The Review of the Rules for Cadastral Survey

Companion document for consultation on draft Rules

10 February 2020

New Zealand Government

Foreword

I am delighted to present the draft Cadastral Survey Rules 2020 for your feedback.

Over the last couple of years we have put considerable effort into this work and completed two stages of consultation. We obtained initial feedback on the Issues and Opportunities paper (August 2017), followed by a second round of consultation on proposed changes, in two parts: Stage 2 - Part 1 Consultation document (July 2018), and Stage 2 - Part 2 Consultation document (January 2019).

I particularly appreciate the feedback received from surveyors and the Surveyor Reference Group through those rounds of consultation. This enabled us to decide what the proposed rules were going to require without actually drafting them, and therefore avoid being distracted by the detail.

Over the last few months we have worked closely with the Parliamentary Counsel Office to draft the actual rules. It is now important to make sure that the draft Rules accurately reflect those decisions and confirm that they will be useable by surveyors. It is also important to review the additional changes and proposals made since the last round of consultation.

While the main focus to date has been on surveyors, I am also keen to ensure that other users of cadastral surveys and cadastral survey datasets have the opportunity to review these proposed Rules.

This document is intended to be read in conjunction with the draft Rules and explains the proposals and decisions that have been made as a result of the Stage 2 consultation. It also includes a number of changes made in the draft Rules that were not included in the Stage 2 consultation.

We have put significant effort into addressing the feedback and explaining the reasons for those decisions, either in the Stage 2 documentation or in this document. Any opposing feedback on those matters should be focussed on new information or incorrect assessments. I would particularly appreciate your feedback on the accuracy, clarity and understandability of the draft Rules, as surveyors have indicated significant concern over these aspects with the current Rules.

The Rules are likely to require further adjustments in the next few years (eg. to fully support the 3D cadastre). However I am hopeful that the clear and concise requirements, logical structure, and the new focus on the use of the survey network and GNSS technologies will provide an enduring yet agile platform and enable surveyors to confidently undertake cadastral surveys.

I look forward to your feedback!

Ngā mihi nui

Anselm Haanen
Surveyor-General / Kairūri Matua

Have your say on the draft Cadastral Survey Rules 2020

The Surveyor-General is now seeking feedback on the draft Cadastral Survey Rules 2020.

Your feedback

1. Feedback can be provided by:

   (a) Submitting an individual or collective written submission.

   (b) Contributing to a submission from an organisation or professional body.

2. It would be helpful if feedback:

   (a) refers to the section number in this document or rule number.

   (b) includes the reason behind your comments, possibly through citing an example.

3. Email written feedback to: sgrulesreview@linz.govt.nz

Submissions close Monday 30 March 2020

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Enquiries

Email: sgrulesreview@linz.govt.nz

Contents

1 Overview

1.1 The purpose of this document

This document is designed to be read in conjunction with the draft Rules. It explains the rationale and thinking behind the rules where a proposal has not been widely supported during stage 2 consultation. It also explains why a proposal has not been included as a result of the feedback on stage 2.

There was strong support for the proposals relating to unique identifiers for boundary points, date of survey, non-primary parcels over water, recording surrendered easements, appellations for unit parcels and merging of reference marks. Further explanation on those proposals is not included in this document.

During the drafting we have also identified a number of other significant changes that will further simplify the rules, deliver cost and time savings – and deliver the required outcomes. These other key changes are documented in sections 12, 13, 14 and 15.

A summary of all changes is included in section 16.

1.2 Overview of the Rules review process.

Figure 1 below illustrates the overall process and indicative timing.

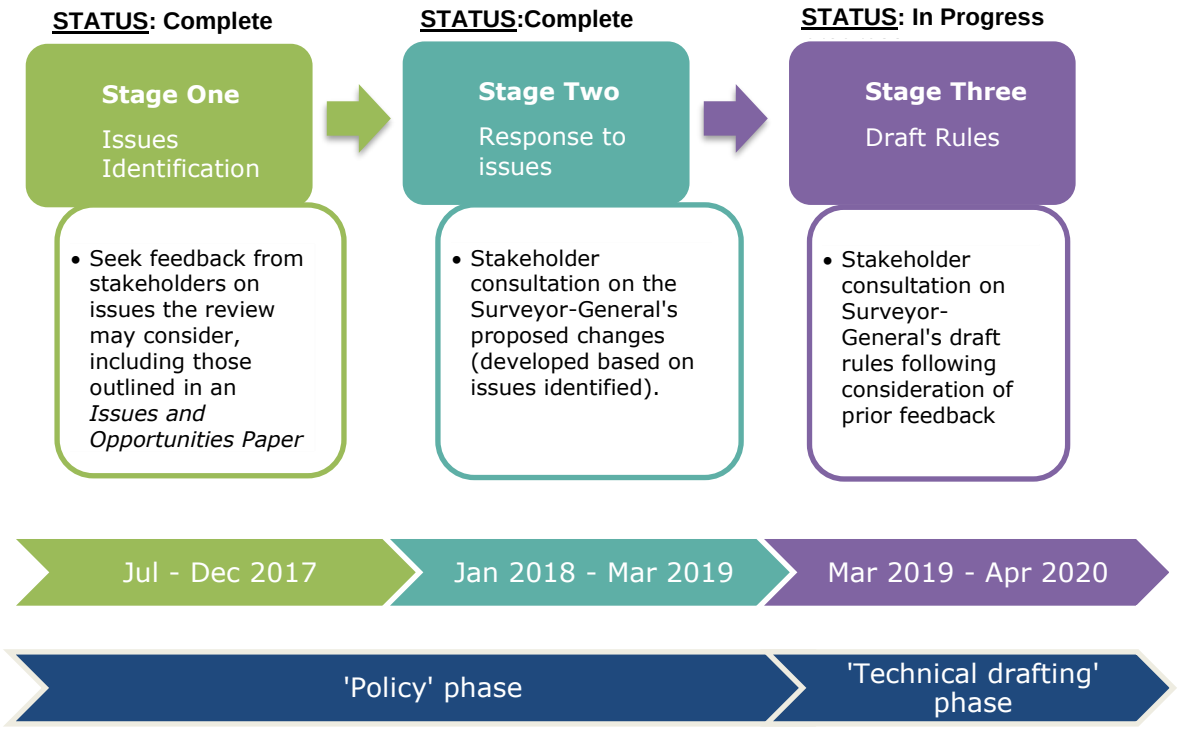

Figure 1: Review consultation process

1.3 Matters to consider

When reviewing the Rules and providing your feedback, please consider the following questions:

- Are the requirements laid out in a logical manner and easily located?
- Are the rules written in a clear and concise manner that will assist interpretation and compliance?
- Does the use of decision trees help with interpretation of the rules?

Please also provide any comments you may have on the implementation of these Rules, and the transition from the current Rules.

1.4 Useful links

Further information can be found by searching for 'Rules Review' on the LINZ website and using the following links:

- Review of the Rules for Cadastral Survey – Issues and Opportunities paper.
- Review of the Rules for Cadastral Survey – Consultation on proposed changes Stage 2 – Part 1.
- Review of the Rules for Cadastral Survey – Consultation on proposed changes Stage 2 – Part 2.
- Rules for Cadastral Survey 2010.
- Rules, Standards and Guidelines for the conduct and processing of cadastral surveys, and for the integration and provision of cadastral survey data.

2 Connection to a horizontal control mark or vertical control mark

2.1 Summary of original proposal

2.1.1 Horizontal connection to a CSNM

1) During the Stage 2 Part 1 consultation, it was proposed that when defining a new primary parcel, all class A surveys would be required to connect to a cadastral survey network mark and all class B and C surveys would be required to connect to a cadastral survey network mark, if such a mark was located within 5,000 m of the parcel.

2) As a result of feedback received, the initial proposal was revised. During the Stage 2 Part 2 Consultation, it was proposed that when defining a new primary parcel, all surveys would be required to connect to a cadastral survey network mark, if it was within 1,000 m. If no cadastral survey network marks existed within 1,000 m, a connection would be required to be made at any distance.

2.1.2 Referencing in terms of an official vertical datum

3) During the Stage 2 Part 1 Consultation, it was proposed that where a new stratum boundary was being defined, the survey must be referenced to an existing non-boundary mark with an official NZVD2016 reduced level, if such a mark was located within 5 km of the boundary. If no non-boundary marks with official NZVD 2016 heights existed within 5 km of the boundary, a connection would be required to be made at any distance.

4) As a result of feedback received, the initial proposal was revised. During Stage 2 Part 2 Consultation, it was proposed that when defining a new stratum boundary, its height would be required to be in terms of an existing vertical control mark if one existed within 1,000 m of the new stratum boundary. If no vertical control marks existed within 1,000 m of the boundary, the height would be required to be in terms of a vertical control mark at any distance.

2.2 Summary of feedback

2.2.1 Horizontal connection to a CSNM

5) Most submissions supported connection to a cadastral survey network mark located within 1,000 m of boundary points or marks on a primary parcel being created. However, a small number of submissions opposed connection to any cadastral survey network mark regardless of distance. Reasons for this opposition include the following:

- The proposal won't improve boundary definition, which provides direct benefit to landowners. Instead, it will improve the accuracy of the integrated (digital) cadastre, which provides benefit to the wider public.
- The proposal will predominantly affect rural areas, where most surveys would be required to connect to a cadastral survey network mark at any distance. This is unreasonable for small firms who can't afford to equip each field party with GNSS, and for surveyors who don't use GNSS;

- Cadastral survey network mark coverage isn't as good in rural areas as it is in urban areas, and the proposal suggests that LINZ expects surveyors to expand the cadastral survey network at their client's expense rather than at LINZ's expense; and
- The current connection distances are reasonable and work well, as evidenced by the fact that the number of CSDs connecting to a cadastral survey network mark is increasing year-on-year.

2.2.2 Referencing in terms of an official vertical datum

6) One submitter raised concerns about the accuracy of reduced levels derived from vertical control marks located over 1,000 m away due to geoid – ellipsoid separation in areas of poor survey control. This submitter suggested that an assumed site datum should be established in those circumstances.

7) One submitter supported the proposed requirement to use NZVD2016 for all levels but opposed the proposed requirement to connect to any vertical control mark regardless of distance.

8) One submitter noted that the vertical mark connection requirement seemed to detract from the basic principle of having nearby height reference marks which enable vertical boundary points to be re-established in the future, and noted that connection to vertical control marks at significant distance will not assist in cases of earthquakes or localised ground movement events.

2.3 Draft rule

2.3.1 Horizontal connection to a CSNM

Draft rule 24: Horizontal datum - connection

2.3.2 Referencing in terms of an official vertical datum

Draft rule 25: Vertical datum

2.4 Response to feedback

2.4.1 Horizontal connection to a CSNM

9) The requirement to connect to any cadastral survey network mark regardless of distance is primarily intended to improve spatial accuracy of the integrated (digital) cadastre. The Surveyor-General considers that this results in efficient allocation of costs for the purposes of s7(2)(c) of the Cadastral Survey Act 2002 for two reasons:
   - Landowners rely on the services of surveyors, solicitors and other land development professionals, who are increasingly reliant on the integrated cadastre in the course of their work. Improvements to the accuracy of the integrated cadastre make this work more efficient, which should indirectly benefit landowners; and
   - The integrated cadastre is increasingly available to the public, through territorial authority GIS maps, Google Maps, and other similar systems. Inaccurately mapped boundaries have the potential to create uncertainty when combined with other spatial information, and can cause disputes between landowners. Landowners who have

surveys carried out will reasonably expect their boundaries to be accurately mapped in public systems which they can access.

10) Submissions correctly noted that the proposal to connect to any cadastral survey network mark regardless of distance will predominantly affect surveys in rural areas. However, it is particularly important for surveys in rural areas to be connected to cadastral survey network marks. Rural areas are typically the least accurate areas in the integrated cadastre because they were historically derived from the DCDB.

11) Surveyors' widespread adoption of GNSS technology (e.g. PositioNZ post processing service), with the high level of accuracy that it can deliver, mean that it has now become cost effective to accurately map boundaries over very large distance without the historical need for connection to the local control network.

12) Overall, the proposal will affect very few surveys. The fact that the number of CSDs connecting to a cadastral survey network mark has been increasing year-on-year suggests that the new requirements are not onerous.

2.4.2 Connection to a vertical datum

13) Demand for a 3D cadastre is increasing, particularly in cities where numbers of unit title developments are increasing. The new rules will facilitate the development of a 3D cadastre, which is planned to be implemented in the Landonline Enhancement (STEP) programme. The success of a 3D cadastre will depend on all cadastral surveys which define a stratum boundary being in terms of an official vertical datum, and the only way to achieve this is through the proposed connection requirements.

14) The proposed connection requirements are not intended to detract from the basic principle of having nearby height reference marks which enable vertical boundary points to be re-established in the future. The reference marks requirements are in draft rules 37(c), 38, 39 and 40. The datum and connection requirements in draft rule 25 apply in addition to, rather than in substitution for those rules.

15) A local datum that is an official vertical datum may still be used when necessary to satisfy local authority requirements.

16) Most stratum boundaries are created in urban areas, where there is a dense and well distributed network of NZVD2016 marks. This should enable surveyors to comply with the proposed accuracy and connection requirements efficiently.

2.5 Additional changes

17) For staged developments where earlier stages are in terms of an assumed or unofficial datum, the following changes will apply (rule 60):

- A common datum must be used for all stages of the development, to prevent confusion by users;
- The survey must be connected to a vertical control mark that is given a reduced level in terms of the same datum as the CSD.
- New stages will be required to reference heighted PRMs that exist and are reliable, to ensure that boundaries can be relocated in the future (rule 57(1), (4) & (5));

3 Accuracy Standards

3.1 Summary of original proposal

18) During the Stage 2 Part 2 consultation, the following proposals were made in relation to accuracy standards:

- Having one tier of accuracy standards rather than separate 95% and 100% confidence level standards;
- Simplifying accuracy standards for boundary points and non-boundary marks to distance based ratios with fixed components;
- Using the slope distance rather than vertical distance in distance-based ratios for vertical accuracies of boundary points and non-boundary marks;
- Reducing the maximum horizontal and vertical accuracy tolerance for non-boundary marks from 0.50m to 0.20m;
- Reducing the horizontal accuracy tolerance for witnessing class A boundary points from 0.04m to 0.03m, while retaining a vertical accuracy tolerance of 0.04m;
- Removing the 0.04 m 95% accuracy tolerance for class A boundary points defined by survey in favour of the universal 0.06m boundary tolerance that includes adoptions;
- Not requiring the use of accuracy classes for water or irregular boundaries, while retaining the requirements in current rule 3.4; and
- Providing pragmatic accuracy requirements for the intersection of right-line and water or irregular boundaries.

3.2 Summary of feedback

3.2.1 Horizontal accuracy

19) Most submissions supported the proposal to move to a single tier of accuracy standards, and to simplify the accuracy standards to distance based ratios rather than retaining the current 'least squares' standards. Submissions noted that these changes would make determining compliance more straightforward, particularly in the field.

20) Most submissions also supported the proposal to have no accuracy classes for water and irregular boundaries.

21) Submissions were mixed in relation to the actual accuracy tolerances. Notable feedback is as follows:

- The proposed tolerances for vectors between boundary points in class A and B surveys appear to be loose.
- The proposed tolerance for witnessing of class A boundary points (0.03m) may be difficult to achieve with GNSS and will require the use of total stations, increasing survey costs.
- The rationale for highly accurate class A witnessing requirements appears to be flawed, because the tolerances for vectors between boundary points are comparatively loose.
- The proposed tolerances for witnessing class B and C boundary points (0.20m and 0.60m respectively) is loose and could realistically be halved.

- The proposed tolerance for non-boundary vectors of 0.025 + (dist. x 0.0001) m may be difficult to achieve in practice, particularly over short lines.

3.2.2 Vertical accuracy

22) Three submissions were received in relation to vertical accuracy standards. One submission partially supported the proposal, and two submissions opposed the proposal:

- Separate tolerances shouldn't be used for horizontal and vertical accuracy.
- Relaxed tolerances for vertical accuracy suggest GNSS will be used when traditional levelling techniques may be more appropriate.
- The introduction of slope distance in the calculation of boundary vector tolerances is inappropriate and may confuse surveyors.

3.3 Draft rule

Draft rule 26: Accuracy of non-boundary marks

Draft rule 32: Accuracy of boundary points

Draft rule 34: Accuracy of Boundary referencing

Draft rule 35: Accuracy of water, centre-line, and irregular boundaries

Draft rule 36: Accuracy of intersection of water, water centre-line, and irregular boundaries

3.4 Response to feedback

3.4.1 Horizontal accuracy

23) It is desirable to have one tolerance that boundaries must meet, regardless of whether the boundary points are newly placed or adopted. However, the tolerances must be set appropriately to ensure that adopted boundary vectors will be compliant.

24) Despite the reduction in boundary tolerances, it is desirable to retain the current accuracy for new class A boundaries. To retain the current levels of accuracy, the tolerance for witnessing class A boundary points must be reduced to 0.03m. This witnessing tolerance is also important to enable accurate boundary reinstatement in the future.

25) Although the proposed tolerances for witnessing class B and C boundary points are loose, they are intended to reflect the needs of landowners. In a rural environment, where land parcels are large and fences are located in a pragmatic manner, there is no real need for greater accuracy. However, if better accuracies can reasonably be achieved in the field without increasing survey costs, there is no reason why surveyors should not work to better accuracies.

26) The proposed tolerance for non-boundary vectors is intended to promote a strong non-boundary network from which pegs can then be placed – regardless of the class and allowing for moving to a more accurate class in future. In effect this fits with the concept of 'working from the whole to the part'. Although the tolerance may be perceived as difficult to achieve, it has the same effect as current rule 3.1(a) and is more relaxed than the tolerance which applied under the Rules for Cadastral Survey 2002/2.

3.4.2 Vertical accuracy

27) The drivers for vertical accuracy are not the same as for horizontal accuracy, and there is no need to require vertical accuracy to be the same.

28) The rules are intended to give surveyors flexibility in how they determine their survey methodology. The use of GNSS may be appropriate in some cases and will increasingly be used to satisfy requirements to connect to a vertical datum.

29) Although several submissions opposed the introduction of slope distance in the calculation of boundary and non-boundary vector tolerances, this proposal was made to ensure that the tolerances are more readily achievable over longer distances with shallow gradients.

3.5 Additional changes

30) It may be difficult to comply with the proposed tolerance for non-boundary vectors when adopting vectors to CSNMs to satisfy horizontal connection requirements. In response the Surveyor-General has decided to include a new tolerance for vectors between new or old non-boundary marks and adopted CSNMs (0.025m + (dist. x 0.00015). In effect, this means that the maximum allowable error (0.20 m) will be reached at 1167m.

4 Accuracy of non-primary parcels

4.1 Summary of original proposal

31) During the Stage 2 Part 1 consultation, it was proposed that new non-primary parcels would not always need to be accurately defined in terms of the underlying primary parcel boundaries. This would allow new non-primary parcels to be accurately defined in relation to permanent reference marks, rather than in terms of the underlying primary parcel boundaries.

4.2 Summary of feedback

32) The submissions in support of the proposal noted that it simplifies existing requirements and will make compliance easier. The submissions opposed to the proposal noted that it transfers the cost of the easement survey from the beneficiary of the easement to the underlying landowner when they subdivide their land in the future. The submissions in partial support saw benefits in the proposal, but made a number of comments as follows:

- Compliance costs may increase because of the requirements for NZGD2000 orientation, connection to cadastral survey network marks, and provision of reference marks which wouldn't be required if the relationship between the primary and non-primary parcel boundaries was determined accurately;
- Care should be taken to ensure that class D boundaries are not used where the relationship between primary and non-primary parcels can reasonably be defined in terms of the applicable accuracy standards for the underlying parcel boundaries;
- It isn't clear how easements defined in accordance with the proposal would relate to existing non-primary parcels that are not affected by the survey;

- There should be no need to connect to reference marks in the same manner as other surveys. It should be sufficient to connect control marks to Class C boundary points at the extremities of the non-primary parcels being surveyed.

4.3 Draft rule

Draft rule 49: Class A and B non-primary parcels with inaccurate relationship to underlying parcel

Draft rule 50: Class C

Draft rule 52: Class with inaccurate relationship to underlying parcel

4.4 Response to feedback

33) Class D accuracy standards for non-primary parcels are intended to provide surveyors with an option which may reduce overall survey costs. Surveyors will have a choice as to whether they use Class D accuracy standards or define the non-primary parcel boundaries in relation to the underlying parcel (as under the current rules, and in the draft Rules).

34) One submission noted that compliance costs could increase. Reasons for this include the need for NZGD2000 orientation, connection to a cadastral survey network mark, and provision of reference marks which would otherwise not be required. However, compliance costs will only increase if surveyors choose to use Class D accuracy standards for non-primary parcels in cases where primary parcel boundaries meet the applicable accuracy standards. In these cases, it would be more cost effective for surveyors to define non-primary parcel boundaries to the same accuracy standards as the underlying primary parcel boundaries.

35) No problems arise in cases where there are existing non-primary parcels. Surveys of non-primary parcels only are not currently required to identify or deal with existing non-primary parcels, and this will continue under the new rules.

36) Two submissions noted that there should be no need to connect to reference marks in the same manner as other surveys. These submissions particularly focused on improving the efficiency with which non-primary parcels can be defined over large rural parcels. For this reason, an alternative rule has been developed (see below) enabling the use of Class C accuracies.

4.5 Additional changes

37) The Surveyor-General has decided to retain the proposal. The draft Rules refer to an 'inaccurate relationship' between non-primary parcels and underlying parcels, and state that in certain circumstances the relationship may or must be 'inaccurately determined'. These provisions are similar to current rules 16 and 17.

38) In this case, the use of the term 'inaccurate' does not mean that the non-primary or underlying parcel boundaries should be incorrectly positioned. Instead, it means that the mathematical relationship between the non-primary and underlying parcels does not need to be determined.

39) The Surveyor-General has also decided to change the number of reference marks required. The number of reference marks required will be aligned with reference mark requirements for primary parcels.

40) Alternative rules have been developed for the creation of non-primary parcels using Class C accuracies. This will enable Class C accuracies to be used for non-primary parcels for

easements over existing primary parcels held in a single estate record with an area greater than 100ha.

41) In these situations, the non-primary parcel can be referenced to cadastral survey network marks, which can be adopted, without the need to use PRMs (rule 52).

4.6 Application of Rule 49

42) Rule 49(1) allows for the relationship between a non-primary parcel and its underlying parcel to be inaccurately determined where an underlying parcel boundary does not meet the applicable accuracy standard. Inaccurately determined boundaries must be class D. Figure 2 below illustrates this concept.

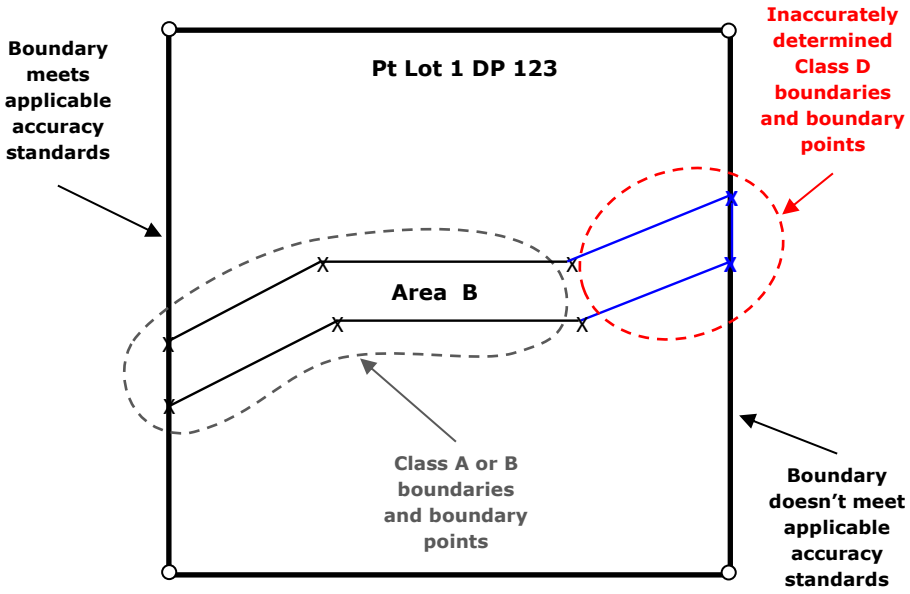

Figure 2: Application of Rule 49 where some boundaries don't meet the applicable accuracy standards

43) Where none of the boundaries meet the applicable accuracy standard every boundary point that is not class D must be connected by vectors to at least one PRM. Figure 3 below illustrates this concept.

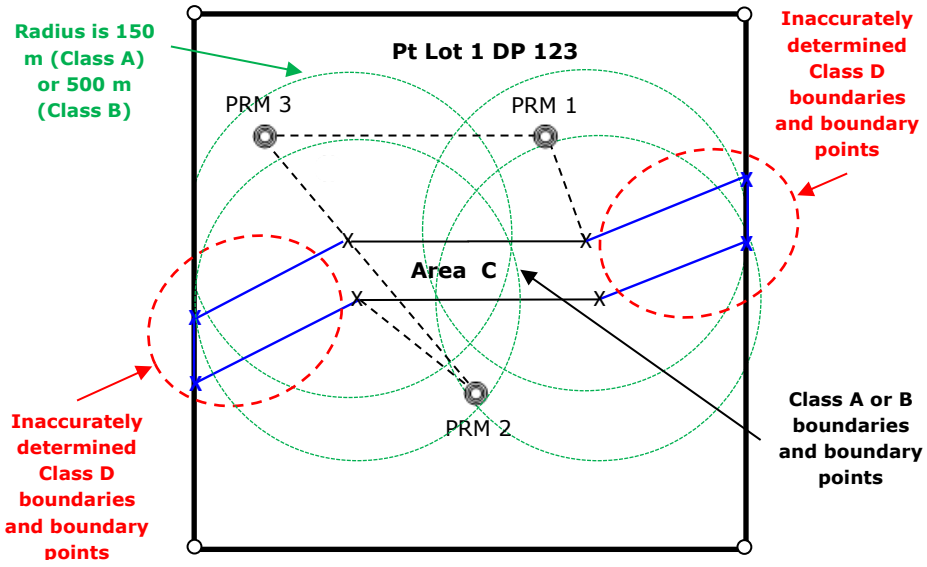

Figure 3: Application of rule 49 where no boundaries meet the applicable accuracy standards

4.7 Application of class C

44) Rule 50(3) allows for class C accuracies to be used for boundaries and boundary points on easements created over parcels held in an estate greater than 100 hectares. Where class C has been used the relationship to the underlying parcel may be inaccurately determined irrespective of the quality of the underlying parcel boundary definition. Inaccurately determined boundaries must be class D. Where the relationship is inaccurately determined every boundary point that is not class D must be connected by vectors to a nearby cadastral survey network mark (rule 52(2)(e)). Figure 4 below illustrates this concept.

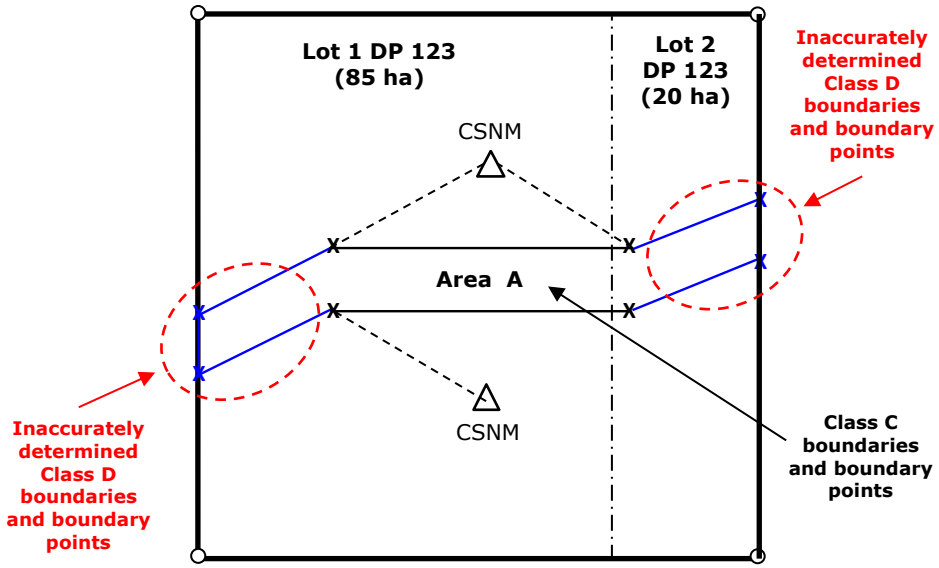

Figure 4: Application of Class C for non-primary parcels

5 Repackaging CSD Plan Information

5.1 Summary of original proposal

45) During the Stage 2 Part 2 consultation, it was proposed that all survey information in the current CSD Plan (including the Diagram of Survey) would be replaced by a digital 'Record of Survey'. Visualisation software would then use this information to produce a 3D view of the survey.

5.2 Summary of feedback

46) Submissions generally didn't oppose the concept of a record of survey; but noted that any visualisation applications must be tested and proven before such a change could be implemented. Some submissions opposed the proposal. Feedback included the following:

- Overall, the proposal appears to be premature and ill-conceived, and the loss of survey plans will have a negative effect on the cadastre;
- Survey plans are effective and well understood. Creation of survey plans is a relatively small proportion of the overall time and cost of a survey, survey plans are useful for a number of purposes, and survey plans can be printed for QA purposes and used in the field;
- Visualisation applications may not be practical for use in the field due to the need to use devices such as tablets. Tablets are constrained by screen glare, battery life, and are hard to use in conditions such as rain, cold temperatures and dirty locations;
- Introducing new tools and systems has the potential to increase compliance costs; and
- Many of the issues identified in the consultation document could be solved by improved plan generation functionality in Landonline.

47) Several submissions noted that until suitable visualisation tools are developed, it is difficult for surveyors to support or oppose changes when they don't know what the alternatives are.

5.3 Draft rule

Part 6, Subparts 2 and 3

5.4 Response to feedback

48) The Surveyor-General has decided not to proceed with the proposal to replace the requirements for a CSD Plan with a digital dataset. It is inappropriate to change the rules until surveyors have alternative and proven means of visualising the information in a CSD for various uses.

5.5 Additional changes

49) The Surveyor-General has decided to change the names CSD Plan, Diagram of Survey, and Diagrams of Parcel:

- CSD plan will now be called 'Record of Survey';

- Diagram of Survey will now be called 'Survey Diagram'; and
- Diagram of Parcels will now be called 'Title Diagram'.

50) Under the Rules for Cadastral Survey 2010 a significant amount of information is duplicated between the Diagram of Survey and the Diagram of Parcels. This reflects an aim that all the information a surveyor requires should be in the CSD Plan and Diagram of Survey; and that surveyors should not need to use the Title Plan and Diagram of Parcels. Compliance with the current requirements is achieved through Landonline bundling the title diagram with the survey diagram. The below table lists the current rules where duplication occurs:

Rule name	**Diagram of Survey**	**Diagram of Parcels**
Parcel information	9.6.3	10.4.2
Parcel information for a unit title development	9.6.4	10.4.3
Parcel information for a movable marginal strip	9.6.6	10.4.4
Water boundaries	9.6.7	10.4.5
Irregular boundaries	9.6.8	10.4.6
Permanent structure boundaries	9.6.9	10.4.7
Parcel annotations	9.6.11, 9.6.12	10.4.8
Boundary dimensions	9.6.14	10.4.9

51) Records of Survey will still include a Title Diagram so all survey and title information will continue to be available in the one location. However, the Surveyor-General has decided to remove tenure system information (boundary vectors, areas and legal annotations) from the Survey Diagram to avoid most of this duplication. The resultant standards are closer to those for the Survey Plan and Title Plan under earlier regulations (between 1972 and 2002). Historically title diagrams have depicted tenure information and survey diagrams have depicted survey traverses, adopted information for definition purposes and boundary marks placed.

52) Removal of most of the tenure system information from the diagram of survey will result in simpler rules aligned with surveyor practice and will facilitate the implementation of visualisation tools in the future when the STEP programme is sufficiently advanced.

53) Figure 5 below shows how CSDs will now be structured.

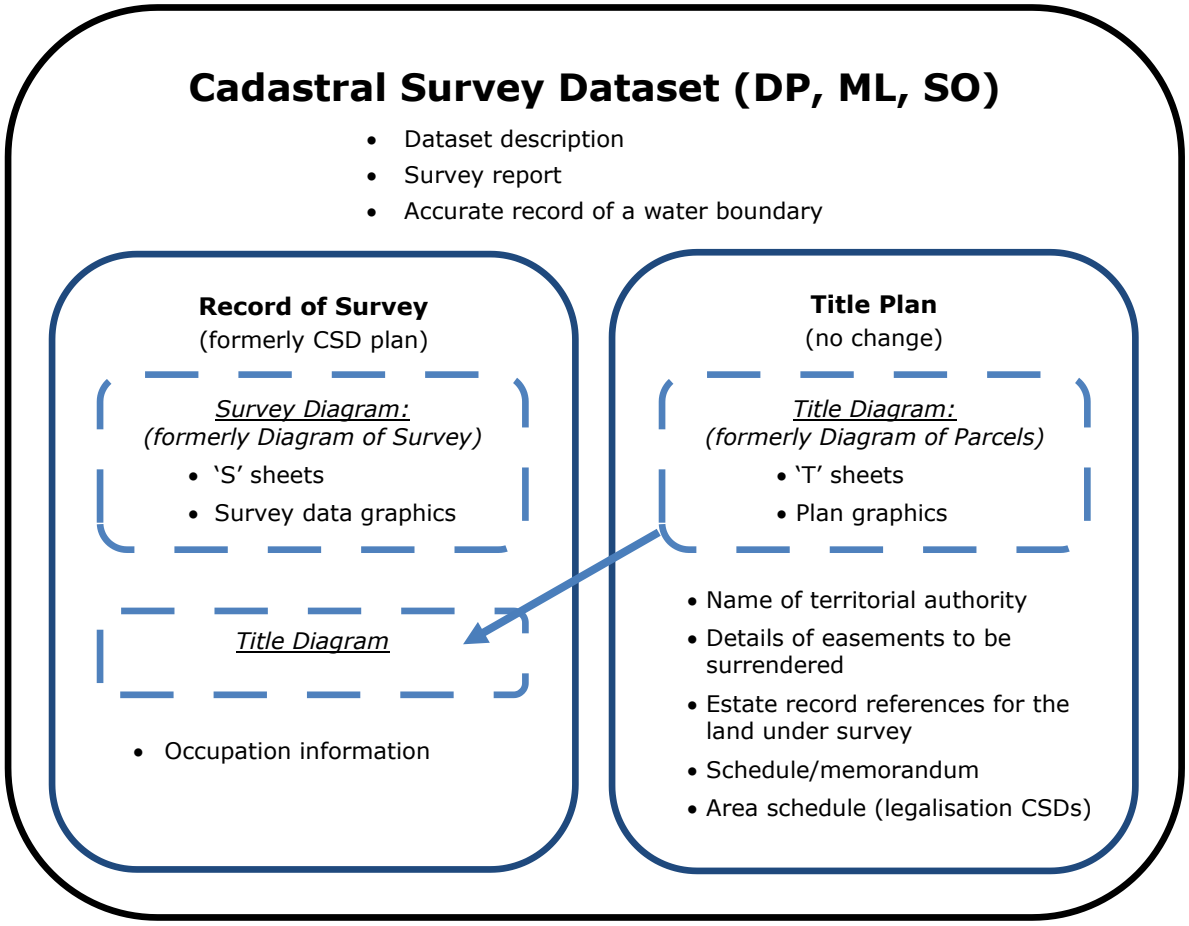

Figure 5: Components of a Cadastral Survey Dataset

6 Recording Survey Marks not found

6.1 Summary of original proposal

54) During the Stage 2 Part 2 consultation it was proposed that information about old survey marks searched for and not found, or found to be destroyed, would be included as smart data in the proposed 'Record of Survey'. This proposal was intended to create efficiency by enabling the digital capture and presentation of this information, as well as enabling the update of the digital cadastre to present the non-existence of these marks.

6.2 Summary of feedback

55) Several submissions noted that old marks searched for and not found may subsequently be excluded from the survey definition (i.e. not captured by adoption). These submissions queried how these marks would be treated if there was no requirement to record information about them in the survey report.

56) A number of submissions noted that survey marks often still exist despite not being located by a surveyor. Electronic data capture may give authority and weight to the assumption that the mark is missing. This is likely to make it easy for future surveyors to overlook such marks when planning their surveys and could result in poorer survey definition overall.

57) A number of submissions noted that survey reports should continue to have a section on old marks. Submitters felt that this is important because survey reports can record descriptive details about marks which electronic data capture can't; and noted that it isn't onerous to record information in the survey report as well as capturing it electronically. One submitter noted that providing this information saves considerable time and money for future surveyors and their clients.

6.3 Draft rule

Draft rule 70(h): Information to be included in survey report

Draft rule 80(5): Survey mark information

6.4 Response to feedback

58) It has been decided to partially retain the proposal. In accordance with draft rule 80, surveyors will need to capture all survey marks and points used for the purposes of the cadastral survey in the Record of Survey. However, if the marks are unable to be captured, draft rule 70(h) requires information about these marks to be included in the survey report.

59) Where a survey mark is recorded as searched for and not found the surveyor certifying the CSD must be certain the mark no longer exists.

60) The Rules as drafted strike a balance which will enable LINZ to make electronic information about the status of survey marks available to surveyors, while ensuring that survey reports still provide descriptive information about marks searched for and not found. Descriptive information about survey marks used for the purposes of the cadastral survey will still be able to be captured in line with current practice. Draft rule 70(h) does not preclude surveyors from including additional information about survey marks in the survey report, so if surveyors wish to include this information in the survey report they may do so.

7 Appellations for height limited parcels

7.1 Summary of original proposal

61) During the Stage 2 Part 2 consultation, it was proposed that where a parcel (other than a unit parcel) is constrained in height, that the appellation for that parcel would include a prefix such as 'Strata' or an alternative word reflecting this intent. This proposal was intended to make it clear to all users that the parcel is constrained in height, at a time when the number of such parcels is significantly increasing.

7.2 Summary of feedback

62) Overall, submissions supported the proposal. Several submissions noted a preference for appellations to be recorded as Lot 1 (Strata) rather than Strata Lot 1. One submission queried whether the proposal should be extended to units, as it is not well understood that units can be height limited, and another submission queried how non-primary parcels subject to height limited and non-height limited rights should be treated.

63) It was noted that the word 'Strata' is not suitable as it is liable to cause confusion with stratum estates created under the Unit Titles Act 2010, and that it is unclear whether the proposal is intended to apply to Māori land administered under the Te Ture Whenua Maori Act 1993.

7.3 Draft rule

Draft rule 20: Parcel-type components

7.4 Response to feedback

64) As a result of the feedback received, the Surveyor-General has decided to proceed with the proposal but use the term 'Height Limited' instead of 'Strata'. The change is considered appropriate because 'Height Limited' is meaningful, unlikely to cause confusion, and can be abbreviated as needed.

65) The proposal will not be extended to units created under the Unit Titles Act 2010. Under the Act, units are defined as land "consisting of a space of any shape … all the dimensions of which are limited". As such, principal and accessory units are all height restricted by virtue of their definition under the Act, and it is therefore not appropriate for the rules to require a 'Height Limited' prefix for unit appellations.

66) The proposal, as outlined in the Stage 2 Part 2 consultation document, is intended to apply to Lots defined on Land Transfer (LT/DP) CSDs, Sections defined on Survey Office (SO) CSDs, and non-primary parcels (Areas) defined on either type of CSD. Māori land defined on Māori Land (ML) CSDs and/or administered under the Te Ture Whenua Maori Act 1993 has not been included.

8 Reinstatement surveys

8.1 Summary of original proposal

67) The Rules for Cadastral Survey 2010 currently provide for three types of boundary reinstatement CSDs: monumentation CSDs, boundary reinstatement CSDs, and full (conflict) CSDs. Monumentation and boundary reinstatement CSDs may be used where no conflict exists, while full (conflict) CSDs must be used where conflict needs to be resolved.

68) During the Stage 2 Part 2 consultation, the Surveyor-General proposed to simplify the requirements for monumentation and boundary reinstatement CSDs by having a single set of requirements for those that didn't involve conflict, while still requiring a 'full' CSD in the conflict cases. The inclusion of a single clear set of requirements, rather than various requirements spread throughout the Rules, was intended to make the Rules clearer and easier to follow. The 'non-conflict' requirements were also intended to make boundary reinstatement CSDs more cost effective for those simple cases.

8.2 Summary of feedback

69) Submissions were generally in favour of simplifying the requirements for reinstatement surveys. Several submissions noted that surveyors often don't place official pegs when reinstating boundaries to avoid the cost of lodging reinstatement CSDs. Compliance costs are considered to be too high, in part due to the need to undertake quality assurance checks prior to lodgement. Several submissions suggested that the proposal doesn't go far enough, and there may be benefit in allowing the lodgement of a simple field record.

70) Several submissions were concerned about the lack of a requirement for connection to a reference mark.

71) Several submissions were concerned about the continued use of reinstatement surveys where boundaries are earthquake-affected or subject to conflict. These submissions noted that the use of reinstatement surveys allows for separate 'survey' and 'title' dimensions for the same parcel of land and suggested that conflict should be reconciled through the use of full LT CSDs.

8.3 Draft rule

Part 8 (draft rules 117 – 126): Boundary reinstatements

8.4 Response to feedback

72) The Surveyor-General has decided to proceed with the proposal. However, because the Survey Diagram requirement is now retained, a Reinstatement Diagram will still be required for reinstatement surveys.

73) The Rules for Cadastral Survey provide for lodgment of reinstatement CSDs to ensure the cadastre holds the authoritative record of marks placed, especially for future users. However, the Surveyor-General acknowledges that there is a tension between the requirements in the rules and the amount that clients are prepared to pay for boundary reinstatement services. The proposed rules have been drafted in recognition of the fact that compliance costs are currently too high, while also trying to ensure that sufficient information is recorded in each reinstatement CSD for future surveyors to understand the boundary definition.

74) The requirement to connect to a reference mark is not considered necessary. This would add to the cost of the survey, and the primary purpose of a reference mark is to enable the boundary to be relocated – which is happening through the survey itself. Surveyors will need to connect to existing non-boundary marks in order to gather sufficient evidence relating to boundary definition and in some cases will place new non-boundary marks. These marks will typically be connected to other surveys therefore maintaining the network and supporting future re-establishment of the boundary.

75) Several submissions expressed concern about the use of reinstatement surveys where boundaries are earthquake-affected or subject to conflict, and thought these should be presented on LT CSDs. This was carefully considered in the Stage 2 Part 2 Consultation document (sec 12) and not agreed by the Surveyor-General. Landowners may wish to know the location of their boundaries without paying to update their title. To a large extent, decisions by landowners will depend on the purpose for which they need a survey to be completed, and the budget they have available.

76) One submission noted that a number of design professionals have erroneously relied on Deposited Plans to position new buildings, and SO plans showing changes in definition have caused the buildings to be re-sited at great expense. Design professionals should not be relying entirely on the record of title for boundary dimensions, particularly where there has been ground movement.

77) Requiring the lodgement of LT CSDs would simply remove the current SO CSD option and cause many landowners to opt for alternative, lesser forms of boundary reinstatement which are not lodged as CSDs at all. For this reason, the current rules will remain in force.

78) The use of LT CSDs remains a valid option, and if a landowner sees a benefit in updating their title (for instance, to have greater certainty or to add value on sale of the property) they may wish to use this option. This is likely to depend on the advice that landowners receive from their surveyor and solicitor.

9 Defining Source of adoptions

9.1 Summary of original proposal

79) During the Stage 2 Part 2 consultation it was proposed not to include a rule defining the 'source' CSD for the purposes of adopting information.

9.2 Summary of feedback

80) Several submissions were received in support of the proposal. These submissions generally considered that showing adoptions correctly is more important than the source plan referred to. However, most submissions opposed the proposal and suggested that the current rule 9.3 should be redrafted to clarify which CSD is the 'source' is to avoid ambiguity and lack of consistency.

81) Submissions overwhelmingly suggested that the source CSD should be the original survey on which a vector was defined.

9.3 Draft rule

Draft rule 73: Adopted information to match source

9.4 Response to feedback

82) As a result of the feedback the Surveyor-General has decided to specify that the source CSD must be the CSD that recorded the measured or calculated value. In the case of water, water centre-line or irregular boundaries, the source CSD must be the CSD that recorded the measurement of the boundary.

83) The Surveyor-General considers that having certainty on this aspect will help avoid errors that sometimes arise from adopting incorrect information. The feedback received suggests that most surveyors already comply with the new rule.

10 Good survey practice

10.1 Summary of original proposal

84) During the Stage 2 Part 2 consultation it was proposed not to include a rule referring to good survey practice, but to include information about good survey practice as far as it relates to boundary definition in the Surveyor-General's guidelines.

10.2 Summary of feedback

85) Submissions on this proposal were mixed. Submissions in support of the proposal noted that good survey practice is not suitable for inclusion as a rule because it is subjective and cannot be quantified. However, some of these submissions did consider that good survey practice and the hierarchy of evidence should be included in LINZ guidance material.

86) Submissions opposed to the proposal believed that inclusion of good survey practice would have a positive impact on the survey system because it would make surveyors more accountable, improve the quality of surveys, complement the current rule 6.1

requirements, and act as a catch-all allowing the regulator to requisition CSDs where bad practice is demonstrated but there are no explicit breach of the rules.

10.3 Response to feedback

87) It has been decided not to include good survey practice in the Rules.

88) The Surveyor-General's position on this is well articulated in the Stage 2 Part 2 Consultation document (sec 14). This has not changed as result of the feedback. As regulator and steward of the cadastral survey system, the Surveyor-General is keenly interested in encouraging good practice by surveyors. However, a rule stating such a requirement will not in itself achieve the goal.

89) Most of the examples cited in the submission relate to boundary definition. This aspect of 'good survey practice' is covered in the current and draft Rules (new rule 11, current rule 6.1). Guidance on this aspect will be made available in due course.

90) The Surveyor-General is keen to support other aspects of good survey practice provided it is led by the Cadastral Surveyors Licensing Board and professional associations.

11 Water centre-line boundaries

11.1 Summary of original proposal

91) During the Stage 2 Part 2 consultation, it was proposed that the rules would permit the retention of existing and creation of new 'irregular' boundaries following the centreline of a river. In greater Christchurch rule 20.9 already permits the retention of existing irregular boundaries following the centreline of a water body.

11.2 Summary of feedback

92) Submissions supported the retention of existing water body centreline boundaries as irregular lines. However, several submissions opposed the creation of new water body centreline boundaries due to uncertainty as to whether these boundaries would be ambulatory or fixed. There are also questions around what material would be required to support a claim where the water centre-line boundary has moved.

11.3 Draft rule

Draft rule 9: Water centre-line boundaries

11.4 Response to feedback

93) Research indicates that there has been a long-standing belief that water centre-line boundaries must be fixed. This belief appears to result from the misinterpretation of an Australian case, *In re White* (1927) 27 S.R.(N.S.W.) 129.

94) *Summary of the Law Relating to Land Surveying In New Zealand* was originally compiled for the New Zealand Institute of Surveyors by E. M. Kelly. The 4th edition (1971), on page 57, states "…the Court said that, although title to the middle of the stream should be clearly expressed in the certificates, it was undesirable to give an indefeasible and absolute certificate of title to the soil within the middle-line and thus make that boundary a fixed one." However, this statement doesn't accurately paraphrase the judgment in the case.

95) In the case, applicants who owned part of the bed of the Hunter River by virtue of the *ad medium filum* presumption applied to bring their land under the Real Property Act (the equivalent of New Zealand's Land Transfer Act). A plan was included in the application, graphically showing the boundary as the *medium filum* of the Hunter River. The Registrar General advised the applicants that a title would be issued to the bank of the Hunter River but would not extend graphically or by description to the *medium filum*. The applicants were not prepared to accept this outcome, so the Registrar General brought the matter before the courts.

96) The judge, Street C. J., stated "I am clearly of the opinion, therefore, that Mr. Manning's contention that the applicants are entitled to have the line of midstream at the time of their application defined and described, and are entitled to the issue of an absolute and indefeasible certificate of title to the soil within that fixed boundary so ascertained cannot be supported. I need not enlarge upon the difficulties and the anomalies that might arise in the future if such a right was conceded, and if the centre of the stream should afterwards become altered by reason of changes in the course of the river".

97) Further commentary on *In re White* is found in the dissenting judgment of F. B. Adams J in Attorney-General; ex parte Hutt River Board v Leighton [1955] NZLR 750. In his judgment, F. B. Adams J stated "In my opinion, the essence of the decision in *In re White* is that the title to the bed, being one with fluctuating boundaries, could not be converted into one with fixed boundaries; and I respectfully accept the reasoning and results of the judgment so far as they rest on that ground. Two matters were decided: (1) that the boundaries could not be defined by metes and bounds, and (2) that the description in the certificate of the land comprised therein should contain a statement that the ownership extended ad medium filum. Thus, the bed was expressly included in the title. It seems to me to be immaterial whether the thing is done by mere words, or by plan, or in both ways, so long as the fluctuating nature of the boundaries is made clear."

98) Earlier in his judgment, F. B. Adams J also stated "In my opinion, this conception of a shifting boundary and a movable freehold dominates the whole subject. When the physical riverbed shifts by natural and imperceptible process, the boundary shifts accordingly, and the freeholds in the bed and in the riparian lands shrink, or expand, as the case may be. The title to the bed will follow the movements of the bed; and, with all deference to a dictum of Williams J, to the contrary in *The King v Joyce* the medium filum of the river must fluctuate in the same way, being at all times the middle line of what is, for the time being, the bed of the river."

99) Although the judgment of F. B. Adams J was a dissenting judgment, we now consider that there is enough authority to allow existing water centre-line boundaries to remain as irregular lines, and to allow new water centre-line boundaries to be created.

12 Non-primary parcels - other changes made during drafting

12.1 A non-primary parcel may span more than one primary parcel where held in the same title

100) The draft Rules allow a non-primary parcel to cross an underlying parcel boundary, but not an estate boundary. This will apply to units, easements, covenants and leases.

101) In figure 6 below, the record of title is made up of Lots 5 and 6 DP 10470 and new easement BB is permitted to cross the underlying primary parcel boundary.

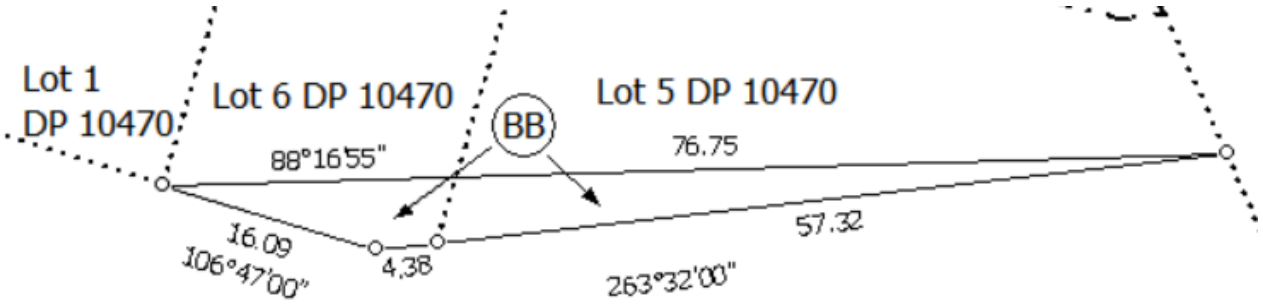

Figure 6: Lots 5 and 6 DP 10470 and new easement BB

12.1.1 Draft Rule

See Part 5 rule 45.

12.1.2 Rationale

102) Current rule 5.2 does not allow a non-primary parcel to cross an underlying parcel boundary unless the parcel is in a unit title development. This requires the intersections with the 'internal' boundary to be defined, which can be problematic, and extra non-primary parcels to be created. This proposal will reduce the time and costs associated with creating new non-primary parcels. This outweighs the potential cost of future work in the rare event that separate titles are required, for example, for Lots 5 and 6 DP 10470. In this case, easement BB would be brought down on both new titles. Alternatively, an easement only plan could be prepared creating two separate easements defining the intersections with Lots 5 and 6.

12.2 Surrendering part of an easement or covenant

103) The draft Rules require the Title Plan to depict both the portion of the easement or covenant to remain and the portion to be surrendered/revoked. The parcel intent for the portion to be surrendered will be 'easement to be surrendered' or 'covenant to be revoked'. The portion of the easement to be surrendered or covenant revoked will also need to be recorded in the record of survey.

12.2.1 Draft rule

See Part 5 rule 46.

12.2.2 Rationale

104) The current survey requirements for surrendering part of an easement or covenant are not intuitive and often incorrectly applied. Current rule 5.1 requires a CSD to depict the portion of the easement or covenant to be surrendered, but not the part to remain. Where the portion to remain is not depicted it can be difficult for the registered owner or benefitted land to determine the extent of the right. This change will facilitate improvement to the processes for effecting the surrender / revocation.

13 Survey diagram - other changes made during drafting

13.1 Ascertain and verify requirements for vectors are re-specified as part of the Survey Diagram

105) The draft Rules have removed the requirement for vectors to be included in the CSD and have re-specified a simplified and prescriptive set of vector requirements for the Survey Diagram.

13.1.1 Draft Rule

Part 6 rule 91.

13.1.2 Rationale

106) Currently the Rules requires a full set of 'ascertain and verify' vectors to be included in the CSD (rule 8.1) and a subset of 'verify' vectors that are required to be included in the Diagram of Survey (rule 9.6.13). Those requirements are specified using the terminology 'sufficient', 'ascertained' and 'verified' which often causes confusion as to exactly what vectors are required on the survey diagram. The draft rule specifies which vectors are required, rather than leaving it to the surveyor to determine which vectors are sufficient for the specified purpose.

14 Title plan – other changes made during drafting

14.1 Require legalisation CSDs to include an area schedule

107) The draft Rules will require an area schedule to be included with each legalisation CSD.

14.1.1 Draft Rule

See Part 6 rule 98

14.1.2 Rationale

108) Despite the absence of a rule requiring an Area Schedule, a schedule is frequently included with each Legalisation CSD. Because area Schedules are not a requirement of the Rules for Cadastral Survey 2010, they are not included in the checks conducted by LINZ before a CSD is approved. Consequently, land holding agencies and their agents cannot rely on Area Schedules for accuracy.

15 Ground movement - other changes made during drafting

15.1 Rules that that apply to all areas of ground movement, where appropriate

109) The requirements for deep-seated movement and Canterbury earthquakes have been merged and rearranged into a single location. The definitions have been simplified and rationalised.

110) An 'affected' boundary is now a boundary where ground movement of any sort has distorted the land in excess of the relevant accuracy tolerances. All affected boundaries must be defined by survey and ground marked unless the underlying parcel meets the criteria to be accepted. When defining that boundary, rule 4 will require either that the boundaries have moved with the land (where the Canterbury Property Boundaries and Related Matters Act 2016 applies) or the usual survey precedents apply (in other cases).

111) The requirements and concessions that apply to earthquake movement in greater Christchurch continue to apply only in greater Christchurch.

15.1.1 Draft Rule

See Part 7

15.1.2 Rationale

112) The ground movement requirements for deep-seated movement (current rule 18) and greater Christchurch (current rule 20) were fragmented, not cohesive and had differing requirements for accepted boundaries. The new consolidated Rules provide a clear and sustainable set of requirements.

16 Summary of all changes

113) The below table lists all changes that have been made:

Part 2	**Boundaries**
Form of boundaries - Subpart 1	Form of boundaries now includes definitions for right-line boundaries, arc boundaries, irregular boundaries, water boundaries and stratum boundaries that are in current rule 2 of the Rules for Cadastral Survey 2010.
Water boundaries – Rule 8	Provided confirmation that a survey of an existing water boundary must account for erosion.
Water centre-line boundaries – Rule 9	Added as a new form of boundary. This will allow for the creation of new and retention of existing water centre-line boundaries.
Height limited boundaries – Rule 10	The term 'stratum' has been replaced with 'height limited'. The definition and application remain unchanged.

Define by Survey – Rule 12	No longer a requirement to define existing class A boundary points by survey where they meet the relevant accuracy tolerances. Clarification around which boundary points must be defined by survey on a computed Māori Land CSD. A boundary point that is defined on a diagram of transfer must be defined by survey.
Adoption and acceptance of boundary – Rules 13 and 14	Definitions of adopted and accepted have been clarified and simplified. Adoption now includes the ability to incorporate verified information from a CSD that was lodged for recording purposes only. Water or water centreline boundaries may now be accepted if they are part of a parcel that is to retain its limited or interim status.
Part 3	**Parcels**
Parcel-type components – Rule 20	New parcel components added for height limited lots, sections and areas.
Unique parcel identifier – Rule 22	Unique parcel identifier options for units now provide for some alignment of appellation and addressing standards.
Part 4	**Field Survey**
Horizontal datum orientation – Rule 23	A CSD no longer needs to include accepted bearings, but if they are included, all bearings must be in the same terms.
Horizontal datum connection – Rule 24	Every new boundary point on a new primary parcel must be connected to a cadastral survey network mark.
Vertical datum – Rule 25	All reduced levels in a cadastral survey must be in terms of an official vertical datum.
Vertical connection – Rule 25	Where a new height limited boundary point is defined by a reduced level, a vertical control mark must be included in the survey.
Accuracy of non-boundary marks – Rule 26	Now a single tier of accuracy for non-boundary marks. Created a new vertical accuracy standard between new and old non-boundary marks that applies to the slope distance. Created a new accuracy standard between adopted cadastral survey network marks and old or new non-boundary marks. All non-boundary accuracy standards are capped at 0.20m.
Accuracy of boundary points – Rule 32	Now a single tier of accuracy for boundary points. The vertical accuracy standard applies to the slope distance.
Accuracy of boundary referencing – Rule 34	The horizontal accuracy tolerance for boundary referencing has been reduced to 0.03m from 0.04m.
Class where connected boundaries have different classes – Rule 31	Replaced the term 'highest class' with 'most accurate class' for clarification.
Accuracy of water, water centre-line and irregular boundaries – Rule 35	No classes for water, water centre-line and irregular boundaries.
Accuracy of intersection – Rule 36	No distance class for a right line boundary intersecting with a water, water centre-line or irregular boundary. A new boundary point at the intersection of a right-line boundary and a water boundary or water centre-line boundary is not required to meet the referencing accuracy requirements of rule 34.

Reference marks – Subpart 3	Witness marks no longer required. Each survey must have 3 PRMs within the specified distances. PRMs expected to be placed to survive the longest possible time, but 50 year term no longer specified.
Boundaries to be marked – Rule 41	Clarification provided that ground marking is required where new parcels are not remaining in the same Crown or TA ownership. All new boundary points on a Māori Land CSD must now be ground marked. Removed clause relating to boundary points being readily identifiable by occupation. Improved cross referencing between boundary points that are required to be defined by survey and ground marked. An unmarked non-primary parcel that is converted to a primary parcel must be ground marked. New boundary points coinciding with water or water centre-line boundaries don't need to be ground marked.
Disturbed survey marks – Rule 43	Disturbed boundary marks may be removed and driven below the ground.
Part 5	**Non-primary parcels**
Form of boundary – Rule 44	Forms of boundary applicable to non-primary parcels are listed. Confirmed the form of boundary must be the same where the boundary is for both a non-primary parcel and a primary parcel. Provision to allow an existing irregular boundary on a non-primary parcel to remain irregular.
Non-primary parcels crossing boundaries – Rule 45	A non-primary parcel may cross a primary parcel boundary but not an estate boundary.
Surrendering part of easement or covenant – Rule 46	Removed balance non-primary parcels as both the portion to remain and be surrendered must be defined.
Centre-line easements – Rule 47	All centre-line easements must be represented as a polygon where the width is known.
Inaccurate relationship to the underlying primary boundary – Rule 49	Allowed for an inaccurate relationship (class D) where the non-primary parcel intersects the underlying parcel. Where an inaccurate relationship has been applied specific survey requirements apply.
Class C – Rule 50	Made allowance to use class C parcel boundaries of new easements where the estate record is greater than 100ha.
Acceptance of non-primary boundaries – Rule 51	An existing non-primary parcel boundary may be accepted where it is within a primary parcel that is accepted.
Permanent structure boundaries – Subpart 4	A PSB can now be used to define a covenant as well as an easement. Specification of methods for defining the location of PSB simplified. Accuracies of PSBs simplified.
CSD number for unit title development - Rule 57	Added a requirement that a CSD deposited in substitution for a previously deposited CSD must retain the same number.
Referencing height limited boundary points – Rule 59	Confirmation that stratum reference marks not required for lease, easement or covenant parcels.

Staged unit developments – Rule 60	Confirmed that subsequent stages of a unit development must be in the same terms irrespective of the datum used. If an unofficial datum is used a vertical control mark must be provided with a reduced level in terms of the unit title development.
Non-primary parcels over water – Subpart 8	New section created for non-primary parcels over water. These parcel boundaries may be class C and be connected to an adopted cadastral survey network mark. Requirements are very similar to those for creating easements over large rural parcels in Rule 51.
Part 6	**Cadastral survey datasets**
Content of a Cadastral survey dataset – Rule 69	Content of a CSD simplified and to include: 1) Record of survey 2) Title plan 3) Dataset description – previously specified in the Standard for lodgement of cadastral survey datasets 4) Survey report 5) An accurate record of the location of a water boundary (this might be a field note or radiations from a PRM) Vector and origin requirements have been specified under the survey diagram (Rule 91). The appellation of extinguished parcels moved from the CSD to the record of survey (Rule 75(e)). Origin of level information no longer required due to mandatory connection to vertical control marks that must record a reduced level – Rule 82(d).
Survey report – Rule 70	Subheadings added to improve navigation. Reference to relevant enactments required where the survey purpose is for legalisation, adverse possession claims, dry stream bed or accretion claims. An explanation why a Crown subdivision does not require a s223 RMA 1991 certification when not included in the CSD. This is currently a requirement in the Standard for lodgement of cadastral survey datasets. The basis for determining the origin of levels. Reporting only required where survey marks searched for and not found, can't be recorded as an attribute in the record of survey. Requirement to report on the adequacy of old marks found deleted as covered by definition decisions. No requirement to report on why a boundary has been accepted (current rule 8.2(x)). No requirement to report where class C has been used for non-primary parcels (current rule 16.5(a)). No requirement to report where class D has been used for non-primary parcels (current rule 17.1(a)). No specific reporting for ground movement (current rule 18.4) as covered by generic definition decisions under Rule 70(i). No longer any provision to provide reporting information elsewhere in the CSD.
Units of measure – Rule 72	Removed how vertical angles must be specified.

Adopted information to match source – Rule 73	Confirmed the 'source' is the CSD that recorded the measured or calculated value.
Retention of field information – Rule 74	Field notes must be made available with 20 working days.
Record of Survey	
Record of survey – Rule 75	CSD Plan has been rebranded Record of Survey. The Record of Survey must include the date a survey was completed where a measurement was made. The requirement for the appellation of each extinguished parcel has been moved to the record of survey (previously in the CSD) Dataset description added. CSD number and sheet numbers now required as per Landonline functionality.
Occupation Information – Rule 79	All occupation information must be provided in graphic form. Occupation must be provided for all new boundary points on a primary parcel. Where there is no occupation a "no occupation" note must be recorded against the boundary. Explicit requirement for occupation information for boundaries subject to various 'conflict' situations (minimising cross-referencing). Current rule 9.5(c) has been removed.
Survey mark information – Rule 80	Unique survey mark name requirements (current rule 7.5) applying to non-boundary marks have been extended to boundary marks. An existing survey mark whose name is not unique may be made unique by adding square brackets. Attribute data (disturbed, renewed, removed or searched for and not found) to be recorded against the survey mark. For any PRM the record of survey must record the relationship to ground level and its situation, e.g. 0.30d in grass berm.
Equipment type – Rule 71	The record of survey must record type of equipment used to measure a vector. Equipment type is currently a requirement in the Standard for lodgement of cadastral survey datasets (but no requirement in case of adopted vectors).
Survey diagram	
Survey mark and point information – Rule 82	Survey mark and point information simplified.
Parcel information – Rule 83	Clarification that vertical extent of all parcels must be shown. Clarification that permanent structure boundaries don't need to be depicted on the survey diagram. Tenure system information (areas, estate boundaries unit and cross lease parcel information) required by existing rules 9.6.3(e), (h)(i) & (ii), 9.6.4 & 9.6.5 deleted as included in Title Diagram.
Height Limited Boundaries – Rule 88	The requirements have been simplified.
Parcel annotations – Rule 89	Existing parcel annotations removed where they are duplicated on the title diagram. Parcel annotations required by current rules 9.6.3(h)(ii) to (v) (road name, water body name, erosion and marginal strip) and 9.6.7 (water boundaries) now included in annotation table 6.

Boundary annotations – Rule 90	Existing boundary annotations removed where they are duplicated on the title diagram. All class D boundaries must be annotated 'Class D'. New annotation added for water centre-line boundaries.
Vectors – Rule 91	Vectors required on the survey diagram have been clarified and simplified. Boundary dimensions are no longer required to be depicted.
Diagram plan symbols and text – Rule 92	Information now located in schedule 7.
Title Plan	
Title plan information – Rule 94	Added a requirement to record easements to be surrendered or covenants revoked. Added a requirement to show the estate record references for the land under survey. Dataset description added.
Easement information – Rules 95 and 96	Dominant and servient tenement updated to benefitted and burdened to reflect the Land Transfer Act 2017.
Covenant Information – Rule 97	Clarification that only existing covenants defined on an approved CSD need to be included on the title plan.
Area schedule – Rule 98	A title plan for legalisation purposes must include an area schedule.
Title diagram	
Parcel information – Rule 99	A non-primary parcel no longer needs to be depicted in terms of the 'entire' underlying parcel. There is still a requirement to ensure the information is clear and unambiguous. Clarification that a title plan is not required to depict a non-primary parcel that is not defined on an approved CSD.
Further parcel information requirements – Rule 100	Added a requirement to show the adjacent primary parcel boundary and appellation. This information is shown on all surveys using existing Landonline functionality. Annotations specified in Rules 10.4.2(f)(ii), (iii) and (iv) now incorporated into annotations table (rule 109).
Parcel information for unit title or cross lease development – Rule 101	Parcel information extended to also include cross leases.
Accepted information for unit and lease parcels – Rule 102	Parcel information relating to units and leases moved to the Title Diagram.
Permanent structure boundaries – Rule 107	Due to the removal of tenure system information from the Survey Diagram current rule 9.6.9(b) and (e) have been moved to become Title Diagram requirements.
Height limited boundaries – Rule 108	New requirement added to ensure height limited boundaries are fully described on the title plan.
Parcel Annotations – Rule 109	All Title Diagram annotations now specified in one location. Width of marginal strips moved from boundary dimensions into table. Where a boundary is accepted the annotation 'boundary accepted from <CSD number>' replaces 'boundary accepted from existing survey'. This annotation now applies to all accepted boundaries not just parcels greater than 100ha. Where an existing non-primary parcel is already defined in an approved CSD the annotation 'adopted from <CSD number>' must

	be included to alert users of the title plan where the missing vectors are located. New annotation added for water centre-line boundaries. One annotation defined for boundaries accepted in areas of ground movement 'boundary not surveyed since ground movement'. Parcel annotations required by current rules 10.4.2(f) (vesting notes, road name, water body name, erosion, accretion and marginal strip) and 10.4.5(c) (water boundaries) now included in annotation table.
Boundary Dimensions – Rule 110	Bearings must now be included on the title diagram as per Landonline functionality. There is no requirement to show any accepted boundary vectors.
Diagram plan symbols and text – Rule 111	Information now located in schedule 7.
Part 7	**Ground Movement**
Affected boundary - Rule 110	Definition of affected now applies to all forms of ground movement.
Canterbury earthquakes	Definition no longer included.
Ground movement	Definition no longer included.
Disturbed - Schedule 2	Now a single definition for disturbed survey mark in the schedule 2 dictionary.
Reinstated - Schedule 2	Now a single definition for reinstated survey mark in the schedule 2 dictionary.
Re-establishing boundaries affected by ground movement – Rule 114	All affected boundaries must be defined by survey and ground marked, unless they can be accepted.
Defining non-primary parcels – Rule 115	Retained provisions for defining non-primary parcels in greater Christchurch. Clarified the provisions for defining non-primary parcels in other areas of ground movement.
Removing boundary marks	No longer provision for removing boundary marks on an approved interim survey in greater Christchurch. Prior written approval will be required from the SG before removing these marks.
Part 8	**Boundary reinstatements**
CSD to be lodged – Rule 118	Subtle changes to existing rule to ensure all reinstatement CSDs are returned from requisition.
Boundary reinstatement restrictions – Rule 119	Confirmation that certain boundaries can't be reinstated. Defined 2 types of boundary reinstatements – simple and complex.
Horizontal datum – Rule 120	Orientation does not need to be in terms of an official geodetic projection for a reinstatement CSD.
Reference marks – Rule 121	Confirmation that reference marks are not required for a simple reinstatement CSD.
Simple reinstatement CSD – Rule 122	New type of CSD defined.
Survey report – Rule 123	Simplified reporting requirements for simple reinstatement CSD.
Record of Survey – Rule 124	Reduced set of requirements for a simple reinstatement CSD.
Reinstatement diagram – Rule 125	Reduced set of diagram requirements for a simple reinstatement CSD.

Schedule 2	
Dictionary	Terms and definitions now in dictionary.
Integrated into the cadastre	Replaced the term 'integrated in the cadastre' with 'approved CSD'.
Cadastral survey network mark	Definition incorporated into Schedule 4 of Rules.
CSD number	New term to cover 'CSD type and identifier'.
Irregular line	Definition removed and not needed because of common understanding.
Official geodetic projection	Definition simplified.
Regulations	Definition removed and not needed because of common understanding.
Reinstated mark	References to ground movement removed.
Schedule 3	Existing ruling LINZR65300 included as a schedule. No changes made to the ruling.
Schedule 4	Existing ruling LINZR65302 included as a schedule. No changes made to the ruling.
Schedule 5	Existing ruling LINZR65301 included as a schedule. No changes made to the ruling.
Schedule 6	Existing ruling LINZR65303 included as a schedule. No changes made to the ruling.
Schedule 7	Diagram symbols and text moved to Schedule. Symbols for witness marks removed. New symbol added for cadastral survey network marks and vertical control marks. Reinstated primary boundaries added as thick line type. Specified line type for underlying parcel boundaries on unit and cross lease developments. Specified line type for proposed units on a unit development. Specified line type for adjacent and underlying primary parcel boundaries. Font size for parcel annotations now covered under Annotations (Rule 109).