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*PricewaterhouseCoopers LLP, 8 Cross Street #17-00, PWC Building, Singapore 048424
T: (65) 62363388, F: (65) 6236 3300, www.pwc.com/sg GST No.: M90362193L Reg. No.: T09LL0001D*

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Noble Group Ltd

*Review of Mark-to-Market valuation of
commodity derivatives*

Management Report

10 August 2015

To:
Board of Directors, Noble Group Ltd



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A. Engagement Terms

Following our appointment by the Board Sub-Committee of Noble Group Limited (“Noble” or “the Company”) on 7 July 2015, Noble has engaged PricewaterhouseCoopers LLP (“PwC” or “us”) to assess the approach used by Noble to derive the mark-to-market (“MTM”) valuation of long-dated derivative contracts, and its application to specific contracts (“the Contracts”).

This report constitutes the ‘Management Report’ as set out in our engagement letter, and it should be read in conjunction with our Assurance Report issued under Singapore Standard on Assurance Engagements 3000 – “Assurance Engagements other than Audits or Reviews of Historical Financial Information” (the “Assurance Report”).

For the avoidance of doubt, this Management Report does not constitute an assurance report, and accordingly we provide no audit opinion, attestation or other form of assurance in this report.

In this report, we set out how we approached our engagement, and summarise our findings as well as any recommendations for future improvement.

The Relevant Criteria

The criteria used by us in this engagement were developed by management based on the relevant requirements of IFRS 13 and standard practices in the industry for deriving MTM valuations (“the Relevant Criteria”) and are set out in the Appendix. These Relevant Criteria represent those factors which are necessary for management to ensure that the MTM valuations are derived in a manner which is in compliance with the relevant requirements of IFRS 13 as well as standard industry practices.

Management’s Responsibility

Management is responsible for the measurement of the individual valuations and the overall valuation of the Contracts and for determining that the use of the Relevant Criteria is appropriate in the circumstances. This also includes ensuring that the inputs to the MTM valuation models, the MTM valuation models themselves and the internal governance and controls over the MTM valuation models comply with the Relevant Criteria

Our Responsibility

Our responsibility is to assess the governance framework, valuation methodology and policies, and the application thereof to the Contracts, and to provide comments based on our work.

Our work included:

- 1) obtaining an understanding of the relevant policies, procedures and controls that are:
 - a) sufficient to identify and assess the risks that management may not have complied with the Relevant Criteria in relation to the Contracts at 30 June 2015; and
 - b) sufficient to design and perform further evidence-gathering procedures.
- 2) carrying out inquiries of relevant personnel of the Group;
- 3) assessing the compliance of the valuation of each Contract with the Relevant Criteria; and
- 4) other procedures which were necessarily conducted on a test basis and included such samples as we deemed appropriate.

Examples of the procedures followed by us against each of the Relevant Criteria are set out in our Assurance Report.

Scope restrictions

Our scope of work did not constitute an examination or a review with the objective of preventing or discovering fraud and PwC's procedures under this engagement are not designed to and unlikely to reveal fraud or misrepresentation by management or staff. We provide no assurance that the period covered by our review is free of fraud (whether by management, staff or by external parties), other irregularities or misrepresentation by management or any other persons.

Our scope of work was restricted to the valuations of the Contracts on the balance sheet as at 30 June 2015 and we did not consider classification, disclosure or recognition of income.

Use of this report

This Report and all PwC deliverables are intended solely for the Board and management of Noble for their internal use and benefit and are not intended to nor may they be relied upon by any other party ("Third Party"). Neither this Report nor its contents may be distributed to, discussed with, or otherwise disclosed to any Third Party without the prior written consent of PwC. PwC accepts no liability or responsibility to any Third Party to whom the Report is disclosed or otherwise made available.

B. Background and Approach

The relevant activities undertaken by Noble for the purposes of this report consist of long-dated agreements with physical commodity producers. While the terms of these contracts are very specific to each individual agreement, in essence they are either (a) 'off-take' contracts, under which the producer typically agrees to sell the contracted amount to Noble at an agreed discount to the market price (such as a commonly-used benchmark price) at the time of delivery, or (b) 'marketing' contracts, under which Noble is paid a fixed percentage of the price achieved for assisting the producer in selling the contracted amount at then-prevailing prices.

Approach

Our approach was as follows:

1. We reviewed the governance and organisation over the derivation of the valuations of the Contracts.
2. We assessed the completeness and appropriateness of the Relevant Criteria, which are necessary for the production of appropriate valuations that are consistent with both the requirements of IFRS 13 and standard industry practices.
3. We assessed the policies and methodologies implemented by Noble to ascertain whether these adequately covered the Relevant Criteria.
4. We reviewed the valuation models for each of the Contracts in detail to ensure that the policies and methodologies were correctly applied in each case.
5. Our review of the valuation models was based on the Excel spreadsheet outputs produced by the Finance (valuation and product control) team. We note that the actual valuations are performed by the front office risk system (Allegro), which is not within the purview of our scope. However, we have checked that the numbers provided to us are consistent with those in Allegro.

Contracts covered

The Contracts which we have examined represented:

- 81% of the value of derivative contracts with a duration of at least two years, and
- 98% of the value of the level 3 net assets (as defined by IFRS 13),

as recorded on the Group's consolidated balance sheet as at 30 June 2015.

C. Executive Summary

We emphasise that our work was not restricted to an examination of the governance, organisation and policies that govern the valuation models. In the case of each Contract reviewed by us, we also obtained the detailed valuation model and checked the application of the Relevant Criteria to the construction of the model. This included an examination of all the inputs as well as the construction of the model itself. We supplemented this with detailed discussions with the various teams that play a role in this process, to clarify our understanding of the inputs and relevant assumptions.

Overall, we note that Noble has adopted an approach to valuations which is consistent with the Relevant Criteria, in all material respects. Indeed, in some aspects of the model construction (such as the development of discount rates and development of counterparty credit risk curves), Noble has an approach which is more sophisticated than that of many non-financial companies. We also note a strong segregation of duties between the different teams that provide key inputs into the models.

We note that observable inputs are used where available, and this is consistent with market practice. In addition, the application of production volume adjustments and allocation of reserves for uncertainties in the valuation is consistent with market practice. All factors that a potential buyer of the Contracts would take into account have been considered and reflected in the valuation of these Contracts.

Further, we note that the governance and oversight framework has been strengthened significantly over the past year, but management recognises that this is still work in progress and there is more that can be done to further strengthen the framework.

Our recommendations are intended to assist the Board in ensuring that the governance and oversight framework continues to be developed to ensure that it remains robust over time. These recommendations can be summarised as follows:

- Steps to improve further the presentation of information, such that there is transparency, comparability and consistency over the valuation of Contracts, both between different Contracts at a point in time, and across all Contracts from one time period to another.
- Steps to formalise policies and practices further, so that management and the Board can focus their attention to outliers or special cases where additional scrutiny over the modelling assumptions is warranted.

There is currently a high degree of reliance on key individuals, who have a deep understanding of the Contracts as well as the informal guidelines and practices that have been developed outside the formal policy framework, and the steps that we recommend should reduce the Company's dependence on these key individuals.

Summary of key recommendations

Our main recommendations for the Board to monitor are listed below; additional minor recommendations, which are for management to consider, can be found in Section D of this report.

1. Enhance the information pack provided to the Board Audit Committee to cover not just an analysis of the portfolio by maturity and accounting classification (Level 2/3 as defined by IFRS 13), but also a standardised depiction of the gross value of cash flows, the unadjusted NPV, and the reserves taken in deriving the adjusted NPV, for major contracts, as well as commentary thereon. The results of backtesting of both volumes (for major contracts) and profit/loss and cash realisation (for all contracts) should also be presented.
2. Continue to enhance the quarterly MTM database report, which analyses the movements in MTM values from one quarter to the next, to provide greater transparency over these movements and the reasons therefor.
3. Update the MTM policy to cover all aspects of forecasting volumes and reserving for uncertainty, including setting formal guidelines, establishing checklists and standardising the way volumes are adjusted for expected changes and reserves are calculated and presented.
4. Strengthen the role of Compliance or Internal Audit in terms of providing stronger assurance on the MTM valuation processes so as to enhance policy adherence and ensure there is no conflict of interest.
5. Enhance and formalise procedures for backtesting and stress testing of the portfolio.

We would like to express our thanks to management for their co-operation through the course of this engagement.



PricewaterhouseCoopers LLP Singapore

D. Assessment against the Relevant Criteria

The Relevant Criteria determined by Management are described individually below, together with our assessment and recommendations for improvement, if any. These Relevant Criteria are deemed by Management to be necessary conditions for the derivation of MTM valuations of the Contracts which are consistent with the requirements of IFRS 13 and standard industry practices.

We have reviewed these Relevant Criteria to ensure that they meet the objective stated in the previous paragraph.

The Relevant Criteria are not all shown in the body of this report, as we focus only on those Criteria where we have specific observations and/or recommendations for the Board. A full list of the Relevant Criteria can be found in the Appendix.

Governance and organisation

The Relevant Criteria:

“The governance and organizational arrangements (including segregation of duties and committee oversight) are designed to meet the objective of independent validation of MTM valuations i.e. independent derivation of the MTM valuation and management oversight and sign-off.

These arrangements have been implemented.”

As there is a considerable amount of judgement inherent in the modelling of these types of Contracts, and small changes in these areas of judgement can have a significant impact on the resulting valuation, having a robust governance framework in place is essential.

Although our assessment was carried out on the valuations of the Contracts as at 30 June 2015, and in the context of the current governance framework, we note from our conversations with management that considerable progress has been made over the past year. We would encourage management to continue to strengthen the governance framework going forward.

We emphasise that our findings do not indicate that the current governance is insufficient for the Board to obtain comfort that the valuations as at 30 June 2015 have been properly derived; however, in order for the Board to continue to obtain such comfort more efficiently and effectively as the business grows, further enhancements are recommended.

Board Audit Committee

We have reviewed the relevant sections of the presentations made by Finance to the Board Audit Committee (BAC) on 1 April 2015, as well as the relevant sections of the pack prepared by your external auditors, EY, for the BAC on 4 May 2015, together with the relevant extracts of the minutes of these meetings, to assess whether there is evidence of sufficient transparency over the MTM valuations, and review and challenge thereof. (The

papers for the BAC meeting for Q2 were not available at the time we completed our fieldwork).

We note that the progress report included in the presentation by Finance on 1 April 2015 listed a number of important improvements that have been made over the past year.

In order for the BAC to be able to continue to exercise proper oversight going forward, we would recommend that the information pack provided be enhanced to cover not just an analysis of the portfolio by maturity and accounting classification (Level 2/3 as defined by IFRS 13), but also a standardised depiction of the gross value of cash flows, the unadjusted NPV, and the reserves taken in deriving the adjusted NPV, for major contracts. This should be presented in a manner which is consistent with the management reporting (see comments below under “Reserves”).

The results of backtesting of both volumes (for major contracts) and profit/loss and cash realisation (for all contracts) should also be presented.

Management oversight

The actual valuations of the Contracts are computed within the Allegro system, and the results are extracted by the Finance (valuation and product control) team for accounting purposes. The Finance team produces the MTM deal reviews, including the MTM valuation results for the purpose of discussions with the business heads and their financial controllers, the President, the global head of Risk, representatives from the Strategy team and the Asia-Pacific CFO, during the monthly MTM review meetings.

A separate monthly review meeting on price curves is held under the oversight of the Curve Review Committee, providing the necessary management oversight of the price curve construction. We note that Noble has applied appropriate practices and procedures to the oversight, internal control and governance over the MTM valuations. However, there is an absence of formal policy or documentation on some of these practices and procedures. With the aim of better consistency and clarity, we would recommend that Noble strengthen its documentation with regards to MTM valuation practices and procedures, as set out further below.

In addition, we have some recommendations as to how the valuations are presented, which we discuss further in the section on Reserves below. We believe that these recommendations should enhance:

- Consistency of valuation using the full list of risks and reserves to be considered (with explanation of the values used) across all Contracts;
- Comparability of valuations, and changes thereto, over time; and
- Transparency, in particular over how reserves have been taken.

Reporting

We note that considerable progress has been made in developing a report that sets out how the valuations have moved from one quarter to the next, showing the changes due to each factor (changes in volume assumptions, discount curves, reserves, etc). This enables

management to compare the forecast realisation of cash over the quarter with the actual realisation. This in turn provides an important feedback loop in producing the valuations for the next quarter, as well as quality control over the accuracy of the valuations.

The report we saw was for the first quarter, as the second quarter report was not yet available at the time we completed our work. The first quarter report did not contain a commentary (we understand this was done in 2014, but the focus so far in 2015 has been in developing a more comprehensive set of numbers). We also understand that the report is circulated to the CEO, President, CFO and Asia-Pacific CFO, but there is no formal management forum in which it is discussed.

Having a clear understanding of how the models have performed relative to actual cash realisation is an important control, and we would encourage management to continue to develop this report, and in particular:

- Complete the work on the numbers such that the report covers 100% of the MTM valuations and is subject to full reconciliation against financial reports and statements;
- Ensure that the report includes a discussion on the development of the MTM of the portfolio, and highlights significant changes and exceptions to approved policy and processes;
- Establish a formal process for review and sign-off by management; and
- Establish a process to update the Board or the Board Audit Committee and define a formal, independent process by which the management and the BAC can review and challenge.

Segregation of duties

We note that different departments are involved in producing inputs to the valuations and taking steps to ensure the accuracy of both input and output. In addition, we understand that Internal Audit (as part of their audit work) reviews the MTM process in the respective business units from the perspective of sound principles and internal controls. Nevertheless, we would recommend the adoption of a governance structure whereby Compliance or Internal Audit could play a greater role in terms of providing stronger assurance on the MTM valuation processes so as to ensure policy adherence and that there is no conflict of interest.

Volumes

The Relevant Criteria:

“Controls are in place to ensure that the assumed volumes are supported by the relevant JORC-compliant report and contract information.”

Production volume is an important parameter for the valuation modelling. The Company has developed and followed a methodology to derive production volumes by referencing the terms of the contracts and where the related commodity deposit reserves are deemed to be either proven or probable in compliance with JORC-compliant standards or assessed as such by independent experts as defined under the JORC code. Further volume adjustments may be made to reflect the quality of compliance of the reports with the code, or due to considerations of the marginal cost of production against the expected market price in order to closely reflect market reality.

In our review of the valuation models of the Contracts, we noted that in some cases the adjustments to expected volume were made directly to the base volume. In other cases, this adjustment was made only later to the modelled NPV.

We recommend that a standard approach be applied in all cases, where the starting point for the valuation is the base forecast for volumes, on an unadjusted basis. Expected volume adjustments to base volume should then be made and separately shown, to derive an adjusted volume forecast. This would be the best estimate of the actual production volumes at the time of valuation. This systematic approach and presentation will facilitate an easier comprehension, both between Contracts and over time.

We explain this further under the section on “Reserves” below.

Reserves

The Relevant Criteria:

“A policy is in place to ensure that reserves are taken to allow for future uncertainty

There is an appropriate degree of review and sign-off over model reserves

The reserves are derived in a manner which is consistent with the requirements of IFRS 13.”

A key part of the modelling process is the establishment of appropriate reserves, due in particular to the uncertainty as to future volumes. The scope of our work was to look at the process by which reserves are computed, reviewed and challenged, and not to perform our own assessment of the reserves required, although we did challenge the modelling team on the nature of, and source of information for, their assessment of the required reserves .

Consistency, comparability and transparency

In order for management to be able to exercise efficient oversight over the reserves (which are a significant element in the valuations, representing for the Contracts we reviewed a reduction of the unadjusted NPV downwards by around 34%), it is important that these reserves be taken in a way that allows for:

- Consistency and transparency of valuation using the full list of risks and reserves to be considered (with explanation of the values used) across all Contracts;
- Comparability of valuations, and changes thereto, over time; and
- Transparency over which reserves have been taken, for what, and why.

While we did not note that there had been any failure to consider what reserves were required as of 30 June 2015, and to justify these, we believe that further progress can be made in how reserves are presented for greater clarity and comparability. Management can then focus on exceptional or significant items, rather than having to discuss each contract in the monthly MTM review meetings.

Policy

We note that the MTM policy on reserves does not specify a defined and standardised application for reserves. We would recommend that the approach to setting reserves and its application in practice should be clearly stated in the policy. The process for review and challenge should also be set out clearly in the policy and MTM review pack.

We note that the valuation team follows an informal set of guidelines as to the level of reserves required (for example, checking that expected volumes do not exceed proven and probable reserves reported under a JORC-compliant report, or setting different levels for production uncertainty depending on the life-cycle of the mine). We would recommend that these be formulated clearly as part of the MTM policy. This does not mean that these have to be followed in every case – there may be valid reasons for setting a different level of reserve for a specific Contract – but departures from the policy should then be articulated clearly and justified.

Further items to consider

We would recommend that a standard checklist be developed to note and indicate the category of applied reserves and the consideration and justification of application. This checklist can then be employed in MTM review meetings for more efficient and effective oversight and governance.

As noted earlier, reserves for changes in expected volumes should initially be taken as adjustments to the base volume forecast. Any residual uncertainty over production volumes could be reserved separately as a volume reserve. Thus the adjustment for expected changes in production volumes (due to known delays etc.) would be presented separately from the reserve taken to allow for future unexpected changes (i.e. uncertainty). A table similar to that set out below would facilitate this:

Contract Ref	Unadjusted Volume	Unadjusted Gross cash flow	Volume Adjustments	Adjusted expected Volumes	Adjusted Gross cash flow	Discount Rate	NPV before reserves	Reserves to NPV taken for uncertainty over:			Net NPV
								Volume	Price	Other factors	
ABC											
DEF											
GHI											
Etc											
Total											

Adoption and interpretation of IFRS 13

Exit price

The Relevant Criteria:

“Fair value must be the price (i.e. exit price) that would be received or paid to execute the contract between market participants (need to consider who are the market participants that the entity would enter into and execute the commodity contract with) in an orderly transaction e.g. it must be arm’s length and cannot be under undue stress circumstances.”

For many derivatives, there is normally no observable market price for the specific derivative contract, as the terms are unique. For example, even for a straightforward interest rate swap, the maturity of the swap may be unique. Instead, the practice is to use observable inputs to the model (yield curves etc), where available. However, further comfort can usually be derived from the fact that the risks of these contracts are often closed out before maturity, either with the counterparty or by doing an offsetting trade with another counterparty. If the price of these trades closely follows the MTM value of the original contract assigned immediately before the offsetting trade, this provides comfort that the MTM value assigned reflected the ‘exit price’.

In the case of Noble’s Contracts, there are no offsetting or close-out trades from which an exit price can be directly observed; however, observable inputs are used where available, and this is consistent with market practice. In addition, the application of production volume adjustments and allocation of reserves for uncertainties in the valuation is consistent with market practice. All factors that a potential buyer of the Contracts would take into account have been considered and reflected in the valuation of these Contracts.

However, we would recommend that the MTM policy be enhanced to cover exit price considerations, so that should such external evidence become available - e.g. market based sales, unwinds, efforts to purchase, re-negotiations etc. – this can be reflected in future valuations.

Principal market

The Relevant Criteria:

“The market against which the commodity will be fair-valued should be the principal market or, in the absence of a principal market, the most advantageous market. The entity must be able to assess the market but does not necessarily need to trade or perform a transaction.”

The market that is used in the valuation of the Contracts is based on the forward curve or observable data for the relevant commodity, and the expected sales price is adjusted or refined when necessary (e.g. quality adjustment) so as to reflect better the value of the Contracts.

We also note that the derivation of forward commodity prices is developed by a team that is independent of the valuation modelling team.

Use of observable inputs

The Relevant Criteria:

“The valuation techniques must maximise the use of relevant observable inputs and minimize the use of unobservable inputs that will be used to develop the valuation techniques. These inputs must be assumptions that market participants would use”.

We note that where observable inputs are available (such as interest rates, credit spreads, forward commodity prices, etc.), these are used in the modelling approach. The unobservable inputs are consistent with assumptions that other market participants would use.

Our comments on specific parameters are shown later in this report.

Characteristics to take into account

The Relevant Criteria:

“The characteristics of the commodity contracts that market participants would take into account must be taken into account when pricing the commodity contract at the measurement date. Entity-specific characteristics (e.g. condition and location of the commodity contracts or restrictions on the commodity which only applies to the entity and other market participants would not take these into consideration) should not be taken into account in the fair valuation of the commodity contract”

The approach to valuation adopted by Noble is in line with what we would expect other market participants to adopt.

Our comments on specific parameters are shown later in this report.

Transport costs

The Relevant Criteria:

Transport costs that are characteristics of the commodity contracts must be included in the fair valuation of the commodity contracts.

In our review of the Contracts, we note that the appropriate transportation costs have been taken into consideration where necessary.

We also note that the derivation of expected future transportation costs is done by the Freight department, which is independent of the valuation modelling team in Finance.

Use of income (present value) approach

The Relevant Criteria:

“Where the entity uses the income approach, the entity must ensure that the present value techniques capture all of the following elements from the perspective of market participants:

- *An estimate of the future cash flows for the commodity contracts;*
- *Expectations about possible variations in the amount and timing of the cash flows representing the uncertainty inherent in the cash flows;*
- *The time value of money, represented by the rate on risk free monetary assets that have maturity dates or durations that coincide with the period covered by the cash flows and pose neither uncertainty in timing nor risk of default to the holder;*
- *The price forbearing the uncertainty inherent in the cash flow i.e. risk premium; and*
- *Other factors that market participants would take into account in the circumstances”.*

The approach to valuation adopted by Noble captures all of these elements.

Our comments on specific parameters are shown later in this report.

Parameters

Discount rates (own funding costs)

The Relevant Criteria:

“A yield curve policy is in place.

The curve reflects inputs obtained from external sources.

Where no external sources are available, the curve is constructed using an industry accepted methodology.

A credit spread policy is in place.

The spread reflects inputs obtained from external sources”.

Noble has developed and followed a methodology to derive the appropriate discount curves that incorporate both the Company's own funding costs as well as counterparty credit spreads. The Company's own funding cost is derived based on third-party credit ratings.

With respect to the process to derive and update discount rates, we would recommend putting in place a formalised peer review to ensure the ongoing validity and accuracy of the discount curves.

In addition, we would recommend a formal process to review the Company's own funding curve on a regular basis to ensure it truly reflects its actual funding costs, especially when there is a change in credit ratings.

Counterparty credit spreads

The Relevant Criteria:

"A credit spread policy is in place.

The spread reflects inputs obtained from external sources".

Noble rates its counterparties internally and reviews them annually. The Company has in place a credit policy on the relevant assessment procedure and application of the internal rating.

Counterparty credit spreads are derived from CDS spreads for companies with equivalent ratings, which is normal market practice.

Future Commodity Prices

The Relevant Criteria:

"A policy is in place to derive forward curves.

The curves reflect inputs obtained from external sources, where available.

Where no such external sources exist, the forward curves are constructed using an industry-accepted methodology".

We note that the derived forward curves are based on a step approach where priority is given in accordance to the reliability and observability of external information. In the absence of such data sources, the forward curves are constructed using an industry accepted methodology.

To enhance the overall robustness of the curve derivation process, we would recommend that Noble considers deploying a statistical method (such as Monte Carlo simulation) to provide further validation of the constructed forward curves. This need not be done for all commodities at every valuation point, merely periodically on a sample basis to gain greater comfort over the construction of the unobservable part of the forward curve.

In addition, we also note that Noble applies a common escalation factor within the forward curve derivation for all commodity types (i.e. beyond the point where external data is available to assess forward prices, Noble applies a consistent inflation factor to extrapolate the curve over the full term, which is consistent with industry practices). We recommend that the escalation factor be re-examined periodically for appropriateness and, if necessary, adjusted to suit each respective type of commodity.

Foreign Exchange Rates

The Relevant Criteria:

“A policy is in place to derive forward FX rates”.

In our review of the Contracts, we note that forward foreign exchange rates are acquired from Bloomberg and applied whenever appropriate.

Freight

The Relevant Criteria:

“A policy is in place to ensure that reserves are taken against any relevant freight costs.

The costs reflect inputs obtained from external sources, where available.

Where no such external sources exist, the costs are estimated using an industry-accepted methodology.”

We note the Company has followed a method to derive the relevant freight curve that is consistent with market practices and external market data is used wherever possible.

MTM Values

The Relevant Criteria:

“There is a policy and methodology in place that complies with IFRS 13.

The MTM values have been derived according to this policy and methodology, in compliance with IFRS 13.”

This is covered by our comments in the preceding sections.

Other Observations

Backtesting

We note that the MTM valuations (against actual profit and loss) are backtested by the Finance team and the results are presented and discussed during the monthly MTM review meetings. To ensure effective control and validation of the MTM computations, we would recommend putting in place a formal process (and policy) to ensure backtesting is conducted regularly using a standardised approach.

Stress Testing

While stress testing is conducted on an ad hoc basis, we note that there is no formal policy on the stress testing procedure and application. To ensure its proper usage for effective risk mitigation against unforeseen (and adverse) circumstances, we would recommend putting in place a formal policy and process to ensure that stress testing is conducted regularly using a standardised approach and presented to the MTM Review Committee.

Valuation Spreadsheets

While actual valuations are performed within the Allegro system, valuation spreadsheets are used by the Finance team to facilitate the understanding of the overall valuation process and to provide an additional level of validation and control.

We noted some inconsistencies in the presentation of MTM valuations in the spreadsheets observed during the review process, and we would recommend the standardisation of the valuation spreadsheets for greater clarity and comparability across different Contracts.

Tax

While income and capital gains taxes are not normally considered in the valuation of these type of Contracts, there may be instances where withholding taxes apply to certain cash flows which would reduce the value of those cash flows.

We note that the withholding tax implications of new Contracts are considered during the initial deal construction. Nevertheless, we would recommend developing a formal sign-off process and incorporation of tax considerations into the MTM review pack.

Retention of Data

We note there is no formal data retention policy. We would recommend the development of a formal data retention policy and procedure in order to maintain a proper audit trail.

Appendix - The Relevant Criteria

Item	Relevant Criteria
Adoption and interpretation of IFRS 13	<ul style="list-style-type: none"> Fair value must be the price (i.e. exit price) that would be received or paid to execute the contract between market participants in an orderly transaction e.g. it must be arm’s length and cannot be under undue stress circumstances
	<ul style="list-style-type: none"> The unit of account should be clearly defined e.g. one contract or one contract split into components or the combination of several contracts.
	<ul style="list-style-type: none"> The market against which the commodity will be fair-valued should be the principal market or, in the absence of a principal market, the most advantageous market. The entity must be able to assess the market but does not necessarily need to trade or perform a transaction.
	<ul style="list-style-type: none"> The valuation techniques must maximise the use of relevant observable inputs and minimize the use of unobservable inputs that will be used to develop the valuation techniques. These inputs must be assumptions that market participants would use.
	<ul style="list-style-type: none"> The characteristics of the commodity contracts that market participants would take into account must be taken into account when pricing the commodity contract at the measurement date. Entity-specific characteristics (e.g. condition and location of the commodity contracts or restrictions on the commodity which only applies to the entity and other market participants would not take these into consideration) should not be taken into account in the fair valuation of the commodity contract.
	<ul style="list-style-type: none"> Transaction costs must be excluded in the fair valuation of the commodity contracts.
	<ul style="list-style-type: none"> Transport costs that are characteristics of the commodity contracts must be included in the fair valuation of the commodity contracts.
	<ul style="list-style-type: none"> If there are offsetting positions in market risks or counterparty risks in the commodity contracts (e.g. the entity will settle two offsetting contracts with the same counterparty on a net basis) then additional factors and requirements must be applied.

Item	Relevant Criteria
<p>Adoption and interpretation of IFRS 13 (cont.)</p>	<ul style="list-style-type: none"> • Where the entity uses the income approach, the entity must ensure that the present value techniques capture all of the following elements from the perspective of market participants: <ul style="list-style-type: none"> - An estimate of the future cash flows for the commodity contracts; - Expectations about possible variations in the amount and timing of the cash flows representing the uncertainty inherent in the cash flows; - The time value of money, represented by the rate on risk free monetary assets that have maturity dates or durations that coincide with the period covered by the cash flows and pose neither uncertainty in timing nor risk of default to the holder; - The price for bearing the uncertainty inherent in the cash flow i.e. risk premium; and - Other factors that market participants would take into account in the circumstances • Depending on the elements captured above, present value techniques may differ and hence further adjustments for risk and the types of cash flows that the entity uses in its present value technique must be reasonable and from the market participant’s perspective to ensure compliance with IFRS 13 Para B12 to B30. • If the contract results in a liability position, depending on whether the resulting liability is held by other parties, the entity needs to take into account (in the case of applying the present value technique) the following: <ul style="list-style-type: none"> (a) future cash outflows that a market participant would expect to incur in fulfilling the obligation, including the compensation that a market participant would require for taking on the obligation. (b) the amount that a market participant would receive to enter into or issue an identical liability, using the assumptions that market participants would use when pricing the identical item in the principal or most advantageous market (only in the absence of the principal market) for issuing a liability with the same contractual terms. (c) non-performance risk which includes, but may not be limited to, an entity's own credit risk. Additional features in the liability such as restrictions preventing the transfer of the liability and demand features should be considered in the fair valuation.
<p>Governance and oversight</p>	<ul style="list-style-type: none"> • The governance and organisational arrangements (including segregation of duties and committee oversight) are designed to meet the objective of independent validation of MTM valuations • These arrangements have been followed.
<p>Policies</p>	<ul style="list-style-type: none"> • The valuation methodologies are covered by policies. • These policies have been complied with.

Item	Relevant Criteria
Parameters: yield curves	<ul style="list-style-type: none"> • A yield curve policy is in place. • The curve reflects inputs obtained from external sources. • Where no external sources are available, the curve is constructed using an industry accepted methodology.
Parameters: Own credit spread	<ul style="list-style-type: none"> • A credit spread policy is in place. • The spread reflects inputs obtained from external sources.
Parameters: Counterparty credit spread	<ul style="list-style-type: none"> • A credit spread policy is in place. • The spread reflects inputs obtained from external sources.
Parameters: volumes	<ul style="list-style-type: none"> • Controls are in place to ensure that the assumed volumes are supported by the relevant JORC report and contract information.
Parameters: Future commodity prices	<ul style="list-style-type: none"> • A policy is in place to derive forward curves. • The curves reflect inputs obtained from external sources, where available. • Where no such external sources exist, the forward curves are constructed using an industry-accepted methodology.
Parameters: Foreign Exchange	<ul style="list-style-type: none"> • A policy is in place to derive forward FX rates.
Parameters: Freight	<ul style="list-style-type: none"> • A policy is in place to ensure that reserves are taken against any relevant freight costs. • The costs reflect inputs obtained from external sources, where available. • Where no such external sources exist, the costs are estimated using an industry-accepted methodology.
Model reserves	<ul style="list-style-type: none"> • A policy is in place to ensure that reserves are taken to allow for future uncertainty. • There is an independent degree of review and sign-off over model reserves. • The reserves are derived in a manner which is consistent with the requirements of IFRS 13.
MTM Values	<ul style="list-style-type: none"> • There is a policy and methodology in place that complies with IFRS 13. • The MTM values have been derived according to this policy and methodology, in compliance with IFRS 13.



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Noble Group Limited
18th Floor
Mass Mutual Tower
38 Gloucester Road
Hong Kong

Attention: The Board of Directors

10 August 2015

**INDEPENDENT ASSURANCE REPORT IN CONNECTION WITH THE
CARRYING VALUE OF LONG-TERM PHYSICAL COMMODITY DERIVATIVE
CONTRACTS AS AT 30 JUNE 2015**

Dear Sirs

Following our appointment by the Board Sub-Committee (“the Committee”) of Noble Group Limited (the “Company”) on 7 July 2015, we have performed a reasonable assurance engagement on certain long-term physical commodity derivatives contracts of the Company and its subsidiaries (“the Group”) as defined in the next paragraph (“the Contracts”) which were included on the Group’s consolidated balance sheet as at 30 June 2015. This report is intended to assist the Committee with its evaluation on whether the methodology used for deriving the mark-to-market (“MTM”) values of these Contracts complies with the requirements of International Financial Reporting Standard 13, Fair Value Measurement, (“IFRS 13”) as well as standard practices in the industry.

These Contracts represented:

- 81% of the value of derivative contracts with a duration of at least two years, and
- 98% of the value of the level 3 net assets (as defined by IFRS 13),

as recorded on the Group’s consolidated balance sheet as at 30 June 2015.

The Relevant Criteria

The criteria used by us in this engagement were developed by management based on the relevant requirements of IFRS 13 and standard practices in the industry for deriving MTM valuations (“the Relevant Criteria”) and are set out in the accompanying Appendix.



Management's Responsibility

Management is responsible for the measurement of the individual valuations and the overall valuation of the Contracts and for determining that the use of the Relevant Criteria is appropriate in the circumstances. This also includes ensuring that the inputs to the MTM valuation models, the MTM valuation models themselves and the internal governance and controls over the MTM valuation models comply with the Relevant Criteria.

Our Responsibility

Our responsibility is to express an opinion, based on our work, on whether the individual valuations and the overall valuation of the Contracts included in the Group's consolidated balance sheet as at 30 June 2015 comply with the Relevant Criteria.

We performed our work in accordance with Singapore Standard on Assurance Engagements 3000 – Assurance Engagements other than Audits or Reviews of Historical Financial Information (the "Standard"). This Standard requires that we comply with ethical requirements and plan and perform our work to form our opinion. A reasonable assurance engagement involves performing procedures to obtain sufficient appropriate evidence to support our opinion. The extent of our procedures depends on our professional judgment and our assessment of the engagement risk.

Our work included:

- 1) obtaining an understanding of the relevant policies, procedures and controls that are:
 - a) sufficient to identify and assess the risks that management may not have complied with the Relevant Criteria in relation to the Contracts at 30 June 2015; and
 - b) sufficient to design and perform further evidence-gathering procedures.
- 2) carrying out inquiries of relevant personnel of the Group;
- 3) assessing the compliance of the valuation of each Contract with the Relevant Criteria; and
- 4) other procedures which were necessarily conducted on a test basis and included such samples as we deemed appropriate.

Further details about our work can be found in the accompanying Appendix.

Our scope of work was restricted to the valuations of the Contracts on the balance sheet as at 30 June 2015 and we did not consider classification, disclosure or recognition of income.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.



Opinion

Based on our work described in this report, in our opinion, the individual valuations and the overall valuation of the Contracts included in the Group's consolidated balance sheet as at 30 June 2015 comply, in all material respects, with the Relevant Criteria.

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Yours faithfully


PricewaterhouseCoopers LLP Singapore

Relevant Criteria

Item	Relevant Criteria	Procedures performed included:
<p>Adoption and interpretation of IFRS 13</p>	<ul style="list-style-type: none"> Fair value must be the price (i.e. exit price) that would be received or paid to execute the contract between market participants in an orderly transaction e.g. it must be arm's length and cannot be under undue stress circumstances. 	<p>Made inquiries of Management as to the determination of the parameters which should be included in the models. This included:</p> <ul style="list-style-type: none"> Obtaining copies of the MTM policy and the policy governing construction of discount curves Assessing whether these policies comply with the Relevant Criteria i.e. with the requirements of IFRS 13 as well as standard practices in the industry for developing valuation models Conducting interviews with the relevant departments that provided inputs to the models, including but not restricted to: <ul style="list-style-type: none"> Business units responsible for the transactions Credit department, responsible for the development of credit ratings and the construction of counterparty credit risk factors Strategy department, responsible for the construction of forward commodity price curves Freight department, responsible for developing forward freight cost estimates Finance department, responsible for the overall valuation models <p>Made inquiries of Management as to the source of inputs. This included:</p> <ul style="list-style-type: none"> Obtaining details of how discount curves and forward commodity prices were constructed Examining the source of inputs, to ensure that wherever possible inputs were obtained from third parties Ensuring that these observable inputs were factored into the models, as further described below Checking the third party inputs to the third-party sources (such as Bloomberg)
	<ul style="list-style-type: none"> The unit of account should be clearly defined e.g. one contract or one contract split into components or the combination of several contracts. 	
	<ul style="list-style-type: none"> The market against which the commodity will be fair-valued should be the principal market or, in the absence of a principal market, the most advantageous market. The entity must be able to assess the market but does not necessarily need to trade or perform a transaction. 	
	<ul style="list-style-type: none"> The valuation techniques must maximise the use of relevant observable inputs and minimize the use of unobservable inputs that will be used to develop the valuation techniques. These inputs must be assumptions that market participants would use. 	
	<ul style="list-style-type: none"> The characteristics of the commodity contract that other market participants would take into account must be taken into account when pricing the commodity contract at the measurement date. Entity-specific characteristics (e.g. condition and location of the commodity contracts or restrictions on the commodity which only apply to the entity and which other market participants would not take into consideration) should not be taken into account in the fair valuation of the commodity contract. 	

Item	Relevant Criteria	Procedures performed included:
Adoption and interpretation of IFRS 13 (cont.)	<ul style="list-style-type: none"> Transaction costs must be excluded in the fair valuation of the commodity contracts. 	Inspected the individual valuation of each Contract to ensure no transaction costs included. This included: <ul style="list-style-type: none"> Obtaining copies of the valuation models, and checking the various parameters used to ensure that no transaction costs were included:
	<ul style="list-style-type: none"> Transport costs that are characteristics of the commodity contracts must be included in the fair valuation of the commodity contracts. 	Inspected the individual valuation of each Contract to ensure transport costs were included, where relevant. This included: <ul style="list-style-type: none"> Inspecting the MTM policy to ensure that transport costs were covered Conducting interviews with the Freight department to understand how estimates of transport costs were determined Obtaining copies of the valuation models, and checking the various parameters used to ensure that transport costs were factored in, where relevant, in conformity with the inputs provided by the Freight department
	<ul style="list-style-type: none"> If there are offsetting positions in market risks or counterparty risks in the commodity contracts (e.g. the entity will settle two offsetting contracts with the same counterparty on a net basis) then additional factors and requirements must be applied. 	Not applicable to the Contracts inspected

Item	Relevant Criteria	Procedures performed included:
<p>Adoption and interpretation of IFRS 13 (cont.)</p>	<ul style="list-style-type: none"> • Where the entity uses the income approach, the entity must ensure that the present value techniques capture all of the following elements from the perspective of market participants: <ul style="list-style-type: none"> - An estimate of the future cash flows for the commodity contracts; - Expectations about possible variations in the amount and timing of the cash flows representing the uncertainty inherent in the cash flows; - The time value of money, represented by the rate on risk free monetary assets that have maturity dates or durations that coincide with the period covered by the cash flows and pose neither uncertainty in timing nor risk of default to the holder; - The price for bearing the uncertainty inherent in the cash flow i.e. risk premium; and - Other factors that market participants would take into account in the circumstances. 	<p>Made inquiries of Management as to the inclusion of all the elements listed on the left in the models</p> <p>Inspected the relevant policies to ensure that the elements listed on the left are covered</p> <p>Inspected the application of these policies to the individual valuation of each Contract. This included:</p> <ul style="list-style-type: none"> • Obtaining copies of the individual valuation models for each Contract • Comparing the construction of the models with the various policies and practices governing inputs to and construction of the models • Ensuring that inputs to the models were, in each and every case, consistent with the stated policies and with our understanding of industry practices <p>See further under “Parameters” below</p>
	<ul style="list-style-type: none"> • Depending on the elements captured above, present value techniques may differ and hence further adjustments for risk and the types of cash flows that the entity uses in its present value technique must be reasonable and from the market participant’s perspective to ensure compliance with IFRS 13 Para B12 to B30. 	<p>See “Parameters: Model Reserves” below</p>

Item	Relevant Criteria	Procedures performed included:
<p>Adoption and interpretation of IFRS 13 (cont.)</p>	<ul style="list-style-type: none"> • If the contract results in a liability position, depending on whether the resulting liability is held by other parties, the entity needs to take into account (in the case of applying the present value technique) the following: <ul style="list-style-type: none"> (a) future cash outflows that a market participant would expect to incur in fulfilling the obligation, including the compensation that a market participant would require for taking on the obligation. (b) the amount that a market participant would receive to enter into or issue an identical liability, using the assumptions that market participants would use when pricing the identical item in the principal or most advantageous market (only in the absence of the principal market) for issuing a liability with the same contractual terms. (c) non-performance risk which includes, but may not be limited to, an entity's own credit risk. Additional features in the liability such as restrictions preventing the transfer of the liability and demand features should be considered in the fair valuation. 	<ul style="list-style-type: none"> • Not applicable as none of the Contracts was a liability

Item	Relevant Criteria	Procedures performed included:
Governance and oversight	<ul style="list-style-type: none"> • The governance and organisational arrangements (including segregation of duties and committee oversight) are designed to meet the objective of independent validation of MTM valuations • These arrangements have been followed. 	<p>Inspected the Noble Group Organization Chart (Selected Functions) as of June 2015 to ensure a clear segregation of duties is in place.</p> <p>Made inquiries of Management and relevant functions including Finance (Product Control, Valuation), Market Risk, Credit Risk, Strategy, Research, Freight, Tax, IT and Compliance, to understand the roles and responsibilities in relation to MTM valuations and the corresponding governance and controls.</p> <p>Inspected the governance process over the models to ensure that segregation of duties and committee oversight are designed to meet the objective of independent validation of MTM valuations. This included:</p> <ul style="list-style-type: none"> • Inspecting information packs submitted to monthly MTM Review meetings and curve review meetings • Making inquiries of management as to how the risks and sensitivities related to the valuations were reflected in the information packs • Attending one monthly MTM review meeting as observers • Inspecting the pack presented to the Board Audit Committee and inspecting the minutes of that meeting, for evidence of review and challenge of the MTM valuations • Conducting interviews with management to complement our understanding
Policies	<ul style="list-style-type: none"> • The valuation methodologies are covered by policies. • These policies have been complied with. 	<p>Inspected the relevant policies to ensure that all the Relevant Criteria are covered</p> <p>Inspected the application of these policies to the individual valuation of each Contract.</p>

Item	Relevant Criteria	Procedures performed included:
Parameters: yield curves	<ul style="list-style-type: none"> • A yield curve policy is in place. • The curve reflects inputs obtained from external sources. • Where no external sources are available, the curve is constructed using an industry accepted methodology. 	<p>Made inquiries of Management as to how yield curves and credit spreads are constructed</p> <p>Inspected the relevant policies to ensure that yield curves, own credit spreads and counterparty credit spreads reflect inputs from external sources or, where such inputs are not available, the curves and spreads are constructed using an industry accepted methodology</p>
Parameters: Own credit spread	<ul style="list-style-type: none"> • A credit spread policy is in place. • The spread reflects inputs obtained from external sources. 	<p>Inspected the construction of discount curves to ensure that this was done in compliance with the policies</p>
Parameters: Counterparty credit spread	<ul style="list-style-type: none"> • A credit spread policy is in place. • The spread reflects inputs obtained from external sources. 	<p>Inspected the external sources obtained. This included:</p> <ul style="list-style-type: none"> • Checking the source of inputs, to ensure that wherever possible inputs are obtained from third parties • Ensuring that these inputs were factored into the models, as further described below <p>Inspected the application of discount rates incorporating own credit spread and counterparty credit spreads to the individual valuation of each Contract. This included:</p> <ul style="list-style-type: none"> • Obtaining copies of the individual valuation models for each Contract • Comparing the construction of the models with the discount curves derived • Ensuring that the discount rates used in the models were consistent with the stated policies and with our understanding of industry practices

Item	Relevant Criteria	Procedures performed included:
Parameters: volumes	<ul style="list-style-type: none"> • Controls are in place to ensure that the assumed volumes are supported by the relevant JORC-compliant report and contract information. 	<p>Inspected the relevant policies to ensure that modelling of volumes is supported by the relevant JORC-compliant report and contract information</p> <p>Made inquiries of Management as to how volumes are derived. This included:</p> <ul style="list-style-type: none"> • Obtaining copies of the individual valuation models for each Contract • Obtaining copies of the supporting contracts with producers • Conducting interviews with the modelling team • Understanding how the volumes stated in the Contract had been modelled over the life of the Contract • Comparing the modelled volumes with the information and explanations provided to us • Obtaining copies of the deal summary reports and information packs provided to monthly MTM review meetings
Parameters: Future commodity prices	<ul style="list-style-type: none"> • A policy is in place to derive forward curves. • The curves reflect inputs obtained from external sources, where available. • Where no such external sources exist, the forward curves are constructed using an industry-accepted methodology. 	<p>Made inquiries of Management as to how forward curves are constructed</p> <p>Inspected the relevant policies to ensure that curves reflect inputs obtained from external sources, where available, or where no such external sources exist, the forward curves are constructed using an industry-accepted methodology</p> <p>Inspected the construction of forward curves</p> <p>Inspected the external sources obtained</p> <p>Inspected the application of these forward curves to the individual valuation of each Contract</p>

Item	Relevant Criteria	Procedures performed included:
Parameters: Foreign Exchange	<ul style="list-style-type: none"> • A policy is in place to derive forward FX rates. 	<p>Made inquiries of Management as to how forward FX rates are obtained</p> <p>Inspected the relevant policies to ensure that forward FX rates reflect inputs obtained from external sources, where available, or where no such external sources exist, the forward FX rates are constructed using an industry-accepted methodology</p> <p>Inspected the external sources obtained</p> <p>Inspected the construction of forward curves</p> <p>Inspected the application of these forward curves to the individual valuation of each Contract</p>
Parameters: Freight	<ul style="list-style-type: none"> • A policy is in place to ensure that reserves are taken against any relevant freight costs. • The costs reflect inputs obtained from external sources, where available. • Where no such external sources exist, the costs are estimated using an industry-accepted methodology. 	<p>Made inquiries of Management as to how freight costs are estimated</p> <p>Inspected the relevant policies to ensure that freight costs reflect inputs obtained from external sources, where available, or where no such external sources exist, the costs are estimated using an industry-accepted methodology</p> <p>Inspected the construction of forward freight costs</p> <p>Inspected the application of these freight costs to the individual valuation of each Contract, where relevant</p>
Model reserves	<ul style="list-style-type: none"> • A policy is in place to ensure that reserves are taken to allow for future uncertainty. • There is an independent degree of review and sign-off over model reserves. • The reserves are derived in a manner which is consistent with the requirements of IFRS 13. 	<p>Made inquiries of Management as to how reserves are derived</p> <p>Inspected the relevant policies to ensure that there is independent review and sign-off over model reserves and the reserves are derived in a manner which is consistent with the requirements of IFRS 13.</p> <p>Inspected the application of these reserves to the individual valuation of each Contract</p> <p>Inspected the information provided to Management to support review and challenge</p> <p>Observed the review process in one of the monthly MTM Committees</p>

Item	Relevant Criteria	Procedures performed included:
MTM Values	<ul style="list-style-type: none"> • There is a policy and methodology in place that complies with IFRS 13. • The MTM values have been derived according to this policy and methodology, in compliance with IFRS 13. 	<p>Inspected the relevant policies to ensure that the valuation policy and methodology complies with the relevant requirements of IFRS 13</p> <p>Inspected the application of these policies to the individual valuation of each Contract. This included:</p> <ul style="list-style-type: none"> • Obtaining copies of the individual valuation models for each Contract • Comparing the construction of the models with all of the factors listed above • Ensuring that inputs to the models were, in each and every case, consistent with the stated policies and the Relevant Criteria