Background

Aggregates are the granular raw materials that are used to make construction products which are used to build our houses, roads, schools, office, hospitals, and other developments within our urban and rural environments.

Aggregates broadly come from three sources:

- Primary aggregates, which are newly extracted from the ground or sea bed;
- Secondary aggregates, which are the by-product either from the extraction or other materials or a manufacturing process, and can either be either natural (such as china clay waste) or manufactured (for example power station ash and steel slag);
- Recycled aggregates, which are produced from crushed demolition waste.

For many purposes aggregates from these different sources can be substituted for one another, for example gravel or crushed rock can be used for concrete. However some end uses, such as rail ballast and roadstone, require particular types of aggregate due to requirements on size, strength and durability. Aggregates used in asphalt for road surfaces must have a high Polished Stone Value (high PSV) to ensure that tyres will grip the surface and such aggregates only come from certain types of rock.

Aggregates are a low value and heavy raw material, which means that transportation costs can make up a significant proportion of the final price the customer pays. For this reason aggregates are typically not transported more than 100 km.

Planning for aggregate mining in South Africa

In many other countries the issue of planning and permitting of aggregate mining is well controlled. In South Africa this is not evident and therefore quarries are allowed to operate in areas where they are often not sustainable. The regulation in S.A it seems does not take into account if there are enough quarries available already.

South Africa is endowed with a wide range of indigenous minerals. The principle of maintaining an adequate and steady supply of minerals should have been the basis for strategic mineral planning in South Africa. Minerals are important national resources and adequate and steady supplies are vital for developing and sustaining our modern society and economy. They play a fundamental role in underpinning the growth of many sectors of the economy and in contributing to the country’s high standard of living. Aggregates and other construction materials such as cement raw materials, brick clay and gypsum, are vital to the construction industry which maintains and enhances our built environment and transport infrastructure. Industrial minerals such as salt, kaolin, ball clay, silica sand...
The Aggregate and Sand Industry in South Africa.

and fluorspar provide the essential raw materials and chemical feedstock which underpin the manufacturing industry, as well as agriculture. Building stones are needed for repairing historic structures and for maintaining local distinctiveness in new buildings. Coal is an important energy resource.

What is a Mineral Resource?

Mineral resources are natural concentrations of minerals in or on the Earth's crust that are or may become of economic interest because they are present in such form, quality and quantity that there is the potential for eventual economic as well as physical parameters.

The identification and delineation of mineral resources is inevitably somewhat imprecise as it is limited not only by the quantity and quality of data currently available but also involves predicting what might, or might not, become of economic importance in the future. The identification of mineral resources is, therefore, a dynamic process which must take into account a range of factors.

Geological reinterpretation of resource areas may be appropriate as additional data becomes available. The demand for mineral changes, as different materials or different qualities of mineral are required to meet changing economic, technical and environmental circumstances. Future developments in working or processing techniques may render deeper extraction viable despite higher proportions of waste. Changes in the location of the point of use have an effect upon viability. Thus a mineral deposit with a high proportion of waste may be viable if located in close proximity to a major market, but uneconomic if located further away. Consequently the boundaries of mineral resources may change over time.

It is important to note that the delineation of mineral resources does not involve consideration of the full range of land use planning constraints that might apply if extraction were to be considered. Issues such as the environmental, social and cultural impacts of mineral extraction are matters which must be left for consideration by the planning process.
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Safeguarding of Aggregate and Sand

Mineral resources are finite and they must be protected to give future generations the best possible chance of meeting their own needs. Minerals can only be worked where they naturally occur and with increased pressure on land use we must ensure that those resources are not needlessly sterilised by other forms of development.

Sterilisation of mineral resources can occur as a result of surface development directly overlying the mineral resource, or by development that is situated on or close to the boundary of a resource. The marked differences in the geological occurrences, properties, markets, and supply and demand for minerals, give rise to different land use planning implications and safeguarding considerations depending on the location.

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