



Consultation Paper: Review of bank capital adequacy requirements for housing loans and internal models processes

The Reserve Bank invites submissions on this Consultation Paper by 25 October 2013.

Submissions and enquiries about this consultation should be addressed to:

Cavan O'Connor-Close
Adviser, Financial System Policy
Prudential Supervision Department
Reserve Bank of New Zealand
PO Box 2498
Wellington 6140
Email: cavan.oconnor-close@rbnz.govt.nz

Please note that a summary of submissions may be published. If you think any part of your submission should properly be withheld on the grounds of commercial sensitivity, or for any other reason, you should indicate this clearly.

20 September 2013

Introduction

1. On 26 March 2013, the Reserve Bank announced a staged review of bank capital adequacy requirements for residential mortgage loans. Stage one of the review addressed the calibration of the correlation coefficient for internal models (IM) banks.¹ That stage was completed on 8 May 2013 when the Reserve Bank published its new requirements for the calibration of the correlation coefficient for certain loans.
2. This consultation is the second stage of the review, and mainly focuses on remedying definitional inconsistencies and ambiguities currently contained in our capital requirements. It also proposes formalising the Reserve Bank's approval process and ongoing requirements for internal models banks.
3. Part one of this paper deals with the definitional issues. Greater consistency of definitions across banks is not only desirable from a level playing field and capital point of view but it is also important in the context of the Reserve Bank's macro-prudential policy framework, which includes a loan-to-value ratio (LVR) policy to restrict banks' high-LVR lending when certain conditions are met. The effectiveness of this policy in particular depends on consistent and clear definitions.
4. Part two proposes formalising the internal model process – which includes the submission and approval process, and the on-going compliance obligations – as a part of BS2B. These requirements are currently stipulated in a letter sent to all IM banks, but have not been formally included in their capital requirements as set out in BS2B. This consultation paper proposes to include these requirements in BS2B, and to establish a compendium of approved models, such that an IM bank may only calculate and meet its capital requirements by way of the version of the approved model in the compendium. This merely reflects the current *de facto* arrangements that IM banks operate under.
5. This consultation paper invites stakeholders to provide feedback on the consultation questions, including estimates of any costs and benefits, by 25 October 2013. The Reserve Bank will then analyse the feedback received and publish a summary of submissions and updated versions of BS2A and BS2B, and then impose new conditions of registration. It is currently envisaged that the new requirements will take effect in Q1/2014, subject to feedback on the time required for IT system changes.

¹ There are two types of locally incorporated banks in New Zealand: standardised and internal models banks. The capital requirements for standardised banks are set out in BS2A, while those pertaining to internal models banks are in BS2B, both of which can be accessed at:
http://www.rbnz.govt.nz/regulation_and_supervision/banks/banking_supervision_handbook/

I Definition issues

Calculation of the LVR

6. The LVR ratio is calculated as the ratio of the loan amount over the value of the property, times 100.

$$\text{LVR} = (\text{loan amount} / \text{value of property}) * 100$$

Definition of the loan amount

7. BS2A and BS2B do not currently contain the same definition of the loan amount (the numerator in the LVR equation). BS2A states that:

“loan value is the total amount, as at balance date, of: (i) all claims secured by way of first ranking mortgage over the residential property; and (ii) all undrawn commitments to the borrower that when drawn down will be secured by way of first ranking mortgage over the residential property.” (Section 37)

8. While BS2B states the following:

“LVR (or loan to value ratio) is defined as the current loan balance The current loan balance includes the EAD amount of any off-balance sheet exposures...” (Section 4.150A)

9. The Reserve Bank believes that, as far as possible, both standardised and IM banks should be subject to the same definition of the loan amount when calculating LVRs. The current situation where one group of banks includes all claims secured by the residential property, whereas the other group does not, leads to the calculation of LVRs that are inconsistent and therefore lack comparability across both groups of banks (*ceterus paribus*).

All claims secured by way of first ranking mortgage

10. The first definition (BS2A) clearly includes all claims secured by way of first ranking mortgage, while the second definition (BS2B) does not state so explicitly. Although the intention has always been for both groups of banks to calculate their LVRs on an equal basis as far as that is possible, BS2B may be interpreted as not including other claims secured by the residential property. It is the Reserve Bank's understanding that this is how IM banks have interpreted the definition. Standardised banks, on the other hand, currently add all claims to the loan amount.
11. Most mortgages are 'all obligations' mortgages. This generally means that if a customer defaults on any other loan he or she has with the bank, for example a personal loan or a credit card debt, the bank can exercise the security it holds over the residential property. This means that a bank could force the sale of the house to recapture the outstanding credit card or personal loan balance. In practice, a bank's incentive to take this measure will depend on the size of the defaulted loan, and a more common scenario might be that the outstanding balance is simply added to the mortgage loan. This link from other loans, such as credit cards or personal loans, to the residential property suggests that all other claims should be included and that the definition currently in BS2A should also apply to the IM banks.

12. A counter argument is that personal loans and credit card balances are treated as unsecured lending for capital purposes and therefore already incur a risk weight of 100 percent. Adding them to the loan amount leads to a higher LVR which could increase the risk weight on the mortgage loan (plus the other loans). This can be seen as a form of double-counting, albeit in most cases this only happens at the margin and the impact on risk weights or capital is likely to be negligible.
13. Secondly, in spite of the all obligations nature of most mortgages, some banks contend that a bank would not force the sale of a house over a credit card bill. The reason given is that this would lead to reputational damage for the bank and that it would be difficult to enforce the sale of the property. Whether or not a bank might be able to foreclose on the mortgage will depend on the particular circumstances and the construction of the all obligations clause but, as mentioned above, the more likely scenario could be for the credit card balance and the mortgage loan to be consolidated into one (mortgage) loan.
14. The treatment of all other claims in the LVR calculation is also relevant for the Reserve Bank's macro-prudential LVR policy. Excluding them from the LVR calculation leads to lower average LVRs and could impact the effectiveness of an LVR restriction, particularly if borrowers became tempted to use their credit card facilities or personal loans to raise or increase the deposit needed to obtain a mortgage. This would be an extremely expensive approach to take, since these other loans are typically more expensive to service than a mortgage loan, but it could diminish the effectiveness of an LVR restriction.
15. The Reserve Bank has assessed the feasibility of having two LVR definitions, one that includes all claims such as credit card limits and personal loans for macro-prudential LVR policy purposes and another that excludes those other loans for capital purposes. That is, a BS19 (macroprudential) definition while the latter would be included in BS2A and BS2B (prudential capital requirements). However, the Reserve Bank has decided against that since banks would have to calculate two LVRs which may be difficult to implement from a systems perspective and lead to confusion.
16. Another option the Reserve Bank has considered but also rejected at this stage is to exclude credit card limits and personal loans (except loans that are made in connection with a residential property). Such an option would rest on a bank knowing and being able to verify the stated purpose of the loan. The Reserve Bank believes that this would be difficult in practice and that this option would leave too much scope for undermining an LVR restriction.
17. At this stage, the Reserve Bank considers that all claims legally secured by the residential property should be included in the loan amount when calculating an LVR. Although we are cognisant of the argument that the treatment of the lending as an unsecured loan means that it already incurs a higher capital charge, ensuring that an LVR restriction is effective requires the current BS2A definition to be extended to IM banks.
18. We therefore propose that the definition of the loan amount in section 4.150A of BS2B be amended to align with section 37 of BS2A and read as follows:

*"The loan-to-valuation ratio for a residential property is calculated by the formula:
 $LVR = (\text{loan amount} / \text{value of property}) * 100$*

In the formula—

“LVR (or loan-to-valuation ratio) is the loan amount as a percentage of the value of the security at the time the loan was originated. The loan amount includes (i) the current loan balance and any other claims secured by way of first-ranking mortgage over the residential property; and (ii) the EAD amount of any off-balance sheet exposures secured by way of first ranking mortgage over the residential property and consistent with sections 4.155 to 4.158.”

19. To the extent that IM banks currently do not include all claims and undrawn commitments secured by way of first-ranking mortgage over the residential property, this change could lead to higher LVRs and therefore increase risk weights on residential mortgage loans. The Reserve Bank is interested in gaining a better understanding of the capital impact this might have and the implications of changing IT systems to implement the proposed new definition, and therefore invites feedback on the following questions:

Question 1

Do you agree that the calculation of the LVR should be based on a common or comparable definition of the loan amount that applies to both groups of banks, i.e. IM as well as standardised banks?

Question 2

How will your bank be affected by this change in the definition? What impact is this likely to have on risk weights and capital? Please outline the system changes you would have to make and provide estimates of their cost and time.

Question 3

Are there any alternative solutions that would address the Reserve Bank's concerns regarding the implications for the effectiveness of an LVR restriction policy if credit card limits and personal loans were not included in the definition of the loan amount?

Definition of the value amount

20. The value amount is the amount in the denominator of the LVR equation. BS2A defines the value amount (referred to as the property value) as follows:

“Property value is the value of the residential property determined under a bank's residential property valuation policy when a residential mortgage loan is originated”. (Section 37)

“a policy governing how a property value is determined for a residential mortgage loan that - (i) is approved by a bank's board of directors; and (ii) includes guidance on the use of –(A) a valuation produced by an independent valuer; and (B) the purchase price of a residential property;” (Section 43 (f))

“independent valuer means a person who is not associated with a person who has an interest in the residential property for which a valuation is made and who is: (i) a registered valuer as defined in the Valuers Act 1948; or (ii) another person approved to provide valuation services by rules made under the Rating Valuations Act 1998:”

21. BS2B states:

“...LVR... is defined as the current loan balance as a percentage of the value of the security at the time the loan was originated.” (Section 4.150A)

22. BS2A explicitly requires standardised banks to have a residential property valuation policy in place and defines certain attributes that the policy must have. One of those attributes is that valuations are carried out by an independent valuer, a definition of which is provided in BS2A.
23. BS2B does not have a comparable requirement nor does it currently define who is qualified to carry out a valuation. Although the Reserve Bank expects that an IM bank has a valuation policy in place and uses independent valuers, it believes that this omission should be rectified and the same requirement that applies to standardised banks should also apply to IM banks.
24. The intention of section 43(f) in BS2A was to ensure that only valuations by independent valuers are used when calculating the LVR. Banks may use databases to obtain a valuation as long as the data used to populate the database is provided by an independent valuer. To the extent that the use of the word 'guidance' does not make this sufficiently clear, it is proposed to update the wording to put this requirement beyond doubt.
25. The Reserve Bank also wants to ensure that a valuation policy is not affected by current market conditions. Both definitions noted above refer to the value of the residential property at origination, i.e., when the mortgage is first granted. The Reserve Bank considers that any triggers a bank uses for setting a new origination date, e.g. credit events, which lead to a new valuation being carried out, should not lead to a situation where valuations are more frequently updated when prices are rising than when they are falling.
26. Thus, the Reserve Bank proposes to include the following requirements and definitions in both BS2A and BS2B:

"Property value is the value of the residential property determined under a bank's residential property valuation policy when a residential mortgage loan is originated".

"A property valuation policy means a policy governing how a property value is determined for a residential mortgage loan that - (i) is approved by a bank's board of directors; (ii) includes the requirement that only property valuations by independent valuers are used for the purpose of calculating the loan-to-value ratio; (iii) includes guidance on the use of the purchase price of a residential property; and (iv) ensures that its application is invariant to the direction of the movement of residential property prices, i.e. it is applied symmetrically irrespective of whether residential property prices are increasing or decreasing.

"independent valuer means a person who is not associated with a person who has an interest in the residential property for which a valuation is made and who is: (i) a registered valuer as defined in the Valuers Act 1948; or (ii) another person approved to provide valuation services by rules made under the Rating Valuations Act 1998."

Question 4

What is your current practice for carrying out a new valuation?

Question 5

Do you agree that all banks should have a residential property valuation policy?

Question 6

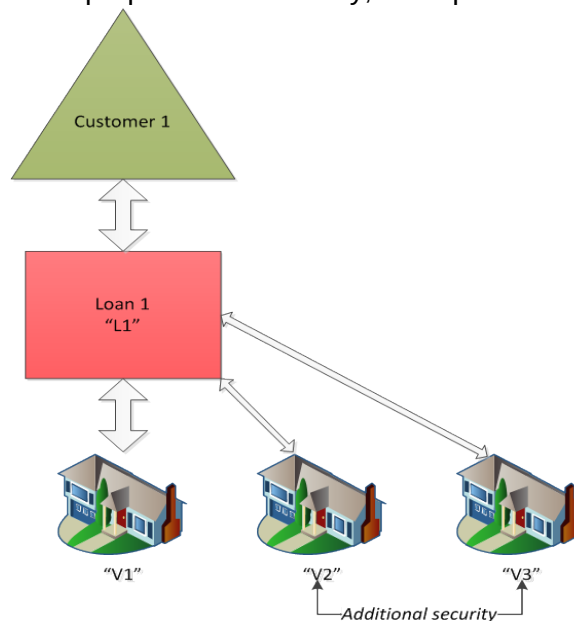
How would you be affected if the valuation policy requirement as proposed was implemented?

Calculation of the LVR when there are multiple securities or multiple borrowers

27. It is not uncommon for more than one property to be used as security for the loan or for a residential property to have more than one purchaser. This might complicate the LVR calculation. The Reserve Bank would like to deepen its understanding of how banks currently calculate LVRs in such instances with a view to setting some minimum rules, if necessary. The following is an illustration of some of these cases.

Case 1: Borrower with additional secured residential properties

The first case involves one borrower who has a single loan over a residential property but a further two residential properties as security, as depicted below.

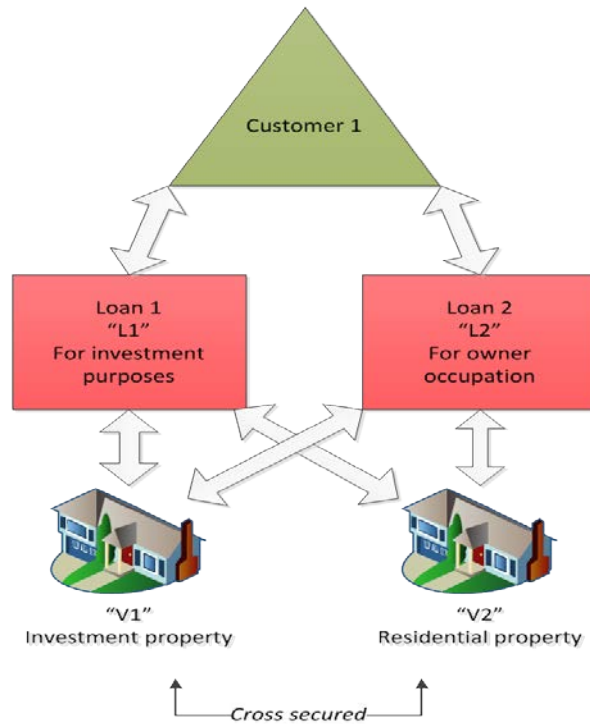


28. This case is reasonably straight-forward and the Reserve Bank understands that the LVR is usually calculated as:

$$L1 / (V1+V2+V3).$$

Case 2: Borrower with multiple loans cross-secured against residential and investment property

29. In the second case, the customer has two loans for two residential properties, one of which is an investment property, and there is a cross-security between the two properties, as depicted below.

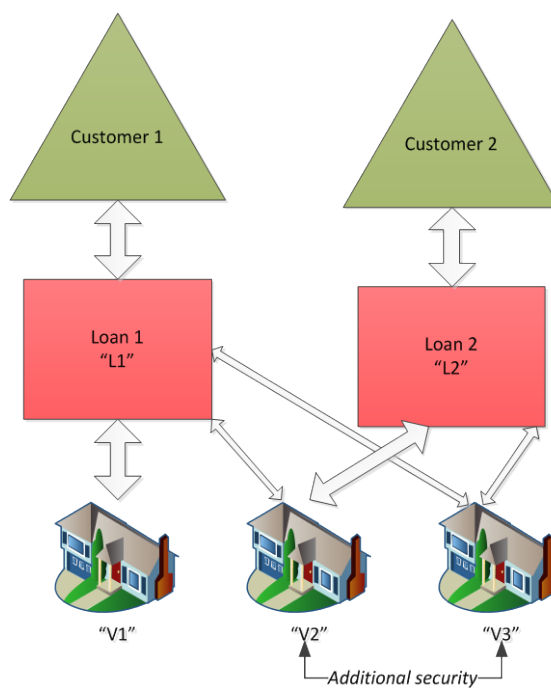


30. Discussions with banks have revealed that in situations like this, the LVR tends to be calculated as follows:

$$(L1+L2)/(V1+V2)$$

Case 3: Multiple borrowers, loans and properties

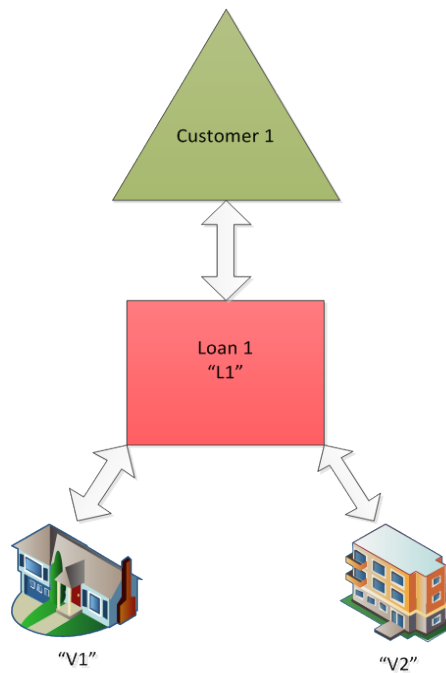
31. The third case is a bit more complicated with two borrowers with two loans and cross-secured properties between them, as depicted below.



32. The Reserve Bank understands that the treatment of this type of arrangement could differ between banks.
33. One way of dealing with it is by grouping the two customers together, particularly where there is a close family relationship between them. In such a scenario, the calculation would look as follows:
- $$(L1+L2)/(V1+V2+V3)$$
34. Another option that some banks may employ is to calculate two LVRs, i.e. one for each customer, and to attribute the collateral to each loan via some collateral spreading methodology. This could mean adding up $V1+V2+V3$ and dividing it by two, or another collateral spreading formula.

Case 4: Borrower with single loan secured against a residential and a commercial property

The next case involves one customer and one loan, but the loan is split between a residential and a commercial property. This could be a borrower with a residential property and who runs his own small business. There is one loan secured over both properties.

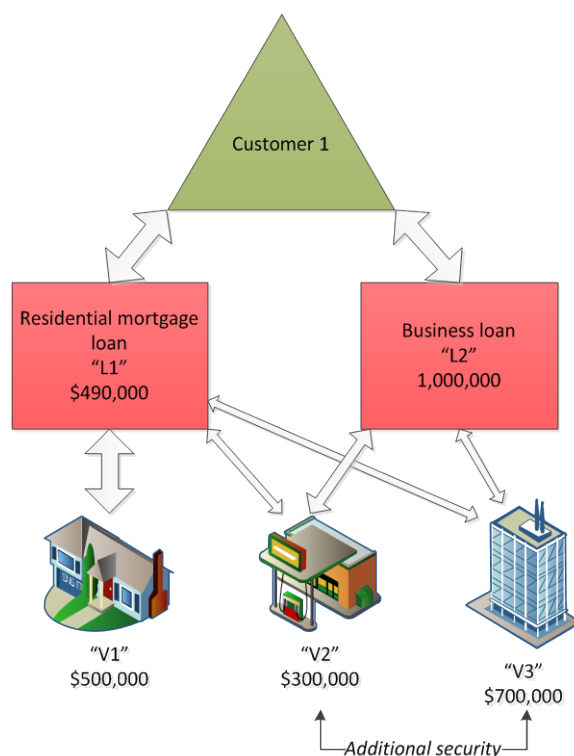


35. The Reserve Bank believes that the LVR in this instance is generally calculated as:

$$L1/(V1+V2)$$

Case 5: Residential mortgage loans cross-secured against other types of collateral

36. The fifth case involves a single customer who has two loans, a mortgage for a residential property and business loan. The commercial property of the business, however, is used as additional security for the mortgage.



37. The Reserve Bank understands that practice here may vary from only counting the residential property in the LVR calculation to employing a collateral spreading methodology to take account of the additional security.
38. The cases presented above represent a broad overview of the types of arrangements that might make an LVR calculation more complicated. The Reserve Bank would like to establish the proportion of mortgage loans for which the LVR calculation is affected by additional complexity, and understand how banks currently treat those cases. While the Reserve Bank's prior is to allow banks to continue to use their existing practices, including collateral spreading strategies, this is dependent on those practices being of sufficient quality and not leading to undue differences in treatment. Should the practices be acceptable, the Reserve Bank may decide to require banks to inform us of any changes they make to the way they treat those loans for LVR calculation purposes.

Question 7

Please provide information as to how you treat each of the five cases listed above in term of calculating the LVR for capital as well as for private reporting purposes. Please explain in detail any collateral spreading methodologies that you use.

Question 8

What is the proportion of mortgage loans that would fall into one of these or any related categories?

Question 9

Are there any other loan and property constellations for which the LVR calculation is difficult? If so, please specify what they are and state how you currently deal with them.

Definition of a residential mortgage loan

39. The Reserve Bank proposes to make a minor change to the wording of the definition of residential mortgage loan in BS2A.

40. BS2A defines a residential mortgage loan as:

“..a loan fully secured by a first ranking mortgage over a residential property used primarily for residential purposes either by the mortgagor or a tenant of the mortgagor.” (Section 43 (e))

41. BS2B states that:

“Residential mortgage exposures are eligible for retail exposure treatment regardless of exposure size.”

And when calculating the capital requirement, BS2B says:

“For non-defaulted exposures fully or partially secured by residential mortgages ...the formula for calculating risk-weighted assets is... .” (* footnote: This means that risk weights for residential mortgages also apply to the unsecured portion of such residential mortgages.)”*

42. The BS2A definition refers to loans fully secured by a residential mortgage, whereas BS2B refers to fully or partially secured loans. If a loan has an LVR of more than 100 percent, it is no longer fully secured. For standardised banks, it means that the loan has to be treated as “other assets”, i.e. an unsecured loan and a risk weight of 100 percent applies. IM banks can treat all residential mortgage loans, including partially secured loans, as residential mortgage loans.

43. In order to remove any doubt that residential mortgage loans made by standardised banks that are only partially secured by a residential property are included in the scope of an macro-prudential LVR restriction, it is proposed to add the words “or partially” to the definition in section 43(e) of BS2A (see new definition below).

44. It is also proposed to clarify that a residential mortgage with an LVR of greater than 100 percent is still a residential mortgage, albeit one that carries a risk weight of 100 percent. For this purpose, it is proposed to add a row to Table 4.11 of section 36 in BS2A specifying that residential mortgages with LVRs greater than 100 percent carry a risk weight of 100 percent, and to remove section 36(2) from BS2A. This means that residential mortgages with LVRs greater than 100 percent are no longer treated as “other assets” but as residential mortgages with a risk weight of 100 percent. As they currently incur a risk weight of 100 percent from their treatment as “other assets”, there is no capital impact from this change.

Proposed changes

45. Introduce new Table 4.11 to BS2A:

Loan-to-valuation ratio	Risk weight (%)	
	If there is lender’s mortgage insurance that qualifies under section 38	If there is no lender’s mortgage insurance or lender's mortgage insurance that does not qualify under section 38
Does not	35	35

exceed 80%		
Exceeds 80% and not 90%	35	50
Exceeds 90% and not 100%	50	75
Exceeds 100 %	100	

46. It is proposed to remove the following section 36(2) from BS2A:

“Residential mortgage loans with loan-to-valuation ratios of more than 100% are treated as “other assets” and risk weighted at 100%.”

Question 10

Do you have any comments on the proposed changes?

Distinction between a residential mortgage exposure and other types of exposures

47. Banks are required to assign each exposure to the appropriate asset class for the purposes of calculating capital requirements. This classification is important because the nature of credit risk differs across asset classes and accordingly minimum regulatory capital requirements are calculated differently for each asset class. In our view, the existing definitions of the residential mortgage asset class in BS2A and BS2B do not sufficiently define the boundaries of this asset class. In particular, we consider more clarity is needed about the following: exposures commonly referred to as ‘lifestyle blocks’; properties that are used for both residential and commercial use; and residential properties that include multiple dwellings. We consider more clarity in these areas will improve the alignment of capital requirements with risk, and increase the consistency of asset class classification across locally incorporated banks.

48. We maintain the following risks are relevant for distinguishing between asset classes:

- Potential movements in the value of the loan security.
- Potential changes in the ability of the borrower to service the loan.

Lifestyle blocks

49. First we consider whether the value of the security is more likely to move in line with the house prices or with farm land prices. One way to do this is to assume that, if the security is used primarily for residential purposes, then its value would move with house prices and it should be classified as a residential mortgage. A potential problem with this approach is that the test of ‘primarily’ is subjective and may be applied differently by different banks or even different lending officers. A more objective test of the security purpose could be achieved by applying rating definitions (e.g. if the property is classified as residential for the purposes of rating then it is also classified as residential for the purposes of capital). A potential problem with this approach is the cost of capturing the rating definition in bank systems.

50. Second we consider whether the ability of the borrower to service the loan is more closely aligned with a ‘household income’ or ‘farm income’. A simple test of this could be to determine whether the borrower is reliant on the income generated by the property to make principal and interest repayments, which would indicate the property should be classified as a farm.

51. On balance we conclude that, while there are potential practical problems determining whether the value of the security is more likely to move more in line with housing prices compared to farm land prices, it should be relatively straightforward to test whether the borrower is dependent on farm-related income to make principal and interest repayments. We therefore propose that, where the borrower is predominantly reliant on the income generated by the property (the farm) to make principal and interest repayments, it should not be treated as residential property for capital adequacy purposes.

Properties used for both residential and commercial use

52. In our view, the issues for these types of exposure are conceptually similar to lifestyle block issues discussed above. We therefore propose a similar solution. In particular we propose that, if the borrower is reliant on the income generated by the commercial property to make principal and interest repayments, then the exposure is treated as a business for capital adequacy purposes.

Residential properties that include multiple dwellings

53. The value of the loan security for these exposures will clearly move in line with house prices. The more relevant test is whether the ability of the borrower to service the loan is similar in nature to the ability of a borrower that puts up just a single dwelling as security.
54. In our view there are two options. The first option is a solution similar to what we propose for lifestyle blocks. That is, if the borrower is dependent on the income generated by the residential property dwellings to make principal and interest repayments, then the loan is treated as a business rather than a residential mortgage loan.
55. The second option is to set a limit on the number of dwellings that can be included in a residential mortgage loan. Under this option, if there are more than four dwellings used as security by the borrower, then the exposure(s) is business rather than residential mortgage. This second option is intended as a more pragmatic solution that recognises some borrowers invest in a second, third or fourth house while continuing in their usual occupation, but as some point (which we propose to be dwelling number five) the investment becomes a business rather than a supplementary source of income. We anticipate this definition would be easier for banks to administer than option one.

Proposed changes to capital adequacy standards – BS2A

56. We propose making the following changes to section 43(e) of BS2A to reflect the solutions proposed above.

“Residential mortgage loan” means a loan fully or partially secured by a first ranking mortgage over a residential property used primarily for residential purposes either by the mortgagor or a tenant of the mortgagor.

If the security is used in part or in full for farming or business activities, and the borrower is reliant in part or in full on income generated by farming or business activities to service principal or interest repayments then the loan cannot be classified as a residential mortgage loan.

If bank has recourse to more than four dwellings owned by the borrower then the loan cannot be classified as a residential mortgage loan.

Proposed changes to capital adequacy standards – BS2B

57. We propose making the following changes to section 4.7(a) of BS2B to reflect the solutions proposed above.

Exposures secured by residential mortgages

Residential mortgages are eligible for retail treatment regardless of exposure size. “Residential mortgage loan” means a loan fully or partially secured by a first ranking mortgage over a residential property used primarily for residential purposes either by the mortgagor or a tenant of the mortgagor.

If the security is used in part or in full for farming or business activities, and the borrower is reliant in part or in full on income generated by farming or business activities to service principal or interest repayments then the loan cannot be classified as a residential mortgage loan.

If bank has recourse to more than four dwellings owned by the borrower then the loan cannot be classified as a residential mortgage loan.

Question 11

Do you agree the capital adequacy requirements need to change to provide more clarity about the distinction between the residential mortgage asset class and other asset classes?

Question 12

Do you agree that lifestyle blocks; properties that are used for both residential and commercial use; and properties that include multiple dwellings are the most important boundary issues relating to the residential mortgage asset class?

Question 13

Do you agree with our proposal that the distinction between asset class types should generally be based on the source of the funds used to service the loan?

Question 14

Do you agree that if bank has recourse to more than four dwellings owned by the borrower then the loan should not be classified as a residential mortgage loan?

Question 15

Do you agree that if the security is used in part or in full for farming or business activities, and the borrower is reliant in part or in full on income generated by farming or business activities to service principal or interest repayments, then the loan cannot be classified as a residential mortgage loan?

Question 16

Please state the capital impact of the proposed changes to BS2A or BS2B for your bank (as at December 2012 and June 2013).

II Internal Model Requirements

58. The methodology IM banks must use when calculating capital requirements is set out in BS2B. These state that accredited banks may only use internal models that have been approved by the Reserve Bank. This is fully in line with international guidance as per the Basel Committee's Basel II requirements. There are two aspects of our current process that sit outside of BS2B that we intend to bring into BS2B. The first is the process that IM banks need to follow when seeking Reserve Bank approval for a model change (or a new model). The second is to the way in which approved models are handled within conditions of registration. Neither of these aspects introduce new policy requirements on IM banks: they simply formalise existing requirements.
59. To date, the types of model changes that require the Reserve Bank's approval and the information that needs to be provided as part of a model change submission have been communicated to IM banks by way of letter. These requirements have been updated from time to time, and most recently in July of this year.
60. The model change submission and ongoing requirements were originally done by way of letter rather than being embedded in BS2B because when the IM framework was established in New Zealand it was thought that our requirements may evolve through time as our experience with the IM framework grew. We are now at a point where it makes sense to formalise the requirements. Moreover, the current process of imposing the requirements does not reflect the importance the Reserve Bank places on the responsibilities of IM banks that go along with their ability to operate under an internal models framework. As these requirements are already an integral part of the internal models approach, we intend to include them in BS2B and thus form part of a registered bank's conditions of registration.
61. For the most part, this proposal merely formalises existing requirements, and therefore the Reserve Bank does not expect their incorporation into BS2B to lead to significant costs for IM banks. However, we have recently also required IM banks to submit four consecutive data points and to calculate the IM capital outcome under the standardised approach as well as the internal model approach. The Reserve Bank understands that this may require some changes to IT systems. The Reserve Bank will engage with IM banks to establish how long such system changes are likely to take, along with any proposals for interim solutions.
62. The Reserve Bank also understands that the requirements to provide four consecutive data points might not be feasible for wholesale portfolios that are only re-rated once a year. The aim of the requirement is to assess the model's performance through time, and in the absence of the availability of parallel runs due to IT systems issues. With that in mind, the Reserve Bank accepts that not all aspects of a model may be easily updated often enough. However, in practice most models combine qualitative components such as customer specific Q&A criteria with a quantitative part. While it may be difficult to update the qualitative aspects more than once a year, it should generally be feasible for a bank to update the quantitative aspects more frequently. Once again, the Reserve Bank is willing to discuss with banks possible solutions to this particular issue.

Compendium of models

63. The Reserve Bank also wishes to establish a record of models with each IM bank. The aim is to have an improved formal record of the models banks have been approved to use and to ensure that model changes can be handled efficiently. For this purpose, the

Reserve Bank proposes a compendium of models with each bank which includes key model specific information (see appendix 2 for a draft compendium). This compendium would not be made public but it would form part of an IM bank's conditions of registration, similar to the compendiums banks have with the Reserve Bank for prepositioning for an OBR event.

64. The information to be included in the compendium would be basic, factual model specific information. As shown in the proposed template, it ranges from the name of the model and approval date to key risk drivers and key model parameters. This should help to further reduce the scope for misunderstandings between the Reserve Bank and IM banks about which version of a model a bank has been accredited to use for its capital adequacy calculation. In addition, having the key information ready at hand is also likely to help in assessing new model change requests by facilitating turn around times.
65. Model changes would be dealt with by updating the compendium but not the conditions of registration. The condition of registration, as drafted below, would only refer to the compendium in general but not to any specific version. However, operating a model that is not approved would be a breach of the condition of registration.
66. The draft new section in the conditions of registration for IM banks would read as follows:

New condition of registration

"That the registered bank maintains a compendium of internal models with the Reserve Bank that –

- (a) At the portfolio level lists the latest approved version of the registered bank's EAD, PD and LGD model (where relevant) used for calculating the capital adequacy requirement, including the model's
 - (i) name
 - (ii) approval date and version number
 - (iii) key risk drivers
 - (iv) key parameters
 - (v) impact on RWA and overall portfolio RWA at the time of model approval
 - (vi) conditions of approval; and
- (b) Is agreed by the Reserve Bank."

Question 17: Do you agree that the model change submission requirements should be contained in BS2B?

Question 18: Are there any costs that your bank would incur if the model change requirements were incorporated in BS2B? If so, please explain what they are and why they would be additional to the costs you currently incur when making a model change submission.

Question 19: Do you think a model compendium would be useful as a reference record between the Reserve Bank and the IM bank?

Question 20: What are the costs to you of establishing and maintaining a model compendium that forms part of your conditions of registration? How do those costs compare against the benefits associated with a compendium?

Consultation timetable

67. Stakeholders are invited to provide feedback to the consultation questions or in a more general format by 25 October 2013. It is currently envisaged that the new requirements will take effect in Q1/2014, although this is subject to feedback on required system changes.

Appendix 1

New Section in BS2B

Types of changes

Banks must advise the Reserve Bank of all proposed changes to their estimates and models *ex ante*. There are two types of changes:

- a. Periodic changes driven by new data (e.g. changes reflecting compositional changes in the loan book). The Reserve Bank should be informed of these, so it can consider whether they need to be approved. In principle compositional changes are not likely to need approval. Notification of these changes provides the opportunity to check for plausibility to satisfy the Reserve Bank that they do relate to compositional shifts, and to track changes through time.
- b. Changes to model structures, estimates or judgments (including any changes proposed to PD, LGD and EAD estimates). This includes the recalibration of a model due to, for example, portfolio changes or the omission or addition of variables. These changes are subject to the formal submission timing set out described below.

Content of submissions

Submissions must clearly set out the following in relation to each proposed change:

- a. The rationale for the change, including the reasons as to why the new model is an improvement on the existing model, and supporting material.
- b. 'Before' and 'after' comparisons with respect to the risk parameters affected (PD, LGD, EAD). Unless otherwise agreed, these comparisons should cover at least four consecutive periods, e.g. quarters or at the half year.
- c. The risk weighted asset² and regulatory capital impacts, and how these impacts are calculated.
- d. Any linkage to the bank's ongoing accreditation requirements.
- e. Confirmation that what is proposed is consistent with the bank's conditions of registration.
- f. Any known industry-wide issues relating to the change.
- g. A comparison with the capital outcome under the standardised approach.

² Information on risk weighted assets should include the impact in terms of dollars (e.g. 'increase from \$10m to \$12m') and as a percentage of exposures (e.g. 'increase from 20% to 24%').

Appendix 2

Model compendium template

Illustrative Compendium of Models					
Date					
Model	Date approved	Key risk drivers	Key parameters	Capital impact and RWA when approved	Conditions of approval
Credit risk					
Corporate					
Corporate LGD (version X)	Jun-12	Interest rate	Downturn LGD = X%	+\$Xm capital impact RWA = X%	None
Large agribusiness rural PD (version X) Mathematical model that mimics the outcome based on expert judgement.	Jan-13	Profit record	Long run PD: X% Central Tendency: X%	+\$Xm capital impact RWA = X% when approved.	PD must not fall below X%
Sovereign					
Sovereign LGD (version X) Expert judgement and statistical model	Mar-09	Sovereign credit rating	Downturn LGD = X%	-\$Xm capital impact RWA = X% when approved	None.
Bank					
Retail					
Residential mortgages PD (version X)	Mar-11	Interest rate	Long run PD: X% Central Tendency: X%	+Xm capital impact. RWA = X%	PD must not fall below X%.
Credit cards PD and LGD (version X)	Jun-10	Application score	Long run PD: X% Central Tendency: X% Downturn LGD = X%	Neutral capital impact. RWA = X%	None.
Equity					
Operational risk					
AMA operational risk	Dec-11			\$Xm	Subject to a floor of \$Xm for operational risk capital
Market risk					

The compendium should include the following information for each model:

- Model name (as reported in the internal documentation supplied to the Bank) and a brief description of the model.

- Version number of the model: this should be the version number of the model document submitted to the Reserve Bank and will be the one that has also gone to the most senior internal group that authorised the submission of the model change request to the Bank.
- Date approved: the date the bank received official confirmation from the Reserve Bank of New Zealand to use the model.
- Key risk drivers: the key variables that drive the outcomes in the model, for example interest rates.
- Key parameters: the key outcomes expected from the model, the example, the long-run expected PD, the downturn LGD etc.
- Capital impact when approved: the change in capital that occurred when the model was approved.
- RWA when approved: the resultant RWA of the relevant portfolio or sub-portfolio when the model was approved.
- Conditions of approval: any conditions that the Bank may impose at time of approval. Without limiting the type of conditions that may be imposed, these could include a capital floor, a requirement that a variable stays within a certain band, an RWA floor etc.