



# **Australian Clearing House Central Counterparty Risk Management Controls**

## **Equity Market Margining**



### **Market Consultation Document**

**30 June 2010**

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## A Executive Summary

There is a sharpened focus on the importance of systemic risk management in the aftermath of the Global Financial Crisis (GFC). Regulatory and user expectations of central counterparty (CCP) capabilities have accordingly increased, particularly in relation to the strengthening of CCP risk controls. In Australia, CCP risk management activities are overseen by the Reserve Bank of Australia (RBA) in accordance with the Financial Stability Standard for Central Counterparties (FSS). In the March 2009 *Review of Participation Requirements in Central Counterparties*, published jointly with the Australian Securities and Investments Commission (ASIC), the RBA underscored the significance of the GFC and recommended that the Australian Clearing House Pty Ltd (ACH) “review, particularly in the light of experience from the global financial crisis, whether there is a longer term case for considering other risk controls”.

ASX recognises the evolution in best practice and regulatory expectations and is committed to measures that further strengthen the important CCP risk protections underpinning the Australian financial markets. Moreover, it is ASX’s view that it is both timely and appropriate to further enhance ACH’s already robust risk controls. To this end, ASX has conducted an extensive consultation process with market stakeholders on a range of potential ACH risk management enhancements. Comprehensive responses were received in relation to ACH’s consultation paper and a summary of feedback was published earlier this year. ASX, in consultation with the RBA and ASIC, has since undertaken further analysis incorporating the feedback received. This paper outlines the proposed changes.

**ASX is proposing to introduce routine daily margining of the equity cash market.** The margining approach is mainly based on a historic VaR simulation of potential losses to ACH in the event that the CCP has to close out a defaulting Clearing Participant’s unsettled novated transactions in normal market conditions. ASX believes that the proposal:

- Would enhance the risk management controls of ACH and therefore further reduce systemic risk in an increasingly complex Australian equity market environment. The calling of margin from Clearing Participants in respect of unsettled novated equity market transactions would provide additional protection to the pooled financial resources available to ACH and to the reputation of both ACH and Australia’s financial markets.
- Is fully aligned with the RBA’s stance as outlined in the ASIC/RBA *Review of Participation Requirements in Central Counterparties* and the RBA’s 2008/09 Annual Assessment of ASX’s central counterparties’ compliance with the Financial Stability Standards; and
- Would further demonstrate ACH’s practices to be international best practice. As highlighted in the initial consultation document, 13 of the 15 CCPs in the international comparator group require margin or other forms of up-front Clearing Participant collateralisation in respect of the equity cash market exposures to the CCP.<sup>1</sup>

In finalising the proposal, ASX has been conscious of concerns related to the cost impact and heightened liquidity risk of paying potentially volatile margin calls at short notice. Section C provides more detail of the means by which these factors have been addressed.

**ASX is seeking further suggested refinements to the proposal by 13 August 2010** prior to finalising the operational design and implementation. ASX looks forward to working with all stakeholders to optimise the outcome. At this stage ASX is not able to confirm implementation timelines, but in order to assist longer term planning, is announcing that the implementation will not be earlier than Q4 2011.

<sup>1</sup> As determined in the ASIC/RBA *Review of Participation Requirements in Central Counterparties*.

## B Background

### (i) History

In Q4 2009, ASX released a Consultation Paper entitled *ACH Central Counterparty Risk Management Controls* seeking feedback on a number of alternative enhancements to ACH's risk control framework. In addition, where requested, ASX staff met bilaterally with a number of stakeholders to outline the initiatives and provide further clarification. The paper provided a comparison of ACH's risk controls against a comparator group of international CCPs and sought feedback on a range of possible enhancements including routine margining of the equity market and the means of creating a mutualised Clearing Participant Default Fund.

### (ii) Key Themes

As usual for such broad consultation documents, respondents' views often diverged to reflect the variety of stakeholder business models. Nevertheless, ASX generally received consistent responses from the 21 submissions on the key topics covered in the consultation paper. In addition, several suggested improvements to the approach were also submitted.

Overall, there was:

- Recognition of the accuracy of the international comparison;
- Clear preference for a 'futures style' daily margining methodology, rather than one based on historic exposures; and
- Reluctance to pass on margin to clients on practical grounds and in part to avoid the need to segregate House and Client accounts in CHES.

Respondents agreed with some key ASX concerns, especially:

- The potentially significant liquidity impact of the volatility of the daily and intraday margin requirement;
- Cost impact to market users.

Some Participants expressed a view that:

- The need for routine Clearing Participant contributions to a mutualised Default Fund was not conclusive; and
- Margining was not necessary given that existing Tier 1 risk controls significantly reduced the probability of a Clearing Participant default. This misunderstanding is addressed in Box 1.

Additional areas for further consideration were also suggested:

- Reducing the length of the T+3 settlement cycle;
- Permitting client stock/funds to be 'locked' for settlement in CHES prior to the settlement date; and
- Prolonging margining in the derivatives market to account for the settlements associated with stock option expiries.

### (iii) ASX Response

Since the publication of the *Summary of Responses to the Key Initiatives* in Q1 this year, ASX has conducted detailed analysis of the feedback and potential additions, with a view to optimising the proposal for further consultation. In so doing, ASX has met with a range of market participants and has continued its discussions with RBA and ASIC. The following sections outline the proposed changes and seek further general feedback.

## C Proposed Approach

### (i) Summary of the Proposal

Taking into consideration the feedback received from ACH Clearing Participants and other market stakeholders, ASX has carefully reviewed the range of potential risk enhancements provided in the previous consultation and is proposing to implement the following:

- a) Daily margining of the equity cash market mainly based on a historic VaR model with a mark-to-market component, supported and accompanied by<sup>2</sup>
  - Ad hoc intraday margin calls;
  - Use of Clearing Participant's stock and bank guarantees (from unrelated entities) as acceptable forms of non-cash collateral; and
  - An ability to lodge cash and non-cash margin with ACH in excess of the daily margin requirement.
- b) The replacement with daily margin of the mutualised Clearing Participant Contribution payments made in accordance with the Contributions and Additional Cover (CAC) arrangements. This margin calculation would replicate the existing CAC calculation and supplement the 'ordinary' margining where necessary.

In response to suggested amendments and the key concerns highlighted by the consultation respondents, it is intended to amend the margin algorithm outlined in (a) to:

- Base margin calls on the higher of the result from two calculations using the following as inputs:
  - i. All of a Clearing Participant's unsettled novated transactions; and
  - ii. As (i) but excluding those transactions due to settle the next business day.
- Exclude novated settlements arising from the exercise of exchange traded options, which will instead be marginated as part of the derivatives margin calculation during the (typically T+3) settlement period. Similarly, LEPO settlements will continue to be omitted.

### (ii) Rationale

ASX believes that the introduction of margining to the equity cash market would **enhance the risk management controls of ACH and therefore further reduce systemic risk** in an increasingly complex Australian equity market environment. The calling of margin from Clearing Participants in respect of unsettled novated equity market transactions would provide additional protection to the pooled financial resources available to ACH and to the reputation of both ACH and Australia's financial markets.

Furthermore, by ensuring that there exists a 'defaulter-pays' element in the resources available to meet any losses arising from a Clearing Participant default in the equity cash market, **the proposal is fully aligned with the RBA's view** as outlined in guidance provided in the 2009 ASIC/RBA *Review of Participation Requirements in Central Counterparties* and the RBA's 2008/09 Annual Assessment of ASX's central counterparties' compliance with the Financial Stability Standards (the FSS Assessment).

In addition, the proposed approach would **further demonstrate ACH's practices to be international best practice**. As highlighted in the initial consultation document, 13 of the 15 CCPs in the international comparator group require margin or other forms of up-front Clearing Participant collateralisation in respect of the risks arising to the CCP from unsettled transactions to which the CCP is counterparty.

<sup>2</sup> Daily margining was referenced as 'futures style margining' in the previous consultation document. Margin cannot be used by the CCP to offset losses arising from another Clearing Participant's default.

### *(iii) Exclusions*

In line with the feedback received from the initial consultation paper, it is proposed that several alternative or complementary initiatives will not proceed at this stage as part of this initiative, including:

- The use of the 'look back' approach to determine margin requirements;
- Routine Clearing Participant contributions to a Default Fund;
- Splitting of the single equity market clearing account into house and client accounts;
- Mandatory passing on of margins to clients; and
- Margin offsets between the equity cash and derivatives markets.

Feedback was received from some market users that a solution should be created that permits Clearing Participants to 'lock' client stock/monies in CHESS for delivery/payment in advance of the scheduled settlement time in order to reduce margin requirements. After careful consideration, such an approach is not included in the proposed model as it is expected to generate significant operational challenges and legal complexities, particularly in the event of a default, and may indeed not attain the goal of margin reduction.

Furthermore, the suggested reduction in the standard T+3 settlement cycle to reduce margin requirements is also not proposed as part of this initiative as feedback from brokers with international clients has indicated operational difficulties in meeting such deadlines. ASX recognises that such a change could potentially reduce systemic risk more broadly and will keep such an enhancement under consideration.

### *(iv) Addressing Respondents' Concerns*

While the purpose of the proposed enhancements is solely to improve CCP risk mitigation, the design of the solution has accounted for the two major concerns expressed by the consultation respondents:

#### a) Cost

ASX is conscious that the implementation of the proposed risk management enhancements will incur transition and ongoing operational costs for Clearing Participants, ASX and potentially other stakeholders. However the nature of the design acts to minimise unnecessary costs to Clearing Participants in several ways:

- Use of a VaR model to better account for the complex pricing inter-relationships, thereby avoiding the tendency of other margining models to over-estimate risk on diverse portfolios of linear instruments;
- Choice of daily margining in preference to a more conservative 'look back' calculation based on historic exposures;
- Permitting a wider array of acceptable non-cash collateral;
- By not mandating the passing on of margins to clients, Clearing Participants will avoid the intense operational activities of calculating and calling margins from all clients; and
- Continuing to maximise netting through the use of a single clearing account per Clearing Participant.

#### b) Liquidity Risk

Respondents expressed concerns that the volatility of the margin requirement and the consequent possibility of receiving a large margin call to be met at short notice, especially intraday, could be the cause of a liquidity event and Clearing Participant default. Several modifications have been made to the solution to minimise such risk:

- Excluding novated transactions arising from option exercises from the cash market margin calculation will remove the cause of the overwhelming majority of margin 'spikes' and associated large margin calls;

- In the end-of-day calculation, by removing those transactions that are scheduled to settle on the next business day, the possibility of an intraday margin call triggered solely by the unnetting of settlements is avoided; and
- Permitting excess cash to be held at ACH will allow Clearing Participants to minimise the size and frequency of intraday calls.

In addition to the cost and liquidity risk issues, several respondents suggested that equity market margining was unnecessary given the alternative ACH risk controls already in place. ASX recognises the demonstrable protection that has been afforded to ACH through the use of the 'Tier 1' risk controls designed to minimise the probability of a Clearing Participant default or market-wide systemic settlement failure. However, it is important to note that ACH does not routinely call margin that would be available to offset losses incurred in closing-out a defaulting Clearing Participant's equity market unsettled novated transactions. This highlights an important distinction between risk controls designed to manage the 'probability of default' versus those designed to offset 'loss given default'. It is especially significant for ASX's central counterparties' compliance with the FSS which requires Australian clearing and settlement facility licencees to be able to withstand the impact of a Clearing Participant's default regardless of the probability of that default. This distinction is explored further in Box 1.

### Box 1: 'Probability of Default' and 'Loss Given Default'

ASX noted responses to the initial consultation paper often did not distinguish between risk controls applied to reduce the probability of default and controls applied to minimise loss given default to ACH and its non-defaulting Clearing Participants.

The initial Consultation Paper contained an overview of the comprehensive tiered risk management framework ACH operates to manage its clearing counterparty credit risk.<sup>3</sup> This framework incorporates three layers of controls which are designed to reduce both the probability of a Clearing Participant default and the level of the CCP's exposure in the event of a default.

#### Probability of Default

Tier 1 controls, also referred to as '*Ex ante* controls', are specifically designed to minimise the probability of a Clearing Participant default and/or a market-wide settlement failure. Clearing Participants will be familiar with the specific risk controls in this tier which include the Risk Based Liquid Capital Requirements, Minimum Core Capital Requirements and operational standards referring to technical and operational capabilities.

Clearing Participants' own risk protections which mitigate their risks, and therefore reduce the probability of their default, are explicitly accounted for in the calculation of the Risk Based Liquid Capital Requirements and results in a reduction to the minimum liquid capital requirement. Importantly, notwithstanding that the Clearing Participant's own risk protections and ASX established *ex ante* controls reduce the probability of default such that it approaches zero, these protections cannot reasonably be perceived to be a guarantee that a Clearing Participant will never default. Indeed, this is reflected in the RBA's FSS for Central Counterparties which requires that a CCP is capable of withstanding the impact of the default of the Clearing Participant with the largest settlement obligations in all but the most extreme circumstances, regardless of the probability of that Clearing Participant defaulting.

#### Loss Given Default

Consequently, unlike those in Tier 1, a CCP's other risk controls (Tier 2 and 3) are *ex post* and underpinned by the assumption a Clearing Participant default has occurred. They reflect ACH's quantification of potential losses that could be incurred by ACH (and in extreme circumstances, the non-defaulting Clearing Participants) in closing out the unsettled novated transactions between the defaulting Clearing Participant and ACH in potentially extreme market conditions. Whilst the Clearing Participant itself may have positions or collateral that offset or hedge its exposure to the CCP, ACH has no recourse to those offsetting assets in a default and therefore when quantifying the potential loss must only account for transactions to which it is counterparty - the unsettled novated transactions.

Margining is a prime example of a Tier 2 risk control. Already, existing margining controls based on potential default losses in normal market conditions are used in respect of ASX and SFE derivatives positions. There is currently no equivalent control which applies to the ASX cash equity market – a matter that this proposal seeks to address.

<sup>3</sup> For further detail on the tiered risk framework structure please see p.7-8 in the initial consultation paper, found at this link: [http://www.asx.com.au/about/pdf/ccp\\_rm\\_controls\\_consultation\\_paper.doc](http://www.asx.com.au/about/pdf/ccp_rm_controls_consultation_paper.doc)

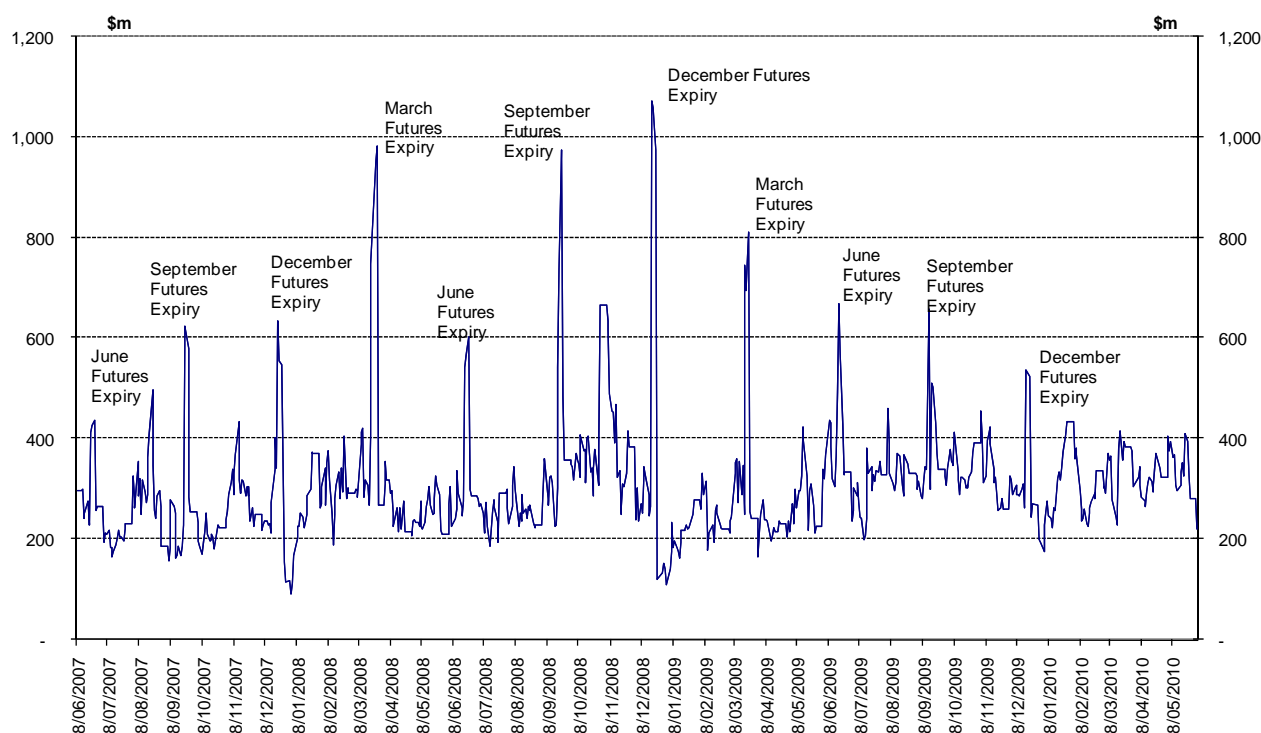
Clearly it is in the interests of all market users to minimise the potential for financial and reputational damage to ACH and the wider Australian marketplace. Tier 1 controls are therefore an essential part of a CCP's risk management protections and should be optimised to reduce the probability of default. However, as the RBA's Financial Stability Standard for licenced clearing and settlement facilities recognises, regardless of the strength of these Tier 1 controls, there is always the possibility that a Clearing Participant could default and that the CCP should be capable of withstanding such an event. Consequently there is a need for controls which will minimise the potential loss and impact to the marketplace following a Clearing Participant default.

Tier 2 and Tier 3 controls should be viewed as complimentary to Tier 1 controls and not considered to be interchangeable with one another. The introduction of a Tier 2 risk control in the form of routine cash equity market margining will minimise the potential loss given default to ACH in normal market conditions.

*(v) Estimated Impact*

ASX has previously published estimates of the total margin requirement and individual Clearing Participant data is available on request. These estimates have been updated and refined to account for the changes made to the model. The results are presented in Chart 1.

*Chart 1: Estimate of total margin requirement in respect of the equity cash market*



In the last three years, it is estimated that margins would have averaged \$306mn per day in total for all Clearing Participants, ranging from around a maximum of \$1bn to a low of \$92mn. The changes since the last consultation paper have reduced the forecast average margin by around \$20mn and it remains substantially lower than margin held by ACH and SFEC in respect of derivatives contracts. The month-end spikes in requirements associated with option expiries have been eliminated due to prolonged margining of those settlements in the derivatives calculation and the size of the largest spike, in December 2008, is \$400mn lower as a result. Less frequent spikes remain, typically associated with the unwinding of arbitrage positions at the quarterly futures expiry, although in practice these are limited to the most highly capitalised Clearing Participants that currently monitor such activity for potential CAC calls. Indeed, as would be expected, margin requirements are usually higher for the larger Clearing Participants

undertaking the most activity: The average forecast margin for a Clearing Participant with over \$200mn of liquid capital was \$15.7mn compared with around \$650,000 for a Clearing Participant with less than \$5mn liquid capital.

*(vi) Further Detail on the Proposed Approach*

**Algorithm**

As outlined in previous consultation documents, ASX uses its existing Real Risk model to calculate risk exposures in respect of all unsettled transactions to which ACH is counterparty. It is anticipated that this approach will form the basis of the margin requirement calculation. This combines the use of a historic VaR calculation for the most liquid stocks and individual margin rates for other cash market products, including warrants and ETFs. A more comprehensive description of the model is provided in Box 2. In line with existing margin rates reviews, ASX Risk Management would periodically review and amend the parameters in line with market conditions. All parameters and the calculation will be made publicly available. ASX will be commissioning an independent assessment of the model including back-testing of its predictive capabilities to identify any further refinements that could be made to the calculation and to assist with the parameter-setting protocols.

**Intraday Margining**

In addition to the routine end-of-day calculations, ACH will also re-calculate margins during the day to account for new trading, completed settlements and observed price movements. The approach will be broadly similar to that currently undertaken as part of the risk control framework for ACH-cleared derivatives. Operational details are yet to be finalised but it is expected that margin will be re-calculated around midday and on an ad hoc basis in response to market volatility. Margin calls will only be made on those Clearing Participants whose margin requirement has increased by more than a given threshold and payment will be required within two hours.

**Acceptable Collateral**

In addition to Australian dollar cash margins, ACH currently accepts high quality, very liquid non-cash collateral with appropriate valuation haircuts. In order to meet margin calls on the equity cash market, it is anticipated that Clearing Participants will be able to lodge a range of their equities with ACH or bank guarantees provided by non-related entities. Further consideration will be given to the acceptance of Commonwealth Government Securities nearer the time of implementation.

**Contributions and Additional Cover (CAC)**

CAC-related Contributions may currently be called against large stress test exposures arising from a Clearing Participant's novated unsettled equity cash market transactions. As part of this initiative, ASX will seek to amend the ACH Clearing Rules to replace the mutualised CAC-related Contributions with additional margin requirements based on the same stress test calculation. Margin, unlike Contributions, cannot be used by the CCP to offset losses arising from another Clearing Participant's default. In addition, the introduction of margining to the cash equity market is expected to decrease the frequency of CAC calls, as the stress test result of the Clearing Participant's portfolio will be reduced by any margin held against cash equity positions.

**Impact on Capital Requirements for Clearing Participants**

The treatment of collateral lodged against a margin call on the cash equity market is expected to be consistent with the current treatment of collateral lodged against a margin call on a Clearing Participant's derivatives market portfolio. Accordingly, funds deposited as margin against the Clearing Participant's equities exposure will not be considered an Excluded Asset for the Liquid Capital calculation.

## Box 2: Overview of the ASX Real Risk model

ASX's Real Risk model quantifies the potential loss under normal market conditions, to ACH arising from its obligations to close out a defaulting Clearing Participant's unsettled cash equity market transactions to which ACH is counterparty. The Real Risk model is currently run each night and calculates a Total Margin Requirement for each Clearing Participant based on their net unsettled novated transactions.<sup>4</sup>

The Total Margin Requirement is the sum to two key components: Mark-to-Market (MTM) and Risk Margin.

### 1. Mark-to-Market

For component equities of the ASX All Ords index, a daily MTM of the net unsettled novated position is calculated and reflects the unrealised profits/losses on the net position per security. This in effect realises any losses on the Clearing Participant's unsettled novated transactions and ensures that should a Clearing Participant default occur, the risk margin needs only to cover potential *future* losses. The model offsets MTM gains against MTM losses and against the risk margin value for each Clearing Participant. Due to the potential for poor quality or stale prices arising from relative market illiquidity, a MTM is currently not calculated on the equities outside the All Ords or ACH cleared warrants and interest rate securities.

### 2. Risk Margin

Whilst MTM seeks to account for unrealised losses, risk margin is designed to protect ACH against potential additional future losses due to adverse price movements occurring after the last margin payment but before ACH closes out a defaulting Clearing Participant's net unsettled novated position. The Real Risk risk margin calculation for the cash equity market assumes the close out will take between 1 and 3 business days and will occur under normal market conditions. ACH supports its risk modelling of losses in normal market conditions with significant financial resources based on daily stress testing assuming extreme market conditions.

For equities, the risk margin is calculated using a historical value-at-risk (VaR) simulation based on exogenously set parameters, including the historical time horizon, confidence interval, volatility parameters and frequency of price returns. ASX will backtest the Real Risk model to ensure the appropriateness of the level of each parameter and has the ability to modify them accordingly to account for market conditions. ASX anticipates Clearing Participants will ordinarily be margined based on one-day price returns over a two year historical period calculated at an estimated 3 standard deviation confidence interval (99.73% if normally distributed).

The risk margin calculation currently distinguishes between the following three portfolio risk groupings:

1. S&P ASX 200 stocks,
2. Remaining Securities in the ASX All Ords,
3. Securities Outside the All Ords index.

So, for example, the historical VaR simulation for the ASX 200 securities grouping calculates the Clearing Participant's exposure to all ASX 200 securities based on actual price and therefore P&L movements in the historical period for each security in the ASX 200. This accounts for the multiple and complex price inter-relationships of the ASX 200 stocks, providing risk margin offsets reflecting inherent correlations and diversity of the 'portfolio' of unsettled transactions. Similarly, there is an analogous historical VaR simulation for the Remaining Securities in the ASX All Ords.

Given the lower levels of liquidity of the securities outside the ASX All Ords, including warrants and interest rate securities, the risk margin calculation for these instruments is more conservative in comparison. Currently the ASX Real Risk model calculates risk margin for these products based on a volatility parameter calculated at a 95<sup>th</sup> percentile and an assumed 3-day close out period. For warrants, the volatility parameter is calculated for key sub warrant groups.

Finally, the risk margin for each portfolio grouping is aggregated up to calculate the risk margin for the Clearing Participant's cash equity market portfolio as a whole.

<sup>4</sup> Any offsetting non-novated positions are excluded as ACH is not counterparty to those settlements.

## D Next Steps

### Further Feedback Sought

ASX welcomes further feedback from stakeholders to assist ACH refine and optimise its proposed margining approach. Any comments should be addressed to Paul Jones, General Manager, Clearing Risk Policy at [paul.jones@asx.com.au](mailto:paul.jones@asx.com.au). *Responses should be received by 13 August 2010.*

ASX staff are available to discuss the contents of this paper further – please contact Himashi Gunasekera, Risk Analyst, Clearing Risk Policy at [himashi.gunasekera@asx.com.au](mailto:himashi.gunasekera@asx.com.au) or call (02) 9227 0537.

### Implementation

The focus of the work will move from design finalisation to implementation of the proposed approach. ASX will continue to work closely with the RBA and ASIC, and looks forward to working with all stakeholders to minimise the operational impact of the margin model and its associated operational processes. Until more detailed planning has been undertaken, it is not possible to provide a firm timetable for commencement. Nevertheless, in order to manage expectations and assist with longer term planning, ASX can state that equity margining will not be implemented before Q4 2011. ASX will also undertake further consultation in the coming months with all stakeholders on the operational detail of the proposed approach.