



CYNGOR SIR
YNYS MÔN
ISLE OF ANGLESEY
COUNTY COUNCIL



Background

This is one of a range of topic papers prepared to offer more detailed information and explain the approach of the Plan to different topics and issues affecting the Joint Local Development Plan Area. This paper will look specifically at **Minerals**. It will explain the background, which will help to identify the issues, objectives, and options for the Deposit Plan.

The Deposit Plan is the second statutory stage in the preparation of the Joint Local Development Plan (JLDP). The JLDP shapes the future growth of communities in the Joint Local Development Plan Area and will set out the policies and land allocations against which planning applications will be assessed.

The Deposit Plan has been submitted to the Welsh Government, which will appoint an independent inspector to assess the soundness of the Plan in the Examination in Public. If the inspector considers the Plan to be sound it will be recommended for adoption. When adopted the JLDP will supersede the Gwynedd Unitary Development Plan (2009) for the Gwynedd Local Planning Authority Area and the Gwynedd Structure Plan (1993) and Ynys Môn Local Plan (1996) for the Ynys Môn Local Planning Authority.

This topic paper can be read in isolation or in conjunction with the other Topic Papers and Background Papers that have been prepared to give a full picture the Joint Local Development Plan Area.

If you have any questions or would like to discuss any of the Topic Papers or Background Papers with a member of the Joint Planning Policy Unit you can contact us at

Uned Polisi Cynllunio ar y Cyd / Joint Planning Policy Unit,
Llawr 1af Swyddfa Cyngor Dinas Bangor / 1st Floor Bangor City Council Offices,
Bangor,
Gwynedd,
LL57 1DT

01286 685003 or 01766 771000
planningpolicy@gwynedd.gov.uk

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Introduction

- 1.1 Minerals are essential for the development of a modern economy, but mineral resources are natural and finite. Minerals are fundamental to ensuring the nation's prosperity and quality of life. Sands, gravels, crushed rocks, chalks and clays are used by the construction industry. Coal oil and gas are vital sources of energy in the production of electricity and heat. Minerals are important in the production of plastics, cosmetics, pharmaceuticals and glass, in the treatment of sewage and in the protection of the coast from coastal erosion.
- 1.2 If society is to maintain its current standard of living, it is essential that there is an adequate and steady supply of minerals consistent with the current policy emphasis on the re-use and recycling of suitable minerals waste materials and that we conserve the resources which we hold in trust for future generations.
- 1.3 Minerals can only be worked where they occur, a fact which often leads to conflict with other land uses and with environmental considerations since the geological processes which give rise to mineral resources often also lead to the landscape features which are important to environmental quality and which society values.
- 1.4 The legislative background for minerals is set out in the Town and Country Planning Act 1990 and the Environment Act 1995, which deals with the Review of Minerals Permissions. The Planning and Compensation Act 1991 is also relevant. The Town and Country Planning (General Permitted Development) Order 1995 sets out exemptions to the requirement for planning permission in respect of some types of mineral working and associated development.

2. National Policy Guidance

- 2.1 Planning policy guidance for mineral extraction and related development in Wales is set out in **Chapter 14 of Planning Policy Wales (Edition 8, January 2016)**. This over-arching document is supplemented by two Mineral Technical Advice Notes (MTANs) and by circulars. There are also many Mineral Planning Guidance Notes (MPGs) which continue to remain in force in Wales until superseded by relevant Mineral Technical Advice Notes (Wales). These include MPG2; MPG3; MPG4; MPG5; MPG7; MPG8; MPG9; MPG10; MPG11, MPG12; and MPG14 although sections of these documents have been cancelled in Wales. In light of the need to plan for all forms of development in a comprehensive manner and to conform with sustainable development principles when planning for mineral extraction due consideration must be given to other strategies and guidance, for example the Welsh Government's Sustainable Development Scheme: One Wales: One Planet (2009), the Wales Spatial Plan 2008 update (2008) and the overarching national planning guidance for all forms of development "Planning Policy Wales Edition 7 (2014).
- 2.2 Chapter 14 of Planning Policy Wales (Edition 8, January 2016) sets out the land use planning policy guidance of the Welsh Government in relation to mineral extraction and related development in Wales, which includes all minerals and substances in, on or under land extracted either by underground or surface working. Policy guidance for marine aggregates is not included in this minerals planning policy guidance. Planning Authorities should take this guidance into account in the preparation of their local development plans. It may be material to decisions on individual planning

applications, including mineral review applications, and will be taken into account by the Welsh Government and by Planning Inspectors in the determination of called-in applications and appeals in Wales. The five themes of the document are:-

- To provide mineral resources to meet society's needs and to safeguard resources from sterilisation and the identification of areas where working can take place in an environmentally acceptable manner;
- To protect areas of importance to natural or built heritage;
- To limit the environmental impact of mineral extraction;
- To achieve a high standard of restoration and after use; and
- To encourage efficient and appropriate use of minerals and the re-use and recycling of suitable materials.

The key principles set out above provide an appropriate framework from which to discuss the issues in respect of planning for mineral extraction

Mineral Technical Advice Note1 (MTAN1) –Aggregates (2004)

- 2.3 MTAN1 sets out Welsh Government (WG) policy for provision of aggregates in more detail. The MTAN refers to three categories of aggregates
- primary aggregates- rock, sand and gravel;
 - mineral waste –material arising as a by-product of mineral extraction that is capable for use as a primary aggregate substitute, e.g. crushed rock and slate waste;
 - secondary/recycled aggregates- previously used materials that are capable of substituting for primary aggregates.
- 2.4 It sets out detailed advice on the mechanisms for delivering the policy for aggregates extraction by mineral planning authorities and the aggregates industry. It should be read in conjunction with Minerals Planning Policy Wales, which sets out the general policies for all mineral development. The overarching objective in planning for aggregates provision 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 extraction are kept to a level that avoids causing demonstrable harm to interests of acknowledged importance.
- 2.5 MTAN1 advises that no allocations for minerals should be identified within Areas of Outstanding Natural Beauty AONB unless there are no environmentally acceptable alternatives.

Mineral Technical Advice Note 2 (MTAN 2) –Coal (2009)

- 2.6 MTAN2 sets out detailed advice on the mechanisms for delivering the policy for coal extraction through surface and underground working by Mineral Planning Authorities and the coal mining industry. Principally, MTAN2 requires MPA to:

- Identify areas where coal working will not be acceptable; and
 - Safeguard shallow coal resources.
- 2.7 Where relevant, MPAs should set out their strategy for the sustainable management of the coal resource in their Local Development Plan (LDP), directing coal working away from sensitive locations and ensuring that any environmental or community impacts can be mitigated.
- 2.8 The Anglesey Coalfield is described in Appendix A of MTAN2. It comprises a narrow strip of Pennine Lower and Middle Coal Measures on the southwest side of the island. The exposed coalfield covers an area of approximately 25 sq. km, mostly under the wetlands of the Maltraeth Marsh. There are at least eight proven seams. Borehole information indicates that only three seams are greater than 0.4 m in thickness and there is no information on their coal rank or methane content. Mining is thought to have ceased in 1875. It is stated in MTAN2 Appendix A that there is no potential for future large scale underground mining, as this would be limited by the size of the coalfield and the low thickness of coal. The potential for opencast mining in this area is very low because the first significant seam occurs at a depth of 70 metres and the area of outcropping Coal Measure mainly coincides with Maltraeth Marsh, which has wet meadow environments that are protected as a Site of Special Scientific Interest and Special Area of Conservation (SAC). The Caernarfon Coalfield comprises a very short (0.5 km long) narrow strip of coal under and to the east of the town of Caernarfon, which has World Heritage status. The Abermenai Coalfield is located within the Anglesey Area of Outstanding Natural Beauty (AONB) and adjacent to SAC, SSSI, and NNR designations.
- 2.9 MPPW seeks to provide certainty in the future extraction of energy minerals, and says: *Mineral planning authorities should therefore consider all available information on the extent of energy mineral resources. They must provide as much guidance in their unitary development plans (superseded by LDPs) as possible to indicate where it is likely to be environmentally acceptable for these resources to be worked. To achieve this degree of certainty, policies should state where such operations would not be acceptable and should provide unequivocal statements as to why, and should also provide a set of clear criteria against which any future proposals will be assessed in those areas where there is a possibility of extraction.*

3. Regional Policy Guidance

Regional Aggregates Working Parties (RAWPs)

- 3.1 Regional Aggregates Working Parties (RAWPs) were established in the early 1970's as technical groups to advise the Government on aggregates demand and supply issues. To assist with this task an annual monitoring survey of sales and reserves is carried out and the results published. The RAWPs are composed of representatives from Welsh Government, Local Planning Authorities, the aggregates industry, Natural Resources Wales and Non-Government Organisations (NGO's). Ynys Môn and Gwynedd Councils were represented on the North Wales RAWP. The minutes are available at www.nwrawp-wales.org.uk.

- 3.2 The preparation of Regional Technical Statement (RTS) is a requirement of the Minerals Aggregates Technical Advice Note (MTAN1) (2004). The RTS set out how aggregates demand would be met in the region for a 15 year period ending in 2021. The First Review RTS (2014) extends the period to 25 years up to 2036. Further reviews will be undertaken every 5 years, in accordance with MTAN1
- 3.3 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 grant planning permission for future extraction to take place in the most environmentally acceptable locations, in accord with the development plans that are informed by the Regional Technical Statement (RTS) 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 practical option of all.
- 3.4 The 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 LDP's.
- 3.5 The RTS is strategic in nature and does not put forward specific sites for aggregate extraction, which is a matter for the Mineral Planning Authorities (MPAs), having regard to the assessments contained within the RTS. It is open for individual MPA's to depart from the apportionment and allocation figures recommended in the RTS provided that such departures can be justified.

4. Local Policy Context

Gwynedd – Unitary Development Plan (2009)

- 4.1 Gwynedd has a long history of mineral extraction including quarrying and metalliferous mining, and it remains an important component of the economic and social make up of Gwynedd. Gwynedd's existing minerals policies are set out in the adopted Unitary Development Plan 2001-2016 dated July 2009.
- 4.2 These policies seek to achieve a balance between the need to protect and promote the environment and the obligations imposed by the Government for the supply of minerals.
- 4.3 The Policies contained in the UDP include:-
- Policy C8 – Mineral Development in the Llŷn Area of Outstanding Natural Beauty (Llŷn AONB)
 - Policy C9 – Mineral Development' outside the Llŷn Area of Outstanding Natural Beauty.
 - Policy C10 - Contribution to the supply of Aggregates.
 - Policy C11 – Safeguarding Mineral Resources
 - Policy C12 – Buffer Zones
 - Policy C13 - Slate
 - Policy C14 – Restoration and after care
 - Policy C15 – Removal of material from mineral working deposits
 - Policy C16 – Railhead and Wharf Facilities
 - Policy C17 – Review of old mineral planning permissions
 - Policy C18 – Dormant Mineral Sites
 - Policy C19 – Borrow Pits
 - Policy C20 – Local Building Stone
- 4.4 Whilst the above policies provide the land use planning guidance in respect of mineral development within the Plan Area, it is important to emphasise that these policies should not be read in isolation to other relevant policies of the Plan.

Anglesey

- 4.5 The current statutory development plan for the Isle of Anglesey is the Gwynedd Structure Plan (adopted 1993) and the Ynys Môn Local Plan (adopted 1996). Supplementary Planning Guidance (SPG) on the topic of Minerals was adopted by the Council in 1996. The Ynys Môn Unitary Development Plan was formally stopped at a late stage in the preparation process (December 2005) and therefore material weight can therefore be afforded to this Document.

4.6 The policies in the Gwynedd Structure Plan 1993 include:

Policy DD2 – Mineral Exploration and Evaluation

Policy DD3 – No presumption in favour of extraction on sites that have been subject to exploration and evaluation

DD4 – Mineral Consultation Areas

DD5 – Rail and Sea Transport

DD6 – Criteria for assessing mineral proposals

DD7 Restoration to beneficial after-use

DD8 – Aggregate Land Bank

DD10 – Use of Secondary Aggregates

DD11 - Marine Dredged Aggregates

DD12 – Protection of Limestone Areas

DD13 – Presumption against large scale extraction of metalliferous ores in certain designated areas.

DD14 – Presumption against large scale exploitation of Peat Reserves

DD15 – Presumption against Borrow Pits.

4.7 The Policies contained in the stopped UDP (December 2005) include:-

MP1 – Aggregate Landbank

MP2 – Sequential Test

MP3 – Need for Minerals

MP4 – Building Stone

MP5 - Metalliferous Minerals

MP6 – Exploration Works

MP8 – Sterilisation

MP9 – Use of Waste Materials

MP10- Recycled Materials

MP11- Transport

MP12 – Reinstatement

MP13 – Control Criteria.

- 4.8 Whilst the above policies provide the land use planning guidance in respect of mineral development within the Plan Area, it is important to emphasise that these policies should not be read in isolation. The existing Mineral policies within the Plan Area will be reviewed as part of the preparatory work for the Deposit Joint LDP.

5. Brief Description of mineral resources and their occurrences in Gwynedd and Anglesey

- 5.1 North-west Wales is dominated by the slate and igneous rock resources of Snowdonia. Slate is still worked around Blaenau Ffestiniog and Penrhyn and south of Caernarfon. Some of the extensive waste tips associated with old slate quarries are being removed for aggregate use. Igneous rocks are also worked on the Llŷn peninsula and on Anglesey. Sandstones suitable for constructional and lower specification aggregate use are present east of Harlech, south of Bangor, on Anglesey and as smaller outcrops through Snowdonia. Quartzitic sandstones occur west of Holyhead. Carboniferous Limestone is worked on Anglesey.
- 5.2 The most extensive sand and gravel deposits occur on the Llŷn peninsula north and west of Pwllheli as extensive spreads of glaciofluvial deposits. Blown sand occurs in dune fields on Anglesey. Sand and gravel is inferred to be present beneath the alluvial tracts of the Vale of Ffestiniog. Extensive peat development has occurred in upland blanket bogs.
- 5.3 Metalliferous mining occurrences are common in North West Wales, copper and lead being common in central Snowdonia and lead, zinc, barium and manganese being worked on the Llŷn. North of Dolgellau gold antimony and copper mines are known. Copper was mined near Amlwch. Economic factors will determine whether metal mining is likely to recommence on a commercial basis within the Plan Period. Most of the mineralisation occurs in hydrothermal veins associated with the igneous rocks.
- 5.4 There are many disused slate quarries across the area and building stone quarries supplied not only local markets, but in the case of some of the igneous rocks, were more widely exported. Granite from quarries such as Gwylwyr and Porth y Nant on the Llŷn Peninsula specifically supplied stone setts to pave the streets of towns and cities in North-west England such as Liverpool and Manchester.

1. Regional Technical Statement (RTS) 1st Review (2014) Recommendations for Anglesey and Gwynedd

- 6.1 The RTS 1st Review (2014) provides a detailed analysis of supply and demand and recommendations for apportionment in the North Wales Region and its constituent authorities. This work has been a collaborative exercise between local planning

authorities, facilitated by Welsh Government Planning Division and supported by members of the Regional Aggregate Working Parties, who have provided much valued technical expertise. It represents an important outcome of collaborative working on minerals and can be used taking forward a strategic and sustainable approach to mineral planning in the Region. The RTS 1st Review has been endorsed by all local planning authorities in Wales and by Welsh Government.

Recommendations for Anglesey

- 6.2 Anglesey can claim major deposits of almost all main rock types – and in particular limestone, various igneous rocks, and sandstone although much of the island is cloaked in glacial deposits. Relatively small sand and gravel deposits are found inland from Red Wharf Bay at Pentraeth. Historically, being an island, the area has been more self-sufficient in aggregates than probably any other county in England and Wales.
- 6.3 In 2013, active quarries included two igneous operations, four limestone units, and one sandstone working (see Table 1). Production in recent years has declined following the completion of the A55 across the county and the downturn in the economy, but may also have been influenced by the increasing use of slate waste from Gwynedd as aggregates.
- 6.4 The RTS Review recommends the following annual apportionment for Anglesey
- | |
|---|
| <ul style="list-style-type: none"> ○ Land won sand and 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 |
|---|
- 6.5 The above 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 sales over the baseline period used in the First Review (i.e. 2001-2010). Other assumptions include that supplies of alternative aggregates, from marine, secondary, and recycled resources will continue to be maintained to proportions comparable to those experienced during the baseline period.
- 6.6 The need for provision to extend beyond the plan period is based on the requirement in MTAN1 to maintain a 7 year sand & gravel landbank and 10 year landbank for crushed rock throughout the duration of the LDP.

Comparison with existing landbanks

- 6.7 The total apportionment for Anglesey calculated in the RTS (First Review is nil for land-won sand and gravel and 7 million tonnes for crushed rock over the 25 year period. These figures compare with existing landbanks of zero for sand and gravel and 5.69 million tonnes for crushed rock (as at 31 December 2010) leaving a shortfall of 1.31 million tonnes of crushed rock..

Allocations required to be identified in the Local Development Plan

- 6.8 In order to address the resulting crushed rock shortfall, the RTS Review recommends a new allocation for crushed rock totaling at least 1.31 million tonnes in the LDP.

- 6.9 The RTS Review suggests that the Anglesey Council may wish to explore collaborating with Gwynedd or Conwy who both have a surplus of crushed rock reserves. However, the RTS advises that this option should only be pursued where the sites that make up the proposed 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.
- 6.10 The RTS Review suggests that in view of the lack of sand and gravel apportionment required for Anglesey (which is a reflection of the very limited availability of potential resources compared to those in Gwynedd), there is no specific requirement for land-based sand & gravel allocations to be identified on the Island. This contrasts with the recommendations of the in the original RTS which required Anglesey to make an allocation of 1.5 million tonnes of sand and gravel within its LDP based on the average regional proportions of total consumption.
- 6.11 The RTS review states that consideration should also be given to whether any of the 4 factors set out below give rise to any further requirements for resource allocations:-
- The technical capacity for one type of aggregate to be changed 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.
- 6.12 The RTS states that 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.

Use of alternative aggregates

- 6.13 Little or no marine dredged aggregate is believed to be used within Anglesey. As noted in the original RTS, the use of secondary aggregates is confined to occasionally processing locomotive ash at Tywan 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 previously developed land is released for redevelopment, but otherwise this source of alternative aggregate is also likely to be very limited. Mobile crushers and screens are increasingly used on redevelopment sites to provide hardcore. The residual requirements for primary land won aggregates assume that these alternative materials will continue to be utilised at a level comparable to that seen in previous years, and the authority should continue to encourage this.

Safeguarding of primary aggregate resources

- 6.14 Relevant resources of crushed rock aggregates will be safeguarded in the LDP in accordance with detailed advice based on the use of British Geological Mapping Safeguarding Maps.

Gwynedd

- 6.15 Historically, Gwynedd (in the form of Caernarfonshire) was one of the leading producers of igneous rock in the UK, being second only to Leicestershire. Stone was shipped from coastal quarries particularly on Llŷn from numerous jetties. The legacy of old mineral planning permissions resulted in a considerable volume of reserves in sites designated as “dormant”. In recent years, those have been eliminated by the use of Prohibition Orders. In 2003, Prohibition Orders were served on 5 dormant quarries on the Llŷn and this resulted in a significant reduction in Gwynedd’s landbank for hard rock. There are now only two regularly active igneous rock quarries. The small number of quarry ownerships means that production cannot be disclosed for confidentiality reasons. There are two glacial sand operations, the only significant ones in North West Wales.
- 6.16 Almost all of the main igneous rock masses on Llŷn lie within the AONB. These deposits largely all within areas exhibiting a low environmental capacity to accommodate future working. MTAN1 (para 49) also makes it clear that allocations should not be made in AONBs in normal circumstances. The environmental capacity of sand and gravel deposits is more variable, but still relatively low, apart from the area between Caernarfon Bay and Snowdonia.
- 6.17 Gwynedd is by far the main source of slate waste in the UK. Usage peaked in 2007 at about 1 million tonnes, but because of the downturn in construction, output had fallen by 2010 to 421,000 tonnes. However, the full potential cannot be realised until the logistics of transporting material by rail have been overcome. There may be indications that slate waste is displacing the output of primary aggregates in North West Wales, but the evidence from trends is complicated as the period under review coincided with the completion of major roadwork’s when a downturn would have normally been expected. Increased use of slate waste probably offers the best potential for N Wales achieving the secondary/recycled aggregate target set in MTAN1.
- 6.18 Trefor “granite” quarry still has workable reserves, is on the coast and a small port remains nearby. It is not clear to what degree additional use of sea transport could or (apart from its use for slate waste) should be encouraged. Facilities at a number of potential wharves have been lost to other forms of development e.g. marinas and housing.
- 6.19 For planning purposes, Gwynedd excludes the Snowdonia National Park. The RTS Review recommends the following annual apportionment for Gwynedd.

- Land won sand and 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

- 6.20 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, sources will continue to be maintained in proportions comparable to those experienced during the baseline period. The need for provision to extend beyond the LDP Plan period is based on the requirement in MTAN for maintaining landbanks of 7 years for sand and gravel

and 10 years for crushed rocks 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. Marine sand is landed at and distributed from Port Penrhyn near Bangor. It is won by dredgers that also deliver into Merseyside docks. In 2013, 53,700 tonnes was landed at Port Penrhyn and 303,696 tonnes landed at Liverpool wharves.

- 6.21 The dredging of sand from natural offshore deposits for use in the construction industry can result in a negative effect on adjacent coastal areas if it is allowed to take place in inappropriate locations. Concerns have been expressed that offshore aggregate dredging can cause or exacerbate shoreline erosion. It cannot therefore be assumed that any shortfall in sand and gravel supply can be easily corrected by increasing the tonnage of sand and gravel obtained from off-shore dredging. The dredging of sand and gravel will only continue if it remains consistent with the principles of sustainable development. The further development of off-shore wind farms and the laying of undersea cables may restrict the future dredging of sand from offshore deposits.

Comparison with existing landbanks

- 6.22 The RTS Review has calculated that the total apportionment for Gwynedd is 4.4 million tonnes for land-won sand and 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 31 December 2010).

Allocations required to be identified in the LDP

- 6.23 In order to address the resulting shortfall for sand and gravel, the RTS 1st Review recommended that new allocations totaling at least 3.7 million tonnes will need to be identified in the LDP. In view of the small surplus of existing of existing crushed rock reserves, no crushed rock allocations are specifically required. However, consideration must also be given to whether any of the following factors gives rise to any requirements for resource allocations:
- 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.
- 6.24 In particular a sizeable part of the 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 rocks might therefore be required and the situation kept under review. Particular attention will need to be given to the continuation (or otherwise) of the exemption of slate from the Aggregate Levy. If the exemption is removed, there could well be increased demand for other types of crushed rock aggregate.

- 6.25 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.
- 6.26 As far as possible any allocations should be identified as Specific Sites, or failing that as Preferred Areas.
- 6.27 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

- 6.28 A total of 5 dormant quarries exist within Gwynedd, 3 slate and 2 sand and gravel workings (Table 3). The RTS review recommends that the Planning Authority should assess the likelihood of each of these sites being worked within the Plan Period, subject to the completion of the 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 with the definition of Specific Sites as set out in paragraph 14 of Mineral Planning Policy Wales they may be identified in the LDP as allocations for future working. Subject to such assessment, the 2 dormant sand and gravel units may offer prospects for addressing all or part of the requirement for new allocations.

Use of alternative aggregates

- 6.29 Small quantities of marine sand are landed at Port Penrhyn, near Bangor and are probably used within a radius of 20-30 miles within Northern Gwynedd.
- 6.30 It is noted in the RTS (1st Review Consultative Draft 2013) that crushed slate aggregate, derived from slate waste or quarried specifically for use as a 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 Aggregate Levy. However, given that slate production is already included in the crushed rocks statistics, this trend has no implications for the overall level of future demand, only for the balance between slate and other types of crushed rocks.
- 6.31 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 for local projects.
- 6.32 The residual requirements for primary land won aggregates assume that all of these alternative materials will continue to be used, particularly but not only in the case of crushed slate, and the authority should continue to encourage this.

Safeguarding of primary aggregate resources

- 6.33 Resources of both crushed rock aggregates and land based sand & gravel should be safeguarded within the LDP, in accordance with the BGS's safeguarding maps, or such other geological information as may be available and suitable for this purpose. Within NW Wales however, more specific potential resource blocks have been identified for sand and gravel in more detailed studies carried out for the National Assembly for Wales by the University of Liverpool in 1988 and 2003. These are not necessarily the only potential worthwhile resources, but they are the most rigorously assessed. Having regard to the above, the Proposed Mineral Safeguarding Areas will be based on data shown on the BGS Mineral Resources Map of Wales, apart from the Sand and Gravel Safeguarding Areas which will be based on information provided in the Liverpool University Report.

7. Key Requirements for Sustainable Mineral Developments

- 7.1 MPPW outlines that the overriding objective in planning for mineral development is to provide a sustainable pattern of mineral extraction by adhering to 5 key principles that Mineral Planning Authorities (MPAs) must take account of when formulating LDP policies.

The key principles are to:-

- Provide mineral resources to meet society's needs in a sustainable manner and to safeguard minerals from permanent development that would prevent or hinder their subsequent extraction.
- To protect areas of natural or built heritage importance from inappropriate mineral development.
- To reduce the impact of mineral extraction and operations by ensuring sensitive working practices and improved operational standards.
- To achieve a high standard of restoration and afteruse; and
- To encourage the efficient use of minerals by promoting the appropriate use of high quality materials and by minimising the production of waste by maximising the potential for re-use and recycling where environmentally acceptable.

- 7.2 The following section considers the above principles and identifies the issues that the Joint Planning Policy Unit will need to address when preparing the Deposit LDP.

Provide and Safeguard Mineral Resources in a sustainable manner

Issue 1. Ensuring supply of sufficient Mineral Resources within the LDP to meet society's needs

- 7.3 MPPW set out that mineral planning authorities should ensure that appropriate contributions are made in development plans to meet local, regional and UK needs. For aggregates Development Plans should reflect the work carried by the Regional Aggregates Working Parties (RAWPS) whose role it is to provide a regional

overview of supply and demand and to ensure that there is a sustainably managed supply of aggregates striking the best balance between environmental, economic and social costs. The Tables below list the current sources of supply in Gwynedd and Anglesey.

Table 1. Active Aggregate Quarries in Gwynedd and Anglesey (2013)

Quarry Name	Operator	Main Product	Easting	Northing
Gwynedd				
Aberllefeni Slate Waste	Robin Meredith, Arthog SlateCo	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	Northern Welsh Quarries Ltd	Slate Waste	270000	346680
Llechwedd	Northern Welsh Quarries 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	345000
Nanhoron	Eric Thomas	Igneous	228658	332977
Ty Mawr East	Watkin Jones Sons Ltd	Slate Waste	249695	352450
Ty Mawr West	DW WE 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

Source Welsh Government Regional Technical Statement (1st Review) Appendix A (2013)

Quarry Name	Operator	Main Product	Easting	Northing
Aberllefenni Mine	Wincillate Ltd	Slate	276920	310290
Ffestiniog	Welsh Slate	Slate + Slate Waste	269206	347186
Greenarfon	Mulcair Ltd	Slate Waste	246950	347186
Llecheiddior		Sand Gravel	247133	344656
Quarry Name	Operator	Main Product	Easting	Northing
Aberllefenni Mine	Wincillate Ltd	Slate	276920	310290
Ffestiniog	Welsh Slate	Slate + Slate Waste	269206	347186
Greenarfon	Mulcair Ltd Group	Slate Waste	246950	347186
Llecheiddior Uchaf	Jones Bros Ruthin (Civil Engineering) Co	Sand Gravel	247133	344656
Twll Llwyd	W. Humphries Ltd	Slate	24900	351800

Table 2. Inactive Aggregate Quarries in Gwynedd and Anglesey (2013)

Source Welsh Government Regional Technical Statement (1st Review) Appendix A (2013)

Table 3. Dormant Aggregate Quarries in Gwynedd and Anglesey (2013)

Gwynedd				
Quarry Name	Operator	Main Product	Easting	Northing
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	

Source Welsh Government Regional Technical Statement (1st Review) Appendix A (2013)

- 7.4 The Regional Technical Statement (First Review 2014) sets out the strategy for the provision aggregates, for the period up to **2036** and determines the apportionment for each authority to meet the calculated need. Any of the sites listed in the tables may be able to contribute to future supply (subject to the dormant sites obtaining new development consents through the (Review of Old Minerals (ROMP) process under the Environment Act 1995.
- 7.5 Based on the available information on permitted reserves and in the light of MTAN1 policy and applying the apportionment methodology, in terms of supply the RTS recommends that new allocation for crushed rock totaling at least 1.31 million tonnes is required for Anglesey and that a new allocation of 3.7 million tonnes sand and gravel is required for Gwynedd (See extract of RTS Tables below).

Table 4. Comparison of total apportionments for land based sand and gravel, 2011 to 2033 with existing (December 2010) landbanks of permitted reserves

Mineral Planning Authority	Total Apportionment (Provision) for sand and gravel over 22 years - from Table 5.3 of RTS 1 Review (mt)	Existing Sand & Gravel Landbank at 31 December 2010 – from Table 3.7 of RTS 1 st Review	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 (at the base date 2010) (mt)
Anglesey	0	0	0	0
Gwynedd	4.4	0.7	-3.7	3.7
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
Sub-totals, N Wales	23.76	18.94	-4.82	7.3

Source Table 5.2 North Wales Regional Technical Statement 2014

Table 5. 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 5.3 of RTS 1 Review (mt)	Existing Crushed Rock Landbank at 31 December 2010 – from Table 3.7 of RTS 1 st Review	Surplus (+) or Shortfall (-) of Existing Reserves (Landbank minus Apportionment (mt))	Minimum Allocation needed in LDP to meet the Required Provision for Crushed Rock (at the base date 2010) (mt)
Anglesey	7.0	5.69	-1.31	1.31
Gwynedd	6.75	8.51	+1.76	
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				
Sub-totals, N Wales	145.0	178.11	33.11	5.33

Source Table 5.3 North Wales Regional Technical Statement 2014

Issue 2. Safeguarding of Mineral Resources.

- 7.6 Safeguarding policies will be required to ensure that mineral resources which may be needed at some time in future are not sterilised by other forms of development, such as housing or wind farms, without consideration of that need. A decision to safeguard a particular mineral resource does not imply that planning permission will

be granted for its working. The method of identification of the Mineral Safeguarding Areas (MSA) will need to be explained and justified and the MSA's shown on the Proposals Maps.

- 7.7 Paragraph 13 of Mineral Planning Policy Wales states that; *"It is important that access to mineral deposits which society may need is safeguarded. This does not necessarily indicate an acceptance of working, but that the location and quality of the mineral is known, and that the environmental constraints associated with extraction have been considered. Areas to be safeguarded should be identified on proposals maps and policies should protect potential mineral resources from other types of permanent development which would either sterilise them or hinder extraction, or which may hinder extraction in the future as technology changes. The potential for extraction of mineral resources prior to undertaking other forms of development must be considered"*.
- 7.8 In 2010 & 2012 respectively, the Welsh Government published the Minerals Resource Map and the Aggregate Safeguarding Map of Wales in conjunction with the British Geological Survey (BGS), in order to provide Local Planning Authorities with a key evidence base for Local Development Plan preparation, enabling plan strategies to fully recognise the importance of mineral resources and to avoid their unnecessary sterilisation. The published maps support sustainable minerals planning by providing comprehensive, up-to-date and accessible information on the location and extent of mineral resources throughout Wales. With regard to sand and gravel in NW Wales, specific potential resource blocks have been identified in more detailed studies carried out for the National Assembly for Wales by the University of Liverpool in 1988 and 2003.
- 7.9 However, with the publication of these maps, Welsh Government decided that it no longer intended to revise national policy and incorporate these maps into it (*paragraph 13 of MPPW*), and it is therefore for the Local Planning Authorities (LPAs) to produce safeguarding maps as part of their Local Development Plans (LDPs). The methodology set out in *Aggregates Safeguarding Maps of Wales* British Geological Survey, CR/12/0/39 (2012) has been adopted to prepare the North West Wales Aggregates Safeguarding Map.
- 7.10 The resource outcrops identified on the BGS Mineral Resources & Safeguarding Maps of Wales are limited to those resources which are important for the production of aggregates. These include all 'Category 1' resources, as identified on the BGS maps, and some (but not all) 'Category 2' resources. However, local authorities will also be required to consider safeguarding of mineral types not identified as potential aggregate such as secondary coal deposits on Anglesey and east of Caernarfon in Gwynedd.
- 7.11 The potential sources of aggregates fall into the following groups:
- Sand and Gravel (Category 1)
 - 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)

- 7.12 Having regard to the Aggregates Safeguarding Maps and the accompanying report it is considered pertinent to safeguard aggregates that fall into the Category 1 Class. The Category 1 resources are those resources that have a national importance in Wales and have been defined using the information in the North Wales RTS and national policies and guidance in MPPW and Mineral Technical Advice Note 1: Aggregates (MTAN1). This category includes those minerals that are specifically referenced in policy as being of limited occurrence across the UK. A summary of the national policies and justification for this Category can be found in Table 1 of the BGS Report, Aggregates Safeguarding Maps of Wales (2012). www.bgs.ac.uk/downloads/start.cfm?id=2654
- 7.13 The term 'HSA' refers to 'High Specification Aggregate', which is suitable for use as skid-resistant road surfacing 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 dolerite (a particular variety of igneous rock) which occurs within various parts of south-west, north-west and mid-Wales.

Safeguarding Margin

- 7.14 Consistent with the separation distances in MTAN1, safeguarding areas for the national aggregates safeguarding map have been extended beyond that of the mapped mineral resource. This minimises the risk of sterilisation of minerals on the edges of the mapped resource and also makes allowance for any inaccuracy of mapped geological boundaries and resources that extend beneath overburden.

Data considerations

- 7.15 Resource area boundaries for minerals are derived from 1:50,000 BGS Maps. As a consequence, any mapped polygon boundary has a degree of uncertainty attached to it. Furthermore, as the resource maps only show the surface extent of the mineral resource derived from the geological mapping, extensive resource may also be available and potentially viable under either superficial deposits or bedrock overburden, further extending the resource polygon from that as mapped.

Secondary coal deposits on Anglesey and east of Caernarfon in Gwynedd

- 7.16 MTAN2: Coal requires that safeguarding of coal resources will need to be shown on the on the LDP proposals maps. Data provided by BGS and the Coal Authority will be utilised to identify the areas to be safeguarded for coal. There are no active or proposed coal workings in the Plan Area.
- 7.17 The coal areas identified in Gwynedd and Anglesey contain secondary resources in which the coals are generally thinner and less concentrated in distribution (MTAN2 and BGS Data). The potential for safeguarding coal resources should be considered in the context of paragraph 13 of MPPW in order to protect potential mineral resources from other types of permanent development which would either sterilise them or hinder extraction. However having regard to paragraph 37 and 38 of MTAN2, the coal resources at Malltraeth Marsh, Abermenai and Caernarfon should be excluded from safeguarding. Paragraph 37 of MTAN2 states that "*Where Coal Resource Zones are present, the MPA should exclude from these Resource Zones International and National Designations of environmental and cultural importance,*

and Settlements". Paragraph 38 states "Where the MPA has clear evidence that an area within the remaining resource zones will not realistically be viable, the area should be excluded". The existence of the above constraints referred to in paragraph 2.8 provide the justification for excluding these three areas of coal resource from safeguarding in the LDP.

Safeguarding of Category 1 Sand and Gravel deposits mainly in Gwynedd, but also around Pentraeth on Anglesey

- 7.18 The BGS study confirms the extent of mineral resources that are; "*mostly inferred from available geological information, and generally have not been evaluated by drilling or other sampling on any systematic basis*". The main issue in Gwynedd is that the sand and gravel deposits identified in the BGS report are substantially larger than, or do not correlate with those identified as resource blocks in the 2003 publication, '*The Sand and Gravel Resources of North West Wales – Liverpool University*'.
- 7.19 The BGS document does go on to say that, "*these published resource maps provide the basic information in order to begin the process of delineating mineral resource areas*". The RTS Review recognises that the BGS Mineral Resources Map of Wales has identified a wide range of sediments which have potential as sources of natural aggregate. Within NW Wales however, more specific potential resource blocks have been identified for sand and gravel in more detailed studies carried out for the National Assembly for Wales by the University of Liverpool in 1988 and 2003. These are not necessarily the only potential worthwhile resources, but they are the most rigorously assessed. Having regard to the above, the Proposed Mineral Safeguarding Areas will be based on data shown on the BGS Mineral Resources Map of Wales, apart from the Sand and Gravel Safeguarding Areas which will be based on information provided in the Liverpool University Report.

Safeguarding of Metalliferous minerals

- 7.20 Paragraph 86 of MPPW states that Mineral Planning Authorities should consult BGS where necessary and make provision to safeguard metalliferous resources. Paragraph 86 of MPPW also requires authorities to consider the economic need for metalliferous minerals (copper, gold silver, lead and zinc) against the environmental impact of extraction, noting that there may be sites of industrial and or archaeological importance.
- 7.21 In terms of economic need, there has been no metal mining in Gwynedd and Anglesey since the 1800's apart from the Clogau Goldmine near Dolgellau. Parys Mountain near Amlwch is a major polymetallic mine which has been worked extensively over several centuries and its workings date back to the Bronze Age. More recently planning permission was granted to develop a modern mine at the site to include shaft sinking, construction of a processing plant and waste disposal. This activity is now suspended, although geological exploration and investigation continues to take place. The existing price of metals does not favour production although it is difficult to predict how the global availability and price of metals will vary in the future

Issue 3. Show Areas of Future Working on the Proposals Maps.

- 7.22 In terms of non-energy minerals MPPW stresses that policies and proposals in development plans should make clear where mineral extraction should or is most likely to take place. The MPPW advises that these should be shown on the Proposals Maps and take the form of:

Specific Sites –where mineral resources of commercial significance exist, and where any planning applications which come forward for those for those sites are likely to be acceptable in planning terms

Preferred Areas which will be areas of known resources with some commercial potential, and where planning permission might reasonably be anticipated; or

Areas of Search where it is likely that some sites will be appropriate for mineral extraction, depending on economic and environmental circumstances. Areas of search will define broad areas that are believed to contain mineral resources of commercial significance but whose extent is uncertain. Within these areas it is likely that appropriate mitigation measures can overcome all environmental effects. Within areas of search, planning permissions could be granted to meet a shortfall in supply should specific sites, preferred areas or extensions to existing sites identified in the plan, not come forward. It will not usually be appropriate for an authority to identify only areas of search in a plan: full justification for adopting such an approach would be needed.

Other Areas: Planning permission should not be granted in areas outside those identified in the plan except where the mineral is needed to make good a proven shortfall in supply, and where the proposal is demonstrably proven to be environmentally acceptable and to have no adverse impact on the amenity of nearby residents or communities.

- 7.23 It is felt that identifying Specific Sites and preferred Areas for crushed rock in Anglesey would be a too onerous and costly task for the Councils to undertake. A feasibility study into the viability of a resource including borehole testing and logging results, before deciding on allocations goes beyond what might reasonably be expected of a LPA, in terms of time, expense and technical expertise, and should therefore remain the remit of the mineral industry. It will be the responsibility of the mineral industry to focus on these Areas of Search and carry out detailed studies to identify whether extraction is viable. This approach will provide flexibility to the market, whilst providing a degree of certainty regarding the likely location of future workings.

Areas of Search for Crushed Rock on Anglesey

- 7.24 The RTS Review recommended new allocations for crushed rock totaling at least 1.31 million tonnes in the LDP. Rather than identify specific sites or Preferred Areas, the Councils have sought to identify Areas of Search where it is likely that some sites will be appropriate for mineral extraction, depending on economic and environmental circumstances. The starting point for identifying Areas of Search for Crushed Rocks was the list of active and inactive quarries outside the Anglesey Areas of Outstanding Natural Beauty. Information from the BGS Mapping and site visits were undertaken to identify the Areas of Search suggested for inclusion in the Deposit LDP. The likely location of sites with potential of future workings will be shown on the proposals Maps and will be referred to in the relevant Deposit LDP Policy. The Local Planning Authority does not have sufficient detailed information to identify whether extraction would be viable.

Preferred Areas of Search for Sand and Gravel in Gwynedd

- 7.25 The RTS 1st review recommends that land based sand and gravel apportionments in Gwynedd be increased, in order to generate an improved balance of supply with reserves in Flintshire and Wrexham and reduce the dominance of supplies from NE Wales, allowing those in Wrexham in particular to focus on the markets within that area and in adjoining parts of North West England.
- 7.26 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. Overall, the recent demise in land-based sand & gravel production in Gwynedd 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).
- 7.27 The total apportionments for Gwynedd, as calculated 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).
- 7.28 The 2010 annual report produced by the North Wales Regional Aggregates Working Party states that, in terms of sand and gravel, the landbank has increased to 23 years in North East Wales, but stands at only 4 years in North West Wales, which is below the 7 year minimum recommended in MTAN1. In making these calculations, the reserves at dormant sites have been excluded from the landbank figures, although they are identified separately. The RTS recognises that this is a possible second departure from paragraph 47 of MTAN 1, where Dormant should be clearly shown in the landbank calculations as a separate category.
- 7.29 The RTS recognises therefore, that there is a shortfall of sand and gravel for which new allocations in Gwynedd totalling a minimum 3.7 million tonnes will need to be identified in the LDP. It further states however that where there are Dormant reserves capable of being implemented, subject to Environmental Impact Assessment and the agreement of modern conditions, these may be offset against the apportionment requirements. In addition, the RTS Review is based upon the 2010 RAWP collation figures and since the publication of the 2010 annual report, further permitted reserves of sand and gravel have been granted at Llecheiddior Uchaf in 2013.

A total of 700,000 tonnes of permitted & dormant reserves of sand and gravel may be offset against the recommended 3.7 million tonne apportionment identified in the RTS and a revised allocation of 3.0 million tonnes will need to be identified in the LDP.

Appendix 1 explains how the proposed Preferred Areas of Search for Sand and Gravel in Gwynedd shown in the LDP have been identified.

Issue 4. Maintenance of Landbanks.

- 7.30 The LDP will need to maintain a 10 year landbank of crushed rocks and 7 year landbank for sand and gravel over the plan period in accordance with MTAN1. A

landbank is a stock of planning permissions for the extraction of minerals and comprises the sum of all permitted reserves at active and inactive sites at any given points in time and for a given area. Whilst the RTS identified a shortfall of crushed rock in Anglesey and Sand and Gravel in Gwynedd, it is considered that the identification of the Preferred Areas of Search for Sand and Gravel and Areas of Search for Crushed Rock identified in the Plan should be sufficient to address these shortfalls. 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. In addition the proposed LDP Annual Monitoring will provide opportunities to update data and record changes in supply or demand.

- 7.31 Bearing in mind the need to ensure that the area is as self-sufficient as possible, the levels of demand, particularly arising from any substantial development, must be carefully monitored. Major construction projects such as the building of Wylfa Newydd and the Caernarfon Bypass are likely to affect the demand for certain materials. For example, preliminary estimates suggest that in excess of 1 million tonnes of concrete making materials (1 part cement, 3 parts sand and 4 parts gravel) may be required to construct Wylfa Newydd and that the construction phase could extend for a period of approximately 10 years.

Issue 5. The LDP will need to contain robust policies to ensure the protection of areas of importance to the Natural and Built Environment.

- 7.32 The LDP will need to consider the specific requirements for each type of area and ensure there is sufficient protection afforded in accordance with MPPW, MTAN1, and MTAN2 to protect areas of natural or built environment importance from inappropriate mineral development. Consideration will need to be given to how to minimise the impact of mineral development on the landscape. The proposed policies the natural and Built Environment Section of the Deposit Plan including the designation of Special Landscape Areas (SLAs) will help identify areas within which impacts on the landscape will be a particular concern.
- 7.33 Policies to permit the development of borrow pits and/or temporary re-opening of small scale mineral operations to provide local building stone provided that use would be compatible with other proposed LDP policies will be set out in the Deposit Plan. Borrow pits can offer significant environmental benefits over mineral supply from existing reserves by reducing transport distances if they are located close to the project. The temporary working or reopening of small scale mineral operations can provide a local supply of building stone to ensure that repairs and alterations to important buildings can be constructed with matching materials. Such new Policies will help provide protection to areas of importance to the Natural and Built Environment.

Issue 5 To reduce the impact of mineral extraction and operations by ensuring sensitive working practices and improved operational standards.

Issue 6. Safeguarding of wharves and railheads

- 7.34 In accordance with RTS recommendations existing and potential wharves, jetties and rail siding facilities and rail routes will be safeguarded in the LDP in order to provide a full range of sustainable transport and to reduce reliance on the existing road system.
- 7.35 It is proposed to construct a purpose built Marine Off Loading Facility (MOLF) at Wylfa to facilitate the transport of bulk construction materials by sea during the construction of the new power station at Wylfa Newydd.

Issue 7. Buffer Zones.

- 7.36 The LDP Proposals maps must have clearly defined buffer zones around permitted and proposed mineral workings. Given the potential of mineral extraction operations to impact on the surrounding environment from such aspects as noise, dust and vibration, MTAN1 advises that buffer zones should be applied to protect public amenity from the possible effects of quarrying. **Buffer zones of 200 metres will be applied to hard rock quarries** with the zones extending outward from the limit of the planning permission area and **100 metre buffer zones will be applied around sand and gravel quarries.**
- 7.37 The Buffer Zones are proposed in recognition of the potential conflict between mineral workings and other land uses due to noise, dust & vibration. As well as protecting local amenities, the proposed Buffer Zones will help protect mineral reserves and resources from development that may sterilise them.

Issue 8. Sites Allocated in the Deposit LDP for other forms of Development

- 7.38 A number of allocations within the LDP fall within areas where minerals are safeguarded. As part of the LDP process, the allocations have been considered against the safeguarding policy, to determine whether prior extraction condition would be required. The need for additional housing and employment have been identified by the Local Planning Authority and the sites put forward are considered the most appropriate and likely to be delivered over the life of the Local Development Plan.

Issue 9. The LDP will need to provide guidance on the preferred after-uses and reclamation to achieve high standards of restoration and beneficial afteruse.

- 7.39 By its nature, mineral extraction is an environmentally destructive activity and it is necessary to ensure that at the cessation of extractive operations, the land is restored to an appropriate condition that will have the least impact on landscape quality. MPPW advises that proposals for extraction which do not include restoration schemes should be refused.
- 7.40 A site's restoration concept can provide opportunities to establish a suitable after use for former mineral sites, These can range from agriculture /forestry, through nature conservation and public open space to recreation and other development. Priorities in terms of after use may change over the life of a mineral planning permission and the concept originally agreed may change over time to accommodate a very different after- use to that originally agreed. A Policy is required to ensure that applications for mineral working are always accompanied by comprehensive schemes for restoration, aftercare and after use.

Issue 10. The LDP will need to consider whether policies are required to encourage the efficient and appropriate use of minerals and the re-use & recycling of suitable materials where environmentally acceptable.

7.41 The policies in the Deposit Plan will need to address the above issue. However in order to avoid unnecessary repetition, it is considered that the encouragement and appropriate use of minerals and the reuse of suitable materials where environmentally acceptable should be referred to in generic strategic policies rather than specific policies dealing with each issue separately. The issue of reuse and recycling of suitable materials will also need to be referred to in the relevant waste management policies of the Deposit LDP.

8. Conclusion

8.1 The evidence referred to in this topic paper will be used to underpin the proposed policies and proposals in the Deposit Local Development Plan.

Appendix 1

Sand and Gravel Resources in Gwynedd and methodology for identifying Preferred Areas of Search for Sand and Gravel

The BGS Mineral Resources Map of Wales has identified a wide range of sediments which have potential as sources of natural aggregate. Within NW Wales, more specific potential resource blocks have been identified in more detailed studies carried out for the National Assembly for Wales by the University of Liverpool in 1988 and 2003. These are not necessarily the only potential worthwhile resources, but they are the most rigorously assessed.

The Sand and Gravel Resources of North West Wales report was commissioned by the National Assembly for Wales to evaluate the location and volume of potentially workable resources of land-based, fine-grained mineral aggregate in the area of the Mineral Planning Authorities of Anglesey County Council, Conwy Borough Council, Gwynedd Council and the Snowdonia National Park Authority; to examine the commercial potential of the resources; to identify the environmental constraints on future exploitation and to make recommendations on the most appropriate means of safeguarding the resources. From a review of existing data, ten areas were identified which were considered likely to yield potential mineral.

Altogether, some 530 million tonnes of potential mineral were identified, divided into 270 million tonnes of sand and 260 million tonnes of gravel. At the county level 92 % of potential mineral occurs in Gwynedd, with Conwy and Anglesey together providing less than 8 % and the National Park area virtually none. At the local level the greatest concentration of reserves, more than 75 % between them, occur in only three areas: Cors Geirch north of Pwllhelli; south of Nefyn and Penygroes, all in Gwynedd.

The area between Penygroes and Bryncir, in Gwynedd, provides the principal source of sand and gravel for North West Wales and currently supplies most of the land-derived mineral production in the region from a single quarry at Graianog since the closure of the Cemex operation in 2007. A more recent permission granted at Llecheiddior Uchaf in 2013, proposes to utilise the former processing facility at Bryncir and two Dormant planning permissions exist for sand and gravel extraction at Cae Efa Lwyd and Tan y Bryn, to the south and west of Penygroes.

The 2003 report identified 14 major resource blocks, all located in an approximately linear strip either side of the A487 between Penygroes and Bryncir, and are fairly unconstrained in terms of environmental and landscape designations. Critically, most of the blocks, with the exception of A2 Cae Efa Lwyd & A3 Tan y Bryn, had previously been identified as 'Mineral Consultation Areas' in the Gwynedd Unitary Development Plan. However, all of the blocks identified for further assessment are located outside of the Llŷn AONB.

The geomorphology of the area to the west and north of Penygroes comprises a series of sub-parallel moraine ridges and narrow intervening sandur contiguous with similar moraine ridges and sandur channels to the north and west. The moraine ridges were formed during successive retreat stages of the Irish Sea ice sheet as it wasted away northwards and consist of a very variable suite of predominantly coarse gravels and associated diamicts deposited in ice-marginal conditions during retreat of the Irish Sea ice-sheet north from the area.

Some of the resource blocks however, have already exploited much of the mineral reserve (*Bryncir & Graianog*) or have been largely sterilised by other development including the Penygroes by-pass and waste management projects at Llwyn Isaf. Two of the resource blocks selected for assessment already include Dormant reserves that may be reactivated at any time, subject to EIA considerations and the approval of modern conditions. However, in consideration of the proximity of these resource blocks to the established market, existing survey data and the potential to utilise existing processing facilities at Bryncir and Graianog, these resource blocks have been given detailed consideration below as to their potential to contribute to the apportionment of sand and gravel in the LDP.

It should be noted however that extensive volumes of good quality sand have been identified in Cors Geirch (65 million tonnes) and around Nefyn (42 million tonnes) and the candidate sites identified as specific allocations or preferred areas of search should not prejudice proposals to exploit safeguarded areas of sand and gravel which are located outside the Llŷn & Môn AONB, where specific survey data may justify the commercial exploitation of the resource.

Consideration of Candidate Resource Blocks as Preferred Areas of Search

The location of following resource blocks are shown on the Liverpool University maps (Appendix A Figure 19), Sand and Gravel Resources of North West Wales. Those resource blocks identified as candidate 'Preferred Areas of Search', have been plotted on (*rough*) working drawings, taken from OS Map Data following a basic site inspection and photographic survey.

Block 10A2 (Cae Efa Lwyd) - Grid Ref. 246377 353026

This is a small kame terrace or kame moraine located immediately west of Penygroes with an area of 0.16 square kilometres. It has a small disused pit on its northern margin and a Dormant planning permission comprising of exposed workings occupying the southern section of the resource. The amount of mineral reserve available within the dormant workings however is constrained by the extent of the permission in relation to the remainder of the resource and the realistic possibility of implementing a scheme of restoration that is capable of beneficial use to agriculture.

The resource forms a discrete elongate mound with the highest point probably having the greatest thickness of sand and gravel. The borehole (No. 7) encountered 20cm of topsoil and 7.4m of sand and gravel. The floors of the pits appear to have been in sand and gravel which suggests that sand and gravel extends below the 100m topographic contour and agrees with a base to the deposit at about 95m as indicated by the geomorphological survey. It has an estimated **0.91** million tonnes of sand and **1.11** million tonnes of gravel. A recent estimate of the resource by an operating company however, confirmed a total tonnage of **500,000** tonnes. The resource has a high content of medium to coarse sand and fine to coarse gravel and yet relatively free of fines. The grading envelope indicates a reasonable degree of grain size variability within the deposit.

Commercial potential is high, with a realistic prospect of re-opening, given that potential operators have expressed an interest in submitting a ROMP to exploit the reserve and further prospect the remainder of the resource. There are no PROW located anywhere within the resource block and since the completion of the Penygroes bypass, the site now has convenient access onto the A487 Trunk road. There are no major constraints, although the site is in a prominent position with many residential properties within 100m of the site boundary and having direct views across the site.

Given that both the 1988 & 2003 Liverpool University studies consider that the resource is of high commercial potential, it is considered therefore that resource 10A2 should be identified as a preferred area of search.

Block 10A3 (Tan-y-bryn) - Grid Ref. 246594 352083

This is a moderate sized kame moraine covering an area of 0.33 square kilometres southwest of Penygroes. It has a previous history of working with a Dormant permission on the south-eastern extent of the deposit. The resource forms a relatively discrete ridge with its highest ground and potentially thickest deposit on the eastern side. The borehole (No.9) encountered 20cm of topsoil and 11.4m of gravel before reaching boulder clay. The report suggests that this resource may extend outside the limits indicated by the geomorphological survey but any such additional resources have not been assessed. It contains an estimated **2.13** million tonnes of sand and **4.52** million tonnes of gravel and is regarded of high commercial potential. The resource has a high content of medium to coarse sand and fine to coarse gravel and yet relatively free of fines. The grading envelope indicates an even grain size distribution with a degree of variability within the resource.

PROW No. 41 cuts across to Tan y Bryn Farm from the west, but is located well clear of the main bulk of the mineral resource. The PROW also includes the farm track which provides access onto the A487 Trunk road since the completion of the Penygroes by-pass. The resource block is located in a prominent position as viewed from the adjacent carriageway and the settlement of Llanllyfni with many residential properties having direct views across the site. The only major constraint is the position of a residential property within the centre of the resource having Grade II listed status with the farm access track located only a few metres away. However, the property is within the ownership of the landowner and the use of the track may be the only means of transporting the remainder of the material from the area of the Dormant permission.

The tonnage of material that is capable of being exploited from the area of the Dormant permission is limited, although the total resource held within the greater part of the agricultural pasture is more substantial.

The southern extent of the deposit is located adjacent to a main river (Llyfni) and C2 Flood Zone and there will be issues concerning ground and surface water that will require consultation with Natural Resources Wales. The southern extent of the deposit is designated as a candidate wildlife site under policy B17 of the UDP (*Afon Llyfni - Broadleaved woodland; coniferous woodland; acid/neutral flush*).

Given that both the 1988 & 2003 Liverpool University studies consider that the resource is of high commercial potential, it is considered therefore that resource 10A3 should be identified as a preferred area of search.

Block 10B (Ffridd-bach) - Grid Ref. 245695 351706

This large, prominent block, of 1.55 square kilometres, lies west of Llanllyfni and extends northeastwards off the north slope of the hill mass of Foel. It consists of a series of parallel ridges separated by flat areas that probably represent ice-front alluvial fans or sandur. The deposits are consequently likely to contain significant quantities of mineral, but possibly contaminated in part with units of diamict. On the basis of four boreholes the block was estimated to contain 9.42 million tonnes of sand and 14.13 million tonnes of gravel and was regarded as comparable to blocks currently containing working quarries in the area and thus of high commercial potential.

The 1988 Sand and Gravel study states that the main problem with the resource will be the overburden, the removal, stacking and storage of which, in concert with progressive

restoration which at any site as big or as potentially big as this will require. Access by unclassified road to either main 'A' roads will not be easy without recourse to a dedicated mineral road, most likely to the A487(T). Overburden, access and perhaps processing any waste could present economic and environmental difficulties to the full exploitation of this resource but the borehole information suggests there may only be major waste problems in the north around Lleuar Fawr. The resource block lies outside a C2 Flood Zone along its eastern boundary, but the north eastern corner of the resource is designated as a SSSI, Corsydd Llanllyfni, a constituent part of the Corsydd Eifonydd SAC. Also 3 candidate wildlife sites under policy B17 of the UDP (*Afon Llyfni on the northern boundary- broadleaved woodland; coniferous woodland; acid/neutral flush, Lleuar Fawr within the centre of the deposit – basin mire, Cae Newydd on the eastern boundary - marshy grassland; acid/neutral flush*).

For the above reasons, it is considered therefore that resource block 10B should be safeguarded.

Block 10C2 (Bodychain) - Grid Ref. 246530 349504

This block lies to the north of Block 10C1 in a similar location banked against the eastern side of the Afon Dwyfach valley and is also part of an arcuate kame moraine complex. It covers an area of 1.62 square kilometres and includes three disused quarries. It records some of the thickest sequences of sand and gravel in the area, up to 22 m.

On the basis of four boreholes the block is estimated to hold 11.15 million tonnes of sand and 20.71 million tonnes of gravel. Numerous boreholes drilled through the block as part of the construction of the re-aligned A 487 confirm both the thickness and quality of the mineral in the block and it is regarded as a significant resource with high commercial potential. The resource has a high content of medium to coarse sand and fine to coarse gravel. Most of the northern and eastern portion of the block, however, is covered by a high density local road network and is largely sterilised.

An application under S17 of the TCPA 1990, was subject to a determination by Gwynedd Council on 31st July 2002 whereby a certificate was issued confirming that the winning and working of sand and gravel would have been an appropriate alternative use of land at Bryn y Gro and Coed Cae Newydd at the northern end of block C2.

The southern portion is unconstrained and provides the best prospect. Information gathered in the preparation of the 1988 survey considered the deposit to be at its thickest along a north-south line to the east of Lon Eifion. Based upon a search area of 383,081m², including a 100m buffer for farms and residential properties located within the resource, an average thickness of 10m is applied to the whole resource yielding approximately 7 million tonnes of sand and gravel. A strip of uncultivated land along the eastern extent provides some measure of a buffer between the resource and the cycle track which, for the most part, includes a drain along its verge to intercept surface water from the resource block.

There are no public rights within the deposit, but a major constraint however is that some sort of crossing will be required, either vehicular or by means of a conveyor, in order to transport the material to the existing processing facility at Cefn Graianog. Three candidate wildlife sites under policy B17 of the UDP (*Bryn Gors to the north- semi-improved neutral grassland; marshy grassland, Cefn Graianog – coniferous woodland on the western boundary and Bodychain on the eastern boundary- marshy grassland; acid grassland*)

Given that both the 1988 & 2003 Liverpool University studies consider that the resource is of high commercial potential, it is considered therefore that the southern section of resource 10C2 should be identified as a preferred area of search.

Block 10C3 (Graianog) - Grid Ref. 246046 349811

This block lies on the western side of the Afon Dwyfach valley and has the form of a cross-valley kame moraine ridge arcing southeast off the margin of the hill mass of Foel. It has an area of 1.18 square kilometres and contains the major working quarry of Cefn Graianog together with a number of older workings. The sedimentology of the quarry has been investigated by Liverpool University and part of it consists of a coarse-grained, ice-marginal delta system feeding into a small, moraine dammed lake occupying the now boggy ground to the immediate south of the quarry.

Much of the block however has already been exploited with land restored back to agricultural use. The area to the north is likely to become increasingly coarse, due to its close proximity to the former ice-margin, and may exacerbate the current problem in the quarry of an increasing volume of cobble and boulder gravel.

Given the position of the workings and the historic exploitation of the resource, it is no longer considered viable to include as a preferred area of search. However, the plant site remains a valuable asset to the operating company as a central processing facility whereby an option may be pursued to exploit other mineral resources and import the material from elsewhere, e.g. Cae Efa Lwyd (10A2), or prospect the mineral within the adjacent Bodychain resource (10C2) as an extension to the existing workings.

It is considered therefore that resource block C3 should be safeguarded.

Block 10C4 (Ty-Glas) - Grid Ref. 245234 347742

This block lies to the immediate west of Block 10C3 and occupies an area of 2.75 square kilometres in the low col between the hill masses of Foel to the north and Bwlch Mawr to the west. The planning permission for mineral extraction at Henbant Bach at the northern end of the block has since expired. Although much disturbed by former quarrying, the morphology suggests that the block is part of an arcuate cross-valley kame moraine that probably links with a similar moraine occupying Block 10C1 on the eastern side of the Afon Dwyfach valley.

The block contains at least two major disused quarries, together with other smaller abandoned workings. An overall assessment based on 20 boreholes suggested block reserves of 10.58 million tonnes of sand and 12.94 million tonnes of gravel. Much of the sand, however, is very fine and unsuitable for aggregate and the proportion of mud and other waste is locally high. The Liverpool University study states that much of the northwest area of the block, previously regarded as a possible future area of exploitation, is composed of diamict unsuitable for aggregate. The area of the former planning permission at Henbant Bach did contain a fair proportion of silt and fines and the recent development of a landfill and anaerobic digester at Llwyn Isaf has effectively sterilised any potential resource remaining in the north-western extent of the resource where workings ceased operation in the early 1980s.

The area to the south, however, bordering the former lake margin, is likely to contain good quality mineral but is located adjacent to the Corsydd Eifonydd SAC. Overall, the block is rated as of only moderate commercial potential as much of the more easily exploited mineral has already been removed, the sedimentology is locally very complex and detailed investigation would be required in order to prove commercially exploitable resources.

It is considered therefore that resource block C4 should be safeguarded.

Block 10D (Bryncir) - Grid Ref. 248202 345337

This large block lies on the eastern side of the Afon Dwyfach and extends from the southern end of Block 10C1 at Pant Glas to Bryncir. It covers an area of 2.54 square kilometres and is part of a cross-valley moraine system older than that identified around Graianog. The morphology within the block consists of a series of closely spaced, sub-parallel moraine ridges together with small areas of sandur and ice-disintegration topography. It also includes areas, however, where the drift cover is thin and bedrock protrudes through or is close to the surface, particularly along its eastern limit. Overall, the feature is a kame moraine but some ridges show deformation as small-scale push moraines.

The block has a long history of mineral working dating back to 1949 where operations for the winning and working of sand and gravel commenced initially at the current processing site at Llystyn Gwyn Bryncir, thereafter extending westwards towards Llystyn Ganol and more recently, northwards towards Blaen y Cae.

Much of the block however has already been exploited with the cessation of mineral operations in 2007, where the land has been restored back to agricultural use. Only the northern and eastern parts of the block remain which fall within the boundary of the National Park. Scheduled Monument cn021 is located at Llystyn Gwyn and as with other resources identified in the area, it is contained within an area of high archaeological potential.

Given the position of the workings and the historic exploitation of the resource, it is no longer considered viable to include as a preferred area of search. However, the plant site remains a valuable asset, which currently operates under a separate grant of permission for the, *'Processing and packing of aggregates, concrete batching in addition to recycling soil and inert materials such as slate, sand and gravel'*, where inert materials, excavation arisings from civil engineering contracts and where it is proposed to import sand and gravel from the resource block at Llecheiddior Uchaf for processing.

It is considered therefore that resource block C4 should be safeguarded.

Block 10E (Derwyn fawr) - Grid Ref. 247020 346247

This moderate to large sized block covers an area of 1.75 square kilometres on the western side of the Afon Dwyfach between the hill mass of Y Foel to its north and Mynydd Cennin to its west. There are a number of residential properties located on the periphery, including the farms of Derwyn Fawr and Derwyn Uchaf, with the property of Ty'r Dewin located within the south western extent of the deposit. It comprises an undulating area rising towards Y Foel but pierced by the hill of Moel Fychan and forms a set of arcuate kame moraine ridges running from northwest to southeast that match up with similar ridges at the northern end of Block 10D on the eastern side of Afon Dwyfach. It is fronted by a sloping sandur surface or ice-front alluvial fan leading into the head of the Rhoslan sandur to the south.

The block has no history of exploitation and no exposure. An assessment made on the basis of two Liverpool University boreholes, however, reveal sand and gravel thickness of over 15m and 12m respectively with the thickest part of the deposit lying immediately to the west of Derwyn Fawr, where as much as 20m of sand and gravel may occur. The deposit has an even distribution of grain sizes between fine sand and coarse gravel and low fines content. The Liverpool University report had estimated a total resource of 8 million tonnes of both sand and gravel. However, based upon a reduced search area of 750,000m², including allowances for pylons and a 100m buffer for farms and residential properties located within and around the resource, a total of 4 million tonnes would appear a more realistic estimate (*independent boreholes recently undertaken by a quarry operator could provide a better indication of the workable resource but at the time of writing this report however, such information was not readily available*). The block was regarded as of high commercial

potential probably able to produce aggregate of similar quality to existing quarries in the area but with a superior grain size distribution.

The Corsydd Eifionydd SAC lies 250m to the north with the Llŷn AONB 2.2km to the west and the National Park 450m to the east but otherwise, no major landscape or environmental constraints. However, given the results of the archaeological investigation at Llecheddior Uchaf, and historical significance of the wider area, the site is likely to be of high archaeological potential. Two small-scale wind turbine developments have been implemented at Pen y Bryn which may be re-located, but a major consideration with this resource is the location of pylons running north to south across the deposit, 180m due west of Derwyn Fawr.

The deposit is dissected by an unclassified road which, together with a buffer applied to the property of Ty'r Dewin, may sterilise a substantial proportion of the resource on its western flank. PROW No. 45 cuts across the deposit from Derwyn Fawr to Derwyn Uchaf and PROW No. 48 traverses the western extent of the deposit. Although the block is relatively unconstrained, the proximity of residential properties, pylons and the requirement for a dedicated haul road onto the A487 are major constraints that will need to be resolved with any application for minerals development at Derwyn Fawr. The access route will involve bridging the Afon Dwyfach, and the Lon Eifion cycle track which borders the eastern side and possibly the diversion of PROW No. 45. Three candidate wildlife sites encroaching into the deposit; (*Moel Fychan on the upper, north-western flank - acid grassland; marshy grassland, Derwyn Fawr to the east - marshy grassland; acid grassland with Derwin occupying low-lying land to the south of the deposit - marshy grassland; wet heath/acid grassland mosaic*).

Given that both the 1988 & 2003 Liverpool University studies consider that the resource is of high commercial potential, it is considered therefore that resource 10E should be identified as a preferred area of search.

Block 10F (Llecheiddior Uchaf) - Grid Ref. 247274 344731

This small block was only identified in the 1988 survey as 'other resources' and occupies an area of approximately 0.50 square kilometres to the west of Bryncir. It forms a double or triple-ridged kame moraine showing a steep northern, or up-ice slope, probably marking the contact with the ice-margin, and a shallow southern, down-ice slope, probably part of an ice-front alluvial fan. The block shows evidence of considerable former quarrying operations but borehole information suggests some sand and gravel remains below the former quarry to the west of the farm.

Because of limited investigation at the time of the 1988 survey, estimates were considered of low reliability but the site is anticipated to contain 1.14 million tonnes of sand and an equivalent volume of gravel at an average thickness of 5 metres or more over an area of 285,000m² and rated of moderate commercial potential because of its low overall volume and relatively high proportion of fine sand and silt.

The resource was further prospected with an application for minerals development in 2012, which was granted subject to conditions in 2013, and is expected to release a total reserve of 600,000 tonnes of sand and gravel. It is proposed that material extracted be used for direct building products, but mainly to supply mortar sand, gravel and sharp sand for builders merchants and ready mixed concrete outlets.

Raw materials excavated from the working face are to be stockpiled on site, ready for dispatch to the processing facility at Bryncir which has an existing planning permission for; '*Processing and packing of aggregates, concrete batching in addition to recycling soil and*

inert materials such as slate, sand and gravel". The mineral reserve is contained within an area of high archaeological potential and the planning permission granted in 2013 includes for significant archaeological mitigation. The volume of material available for extraction is limited to an average depth of working of 5 metres on account of a high water table and possible impact on groundwater flows in the area. A Class 3 county highway bisects the deposit on the western extent, although the development proposals were not affected in any way but the planning permission does include output restrictions, given that the unclassified road serving the site also forms part of the Sustrans cycle network.

There are three candidate wildlife sites under policy B17 of the UDP; (*Derwin and Bryncir to the north - marshy grassland; wet heath/acid grassland mosaic and marshy grassland respectively, Llecheiddior Ganol on the southern boundary - marshy grassland; acid/neutral flush; acid grassland, and Ynys Galed to the west - acid grassland; marshy grassland*).

The 600,000 tonne mineral reserve at Llecheiddior Uchaf should offset against the RTS apportionment requirement of 3.7 million tonnes. Notwithstanding, it is still considered that the resource should be identified as a preferred area of search.

Conclusions

The maintenance of future supplies of sand and gravel from resources within Gwynedd is seen to be a matter of sub-regional, rather than local importance. There are no sand and gravel workings in Anglesey, Conwy or Snowdonia National Park. Consequently, Gwynedd remains a sand and gravel exporting authority.

It's important to note however, that no specific allocations have been proposed by the minerals industry/private operators, and which are supported by specialist borehole or survey data in response to the 'call for sites' stage of the Joint Local Development Plan. The conclusions of the above site selection exercise are based solely upon the assessment of planning constraints, the proximity of resource blocks to existing settlements and the potential for commercial for exploitation based upon the best available information in the 1988 & 2003 Liverpool University surveys of the Sand and Gravel Deposits of North West Wales. With respect to both surveys however, the estimates of the sand and gravel resource contained in the candidate allocations/preferred areas of search appear generous and more detailed investigations should therefore be undertaken by the mineral industry in order to quantify the volume of material available for commercial exploitation.

Although most blocks are relatively sand-poor, some large volume blocks contain higher than average proportions of sand, including include Blocks 10D at Bryncir and 10E at Derwyn Fawr but also some low volume blocks also contain significant volumes of sand including Block 10A2 Cae Efa Lwyd and 10F at Llecheiddior Uchaf. Of the blocks currently not exploited four have high commercial potential, Block 10C2 at Bodychain and block 10E at Derwyn Fawr appear to contain significant reserves of sand and gravel.

For the above reasons, it is considered that the following should be identified in the LDP as 'Preferred Areas of Search', (*"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.

Cae Efa Lwyd, Penygroes – Approx. **0.5** million tonnes of sand and gravel

Tan y Bryn, Penygroes - Approx. **2.13** million tonnes of sand and **4.52** million tonnes of gravel

Bodychain, Llanllyfni - Approx. 7 million tonnes of sand and gravel

Derwyn Fawr, Bryncir – Approx. 4 million tonnes of both sand and gravel

Llecheiddior Uchaf, Bryncir - Approx. Approx. 2.28 million tonnes of both sand and gravel

TOTAL – 20.43 MILLION TONNES OF SAND AND GRAVEL

The Preferred Areas of Search identified above provide the potential for the release of new reserves which are far greater than the minimum allocation of 3 million tonnes recommended by the RTS (First Review)(endorsed 2014) in order to allow for the uncertainties involved, to provide choice to the Minerals Industry and to encourage local supply to minimise transport distances.

Appendix 2

Glossary of Terms

Active Site: Active sites in Wales are defined by the Town and Country Planning (Fees for Application and Deemed Applications) (Amendment No.2) (Wales) Regulations 2006 as sites where “a) development to which the relevant mineral planning permission or landfill permission relates to be 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 Mineral Planning Guidance Note 14 (MPG14): Environment Act 1995: Review of Mineral Planning Permissions.

Active reserves: consist of reserves from quarries which are currently working, or have been worked in the recent past.

Aggregates: particles of rock or other inorganic manufactured material used for construction processes, e.g. sand, gravel crushed rock and recycled or secondary materials used in the construction industry.

Allocation: The identification within a Local Development Plan, of an area of land for future mineral working.

AONB: Area of Outstanding Natural Beauty designated under the National Parks and Access to the Countryside Act 1949 for the purposes of preserving and enhancing their natural beauty.

Apportionment: The rate at which the mineral planning system requires provision to be made in Development Plans for the supply of aggregates from a given area or region.

Areas of Search: Areas where it is likely that some sites will be appropriate for mineral extraction, depending on economic and environmental circumstances. Areas of search will define broad areas that are believed to contain mineral resources of commercial significance but whose extent is uncertain is uncertain. Within these areas it is likely that appropriate mitigation measures can overcome all environmental effects. Within areas of search, planning permissions could be granted to meet a shortfall in supply should specific sites, preferred areas or extensions to existing sites identified in the plan, not come forward. It will not usually be appropriate for an authority to identify only areas of search in a plan: full justification for adopting such an approach would be needed.

Borrow Pit: A site for the extraction of aggregate minerals over a limited period, for exclusive use in a specific construction project, which will usually be close to or contiguous with the site.

BREEAM: BREEAM a standard for best practice in sustainable building design, construction and operation. BREEAM has become one of the most comprehensive and widely recognised measures of a building's environmental performance.

British Geological Survey (BGS).

Buffer Zones: A buffer Zone is an area of protection around permitted and proposed mineral workings. The objective of the buffer zone is to protect land uses that are most

sensitive to the impact of mineral operations by establishing a separation distance between potentially conflicting land uses.

Construction Demolition and Excavation Waste (CD & EW): Material arising from the demolition of buildings. It can include material that after processing, for example, by crushing can be re-used as aggregate (previously referred to as C & DW – excavation waste is now usually included).

Crushed Rock: Stone derived from a solid rock mass, for example limestone by quarrying and processing usually by mechanical breaking, for use in construction.

Demand: The need or desire for a particular product, backed by an ability to pay.

Dormant sites: Dormant sites as defined by the Planning & Compensation Act 1991 and the Environment Act 1995, cannot be worked until new schemes of conditions have been determined and therefore do not contain permitted reserves.

Environment Agency (Wales) (EAW).

Geographical Information System (GIS).

Landbank: A stock of planning permissions to which valid conditions are attached for the winning and working of minerals. It is composed of the sum of all permitted reserves at active at a given point in time, and for a given area.

Limestone: A sedimentary rock consisting mainly of calcium carbonate.

Local Development Plan (LDP).

Local Planning Authority (LPA).

Igneous Rock: Solidified molten rock e.g. granite, dolerite.

Implementing the Methodology for Assessing the Environmental Capacity for Primary Aggregates' (IMAECA): A methodology devised by ENVIROS Consultancy to enable environmental capacity to be assessed and displayed in geographic form on a GIS [Geographic Information System] database.

Inactive Site: Defined by the Town and Country Planning (Fees for Application and Deemed Applications) (Amendment No.2) (Wales) Regulations 2006 as one "which is not an active site". Inactive sites 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. .

Mineral Planning Authority: local authority which is responsible for determining planning applications and developing policies on mineral working.

Mineral Planning Policy Wales (MPPW): published by the Welsh Government in 2000. MPPW provide a statement of national planning policy on minerals.

Mineral Safeguarding Area (MSA).

Mineral Technical Advice Note (Wales) 1: Aggregates (MTAN1): published by the Welsh Government in 2004, MTAN1 provides more detailed guidance on planning for aggregates, to supplement MPPW. MTAN1 also defines the roles of RAWPs and RTS.

Mineral Technical Advice Note (Wales) 2: Coal (MTAN2)(2009): published by the Welsh Government in 2004, MTAN2 sets out detailed advice on the mechanisms for delivering the policy for coal extraction through surface and underground working by Mineral Planning Authorities and the coal mining industry. Principally, MTAN2 requires MPA to identify areas where coal working will not be acceptable; and safeguard shallow coal resources.

National Nature Reserve (NNR): some of the most important places for wildlife in the country exhibiting the very finest examples of our natural heritage, including flora, fauna, habitats and geological features.

Permitted Reserves (of primary aggregates): Primary aggregate resources which have the benefit of valid planning permission for the winning and working of minerals.

Preferred Areas: Areas of known resources with some commercial potential, and where planning permission might reasonably be anticipated

Primary aggregates: minerals that are directly quarried from the ground, principally to provide aggregates. Primary aggregates are distinguished from other sources (known as secondary aggregates) which include slate waste and construction and demolition waste.

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 material that may be produced, including overburden and processing waste which may or may not be useable. Production represents the overall rate (in tonnes or millions of tonnes per year) at which the permitted reserves at a particular site are being used up.

Provision: The total amount of aggregate required to be supplied from a particular local authority over the duration of the Local Development Plan.

Proximity Principle: relates to the objective of minimising unnecessary transportation of bulk materials such as construction aggregates, by ensuring that sources of supply are located as close as possible to the main centres of demand.

Recycled aggregates: Aggregates previously used in construction.

Regional Aggregates Working Party (RAWPs): The North Wales RAWP is one of two bodies in Wales which are responsible for preparing Regional Technical Statements (RTS). The RAWP includes representatives from national and local government and the minerals industry.

Regionally Important Geological Sites (RIGS): The Regionally Important Geological Sites (RIGS) scheme was developed as the non-statutory voluntary arm of the Earth Science Conservation Strategy (1990) devised by the former Nature Conservancy Council (NCC) for the conservation and management of Regionally Important Geological /Geomorphological Sites (RIGS).

Regional Technical Statements (RTS): The RTS provides a Strategic basis for aggregate provision in local development plans. The North Wales RTS was first published in 2009, and the 1st Review endorsed in 2014.

Reserve: Those parts of a **resource** which are known to be suitable (usually as a result of detailed ground investigations and laboratory testing. has a valid planning permission for extraction.

Resources (of primary aggregates): Geological materials including rocks and naturally occurring sand and gravel, which have the potential to be used as aggregates. A concentration of occurrence of material of intrinsic economic interest in or near the Earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction.

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 R3eview 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. However, court judgements, 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.

Road Planings: A particular example of CD&EW materials comprising aggregate and bitumous or cement binder materials that have been 'planed' from the surface of a worn out road prior to resurfacing with new or recycled materials

Safeguarding: Safeguarding policies ensure that mineral **resources** which may be needed at some time in future are not sterilised by other forms of development, such as housing, without consideration of that need. A decision to safeguard a particular mineral resource does not imply that planning permission will be granted for its working.

Sand and Gravel: Unconsolidated usually superficial material usually of fluvial or glacial origin overlying the solid geology.

Secondary Aggregates: Wastes or by-products suitable for aggregate purposes but derived from activities where aggregate production is not the main aim, e.g. various industrial processes and the extraction of minerals for uses other than for aggregates.

Special Areas of Conservation (SAC): designated in accordance with European Directive 92/43/EEC, adopted 21 May 1992, to provide measures to conserve natural habitats and associated wild fauna and flora. The directive is commonly known as the 'Habitats Directive.' Special Areas of Conservation, together with Special Protection Areas (see below), will form part of 'Natura 2000,' a European wide network of areas of special nature conservation interest. Special Areas of Conservation are also Sites of Special Scientific Interest.

Specific Sites: Sites where mineral resources of commercial significance exist, and where any planning applications which come forward for those for those sites are likely to be acceptable in planning terms

Special Protection Areas (SPA): designated in accordance with European Directive 79/409/EEC, adopted 2nd. April 1979, to provide measures to conserve wild birds, their eggs and their habitats. This directive is commonly known as the 'Birds Directive.' Special Protection Areas are also Sites of Special Scientific Interest.

Site of Special Scientific Interest (SSSI): designated by English Nature Countryside Council for Wales in accordance with the Wildlife and Countryside Act 1981 to conserve areas of special interest for their flora, fauna, geological or geomorphological interest.

Supply: The amount of a product which producers are both willing and able to sell at a given price. Supply of aggregates is normally expressed in relation to a particular source area and is measured in tonnes or millions of tonnes per year.

Appendix 3

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