

Bryn - High Specification Aggregate Source



Report by Julian Smith

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- Regional geological setting

Bryn Quarry is located between the villages of Nelson and Gelligaer, just 2 miles off the A470 and 13 miles from Jct 32 of the M4. The quarry itself is situated on the site of a recycling operation. The strata being worked are from the Pennant Measures of Upper Carboniferous Age, which form the central part of the South Wales coalfield. In contrast to underlying divisions of the Coal Measures, sandstones predominate in the Pennant Measures and comprise poorly sorted, fine to coarse, feldspathic and micaceous lithic greywackes. These rocks vary from being massive to flaggy or cross bedded and commonly exhibit pebbly beds containing iron-stone clasts, mudstones flakes and coarse carbonised plant remains. Individual sandstone units of up to 60 m are common but locally exhibit thin impersistent partings and thin beds of clayey siltstones associated with coal seams.

- Bryn geology

Bryn Quarry extracts sandstone from the Grovesend Beds within the Upper Pennant Measures, which in this locality are sub-horizontal but form part of a broader scale, shallow, synclinal feature.

The geology of the consented extraction area has been derived from the published maps Of the British Geological Survey. However, more detailed geological information exists in the form of exploration drilling records from five cored boreholes, supplemented by two open-hole boreholes.

The material quarried is a very consistent sequence of massive, ill-sorted, medium grained sandstones with only brown weathering discoloration along the numerous joint planes. Due to the bedding and joint pattern, the rock tends to be slabby in nature, with blocks of 0.3 metre x 1 metre x 1 metre being common.

The sandstones are remarkably consistent, except for a thin mudstone horizon up to 0.3 metres thick towards the base of the face, but good quality sandstones are exposed again below this horizon. This mudstone, together with the occasional thin clay smeared joint, is discarded at the face and stock-piled for future processing as crusher run materials in a separate operation. In addition to the removal of soil and clay overburden to depths of approximately 1.5 metres, a further 0.5 metres of weathered top rock is removed prior to blasting and processing.

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- Importance of High Specification Aggregates

A report carried out by Capita Symonds states: *“High Specification Aggregates (HSA) used for the construction and maintenance of skid-resistant road surfaces are relatively rare. They are highly specialised aggregates which can be obtained only from a limited number of geological formations, mainly within the western and northern parts of the UK. Such aggregates are of fundamental importance in underpinning both national and local policies on road safety and skid resistance and this, combined with their scarcity, means that they are often transported long distances for use in areas which do not have indigenous sources of suitable material, as is the case in much of southern and eastern England.”*

The aggregate produced at Bryn quarry is classified as a HAS (High specification Aggregate) due to the fact that it has a High resistance to polishing (Polished stone Value) and achieve in excess of 68psv.

High specification aggregates (HSA's) with a high polished stone value are used extensively in road surfacing, construction and maintenance particularly where high volumes of commercial traffic occur and wherever road conditions are likely to give a high risk of skidding related accidents e.g. junctions, roundabouts etc. They represent the premium products of the aggregate quarrying industry.

The availability of aggregate within the UK with these properties is localised and strictly limited. There are approximately only 8 quarries in the UK that supply aggregates that consistently record a psv level of 68+, within south wales there is currently only 2, Bryn being one. In 1991 only 12% of the total output of HSA's in Great Britain, fell into the category of psv's greater than 68.

The Travers Morgan report published in 1993 by the Department of the Environment recommended that: *“In view of the strategic importance of High Specification Aggregates in the maintenance of safety standards on Britain's most heavily trafficked road it is recommended that these materials are given special consideration in future minerals planning policies”.*

- Demand for 68+ PSV Aggregate in the UK

There are no official published figures for demand of 68+ PSV aggregate in the UK, but Tarmac estimate the total UK demand is around 300,000 tonnes of 68+ PSV aggregate per annum. Tarmac is the largest supplier of Aggregates and Asphalt in the UK and its national demand is approximately 60-80,000 tonnes of 68+ PSV aggregate. Within Wales this demand is approximately 30-40,000 tonnes.

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- Strategic importance of Bryn to Tarmac

After the closure of Bwlch Ffos mining site (Resolven) which was operated by Tarmac Quarry Materials as its primary source of 68+ PSV material in Wales as well as the vast majority of the UK, Tarmac has highlighted Bryn quarry as its major supplier of high PSV aggregate in Wales, the South West of England and Midlands.

As the other source of 68+ PSV aggregate within south Wales is unable to meet these demands, Bryn quarry is strategically important to Tarmac's business as a supplier of High PSV asphalt within the UK. As an environmentally conscious company, Tarmac sees the location of Bryn as a prime driver in minimizing the need to transport 68+PSV aggregate long distances into Wales and the south west of England from other sources.

Conclusions

The relationship between Tarmac and Bryn Quarry (Mineral Traders Ltd.) is important in preserving and obtaining maximum benefit from the high value aggregate contained within its deposit. Tarmac, as a leading supplier of asphalt within Wales, using Bryn as its source of 68+ PSV is able to provide a cost effective, competitive and high quality asphalt product to its customers in Wales.

REFERENCES

- *HIGH SPECIFICATION AGGREGATES FOR ROAD SURFACING MATERIALS IN ENGLAND – UPDATING THE TRAVERS MORGAN REPORT* Thompson, A , 2004, Capita Symonds Limited,
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