

27 July 2015

June Quarterly Report

**MRL Corporation Limited**

ACN 007 870 760

ABN 50 007 870 760

**Registered Office**

Suite 3

9 Hampden Road

Nedlands WA 6009

Tel: +61 1300 660 448

Fax: +61 1300 855 044

**Directors**

Craig McGuckin

Peter Youd

Denis Geldard

Peter Hepburn-Brown

Chris Banasik

**Company Secretary**

Peter Youd

Email: [info@mrltd.com.au](mailto:info@mrltd.com.au)

Website: [www.mrltd.com.au](http://www.mrltd.com.au)

**ASX Symbol**

MRF, MRFOA

# MRL set to secure Sri Lankan mining licence

## *On track for first production later this year*

MRL (ASX: MRF) is pleased to report on what has been a highly successful June Quarter for the Company as it closes in on first production at its Sri Lankan graphite projects.

As a result of this significant progress, MRL remains on track to begin production of high-grade graphite in Sri Lanka in 2015.

The key achievements during the Quarter were:

- Completed the Initial Environmental Examination report required by Central Environmental Authority (CEA). Final committee meeting scheduled for August, following which the Industrial Mining Licence for MRL's flagship Pandeniya high-grade graphite project is expected to be issued.
- Drilling continued at the Aluketiya high-grade graphite project. MRL's recently-acquired diamond drill rig, is expected on site shortly. This will accelerate the exploration drilling program.
- Graphene testing at the University of Adelaide returned outstanding results which demonstrated that MRL's graphite is suitable for manufacturing premium-priced graphene.
- Involved in discussions with third parties with a view to collaborating, and seeking to value add through production of graphene.
- All Exploration licences were successfully renewed for a further two year period.
- Experienced geologist Chris Banasik appointment as a non-executive director.
- Continued negotiating land access agreements to provide the future exploration path in the MRL priority areas at Dedigama and Pujipitiya.
- Raised \$1m via successful placement to sophisticated investors in Australia, Europe and Asia.

### Outstanding results from graphene testing

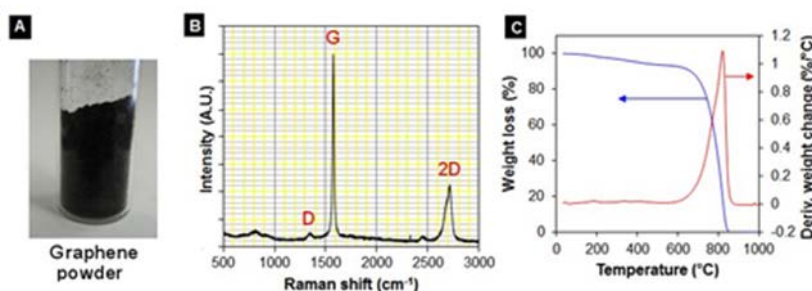
Testing by the University of Adelaide involved trialling a number of processes to determine the suitability of MRL's graphite for manufacturing premium-priced graphene. The electro-chemical exfoliation process returned the best results. This process route was stated to be scalable and therefore suitable for commercial scale production of single and few-layered graphene directly from the graphite ore.

### Combined Thermal and Mechanical Process

This method is used to isolate graphene directly from raw graphite (after milling) and without having to produce graphene oxide.

This test generated single layered graphene sheets with excellent quality and low defects, which was confirmed by the Raman shift curve.

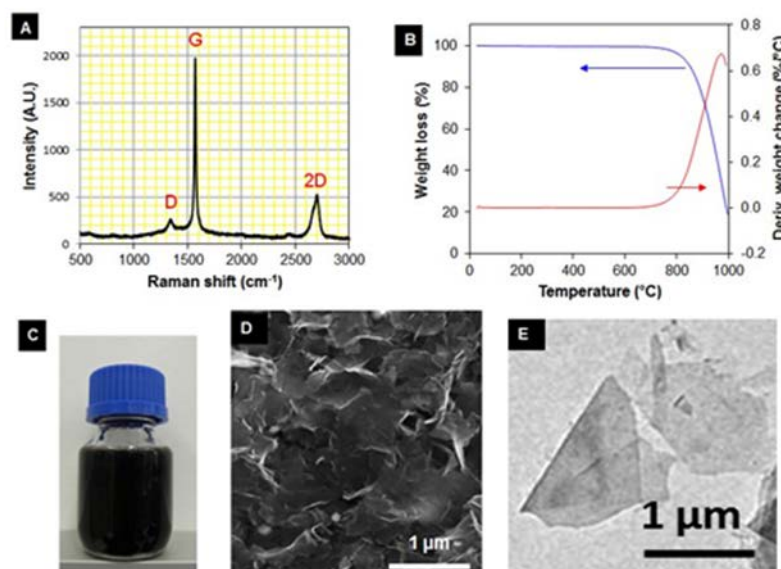
The quality of graphene prepared by this method is comparable with graphene prepared by the synthetic method and is the best quality graphene available on the market. There are very few suppliers of this graphene.



**Figure1:** a) Digital photograph of graphene powder, b) Raman and c) TGA plots of graphene prepared from the developed method.

### Electrochemical Method

The electrochemical method is another promising method for the direct and scalable production of graphene from raw graphite.



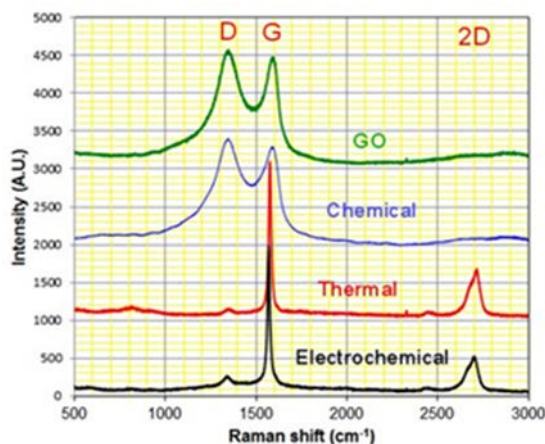
**Figure 2:** a-b) Raman and TGA spectra of graphene, c) Graphene solution, d) SEM, and e) TEM images of the graphene sheets electrochemically removed from the process.

Graphene was successfully extracted from raw MRL graphite using direct electrochemical exfoliation without having to purify the material. The quality of graphene (single to several layer thickness and low defects) prepared by this method is comparable with graphene prepared by the synthetic method.

### Summary of Characterisation and Graphene Exfoliation Methods

The thermal treatment and electrochemical exfoliation of raw graphite is much more efficient to produce bulk graphene because it is a fast process, does not use of toxic chemicals, therefore minimising waste, and more importantly produces graphene with outstanding quality, as confirmed by Raman

characterisation. Both of these processes are also scalable and can be implemented into industrial production.



*Figure 3: Comparative Raman spectra of graphene and GO prepared by the three methods confirming the quality and integrity of its structure.*

### Pandeniya

During the quarter, the Initial Environmental Examination (IEE) was completed and submitted to the Central Environmental Authority (CEA). No issues were identified in the IEE and no objections were received from any stakeholders.

This will be the first new graphite mining licence to be issued in Sri Lanka for approximately 25 years.

### Aluketiya

Diamond drilling continued for sterilisation purposes. During this drilling, many shallow veins were intersected. GSMB were de-mobilised from the site when they were unable to complete the drill holes the Company required at the appropriate drill angle.



Figure 4: 50 cm graphite vein intersected by AK 04

Design work has commenced on civil works for the construction of two shafts on the Aluketiya project area.

### Pujapitiya

Further exploration ground work was conducted on the Pujapitiya project area during the quarter.

Exploration activities are dictated by land access agreements being in place. This is an ongoing task and allows further areas to be opened up for exploration and development.

### Other Developments

#### Drill Rig

The Company has negotiated the acquisition of a diamond drill rig and this was shipped to Sri Lanka in early July. The rig is capable of completing HQ diamond drill holes to a vertical depth of 400m. The rig previously contracted to the Company had an NQ capacity to a depth of only ~250m.

The purchase of the drilling rig is major step forward for MRL and will enable the Company to accelerate its program to test about 10 priority drilling targets and increase the size of core samples.

This will in turn ensure MRL remains on track to begin production of high-grade graphite in the last quarter this year.

The rig comes complete with ancillary equipment and a separate track driven rod carrier and is likely the most advanced drill rig in country



Figure 5: XT400THD Drilling Rig

### Licence Renewal

As required under The Mines and Minerals Act of Sri Lanka, all exploration licence holders are required to submit bi-yearly reports and expenditure details to have their licences renewed for a further two-year period.

During the quarter, MRL submitted the required documents and is pleased to report all exploration licences have been renewed for a further two years. MRL's extensive exploration work and other activities during the first two years ensured the licences were renewed without any issue.

### Non-Executive Director Appointment

Highly experienced geologist Chris Banasik was appointed as a Non-Executive Director of the Company on 20 May 2015.

Mr Banasik has a Master's Degree in Mineral Economics from University of WA and Bachelor's Degree in Applied Physics from Curtin University.

Mr Banasik was a founding Director of Exploration and Geology for the ASX listed company Silver Lake Resources Limited and held this position from May 2007 until November 2014.

Previously he held senior geological management positions over 12 years' with organisations including WMC Resources Ltd, Reliance Mining Ltd, Goldfields Mine Management and Consolidated Minerals Ltd. He has gained extensive experience in every aspect of mining, mineral processing, smelting and refining primarily for gold and nickel.

### Sri Lankan Collaboration

MRL has commenced collaboration with the University of Pandeniya in Sri Lanka. The university is one of the pre-eminent research universities in the country. The collaboration involves an MRL representative providing mining geology lectures to geology undergraduates and post graduates on a monthly basis. The university will provide access to staff and facilities which will assist MRL in a variety of ways, particularly in graphite and graphene research and exploration methodology. MRL believes involvement with the community is crucial to the successful development of its operations in Sri Lanka.

### Corporate

During the quarter, the Company placed 25 million shares at 4c each to sophisticated investors from Australia, Europe and Asia. This represents a 17 per cent premium to the last closing price on Friday 8th May 2015. QA Capital Pty Ltd acted as Lead Manager to the placement.

The capital raising followed the outstanding results received by the Company from its graphene test work.

The proceeds will be used to progress development of MRL's high-grade graphite projects in Sri Lanka and to fund the next round of tests aimed at establishing the suitability of MRL's graphite for producing premium-priced graphene.

The company also appointed Far East Capital Limited as a corporate advisor.

MRL Managing Director Craig McGuckin said it had been a significant quarter in the Company's steady march towards production later this year.

*"The June Quarter has seen significant progress, with the very successful results from graphene testing. At Pandeniya and Aluketiya, the Company continues towards its strategic target of being a producer of high-grade Sri Lankan graphite in the foreseeable future*

*"Our progress is a testament to the dedication and hard work of all MRL employees and contractors," Mr McGuckin said.*



### The September Quarter

MRL is now immersed in an active September Quarter, which includes:

- Preparation for mine development at Pandeniya ahead of the expected grant of the Industrial Mining Licence
- Commencing rehabilitation on two shafts and construction of headframes in the Aluketiya project area together with construction of civil works
- Commencing scalable graphene production pilot test work at the University of Adelaide.
- Continue land access agreements to provide the future exploration path in the MRL priority areas.

### About Graphene

Graphene, the well-publicised and now famous two-dimensional carbon allotrope, is as versatile a material as any discovered on Earth. Its amazing properties as the lightest and strongest material, compared with its ability to conduct heat and electricity better than anything else, mean it can be integrated into a huge number of applications. Initially this will mean graphene is used to help improve the performance and efficiency of current materials and substances, but in the future it will also be developed in conjunction with other two-dimensional (2D) crystals to create some even more amazing compounds to suit an even wider range of applications.

One area of research which is being very highly studied is energy storage. Currently, scientists are working on enhancing the capabilities of lithium ion batteries (by incorporating graphene as an anode) to offer much higher storage capacities with much better longevity and charge rate. Also, graphene is being studied and developed to be used in the manufacture of super capacitors which are able to be charged very quickly, yet also be able to store a large amount of electricity.

### 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

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 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 open pit gold or copper mines, 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  $-70^{\circ}$  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.

For further information:

**Craig McGuckin**

Managing Director

MRL Corporation Ltd

**Peter Youd**

Executive Director

MRL Corporation Ltd

[www.mrltd.com.au](http://www.mrltd.com.au)

Information in this report relating to Metallurgical interpretation, analysis, mineral distribution and recommendations has been compiled by Mr Denis Geldard, MAusIMM in consultation with Dr Slobodanka Vukcevic, Senior Metallurgist at Nagrom the Mineral Processors. Dr Slobodanka Vukcevic has sufficient experience and expertise relevant to this type of test work through her job experience and expertise and qualifies as a competent person in the field of metallurgy. Mr Geldard consents to the inclusion in the report of the matters based on the information reported in the form and context in which it appears.

Information in this report relating to Exploration Results is based on information compiled by Mr Denis Geldard, MAusIMM working in consultation with consulting Geologist Mr Chris Banasik, MAusIMM and MRL's Senior Sri Lankan Geologist who has 35 years of vein graphite experience in Sri Lanka. Their experience is relevant to the type of deposit under consideration. Mr Geldard is signing as competent person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Geldard consents to the inclusion in the report of the matters based on the information in the form and context in which it appears.

## JORC TABLE 1 Report for Exploration Locations

### Section 1 Sampling Techniques and Data

<i>Criteria</i>	<i>Explanation</i>
Sampling techniques	<ul style="list-style-type: none"> <li>Diamond core is collected and stored in core trays of 5m per tray. Vein graphite is readily identified visually (black in colour) and intersections recorded accordingly. Intersections will then be cut under the supervision of MRL's Senior Sri Lankan Geologist and prepared for transport to Nagrom (Australia) for analysis.</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <li>All future drilling will be undertaken utilising NQ Triple Tube (NQTT) drilling.</li> </ul>
Drill sample recovery	<ul style="list-style-type: none"> <li>Diamond core recovery is recorded between core runs by the geological crew in the Core Logging Record. The unconsolidated surface material will be drilled using rotary wash method until competent material is intersected</li> </ul>
Logging	<ul style="list-style-type: none"> <li>All holes are logged on site by MRL geological personnel under the supervision of MRL's Senior Sri Lankan Geologist, using MRL's Core Logging Procedure Manual.</li> <li>Logging will record geological and geotechnical observations, and is undertaken on a continual basis throughout the entire drill hole.</li> </ul>
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> <li>Half-core intersections of Vein Graphite will be submitted for analysis to Nagrom laboratories in Perth Western Australia. The remaining half-core is stored in the core boxes. Core &amp; bulk samples may be provided to potential off-take parties.</li> </ul>
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> <li>All Vein Graphite core intersections will be analysed by Nagrom the Mineral Processors in Perth Western Australia and or Wuhan University of Technology (WUT). Nagrom and WUT will follow industry practice QA/QC procedures to ensure high quality sample assurance.</li> <li>Certified Sample Standards will be inserted routinely into sample analysis.</li> </ul>
Verification of sampling and assaying	<ul style="list-style-type: none"> <li>All diamond core will be logged and photographed by MRL geologists under the supervision of MRL's Senior Sri Lankan Geologist. Independent consulting geologist will visit the MRL operation sites on a regular basis to oversee QA.</li> </ul>
Location of data points	<ul style="list-style-type: none"> <li>All drill locations have been positioned using hand-held Garmin GPS systems. MRL has completed a full topographical survey of the Pandeniya – Bopitiya &amp; Aluketiya areas. All drill collars will be geo-referenced to the Sri Lankan Transverse Mercator Projection.</li> </ul>
Data spacing and distribution	<ul style="list-style-type: none"> <li>Drill holes have been orientated in a position to intersect the expected vein mineralisation (based on historical shafts / adits and geophysical information) at the optimal angle for evaluation, whilst minimising surface land disturbance.</li> </ul>
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <li>Diamond Core Drill holes are designed to intersect potential graphite vein mineralisation perpendicular to strike, wherever possible, whilst taking into account expected deviation in dip and azimuth.</li> </ul>
Sample security	<ul style="list-style-type: none"> <li>Core Samples are collected and stored in core trays under the supervision of MRL geological crews and then transported at the end of each day, and secured in a locked container at the MRL site facility for further detailed logging. Security is managed by MRL's Senior Sri Lankan Geologist and the MRL country General Manager.</li> </ul>



<i>Criteria</i>	<i>Explanation</i>
Audits or reviews	<ul style="list-style-type: none"> <li>A review was undertaken by the consulting Geologist of all procedures, including retrieving of core samples from the core tube, through to logging and storage of core samples, during drilling activities. Consulting Geologist will undertake further reviews into the future.</li> </ul>

## Section 2 Reporting of Exploration Results

Criteria	Explanation																																								
Mineral tenement and land tenure status	<p>The Warakapola / Bopitiya / Pandeniya project exploration license areas EL228 are 100% owned by MRL Graphite (Pvt) Ltd. The exploration Licenses when granted have a two year term which can be renewed prior to the 2 year anniversary.</p> <table><tr><th>License No.</th><th>MRL Interest</th><th>Status</th><th>General Location</th></tr><tr><td>EL/225</td><td>100%</td><td>Granted</td><td>Central</td></tr><tr><td>EL/226</td><td>100%</td><td>Granted</td><td>Central</td></tr><tr><td>EL/227</td><td>100%</td><td>Granted</td><td>South Central</td></tr><tr><td>EL/228</td><td>100%</td><td>Granted</td><td>Central</td></tr><tr><td>EL/231</td><td>100%</td><td>Granted</td><td>South West</td></tr><tr><td>EL/243</td><td>100%</td><td>Granted</td><td>Central</td></tr><tr><td>EL/244</td><td>100%</td><td>Granted</td><td>South West</td></tr><tr><td>EL/262</td><td>100%</td><td>Granted</td><td>Central</td></tr></table> <table><tr><td>IML/C/HO/8416</td><td>100%</td><td>Granted</td><td>Western</td></tr></table> <ul style="list-style-type: none"><li>MRL Corporation Ltd has informed the Consulting Geologist all granted licenses are in good standing and comply with the reporting requirements of the exploration licence.</li></ul>	License No.	MRL Interest	Status	General Location	EL/225	100%	Granted	Central	EL/226	100%	Granted	Central	EL/227	100%	Granted	South Central	EL/228	100%	Granted	Central	EL/231	100%	Granted	South West	EL/243	100%	Granted	Central	EL/244	100%	Granted	South West	EL/262	100%	Granted	Central	IML/C/HO/8416	100%	Granted	Western
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Exploration done by other parties	<ul style="list-style-type: none"><li>Initial Exploration and Review of the Warakapola / Bopitiya / Pandeniya project was carried out by Geological Survey and Mines Bureau (GSMB) Technical Services (Pvt) Ltd with reports provided to MRL. MRL has established a regional office in the EL228 area to support the company geologists and underground exploration crews.</li><li>Historical mining has taken place with several shafts and adits evident.</li><li>MRL continues exploration in all license areas</li></ul>																																								

Geology	<ul style="list-style-type: none"><li>• Warakapola / Bopitiya / Pandeniya / Aluketiya</li><li>• Geologically, the area covered by the selected grid units belong to the Wannu Complex of Sri Lanka. The Wannu Complex is mainly characterised by thick sequences of orthogneisses, comprising amphibolite, migmatitic, granitic and granodioritic gneisses. These rocks represent a series of antiformal and synformal structures. A characteristic feature of the exploration area is the alignment of identified abandoned graphite mines / pits within a NNW-SSE trending corridor,.(GSMB 2013)</li></ul>																																										
Drill hole Information	<p>Planned Diamond Core Drill Holes</p> <table><tr><th>Drill Hole</th><th>Easting</th><th>Northing</th><th>Dip / Azimuth</th><th>Hole Depth</th><th>Comments</th></tr><tr><td>AK07</td><td>134,584</td><td>136,467</td><td>-55/325</td><td>54.3</td><td>Hole abandoned</td></tr><tr><td>AK07A</td><td>134,586</td><td>136,460</td><td>-75/325</td><td>120.17</td><td>Completed results pending</td></tr><tr><td>AK08</td><td>134,540</td><td>136,606</td><td>-50/338</td><td>160m</td><td>Planned</td></tr><tr><td>AK09</td><td>134,642</td><td>136,515</td><td>-50/325</td><td>110m</td><td>Planned</td></tr><tr><td>AK10</td><td>134,620</td><td>136,565</td><td>-80/310</td><td>100m</td><td>Completed/results pending</td></tr><tr><td>AK11</td><td>134590</td><td>136482</td><td>-55/75</td><td>75m</td><td>Completed results pending</td></tr></table> <ul style="list-style-type: none"><li>• All Diamond Core Drill holes are planned to be accurately surveyed for dip and azimuth using a GlobalTech Pathfinder multi-shot, electronic, down-hole survey tool.</li><li>• A GlobalTech core orientation tool is being used to orientate the core during the drilling.</li></ul>	Drill Hole	Easting	Northing	Dip / Azimuth	Hole Depth	Comments	AK07	134,584	136,467	-55/325	54.3	Hole abandoned	AK07A	134,586	136,460	-75/325	120.17	Completed results pending	AK08	134,540	136,606	-50/338	160m	Planned	AK09	134,642	136,515	-50/325	110m	Planned	AK10	134,620	136,565	-80/310	100m	Completed/results pending	AK11	134590	136482	-55/75	75m	Completed results pending
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Data aggregation methods	<ul style="list-style-type: none"><li>• Intersections of diamond core containing vein graphite will be visually selected for analytical testing with accurate lengths recorded to ensure 100% of mineralisation is analysed and reported.</li></ul>																																										
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"><li>• Planned Drill hole orientation is based on observations from historical shafts / adits and geophysics, and planned to intersect any vein graphite mineralisation as close to perpendicular as practical.</li></ul>																																										
Diagrams	<ul style="list-style-type: none"><li>• NA</li></ul>																																										
Balanced reporting	<ul style="list-style-type: none"><li>• MRL Corporation Ltd will endeavour to produce balanced reports accurately detailing the results from any exploration activities.</li></ul>																																										
Other substantive exploration data	<ul style="list-style-type: none"><li>• No other substantive exploration data is available at this time.</li></ul>																																										
Further work	<ul style="list-style-type: none"><li>• MRL Corporation Ltd continues to complete further site investigations on all licenses. Following the completion of progressive site investigations and evaluation the next phase of exploration for each location will be undertaken and reported.</li><li>• Land access agreements continue at Pujapitiya, Dedigama and Hikkaduwa</li><li>• Further drilling is planned at Aluketiya, Dedigama &amp; Pujapitiya and other license areas as land access is obtained.</li></ul>																																										