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# Accounting and Auditing Requirements of Market Participants in the NEM

## Derivative Valuation

A Report by Deloitte

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20 May 2014

Mr Eamonn Corrigan
Director
Australian Energy Market Commission (AEMC)
Level 6, 201 Elizabeth Street
Sydney, New South Wales, 2000
Australia

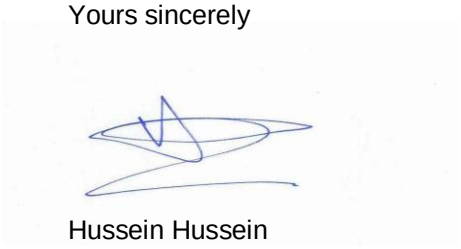
Dear Eamonn

**Re: Accounting and auditing requirements of participants in the NEM – Derivative Valuation**

Deloitte is pleased to provide the AEMC with its report into the Accounting and Auditing requirements of participants in the NEM in relation to derivative valuation and links to risk management. The purpose of the report is to contribute to the broader AEMC NEM Financial Market Resilience (FMR) Review process already being undertaken.

Deloitte would like to acknowledge the AEMC and members of the FMR Working Group for their support and for providing input throughout the course of the project.

Yours sincerely



Hussein Hussein
Partner
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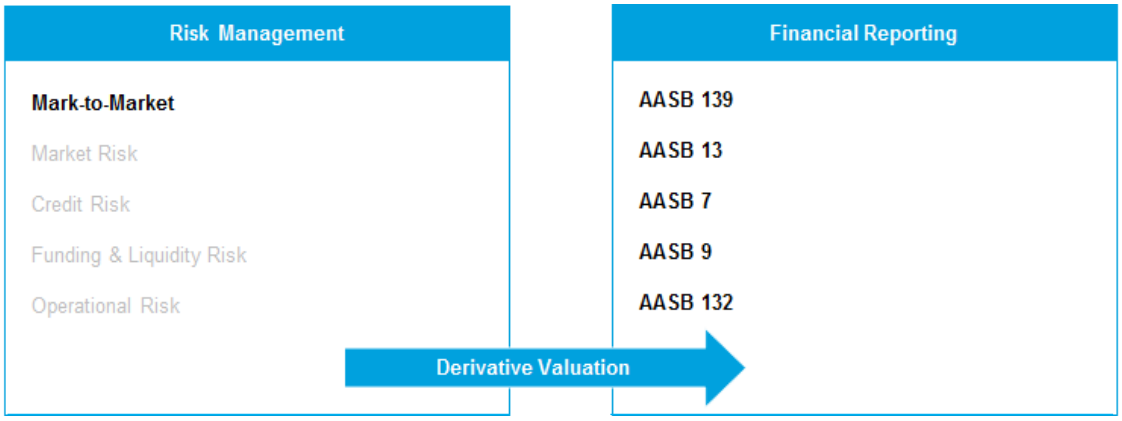
# Executive Summary

**There is only one inherent link between risk management and financial reporting for an entity. This link is through a principle of ensuring consistency between derivative valuation in the financial statements and the risk management function. The guidelines exist to assist the auditor meet the objectives and requirements of an audit. Risk management covers more than just the financial reporting of mark-to-market positions in the financial statements as articulated in the diagram below:**




**Although Australian Accounting Standard *AASB 7 Financial Instruments: Disclosure* require both quantitative and qualitative disclosures in relation to risks associated with valuation of reported financial instruments, valuation is the sole extent of the link between the two functions. Financial reporting and risk management have different objectives. This report addresses the current accounting and auditing requirements for participants in the NEM in relation to the valuation of financial instruments (i.e. Derivatives).**

## Risk Management

Participants' internal risk management policies, procedures and systems in the NEM have been operating and evolving over a period of time in response to their Boards' mandates for the establishment of a Risk Governance Framework. Risk management is enabled through a clear set of policies, processes and procedures that are approved at Board level in order to:

- Identify;
- Measure;
- Monitor;
- Report; and
- Manage

risk exposure within the Board articulated risk appetite. The Risk Governance Framework and risk appetite is then enforced through the limit framework and delegation of authority. Within Board approved policies, risk is classified across the following broad areas of risk:

- Market Risk;
- Credit Risk;
- Funding/Liquidity Risk; and
- Operational Risk.

The risk management function is embedded through the activities of the middle office which is segregated from front office (execution) and back office (settlement and accounting) activities through a clear segregation of duties and reporting lines to senior management. Middle office provides an independent oversight of front office activities ensuring the limit frameworks are enforced, including remedial actions to remedy breaches of policy and the recording of breaches from an operational risk perspective.[1]

The back-office is responsible for ensuring settlement of physical and financial trade against *all* counterparties takes place in a controlled and reconcilable manner; including the accounting activities for financial reporting purposes.

Participants in the NEM have also established an independent Internal Audit function as a third-line of defence.[2] The purpose of Internal Audit is to ensure internal controls around front, middle and back office activities are adequate from an internal Governance perspective.

Participants in the NEM use derivatives, including over-the-counter (OTC) derivatives to manage risk and to optimise their assets in line with approved strategies and approved limit structures. Controls throughout the deal life cycle (across front, middle and back office) work to ensure a *single source of truth* for the entities' derivative position.

## Financial Reporting & Australian Accounting Standards

The broader financial statements are prepared by an entity in accordance with AASB 101 on a going concern basis, unless management either intends to liquidate the entity, or to cease trading, or has no realistic alternative but to do so. Going concern assumes an entity is able to continue viably for the foreseeable future. An entity is required to assess its own ability to operate as a going concern in preparing its financial statements; and to disclose if the going concern basis has not been used in their preparation.

Financial instruments (i.e. derivatives), including embedded derivatives, are measured at fair value for the purpose of recognition on the balance sheet, calculating profit or loss, and/or disclosure for financial reporting purposes in accordance with Australian Accounting Standards *AASB 139 Financial Instruments: Recognition & Measurement* or *AASB 9 Financial Instruments*, which is currently being introduced and will replace AASB 139 in the future.

The financial statements may provide *a* source of available information for market participants to undertake their own financial analysis in order to assess the creditworthiness of counterparties.

Existing Australian Accounting Standards outline the requirement of entities in relation to the valuation and presentation of derivatives in the financial statements and these form the basis of the current accounting arrangements as they apply to derivative valuation and financial reporting for participants in the NEM. These are summarised in the table below and are addressed in section 2 of this report.

In particular, Australian Accounting Standard *AASB 7 Financial Instruments: Disclosures* provides guidance on the types of financial disclosures (i.e. qualitative and quantitative) applicable in relation to derivative valuation and Australian Accounting Standard *AASB 13 Fair Value Measurement* provides guidance on the measurement of fair value including the credit and debit adjustments to derivative valuations relevant for Over-the-Counter (OTC) exposures. The credit an adjustment on an asset position is known as Credit Value Adjustment (CVA) and debit adjustments on a liability position is known as Debit Value Adjustment (DVA). Section 3 outlines the following three general approaches (although names differ amongst entities) to

[1] For example, Mark-to-market (mtm) of the entity's position through independent price verification is but one activity undertaken by the middle office independent to the front office. Other activities include market risk measurement against approved limits through Value-at-Risk (VaR) or Earnings-at-Risk (EaR) and Credit risk measurement against approved counterparty limits through Current Exposure (CE) or Potential Future Exposure (PFE) - or absolute limits against rated counterparties and non-rated counterparties. Funding/Liquidity risk measurement is usually undertaken against limits using Cashflow-at-Risk (CFAR) or a short term risk test.

[2] The first line is the front office owning the risk as its best placed to manage risk through execution of trade, the middle office is the second line through its independent oversight function of the front office.

calculate CVA/DVA that are used by market participants and the differences in each approach:

- The Direct Approach;
- The Adjusted Cash-flow Approach; and
- The Simulation Approach.

The accounting standards provide a requirement to calculate CVA/DVA for financial reporting purposes although a specific approach is not stipulated within the standard. The choice of the approach by participants is influenced by, but not limited to, the following factors:

- Materiality of CVA/DVA calculations
- Internal capabilities in relation to systems and computation;
- Tenor of derivatives;
- Complexity of derivatives; and
- Commercial considerations in relation to comparative advantage across an entity's portfolio, credit worthiness and balance sheet.

The CVA/DVA is captured within the derivative valuations reported within the financial statements. Individual CVA/DVA by deal or by counterparty may not necessarily be determined from the financial statements. These are commercially sensitive matters amongst OTC counterparties. AASB 13 implicitly assumes that the fair value measurement is undertaken on a *going concern basis* unless management intends to liquidate or must liquidate assets in a situation of distress.

## Current Australian Accounting Arrangements relevant to Derivative Valuation

| Standard | Application |
|---|---|
| AASB 139 Financial Instruments: Recognition & Measurement | Defines financial instruments (including derivatives) and the accounting treatment thereof. |
| AASB 13 Fair Value Measurement | Provides guidance on fair value measurement, in particular the requirements of Credit Valuation Adjustments. This standard defines fair value and is applicable when another accounting standard requires or permits fair value measurements or disclosures about fair value measurements. |
| AASB 7 Financial Instruments Disclosures | Requires various financial risk management disclosures, both quantitative and qualitative. Qualitative disclosures include financial risk management policy approaches. Quantitative disclosures include various market risk sensitivities, credit quality and liquidity analysis. |
| AASB 9 Financial Instruments | This standard is gradually replacing AASB 139 Financial Instruments: Recognition & Measurement. The standard can be early adopted and contains new hedge accounting rules. |
| AASB 132 Financial Instruments: Presentation | Guidance in relation to the classification of financial instruments as financial assets, financial liabilities and equity instruments. |

The classification and measurement categories of a financial instrument under AASB 139 or AASB 9 will define whether it will be required to be measured in accordance with AASB 13 and this in turn determines the impact of CVA/DVA reported.

## Auditing Standards

Audits of the Financial Report of Corporations Act entities must be conducted in accordance with Australian Auditing Standards (ASAs) issued by the Australian Auditing and Assurance Standards Board (AUSAB). In conducting an audit of the financial report, the overall objectives of the auditor are:

a) To obtain reasonable assurance about whether the financial report as a whole is free from material misstatement, whether due to fraud or error, thereby enabling the auditor to express an opinion on whether the financial report is prepared, in all material respects, in accordance with an applicable financial reporting framework; and

b) To report on the financial report, and communicate as required by the Australian Auditing Standards, in accordance with the auditor's findings.

In addition to issuing auditing standards the AUASB also issues Guidance Statements (GS). GSs assist the auditor to fulfil the objectives of the audit. They include explanatory material on specific matters for the purpose of understanding and complying with AUSAB standards. The AUASB has issued GS 020 "Special considerations in Auditing Financial Instruments".

## Role of existing accounting standards in mitigating financial contagion

AASB 13 was introduced in September 2011 to ensure that there are consistencies in the fair value measurement process across various assets and liabilities carried at fair value and also increased disclosures. A key change compared to the fair valuation guidance in AASB 139 is the definition of fair value. Under AASB 13, fair value is defined in the context of an "Exit Price" which is different to the "Entry Price" under AASB 139. This change in the definition has further emphasised the incorporation of CVA adjustments on derivative assets and also introduced DVA on financial liabilities because AASB 13 introduces a transfer concept of fair value, not a settlement concept and transfer includes an organisation's own credit risk.

The changes in the fair value definition coupled with increases in credit charges observed on derivatives post Global Financial Crises (GFC) resulted in a significant focus on CVA/DVA on derivative financial assets and liabilities. The standard will be fully implemented by 30 June 2014 (31 December 2013 for entities with a December annual reporting date).

Whilst CVAs for financial reporting requires an appropriate consideration be given to the credit quality status of derivative counterparties, whether this is sufficient to mitigate financial contagion in the event of a financial default is outside the scope of this report.

## G20 OTC Reforms and Derivatives

Addressing these issues under the G20 OTC reforms could be enhanced with consideration of the NEM market design and the physical nature of contracts used by participants.

Prior to the introduction of the NEM, electricity was delivered under asset backed physical contracts for consumption by end users at fixed prices. The introduction of the NEM in December 1998 created a market for the net settlement of these physical contracts. These physical contracts converted to net settlement contracts and hence qualified as derivatives in accordance with AASB 139 despite, to a large extent, being physical in nature. This fact is particularly important when the counterparties to these contracts are Generators and Retailers.

When determining whether a contract is in scope of the G20 OTC Reforms, we have used the definition of a derivative in the Corporations Act – 2001, specifically Sect 761D[3] (subject to legal interpretation) when compared to the definition in AASB 139. The definition of derivatives in the Corporations Act – 2001 shares a common theme with the definition under AASB 139 and AASB 9. However Paragraph 5 of AASB 139 (and

[3] http://www.austlii.edu.au/au/legis/cth/consol_act/ca2001172/s761d.html

Paragraph 2.1 of AASB 9) excludes contracts that were entered into and continue to be held for the purpose of receipt or delivery of a non-financial item in accordance with the entity's expected purchase, sale, or usage requirements, despite the fact that they fit in the definition of derivatives.

The Australian electricity derivative market is largely physical in nature (between Generators and Retailers) and derivatives are scoped into AASB 139 due to the net settlement mechanism following the introduction of the NEM. This therefore provides an interesting consideration for AEMC, in addition to the definition of a derivative under AASB 139 and AASB 9, when assessing the exemption of the electricity derivative contracts in the Australian Energy Market from the G20 OTC Reforms. It is important to note that a conclusion in reference to the exemption eligibility of electricity contracts in the Australian Energy Markets under G20 Reforms is not in scope of this report.

# 1. Introduction

**The AEMC is looking to gain a better understanding of existing accounting and auditing requirements of participants in the NEM in relation to derivative valuation including links to the risk management function. This will contribute to the broader AEMC NEM Financial Market Resilience review. The AEMC engaged Deloitte to prepare this report to meet this end.**

## 1.1 Terms of Reference for this Report

The terms of reference for this report are a concise and specific scope of work notwithstanding the broader FMR Review the AEMC is currently undertaking. The scope is to outline to the AEMC the current accounting and auditing requirements of participants in the NEM as they relate to derivative valuation and any links to the risk management function.[4]

The terms of reference are as outlined below.

*Explain the current requirements and practices of participants*

The AEMC understands there is a requirement under current international accounting standards to apply a credit value adjustment (CVA) to value over-the-counter (OTC) derivative hedge contracts entered into by all entities, and not just participants in the NEM. The AEMC is also interested to understand the extent of guidelines on applying existing accounting standards that govern how CVA should be applied:

- The relevant accounting standards applicable to risk management practices for the valuation of hedge contracts;
- How market participants apply those standards in practice – identifying any differences in application across market participants and an exploration explaining the differences and consequences of applying different applications;
- The role of these standards in promoting appropriate and robust risk management by market participants;
- The role and function of an external auditor and the relevance of this role in promoting risk management when performing its audit functions;
- Assess the role of existing standards and requirements in mitigating the risk of financial contagion in the NEM; and
- Whether accounting standards relating to the definition of a derivative hedge contract could be used to identify, and possibly, exempt derivative hedge contracts from increased regulatory obligations such as the G20 reforms for OTC derivatives.

[4] The reference to Risk Management is a NEM participant's internal risk function, commonly known as the *Middle Office*, that is responsible for identification, measurement, monitoring, reporting and management of market, credit, funding/liquidity and Operational related risks consistent with board approved internal risk management policies.

In preparing its response to the terms of reference, Deloitte is to comment on whether it is possible that different standards and practices may apply to participants listed on the Australian Stock Exchange (ASX), and / or those which have an Australian Financial Services (AFS) license administered by the Australian Securities and Investments Commission (ASIC).

## 1.2 Industry Consultation and Acknowledgment

This report has been prepared by Deloitte using the acquired knowledge of its practitioners across the Accounting for Financial Instruments and Energy Trading Risk Management. The report incorporates the available feedback from industry professionals across middle office and back office; including feedback directly from the FMR working group to drafts of this report.

Deloitte would like to acknowledge this feedback and thank all industry representatives for their contribution.

## 1.3 Inherent limitations of the Report and Disclaimer

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## 1.4 Report Structure

Deloitte has prepared this report using the following structure to address the AEMC's defined terms of reference:

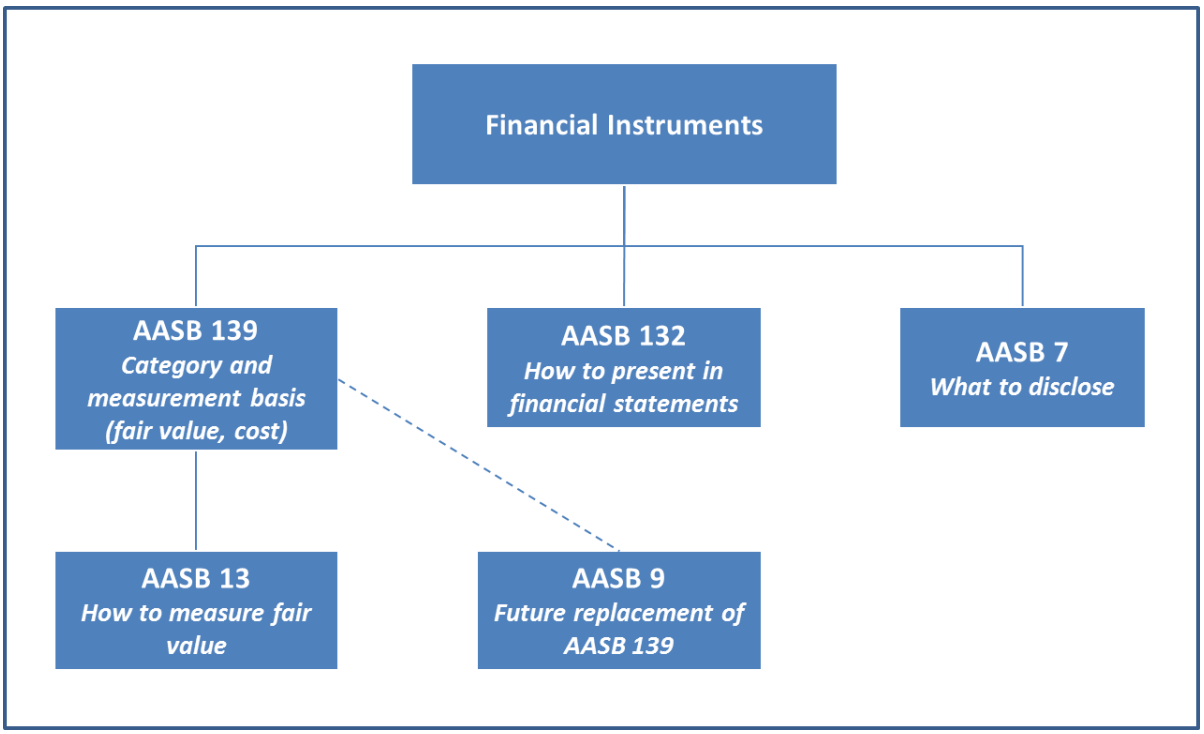
- Section 2 outlines the current accounting standards as they apply to derivative valuation;
- Section 3 details the valuation of derivative hedge contracts, outlining the guidance in the existing accounting standards on CVA and approaches used in practice;
- Section 4 describes the broader auditing requirements and guidance; and
- The 3 appendices acknowledge the assistance and input of the FMR working group provide the full terms of reference from the AEMC and provides an outline for guidance in relation to special considerations in the auditing of financial instruments.

# 2. Current Accounting Requirements and Derivative Valuation

**The following Australian Accounting standards ("Accounting Standards") govern the accounting treatment and disclosure of derivative financial instruments for financial reporting purposes. These Accounting Standards are issued by the Australian Accounting Standards Board (AASB):**

- **AASB 139 *Financial Instruments: Recognition & Measurement (AASB 139);***
- **AASB 13 *Fair Value Measurement (AASB 13);***
- **AASB 7 *Financial Instruments: Disclosures (AASB 7);***
- **AASB 9 *Financial Instruments (AASB 9)*; and**
- **AASB 132 *Financial Instruments: Presentation (AASB 132).***

**The inter-relationship between the standards above can be illustrated as follows:**



## 2.1 Overview of the Accounting Standards

### AASB 139 Financial Instruments: Recognition & Measurement

AASB 139 contains the key guidance for recognition and measurement of financial instruments (financial assets and financial liabilities).

*Recognition*

AASB 139 provides the guidance on when a financial asset or liability is initially recognised and when it should be derecognised.

*Measurement*

AASB 139 states that financial assets and liabilities are initially measured at fair value. For financial assets and liabilities not measured at fair value through profit or loss, transactions costs that are directly attributable to the acquisition or issue of the financial asset or financial liability are included in the initial measurement.

After initial recognition, AASB 139 classifies financial assets into the following categories for subsequent measurement:

- Financial assets at fair value through profit or loss;
- Held to maturity investments;
- Loans and receivables; and
- Available for sale financial assets.

After initial recognition, financial assets should be measured at fair value, with the following exceptions:

- Loans and receivables and held-to-maturity investments should be measured at amortised cost using the effective interest method; and
- Investments in equity instruments that do not have a quoted market price and with no reliable fair value measurement (and derivatives linked to and settled using such equity instruments) should be measured at cost.

AASB 139 states that financial liabilities, after initial recognition, are measured at amortised cost using the effective interest method, except for financial liabilities at fair value through profit or loss. There are other exceptions relating to financial guarantees, loan commitments and financial liabilities that arise when a transfer of a financial asset does not qualify for de-recognition.

*Application to derivatives*

AASB 139 defines a derivative as a financial instrument with all three of the following characteristics:

- Its value changes in response to the change in a specified interest rate, financial instrument price, commodity price, foreign exchange rate, index of prices or rates, credit rating or credit index, or other variable, provided in the case of a non-financial variable that the variable is not specific to a party to the contract (sometimes called the ‘underlying’);
- It requires no initial net investment or an initial net investment that is smaller than would be required for other types of contracts that would be expected to have a similar response to changes in market factors; and

- It is settled at a future date.

Electricity derivatives would typically meet this definition. Under AASB 139, derivatives assets and liabilities are measured at fair value through profit and loss, unless hedge accounting is applied. This means that derivatives will be measured at fair value, with changes in fair value recognised in profit or loss.

When cash flow hedge accounting is applied, the derivative is still measured at fair value but the change in fair value is taken to reserves to the extent effective. For fair value hedge accounting, both the hedged item and derivative are measured at fair value with changes in fair value offset in profit or loss. Application of hedge accounting is an option under AASB 139 or AASB 9.

The approach to value derivatives is governed by AASB 13, which is discussed below.

## AASB 13 Fair Value Measurement

AASB 13 defines fair value, provides guidance on its determination and introduces consistent requirements on disclosures on fair value measurement. It does not include requirements on when fair value measurement is required. It prescribes how fair value is to be measured if another accounting standard requires it.

AASB 13 aims at providing guidance on *how* to determine fair value and disclosures required. The objectives of AASB 13 are:

- To establish a single source of guidance for all fair value measurements;
- To clarify the definition of fair value as an exit price and transfer price for financial assets and liabilities respectively and provide related guidance;
- To enhance the disclosures in relation to fair value measurements.

Fair value is defined in AASB 13 as follows:

> "The price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date."

An *orderly transaction* is not a forced liquidation or distressed sale situation and market participants are independent buyers/sellers that are knowledgeable, able and willing to transact. This implies a going concern basis of preparation of the financial statements, unless management either intends to liquidate the entity, or to cease trading, or has no realistic alternative but to do so.

The previous guidance for fair value measurement for financial instruments was in AASB 139. Under both AASB 13 and the previous AASB 139 requirements, an entity is required to include counterparty credit risk in the fair value measurement.

However previously, for a financial liability, own credit risk (the risk an entity will fail to discharge its own obligation) has not been included in the measurement of fair value. However, given the new definition of fair value under AASB 13 is based on a "transfer notion" (rather than a settlement notion under AASB 139), entities now need to include to their own credit when determining the fair value of their financial liabilities.

*Application to derivatives*

In the context of derivative valuation, AASB 13 requires that non-performance risk (or Counterparty Credit Risk) be incorporated into the fair value measurement of derivatives. Counterparty Credit Risk is the risk that a counterparty to an Over-the-Counter (OTC) derivative will default prior to the expiration of the contract and will not make all payments required by the contract. This includes both the non-performance of the counterparty or the entity itself:

- Credit value adjustment (CVA) is an expected loss due to counterparty default on an OTC derivative or portfolio of derivatives net of any collateral. It is the adjustment to fair value which reflects the creditworthiness of counterparties to OTC transactions; and

- Debit value adjustment (DVA) applies to own risk of default.

CVA and DVA are described in detail in section 3 on the valuation of derivative contracts.

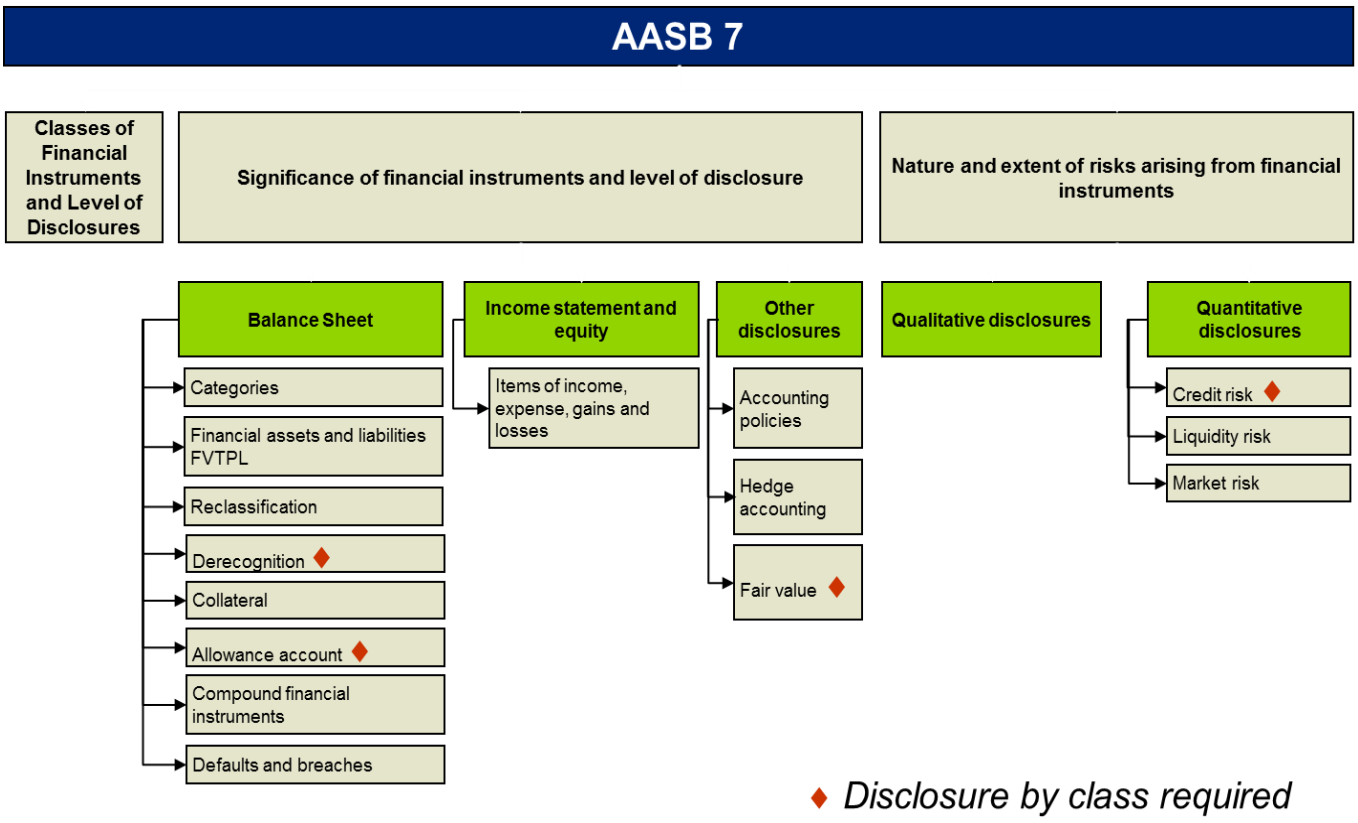
## AASB 7 Financial Instruments: Disclosures

AASB 7 focusses on achieving the following two objectives:

- To enable users to evaluate the significance of financial instruments for the entity's financial position and performance; and

- To enable users to evaluate the nature and extent of risks arising from financial instruments to which the entity is exposed during the period and at the reporting date, and how the entity managed those risks.

The diagram below outlines the classes of financial instruments and the level of disclosures required under AASB 7:




*Class' referred to in the diagram above is determined considering the nature, characteristics and risk of financial instruments. At a minimum the 'Classes' are required to distinguish between those that are measured at amortised cost and those measured at fair value, and those financial instruments outside the scope of AASB 7.

AASB 7 requires disclosure of the fair value hierarchy of financial instruments in terms of Level 1, Level 2, and Level 3 (discussed further in Appendix C in relation to Guidance Statement 020).

Disclosure is required for financial instruments in the following aspects:

- The level in the fair value hierarchy into which the fair value measurements are categorised;
- Any significant transfers between Level 1 and Level 2 and the reasons for those transfers; and
- For fair value measurements in Level 3:
  - reconciliation from the opening to the closing balances;
  - gains or losses for the period recognised in profit or loss, and a description of where they are presented; and
  - sensitivity to changes in inputs.

AASB 7 requires qualitative disclosures around risk management in terms of the risks and the strategies used by entities to manage those risks. These qualitative disclosures may include:

- Identifying the risk exposures for each type of financial instrument;
- Identifying the objectives, policies and processes for managing the risk and the methods used to measure that risk; and
- Changes from the prior period.

AASB 7 also requires quantitative disclosures around the risks faced by the entity based on the information reported internally to key management personnel in relation to financial instrument valuations.

In addition to the qualitative disclosures mentioned above, the following table provides for the types of disclosures across Credit Risk, Liquidity Risk and Market Risk:

| Risk Classification | Disclosure |
|---|---|
| *Credit Risk* | ▪ Gross maximum amount of exposure (before deducting collateral)<br>▪ Information on credit quality (rating analysis)<br>▪ Analytical disclosure of past due or impaired assets<br>▪ Information on collateral or other credit enhancement obtained and called. |
| *Liquidity Risk* | ▪ Maturity analysis (based on discounted cash flows)<br>▪ Description of approach to risk management |
| *Market Risk* | ▪ Sensitivity analysis for each type of market risk entity is exposed to<br>▪ The methods and assumptions used<br>▪ Any change in methods and assumptions and the reason for those changes. |

The qualitative and quantitative disclosures outlined above would apply to derivatives. However, it should be noted that the disclosures describe the risk management practices of the entity, but does not cover the adequacy of those practices.

## AASB 9 Financial Instruments

The International Accounting Standards Board (IASB) initiated a project to replace IAS 39 Financial Instruments: Recognition and Measurement (the Australian equivalent being AASB 139) through the progressive issue of IFRS 9 Financial Instruments (AASB 9). This is being performed in three phases:

- Phase 1 – Classification and measurement;
- Phase 2 – Impairment; and
- Phase 3 – Hedge accounting.

IFRS 9 includes requirements for recognition and measurement, de-recognition and hedge accounting. The IASB is adding to the standard as it completes the various phases of its comprehensive project on financial instruments, and so it will eventually form a complete replacement for IAS 39 (AASB 139).

To-date the classification, measurement, and hedge accounting sections of IFRS 9 (AASB 9) have been issued.

*Application to derivatives*

In relation to derivatives, the requirement to recognise derivatives at fair value has not changed. The fair value measurement requirements are still governed by AASB 13. However, the hedge accounting requirements have been changed, with a better alignment to risk management, and with expanded eligibility requirements for hedged items and hedging instruments.

The application of AASB 9 is currently not mandatory. However the classification, measurement and hedge accounting sections of AASB 9 are available for early adoption, subject to meeting the transition requirements of the standard.

## AASB 132 Financial Instruments: Presentation

AASB 132 Financial Instruments: Presentation outlines the accounting requirements for the presentation of financial instruments, particularly as to the classification of such instruments into financial assets, financial liabilities and equity instruments. The standard also provides guidance on the classification of related interest, dividends and gains/losses, and when financial assets and financial liabilities can be offset.

The stated objective of AASB 132 is to establish principles for presenting financial instruments as liabilities or equity and for offsetting financial assets and liabilities. AASB 132 addresses this in a number of ways:

- Clarifying the classification of a financial instrument issued by an entity as a liability or as equity;
- Prescribing the accounting treatment for treasury shares (an entity's own repurchased shares); and
- Prescribing strict conditions under which assets and liabilities may be offset in the balance sheet.

*Application to derivatives*

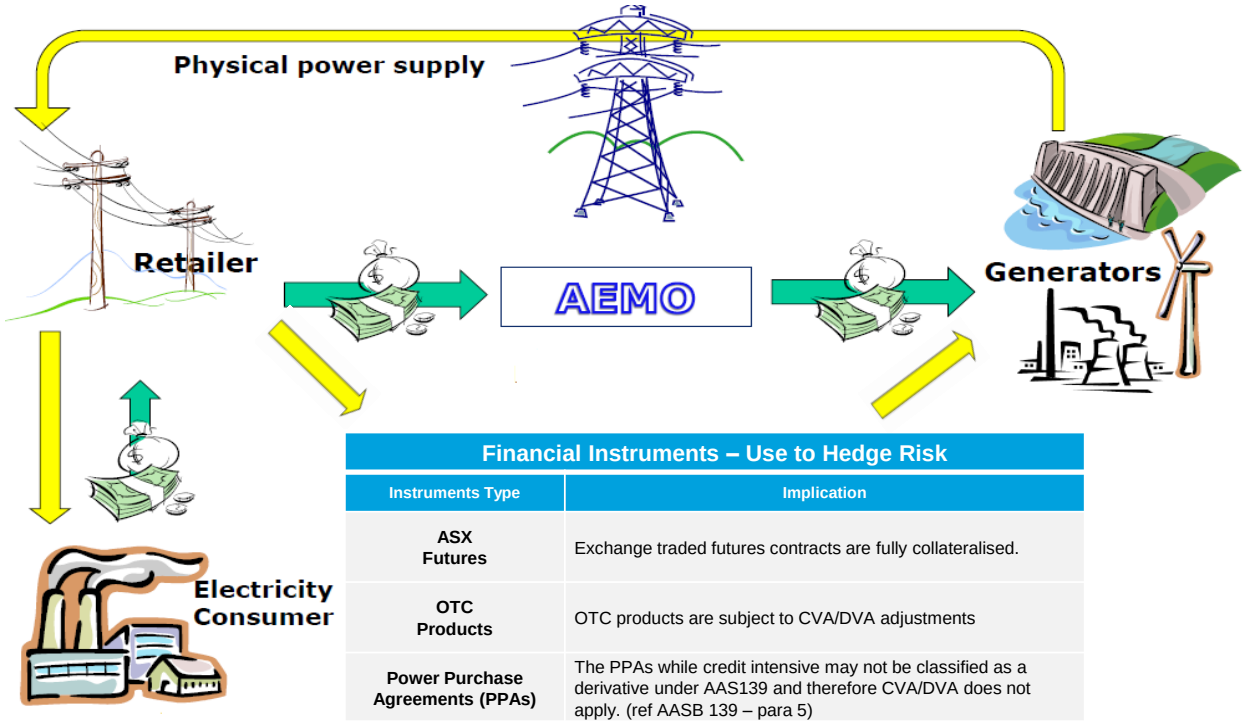
From the perspective of the presentation of derivative valuation, AASB 132 sets out the rules when assets and liabilities can be offset in the financial statements.

# 3. Valuation of Derivative Hedge Contracts including CVA/DVA

**The impact of CVA/DVA will need to be quantified for financial instruments that meet the definition of a derivative under the accounting standards. This section outlines the guidelines on CVA/DVA under the accounting standards and the various approaches used by market participants in the NEM.**

## 3.1 Guidance

Financial instruments (i.e. derivatives), including embedded derivatives, are measured at fair value for the purposes of balance sheet presentation, calculating profit or loss, and/or disclosure for financial reporting purposes in accordance with AASB 139 (or AASB 9 which is currently being introduced and will replace AASB 139 in the future). This will in turn determine whether the financial instrument is within scope of AASB 13 in context of the NEM diagram described below:




| Financial Instruments – Use to Hedge Risk | |
|---|---|
| **Instruments Type** | **Implication** |
| **ASX Futures** | Exchange traded futures contracts are fully collateralised. |
| **OTC Products** | OTC products are subject to CVA/DVA adjustments |
| **Power Purchase Agreements (PPAs)** | The PPAs while credit intensive may not be classified as a derivative under AAS139 and therefore CVA/DVA does not apply. (ref AASB 139 – para 5) |
| **Internal Derivatives Instruments** | Largely used by Retailers with generation capacity. Internal traders are used between the Retail & Generation Divisions |

## 3.2 Market Practices

The CVA can be viewed as the expected value of the loss due to counterparty default at the times the transaction is an asset. The DVA can be viewed as the expected value of the loss at the times the transaction is a liability.[5]

CVA/DVA adjustments on derivatives are generally made by market participants using three different approaches. These approaches are typically referred to as:

- The Direct Approach (section 3.2.2);
- The Adjusted-cash flow Approach (section 3.2.3); and
- The Simulation Approach (section 3.4.4).

Each of these approaches, and their advantages and disadvantages, are discussed below. Except for the adjusted cash flow approach, the primary credit risk calculation requires all the following three inputs:

- The expected positive / negative exposure amount;
- The Loss Given Default; and
- The Probability of Default.

Each of these inputs are defined and discussed below:

*Exposure amount*

Expected Positive Exposure (EPE) at any given time is the amount counterparty is expected to owe to the entity over the tenure of an OTC transaction assuming default can occur at any time over that tenure. Exposure amounts to/from counterparty can change from being positive to negative throughout the life of the transaction as the price and volume of the underlying contract may vary over time. However, credit exposure only arises during times when exposure amounts are positive and hence credit risk is calculated only on expected positive exposure amounts. Likewise, Expected Negative Exposure (ENE) is the amount the entity is expected to owe to the counterparty, assuming default by the entity can occur at any time over the tenure of the transaction.

In practice, participants distinguish between Current Exposure (CE) and EPE or ENE (as defined above). For OTC transactions, CE is the current mark-to-market of the derivative (i.e. the valuation of the derivative at a point in time)

In contrast EPE / ENE is the estimated future mark-to-market of a derivative at which point in time a default could occur. CE and EPE / ENE are calculated on a net basis (at counterparty level) taking into account any master netting arrangements and collateral.

*Loss Given Default*

Loss Given Default (LGD) is that part of the amount of positive financial exposure to a counterparty that cannot be recovered in the event of its default. Industry participants sometimes use the term “Recovery Rate”

[5] In essence the DVA captures an entity’s own risk of default.

(R) which is the amount of positive financial exposure recovered in the event of default. LGD is defined as LGD = 1 - R;

From discussions with industry participants a recovery rate of 40 cents per dollar is used; giving a LGD of 60 per cent. This is consistent with traded Credit Default Swap (CDS) market convention. There is, however, a limited history of defaults in energy markets in order to assess this reasonableness.

*Probability of Default*

Probability of Default (PD) is the probability that a participant will default over the life of the transaction. Participants derive PDs from the following sources:

- Credit Default Swaps (CDS) spreads for a particular counterparty;
- Where CDS spreads are not available for a particular counterparty, proxy CDS spreads are used. These are spreads derived from relevant entities with a similar credit rating to the counterparty; and
- Available data on historical PDs.

A majority of the participants do not have publicly available credit ratings or traded CDS in order to derive PDs. In such cases participants would assign a proxy rating internally based on judgement.

Using the three inputs defined and discussed above, the CVA or DVA can be mathematically represented as:

CVA = EPE x PD x LGD; and

DVA = ENE x PD x LGD.

## 3.3 The Direct Approach

The key steps involved in calculating the CVA/DVA using the Direct Approach method are:

1. Obtain the Mark to Market (mtm) value prior to any credit adjustment for each instrument in the portfolio;
2. Based on the current mtm , determine whether an instrument is in an asset or liability position;
3. Aggregate the mtm values on all transactions with a counterparty to find the net exposed position with that counterparty;
4. To the net mtm position calculated in step 3, apply any collateral, C, offered by the counterparty;
5. Derive CDS spread (or proxy) from the corresponding counterparty CDS spread:
    - If the instrument is in an ASSET position, then the counterparty CDS spread is chosen;
    - If the instrument is in a LIABILITY position, then the own entity CDS spread is chosen; and
    - Where counterparty or own CDS spreads are not available, proxies are used as discussed above.

6. Compute the PD as follows:

   *PD[6] = 1-Exp[- CDS spread / (1-R) * maturity]*

7. Calculate the CVA or DVA as follows:

   *CVA or DVA = PD * (Net mtm – C)[7] * LGD*

This approach is typically employed by those participants that do not have in-house system capabilities to generate potential mtm outcomes (e.g. EPE or ENE). The key disadvantage of this approach is that it is based on current mtm exposure (CE) which may be lower than the average future exposure of the transaction, thereby underestimating the actual credit risk. When the mtm value is zero, the method computes the credit risk as zero which may not necessarily be the case. Furthermore, the Direct Approach assumes the PD does not change over the life of the deal. PDs are in general expected to change over time and are affected by time to maturity.

Participants who adopt this approach suggest it is appropriate for portfolios with short duration contracts and credit worthy counterparties. Participants also monitor the use of the approach and make assessments on its appropriateness on a regular basis (i.e. annually), particularly when the duration of contracts changes.

## 3.4 The Adjusted Cash-flow Approach

The key steps involved in calculating the CVA/DVA using the Adjusted Cash-flow Approach are:

1. Obtain mtm valuations prior to any credit adjustment of each instrument in the portfolio;
2. Based on the current mtm , determine whether an instrument is in an Asset or Liability position;
3. Aggregate the mtm values on all transactions with a counterparty to find the net position with that counterparty;
4. Derive the CDS spread (or proxy) from the corresponding counterparty CDS spread:
   - If the instrument is in an ASSET position, then counterparty CDS spread is chosen;
   - If the instrument is in a LIABILITY position, then the own entity CDS spread is chosen: and
   - Where counterparty or own CDS spreads are not available, proxies are used as discussed above.
5. Compute the discount factor based on the credit spread derived in step 5 accordingly:

$$\text{Adjusted discount factor} = \frac{1}{(1+\text{risk free rate}_t+\text{CDS spread}_t)^t}$$

6. Discount the mtm obtained in step 1 using the adjusted discount factor calculated in step 6 to compute the adjusted mtm; and
7. Calculate the CVA or DVA

   *CVA or DVA = (risk-free mtm – adjusted mtm)*

---

[6] See *Options Futures and Other Derivatives*, John C. Hull, eighth edition 2012, page 523, 524.
[7] The formulation assumes the collateral C offered is less than or equal to the net mtm exposure amount. Excess collateral is not factored into this calculation.

Any collateral held will have to be incorporated into the calculation above. As with the Direct Approach, this approach is also typically employed by those participants that do not have in- house system capability to generate potential mtm outcomes. This approach otherwise has similar advantages and disadvantages to those of the Direct Approach. A key difference, however, is that this methodology does not explicitly compute the PD, which is accounted for in the discounting.

## 3.5 The Simulation Approach

The key steps involved in calculating the CVA/DVA in a typical Simulation Approach are:

1. Obtain current mtm valuations prior to any credit adjustment of each instrument in the portfolio;
2. From the current market price, simulate numerous future price outcomes;
3. Separate the positive mtm values from the negative mtm values;
4. Compute the average of positive mtm value to obtain EPE and compute the average of negative mtm values to obtain ENE;
5. Add the current mtm to EPE or ENE as the case may be to obtain the full exposure (Net EPE or Net ENE);
6. Aggregate the net full exposure values on all transactions with a counterparty to find the net exposed position with that counterparty;
7. To the net full exposure calculated in step 5, apply any collateral, C, offered by the counterparty;
8. Derive the CDS spread (or proxy) from the corresponding counterparty CDS spread:[8]
   - If the instrument is in an ASSET position, then counterparty CDS spread is chosen; and
   - If the instrument is in a LIABILITY position, then the entity CDS spread is chosen.
9. Compute the Probability of Default (PD) as follows:

   *PD = 1-Exp [- CDS spread / (1- recovery rate) * maturity]; and*
10. Calculate the Credit Risk Adjustment as follows:

    CVA = (Net EPE-C) x PD x LGD; and

    DVA = (Net ENE-C) x PD x LGD.

Simulation based approaches are generally regarded by industry participants as the most rigorous of the three approaches as it includes both current and expected exposure for a counterparty. It is, however, the most sophisticated and computationally difficult of the approaches as simulating the underlying price risk factor and simultaneously calculating the mtm for a portfolio of transactions is non-trivial.

[8] The simulation approach may incorporate a PD term structure at this point.

## 3.6 Observations on Market Practices

The practices adopted by market participants for calculating CVA/DVA are varied and the choice is primarily based on obtaining the right balance between accuracy of the outcomes and the effort required to achieve the desired level of accuracy. A secondary consideration is the nature of the derivatives. A vast majority of participants use the Adjusted Cash flow approach, whereas the Direct Approach and Simulation approaches are the least adopted. The participants who have adopted the simulation based approach have done so as an extension to their existing credit risk calculations that are already being performed using simulation approaches.

A key issue faced by all participants is the fact that a vast majority of their counterparties are unrated. As a result, estimating probabilities of default is a non-trivial task. For rated counterparties, participants use historical probabilities of default as obtained from credit rating agencies such as S&P, Moody's and Fitch or default probabilities derived from quoted or proxy credit default swap spreads. However, for unrated counterparties, participants undertake internal qualitative assessments based on publicly available information to arrive at an internally rated credit score.

Lastly, participants have commonly stated that due the lack of observable defaults, particularly in the Australian electricity market, it is difficult to know the level of recovery from any counterparty in the event of a default. Most participants mentioned that they use 40% recovery for every dollar of default.

## In A Nutshell…

- The simulation approach is acknowledged as the most rigorous of the approaches.
- A number of companies base their credit risk calculation on Current Exposure only. This does not capture the expected potential exposure. It is very difficult to obtain reliable credit ratings (from Standards/Fitch/Moody's). Some participants in the NEM Organisations must rely on internal scoring models, Dun & Bradstreet dynamic risk scores, proxy credit spreads from CDS markets or other more complex mathematical models;
- With respect to LGD there is no history of local defaults; and
- Individual commercial drivers will dictate to a large extent the chosen approach for CVA / DVA in terms of a cost / benefit for an entity. This will in turn dictate the comparative advantage in the market with respect to pricing counterparty credit. In this regard commercial drivers and not accounting standards will dictate how credit is measured and taken into account. The CVA/DVA is captured within the derivative valuations that are reported within the financial statements. Individual CVA/DVA by deal or by counterparty may not necessarily be determined from the financial statements. These are commercially sensitive matters amongst OTC counterparties.

# 4. Current External Auditing Requirements and Guidelines

**Audits of the Financial Report of Corporations Act entities must be conducted in accordance with Australian Auditing Standards (ASAs) issued by the Australian Auditing and Assurance Standards Board (AUSAB).**

## 4.1. The objectives and requirements of an auditor

The objectives of an auditor are:[9]:

- 'to express an opinion on whether the financial report is prepared, in all material respects, in accordance with an applicable financial reporting framework; and
- 'to report on the financial report, and communicate as required by the Australian Auditing Standards, in accordance with the auditor's findings.

## 4.2. ASA 540 – Auditing Accounting Estimates, Including Fair Value Accounting Estimates, and Related Disclosures

Auditing Standard ASA 540 establishes mandatory requirements and provides explanatory guidance on the audit of accounting estimates contained in a financial report.[10]

The standard requires the auditor to obtain an understanding of the requirements of the applicable financial reporting framework relevant to accounting estimates, including related disclosures and any regulatory requirements. The requirements of the applicable financial reporting framework regarding financial instruments may themselves be complex and require extensive disclosures. The relevant financial reporting framework includes the specific AASB standards addressed in section 2 of this report.

Guidelines also exist to assist the auditor meet the requirements and objectives of ASA 540 in the context of special considerations in the audit of financial instruments.[11]

[9] Auditing Standard ASA 200 Overall Objectives of the Independent Auditor and the Conduct of an Audit in Accordance with Australian Auditing Standards – November 2013 – para 11

[10] Explanatory Statement ASA 540 Audit of Accounting Estimates April 2006 – page 3

[11] Guidance Statement GS 020 Special Considerations in Auditing Financial Instruments – March 2012 para 74

## 4.3. GS 020 Special Considerations in Auditing Financial Instruments

GS 020 provides guidance and addresses valuation, presentation and disclosure. It also covers in less detail:

- Completeness;
- Accuracy, existence, and
- Existence of rights and obligations of an audit.

Appendix C provides background and highlights the limited aspects of ASA 200 and ASA 540 that appear in guideline statements issued by the Auditing & Assurance Standards Board with respect to special consideration for the auditing of financial instruments.

# Appendix A - Acknowledgment of Working Group Members

**Deloitte would like to acknowledge the involvement and input of the AEMC and the FMR working group and thank its members for their contribution throughout the project; including feedback to drafts of this report.**

# Appendix B - Detailed Terms of Reference

## The AEMC's detailed terms of reference for this report are outlined below.

We understand that under International standard IAS39, all commercial businesses are required to apply a credit adjustment to the value of their over the counter (OTC) derivatives (e.g., probability of default to the contract value). This applies to all firms, not just NEM participants. However there is no accompanying guideline published to inform how businesses should make should such adjustments.

The consultant is requested to provide advice on the following matters:

- What are the relevant accounting standards applicable to risk management practices, including the valuation of hedge contracts?
- How do market participants apply those standards in practice? The consultant should identify any differences in application across market participants and explore what explains these differences and what the consequences are of participants applying the standards differently;
- What is the role of such standards in promoting an appropriate and robust level of risk management by market participants?
- What are functions of an external auditor and what relevance does the external auditor play in promoting risk management when performing its functions?
- An assessment of the role of existing standards and requirements in mitigating the risk of financial contagion in the NEM;
- Whether the accounting standard relating to the definition of a hedging derivative contract could be used to identify, and possible, exempt hedging contracts from increased regulatory obligations such as the G20 reforms for OTC derivatives.

In its advice, the consultant would recognise whether it is possible different standards and practices may apply to participants which are listed on the ASX and/or which have an AFS licence.

# Appendix C – Auditing Financial Instruments - Guidelines

**This appendix highlights limited aspects of ASA 200 and ASA 540. GS 020 provides a background to the special considerations associated with the audit of financial instruments.**

| Guideline or Standard | Application |
|---|---|
| GS 020 | Special Considerations in Auditing Financial Instruments |
| ASA 200 | Overall Objectives of the Independent Auditor and the Conduct of an Audit in Accordance with Australian Auditing Standards |
| ASA 540 | Auditing Accounting Estimates, Including Fair Value Accounting Estimates, and Related Disclosures |

## Auditing Standards

### ASA 200

ASA 200 establishes requirements and provides application and other explanatory material regarding the independent auditor's overall responsibilities when conducting an audit of a financial report in accordance with AAS.[12]

The main features of ASA 200 are to:

- set out the overall objectives of the auditor;
- explain the nature and scope of an audit designed to assist the auditor in meeting those objectives;
- explain the scope, authority and structure of AAS; and
- establish the general responsibilities of the auditor, applicable in all audits, including the obligation to comply with AAS.

[12] See http://www.comlaw.gov.au/Details/F2009L04064/Explanatory%20Statement/Text

## ASA 540[13]

ASA 540 establishes requirements and provides application and other explanatory material to auditors regarding their responsibilities relating to accounting estimates, including fair value accounting estimates, and related disclosures in an audit of a financial report. Specifically, ASA 540 expands on how other relevant Auditing Standards are to be applied in relation to accounting estimates.

The main features of ASA 540 require the auditor to:

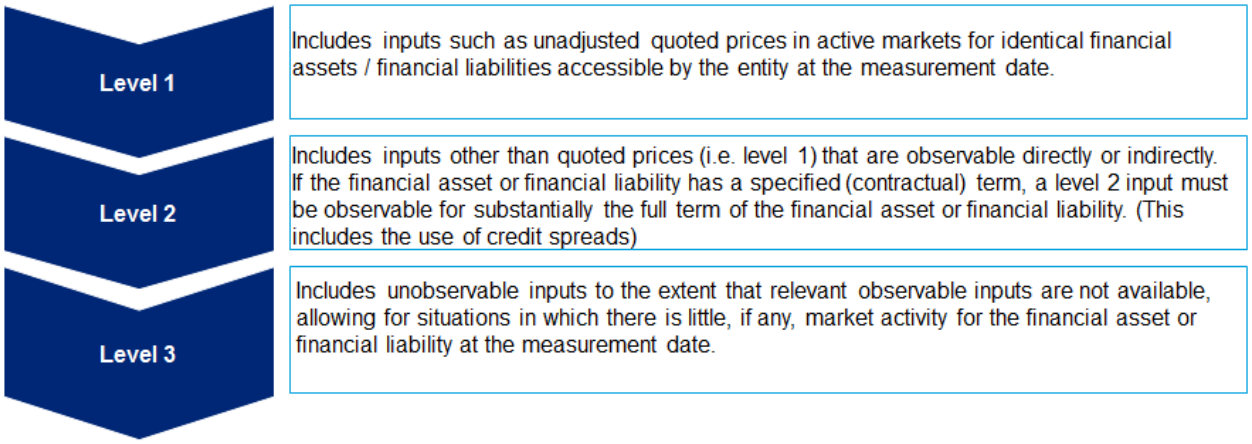
- Obtain an understanding of the entity and its environment to provide a basis for the identification and assessment of the risks of material misstatement for accounting estimates;
- Design and perform audit procedures to respond to the assessed risks of material misstatement of an entity's accounting estimates;
- Perform further substantive procedures in response to any identified significant risks;
- Evaluate the reasonableness of accounting estimates, and their disclosure in the financial report; and
- Obtain written representations from management about the reasonableness of significant assumptions used by it in making accounting estimates.

## GS 020

## Fair valuation of assets and liabilities - Valuation hierarchy

Fair value measurements of financial assets and financial liabilities may arise both at the initial recording of transactions and later when there are changes in value. Changes in fair value measurements that occur over time may be treated in different ways under different financial reporting frameworks. For example, such changes may be recorded as profit or loss, or may be recorded in the other comprehensive income. Also, depending on the applicable financial reporting framework, the whole financial instrument or only a component of it (for example, an embedded derivative when it is separately accounted for) may be required to be measured at fair value.[14]

There is a hierarchy for valuation inputs to be classified into different levels as shown below:




[13] See http://www.comlaw.gov.au/Details/F2009L04092/Explanatory%20Statement/Text
[14] Ibid page 20 and refer to section 2.

GS 020 points out that in general the measurement uncertainty will increase as the valuation inputs move down through the levels from level 1, level 2 and to level 3.[15] Activity (i.e. volume of trade) in derivative markets may also decline such that observability of inputs declines and valuation uncertainty increases. It therefore becomes more difficult for management to obtain observable inputs to support a valuation when markets become inactive as information reduces in regard to sources of risk. An entity may initially use its own data, which is adjusted if reasonably available information indicates this is plausible in order to reduce uncertainty in moving up from Level 3 to Level 2 to Level 1.

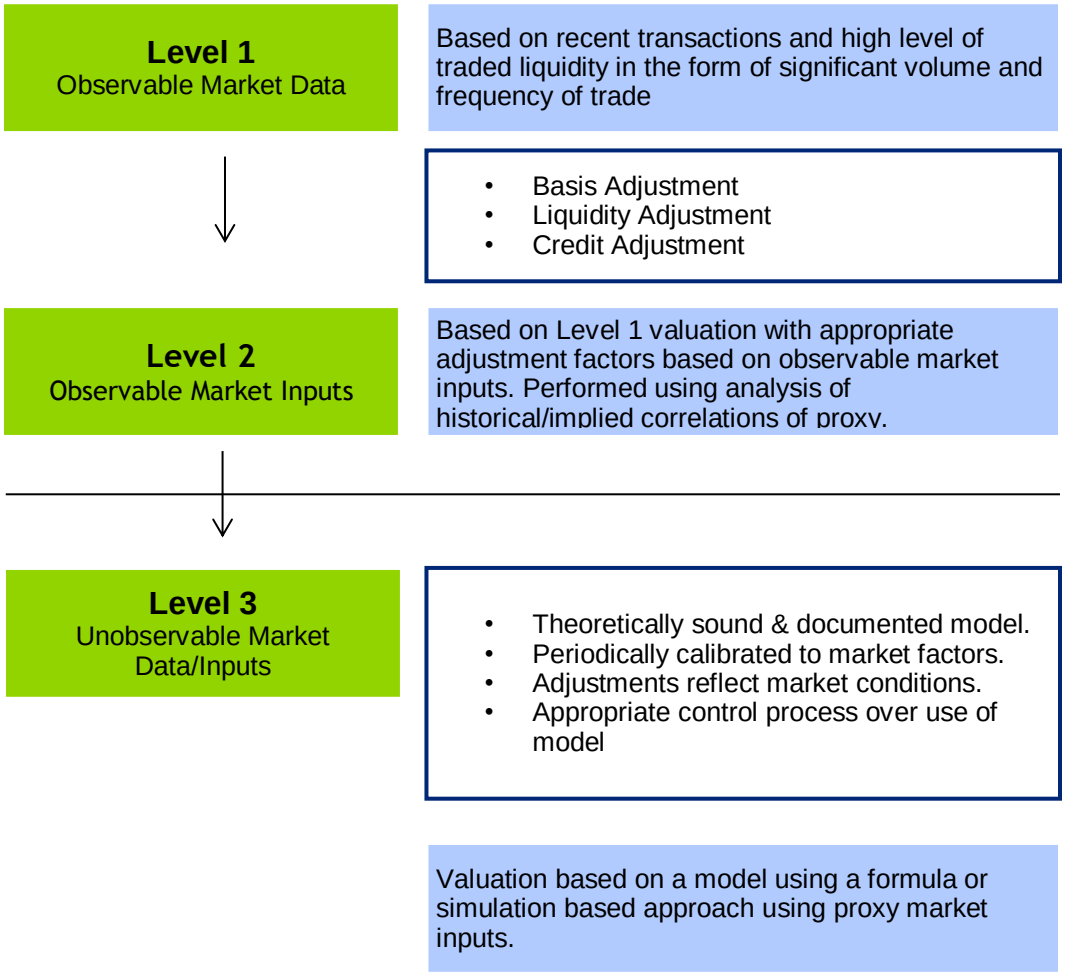
GS 020 provides guidance on the sorts of adjustments that may be made to valuations when markets are perceived to be inactive including:[16]

- The development of valuation policies and processes for determining the availability of Level 1 inputs;
- Understanding how particular prices or inputs used for valuation techniques are calculated in order to assess reliability. For example broker quotes that have not recently traded may rely more on indicative quotes based on the brokers' proprietary valuation model rather than active quotes.
- An understanding of how credit risk affects valuations and how deteriorating business conditions of the counterparty may also affect valuations;
- The development of policies for adjusting measurement uncertainties; including model adjustments, liquidity adjustments, credit risk adjustments, and other related adjustments;
- Ability to calculate the range of realistic outcomes given the uncertainties involved by using sensitivity analysis; and
- Developing policies for identifying when valuation can move to a different level of the hierarchy.

The valuation process flow is shown below as per the guidance provided in GS 020[17].

[15] Ibid page 21.
[16] Ibid page 23.
[17] Ibid page 24 to 32.

## Management Valuation Process:

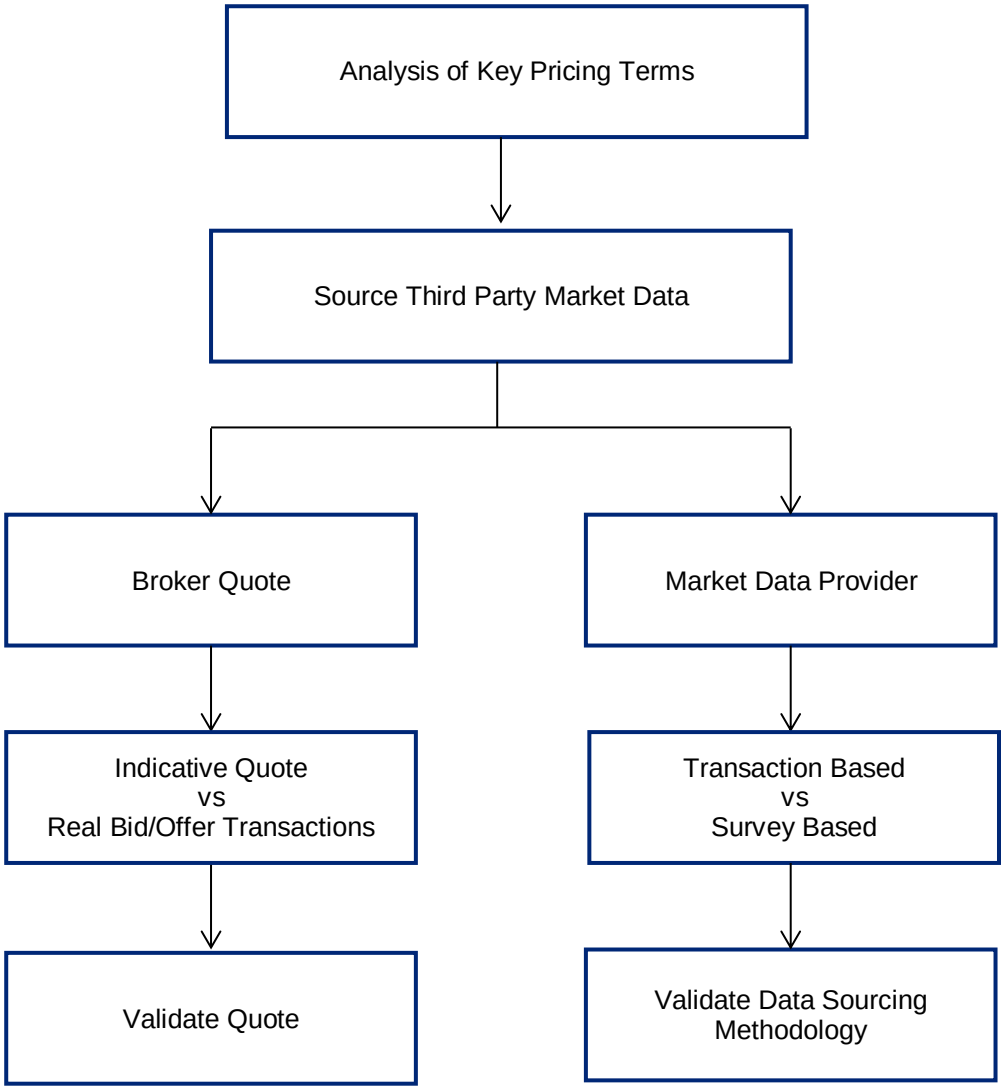



The primary requirement to satisfy that a valuation is Level 1 is that it must be based on observable market price data consisting of recent transactions with significant volumes and frequency of transactions. As the guideline does not provide any further indication on how to determine if an observable market transaction is recent, and reflective of significant volume/frequency, it is largely the role of management to make a determination and such determination must be validated by the external auditor.

If this requirement is not satisfied then some form of adjustment based on liquidity, credit, maturity and quality basis is required.
It must be demonstrated that the inputs used to perform the adjustments we observable in the market, such as credit spreads, quality/maturity basis, and bid/offer liquidity spreads. The adjustment process of a Level 1 measurement to a Level 2 measurement is to be performed by management and to be validated by the external auditor.

A Level 3 valuation methodology is one which is either not based on observable market price data and/or requires a significant amount of inputs to be modelled. In such circumstances it must be demonstrated and internally documented that the valuation model is theoretically sound and intuitive. Additionally it must be periodically calibrated to reflect market factors. Management must ensure there are sufficient internal controls in place to ensure oversight over the valuation process. The role of the external auditor is to validate the theoretical model and its application to reflect market conditions.

## Pricing Input Analysis:




Reporting entities often use third party data sources due to the cost prohibitive requirements of directly sourcing all the required market data & inputs required to perform the valuations. Third party data provides are typically characterised as either i) dedicated market data service providers which charge a fee to provide service or ii) brokers providing market quotes as part of a broader complimentary customer service to existing & prospective clients.

In the case of dedicated market data providers the data often comes from a transparent methodology or via customer survey. It is the responsibility of management to determine the effectiveness of the methodology and to be validated by the external auditor.

In the case or broker quotes the management is required to determine if the prices quoted are indicative or genuine bid/offer which can be transacted on. The external auditor should validate the assumptions.

GS 020 also discusses the importance of *credit risk* in the valuation of both financial assets and financial liabilities. Valuations are to capture the credit quality / strength of both issuer and any credit support providers. AASB also requires the measurement of a financial liability to assume it is transferred to a market participant at the measurement date. Where there is not an observable market price for a financial liability, its value is typically measured using the same method as a counterparty would use to measure the value of the corresponding asset, unless there are factors specific to the liability (such as third-party credit enhancement). In particular, the entity's own credit risk can often be difficult to measure.[18]

[18] Ibid pages 32 – 33.

## Presentation and Disclosure of Financial Instruments

As introduced in the context of AASB 7, financial reporting frameworks require disclosure in the financial report to enable users to make a meaningful assessment of the effects of the entity's financial instrument activities.

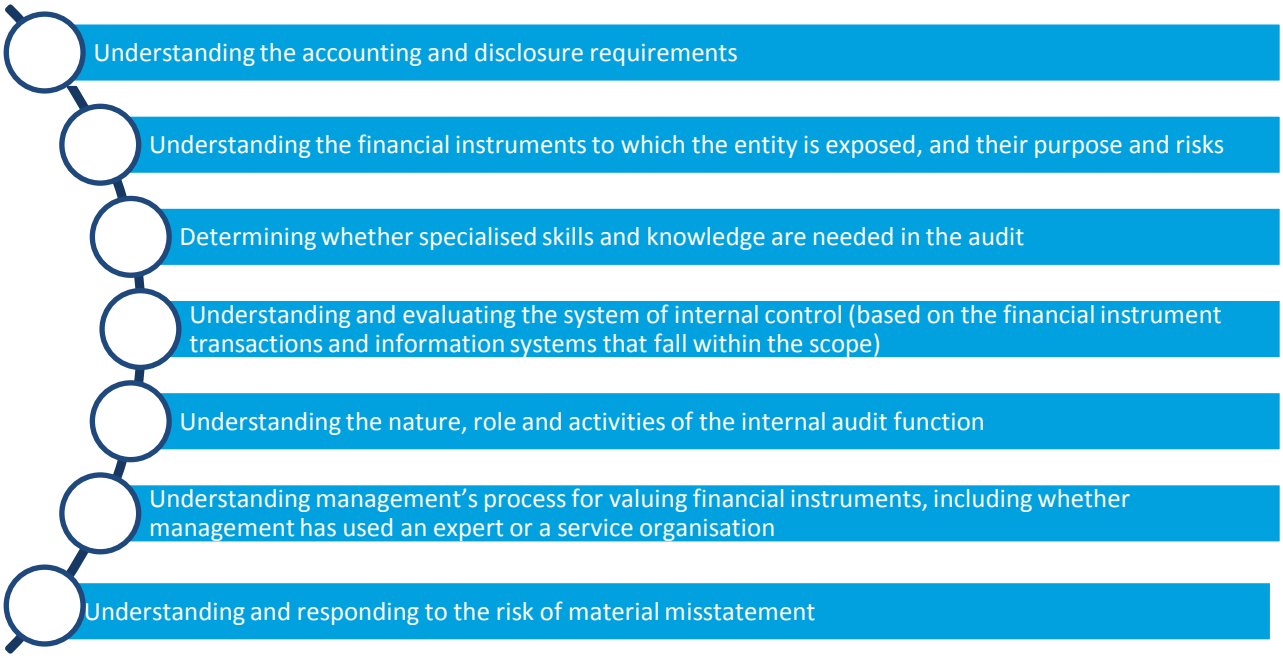
The table below describes the categories of disclosure and provides an example of the content of such disclosures:

| Categories of Disclosures | Example of content |
|---|---|
| Quantitative disclosures that are derived from the amounts included in the financial report | Categories of financial assets and liabilities. |
| Quantitative disclosures that require significant judgement | Sensitivity analysis for each type of risk to which the entity is exposed |
| Qualitative disclosures | Those that describe the entity's governance over financial instruments; objectives; controls, policies and processes for managing each type of risk arising from financial instruments; and the methods used to measure the risks |

The sensitivity analysis of quantitative disclosures referred to above includes the effects of changes in the assumptions used in the entity's valuation techniques, particular where uncertainty prevails over valuations:

| Categories of Disclosures | Example of content |
|---|---|
| Sensitivity disclosure | Information for users about the effects of fair value measurements that use the most subjective inputs (for financial instruments categorised level 3) |

| Categories of Disclosures | Example of content |
|---|---|
| Qualitative disclosure | ▪ The exposures to risk and how they arise, including the possible effects on an entity's future liquidity and collateral requirements;<br>▪ Sensitivity analysis for each type of market risk to which the entity is exposed<br>▪ Any changes in exposures to risk or objectives, policies or processes for managing risk from the previous period |



## Implications of the current arrangements for Derivative Valuation

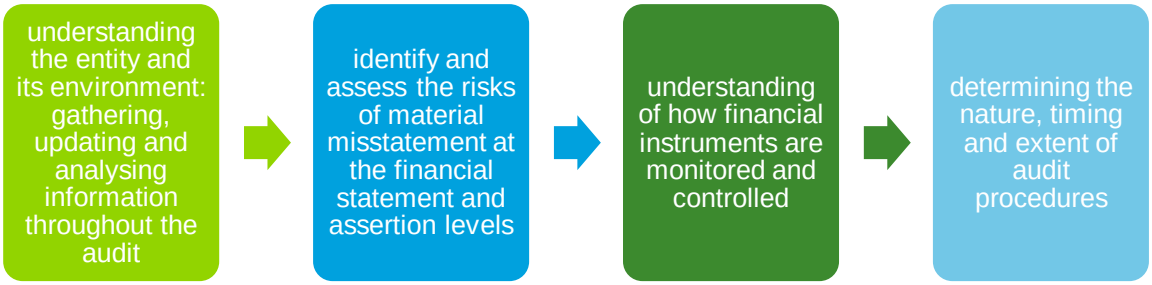
*Understanding the Nature, Role and Activities of the Internal Audit Function*

In many large entities, the internal audit function may perform work that enables senior management and those charged with governance to review and evaluate the entity's controls relating to the use of financial instruments. The internal audit function may assist in identifying the risks of material misstatement due to fraud or error.

However, the knowledge and skills required of an internal audit function to understand and perform procedures to provide assurance to management or those charged with governance on the entity's use of financial instruments are generally quite different from those needed for other parts of the business. The extent to which the internal audit function has the knowledge and skill to cover, and has in fact covered, the entity's financial instrument activities, as well as the competence and objectivity of the internal audit function, is a relevant consideration in the external auditor's determination of whether the internal audit function is likely to be relevant to the overall audit strategy and audit plan.

Areas where the work of the internal audit function may be particularly relevant are:

- Developing a general overview of the extent of use of financial instruments;
- Evaluating the appropriateness of policies and procedures and management's compliance with them;
- Evaluating the operating effectiveness of financial instrument control activities;
- Evaluating systems relevant to financial instrument activities; and
- Assessing whether new risks relating to financial instruments are identified, assessed and managed.



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