregates. These include all 'Category 1' resources, as identified on the BGS maps, and some (but not all) 'Category 2' resources. They fall into seven main groups, as follows:

- Carboniferous HSA sandstones (Category 1)
- Pre-Carboniferous HSA sandstones (Category 2)
- High Purity Carboniferous Limestone (Category 1)
- Other Carboniferous Limestone (Category 2)
- HSA dolerites (Category 1)
- Other igneous rock formations (Category 2)
- Slate (Category 2)

[6] A 2012 edition of the Britpits database was supplied by the BGS at the outset of this study but was then updated by various members of the Project Steering Group in July and August 2013, particularly in terms of current operational status and ownership.

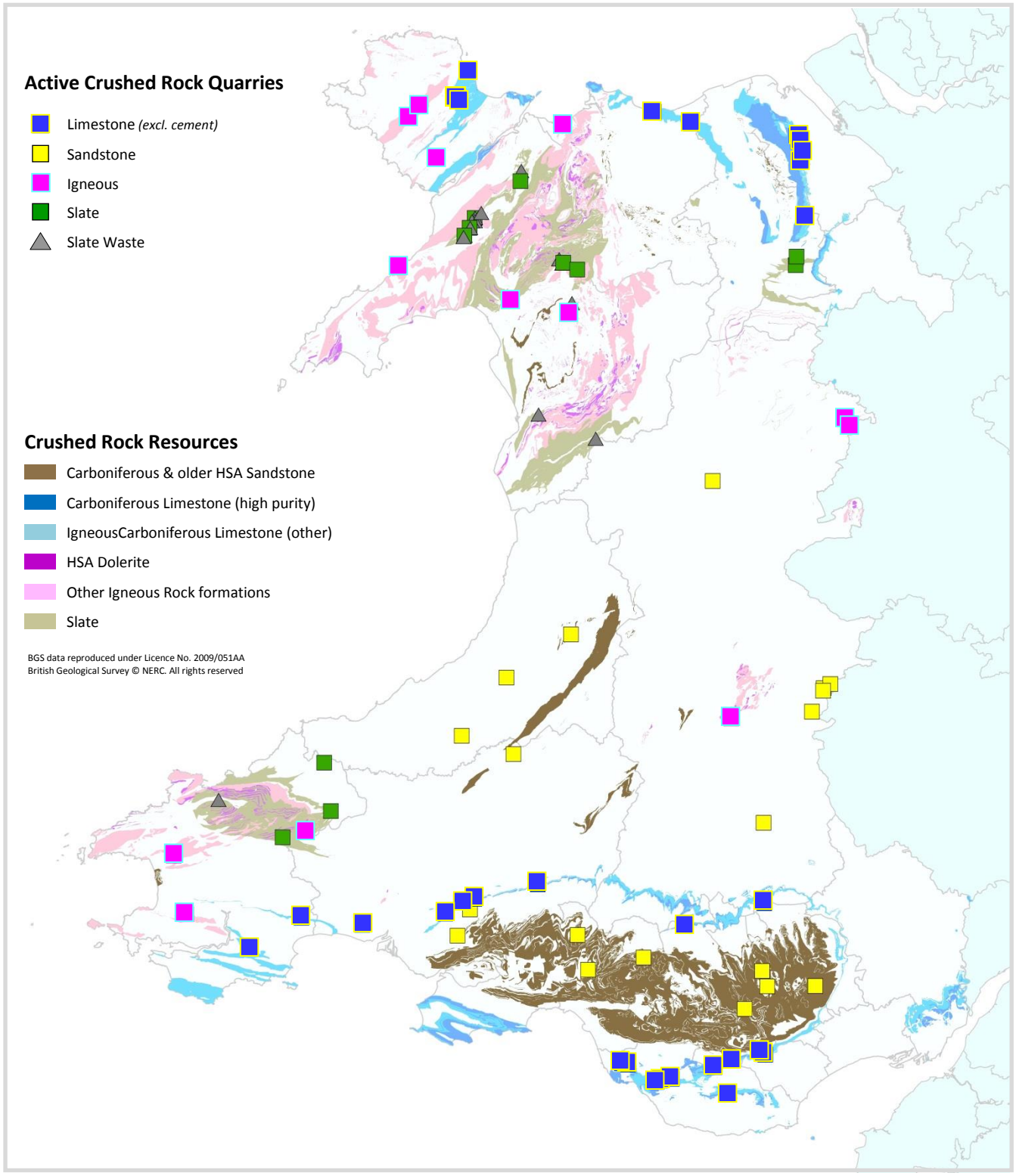
4.11 The term 'HSA' refers to 'High Specification Aggregate', which is suitable for use as skid-resistant road surfacing aggregate as defined in the original 'Travers Morgan' report on these materials for the former Department of the Environment (Thompson, Greig & Shaw, 1993). They are characterised by a high Polished Stone Value (PSV≥58) in combination with a low Aggregate Abrasion Value (AAV≤16) and tend to command a premium price compared with other types of road aggregate. They are also transported over much greater distances in order to meet specification requirements in areas which have no comparable indigenous resources (which includes most of eastern and southern England). HSA aggregates in Wales include certain types of hard sandstone (particularly the Carboniferous 'Pennant' Sandstones of the South Wales coalfield, and some older sandstones - mainly within Powys), and certain types of dolerite (a particular variety of igneous rock) which occurs within various parts of south-west, north-west and mid-Wales. It should be noted that some of the extensive sandstone formations within mid-Wales and North Wales that were identified as potential HSA resources within the 1993 Travers Morgan report have since been refined by the most recent and more detailed BGS resource mapping, such that only parts of those resources are now identified as potential sources of HSA material on a commercial scale.

4.12 The usual caveat should be added that not all of the outcrops, of any of the rock types or formations listed at para. 4.10, above, will necessarily be suitable for commercial quarrying. This is because all geological materials are inherently variable, from one part of their outcrop to another. Moreover, the commercial viability of extraction is also influenced by a large number of other practical issues including the local extent of the deposit, land ownership, access, and distance from market, as well as planning and environmental constraints.

4.13 Above all, it must be emphasised that Figure 4.1 (and Figure 4.2 below) displays the extent of potential **resources** and not **reserves** or **permitted reserves**. Resources are geological materials, including rocks and naturally occurring sand & gravel, which have the ***potential*** to be used for a particular purpose (in this case as construction aggregates). Reserves are those parts of a resource which are ***known*** to be suitable for this purpose (usually as a result of detailed ground investigations and laboratory testing) and permitted reserves are those reserves which have valid planning permission for the winning and working of the materials in question.

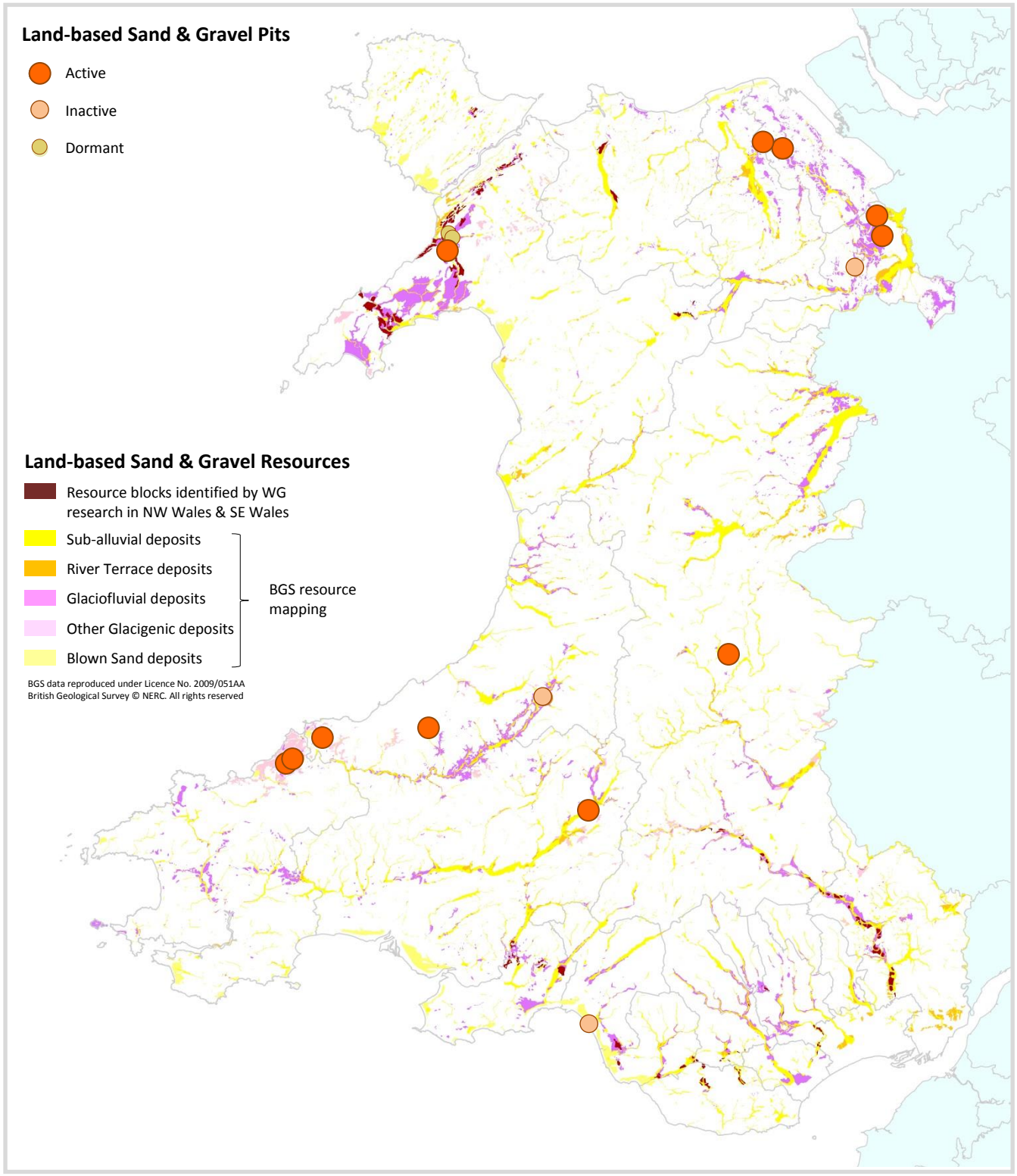
4.14 Excluded from Figure 4.1 are a range of weaker sandstones and limestones, including some 'Category 2' resources, which are not currently exploited as sources of crushed rock aggregate on anything other than an extremely local scale (e.g. for use on farms etc.), and where this is most unlikely to change in future, because of their inherent unsuitability for more commercial applications. Such resources include all Devonian sandstones and all post-Carboniferous sandstones and limestones. Whilst many of these have been identified by the BGS as being worthy of safeguarding within Local Development Plans (Wrighton & Humpage, 2012), they do not represent practical alternatives to the resources listed above, in terms of their ability to meet the same commercial specifications, and are therefore not considered further here.

**Figure 4.1: Active Crushed Rock Aggregate Quarries and Resources in Wales, 2013**




4.15 Figure 4.2, below, provides a similar map of the distribution of land-based sand & gravel pits (including inactive and dormant sites as well as active ones) together with the corresponding potential resources. The latter are once again taken largely from the BGS Mineral Resources Map of Wales, and include a wide range of sediments which have potential as sources of natural aggregate.

**Figure 4.2: Land-based Sand & Gravel Pits and Resources in Wales, 2013**



4.16 Figure 4.2 also shows, within NW Wales and SE Wales, more specific potential resource blocks which were identified in more detailed studies carried out for the National Assembly for Wales (Thompson *et al*., 2000; University of Liverpool, 2003). These are not necessarily the only potential worthwhile resources, but they are the most rigorously assessed, within the areas concerned.

4.17 Figure 4.3, below, shows the areas which are within an illustrative 20km radius of one or more currently active crushed rock quarries; and Figure 4.4 provides a similar illustration in respect of both land-based sand & gravel quarries and ports which receive marine-dredged aggregates. In most cases, the economic radius of distribution from these locations is considerably greater than 20km: typically up to 50km for 'ordinary' graded aggregate or further in the case of value-added products (e.g. ready-mixed concrete and asphalt materials) that are often produced at remote depots for onward distribution, and much further still in the case of High Specification Aggregates or High Purity limestone. The diagrams merely illustrate that the existing pattern of supply within Wales already conforms reasonably well to the Proximity Principle: very few parts of the country (those shown in black on Figure 4.3) are more than 20km from a source of crushed rock aggregate and most of those which are further away fall within 20km of either a land-based sand & gravel pit or a wharf which imports marine-dredged aggregates. Elsewhere, the distances are more than 20km but rarely more than 30km, and in most cases these are remote rural areas which are unlikely to generate significant levels of demand.

4.18 Figure 4.5, which follows, shows the distribution of crushed rock quarries in relation to the scale of demand ***upon*** individual MPAs for crushed rock aggregate production in Wales, as measured by average historical sales figures for each MPA over the baseline period (2001-2010). The shading corresponds to the figures given in Table 3.1, above[7], and it is emphasised that this illustrates the demand being made ***upon*** these areas, including both domestic consumption and exports to adjoining areas, including England. Figure 4.6 then provides a similar map for land-based sand & gravel production.

4.19 The focus of demand for crushed rock production is clearly seen to be in North-East Wales - particularly Flintshire (which is where most of the exporting Carboniferous Limestone quarries are located); and in Powys, where a number of sandstone and igneous rock quarries supply HSA material to England - particularly to adjoining parts of the West Midlands. In the rest of South Wales the picture is distorted by the much smaller size of many of the individual unitary authorities, particularly in the south-east, where the totals for each MPA are less than for the much larger county of Powys, even though overall production within SE Wales is double the total for Powys.

4.20 Historical crushed rock sales in South Wales have been concentrated within the Carmarthenshire, Bridgend, Vale of Glamorgan, Rhondda Cynon Taf and Cardiff MPAs (which is where most of the larger Carboniferous Limestone quarries in

[7] The exception being Snowdonia National Park, which is combined with Conwy in Table 3.1, for confidentiality reasons, but which in fact had very limited production over the baseline period, from a single site.

South Wales are located), and in the adjoining MPAs of Caerphilly and Neath Port Talbot, where additional HSA sandstone quarries are also located.

**Figure 4.3: illustrative 20km radii from all active crushed rock quarries in Wales, 2013.**

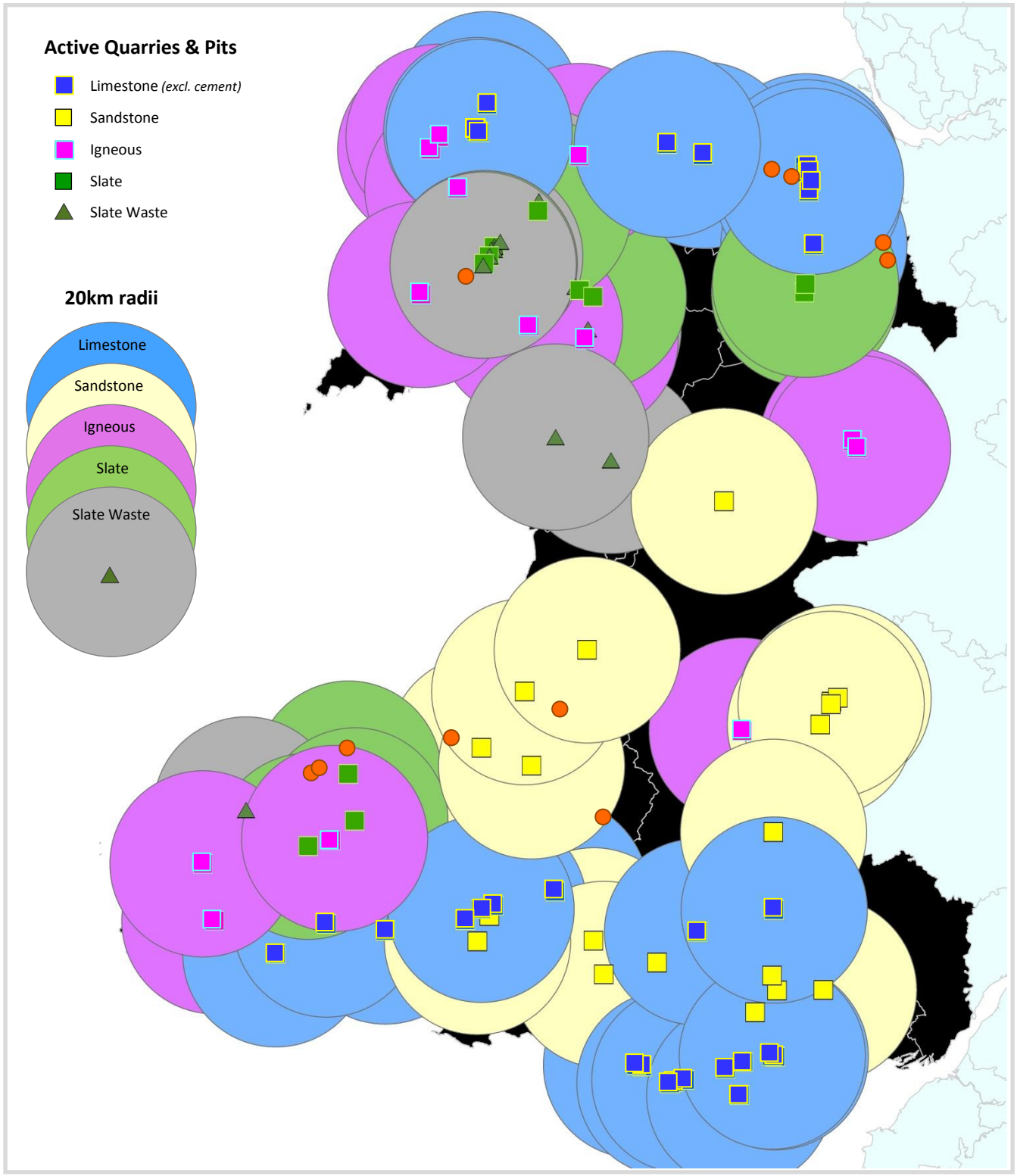


**Figure 4.4: illustrative 20km radii from all active sand & gravel pits & wharves in Wales, 2013.**

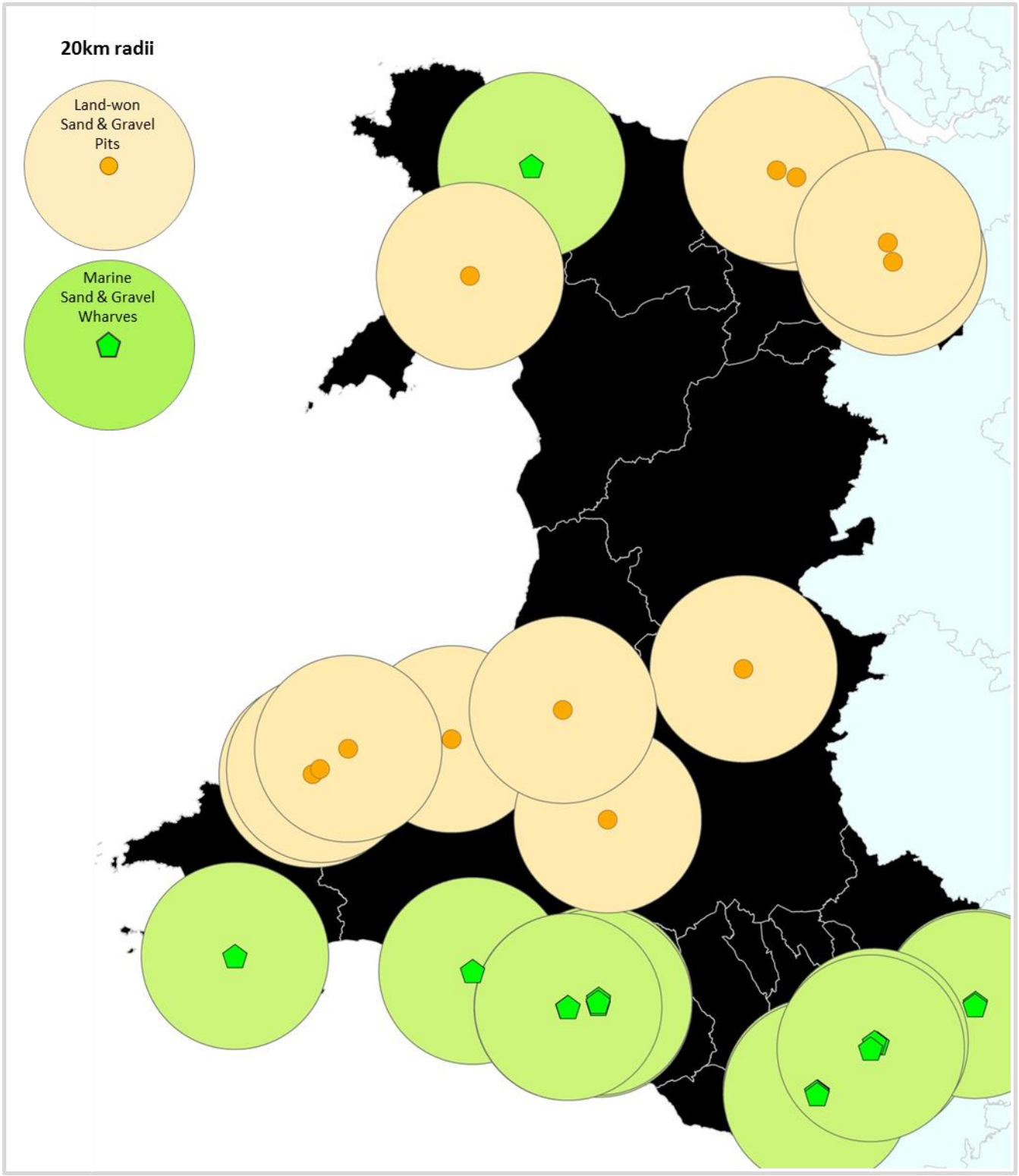
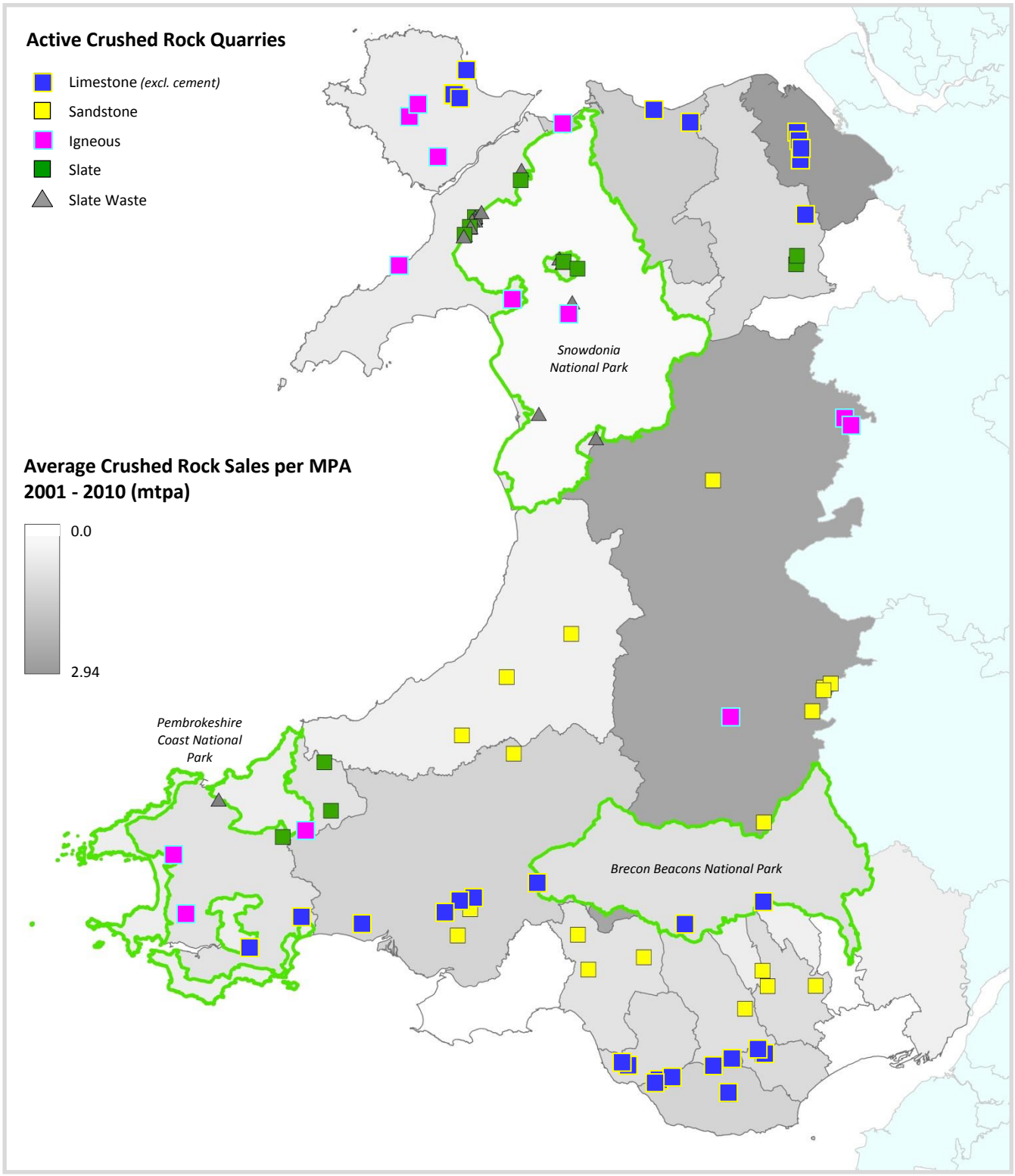


**Figure 4.5: Spatial Distribution of Anticipated Crushed Rock Demand *upon* each MPA, based on Average Sales 2001 - 2010, with locations of Active Crushed Rock Aggregate Quarries (2013)**




4.21 Whereas much of the crushed rock demand upon NE Wales derives from the neighbouring parts of North West England, particularly Merseyside, most if not all of the limestone production in South East Wales appears to be utilised locally, within the producing areas, and within the adjoining MPAs of Swansea and Neath

Port Talbot, to the west, and those of Merthyr Tydfil, Caerphilly and the 'Former Gwent' authorities to the east. Although Carboniferous Limestone resources do exist in these adjoining areas, they are either less extensive and/or more heavily constrained (see Appendix B for more detailed analysis).

4.22 The fact that little or none of the limestone from South Wales is exported further east, into England, is evidenced by the fact that additional Carboniferous Limestone from the Forest of Dean in Gloucestershire is currently being imported into the former Gwent area to make up for what would otherwise be an overall shortfall of supply. Although SE Wales has significant exports of crushed rock to England, most if not all of those exports are of HSA from the Pennant Sandstone formations of the South Wales Coalfield.

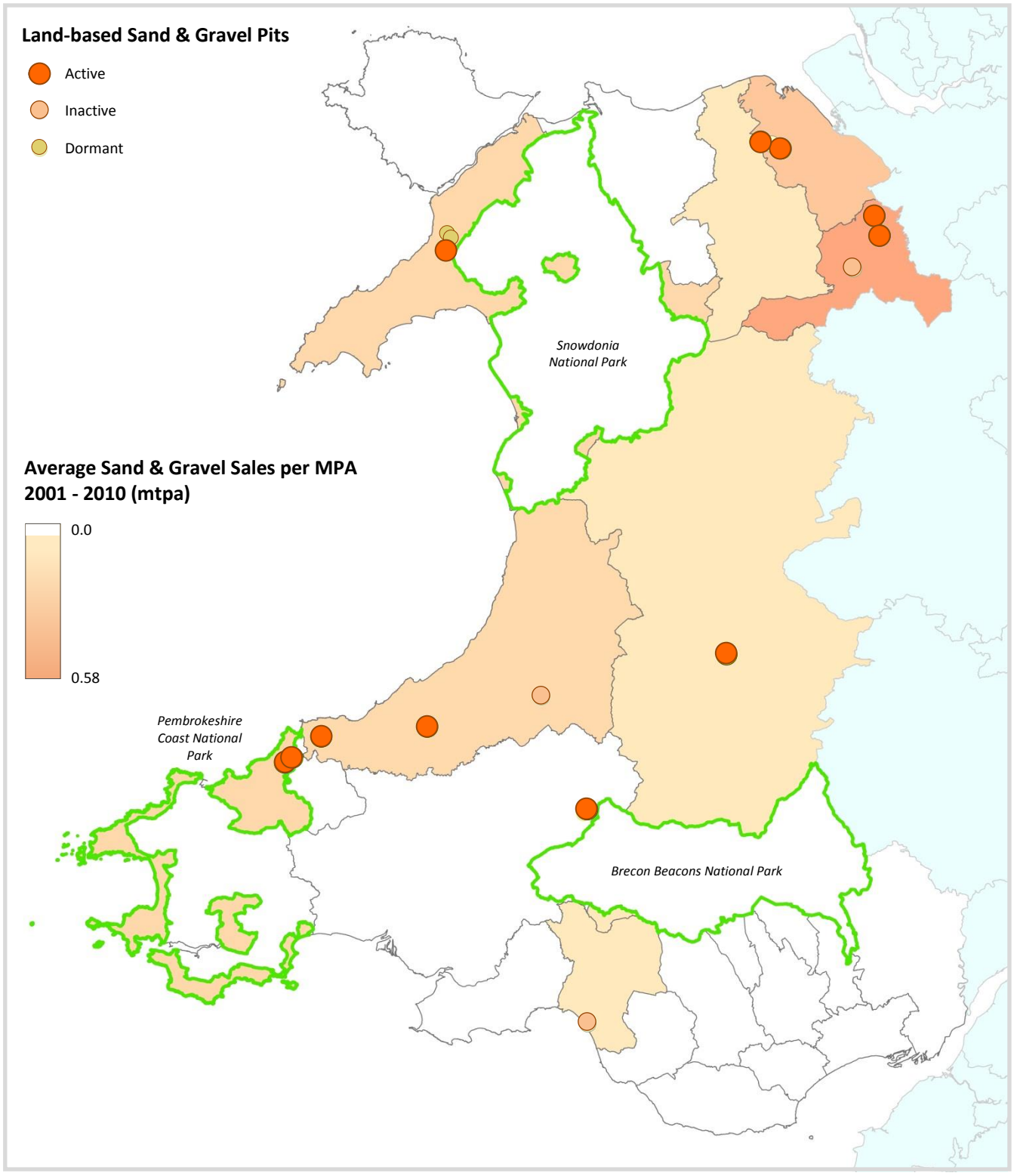
4.23 Overall, the pattern of demand for crushed rock aggregate production outlined above relates largely to the availability of resources, the location of established supply units and the proximity of these to the main areas of construction activity and/or to major transport routes such as M4 corridor. Further analysis of the supply pattern, including the relationships between quarry locations, resources, markets, major designations and environmental capacity, is provided in paragraphs 4.27 *et seq*., below, and in the two Regional Appendices.

4.24 Looking to the future, any undue reliance on historical supply data would inevitably reinforce and perpetuate the same patterns of supply. More careful consideration is therefore needed where such reliance would unnecessarily perpetuate adverse environmental effects or unjustified inequalities in the balance of supply between neighbouring authorities (see also para. 4.24, above); or where undue reliance might otherwise be placed on the continued availability of supplies from an adjoining MPA or country (e.g. imports from Gloucestershire into SE Wales). In addition, any imposed change to the existing supply pattern may, in some cases, either necessitate working less suitable, thinner or otherwise less viable resources, where these exist, or (in some cases at least) may entail increased transportation distances, with consequential increases in carbon emissions and traffic impacts. All of these issues are explored in more detail in the sub-Regional analyses within Appendices A and B.

4.25 In the case of sand & gravel production, as illustrated In Figure 4.6, below, the picture is greatly distorted by the reliance of South East Wales, in particular, on marine-dredged aggregates from the Bristol Channel and the Severn Estuary. South West Wales is less dependent on marine aggregates and has a small number of active land-based sites. Powys is too far removed from the coast to be influenced to any significant degree by marine aggregates, but still has only one very small land-based sand & gravel site currently in operation. It is reliant instead on crushed rock material, despite the apparent resources of natural sand & gravel within the upper reaches of the Severn, Wye and Usk valleys. In North Wales, there are, once again, apparently plentiful resources of natural sand & gravel in Gwynedd (as indicated in both BGS and Liverpool University mapping) but the supply pattern is dominated by one major quarry within Wrexham and (to a much

smaller extent) by two further units within Wrexham and two or three others in Flintshire. Further details are given in the Regional Appendices.

**Figure 4.6: Spatial Distribution of Anticipated Demand for Land-won Sand & Gravel *upon* each MPA, based on Average Sales 2001 - 2010, with locations of Sand & Gravel Pits (2013)**



4.26 Overall, in South Wales and much of North Wales, the relative lack of land-based sand & gravel production is influenced to a very large extent by environmental and landscape concerns, as well as by the relative ease of availability of alternative materials (marine aggregates, crushed rock and slate, including slate waste).

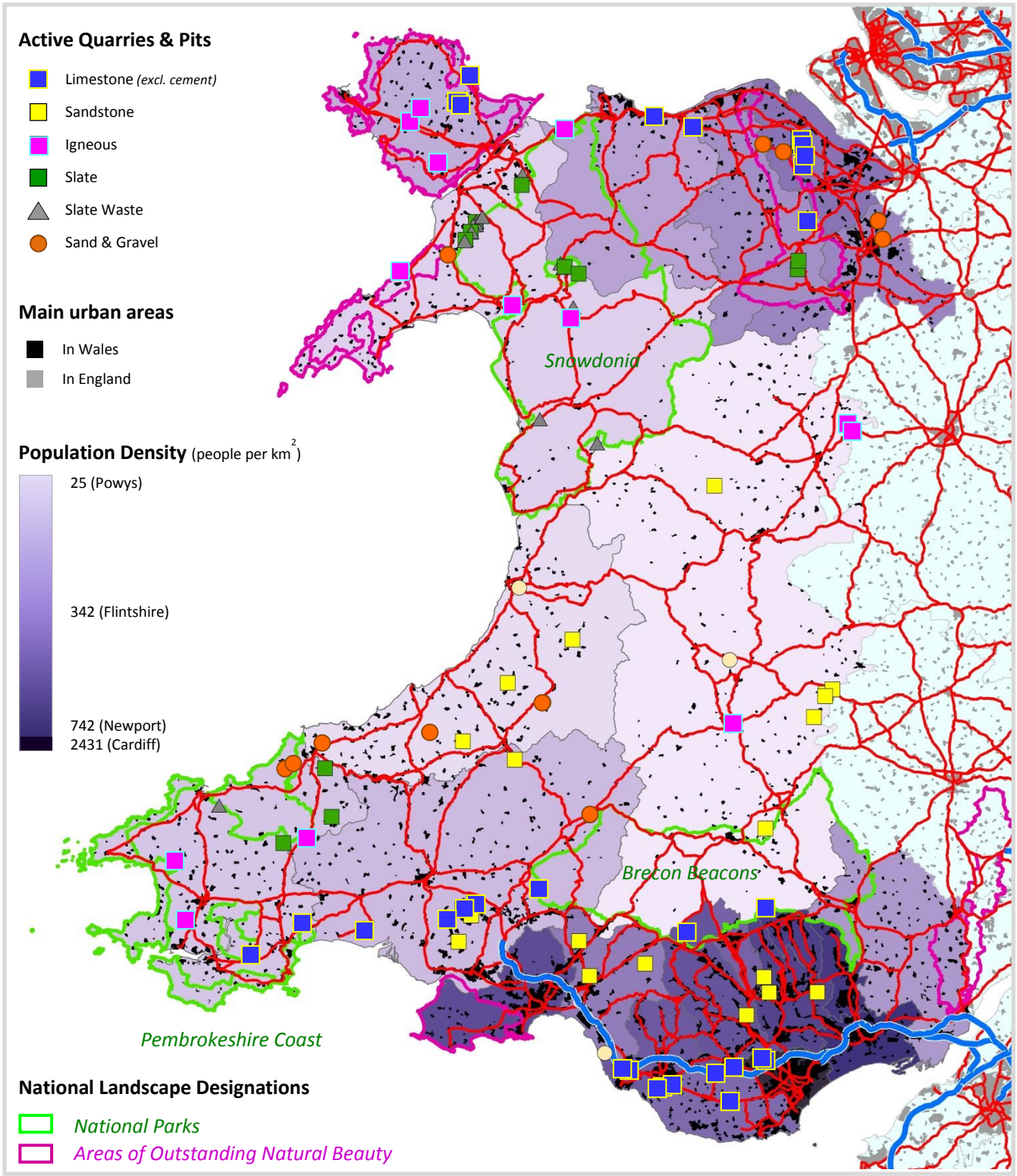
Distribution of Population and Transport Links

4.27 Figure 4.7, below, illustrates the variation in population density by local authority area, using data for 2010. It also shows urban areas, A-roads and motorways, together with the locations of all currently active quarries. It should be noted that not all of the roads shown are necessarily used for the transportation of aggregates, and that additional local roads will also be utilised close to individual quarries, distribution depots or customer locations. Equally, some of the exported material is transported by rail, though the quantities involved are not large. Together, the areas of high population density and the main urban areas provide a good indication of where construction activity is most likely to be concentrated, but the locations of major transport routes, such as the A55 in North Wales, and the M4 corridor in South Wales have important influences on export distribution.

4.28 In North Wales, the variation in population density has some similarities with the distribution of historical crushed rock sales (Fig 4.5) with a strong focus of both in Flintshire, where the road network also provides ease of access for exports into the conurbations of North West England, including the Wirral, Liverpool and Warrington. The correlation is absent in Wrexham, however, which also has a high population density and good road networks, but no crushed rock production, and only limited resources outside the AONB. As demonstrated by the more detailed analysis within Appendix A, however, there may be merits in adjusting the future supply pattern for crushed rock production by focusing new allocations within Flintshire, Wrexham, Conwy or north Denbighshire. There is also a need to maintain sand & gravel supplies within North West Wales by developing further resources in Gwynedd.

4.29 In South Wales, there is some coincidence between the areas of high population density and urban areas, on the one hand, and the distribution of crushed rock sales and quarries, on the other, but the relationship is less clear than in the north and the need for adjustments to the future supply pattern is, in some cases, more compelling. In particular, the areas of Newport, Torfaen, Blaenau Gwent and Caerphilly have higher population densities than those of the Vale of Glamorgan, Bridgend and RCT, but it is in the latter areas where most of the Carboniferous Limestone outcrops and quarries are located. The distribution of crushed rock quarries in this area as a whole is therefore not ideally matched with the main areas of demand, suggesting that there may need to be some adjustment in terms of future apportionments, on the grounds of proximity. This, however, needs to be examined in more detail and balanced against both environmental capacity and commercial factors. Further commentary is given in Appendix B.

**Figure 4.7: LPA Population Densities (2010) and main urban areas, as approximations for the pattern of demand for construction aggregates,** with motorways, A-roads, national landscape designations and locations of all active quarries & pits (2013)



4.30 In mid Wales, there is a marked contrast between the very low population density of Powys and the high level of demand placed upon that County, in terms of crushed rock sales (compare Fig 4.6 with Fig 4.4). This, as noted earlier, is primarily due to the presence of five large quarries which export High Specification Aggregates by road to markets in England. Taking that into account, together with the distribution of these important resources, these quarries are clearly well-placed in terms of proximity to the relevant markets and transport routes.

Distribution of Environmental Capacity

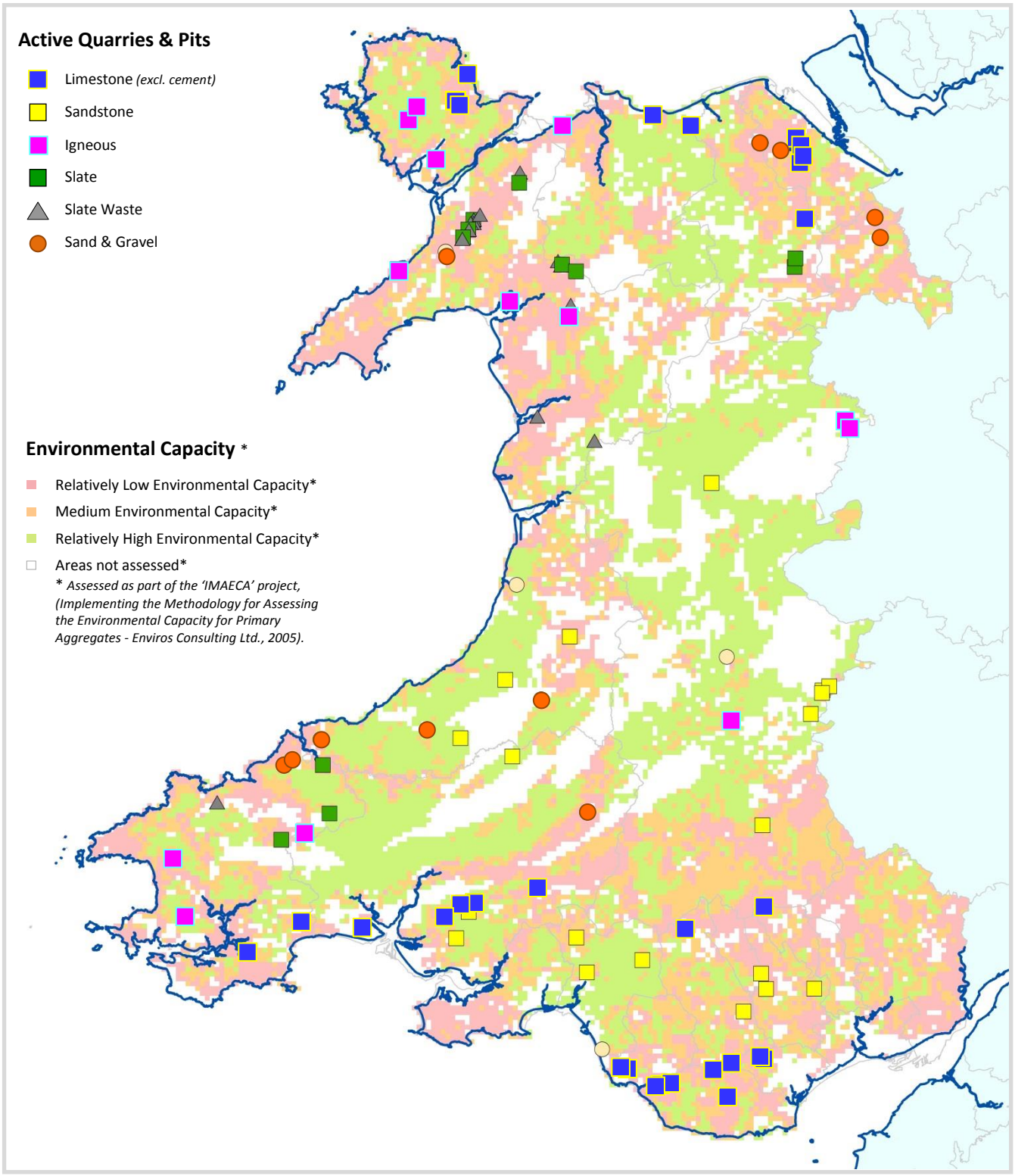
4.31 Figure 4.8, below, illustrates the spatial variations in Environmental Capacity across most of Wales, as indicated by the 'combined scores' from the IMAECA Geographic Information System tool developed by Enviros Consulting Ltd. (2005). As explained more fully in paragraphs 2.10 et seq., above, the tool provides values, relative to arbitrary thresholds between the three coloured categories, for each 1km square which was assessed by the IMAECA project. The areas assessed were identified on the basis of whether or not aggregate resources were present within all or part of each square. Areas which were considered not to contain such resources were not assessed, which is why many parts of the country are left blank.

4.32 It should be noted that, whist the GIS tool allows separate results to be shown for different resource categories, those categories do not entirely match with the current BGS mineral resource maps and the resource outlines are therefore quite different. It is therefore more useful to look at the overall picture, as shown in Fig 4.8 (and, at a slightly larger scale but at the same level of detail, in the various maps which accompany the sub-Regional analysis in Appendices A and B).

4.33 It must be emphasised that the IMAECA results are intended only to provide a very broad indication of the capacity of different areas to accept the environmental impacts of additional quarrying activity. They are necessarily generalised and are specifically ***not*** intended to take the place of conventional 'sieve-mapping' within individual Local Authorities, where more detailed constraint maps can be used and site-specific issues can be examined to determine the relative pros and cons of different factors. The IMAECA results have also been criticised for the fact that the presence of an existing quarry is treated, in the IMAECA analysis, as a factor which reduces the capacity for further quarrying in that area. Whilst there might be some justification for this, in terms of seeking to minimise cumulative impacts, it conflicts with the widely-held notion that well-designed extensions to existing quarries are likely to be more acceptable, at least in terms of public perception, than the introduction of quarrying to previously undisturbed 'greenfield' sites.

4.34 Bearing all of that in mind, the IMAECA results nevertheless provide a useful starting point for comparing environmental capacity issues with other factors (including resource availability, proximity and commercial viability) in areas where the historical supply pattern is thought to be in need of improvement, from a sustainability point of view. This is examined further in the Regional Appendices (A and B), the key findings of which are summarised at the end of this chapter.

**Figure 4.8: Environmental Capacity Assessment (combined scores for each km$^2$), as assessed by the IMAECA project,** with locations of all active quarries & pits (2013)



### *Sub-Regional Analysis of Supply Patterns*

4.35 More detailed, sub-regional analyses of the inter-relationships between each of the various factors outlined above are presented in the Regional Appendices for North Wales (Appendix A) and South Wales (Appendix B). Observations are given on the extent to which the existing supply patterns comply with the broad sustainability criteria relating to the proximity principle and environmental capacity, within the limitations imposed by the availability of resources.

4.36 Where those observations suggest that the existing supply patterns could be improved, in terms of sustainability, through adjustments to the distribution of future apportionments and allocations, the suggestions have been carried through to the analysis presented in Chapter 5, below.

4.37 Briefly summarised, the suggestions for making such adjustments are as follows:

- Adjusting apportionments for land-based sand & gravel provision within North Wales such that new allocations become focused on the resources within north Denbighshire and Gwynedd in order to generate an improved balance of supply overall (see paragraph A45 in Appendix A);
- Adjusting the balance of apportionments and allocations for land-based sand & gravel provision within mid- and southwest Wales, as necessary, in order to find a longer-term solution to the aspiration of reducing future production within the Pembrokeshire Coast National Park (see paragraphs B45 and B54 in Appendix B);
- Reducing crushed rock apportionments in Anglesey and Gwynedd, with corresponding increases in Flintshire/Wrexham and/or Conwy or north Denbighshire, in order to focus any new allocations in the latter areas (see paragraphs A36 and A43 in Appendix A);
- Considering a reduction of future HSA sandstone output in Neath Port Talbot, provided that a corresponding increase can be agreed within other MPAs further east, in order to focus any new allocations (as and when they become necessary, in future RTS reviews) on areas that will help to reduce the transportation impacts associated with HSA exports to England (see paragraphs B52 and B67 in Appendix B).
- Considering an increase in the crushed rock allocation for Carboniferous Limestone in Caerphilly, unless the existing unit at Machen is likely to be reactivated within the near future (see paragraph B64 in Appendix B);

# 5. Future Apportionments and Allocations

## *Introduction*

5.1 The two main outputs of the RTS process are required to be the identification of apportionments for each Mineral Planning Authority in Wales for the 22 or 25 year period[8] concerned; and the identification of any allocations that may need to be designated within individual LDPs in order to secure this level of provision.

5.2 The assessment presented in Chapter 3 of this review has identified the historical pattern of demand *upon* each individual MPA for the production of land-based primary aggregates, based on average sales over the preceding 10 year 'baseline' period (2001 to 2010, inclusive). The review of factors relating to the availability of alternative materials, imports, exports and economic growth has suggested that this historical supply pattern is likely to provide a good guide for the determination of future apportionments, both in terms of overall quantities and broad geographical distribution. No evidence was found of *economic* factors which would suggest otherwise.

5.3 However, in accordance with the over-arching principles set out in Chapter 2, future apportionments and allocations also need to reflect the consideration of other sustainability factors, particularly those relating to *proximity* and *environmental capacity*. These factors have been considered in Chapter 4 (and in more detail within the Regional Appendices). That work has found that, in most areas, the existing pattern of supply is sensibly balanced in terms of proximity and capacity, within the restrictions imposed by the distribution of workable resources, and the requirements of economic viability. However, it has also identified some areas (as summarised in para. 4.37, above) where there might be merits in adjusting the future supply pattern in order to improve sustainability.

## *Suggested Apportionments*

5.4 Table 5.1, below, sets out the suggested apportionments for each individual MPA within Wales, based on the historical sales data presented in Table 3.1, with adjustments in some areas to deal with the suggestions from para. 4.37, above. For convenience, Table 5.1 shows figures for the annualised apportionments and the historical sales averages (for comparison), as well as the total apportionment required from each MPA over the full period covered by the RTS (i.e. 22 years for sand & gravel, and 25 years for crushed rock provision). It must be emphasised, however, that it is only the total apportionment over the duration of a particular LDP which matters and that, at the start of the relevant Plan period, the overall provision can be achieved through a combination of existing landbanks and (where necessary) new allocations. **There is no requirement for an MPA to maintain or limit their annual sales in line with either the annualised apportionment or the historical sales averages**.

[8] This First Review RTS covers the period from 2011 to 2033, inclusive, for sand & gravel provision, and to 2036 for crushed rock provision. This is based on the need to maintain minimum landbanks of 7 years (for sand & gravel) and 10 years (for crushed rock) throughout a 15 year LDP. Given that individual LDPs will have different start dates, the annualised apportionment should be used to calculate the total provision required in each case.

**Table 5.1: Suggested Apportionments for Future Aggregates Provision in Wales, 2011 to 2033 (sand & gravel) or 2036 (crushed rock)**

| Mineral Planning Authority | Land-won Sand & Gravel | | | Crushed Rock | | |
|---|---|---|---|---|---|---|
| | Total Apportionment (Provision) over 22 years (mt) | Annualised Apportionment (mtpa) | Historical 10yr Sales Average from Table 3.1 (mtpa) | Total Apportionment (Provision) over 25 years (mt) | Annualised Apportionment (mtpa) | Historical 10yr Sales Average from Table 3.1 (mtpa) |
| Wrexham | **12.76** | 0.58 | 0.58 | **78.25** | 3.13 | 0 |
| Flintshire | **4.4** | 0.2 | 0.31 | | | 2.94 |
| Denbighshire | **2.2** | 0.1 | 0.02 | **22.25** | 0.89 | 0.89 |
| Conwy | **0** | 0 | 0 | **30.75** | 1.23 | 1.23 |
| Snowdonia NPA* | | | | | | |
| Anglesey | **0** | 0 | 0 | **7.0** | 0.28 | 0.38 |
| Gwynedd | **4.4** | 0.2 | 0.17 | **6.75** | 0.27 | 0.37 |
| **Sub-totals, N. Wales** | **23.76** | **1.08** | **1.08** | **145.0** | **5.80** | **5.80** |
| Ceredigion | **7.26** | 0 .33 | 0.14 | **5.0** | 0.20 | 0.20 |
| Pembrokeshire | | | 0 | **21.0** | 0.84 | 0.55 |
| Pembs Coast NPA* | | | 0.16 | | | 0.29 |
| Carmarthenshire | | | 0 | **26.75** | 1.07 | 1.07 |
| Swansea | **0** | 0 | 0 | **0** | 0 | 0 |
| Neath Port Talbot | **0** | 0 | 0.03 | **14.75** | 0.59 | 0.59 |
| Powys | **0** | 0 | | **62.75** | 2.51 | 2.51 |
| Bridgend | **0** | 0 | 0 | **18.75** | 0.75 | 0.75 |
| Brecon Beacons NPA* | **0** | 0 | 0 | **20.5** | 0.82 | 0.55 |
| Merthyr Tydfil | **0** | 0 | 0 | | | 0.27 |
| Vale of Glamorgan | **0** | 0 | 0 | **27.25** | 1.09 | 1.09 |
| Rhondda Cynon Taf | **0** | 0 | 0 | **17.25** | 0.69 | 0.69 |
| Cardiff | **0** | 0 | 0 | **21.5** | 0.86 | 0.86 |
| Caerphilly | **0** | 0 | 0 | **19** | 0.76 | 0.76 |
| Blaenau Gwent | **0** | 0 | 0 | **4.25** | 0.17 | 0.17 |
| Torfaen | **0** | 0 | 0 | **0** | 0 | 0 |
| Newport | **0** | 0 | 0 | **0** | 0 | 0 |
| Monmouthshire | **0** | 0 | 0 | **3.0** | 0.12 | 0.12 |
| **Sub-totals, S. Wales** | **7.26** | **0.33** | **0.33** | **261.75** | **10.47** | **10.47** |
| **TOTALS Wales** | **31.02** | **1.41** | **1.41** | **406.75** | **16.27** | **16.27** |

SOURCE: Derived from the historical sales figures presented in Table 3.1, with adjustments to address the requirements summarised in para. 4.37 above, and discussed further in the text below. Green shaded cells indicate apportionments that are set higher than historical sales. Those shaded pink indicate corresponding reductions. The sub-total figures for North Wales and South Wales, and the totals for all of Wales remain unchanged from the figures indicated by historical sales.

*Where apportionments are shown for National Parks, these relate to production from existing permitted reserves in those areas. There is no requirement for National Parks to provide future allocations

5.5 There is inevitably a strong bias in this table towards the existing pattern of supply. This is because that pattern is inextricably linked to the existing distribution of permitted reserves, and because the operators at those sites have well-established

markets and distribution networks. Some deliberate differences have been introduced, however, where there are opportunities and justifications for doing so, in order to encourage a more sustainable pattern of future supply. In each case, the suggested adjustments seek to optimise the balance between proximity, environmental capacity and commercial reality. They are specifically focused on the findings of the detailed sub-regional analyses, as presented in Appendices A and B, and summarised in para. 4.37, above. Further explanations are given below for each one.

5.6 Land-based sand & gravel apportionments in North Wales have been increased in Denbighshire and Gwynedd, and correspondingly reduced in Flintshire, in order to generate an improved balance of supply overall. Specifically, this should help to reduce the dominance of supplies from NE Wales, allowing those in Wrexham, in particular, to remain focused on the markets within that area and in adjoining parts of North West England. It should also help to encourage the development of new resources within Gwynedd and North Denbighshire, which in turn should allow the markets in those areas to be supplied from more local sources. This, however, is dependent upon suitable resources being found in that area; specifically, resources which include an appropriate balance between fine aggregate (sand) and coarse aggregate (gravel). If that cannot be achieved, the fine aggregate fraction might still need to be supplied from NE Wales or, perhaps, from marine-dredged sources off the North Wales coast. The suggested requirement for Gwynedd could potentially be shared with Anglesey, through local cooperation in preparing their LDPs, although Anglesey has very limited sand & gravel resources and no current extraction.

5.7 The apportionments and allocations for land-based sand & gravel within Pembrokeshire, the Pembrokeshire Coast National Park, Ceredigion, and Carmarthenshire have been combined. This is primarily in order to encourage cooperation between these authorities in finding a longer-term solution to the aspiration of reducing future production within the National Park, once existing permitted reserves in that area have been exhausted. The present supply pattern in this part of Wales is (quite understandably) focused on the areas which have the main concentrations of high quality glacio-fluvial sand & gravel deposits, to the east and south west of Cardigan. A large proportion of these deposits fall within the National Park but some of them extend into adjoining parts of Pembrokeshire and Ceredigion. Other potential resources do exist, however, although the commercial viability of some of those, particularly in Carmarthenshire and parts of Pembrokeshire, is compromised by the availability of marine-dredged material landed at Burry Port and Pembroke Dock. The apportionment for Powys has also been transferred to this group of authorities in recognition of the fact that the current reserves and output from the one site in Powys are extremely small, and unlikely to be sustained in future years. Although the apportionment for Powys has been reduced to zero, this does not preclude the potential need for temporary borrow pits being utilised within that County to support specific major infrastructure demands for concrete aggregate, such as wind farms (as is the case for all other areas).

5.8 Crushed rock apportionments in Anglesey and Gwynedd have been reduced, with corresponding increases in Flintshire and/or Wrexham, in recognition of the fact that the major markets for crushed rock aggregate supplied from North Wales are likely to be predominantly within those areas and further east, in neighbouring parts of north west England (see Appendix A). It is also suggested that the apportionments for Flintshire and Wrexham are combined, in order to provide greater flexibility. At present, as shown in Appendix A, there are no crushed rock workings in Wrexham and virtually all of the unworked limestone resources in that area fall within the AONB. It may, however, be possible to find some scope for future working through detailed collaborative working between the two adjoining MPAs. The suggested change will focus the requirement for new allocations on Flintshire/Wrexham although increases could alternatively be sought within Conwy and/or north Denbighshire, subject to views from NWaRAWP members.

5.9 It has been suggested in Appendix B (para. B52) that there might be some merit in reducing future output from Neath Port Talbot and increasing that from other MPAs further east within the Pennant Sandstone outcrop (e.g. Rhondda Cynon Taf, Caerphilly, Torfaen or Blaenau Gwent), in order to reduce the road transportation distances of HSA exports to England. That said, a high proportion of the resource outcrop within Neath Port Talbot coincides with areas of high environmental capacity whereas such areas are more limited within the outcrops further east. In practice, the shortfall in Neath Port Talbot has since been addressed by a new permission to extend the existing operations at Gilfach Quarry, from which part of the output is exported by train via the railhead at Neath Abbey. For future reference, however, if such a shift in supply pattern were considered beneficial, in the light of more detailed and balanced considerations of proximity, environmental capacity and other aspects of sustainability, this could be encouraged by reducing the requirement for any further new allocations or permissions within Neath Port Talbot, and transferring part of the apportionment to one or more of the MPAs further east, subject to agreements between the MPAs involved. This, however, is a matter for future revisions of the RTS.

5.10 The remaining suggestion carried forward from Appendix B is the possible need for further crushed rock allocations (of Carboniferous Limestone) within Caerphilly, in order to encourage an improved compliance with the proximity principle in supplying limestone aggregates to Newport and Torfaen, further east. To achieve this, there is no requirement to increase the level of apportionment in Caerphilly - only to fulfil it. Ideally, the inactive permission at Machen will able to be brought back into production in due course. If this unit and the much smaller one at Cwmleyshon nearby remain inactive (despite the projected economic recovery) the apportionment will not be able to be fulfilled. This, however, would be entirely in the hands of the mineral operator and could not be used as a justification for new allocations. A similar situation arises in Monmouthshire where the only remaining permitted reserves are at an inactive quarry (Ifton). In each case, unless the local authority served Prohibition Notices (and made compensation payments as necessary), the existing permitted reserves at these inactive quarries will remain a valid part of the landbank. Under those circumstances, then unless the inactive units are reactivated by their operators, the supply position will remain

unbalanced, with material having to be transported into the eastern part of SE Wales from more distant quarries further west or further north, or from the Forest of Dean in Gloucestershire, to the east. Whilst this would clearly be in conflict with the proximity principle, the issue would largely be beyond the scope of the local authorities to resolve. It would, of course, be open to those authorities to consider applications for new quarries, even without having a requirement for new allocations, if there were compelling evidence that the inactive quarries were never likely to re-open. Such applications might be justified on the grounds of reduced transportation impacts and reduced reliance on supplies from other MPAs, but those benefits would need to be balanced against issues relating to the development of a new greenfield site.

### *Comparison with Existing Landbanks*

5.11 Landbank figures for the end of the baseline period (December 2010) have already been presented in Table 3.7, in Chapter 3. As explained in Chapter 3, the existing landbanks relate to the reserves at active and inactive sites but deliberately exclude the reserves at dormant and suspended sites. Those are presented separately in Table 3.8 and are discussed further at para. 5.19, below.

5.12 As noted under Table 3.7, the adequacy or otherwise of existing landbanks, in terms of contributing to the provision required in each MPA by the RTS, needs to be considered in the light of any adjustments to the pattern of future apportionments that are justified by proximity and/or environmental capacity criteria. Those adjustments are now incorporated in Table 5.1 and explained in the foregoing text.

5.13 Taking these adjustments into account, Table 5.2, below, compares the total provision for land-won sand & gravel now required (over the period 2011 to 2033), with the size of existing sand & gravel landbanks (from Table 3.7). Table 5.3 then provides similar comparisons for crushed rock, for the period up to 2036. In each case, the resulting surpluses (shown in green) or shortfalls (shown in red) of available reserves are indicated in the third column. The resulting minimum requirements for new allocations are then shown in the last column. It should be noted that these relate to the landbank position at the end of 2010, and that in some cases the allocation requirements may already have been partially or entirely fulfilled, either by new permissions granted since 2010, or by allocations that have already been identified in LDPs.

5.14 As far as possible, the information in each table is presented for individual MPAs but, where confidentiality restrictions on the landbank data do not allow this, the figures for some adjoining MPAs have been grouped together. In the consultation exercise, the clarity of being able to provide specific apportionments for individual authorities has largely been welcomed, both by local authorities and by industry, although some consultees suggested there may be merit, in some areas at least, of adopting a more 'sub-regional' approach which further encourages co-operation between adjoining authorities. Moreover, in view of the emerging 'City Regions' concept in Wales and the outcome of the Williams Commission, which is thought

likely to recommend reducing the current 22 councils to 12 or fewer, the notion of sub-regional working will need to be re-examined in the next RTS review. In doing so, however, it should be kept in mind that the groupings of authorities needed to achieve deliverable minerals planning solutions (which have to take account of the fixed distribution of geological resources) may not necessarily be the same as the groupings required for other, administrative purposes (or the groupings which, hitherto have been dictated by commercial confidentiality).

### *Allocations Required to Meet Shortfalls*

5.15 In the case of land-based sand & gravel provision, Table 5.2 reveals that only Wrexham and Powys had a surplus of existing permitted reserves in December 2010 (in the latter case this being purely due to the decline in production from the two small sites previously involved) and that up to seven other MPAs (three in North Wales and a grouping of four in South Wales) will need to find new allocations in order to deliver the total provision required over the period covered by this review of the RTS (except where the indicated shortfall has already been covered by new permissions granted since December 2010). In North Wales, new allocations are called for in Flintshire, Denbighshire and, especially, Gwynedd. In South Wales the requirements are more modest, and are focused on Carmarthenshire, Pembrokeshire (including the National Park[9]) and Ceredigion. The justification in each case has been summarised in paragraphs 5.6 and 5.7, respectively. The remaining MPAs have neither a surplus nor deficit for sand & gravel provision, but in all cases this is simply because they currently have no production and no apportionment. In South East Wales, this position is critically dependent upon the continued availability of marine-dredged aggregates. If that source of supply were to be disrupted, there would be an urgent need to reconsider the apportionments to all of the authorities in that area.

[9] Although the Pembrokeshire Coast National Park makes an important contribution to the existing provision of sand & gravel in West Wales, it is not expected to contribute to future provision (beyond the expiry of existing permissions) unless here are no environmentally acceptable alternatives.

**Table 5.2: Comparison of total apportionments for land-based sand & gravel, 2011 to 2033 with existing (December 2010) landbanks of permitted reserves.**

| **Mineral Planning Authority** | **Total Apportionment (Provision) for sand & gravel over 22 years** - from Table 5.1 (mt) | **Existing Sand & Gravel Landbank - at 31 December 2010** - from Table 3.7 (mt) | **Surplus (+) or Shortfall (-) of Existing Reserves** (Landbank minus Apportionment) (mt) | **Minimum Allocation needed in LDP to meet the Required Provision for Land-based Sand & Gravel** (as at the base date of December 2010) (mt) |
|---|---|---|---|---|
| Wrexham | 12.76 | 15.24 | +2.48 | 0 |
| Flintshire | 4.4 | 3 | -1.4 | **1.4** |
| Denbighshire | 2.2 | 0 | -2.2 | **2.2** |
| Conwy | 0 | 0 | 0 | 0 |
| Snowdonia NPA | 0 | 0 | 0 | 0 |
| Anglesey | 0 | 0 | 0 | 0 |
| Gwynedd | 4.4 | 0.7 | -3.7 | **3.7** |
| **Sub-totals, N. Wales** | **23.76** | **18.94** | **-4.82** | **7.3** |
| Ceredigion | 7.26 | 2.41 | -2.94 | **2.94** |
| Pembrokeshire | | 1.65 | | |
| Pembs Coast NPA* | | | | |
| Carmarthenshire | | 0.26 | | |
| Swansea | 0 | 0 | 0 | 0 |
| Neath Port Talbot | 0 | 0 | 0 | 0 |
| Powys | 0 | 0.53 | +0.53 | 0 |
| Bridgend | 0 | 0 | 0 | 0 |
| Brecon Beacons NPA | 0 | 0 | 0 | 0 |
| Merthyr Tydfil | 0 | 0 | 0 | 0 |
| Vale of Glamorgan | 0 | 0 | 0 | 0 |
| Rhondda Cynon Taf | 0 | 0 | 0 | 0 |
| Cardiff | 0 | 0 | 0 | 0 |
| Caerphilly | 0 | 0 | 0 | 0 |
| Blaenau Gwent | 0 | 0 | 0 | 0 |
| Torfaen | 0 | 0 | 0 | 0 |
| Newport | 0 | 0 | 0 | 0 |
| Monmouthshire | 0 | 0 | 0 | 0 |
| **Sub-totals, S. Wales** | **7.26** | **4.85** | **-2.41** | **2.94** |
| **TOTALS Wales** | **31.02** | **23.79** | **-7.23** | **10.24** |

NOTE: Where allocation requirements are shown these are the minimum amounts required to meet the RTS requirements. In many cases an application for an individual new permission will exceed these amounts, in the interests of economic viability. Such applications should not be rejected purely on the grounds of exceeding the minimum requirements shown here. In some cases, the suggested allocations may already have been partially or entirely fulfilled, either by new permissions granted since 2010, or by allocations that have already been identified in LDPs.

*Although the Pembrokeshire Coast National Park makes an important contribution to the existing provision for this group of authorities, it is not expected to contribute to the suggested allocation of new reserves, unless here are no environmentally acceptable alternatives.

**Table 5.3: Comparison of total apportionments for crushed rock aggregates, 2011 to 2036 with existing (December 2010) landbanks of permitted reserves**

| **Mineral Planning Authority** | **Total Apportionment (Provision) for crushed rock over 25 years** - from Table 5.1 (mt) | **Existing Crushed Rock Landbank - at 31 December 2010** - from Table 3.7 (mt) | **Surplus (+) or Shortfall (-) of Existing Reserves** (Landbank minus Apportionment) (mt) | **Minimum Allocation needed in LDP to meet the Required Provision for Crushed Rock** (as at the base date of December 2010) (mt) |
|---|---|---|---|---|
| Wrexham | 78.25 | 0 | -3.84 | **3.84** |
| Flintshire | | 74.41 | | |
| Denbighshire | 22.25 | 22.07 | -0.18 | **0.18** |
| Conwy | 30.75 | 67.43 | +36.68 | 0 |
| Snowdonia NPA | | | | |
| Anglesey | 7.0 | 5.69 | -1.31 | **1.31** |
| Gwynedd | 6.75 | 8.51 | +1.76 | 0 |
| **Sub-totals, N. Wales** | **145.0** | **178.11** | **+33.11** | **5.33** |
| Ceredigion | 5.0 | 13 | +8 | 0 |
| Pembrokeshire | 21.0 | 28 | +14 | 0 |
| Pembs Coast NPA | | 7 | | |
| Carmarthenshire | 26.75 | 47 | +20.25 | 0 |
| Swansea | 0 | 0 | 0 | 0 |
| Neath Port Talbot | 14.75 | 9 | -5.75 | **5.75*** |
| Powys | 62.75 | 119 | +56.25 | 0 |
| Bridgend | 18.75 | 47 | +28.25 | 0 |
| Brecon Beacons NPA | 20.5 | 94 | +73.5 | 0 |
| Merthyr Tydfil | | | | |
| Vale of Glamorgan | 27.25 | 13.7 | -13.55 | **13.55** |
| Rhondda Cynon Taf | 17.25 | 13 | -4.25 | **4.25** |
| Cardiff | 21.5 | 41 | +19.5 | 0 |
| Caerphilly | 19 | 27.8 | +8.8 | 0 |
| Blaenau Gwent | 4.25 | 3 | -1.25 | **1.25** |
| Torfaen | 0 | 0 | 0 | 0 |
| Newport | 0 | 0 | 0 | 0 |
| Monmouthshire | 3.0 | 11 | +8 | 0 |
| **Sub-totals, S. Wales** | **261.75** | **473.5** | **211.75** | **24.8** |
| **TOTALS Wales** | **406.75** | **651.61** | **+244.86** | **30.13** |

NOTE: Where allocation requirements are shown these are the minimum amounts required to meet the RTS requirements. In many cases an application for an individual new permission will exceed these amounts, in the interests of economic viability. Such applications should not be rejected purely on the grounds of exceeding the minimum requirements shown here. In some cases, the suggested allocations may already have been partially or entirely fulfilled, either by new permissions granted since 2010, or by allocations that have already been identified in LDPs.

* This requirement has already been fulfilled by a recent (2012) permission to extend Gilfach Quarry, which has provided 8.42 million tonnes of additional permitted reserves (but see para. 5.9 for further observations).

5.16 In the case of crushed rock provision, the figures shown in Table 5.3 suggest that many areas have a surplus of existing permitted reserves, but that four of those in North Wales (Wrexham, Flintshire, Denbighshire and Anglesey) and a further four in South Wales (Neath Port Talbot, Vale of Glamorgan, Rhondda Cynon Taf and Blaenau Gwent) were facing a shortfall of reserves (as of December 2010) and, except where these have already been addressed by new permissions granted since that time, will need to find new allocations when preparing or reviewing their LDPs. In addition, Caerphilly might need to find a new allocation for Carboniferous Limestone, depending on its assessment of the likelihood of two inactive quarries being brought back into production in the near future. The justifications are provided in paragraphs 5.8 to 5.10, above.

5.17 In each case, where sufficiently detailed information exists, it is recommended that the allocations should ideally take the form of **Specific Sites**, as defined in paragraph 14 of Minerals Planning Policy Wales i.e. *"where mineral resources of commercial significance exist, and where any planning applications which come forward for those sites are likely to be acceptable in planning terms".* Where that is not possible, they should normally at least take the form of **Preferred Areas** *("areas of known resources with some commercial potential, and where planning permission might reasonably be anticipated")*, within which operators should be encouraged to bring forward more specific proposals.

5.18 A key requirement is to be able to demonstrate, within the LDP, that adequate provision has been made and this, in turn, means that the quantity of workable reserves within the allocation needs to be known, as far as possible. In most cases, this is only likely to be feasible within Specific Sites. Preferred Areas will generally not have sufficient information to be able to do this, though it may sometimes be possible for reasonable estimates to be made. **Areas of Search** ("*…broad areas that are believed to contain mineral resources of commercial significance but whose extent is uncertain…*") will usually have only minimal information on the suitability and commercial viability of the resources for commercial development and, as noted in Paragraph 14 of MPPW, it will not usually be appropriate to only rely on these for the purposes of making allocations. There will be some situations, however, where there is insufficient knowledge about potential resources to identify anything other than Areas of Search. Where this is the case, it is recommended that the Area(s) so identified should provide the potential for the release of new reserves which are far greater than the minimum allocation recommended, in order to allow for the uncertainties involved. In some cases it may be better, in terms of deliverability, to rely on specific sites (whether existing permissions or new allocations) in neighbouring authorities (additional to those MPAs' own requirements), where such reliance has been agreed through collaborative working, in preference to relying upon the uncertainty associated with broad Areas of Search.

5.19 As noted in Chapter 2 (para. 2.4), where an MPA considers that the reserves at dormant sites are likely to be capable of being worked in the relevant period (subject to Environmental Impact Assessment and the agreement of modern

conditions) it may be possible for those reserves to be offset against the requirement for new allocations. The same logic would apply to reserves at suspended sites. The logic would only work, however, if the sites in question meet the same expectations as for other allocations, i.e. that they comply with the definition of Specific Sites or at least Preferred Areas, as given in MPPW.

5.20 Finally, it should be noted that the recommendations made above are based on currently available information regarding reserves, production, proximity and environmental capacity. As noted in 'Box 1' of the original RTS documents, the suggested apportionments and allocations do not take fully into account all factors that may be material to the ensuring an adequate supply of aggregates obtained from appropriately located sources. Such factors may include such things as:

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

5.21 For such reasons, and as already noted in Chapter 1 (para. 1.8), where it is justified by new evidence, it is open for individual MPAs to depart from the apportionment and allocation figures recommended by the RTS. In doing so, however, an MPA would need to demonstrate that their intended departure would not undermine the overall strategy provided by the RTS itself (e.g. by working together with other MPAs to ensure that sub-regional and regional totals are still achieved) and this would be likely to become a key issue at Examination and/or Public Inquiry. Where the local authorities involved are unable to reach agreement, or if individual local authorities do not accept the Regional Technical Statement, as a last resort the Welsh Government will consider its default powers to intervene in the LDP process, (MTAN 1, paragraph A3).

# 6. Consultation Process

6.1 This First Review of the RTS documents for North Wales and South Wales has been undertaken as a collaborative exercise with several stages of consultation and technical peer review.

6.2 At the outset of the project, initial consultation meetings were held with a range of stakeholders to ensure that the Review was properly focused and that key sources of information were made available for consideration. The organisations and/or representative individuals consulted were as follows:

- Steve Bool, Secretary of the South Wales Regional Aggregates Working Party
- Gary Nancarrow, Secretary of the North Wales Regional Aggregates Working Party
- Ken Hobden and others[10], representing the Mineral Products Association
- Huw Davies, of the Environment Agency Wales (EAW)*
- Karen Maddock-Jones of the Countryside Council for Wales (CCW)*
- Murray Alston of the British Aggregates Association
- Ian Selby of the Crown Estate
- Mark Russell of the British Marine Aggregate Producers Association

** From 1st April 2013, EAW and CCW combined with the Forestry Commission (Wales) to form "Natural Resources Wales" (NRW).*

6.3 The findings of this early stage of consultation are detailed in the Interim Report, issued on 28th March 2013 (pdf copies available on request from the author).

6.4 Initial drafts of the revised RTS were then produced in stages between April and September 2013. At each stage, consultation was held with a Project Steering Group made up of the RTS sub-committees of the two Regional Aggregate Working Parties (including mineral operators, mineral planning authorities and Natural Resources Wales). This consultation entailed issuing drafts for comment, Steering Group meetings chaired by Joanne Smith of the Welsh Government, and the preparation of revised drafts incorporating responses to all Steering Group comments received, including the receipt of new technical data. Each successive draft superseded previous versions.

6.5 The third draft was issued to the entire membership of both RAWPs and comments on that version were received at a joint North Wales and South Wales RAWP meeting on 30th September 2013. Following revision, a further draft was issued for wider (public) consultation and drawn to the attention of all interested parties - specifically including the Member Forums for each RAWP. That version was made available via the Websites of both RAWPs for an eight-week period of Public

[10] MPA representatives at this meeting comprised: Ken Hobden (MPA); Mark Russell (MPA); Malcolm Radcliffe (MPA); David Harding (MPA); Malcolm Lawer (Lafarge Tarmac); Ross Halley (Lafarge Tarmac); Lisa Trivett (Lafarge Tarmac); Shaun Denny (CEMEX); Simon Chaffe (Matthews & Son); and Mark Frampton (Hanson UK).

Consultation, between 28th October and 23rd December, 2013. Within that period, two consultation events were held, on 20th November at Bridgend in South Wales and on 21st November at Llandudno Junction in North Wales[11]. At each event, the RTS review process was clearly explained and the findings, including recommendations to individual MPAs, were presented for discussion and comment. This final stage of consultation was the main opportunity for elected members to scrutinise the document and to be satisfied that it was acceptable and fit for purpose, taking account of both local views and technical advice from their respective officers.

6.6 A further revision of the documents was carried out following the analysis and Steering Group discussion of the public consultation responses. Where conflicting views had been received during the Public Consultation exercise, the Steering Group advised on the most sensible and sustainable resolution, making use of their combined technical expertise.

6.7 This final edition (of the main document and both regional appendices) will be presented to a combined meeting of the two Member Forums, at which political endorsement of the document by Members representing all constituent Mineral Planning Authorities within Wales will be sought. It is not anticipated that any significant changes will need to be made following this meeting, given the extent of previous scrutiny, but if any major disagreements are encountered, these will be considered by the Welsh Government, as final arbiter.

6.8 The final edition will be endorsed for publication by the Welsh Government. The document will also be translated, at that stage, into Welsh, and electronic (pdf) copies of both English and Welsh versions will subsequently be made available via the RAWP Websites.

6.9 In the interests of sustainability, it is not intended that printed copies will be issued.

[11] Full details of these events are given on the respective RAWP Websites. Up to 40 places will be available at each event, which will be free to attend, but places will need to be booked in advance (**before 10th November**) by contacting the author (alan.thompson@cuesta-consulting.com).

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# Glossary

The following terms are frequently used in relation to aggregate supply and apportionment. The terms are listed in topic groupings rather than alphabetically.

| Term | Definition, in relation to the supply of aggregates |
|---|---|
| **TOPIC: Aggregate Materials** | |
| **Aggregate** | Crushed rock, natural sand and gravel or artificial granular material that is used in construction, often in conjunction with a suitable binding agent such as bitumen or cement. |
| **Primary Aggregates** | Aggregates sourced directly from naturally occurring geological materials as a primary product (as distinct from secondary aggregates, including excavation wastes, produced as a by-product from the extraction or processing of geological materials for other primary purposes). |
| **Secondary Aggregates** | These are usually by-products of other industrial processes, or the arisings from non-aggregates extractive operations, that have been processed to meet the specification requirements for construction aggregate materials. They can be sub-divided into manufactured and natural materials, depending on their source. Examples of manufactured secondary aggregates are pulverised fuel ash (PFA) and metallurgical (iron and steel) slags. Natural secondary aggregates include china clay sand, ball clay sand, aggregate produced from slate waste or colliery spoil and excavation wastes (as defined below). All of these are exempt from the aggregates levy, giving them a deliberate cost advantage over primary materials, in an attempt to encourage their greater use. |
| **Construction, Demolition and Excavation Wastes (CD&EW)** | A term referring to wastes (see below) arising from the construction or demolition of buildings and/or civil engineering infrastructure, or from excavations associated with land levelling, foundations or other civil engineering works. Aggregates may be derived from some of these various waste streams, either as recycled materials or from excavation wastes (both of which are defined separately below). |
| **Waste** | Any substance or object which the holder discards or intends, or is required, to discard. In CD&EW surveys, materials arising from construction or demolition works, or from associated excavations, which are beneficially used *in an unprocessed form* on the site on which they arise are generally not regarded as waste, because they are not generally regulated as waste. |
| **Road planings** | A particular example of CD&EW materials, comprising aggregate and bituminous or cement binder materials that have been 'planed' from the surface of a worn out road prior to resurfacing with new or recycled materials. |
| **Recycled Materials suitable for use as Aggregate** | These are materials, usually arising from construction or demolition projects, which have previously been used for construction purposes, and which are capable of being recycled or re-used as construction aggregates for a second or further time. In the Finance Act 2001, all materials previously used in construction are exempt from the aggregates levy, giving them a deliberate cost advantage over primary aggregates in an attempt to encourage their greater utilisation. |
| **Excavation Waste suitable for use as Aggregate** | These are materials that may be suitable, with or without processing, for use as secondary aggregates, arising from excavation works:<br>**a)** on the site of any building or proposed building, where the excavation is undertaken exclusively for the purposes of laying foundations, pipes or cables;<br>**b)** on the site of any river, canal, watercourse or navigational channel, where the excavation is undertaken exclusively for the purpose of creating, restoring, improving or maintaining that feature;<br>**c)** along the line or proposed line of any highway or proposed highway, where the excavation is undertaken for the purpose of constructing, improving or maintaining the highway and not wholly or mainly for the purpose of extracting aggregate.<br>Each of these categories, as defined more precisely in the Finance Act 2001, is exempt from the aggregates levy, giving these materials a deliberate cost advantage over primary materials in an attempt to encourage their greater utilisation. |
| **Mineral Wastes** | Mineral wastes are identified in MTAN1 as a further category of material with potential for use as aggregate. The term is specifically used to encompass aggregates from slate waste, colliery spoil, and crushed rock fines (i.e. the "dust" generated from crushing and screening operations in hard rock primary aggregate quarries). It may also include aggregates produced from the excavation and processing wastes at building stone (dimensional stone) quarries. Aggregates produced from slate waste and colliery spoil are classed as secondary materials (see above) and are exempt from the aggregates levy. The same is not true of crushed rock fines, or of the residue from building stone production, both of which remain classed as primary aggregates and are not exempt. |

| **TOPIC: Supply and Demand** | |
|---|---|
| **Production** | The overall rate at which products are generated, in tonnes (or millions of tonnes) per year, *whether or not they are sold*. In quarrying, production includes any unsaleable materials that may be produced, including overburden, interburden and processing waste, which may or may not be useable. |
| **Sales** | The rate at which products are sold, in tonnes (or millions of tonnes) per year. In quarrying, for the reasons outlined above, this will usually be less than the rate of production. |
| **Consumption** | The rate at which products are used, within a specified market area, measured in tonnes (or millions of tonnes) per year. |
| **Demand** | The need or desire for a product, backed by an ability to pay. Demand is measured over a given time period, and is affected by budgets, prices, preferences and the availability and price of alternative products. Demand for aggregates may be expressed in terms of the rate at which it is expected to be used within a particular market area (which is rarely known), or the rate at which it is expected to be supplied from a given source area, and is measured in tonnes (or millions of tonnes) per year. |
| **Supply** | The amount of a product which is supplied. Supply of aggregates is normally expressed in relation to a particular source area and is measured in tonnes (or millions of tonnes) per year. |
| **Distribution** | The pattern of market destinations served by the sales from a particular quarry or group of quarries. |
| **Proximity Principle** | The general concept of minimising the transportation of aggregates (and other bulk materials) by road, in accordance with para. 26 of MTAN1, in order to reduce associated impacts on the environment. |

| **TOPIC: Resources, Reserves and Landbanks** | |
|---|---|
| **Resources** (of primary aggregate) | Geological materials, including rocks and naturally occurring sand & gravel, which have the potential to be used as aggregates. The presence of a resource does not imply an acceptance of mineral working. |
| **Permitted Reserves** (of primary aggregate) | Primary aggregate resources which have the benefit of planning permission for the winning and working of minerals. |
| **Landbank** (of primary aggregate reserves) | In general, a landbank is a stock of planning permissions for the winning and working of minerals within a specified area, expressed both in millions of tonnes and in terms of the number of years' supply which they represent. The latter is usually calculated on the basis of recent rates of production. |
| **Current Landbank** (of primary aggregate reserves) | In MTAN1 (paragraph 45), this is defined as *"the sum of all permitted reserves at active and inactive sites at a given time and for a given area"*, and is required to be based on *"the latest 3 years production figures"* (production, in this case, usually being represented by sales). **For the purposes of this review, and in the interests of adopting a more practical approach to the strategic planning of aggregates provision in Wales, two deliberate departures from this definition were agreed by the Steering Group**. Firstly, although 'inactive sites' technically include those which are dormant or suspended, the current landbank has been taken to exclude those sites (but see also 'Dormant Reserves' below). Secondly, in recognition of the recent prolonged economic recession, the agreed method of calculating the landbank has been to use the average of the latest 10 (rather than 3) years' sales figures. |
| **Dormant Reserves** | The permitted reserves of primary aggregates at Dormant sites (see below). MTAN1 (paragraph 47) requires these to be *"clearly shown in the landbank calculations as a separate category"*. For the purposes of this review, such reserves and those at sites where permission has been suspended (see below) have therefore been excluded from the main landbank calculations used to determine future allocation requirements, though in some cases they might be able taken into account by local authorities to offset any requirement for new allocations, subject to more detailed local knowledge. |
| **Future Landbank** (of primary aggregate reserves)* | In MTAN1 (paragraph 45), the Future (or 'Extended') Landbank is defined as *"land specifically allocated for the working of aggregates"* (but see footnote below*) |
| **Apportionment** | The rate for which the mineral planning system requires provision to be made, in Development Plans, for the supply of aggregates from a given area or region. This may be expressed either in terms of millions of tonnes over a specified period, and/or as an averaged 'annualised apportionment' in millions of tonnes per year. |
| **Allocation** | The identification, within a Local Development Plan, of an area of land for future mineral working. In Wales, the size (in terms of tonnage) of allocations required in specific LDPs are defined in the Regional Technical Statements, but only for areas in which the cumulative apportionments over the period covered by the RTS are in excess of the available landbank of permitted reserves, at the time of the baseline date used in the assessment (in this case 31/12/10). |
| **Provision** | The total amount of aggregate required to be supplied from a particular local authority over the duration of its Local Development Plan. The overall provision may comprise both a landbank of permitted reserves and allocations for future working. |

* The term 'Future Landbank' is somewhat confusing, since a landbank is a stock of planning permissions and (by definition), allocations do not have this status. Allocations may thus form part of the overall 'provision' within a Local Development Plan, but cannot form part of the landbank.

| **TOPIC: Quarry Status** | |
|---|---|
| **Active Site** | Active sites in Wales are explicitly defined by the Town and Country Planning (Fees for Applications and Deemed Applications) (Amendment No.2) (Wales) Regulations 2006 as sites where *"**a)** development to which the relevant mineral permission or landfill permission relates is being carried out to any substantial extent; or **b)** other works to which a condition attached to such permission are being carried out to any substantial extent".* "Substantial extent" is not defined, but relevant guidance is provided in Minerals Planning Guidance Note 14 (MPG14): Environment Act 1995:- Review of Mineral Planning Permissions. |
| **Inactive Site** | Defined by the Town and Country Planning (Fees for Applications and Deemed Applications) (Amendment No.2) (Wales) Regulations 2006 as one *"which is not an active site",* as defined above. Inactive sites thus include, but are not limited to, those which are classified under the Environment Act 1995 as being dormant and those where planning permission has been suspended (see below). |
| **Dormant Site** | As defined in the Environment Act 1995, this refers specifically to quarries with mineral permissions granted between 30th June 1948 and 22nd February 1982 (i.e. "Phase I" and "Phase II" sites, as defined in the Act) where no minerals development was carried out to any substantial extent in, on, or under the site at any time in the period beginning on 22 February 1982 and ending with 6 June 1995. These sites still have valid planning permissions but, since 1st November 1995 it has not been lawful to recommence or carry on working a dormant site until full modern planning conditions have been approved by the Mineral Planning Authority (MPA), through the process of an initial ROMP review (see below).<br><br>In some areas there are additional, 'dormant IDO' sites, as defined within the Planning and Compensation Act, 1991. These are sites which were originally granted consent under 'Interim Development Orders' (IDOs), in the period between 22 July 1943 and 1 July 1948, and which were subsequently registered under the 1991 Act (thus retaining valid planning permission), but where no substantial work was carried out between 1 May 1989 and 30th April 1991. For these sites, a scheme of operation and restoration conditions is required to be submitted to the relevant MPA together with an acceptable Environmental Assessment, before they can lawfully be reactivated. |
| **ROMP** | The acronym for 'Review of Old Mineral Permissions' carried out in accordance with the Environment Act 1995. Sites which obtained planning permission between 1948 and 1982, whether active, inactive or dormant, were required by this Act to be subject to an Initial Review in order that modern planning conditions can be agreed. In addition, all sites (including reactivated ISO permissions) are required to be subject to subsequent Periodic Reviews at intervals of not less than 15 years. ROMP applications cannot be refused, since valid planning permissions already exist.<br><br>However, court judgments, guidance and regulations have since clarified that both the ROMP process, and the approval of new conditions at IDO sites, amount to obtaining new development consents and are therefore subject to Environmental Impact Assessment. |
| **Stalled ROMP / Suspended Permission** | Where a ROMP review has begun but has not been completed (e.g. because an Environmental Statement has not been submitted), the ROMP process is said to have 'stalled'. In accordance with the Town and Country Planning (Environmental Impact Assessment) (Undetermined Reviews of Old Mineral Permissions) (Wales) Regulations 2009, planning permission then becomes 'suspended' - i.e. it ceases to authorise any minerals development. As with dormant sites, suspended permissions cannot lawfully be operated until the process (including Environmental Impact Assessment) has been completed and modern conditions agreed. |

# Abbreviations

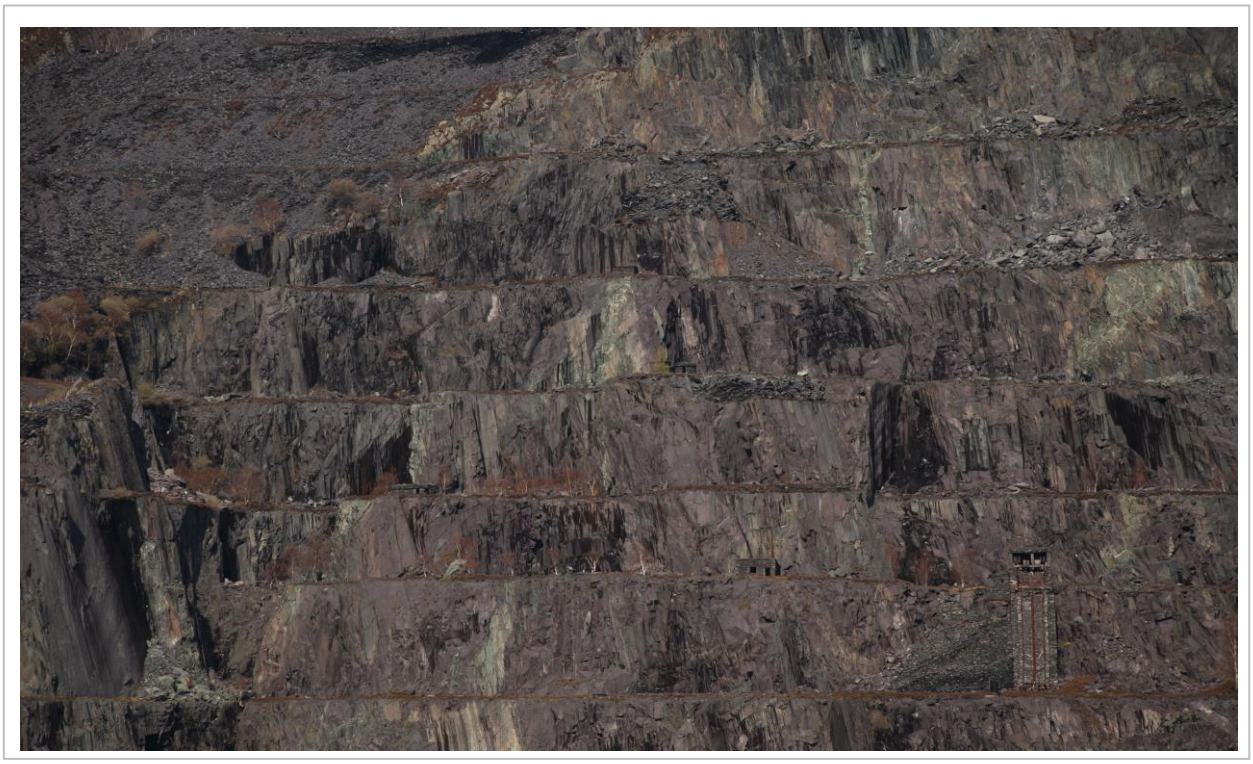
The following abbreviations are commonly used throughout the RTS.

| | |
|---|---|
| AAV | Aggregate Abrasion Value |
| AM survey | Aggregate Minerals survey |
| AONB | Area of Outstanding Natural Beauty |
| BAA | British Aggregates Association |
| BGS | British Geological Survey |
| BMAPA | British Marine Aggregate Producers Association |
| CD&EW | Construction, Demolition and Excavation Waste |
| CPRW | Council for the Protection of Rural Wales |
| DCLG | Department of Communities and Local Government |
| EA | Environmental Assessment |
| EC | European Commission |
| EIA | Environmental Impact Assessment |
| EMAADS | Establishing a Methodology for Assessing Aggregates Demand and Supply (project title) |
| ES | Environmental Statement |
| EU | European Union |
| FBA | Furnace Bottom Ash |
| GDP | Gross Domestic Product |
| GIS | Geographic Information System |
| HMRC | Her Majesty's Revenue & Customs |
| HSA | High Specification Aggregate |
| IDO | Interim Development Order |
| IMADP | Interim Marine Aggregates Dredging Policy |
| IMAECA | Implementing the Methodology for Assessing the Environmental Capacity for primary Aggregates (project title) |
| ISO | International Organisation for Standardisation |
| LDP | Local Development Plan |
| LPA | Local Planning Authority |
| MASS | Managed Aggregate Supply System |
| MPA | Mineral Planning Authority<br>(also, Mineral Products Association) |
| MPPW | Minerals Planning Policy Wales |
| mt | Million tonnes |
| mtpa | Million tonnes per annum |
| MTAN | Minerals Technical Advice Note |
| NPA | National Park Authority |
| NRW | Natural Resources Wales |
| OBR | Office of Budget Responsibility |
| PFA | Pulverised Fuel Ash |
| POS | Planning Officers Society |
| PSV | Polished Stone Value |
| RAWP | Regional Aggregate Working Party |
| ROMP | Review of Old Mineral Permissions |
| RTS | Regional Technical Statement |
| SAC | Special Area of Conservation |
| SEA | Strategic Environmental Assessment |
| SSSI | Site of Special Scientific Interest |
| WG | Welsh Government |

# Regional Technical Statement

## (1st Review)

## Appendix A (North Wales)



*Final Edition (endorsed) - 1st August 2014)*

North Wales
Regional
Aggregates
Working Party

Llywodraeth Cymru
Welsh Government

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# Appendix A: North Wales Region - Detailed Analysis & Recommendations

## *Introduction*

A1. This appendix is intended to complement, and should be read in conjunction with, the main document of the First Review of the Regional Technical Statement (RTS). It provides additional detail, specific to the North Wales RAWP Region, relating to the analysis of demand and the consideration of existing supply patterns. This information then feeds back into the determination of new apportionments and allocations (where required) for future aggregate provision, as presented in Chapter 5 of the main text. The final part of the Appendix incorporates that information into specific recommendations and guidance for each individual Mineral Planning Authority within North Wales.

## *Sub-Regional Analysis of Demand in North Wales*

A2. As explained in Chapter 3 of the main text, the starting point for assessing the future demand for aggregates over the period covered by the revised RTS (i.e. 2011-2036) has been taken to be the average of actual or estimated sales figures for the preceding 10 year 'baseline' period (2001 to 2010), within each MPA.

A3. The historical sales represent the demand that has been placed *upon* those authorities in terms of aggregates required within those areas and elsewhere, including exports to England, particularly from the sites within North East Wales.

A4. They also represent the *residual* demand for land-based primary aggregates over that period, since the overall demand was partly satisfied by supplies from secondary, recycled and marine aggregate sources, as well as by imports from primary aggregate sources in England (though these are generally very limited).

A5. The figures for North Wales are shown in Table A1, below. The origin of the data is explained fully in Chapter 3 of the main text.

**Table A1: Summary of average sales figures for land-based primary aggregates in North Wales, 2001 - 2010**

| Mineral Planning Authority | Land-won Sand & Gravel Aggregates (mtpa) | Crushed Rock Aggregates (mtpa) |
|---|---|---|
| Wrexham | 0.58 | 0 |
| Flintshire | 0.31 | 2.94 |
| Denbighshire | 0.02 | 0.89 |
| Conwy + Snowdonia NP | 0 | 1.23 |
| Anglesey | 0 | 0.38 |
| Gwynedd | 0.17 | 0.37 |
| **Sub-totals, North Wales** | **1.08** | **5.80** |

SOURCE: Collated by the North Wales RAWP secretary from confidential MPA data, for publication in annual RAWP reports, but refined in some cases from other public domain information (e.g. planning applications, Inspectors' reports and LDP documents) to provide a more detailed or updated breakdown.

A6. The figures show that the supply of land-won sand & gravel has been dominated by Wrexham and Flintshire, this being largely a reflection of their proximity and good access to the main market areas in both North East Wales and adjoining parts of North West England. It also reflects the existence of substantial glacio-fluvial sand & gravel resources in those areas - particularly to the east of Wrexham. Whilst similar deposits exist in North

West Wales, particularly in Gwynedd, these are less well-placed to serve the main markets, and production there is therefore more limited.

A7. In the case of crushed rock aggregates, historical demand has again been focused primarily on North East Wales, and for the same reasons, but in this case the materials have overwhelmingly been supplied from Flintshire. This reflects the extensive resources of high quality Carboniferous Limestone within relatively unconstrained areas to the east of the Clwyddian Hills AONB, in contrast to the situation in Wrexham, where the continuation of these resources falls almost entirely within the AONB. Significant quantities of limestone from Flintshire, including high purity limestone for industrial uses, are exported into England, and some are used for cement manufacture at Padeswood near Mold. Limestone production also takes place elsewhere in North Wales, together with igneous rock and slate production, particularly in Gwynedd. In the case of Conwy, the output figures incorporate sales from one small igneous rock quarry within the Snowdonia National Park, in order to maintain confidentiality. Further observations on the supply pattern in North Wales, including the relationships between resources, markets and environmental capacity, are given in paragraphs A28 onwards, below.

A8. By default, the use of historical sales data as a basis for estimating future demand provides a built-in allowance for the supply of secondary, recycled and marine aggregates, assuming that these various factors will continue as before (with different levels of contribution in each MPA). It also assumes that the factors influencing the overall scale of construction activity will remain broadly unchanged. In practice, adjustments may need to be made in order to reflect changes in any of these factors which are considered likely to occur in future years, within each MPA.

A9. The need for any such adjustments to be made is assessed below, both for North Wales as a whole and, where appropriate, for individual sub-regions or MPAs. The issues are considered under the headings of:

- **supply factors** (relating to the continued availability of alternative materials),
- **import/export factors** and
- **demand factors** (relating to influences on overall construction activity).

A10. In each case, the observations relate to the anticipated changes compared to the average conditions over the 2001-2010 baseline period, and they relate only to the reasonably foreseeable future (no more than 10 years), since longer-term predictions are likely to be unreliable. It is important that these observations are kept under review and adjusted each time the RTS is revised.

## Anticipated Changes in Supply Factors

### Secondary Aggregates

A11. Secondary aggregates comprise the by-products of various industrial processes, including metallurgical slags and power station arisings, but also the by-products from certain types of non-aggregate mineral extraction, such as colliery spoil and slate waste, and from the recycling of glass, ceramics, asphalt planings and rail ballast[1].

A12. Aggregate production from metallurgical slags and from coal-fired power station arisings, no longer occurs in North Wales. Small amounts of aggregate minerals (sandstone and occasionally sand) arise adventitiously from the reworking of former colliery spoil tips or from the working of opencast coal. In North Wales, almost all former colliery waste tips (mainly in Flintshire/Wrexham) have been either landscaped as part of reclamation schemes or utilised for base fill material. Volumes still available have not been assessed recently but are understood to be small or insignificant.

[1] it might appear more logical to group these substances under CD&EW. However, the coverage of CD&EW is already well defined in terms of survey returns, so those items are included here as secondary aggregates.

A13. In North Wales, crushed slate, derived either from slate waste (as a by-product of roofing material production) or quarried specifically for use as primary aggregate, features significantly in the overall pattern of supply, especially in Gwynedd. Both categories are included in the overall figures for crushed rock production within the North Wales RAWP reports and, over the 10-year baseline period, have accounted for between 5.3% and 16.2% of total crushed rock sales, with evidence of a rising trend in both proportion and actual sales up to a peak in 2007. Although output has since fallen during the current recession, the proportions have remained high in the period up to 2010 (between 11.7 and 14.8%). This suggests an underlying increase in the market for slate aggregate, reflecting its increasing acceptance by users, as well as the price advantage associated with the exemption of this material from the Aggregates Levy (but see next paragraph). However, given that slate production is already included in the crushed rock statistics, this trend has no implications for the overall level of future demand, only for the balance between slate and other types of crushed rock.

A14. In August 2013, HMRC announced that a European Commission investigation into certain exemptions and reliefs contained within the aggregates levy was being undertaken to determine whether or not these amounted to 'State Aid' (Revenue & Customs Brief 24/13). Of particular relevance to Wales, these materials include slate, shale, colliery spoil and (perhaps) aggregates made from metallurgical slag. On 18th December 2013, the Government published draft legislation on the suspension of these exemptions (Finance Bill 2014). Final details of the EC investigation are currently awaited but the implication is that they could have significant implications for the balance between primary and alternative aggregates, if the exemptions are found to be unlawful. These implications have not yet had chance to be factored into the following analysis. However, the Government is strongly of the view that the exemptions in question do not give rise to State aid, and is providing information to the Commission to support that view as part of the formal investigation process. The Bill incorporates provisions for secondary legislation to restore any suspended exemptions, if appropriate, following the outcome of the EC investigation.

**Recycled Aggregates**

A15. Aggregates produced from construction, demolition and excavation wastes (CDEW), but excluding asphalt planings, recycled rail ballast and recycled glass, form an important contribution to the overall consumption of construction aggregates. The 2008 RTSs noted a total output for the whole of Wales of 3.97mt, based on 2005 survey data, and suggested a roughly 3 to 1 split between South Wales and North Wales, based on earlier surveys and population ratios. They also noted that, despite the lack of quantitative detail, it is inevitable that the greatest volumes of CD&EW arisings and usage are in the urban areas. The RTS documents emphasised, however, that all statistics for this sector need to be used with a high degree of caution, because of the low rate of response to the surveys.

A16. The situation, in terms of available data, has not improved since the original RTSs were published. No new survey data is available, so any observations on recent or future trends can only be regarded as broad approximations. If anything, the efficiency of recycling is likely to have increased, and the introduction of WRAP's (2005) 'Quality Protocol' for the production of aggregates from inert waste may have increased the proportion and usage of higher value products derived from the various recycled sources. Such improvements, however, represent only small increments on the progress which had previously been made - primarily as a consequence of the price advantages resulting from the landfill tax and, to a lesser extent, the aggregates levy. The industry view is that there is little opportunity for significant further increase in the proportion of construction aggregate likely to be derived from this sector. The future availability of recycled aggregates is likely to be inextricably linked to the overall rates of construction activity and economic growth, so the safest assumption is that it will rise and fall in a very similar way to overall demand, and will thus have a neutral impact on the demand for primary aggregates, compared to the baseline period (2001 to 2010).

**Marine-dredged Aggregates**

A17. In North Wales, very little marine-dredged sand & gravel is used. The figures for marine aggregates are combined, in the annual RAWP reports, with those for land-won sand & gravel, but are understood (from the 2008 RTS) to be in the order of 45,000 tpa (although only 32,000 in AM2009 survey). Dredging licences within the coastal waters of North Wales are primarily used to supply Merseyside, with substantial quantities being landed in Liverpool. This, in turn, offsets the pressure for exports to NW England from land-based resources in N Wales.

A18. For the time being, it seems reasonable to suppose that marine-dredged aggregates will continue to supply a similar (very small) proportion of overall demand as they have done over the last decade, so the demand for land-won aggregates in any of the MPAs in North Wales is not likely to be affected.

## Anticipated Changes in Import/Export Factors

A19. Wales has always been a net exporter of land-won aggregates. Data on both exports and imports is recorded in the 4-yearly Aggregate Minerals (AM) Surveys, and data for exports in the last three surveys is summarised in Table A2, below. In North Wales, the main aggregate exports, by far, are those of Carboniferous Limestone which primarily (more than 90% in 2005 and almost 100% in 2009) are supplied to North West England. These exports, in turn, are sourced primarily from the NE Wales sub-region (mostly from Flintshire) with smaller quantities from NW Wales (notably from Conwy). The AM Survey figures generally show that, as overall sales have fallen in recent years - particularly since 2005, the proportion (as well as the totals) of exports also fell. This implies that, during periods of recession, for general-purpose limestone aggregates, there is a reduced dependence by importing regions on supplies from more distant sources, as would be expected. But the reverse is also likely to be true: as the economy rebounds from the current recession in future years, the demand for exports from North Wales is likely to increase once again, and more quickly than the overall rate of economic growth. However, whether or not this will reach or exceed the levels of demand experienced in the 2001 to 2010 baseline period cannot be certain: it will depend, to a large extent, on the future level of economic growth and construction activity within North West England.

**Table A2: Summary of key export statistics for North Wales from recent AM surveys**

| *Note: all figures exclude sales for non-aggregate use* | **AM2001** (mt) | **AM2005** (mt) | **AM2009** (mt) |
|---|---|---|---|
| **North Wales** | | | |
| Land won Sand & Gravel Sales | 1.342 | 1.192 | 0.589 |
| S&G Exports* | 0.544 | 0.508 | 0.128 |
| **Exports as % of S&G total** | **41%** | **43%** | **22%** |
| Limestone Sales | 6.062 | 4.641 | 2.636 |
| Limestone Exports* | 3.344 | 2.973 | 1.116 |
| **Exports as % of Limestone total** | **55%** | **64%** | **42%** |
| Igneous Sales | 1.136 | 1.022 | 0.610 |
| Igneous Exports* | 0.091 | 0.277 | 0.064 |
| **Exports as % of Igneous total** | **8%** | **27%** | **10%** |
| Sandstone Sales | 0 | 0 | 0 |
| Sandstone Exports* | 0 | 0 | 0 |
| **Exports as % of Sandstone total** | **0%** | **0%** | **0%** |
| Total Crushed Rock Sales** | 7.198 | 5.663 | 3.245 |
| Total CR Exports* | 3.436 | 3.251 | 1.178 |
| **CR Exports as % of CR total** | **48%** | **57%** | **36%** |

* 'exports' includes movement between North Wales and South Wales, as well as to other regions (mostly in England).
** crushed rock sales exclude slate

A20. Imports of land-based aggregates are very minor, by comparison with exports. In North Wales, imports amounted to just 0.03mt of land-won sand & gravel (from England), and only 0.653mt of crushed rock, more than 90% of which comprised igneous rock and sandstone from neighbouring South Wales.

## Anticipated Changes in Economic Demand Factors

A21. Before considering future changes it is worth considering the relationships between aggregate sales and economic factors over the baseline period (2001 to 2010). Since economic growth/recession figures are available only for the country as a whole, this analysis is presented in the main text rather than in this Regional appendix (see paragraphs 3.34 onwards), with only a brief summary given here.

A22. The analysis used annual GDP change figures, for the UK as a whole, as a broad indicator of economic activity, and compared these to the annual series of aggregate sales data from individual RAWP reports. The GDP figures clearly show the onset of the recession in 2008 and 2009, and the modest level of growth in 2010, compared with the earlier parts of the baseline period, broadly tying-in with the available sales data. Since 2010, GDP growth has fallen back again, but the average growth (from out-turn and forecast) from 2011 to 2018, is 1.88% per annum. This compares with an average of 1.78% per annum for the 2001 to 2010 baseline period and suggests that demand figures up to 2018 are, if anything, likely to be slightly higher than those for the baseline period. Consideration also needs to be given, however, to the possibility of a return to more substantial growth in the period beyond 2018. Whist there is currently no evidence to quantify or even suggest such growth, it would be prudent to allow for it, in order to avoid the risk of under-provision.

A23. Other potential sources of information that have been considered regarding the likely future demand for construction aggregates include population growth forecasts and Local Authority housing forecasts, though neither of these provide any clear indications of changes in demand within the short to medium-term future.

A24. Aside from predictions of economic growth and associated general construction activity, a further important element in the demand for aggregates is that relating to major infrastructure projects. Consultation with the North Wales RAWP Technical Secretary and RAWP members has suggested that such projects may include the following:

- Caernarfon bypass construction;
- Redevelopment of the Wrexham industrial estates, including the construction of a proposed major new prison;
- North Wales Gateway Project, including redevelopment of the former Shotton steelworks sites and of the former RAF Sealand site near Queensferry;
- New nuclear power station at Wylfa on the Isle of Anglesey;
- Numerous large scale wind farm proposals (land-based and offshore);
- Tidal/wave power schemes;
- Possible supply of stone from coastal quarries in North Wales to the proposed tidal lagoon project in Swansea Bay and armourstone to coastal defence projects;
- Possible future expansion of Harwarden as a Regional Airport and to accommodate Airbus manufacturing; and
- A55 North Wales coast road upgrade.

A25. Additional projects, focused on adjoining parts of north west England but still potentially capable of influencing future aggregate demand in North Wales include:

- Wirral Waters (site of the former docks in Birkenhead);
- Liverpool 2 Docks;
- Ince(Peel) "ecopark and energy plant " near Ellesmere Port;

- Mersey Gateway (second Mersey crossing) near Runcorn; and
- Possible linking of East-West and North-South rail lines near Chester.

A26. The likelihood of any of these projects coming forward in the short, medium and long term is difficult to predict, and in part depends upon investor confidence and Government commitment. There is therefore no clarity, at present, on the timescales involved or on the associated demand for construction aggregates. Equally, however, there is no readily available information on the quantities of aggregates used in major projects that were undertaken during the baseline period (2001 to 2011), and therefore no basis for any meaningful comparison between the recent past and the short- to medium-term future.

### Summary of Sub-Regional Demand Assessment

A27. Subject to the outcome of HMRC's decision regarding the possible suspension of certain exemptions from the Aggregates Levy, and to the outcome of the formal EC investigation into those exemptions (see para. A14 above), little justification has otherwise been found for modifying the assumption that future demand *upon* MPAs in North Wales should be based simply on the average sales figures for the baseline period (2001 to 2010), as detailed in Table A1, above, subject to any fine-tuning of the balance between individual MPAs to take account of proximity and environmental capacity issues, as discussed in the following section. Whilst there is some evidence that short term rates of economic growth are likely to be slightly higher than those seen during most of the baseline period, implying a slightly increased level of demand in future years, there is also a need to allow for the possibility of further increased growth during later years within the period covered by the revised RTS. That possibility is at least hinted at by future projections of population growth, but is also in keeping with the more general long-term economic cycle of peaks and troughs. If the Aggregate Levy exemptions are suspended, or if the Levy itself is eventually abolished, this would have significant implications in terms of the future demand for primary aggregates. Whilst it would not be justified to rely to such factors in terms of clear predictions, it would be prudent not to ignore them for the purposes of ensuring an adequate level of future provision of construction aggregates.

## *Sub-Regional Analysis of Supply Patterns in North Wales*

A28. Figures A1 to A6 illustrate the spatial patterns associated with individual mineral types (or in some cases two mineral types where these are clearly separated and where they are at least partially interchangeable in terms of aggregate end-uses - e.g. limestone and slate or sandstone and igneous rock).

A29. In each case there are two maps. The first one deals with 'proximity' issues (i.e. the relationships between resources, quarry locations, major roads and the distribution of both population density and urban areas). The second one then deals with environmental capacity issues (using the output from the IMAECA analysis).

A30. As noted in the main document, it must be emphasised that these maps show the extent of potential resources and not reserves or permitted reserves. **Resources** are geological materials, including rocks and naturally occurring sand & gravel, which have the potential to be used for a particular purpose (in this case as construction aggregates). **Reserves** are those parts of a resource which known to be suitable for this purpose (usually as a result of detailed ground investigations and laboratory testing) and **permitted reserves** are those reserves which have valid planning permission for the winning and working of the materials in question.

A31. All of the maps are presented at the same scale (slightly smaller than the scale used for South Wales in Appendix B). All of the quarry locations shown on the maps are detailed in Tables A3 to A5, later in this Appendix.

A32. As noted in the main document, not all of the roads shown on the 'proximity' maps are necessarily used for the transportation of aggregates, and that additional local roads will also be utilised close to individual quarries, distribution depots or customer locations.

Equally, some of the exported material is transported by rail, though the quantities involved are not large. Together, the areas of high population density and the main urban areas provide a good indication of where construction activity is most likely to be concentrated, but the locations of major transport routes have an additional important influence on export distribution.

## Carboniferous Limestone

A33. The distribution of Carboniferous Limestone quarries and resources in North Wales is shown on Figures A1 and A2. The majority of existing quarries, and most of the resources, are located within Flintshire, which is also (by far) the main supplier (see Table A1, above).

A34. Significant parts of the resource, particularly within Denbighshire and Wrexham, are constrained by the recently expanded Bryniau Clwyd AONB. To a lesser extent the Ynys Môn AONB constrains resources on the Isle of Anglesey. Plentiful resources exist outside of these areas, however, within other parts of Denbighshire and Anglesey, as well as in Conwy and Flintshire. Of these, the resources in Flintshire are closest to the main centres of demand, in terms of population density, existing urban areas and access (via the A55) to the major markets of Merseyside and North Cheshire. In this respect, Flintshire would represent an obvious preference for any future limestone resources that may need to be developed, both in terms of proximity to markets and of avoiding the AONBs.

A35. However, reference to Figure A2 suggests there may be less scope for such development in terms of environmental capacity, except in some parts of northern Flintshire. There would seem to be greater scope, in this respect, within parts of Conwy and north Denbighshire, where proximity factors are less compelling in terms of exports to England but are good in terms of supplying urban areas and infrastructure projects along the North Wales coast. These are issues which would need to be considered in more detail as and when new allocations are required.

A36. Existing crushed rock landbanks in Anglesey and Gwynedd are currently less than the total provision of 25 years required by the RTS, although opportunities for increasing these, in terms of new Carboniferous Limestone allocations, are very limited. No limestone resources exist within Gwynedd and those in Anglesey are either within the Ynys Môn AONB (Fig. A1) or largely within areas of low environmental capacity (Fig. A2). There are, however, extensive igneous rock resources in both of these areas, and additional resources of slate (outside as well as within the Snowdonia National Park) in Gwynedd (see below). But given the relatively limited population density, urbanisation and major infrastructure development within Anglesey and Gwynedd, compared to the situation further east, there may be merit in reducing the future crushed rock apportionments in these areas and increasing those in Conwy, Denbighshire, Flintshire and Wrexham. This suggestion is carried forward to the discussion about future apportionments and allocations within Chapter 5 of the main document.

A37. At present, Wrexham provides no contribution at all in terms of crushed rock production (though it provides the major share of sand & gravel output), and its reserves of both limestone and slate are now almost entirely within the expanded AONB. Whether or not there is scope for any crushed rock resources to be developed here is a matter of detail which lies beyond the resolution of the RTS. It may be prudent, however, to consider a joint apportionment with Flintshire, with the expectation that the two MPAs co-operate to find an optimum solution. This, again, is considered further in Chapter 5 of the main document.

## Slate

A38. Figures A1 and A2 also illustrate the distribution of slate resources and production sites within North Wales. The latter include both quarries, where new slate is extracted as a primary aggregate, and existing slate waste tips, where material is reprocessed as a secondary aggregate, either under a specific planning permission or as deemed development rights under Part 23, Class B of the GPDO. Both of these are counted as primary aggregate within the North Wales RAWP reports (see para. A13 above) but both

are also exempt from the Aggregates Levy, simply on the basis of rock type. The majority of current slate aggregate production is associated with sites located either immediately outside the north-western boundary of the Snowdonia National Park (particularly at Penrhyn slate quarry and tip, near Bethesda), or (on a much smaller scale) around Blaenau Ffestiniog, which is located centrally within (but excluded from) the National Park. Two other currently active units are located to the north of Llangollen within the Bryniau Clwyd AONB in Denbighshire, but these are understood to produce little or no aggregate material other than decorative chippings.

A39. Given that most slate aggregate is used locally within NW Wales, and that most of the resources are constrained by the National Park or the AONB, there is little to suggest that the existing supply pattern either needs to change or is capable of doing so. There is scope for the output from established sites in Gwynedd to increase, in response to any future rise in demand in the NW Wales sub-region, but there is limited (if any) likelihood of this material displacing sales of limestone aggregate to the main markets in North East Wales and North West England. This could potentially happen if there were to be a significant increase in the Aggregates Levy, giving slate aggregates a further price advantage, but the reverse could be true if the Aggregates Levy were to be abolished, in line with the ongoing legal challenge being pursued by the British Aggregates Association. Moreover, any potential sustainability benefits associated with increased use of slate waste would need to be balanced against the increased radius of transportation from sites within Gwynedd, which would be contrary to the proximity principle. Thus, although Gwynedd is facing a slight shortfall of crushed rock reserves compared with the total level of provision required to maintain the existing supply pattern over 25 years (see Table 3.7 in the main document), it may be sensible to adjust the future apportionments so that the shortfall is effectively transferred to limestone production further east instead, as suggested above. Again, this suggestion is carried forward to the discussion about future apportionments and allocations within Chapter 5 of the main document.

## Igneous Rock and Sandstone

A40. The resources and production sites for both igneous rock and sandstone within North Wales are illustrated in Figures A3 and A4. A high proportion of both types of resource are constrained by the Snowdonia National Park and/or by one of the three AONBs. There are, nevertheless, outcrops of both resource types outside of these areas, particularly in Gwynedd, Conwy and Anglesey.

A41. The term ‘igneous rock’ is used here, and in the maps, as shorthand for ‘igneous and metamorphic rock’, which in practice covers an extremely wide range of rock types, but all with similar suitability for use as general purpose hard rock aggregates. In some cases, (shown on the maps as ‘HSA Dolerite’), the rocks are suitable for use as High Specification Aggregate (as defined in Chapter 4 of the main document) and are worked as such at Minffordd near Porthmadog in Gwynedd. This is currently the only unit in this group which exports aggregate to England. Penmaenmawr diorite quarry on the north coast of Conwy was formerly an exporter of rail ballast to England, by rail, but ballast production here has been greatly reduced since 2008, when the contract to supply Network Rail was lost. All other quarries in this group tend to supply only local markets, although, in the recent past, these have included major contracts such as upgrading the A55 North Wales Coast road and the A5 across Anglesey. In the future, the same resources may be called upon for many of the potential major infrastructure projects listed at para. A24, above.

A42. The sandstone resources shown on the Figures A3 and A4 are also potentially suitable for use as HSA, although none have ever been worked for this purpose (not least because of their distance from significant markets for this material and their unproven reliability compared with HSA sandstone resources in South Wales). Weaker sandstones were, until recently, worked for local use in eastern Flintshire, but those sites are no longer operational and the resources are not shown on the maps. As a consequence, there are no active sandstone quarries in North Wales at all at the present time.

A43. Whilst there is potentially scope for the further development of igneous rock resources in both Anglesey and Gwynedd, and whilst the crushed rock landbanks in these areas are less than the total provision required to maintain the existing pattern of supply, this may not be the best way forward. As noted in para. A36, above, there is likely to be more benefit (in terms of the proximity principle, at least) in rebalancing future apportionments such that the additional allocations required are found in other parts of North Wales, further east, and are provided from Carboniferous Limestone, rather than from igneous rock or sandstone resources.

### Land-based Sand & Gravel

A44. In the case of land-based sand and gravel extraction, as illustrated in Figures A5 and A6, the current supply pattern is dominated by one site within Wrexham, although smaller contributions are also made by four other active pits: one other in Wrexham, two in Flintshire and one in Gwynedd.

A45. Whilst the Wrexham sites are ideally placed in relation to the markets of NE Wales and adjoining parts of NW England, they are much further away from the smaller but important local markets along the North Wales coast of Denbighshire and Conway, and much further still from those in both Gwynedd and Anglesey. From a proximity point of view there is therefore a need to maintain adequate supplies to those areas from other sites, and this will need to be reflected in future apportionments and allocations. In terms of environmental capacity, there would seem to be potential opportunities in north Denbighshire and in Gwynedd (both to the east and south of Caernarfon, within resource blocks identified by the Liverpool University (2003) study), and at the eastern end of the Llŷn Peninsula. It is suggested therefore that apportionments are adjusted so that future allocations for sand & gravel provision in North Wales are focused on these areas in order to generate an improved balance of supply sources.

A46. This, however, is dependent upon suitable resources being available within Denbighshire and/or Gwynedd. More specifically, resources are needed which include an appropriate balance between fine aggregate (sand) and coarse aggregate (gravel). If that cannot be achieved, the fine aggregate fraction might still need to be supplied from NE Wales or, perhaps, from marine-dredged sources off the North Wales coast.

## *Current Sources of Supply in North Wales*

A47. Tables A3 to A5, below, list the currently active, inactive and dormant aggregate quarries in North Wales (updated to August 2013). The lists exclude quarries devoted to the manufacture of cement, building stone, silica sand, shale or other non-aggregate products.

**Table A3: Active Aggregate Quarries in North Wales (2013)**

| Quarry Name | Operator | Commodity | Easting | Northing |
|---|---|---|---|---|
| **CONWY** | | | | |
| Abergele | Hanson Aggregates | Limestone | 296700 | 375800 |
| Penmaenmawr | Hanson Aggregates | Igneous | 270135 | 375515 |
| Raynes | CEMEX UK | Limestone | 289000 | 378190 |
| **DENBIGHSHIRE** | | | | |
| Berwyn | Berwyn Slate Quarry Ltd | Slate | 318500 | 346300 |
| Graig | Lafarge Tarmac | Limestone | 320500 | 356500 |
| Moel y Faen | Jones Bros Ruthin (Civil Engineering) Co Ltd | Slate | 318700 | 348100 |
| **FLINTSHIRE** | | | | |
| Aberdo | D P Williams Holdings Ltd | Limestone | 318700 | 373300 |
| Fron Haul | Lloyds Quarries & Sand & Gravel Co Ltd | Sand & Gravel | 315700 | 370600 |
| Halkyn | CEMEX UK | Limestone | 319000 | 372000 |

| | | | | |
|---|---|---|---|---|
| Hendre | Lafarge Tarmac | Limestone | 319400 | 368000 |
| Maes Mynan | Lloyds Quarries & Sand & Gravel Co Ltd | Sand & Gravel | 311500 | 372100 |
| Pant | Lafarge Tarmac | Limestone | 319800 | 370200 |
| **GWYNEDD** | | | | |
| Aberllefenni Slate Waste | Robin Meredith, Arthog Slate Co | Slate Waste | 276920 | 310290 |
| Alexandra | Caernarfonshire Crown Slate Quarries | Slate + Slate Waste | 251800 | 356105 |
| Alexandra Bach | Caernarfonshire Crown Slate Quarries | Slate Waste | 251860 | 356190 |
| Bryn-Fferam | Wynne's Transport Ltd | Slate Waste | 251810 | 355495 |
| Bryntirion Tip, Gloddfa Ganol | Welsh Slate | Slate Waste | 269325 | 347590 |
| Cefn Graianog | Tudor Griffiths Group | Sand & Gravel | 246000 | 349500 |
| Crown New | Caernarfonshire Crown Slate Quarries | Slate Waste | 251205 | 355465 |
| Hafod-Y-Wern | Gwilym Elias Owen | Slate Waste | 253135 | 357215 |
| Llechwedd | G H James Cyf. | Slate Waste | 270000 | 346680 |
| Llechwedd | Greaves Welsh Slate Co Ltd | Slate | 270200 | 346800 |
| Manod | Welsh Slate | Slate | 273100 | 345400 |
| Minffordd (HSA) | Lafarge Tarmac | Igneous | 259400 | 339100 |
| Penrhyn | Welsh Slate | Slate Waste | 261460 | 365960 |
| Penrhyn Slate Quarry | Welsh Slate | Slate | 261290 | 363780 |
| Pen-yr-Orsedd | Welsh Slate | Slate | 250745 | 354070 |
| Trefor | R T Davies | Igneous | 236100 | 345900 |
| Ty Mawr East | Watkin Jones & Son Ltd | Slate Waste | 249695 | 352530 |
| Ty Mawr West | D W & E W Jones | Slate + Slate Waste | 249650 | 352450 |
| Tyn-y-Weirglodd | Welsh Slate | Slate Waste | 249450 | 352195 |
| **ISLE OF ANGLESEY** | | | | |
| Aber | Anglesey Masonry Ltd | Limestone | 250300 | 386650 |
| Gwalchmai | The Hogan Group | Igneous | 238175 | 376990 |
| Gwyndy | The Hogan Group | Igneous | 239955 | 379665 |
| Hengae | The Hogan Group | Igneous | 244000 | 368600 |
| Nant Newydd | W J Owens & Sons | Limestone | 248100 | 381100 |
| Rhuddlan Bach | Clive Hurt Plant Hire Ltd | Limestone | 248600 | 380700 |
| **SNOWDONIA** | | | | |
| Braich Ddu | John Roberts | Slate Waste | 271985 | 338460 |
| Craig y Tan | G E Williams | Igneous | 271349 | 336224 |
| Ty'n-y-Coed | Robin Meredith, Arthog Slate Co | Slate Waste | 265030 | 315275 |
| **WREXHAM** | | | | |
| Ballswood | DP Williams Ltd | Sand & Gravel | 335200 | 356600 |
| Borras | Lafarge Tarmac | Sand & Gravel | 336300 | 352500 |

**Table A4: Inactive Aggregate Quarries in North Wales (2013)**

| Quarry Name | Operator | Commodity | Easting | Northing |
|---|---|---|---|---|
| **CONWY** | | | | |
| Llanddulas | Waste Recycling Group | Limestone | 290300 | 377460 |
| Plas Gwilym | Plas Gwilym Environmental | Limestone | 287850 | 378100 |
| **DENBIGHSHIRE** | | | | |
| Burley Hill | Lafarge Tarmac | Limestone | 320280 | 360075 |
| Denbigh | Hanson Aggregates | Limestone | 305090 | 367050 |
| **FLINTSHIRE** | | | | |
| Ddol Uchaf | Lloyds Quarries & Sand & Gravel Co Ltd | Sand & Gravel | 313800 | 371500 |
| Pen-yr-Henblas | Grosvenor Estate | Limestone | 319100 | 372900 |
| **GWYNEDD** | | | | |
| Aberllefenni Mine | Wincillate Ltd | Slate | 276920 | 310290 |
| Ffestiniog | Welsh Slate | Slate + Slate Waste | 269206 | 347186 |
| Greenarfon | Mulcair Ltd | Slate Waste | 246950 | 350840 |
| Llecheiddior Uchaf | | Sand & Gravel | 247133 | 344656 |
| Twll Llwyd | W Humphries | Slate | 249000 | 351800 |
| **ISLE OF ANGLESEY** | | | | |
| Gaerwen | The Hogan Group | Igneous | 248000 | 372830 |
| Penmon | Jones Bros Ruthin (Civil Engineering) Co Ltd | Limestone | 263555 | 381290 |
| **WREXHAM** | | | | |
| Hafod | Cory Environmental Ltd | Sand & Gravel | 330800 | 345600 |

**Table A5: Dormant Aggregate Quarries in North Wales (2013)**

| Quarry Name | Operator | Commodity | Easting | Northing |
|---|---|---|---|---|
| **FLINTSHIRE** | | | | |
| Grange | Mr. D. Priestley | Limestone | 316660 | 375935 |
| **GWYNEDD** | | | | |
| Cae Efa Llwyd | Mr H Evans | Sand & Gravel | 246370 | 353000 |
| Dorothea | Penygroes Quarries Ltd | Slate | 249905 | 353270 |
| Marchlyn | First Hydro | Slate | 260200 | 362675 |
| Tan y Bryn Farm | G & G L Bowness | Sand & Gravel | 246640 | 352350 |
| Twll Coed | Welsh Slate | Slate | 249165 | 351945 |

A48. Whilst any of the sites listed in these tables may be able to contribute to future supply (subject to the dormant sites obtaining new development consents through the ROMP process[2]), it is only the active and inactive sites which contributed to the reserves figures presented in Table 3.7 of the main document. Reserves at dormant sites are noted separately in Table 3.8 of that document. The active sites and some of the currently inactive ones, together with a small number of other sites which have since closed, contributed to the historical sales over the baseline period (2001 to 2010).

A49. Full lists of active, inactive and dormant sites for individual years prior to 2013 are given in the relevant annual RAWP reports.

[2] ROMP is the acronym for the Review of Old Mineral Permissions, under the Environment Act 1995. Further details are given in the Glossary at the end of the main report.

## *Apportionments, Allocations and Guidance to MPAs in North Wales*

A50. The following pages set out the recommendations and guidance for each individual MPA in North Wales, drawing upon the figures calculated in Chapter 5 of the main document. The MPAs are dealt with in alphabetical order.

A51. In each case, reference to the 'Plan period' relates to the end date of the Local Development Plan which has been adopted, or is in preparation (whichever is later) for that particular planning authority.

A52. It should also be noted that the annualised apportionments given for each authority are provided only for the purpose of guiding the total apportionments required over the duration of that particular authority's LDP.

A53. In all cases, the recommendations are based on currently available information regarding reserves, production, proximity and environmental capacity. As noted in 'Box 1' of the original RTS documents, the suggested apportionments and allocations do not take fully into account all factors that may be material to the ensuring an adequate supply of aggregates obtained from appropriately located sources. Such factors may include such things as:

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

A54. For such reasons, and as already noted in Chapter 1 of the main document, where it is justified by new evidence, it is open for individual MPAs to depart from the apportionment and allocation figures recommended by the RTS. In doing so, however, an MPA would need to demonstrate that their intended departure would not undermine the overall strategy provided by the RTS itself (e.g. by working together with other MPAs to ensure that sub-regional and regional totals are still achieved) and this would be likely to become a key issue at Examination and/or Public Inquiry. Where the local authorities involved are unable to reach agreement, or if individual local authorities do not accept the Regional Technical Statement, the Welsh Government will consider its default powers to intervene in the planning process, as a last resort (MTAN 1, paragraph A3).

## ANGLESEY

### Apportionment for the future provision of land-won primary aggregates

The planning authority is required to make future provision for land-won primary aggregates within its Local Development Plan on the basis of the following annualised apportionments:

- Land-won sand & gravel provision: **Nil**
- Crushed rock aggregates provision: **0.28 million tonnes per year** until the end of the Plan period and for 10 years thereafter.

These figures are based on the assumption that average annual demand for land-won primary aggregates within the area, over the period to 2036, will be comparable to the average annual sales over the baseline period used in the First Review (i.e. 2001 to 2010).

They are also based on the assumption that supplies of alternative aggregates, from marine, secondary and recycled sources, will continue to be maintained in proportions comparable to those experienced during the baseline period.

The accuracy of these assumptions will continue to need to be monitored by the planning authority, using information from various data sources and new surveys (e.g. by NRW, WG etc.) and that data will be used to inform a revision of the apportionment requirements, if this is needed, as part of the next review of the RTS.

It should be emphasised that the annualised apportionments noted above are given only as a guide to the calculation of the total apportionment required over the duration of the LDP. In practice, sales will vary from year to year and there is no requirement for the authority to maintain or limit these in line with either the annualised apportionment or the historical sales averages.

The need for provision to extend beyond the Plan period is based on the requirement in MTAN1 for maintaining landbanks of 7 years for sand & gravel and 10 years for crushed rock, throughout the full duration of the LDP. Subject to this requirement being met, the overall provision at any given time may comprise both landbanks of permitted reserves and allocations for future working, where these are required (see below).

### Comparison with existing landbanks

The total apportionments for Anglesey, as calculated in Table 5.1 of the main document, over the 25-year horizon covered by The First Review are zero for land-won sand & gravel and 7 million tonnes for crushed rock. These compare with existing landbanks of zero for sand & gravel and 5.69 million tonnes for crushed rock (as at 31st December 2010).

### Allocations required to be identified in the Local Development Plan

In order to address the resulting crushed rock shortfall, new allocations for crushed rock totalling at least 1.31 million tonnes will need to be identified within the LDP.

Alternatively, the planning authority may wish to explore collaborative working with either Conwy or Gwynedd, which both have a surplus of crushed rock reserves, as indicated in Table 5.3 of the main document. This option should only be pursued, however, where the sites that make up the proposed shared landbank offer advantages, in terms of the proximity principle, environmental capacity and other sustainability criteria, compared with the option of developing new allocations within Anglesey itself. Any shared landbank agreements should be made in writing with the consent of all parties.

In view of the lack of any sand & gravel apportionment being required for Anglesey (which itself is a reflection of the very limited availability of potential resources on the island, by comparison with those available in neighbouring Gwynedd), there is no specific requirement for land-based sand & gravel allocations to be identified within the LDP. This

contrasts with the recommendations given in the original RTS which, purely on the basis of average regional proportions of total consumption, required Anglesey to make an allocation of 1.5 million tonnes of sand & gravel within its LDP.

However, consideration should also be given to whether any of the factors set out in paragraph A53 above give rise to any further requirements for resource allocations.

As far as possible, any allocations should be identified as Specific Sites or, failing that, as Preferred Areas. If, as a last resort, it is only possible to identify broad Areas of Search, these should be sufficient to offer the potential of much greater quantities of reserves, in order to reflect the uncertainties involved.

In accordance with MTAN 1 (para. 49), no allocations should be identified within the Ynys Môn Area of Outstanding Natural Beauty, unless there are no environmentally acceptable alternatives.

**Use of alternative aggregates**

Little or no marine-dredged aggregates are thought to be utilised within Anglesey. As noted in the original RTS, the use of secondary aggregates is confined to occasionally processing locomotive ash at Trywyn Trewan and recycled glass is mixed with stone for asphalt at one quarry. There may be some additional potential for recycling construction, demolition and excavation wastes as aggregates in the event that MOD or industrial land is released for redevelopment but, otherwise, this source of alternative aggregate is also likely to be very limited.

Nevertheless, the residual requirements for primary land-won aggregates assume that these alternative materials will continue to be utilised to a level comparable to that seen in previous years, and the authority should continue to encourage this.

**Safeguarding of primary aggregate resources**

Relevant resources of both crushed rock aggregates and land-based sand & gravel have been safeguarded within the LDP, in accordance with detailed advice based on the use of British Geological Survey mapping, prior to the publication of the BGS safeguarding maps.

**Safeguarding of wharves and railheads**

All existing and potential new wharves, jetties and railheads should be identified for safeguarding within the LDP, in order to provide a full range of sustainable transport options (whether or not they are currently utilised).

## CONWY AND THE SNOWDONIA NATIONAL PARK

### Apportionment for the future provision of land-won primary aggregates

Together, the two planning authorities are required to make future provision for land-won primary aggregates within their Local Development Plans on the basis of the following annualised apportionments:

- Land-won sand & gravel provision: **Nil**
- Crushed rock aggregates provision: **1.23 million tonnes per year** until the end of the Plan period and for 10 years thereafter.

The majority if not all of this provision is expected to be supplied from Conwy.

These figures are based on the assumption that average annual demand for land-won primary aggregates within the combined area, over the period to 2036, will be comparable to the average annual sales over the baseline period used in the First Review (i.e. 2001 to 2010).

They are also based on the assumption that supplies of alternative aggregates, from marine, secondary and recycled sources, will continue to be maintained in proportions comparable to those experienced during the baseline period.

The accuracy of these assumptions will continue to need to be monitored by the planning authority, using information from various data sources and new surveys (e.g. by NRW, WG etc.) and that data will be used to inform a revision of the apportionment requirements, if this is needed, as part of the next review of the RTS.

It should be emphasised that the annualised apportionments noted above are given only as a guide to the calculation of the total apportionment required over the duration of the LDP. In practice, sales will vary from year to year and there is no requirement for the authority to maintain or limit these in line with either the annualised apportionment or the historical sales averages.

The need for provision to extend beyond the Plan period is based on the requirement in MTAN1 for maintaining landbanks of 7 years for sand & gravel and 10 years for crushed rock, throughout the full duration of the LDP. Subject to this requirement being met, the overall provision at any given time may comprise both landbanks of permitted reserves and allocations for future working, where these are required (see below).

### Comparison with existing landbanks

The total apportionments for Conwy and the Snowdonia National Park (combined), as calculated in Table 5.1 of the main document, over the 25-year horizon covered by the First Review of the RTS are zero for land-won sand & gravel and 30.75 million tonnes for crushed rock. These compare with existing (combined) landbanks of zero for sand & gravel and 67.43 million tonnes for crushed rock (as at 31st December 2010).

### Allocations required to be identified in the Local Development Plan

In view of the surplus of existing permitted crushed rock reserves, no further allocations for crushed rock are required to be identified within either of the LDPs. However, consideration should be given to whether any of the factors set out in paragraph A53 above give rise to any other requirements for resource allocations within Conwy.

As far as possible, any allocations should be identified as Specific Sites or, failing that, as Preferred Areas. If, as a last resort, it is only possible to identify broad Areas of Search, these should be sufficient to offer the potential of much greater quantities of reserves, in order to reflect the uncertainties involved.

Paragraph 49 of MTAN 1 notes that landbanks are not required to be maintained within National Parks or Areas of Outstanding Natural Beauty. For this reason, no allocations

should be identified within the National Park, unless there are no environmentally acceptable alternatives, and efforts should continue to be made to gradually transfer the very small amount of production which currently takes place within the National Park to Conwy and/or to other neighbouring authorities.

### Use of alternative aggregates

Small quantities of marine sand are landed at Port Penrhyn in neighbouring Gwynedd, some of which may be utilised within the coastal towns in north east Conwy.

As noted in the original RTS, no significant sources of secondary or recycled aggregates have been identified in Conwy, with the possible exception of relatively small slate waste tips. Two small-scale slate waste tips are also active within the Snowdonia National Park

There is also likely to be continued recycled aggregate production, albeit at a modest level, from construction, demolition and excavation wastes, primarily within the towns along the Conwy coast.

Nevertheless, the residual requirements for primary land-won aggregates assume that these alternative materials will continue to be utilised and the authority should continue to encourage this.

### Safeguarding of primary aggregate resources

Resources of both crushed rock aggregates and land-based sand & gravel should be safeguarded within both LDPs in accordance with the British Geological Survey's safeguarding maps, or such other geological information as may be available and suitable for this purpose.

### Safeguarding of wharves and railheads

All existing and potential new wharves, jetties and railheads within Conwy should be identified for safeguarding, in order to provide a full range of sustainable transport options (whether or not they are currently utilised). This should include facilities for the transfer of slate waste from neigh boring areas, through Conwy.

## DENBIGHSHIRE

### Apportionment for the future provision of land-won primary aggregates

The planning authority is required to make future provision for land-won primary aggregates within its Local Development Plan on the basis of the following annualised apportionments:

- Land-won sand & gravel provision: **0.1 million tonnes per year** until the end of the Plan period and for 7 years thereafter.
- Crushed rock aggregates provision: **0.89 million tonnes per year** until the end of the Plan period and for 10 years thereafter.

These figures are based on the assumption that average annual demand for land-won primary aggregates within the area, over the period to 2036, will be comparable to the average annual sales over the baseline period used in the First Review (i.e. 2001 to 2010).

They are also based on the assumption that supplies of alternative aggregates, from marine, secondary and recycled sources, will continue to be maintained in proportions comparable to those experienced during the baseline period.

The accuracy of these assumptions will continue to need to be monitored by the planning authority, using information from various data sources and new surveys (e.g. by NRW, WG etc.) and that data will be used to inform a revision of the apportionment requirements, if this is needed, as part of the next review of the RTS.

It should be emphasised that the annualised apportionments noted above are given only as a guide to the calculation of the total apportionment required over the duration of the LDP. In practice, sales will vary from year to year and there is no requirement for the authority to maintain or limit these in line with either the annualised apportionment or the historical sales averages.

The need for provision to extend beyond the Plan period is based on the requirement in MTAN1 for maintaining landbanks of 7 years for sand & gravel and 10 years for crushed rock, throughout the full duration of the LDP. Subject to this requirement being met, the overall provision at any given time may comprise both landbanks of permitted reserves and allocations for future working, where these are required (see below).

### Comparison with existing landbanks

The total apportionments for Denbighshire, as calculated in Table 5.1 of the main document, over the 25-year horizon covered by the First Review of the RTS are 2.2 million tonnes for land-won sand & gravel and 22.25 million tonnes for crushed rock. These compare with existing landbanks of zero for sand & gravel and 22.07 million tonnes for crushed rock (as at 31st December 2010).

### Allocations required to be identified in the Local Development Plan

In order to address the resulting shortfalls, new allocations totalling at least 2.2 million tonnes for sand & gravel and at least 0.18 million tonnes for crushed rock will need to be identified within the LDP. In practice, the crushed rock allocation will probably need to be significantly greater than this, in recognition of scale of extraction needed to justify a new planning application, even for an extension to an existing quarry.

Consideration should also be given to whether any of the factors set out in paragraph A53 above give rise to any further requirements for resource allocations.

As far as possible, the allocations should be identified as Specific Sites or, failing that, as Preferred Areas. If, as a last resort, it is only possible to identify broad Areas of Search,

these should be sufficient to offer the potential of much greater quantities of reserves, in order to reflect the uncertainties involved.

Paragraph 49 of MTAN 1 notes that landbanks are not required to be maintained within National Parks or Areas of Outstanding Natural Beauty. For this reason, no allocations should be identified within the Bryniau Clwyd AONB, unless there are no environmentally acceptable alternatives.

As an alternative to finding new allocations within the county, the planning authority may wish to explore collaborative working with neighbouring Conwy, which has a substantial surplus of crushed rock reserves, as indicated in Table 5.3 of the main document.

This option should only be pursued, however, where the sites that make up the proposed shared landbank offer advantages, in terms of the proximity principle, environmental capacity and other sustainability criteria, compared with the option of developing new allocations within Denbighshire itself. Any shared landbank agreements should be made in writing with the consent of all parties.

### Use of alternative aggregates

Little or no marine-dredged aggregates are thought to be utilised within Denbighshire.

Slate waste is processed at two active sites within the southern part of the Bryniau Clwyd AONB, but the material is believed to be used only as decorative chippings and low grade fill. Other than these, there are no other known sources of secondary aggregate within the county.

There is likely to be some recycled aggregate production from construction, demolition and excavation wastes, primarily within the main coastal towns, but also within some of the quarries, including one of the slate waste units referred to above.

Despite the limited availability of alternative materials within Denbighshire, the residual requirements for primary land-won aggregates assume that these will continue to form part of the overall supply pattern and the authority should continue to encourage this.

### Safeguarding of primary aggregate resources

Resources of both crushed rock aggregates and land-based sand & gravel should be safeguarded within the LDP, in accordance with the British Geological Survey's safeguarding maps, or such other geological information as may be available and suitable for this purpose.

### Safeguarding of wharves and railheads

All existing and potential new wharves, jetties and railheads should be identified for safeguarding within the LDP, in order to provide a full range of sustainable transport options (whether or not they are currently utilised).

## FLINTSHIRE

### Apportionment for the future provision of land-won primary aggregates

The planning authority is required to make future provision for land-won primary aggregates within its Local Development Plan on the basis of the following annualised apportionments:

- Land-won sand & gravel provision: **0.2 million tonnes per year** until the end of the Plan period and for 7 years thereafter.
- Crushed rock aggregates provision: **3.13 million tonnes per year** (shared with Wrexham) until the end of the Plan period and for 10 years thereafter.

These figures are based on the assumption that average annual demand for land-won primary aggregates within the area, over the period to 2036, will be comparable to the average annual sales over the baseline period used in the First Review (i.e. 2001 to 2010).

They are also based on the assumption that supplies of alternative aggregates, from marine, secondary and recycled sources, will continue to be maintained in proportions comparable to those experienced during the baseline period.

The figures exclude the provision of limestone for non-aggregate use, for which separate consideration will need to be given in the LDP.

The accuracy of these assumptions will continue to need to be monitored by the planning authority, using information from various data sources and new surveys (e.g. by NRW, WG etc.) and that data will be used to inform a revision of the apportionment requirements, if this is needed, as part of the next review of the RTS.

It should be emphasised that the annualised apportionments noted above are given only as a guide to the calculation of the total apportionment required over the duration of the LDP. In practice, sales will vary from year to year and there is no requirement for the authority to maintain or limit these in line with either the annualised apportionment or the historical sales averages.

The need for provision to extend beyond the Plan period is based on the requirement in MTAN1 for maintaining landbanks of 7 years for sand & gravel and 10 years for crushed rock, throughout the full duration of the LDP. Subject to this requirement being met, the overall provision at any given time may comprise both landbanks of permitted reserves and allocations for future working, where these are required (see below).

### Comparison with existing landbanks

The total apportionments for Flintshire, as calculated in Table 5.1 of the main document, over the 25-year horizon covered by the First Review of the RTS are 4.4 million tonnes for land-won sand & gravel and 78.25 million tonnes (shared with Wrexham) for crushed rock. These compare with existing landbanks of 3 million tonnes for sand & gravel and 74.41 million tonnes for crushed rock (all within Flintshire), as at 31st December 2010. These figures exclude limestone reserves which are allocated for non-aggregate use.

### Allocations required to be identified in the Local Development Plan

In order to address the resulting shortfalls, new allocations totalling at least 1.4 million tonnes of sand & gravel and at least 3.84 million tonnes of crushed rock will need to be identified within the LDP. The crushed rock allocation is shared with neighbouring Wrexham and therefore, depending on the outcome of collaborative working between the two authorities, some or all of it may need to be identified in the LDP for Wrexham, rather than Flintshire.

Consideration should also be given to whether any of the factors set out in paragraph A53 above give rise to any further requirements for resource allocations.

As far as possible, any allocations should be identified as Specific Sites or, failing that, as Preferred Areas. If, as a last resort, it is only possible to identify broad Areas of Search, these should be sufficient to offer the potential of much greater quantities of reserves, in order to reflect the uncertainties involved.

Paragraph 49 of MTAN 1 notes that landbanks are not required to be maintained within National Parks or Areas of Outstanding Natural Beauty. For this reason, no allocations should be identified within the Bryniau Clwyd AONB, unless there are no environmentally acceptable alternatives.

### Treatment of Dormant sites

A single dormant limestone quarry exists within Flintshire, as detailed in Table A5, above. The planning authority should assess the likelihood of this site being worked within the Plan period, subject to the completion of an initial review of planning conditions and submission of an Environmental Impact Assessment. Where there is a likelihood of reactivation, and where the site is considered by the authority to conform to the definition of 'Specific Sites', as set out in paragraph 14 of Minerals Planning Policy Wales, it may be offset against any requirements that may otherwise be identified for allocations for future working. Subject to such assessment, this may help to address all or part of the requirement for new crushed rock allocations noted above.

### Use of alternative aggregates

Unknown quantities of navigational dredgings from the Dee Estuary are landed at Mostyn Dock, some of which are understood to have been deployed for low specification construction fill. Other than this, no marine-dredged aggregates are thought to be used within Flintshire.

Colliery spoil would once have been available for use as a secondary aggregate within the coalfield area but, in most instances, the area has been redeveloped for use by new, high-tech industries, leaving little further opportunity for generating secondary aggregates on a regular basis.

The relatively high levels of industrial and commercial development and redevelopment (compared with most other parts of North Wales) generate significant quantities of construction, demolition and excavation wastes, from which (currently unknown quantities of) recycled aggregates are derived. Whilst redevelopment has already taken place in many areas, there may be some further opportunities in the south of the county.

The residual requirements for primary land-won aggregates assume that these varying quantities of alternative materials will continue to form part of the overall supply pattern and the authority should continue to encourage this.

### Safeguarding of primary aggregate resources

Resources of both crushed rock aggregates and land-based sand & gravel should be safeguarded within the LDP, in accordance with the British Geological Survey's safeguarding maps, or such other geological information as may be available and suitable for this purpose.

### Safeguarding of wharves and railheads

All existing and potential new wharves, jetties and railheads should be identified for safeguarding within the LDP, in order to provide a full range of sustainable transport options (whether or not they are currently utilised).

## GWYNEDD

### Apportionment for the future provision of land-won primary aggregates

For planning purposes, Gwynedd excludes the Snowdonia National Park, which is a separate Mineral Planning Authority (and is dealt with in combination with neighbouring Conwy, above). Gwynedd is required to make future provision for land-won primary aggregates within its Local Development Plan on the basis of the following annualised apportionments:

- Land-won sand & gravel provision: **0.2 million tonnes per year** until the end of the Plan period and for 7 years thereafter.
- Crushed rock aggregates provision: **0.27 million tonnes per year** until the end of the Plan period and for 10 years thereafter.

These figures are based on the assumption that average annual demand for land-won primary aggregates within the area, over the period to 2036, will be comparable to the average annual sales over the baseline period used in the First Review (i.e. 2001 to 2010). They are also based on the assumption that supplies of alternative aggregates, from marine, secondary and recycled sources, will continue to be maintained in proportions comparable to those experienced during the baseline period.

The accuracy of these assumptions will continue to need to be monitored by the planning authority, using information from various data sources and new surveys (e.g. by NRW, WG etc.) and that data will be used to inform a revision of the apportionment requirements, if this is needed, as part of the next review of the RTS.

It should be emphasised that the annualised apportionments noted above are given only as a guide to the calculation of the total apportionment required over the duration of the LDP. In practice, sales will vary from year to year and there is no requirement for the authority to maintain or limit these in line with either the annualised apportionment or the historical sales averages.

The need for provision to extend beyond the Plan period is based on the requirement in MTAN1 for maintaining landbanks of 7 years for sand & gravel and 10 years for crushed rock, throughout the full duration of the LDP. Subject to this requirement being met, the overall provision at any given time may comprise both landbanks of permitted reserves and allocations for future working, where these are required (see below).

### Comparison with existing landbanks

The total apportionments for Gwynedd, as calculated in Table 5.1 of the main document, over the 25-year horizon covered by the First Review of the RTS are 4.4 million tonnes for land-won sand & gravel and 6.75 million tonnes for crushed rock. These compare with existing landbanks of 0.7 million tonnes for sand & gravel and 8.51 million tonnes for crushed rock (as at 31st December 2010).

### Allocations required to be identified in the Local Development Plan

In order to address the resulting shortfall for sand & gravel, new allocations totalling at least 3.7 million tonnes will need to be identified within the LDP. In view of the small surplus of existing crushed rock reserves, no crushed rock allocations are specifically required. However, consideration should also be given to whether any of the factors set out in paragraph A53 above give rise to any other requirements for resource allocations. In particular, a sizeable part of the existing crushed rock landbank in Gwynedd is made up of permissions at slate quarries and slate waste tips and, whilst slate aggregate is able to substitute for other rock types in many situations, it is not suitable for all applications. Additional allocations for other types of crushed rock might therefore be required and the situation will need to be kept under close review by the planning authority. Particular

attention will need to be given to the continuation (or otherwise) of the exemption of slate from the Aggregates Levy (see para. **Error! Reference source not found.**, above). If the xemption is removed there could well be an increased demand for other types of crushed rock aggregate.

As noted in the original RTS, any future crushed rock permissions in Gwynedd may need to be specifically dependent upon justification for material of a particular quality (e.g. rail ballast or road surfacing aggregate) which cannot be met from processed slate waste.

As far as possible, any allocations should be identified as Specific Sites or, failing that, as Preferred Areas. If, as a last resort, it is only possible to identify broad Areas of Search, these should be sufficient to offer the potential of much greater quantities of reserves, in order to reflect the uncertainties involved.

Paragraph 49 of MTAN 1 notes that landbanks are not required to be maintained within National Parks or Areas of Outstanding Natural Beauty. For this reason, no allocations should be identified within the Llŷn Peninsula AONB, unless there are no environmentally acceptable alternatives.

### Treatment of Dormant sites

A total of five dormant quarries exist within Gwynedd, as detailed in Table A5, above. Three of these are slate quarries and two are sand & gravel workings. The planning authority should assess the likelihood of each of these sites being worked within the Plan period, subject to the completion of an initial review of planning conditions and submission of an Environmental Impact Assessment. Where there is a likelihood of reactivation, and where the site(s) in question are considered by the authority to conform to the definition of 'Specific Sites', as set out in paragraph 14 of Minerals Planning Policy Wales, they may be offset against any requirements that may otherwise be identified for allocations for future working. Subject to such assessment, the two dormant sand & gravel units may offer prospects for addressing all or part of the requirement for new allocations noted above.

### Use of alternative aggregates

Small quantities of marine sand are landed at Port Penrhyn near Bangor, and are probably utilised within a radius of 20 to 30 miles within northern Gwynedd and (perhaps) neighbouring Conwy.

As noted earlier, crushed slate aggregate, derived either from slate waste or quarried specifically for use as primary aggregate, features significantly in the overall pattern of supply within Gwynedd, with evidence of a rising trend in both proportion and actual sales up to a peak in 2007. Although output has since fallen during the recent recession, the proportions have remained high. This suggests an underlying increase in the market for slate aggregate, reflecting its increasing acceptance by users, as well as the price advantage associated with the current exemption of this material from the Aggregates Levy. However, given that slate production is already included in the crushed rock statistics, this trend has no implications for the overall level of future demand, only for the balance between slate and other types of crushed rock.

Recycled aggregate production from construction, demolition and excavation wastes within Gwynedd is likely to be limited to small quantities within the main towns and utilised only for local projects.

The residual requirements for primary land-won aggregates assume that all of these alternative materials will continue to be utilised, particularly but not only in the case of crushed slate, and the authority should continue to encourage this.

### Safeguarding of primary aggregate resources

Resources of both crushed rock aggregates and land-based sand & gravel should be safeguarded within the LDP, in accordance with the British Geological Survey's safeguarding maps, or such other geological information as may be available and suitable for this purpose.

**Safeguarding of wharves and railheads**

All existing and potential new wharves, jetties and railheads should be identified for safeguarding within the LDP, in order to provide a full range of sustainable transport options (whether or not they are currently utilised).

## WREXHAM

### Apportionment for the future provision of land-won primary aggregates

The planning authority is required to make future provision for land-won primary aggregates within its Local Development Plan on the basis of the following annualised apportionments:

- Land-won sand & gravel provision: **0.58 million tonnes per year** until the end of the Plan period and for 7 years thereafter.
- Crushed rock aggregates provision: **3.13 million tonnes per year** (shared with Flintshire) until the end of the Plan period and for 10 years thereafter.

These figures are based on the assumption that average annual demand for land-won primary aggregates within the area, over the period to 2036, will be comparable to the average annual sales over the baseline period used in the First Review (i.e. 2001 to 2010).

They are also based on the assumption that supplies of alternative aggregates, from marine, secondary and recycled sources, will continue to be maintained in proportions comparable to those experienced during the baseline period.

The accuracy of these assumptions will continue to need to be monitored by the planning authority, using information from various data sources and new surveys (e.g. by NRW, WG etc.) and that data will be used to inform a revision of the apportionment requirements, if this is needed, as part of the next review of the RTS.

It should be emphasised that the annualised apportionments noted above are given only as a guide to the calculation of the total apportionment required over the duration of the LDP. In practice, sales will vary from year to year and there is no requirement for the authority to maintain or limit these in line with either the annualised apportionment or the historical sales averages.

The need for provision to extend beyond the Plan period is based on the requirement in MTAN1 for maintaining landbanks of 7 years for sand & gravel and 10 years for crushed rock, throughout the full duration of the LDP. Subject to this requirement being met, the overall provision at any given time may comprise both landbanks of permitted reserves and allocations for future working, where these are required (see below).

### Comparison with existing landbanks

The total apportionments for Wrexham, as calculated in Table 5.1 of the main document, over the 25-year horizon covered by the First Review of the RTS are 12.76 million tonnes for land-won sand & gravel and 78.25 million tonnes (shared with Flintshire) for crushed rock. These compare with existing landbanks of 15.24 million tonnes for sand & gravel and 74.41 million tonnes for crushed rock (all within Flintshire), as at 31st December 2010. These figures exclude limestone reserves which are allocated for non-aggregate use.

### Allocations required to be identified in the Local Development Plan

In order to address the resulting crushed rock shortfall, new allocations totalling at least 3.84 million tonnes will need to be identified. This figure is shared with neighbouring Flintshire, where all of the existing crushed rock quarries in the combined area are located. However, depending on the outcome of collaborative working between the two authorities, some or all of the new crushed rock allocations required may need to be identified in the LDP for Wrexham, rather than Flintshire.

Consideration should also be given to whether any of the factors set out in paragraph A53 above give rise to any further requirements for resource allocations.

As far as possible, any allocations should be identified as Specific Sites or, failing that, as Preferred Areas. If, as a last resort, it is only possible to identify broad Areas of Search, these should be sufficient to offer the potential of much greater quantities of reserves, in order to reflect the uncertainties involved.

Paragraph 49 of MTAN 1 notes that landbanks are not required to be maintained within National Parks or Areas of Outstanding Natural Beauty. For this reason, no allocations should be identified within the Bryniau Clwyd AONB, unless there are no environmentally acceptable alternatives. In practice, this severely restricts the opportunities for new crushed rock allocations to be found within Wrexham unless there are no acceptable alternatives within Flintshire.

### Use of alternative aggregates

Little or no marine-dredged aggregate is thought to be utilised within Wrexham, not least because of the extensive and accessible reserves of land-based sand & gravel within the area.

As noted in the original RTS, slag banks were periodically processed at the former Brymbo Steelworks for construction fill and colliery spoil heaps were utilised as embankment fill, but neither of these sources of secondary aggregate are now available. Similarly, a substantial amount of derelict land and buildings associated with the former mining and clay products industries, e.g. around Ruabon, has been cleared and other tips have been reprofiled leaving little scope for generating further material from such sources.

As in Flintshire, relatively high levels of industrial and commercial development and redevelopment (compared with other parts of North Wales) generate significant quantities of construction, demolition and excavation wastes, from which (currently unknown quantities of) recycled aggregates are derived. Significant further redevelopment is anticipated in the years ahead and this source of alternative aggregates is therefore likely to continue.

The residual requirements for primary land-won aggregates assume that all available alternative materials will continue to be utilised and the authority should continue to encourage this.

### Safeguarding of primary aggregate resources

Resources of both crushed rock aggregates and land-based sand & gravel should be safeguarded within the LDP, in accordance with the British Geological Survey's safeguarding maps, or such other geological information as may be available and suitable for this purpose.

### Safeguarding of wharves and railheads

All existing and potential new wharves and railheads should be identified for safeguarding within the LDP, in order to provide a full range of sustainable transport options (whether or not they are currently utilised).

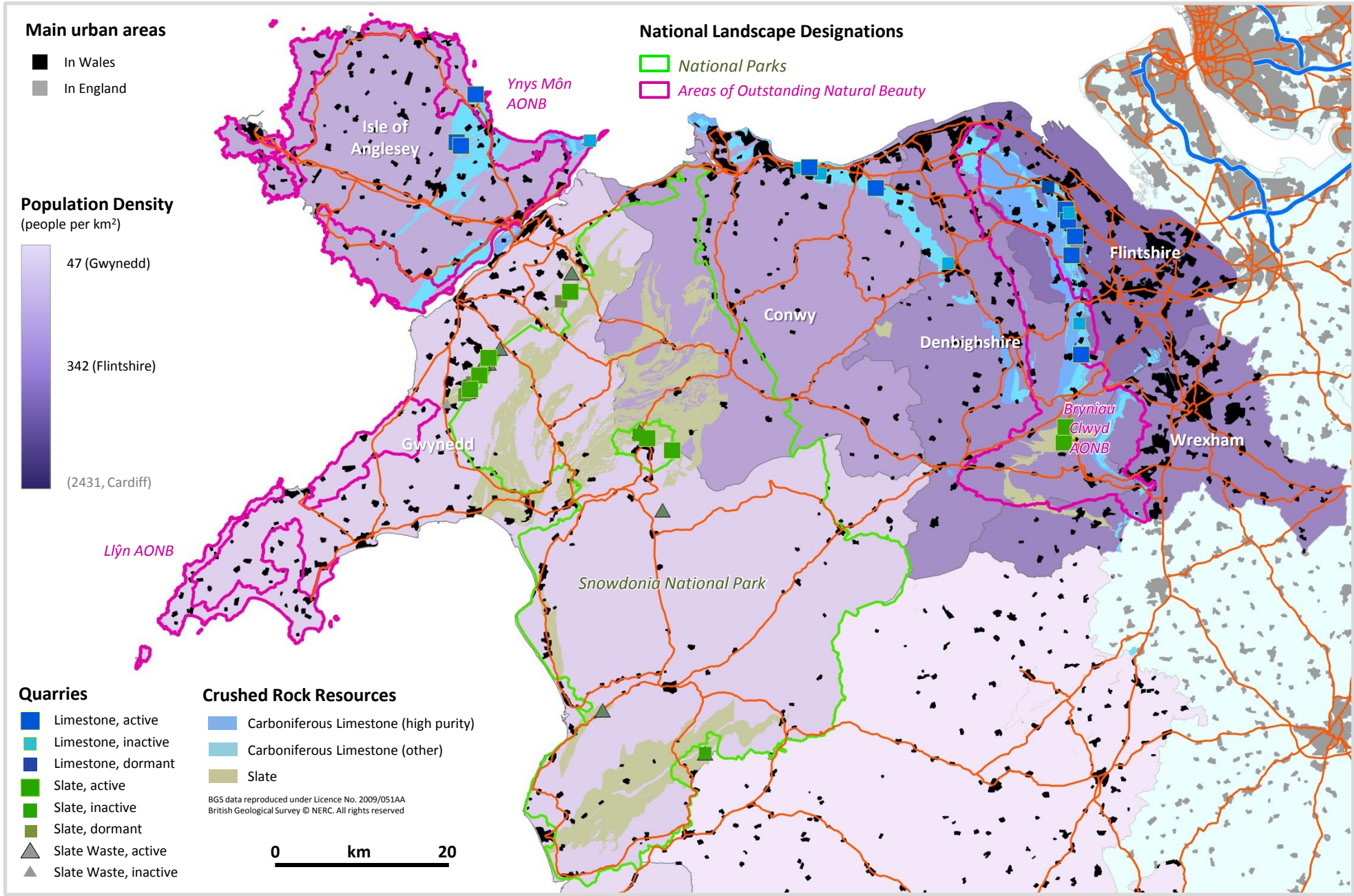


**Fig A1: Limestone & slate resources and quarries in relation to national landscape designations, population density, urban areas and major roads.**

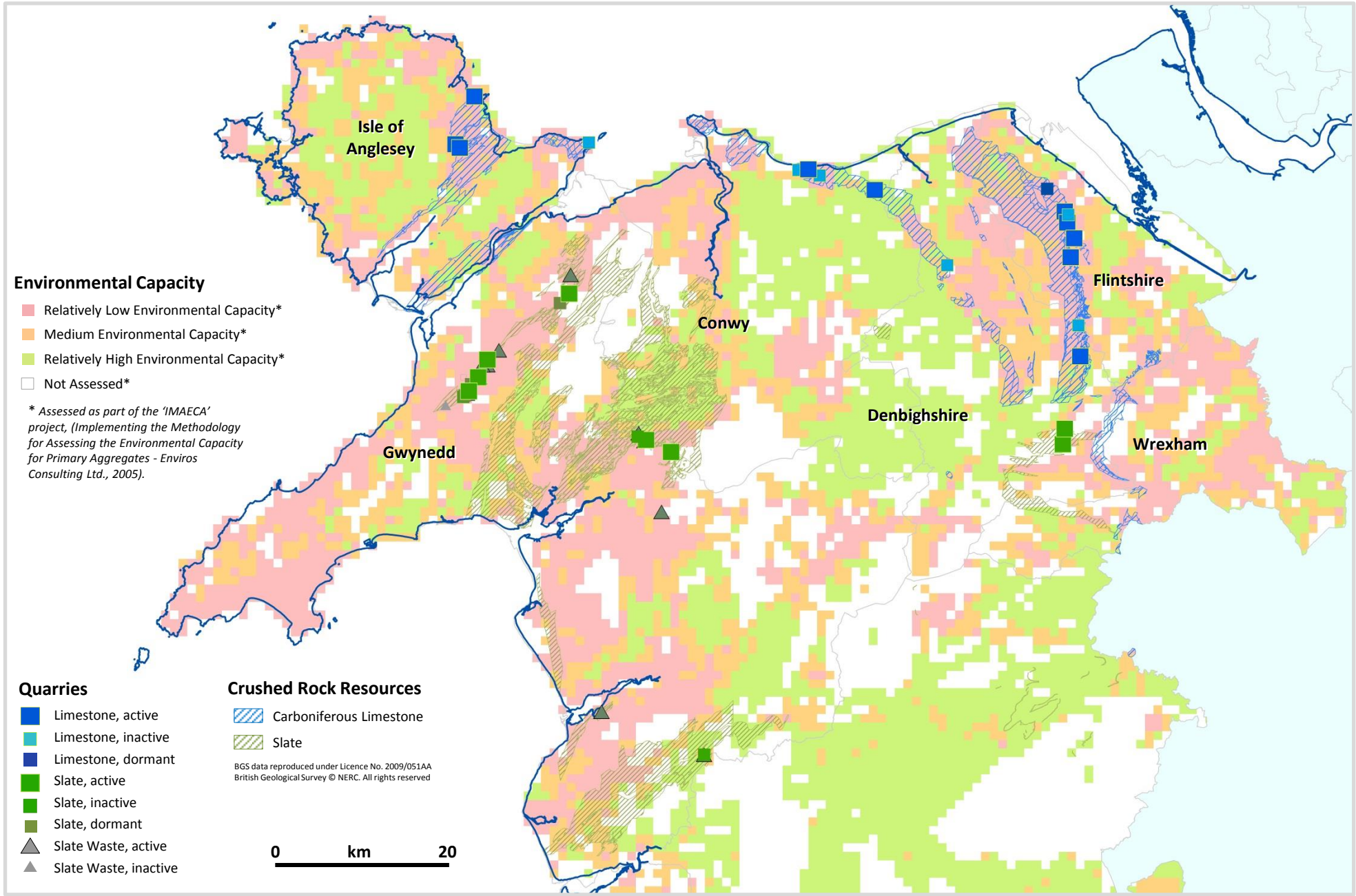


**Fig A2: Limestone & slate resources and quarries in relation to assessed Environmental Capacity for future quarrying.**

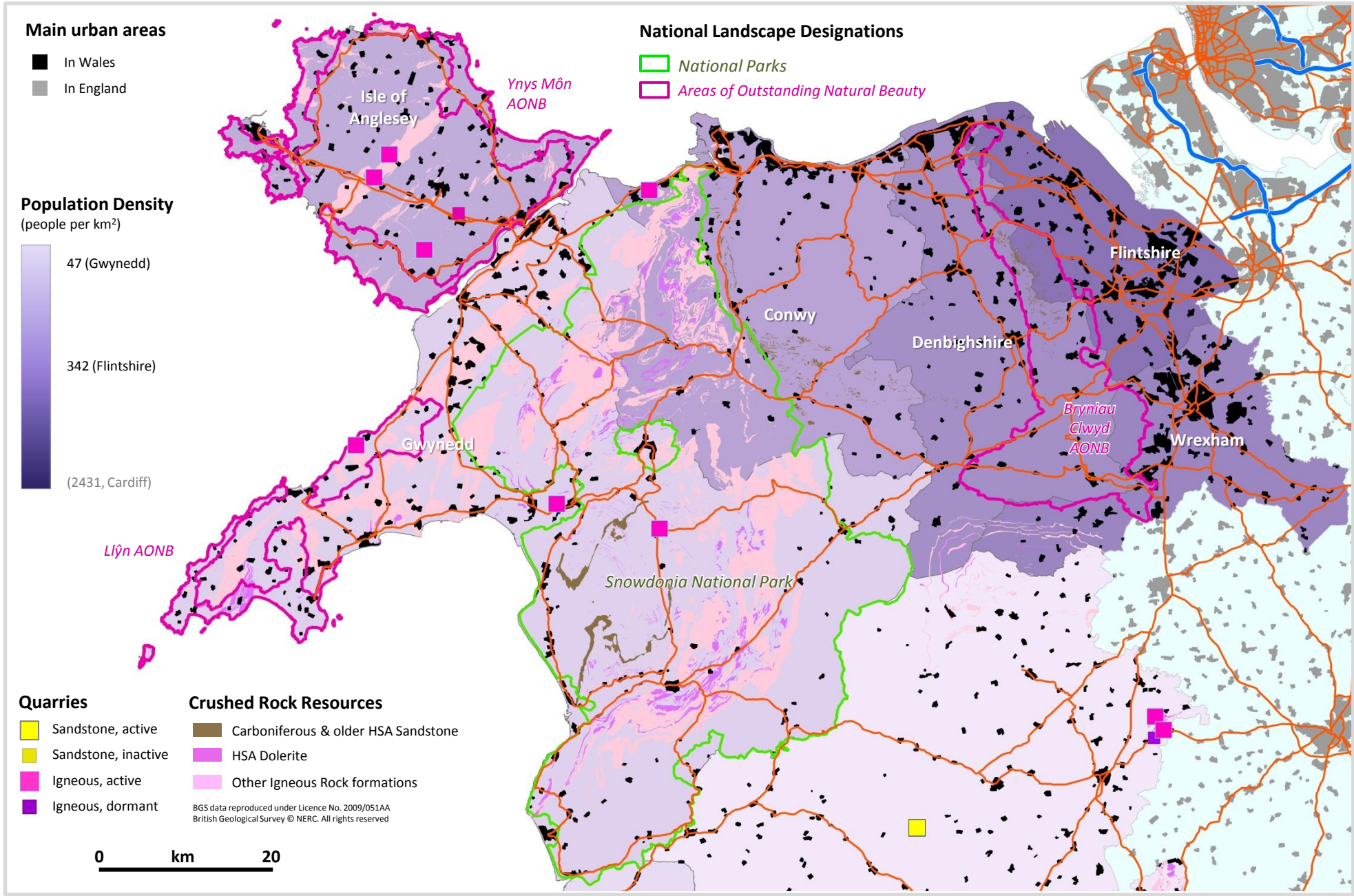


**Fig A3: Igneous rock resources and quarries in relation to national landscape designations, population density, urban areas and major roads.**

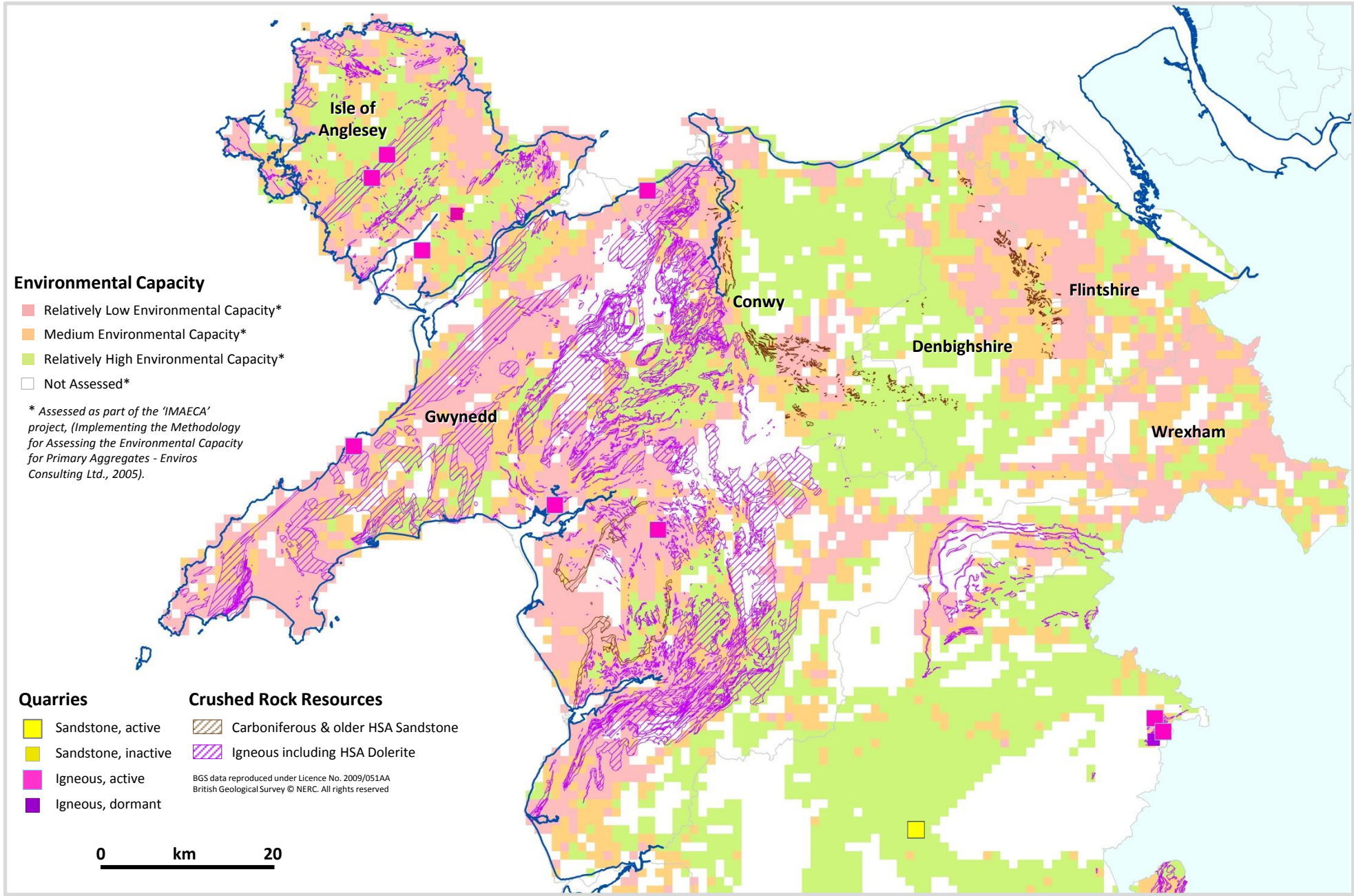


**Fig A4: Igneous rock resources and quarries in relation to assessed Environmental Capacity for future quarrying**

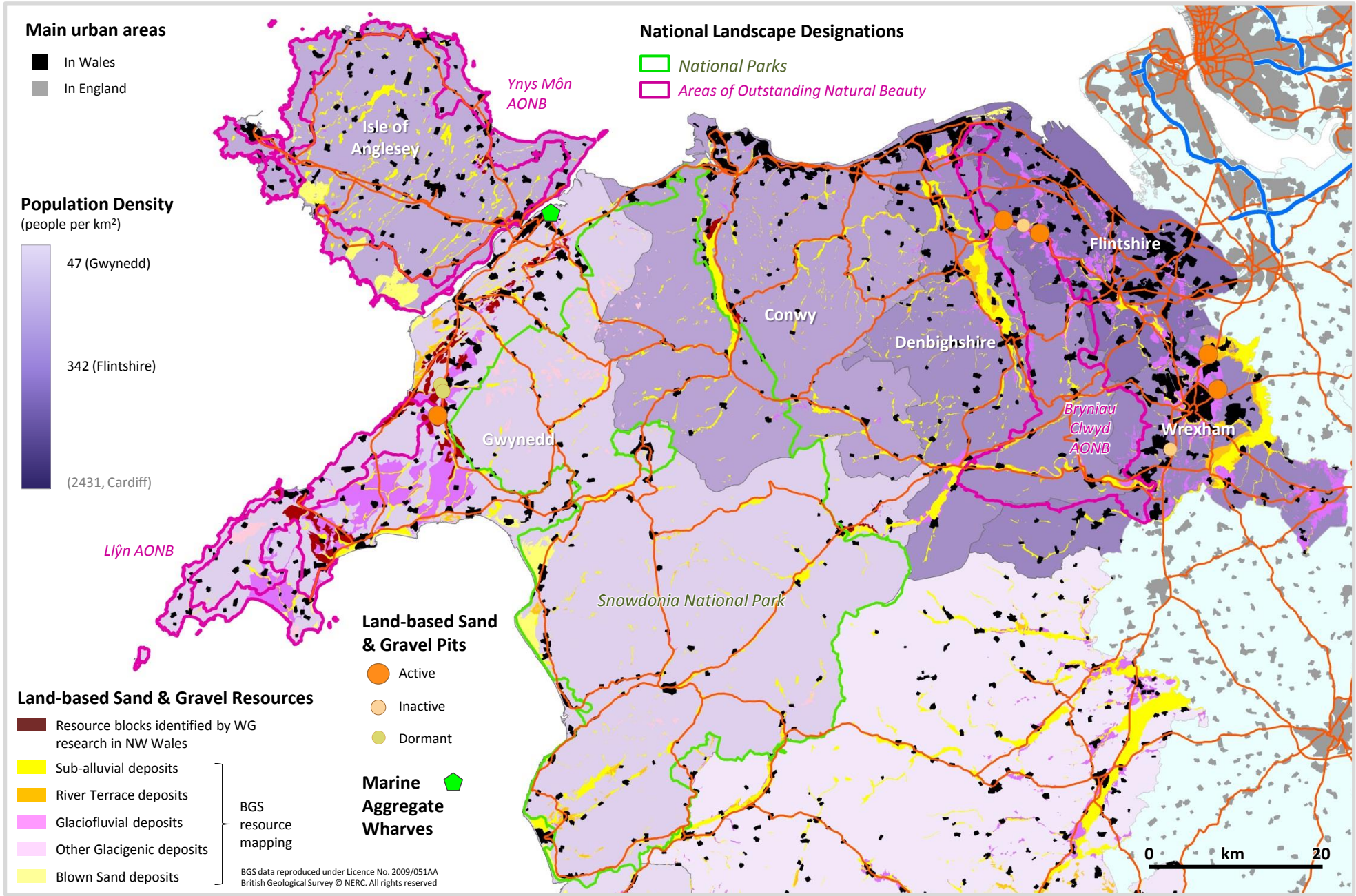


**Fig A5: Sand & gravel resources and quarries in relation to national landscape designations, population density, urban areas and major roads.**

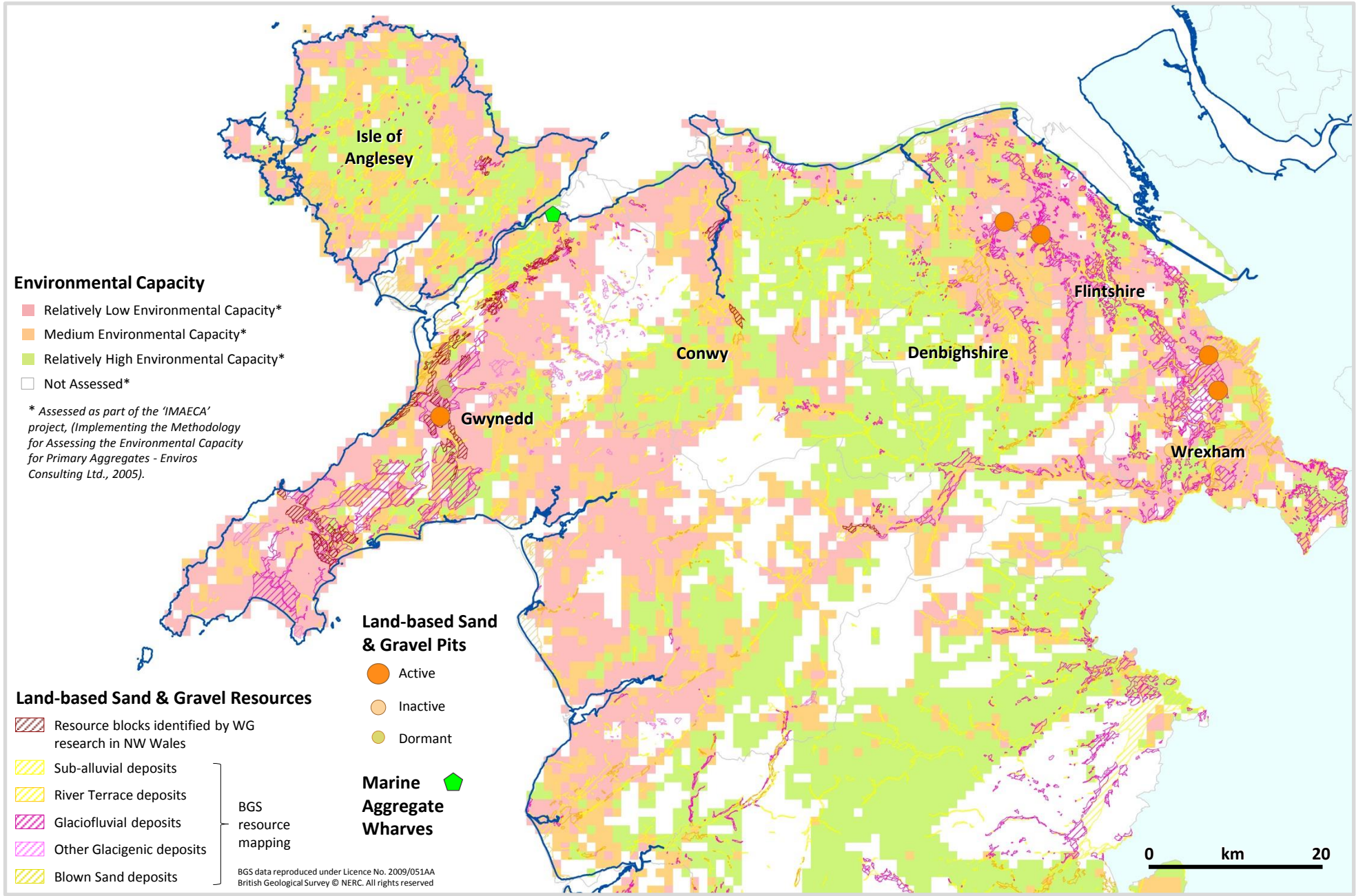


**Fig A6: Sand & gravel resources and quarries in relation to assessed Environmental Capacity for future quarrying.**