MRL Corporation Ltd

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ASX Symbol

MRF, MRFO, MRFOA

MRL begins key testwork on its high-quality graphite

Program is part of MRL's strategy to be in commercial production next year

MRL Corporation (ASX: MRF) is pleased to advise it has taken another key step in its plan to fast-track production and cash flow by delivering bulk samples from its Aluketiya and Pandeniya high-grade graphite projects in Sri Lanka to Wuhan University of Technology for metallurgical tests.

The tests will determine the suitability of MRL's high-grade vein graphite for conversion to premium-priced spherical graphite and therefore its ability to be used in battery technologies. The Company anticipates this test work will take approximately six weeks.

If the test results confirm that MRL's graphite is suitable for this purpose, the Company intends to issue samples to major battery manufacturers with the objective of securing offtake agreements.

MRL's strategy to fast-tack the start of production and cash flow is underpinned by several key factors, including the fact the Aluketiya project is already covered by a mining licence and an application for a mining licence at Pandeniya is underway. There is also an established track record of high-quality graphite production at these projects and the existence of production shafts at Pandeniya.

In parallel with the test work, MRL is now refurbishing some of the shafts at Pandeniya to prepare them for production.

MRL believes that should the test results be positive, it will be in a position to start ramping up commercial production later next year.

Wuhan University of Technology possesses 27 innovative research centres, including two State Key Laboratories, a State Engineering Laboratory and provincial or ministerial level laboratories in the areas of new materials, new energy, transportation and logistics, mechatronics and automobile, information technology as well as resources and environmental technology.

Synthetic graphite for batteries currently sells for around $20,000 per tonne. Spherical coated graphite made from natural flake, with its superior properties, sells for around $6000 to $10,000 per tonne. This represents a huge saving to manufacturers and is a means of reducing the overall cost of automotive battery systems.

An increasing amount of high-purity graphite is used in lithium-ion battery (LIB) anodes. Consumption of high-purity flake and synthetic graphite is forecast to rise by 10-12 per cent a year as battery production increases and manufacturers push for higher performance. Synthetic graphite is presently the major raw material used in LIB with 76 per cent of the price of a battery attributed to the raw material costs.

US automotive giant Tesla has revealed plans to build a $5 billion lithium-ion battery 'gigafactory' which could potentially increase natural graphite demand by up to 37 per cent by 2020. Tesla has stated its intention is to reduce the cost of battery production by a minimum of 30 per cent with natural graphite set to play a part in the reduction of raw material costs.

TechMetals Research estimates 102,900 tonne per annum of battery grade graphite will be required to supply the Tesla facility. Below, *IM Data* offers the following consumption scenarios for Tesla's battery plant by 2020:

	Spherical Graphite (tpa)*	Flake Graphite (tpa)	New Graphite Mines
Conservative	28,000	93,000	6
Bullish	42,000	140,000	9

Source : IM Data
**Accounts for the relatively low (30%) yield of spherical graphite from flake using current processing methods.*

Using current processing methods and yields, Tesla's demand alone is greater than current existing global supply calculated at 80-85,000 t/year. If achieved, battery demand for natural graphite will increase by 112 per cent. IM Data estimates large flake grades (+80 mesh and larger) suitable for battery consumption made up just over 20 per cent of total flake graphite output in 2013 and with competition for these grades from other traditional markets (i.e. the refractories sector), new projects like MRF's will be required to meet the battery market demand.

Shaft Refurbishment Pandeniya Location

About MRL Corporation Ltd (ASX: MRF)

MRL is aiming to develop an underground mining operation to extract high-grade, crystalline vein graphite, which is unique to Sri Lanka. The Company holds exclusive rights to exploration licenses covering approximately 6,300 hectares in area, with historical workings located within nearly all license grids.

About Graphite

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Natural graphite occurs in three forms: amorphous graphite, flake graphite and the most rare and highest quality form being crystalline vein graphite. Sri Lanka is famed for being the only commercial producer of crystalline vein graphite (lump or Ceylon graphite), the highest quality of naturally occurring material in the world. The quality of vein graphite produced in the country has a purity level in excess of 90% TGC (Carbon as graphite) which means little upgrading and processing is required to make a high quality saleable product.

Amorphous (micro crystalline) graphite is the least pure form of naturally occurring graphite and commercial deposits usually have a carbon content of 70-85%, and are found as lenses or lumps with flat fracture cleavages. It is normally formed by metamorphism of previously existing anthracite coal seams.

Flake (crystalline) graphite is the more common form of graphite and typically has a carbon content in the range of 80-99%, and is usually formed in metamorphic rock in concentrations of 5%-12% of the ore body. Mining and processing of these deposits is similar to an open pit gold or copper mine, requiring 'large scale' mining and processing to extract the graphite. Large-scale mining and processing plants typically equates to high capital expenditures and relatively high operating costs.

Vein (crystalline) graphite is the purest form of graphite with TGC grades typically >90%, with some grade as high as 99.5% TGC. Mining vein graphite may be considered analogous to high-grade gold vein mining, requiring considerably less capital expenditure when compared to large-scale open pit mining. That is, development, mining equipment and processing plants will be of a significantly smaller scale. Operating unit costs will also be lower than those for typical large-scale open pit mining.

Nature of vein graphite

Sri Lankan graphite deposition model is best described from the 'bottom up': tension fractures formed in the metamorphic sediments, caused by the folding of the sediments, creating 'conduits' for the hydrothermal deposition of high quality vein graphite. Historically, mining of these veins has found the veins generally increase in thickness and grade quality with increasing depth. Graphite veins generally dip steeply at –70° to near vertical, enabling 'narrow vein' extraction mining techniques similar to those used on narrow vein, high-grade gold deposits. The method commonly used is an overhead retreat stoping technique where the high-grade vein graphite is mined and hauled to surface without contamination. The graphite selvages, in contact with the surrounding waste, is hauled to surface and stockpiled for upgrading. The balance of the waste is used to fill the floor of the stope.

Due to the nature of the vein graphite, it is anticipated vein widths of ~25cm, using narrow vein mining techniques can be economically extracted from underground operations.

The comparison chart below illustrates comparative 'metal equivalent' grades of precious metals with their assumed metallurgical recoveries as compared to Sri Lankan vein graphite.

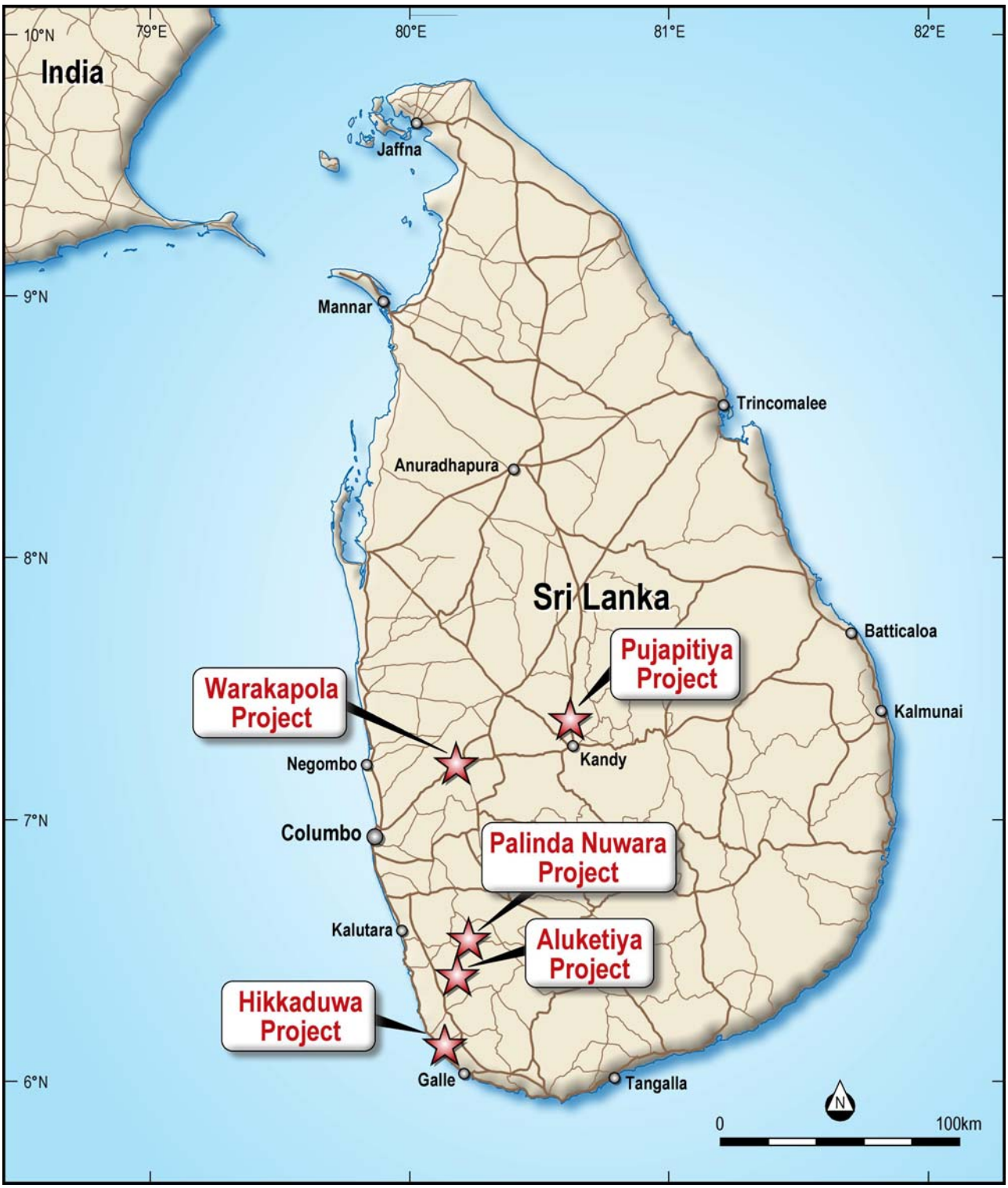

Figure 1: MRL Graphite Project Locations – Sri Lanka

Figure 2: Aluketiya Location Plan

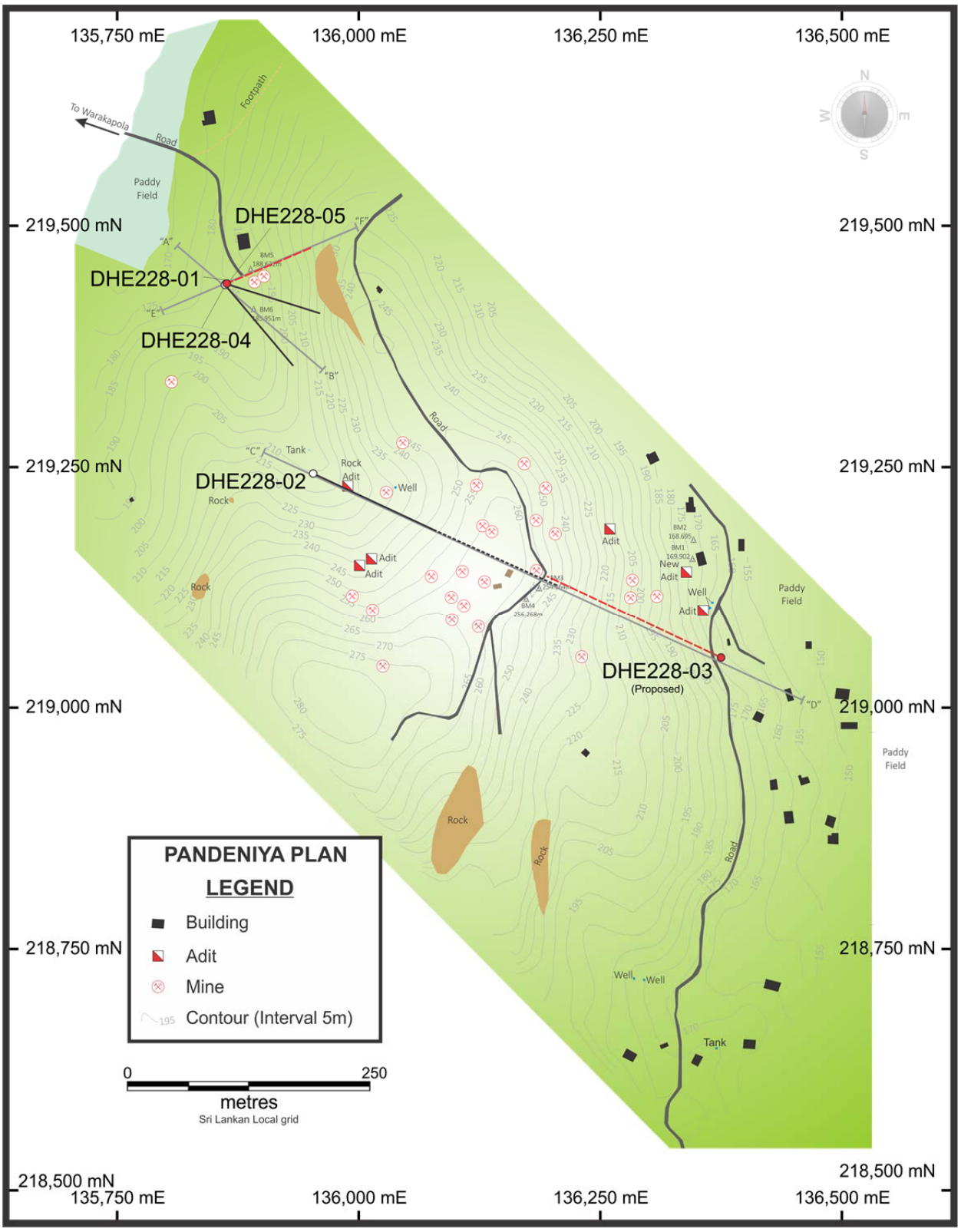

Figure 2: Warakapola Pandeniya Location

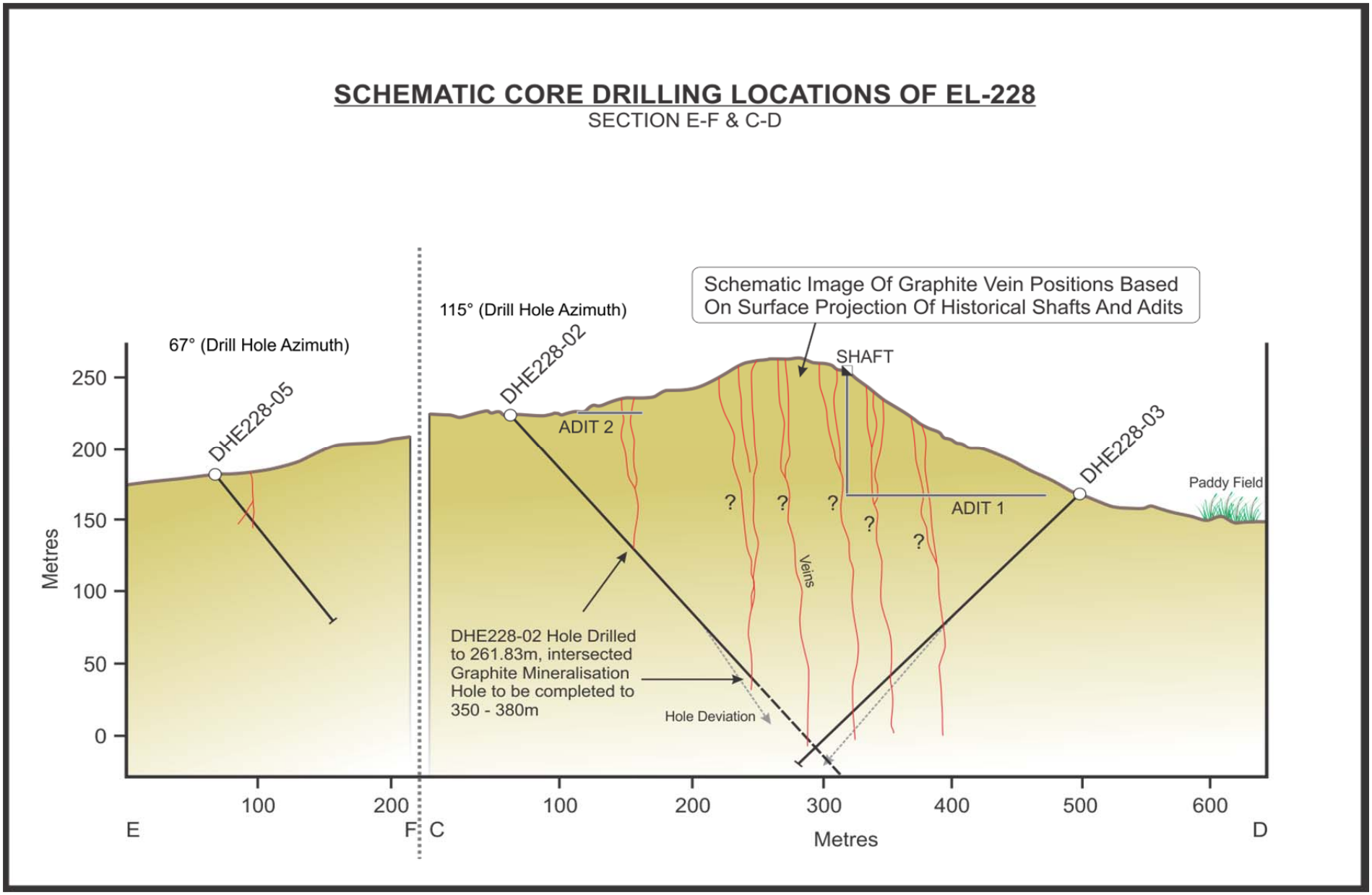

Figure 4 - Warakapola Pandeniya sectional view