# Havilah Resources

(ASX : HAV)

17 October 2014

***Havilah Resources NL*** *aims to become a significant new producer of iron ore, copper, gold, cobalt, molybdenum and tin from its 100% owned JORC mineral resources in northeastern South Australia.*

*150.4 million ordinary shares*
*30.1 million listed options*
*11.6 million unlisted options*




# NEW COPPER DISCOVERY AT BIRKSGATE PROSPECT

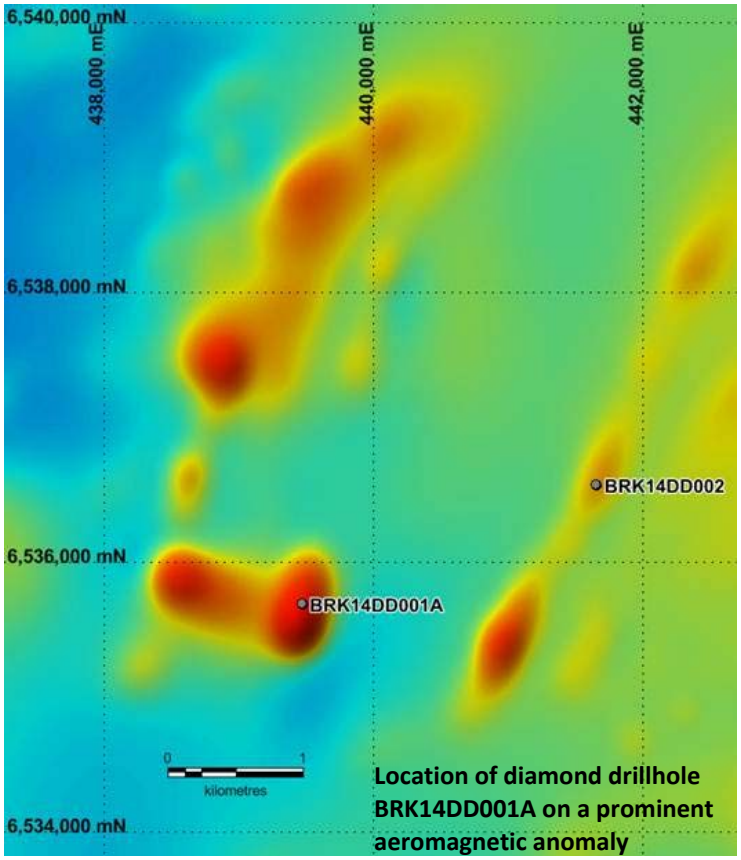
## HIGHLIGHTS

- **MMG drilling has discovered significant new copper mineralisation at the Birksgate prospect including 10.9m @ 0.84% Cu, 0.64 g/t Au from 209.5m in diamond drillhole BRK14DD001A.**
- **9 of 10 diamond drillholes at Eurinilla dome intersected typical Kalkaroo style copper-gold mineralised prospective horizon, including 6m @ 5.3% Cu from 157m in diamond drillhole EUR14DD009.**

MMG Exploration Pty Ltd (MMG) has recently released final assay results for 15 diamond drillholes (total 4,514m) on three prospects within Havilah Resources NL (**ASX:HAV**) ("Havilah") exploration licences.

Diamond drillhole BRK14DDOO1A at the **Birksgate prospect** discovered new copper mineralisation, with a downhole intersection of:

**10.9m @ 0.84% Cu, 0.64 g/t Au, 5.4 g/t Ag, 493 ppm Mo and 186 ppm U from 209.5m, including** 2m @ 2.84% Cu, 0.61 g/t Au, 10.8 g/t Ag, 453 ppm Mo and 183 ppm U from 211m, **within** an overall interval of 23.8m @ 0.51% Cu from 207.5m.




**Location of diamond drillhole BRK14DD001A on a prominent aeromagnetic anomaly**

This drillhole was sited on a discrete magnetic anomaly adjacent to a large diorite intrusive body (see magnetic image at right). The mineralisation mainly consists of laminated chalcopyrite and magnetite replacement bands within metamorphosed fine grained sediments (see picture of drillcore below). This drilling is in the same general region where last year MMG drilling intersected hematite alteration that is typically associated with hydrothermal brecciation (producing fragmented and shattered rocks). Such features are commonly observed in the alteration zones marginal to Iron Oxide Copper Gold (IOCG) deposits, for example in the vicinity of the giant Olympic Dam deposit. One of the previous drillholes, namely BRK13DD006, intersected minor associated copper mineralisation including 1.2m @ 0.55% copper and 0.1 g/t gold from 249m

depth. The anomalous uranium and light rare earth element association in the recent drillhole supports the IOCG association.

*MMG diamond drillhole BRK14DDOO1A from 212m depth showing laminated chalcopyrite (copper sulphide-brassy yellow colour) and dark grey magnetite replacement bands. This interval carries more than 2% copper.*

Commenting on the drilling results, Managing Director, Dr Chris Giles said Birksgate was a geologically significant new discovery.

"The target was an undrilled 600m long magnetic anomaly lying some 200m beneath younger cover rocks, and to hit such impressive magnetite-chalcopyrite mineralisation in the first drillhole on the magnetic anomaly is a great result.

"Last year MMG discovered evidence of IOCG style alteration in the region and these follow-up results support the potential for IOCG style mineralisation on the Benagerie Ridge.

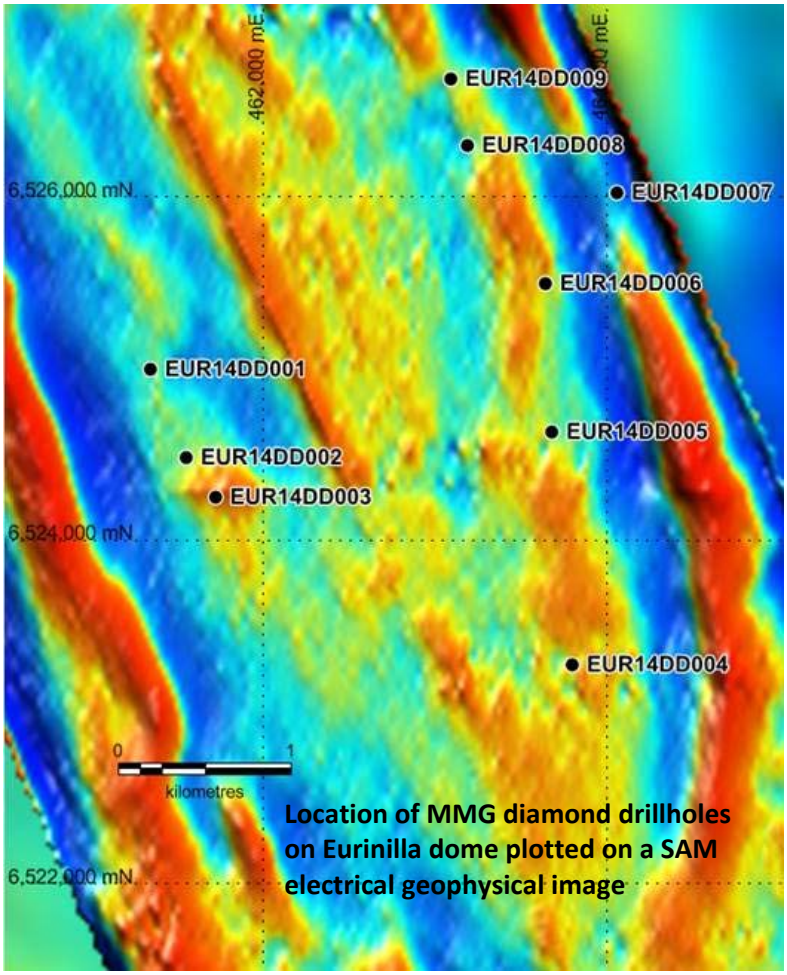
"We are naturally curious about the other magnetic anomalies, which represent a series of new targets yet to be drilled" he said.

MMG also completed 10 diamond drillholes on the **Eurinilla dome**, nine of which intersected replacement style copper-gold mineralisation typical of the regional mineralised horizon that hosts the Kalkaroo and North Portia copper-gold deposits.

**The best intersection was 6m @ 5.3% Cu from 157m in diamond drillhole EUR14DD009** (including 0.8m of core loss - see pictures of drillcore below).

*Mineralised horizon with replacement pyrite and chalcocite from diamond drillhole EUR14DD009*

MMG is a subsidiary of MMG Limited (HKSE 1208), an international upstream base metals company and one of the world's largest producers of zinc as well as a substantial producer of copper, lead, gold and silver. MMG Limited owns and operates the Lane Xang Minerals Limited (LXML) Sepon mine in Laos, the Kinsevere mine in the Democratic Republic of the Congo (DRC) and the Century, Golden Grove and Rosebery mines in Australia. It also has development projects including Las Bambas, a large copper-gold-silver-molybdenum resource in Peru, Dugald River, a high-grade zinc-lead-silver deposit in northwest Queensland, Australia, and the Izok Corridor base metals project in Nunavut, northwest Canada.




**Location of MMG diamond drillholes on Eurinilla dome plotted on a SAM electrical geophysical image**

Under the Option and Joint Venture Agreement, MMG may secure a 60% participating interest in any potential development projects that it identifies within Havilah's exploration licences, provided that it has spent an amount of $12m within a five year period.

A development project will be operated under a normal joint venture arrangement in which Havilah will have the opportunity to either contribute to maintain its 40% participating interest, or dilute to a 20% project interest carried through to the mine development stage. Havilah will retain 100% ownership of the exploration licences and may continue with exploration of them on its own account. During the term of the Agreement Havilah will be obliged to offer MMG a 60% participating interest in any new discoveries it makes for which it is seeking a development partner.

For further information visit the Company website www.havilah-resources.com.au or contact: Dr Chris Giles, Managing Director, on: info@havilah-resources.com.au.

**Competent Person's Statement**

The information in this announcement that relates to Exploration Targets and Exploration Results is based on data compiled by geologist, Dr Chris Giles, a Competent Person who is a member of The Australian Institute of Geoscientists. Dr. Giles is a director of the Company and is employed by the Company on a consulting contract. Dr. Giles has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration and to the activities being undertaken to qualify as a Competent Person as defined in the 2012 Edition of 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr. Giles consents to the inclusion in the announcement of the matters based on his information in the form and context in which it appears.

*Table 1 Drill collar information for MMG diamond drillholes cited in text*

| Hole ID | Grid system : UTM Zone 54 South (GDA 94 datum) | | | | Dip degrees | EOH metres |
|---|---|---|---|---|---|---|
| | Easting m | Northing m | RL m | UTM azimuth | | |
| BRK14DDOO1A | 439470 | 6535694 | 45.101 | 190 | -70 | 296.4 |
| EUR14DD009 | 463098 | 6526701 | 62.951 | 225 | -70 | 232.5 |

*Portion of downhole interval containing 6m @ 5.3% Cu from 157m in diamond drillhole EUR14DD009 from Eurinilla Dome. This is replacement mineralisation occurs within a portion of the so called "mineralised horizon" that runs for more than 200km through Havilah's tenements and is host to the Kalkaroo and North Portia copper-gold deposits.*

*Detail of portion of downhole interval containing 6m @ 5.3% Cu from 157m in diamond drillhole EUR14DD009 from Eurinilla Dome.*

# JORC Code, 2012 Edition – "Table 1"

## Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***Sampling techniques*** | • *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*<br>• *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.*<br>• *Aspects of the determination of mineralisation that are Material to the Public Report.*<br>• *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.* | • HQ, HQ3 and NQ2 sized diamond drill core. Standard-tube and triple-tube wireline equipment. 0.3-1.3m of quarter or half core samples, cut by a diamond saw, collected from visually interesting intervals as determined by the geologist's logging. Approx. 3.5kg of sample in numbered calico bag submitted to ALS assay lab at Pooraka near Adelaide.<br>• At ALS Pooroka samples undergo one of two sample preparation workflows depending on the amount of sulphides present.<br>• Samples with high sulphides are crushed in the Boyd crusher and 500g split off using a rotary splitter. The split is then pulverized in an LM2 to 85% passing 75 microns. The pulps are then stored in a foil packet.<br>• All other samples are crushed in a jaw crusher to a nominal 6mm (method CRU-21) then a 3 kg split obtained using a riffle splitter. The split is pulverized in an LM5 to 85% passing 75 microns (method PUL-23). These pulps are stored in paper bags.<br>• All samples are then analysed at ALS Brisbane for a range of elements using ALS's ME-MS61 and ME-MS61r suite, whereby samples undergo a 4 acid digest and analysis by ICP-atomic emission spectrometry and ICP mass spectrometry. Over limit Cu, Pb and Zn are re-assayed using OG62.<br>• Gold is analysed at ALS Orange by atomic absorption spectrometry using Au-AA23 |
| ***Drilling techniques*** | • *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other* | • HQ and NQ sized diamond drill core. Standard-tube and triple-tube wire line. Oriented core. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *type, whether core is oriented and if so, by what method, etc).* | |
| ***Drill sample recovery*** | • *Method of recording and assessing core and chip sample recoveries and results assessed.*<br>• *Measures taken to maximise sample recovery and ensure representative nature of the samples.*<br>• *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.* | • Recovery is measured in the core tube by the driller and a marker inserted into the core tray noting any core loss. Core recovery is measured and recorded by the geologist when logging the hole.<br>• No relationship between core recovery and grade has been observed. |
| ***Logging*** | • *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*<br>• *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.*<br>• *The total length and percentage of the relevant intersections logged.* | • All core is geologically logged and photographed prior to sampling. Structural measurements are taken where appropriate. Geotechnical logging was not carried out. Logging is semi-quantitative and 100% of reported intersections have been logged. |
| ***Sub-sampling techniques and sample preparation*** | • *If core, whether cut or sawn and whether quarter, half or all core taken.*<br>• *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.*<br>• *For all sample types, the nature, quality and appropriateness of the sample preparation technique.*<br>• *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.*<br>• *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.*<br>• *Whether sample sizes are appropriate to the grain size of the material being sampled.* | • Continuous half or quarter core is sampled over 0.3-1.3 metre intervals as a general rule in visually interesting intervals. Where the core is visually unmineralised sampling is not usually undertaken. Splitting the core is done with a diamond saw. Where there is a major geological boundary, sampling intervals are made to honour the boundary. Sample preparation and assaying methods are summarized above.<br>• Quality control procedures include the insertion of standards (1 in 30 samples), blanks (1 in 30 samples) and duplicates (1 in 30 samples) into the regular sample number sequence. If any blank, standard or duplicate is out of spec, re-assay of retained samples is requested of the laboratory as a first step.<br>• Sampling size is considered to be appropriate for the style of mineralisation observed. Assay repeatability for gold and other metals has not proven to be an issue. |
| ***Quality of assay data and*** | • *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered* | • All samples are prepared at ALS Pooraka (near Adelaide) and assayed at ALS Orange (for Au) and ALS Brisbane (all other elements). The total assay methods are standard ALS procedure |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***laboratory tests*** | *partial or total.*<br>• *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.*<br>• *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.* | and are considered appropriate at the exploration reporting stage.<br>• Quality control procedures include the insertion of standards (1 in 30 samples), blanks (1 in 30 samples) and duplicates (1 in 30 samples) into the regular sample number sequence. If any samples are out of spec re-assay is requested.<br>• Potential issues with some gold assays were noted, resulting in re-assaying and rigorous analysis of results. |
| ***Verification of sampling and assaying*** | • *The verification of significant intersections by either independent or alternative company personnel.*<br>• *The use of twinned holes.*<br>• *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.*<br>• *Discuss any adjustment to assay data.* | • Rigorous internal QC procedures are followed to check all assay results. Twinned holes are generally not used or considered to be required at the exploration stage.<br>• All data entry is under control of a specialist database geologist, who is responsible for data management, storage and security.<br>• No adjustments to assay data are carried out. |
| ***Location of data points*** | • *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.*<br>• *Specification of the grid system used.*<br>• *Quality and adequacy of topographic control.* | • Down hole drill survey and orientation data collected with hired Reflex Act digital measuring equipment.<br>• Drill collars have been measured by handheld GPS instruments (+- 1-5 metre accuracy) with all coordinates quoted in MGA54 (GDA 94 datum).<br>• Regional topographic control is established by DTM data points from detailed aeromagnetic surveys (datum EOID 09), which is sufficiently accurate at the exploration stage. |
| ***Data spacing and distribution*** | • *Data spacing for reporting of Exploration Results.*<br>• *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.*<br>• *Whether sample compositing has been applied.* | • Data spacing (drill-hole spacing) is variable and appropriate to the geology. As this is an exploration project, infill drilling may be necessary to confirm interpretations.<br>• Sample compositing is not used in reporting exploration results. |
| ***Orientation of data in relation to*** | • *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* | • Largely unknown due to preliminary stage of exploration.<br>• At this stage, no material sampling bias is known to have been introduced by the drilling direction, but this will only be confirmed |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***geological structure*** | • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.* | by additional drilling. |
| ***Sample security*** | • *The measures taken to ensure sample security.* | • Samples are taken in covered core trays from the drill site to the core processing facility at Mudros base camp. Company personnel log, photograph and split the core. Half or one quarter of the core is retained in the core tray as a geological reference and for use should further tests be required. All samples for assay are bagged in numbered calico sample bags. 5 calico bags are placed in each polyweave bag which are then placed in bulker bags for transport to the lab by commercial carriers. There is minimal opportunity for systematic tampering with the samples<br>• This is considered to be a secure and reasonable procedure and no known instances of tampering with samples have occurred since drilling commenced |
| ***Audits or reviews*** | • *The results of any audits or reviews of sampling techniques and data.* | • Ongoing internal auditing of sampling techniques and assay data has not revealed any material issues. |

## Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***Mineral tenement and land tenure status*** | • *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*<br>• *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.* | • Exploration is taking place on Havilah Resources NL's exploration licences under an Option and Joint venture Agreement with MMG Exploration Pty Ltd.<br>• Security via current valid exploration licences granted to Havilah |
| ***Exploration done by other parties*** | • *Acknowledgment and appraisal of exploration by other parties.* | • Aircore drilling was carried out in the region by Pasminco and BHP in the period 1999-2003 |
| ***Geology*** | • *Deposit type, geological setting and style of mineralisation.* | • Replacement style for EUR14DD009. BRK14DDOO1A likely IOCG |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | style |
| ***Drill hole Information*** | • *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*<br>o *easting and northing of the drill hole collar*<br>o *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*<br>o *dip and azimuth of the hole*<br>o *down hole length and interception depth*<br>o *hole length.*<br>• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.* | • See separate Table1 in this report |
| ***Data aggregation methods*** | • *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.*<br>• *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.*<br>• *The assumptions used for any reporting of metal equivalent values should be clearly stated.* | • Intercepts are calculated using the length-weighted averages of individual samples. Minimum grade truncations are applied. Local geology is also used as an input.<br>• Where higher grades exist, a separate high grade sub-interval will normally be reported. |
| ***Relationship between mineralisation widths and intercept lengths*** | • *These relationships are particularly important in the reporting of Exploration Results.*<br>• *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.*<br>• *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').* | • Down-hole lengths are reported. Current interpretation is that the drillhole intersected mineralisation almost at 90 degrees, and hence down-hole intersection may approximate the true width. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***Diagrams*** | • *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.* | • Plan view is included in this report. Lack of other drilling information prevent construction of an accurate section at this stage |
| ***Balanced reporting*** | • *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.* | • Only potentially economic grade interval is reported. Until further drilling is completed the representativeness of the reported grades is unknown. |
| ***Other substantive exploration data*** | • *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.* | • Geological observations reported in text. Other data not yet collected or not relevant |
| ***Further work*** | • *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*<br>• *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.* | • No firm plans at this stage. Subject to allocation of future drilling budget.<br>• Not appropriate to comment as speculative at this stage. |