

Hybrid Cadastre Standards

Frequently Asked Questions (V3.0)

NOTE: For the purposes of these FAQs, when reference is made to Alberta Environment and Parks (AEP) and/or the Alberta Energy Regulator (AER) for plan registration (filing) purposes, the intent is to mean both AEP and AER

General Information

1. Where can I download the latest Hybrid Cadastre Standards and related documents? Whom should I contact regarding questions about the Hybrid Cadastre Standards?

The latest Hybrid Cadastre Standards (HCS) Version 3.0 and related documents can be downloaded from the Alberta Environment and Parks (AEP) website. For specific questions regarding the HCS not addressed in these FAQs, contact the Director of Surveys (DOS) Office at:

- Hybrid.Cadastre@gov.ab.ca

2. Do the *Surveys Act* and the Alberta Land Surveyors' Association (ALSA) Manual of Standard Practice (MSP) govern the Hybrid Cadastre plans?

Yes, the *Surveys Act* prevails in all circumstances and the ALSA MSP does provide guidance on the professional practice of Hybrid Cadastre surveys.

3. Which dispositions are included/ acceptable under the Hybrid Cadastre?

The Hybrid Cadastre applies to public land disposition surveys on surveyed and unsurveyed Crown lands as specified in the AER/AEP PLAR Tables encompassing new applications, renewals and amendments issued by the Alberta Energy Regulator (AER) and AEP.

- Public Lands Administration Regulation - AER/AEP [PLAR Table A1](#) and [PLAR Table A2](#)

4. Does the Hybrid Cadastre include patented provincial Crown lands where the owner is Her Majesty the Queen in Right of Alberta?

Yes, AER and AEP issue dispositions on all titled land where the owner is shown as Her Majesty the Queen in Right of Alberta as represented by the Ministry of Environment and Parks and its predecessors or successors. If the title is held by any other Ministry such as Alberta Transportation or Infrastructure etc., the land is not deemed to be public lands and thus the Hybrid Cadastre cannot be used.

5. Do I need to follow the same procedure for submitting Hybrid Cadastre plans as conventional survey plans for surface activity applications in public land?

Yes, the procedure for submitting the Hybrid Cadastre plans is the same as when submitting the conventional survey plans for surface activity applications on public land. A Hybrid Cadastre plan is essentially equivalent to any other disposition survey plan. Hybrid Cadastre survey plans for activities under PLAR Table A1, in public land are submitted to the Plan Confirmation Service (PCS) website prior to submitting to AEP through the Electronic Disposition System (EDS). For applications under PLAR Table A2, the plan is submitted to the AER through OneStop.

Application, Final Plan, Amendments and Renewals

6. My client went with a Hybrid Cadastre survey plan at the application stage for a disposition application on public land under EAP. As an Alberta Land Surveyor (ALS), do I need to submit another Hybrid Cadastre survey plan for the final stage? Can I use a Land Surveyor's Statutory Declaration if asked for proof that all activity on the ground is within the boundaries of the survey?

If your client goes with a Hybrid Cadastre survey plan at the Application stage, then when the four-year short-term disposition time limit is up, if there are no changes to the boundaries, an as-built survey plan is not required. The same applies to AER applications under OneStop at the five-year stage gate. The regulator reserves the right to request proof that the activity is entirely within the boundaries of the disposition at any time during the term by means of an ALS statutory declaration.

7. What if the client went with a Hybrid Cadastre survey plan at the Application Stage under EAP and something has changed? What is the process then? Can Hybrid Cadastre plan be amended? Can I prepare a conventional survey plan for amendment? As an Alberta Land Surveyor (ALS), what needs to be done on my part?

If the client went with a Hybrid Cadastre survey plan at the Application Stage and the plan has been filed with AER/AEP, then the client is required to apply for an amendment of the disposition and you are required to prepare a survey plan showing the amended disposition boundaries. This is no different than what is done with conventional survey plans.

Treat every Existing Establishment Coordinate (XC) as an original undisturbed monument and every RC as a re-established monument, and proceed accordingly. If the surveyor desires to replace the EC with a Statutory Iron Post (IP) it must be preceded by statutory declaration ([Appendix B – Statutory Declaration for Monumenting Hybrid Cadastre Establishment Coordinate Positions](#)) prior to amendment plan submission, found in Appendix B of the [Public Lands Survey Manual](#)

If, through the amendment process, a surveyor decides to replace a Hybrid Cadastre survey plan with a conventional survey plan, then the surveyor is not required to replace all the Hybrid Cadastre survey plan governing coordinates with Iron Posts, but additional survey posts can be placed. In the end, enough monuments will need to be placed to adequately define the new boundary.

8. My client went with a Sketch Plan at the application stage for a disposition application on public land under EAP. As an Alberta Land Surveyor (ALS), can I submit a Hybrid Cadastre survey plan for the final plan?

If your client goes with a Sketch Plan at the Application Stage, then before the four-year short-term disposition time limit is up they can ask you (i.e., the ALS) to submit either a conventional disposition survey plan or a Hybrid Cadastre survey plan. Using a Hybrid Cadastre survey plan at the final stage in place of a formal as-built survey plan is acceptable. The same applies to AER applications at the five-year stage gate through OneStop.

9. Under the Hybrid Cadastre, do I need to submit a Hybrid Cadastre survey plan with the disposition renewal application? In the case of changed disposition extent (location, shape or size?), can I submit a Hybrid Cadastre survey plan for amendment application?

In the case of a renewal, and if the disposition has a survey plan on file, there is no need to submit a second plan (either a conventional survey plan or a Hybrid Cadastre plan) with the disposition renewal application.

As noted on the Disposition Renewal Application, if something has changed, then either an amendment (survey) has to be done or a request has to be made to cancel the disposition along with the reclamation certificate/clearance certificate etc. An amendment can be done via a Hybrid Cadastre survey plan or a conventional survey plan, whichever is more expedient.

Monumenting Establishments Coordinate Positions

10. When do I need to submit the ‘Appendix B – Statutory Declaration for Monumenting Hybrid Cadastre Establishment Coordinate Positions’ provided in the Hybrid Cadastre Standards document?

As an ALS, you are required to submit the ‘Appendix B – Statutory Declaration for Monumenting Hybrid Cadastre Establishment Coordinate Positions’ when a monument replaces a position currently governed by an Establishment Coordinate (EC). See section 3 of the HCS for further information.

An EC governs a position until such time as an ALS replaces it with a conventional monument and submits the ‘Appendix B – Statutory Declaration for Monumenting Hybrid Cadastre Establishment Coordinate Positions’ form and its change of status is reflected in the AEP/DOS online database, as found in the [Public Lands Survey Manual](#)

In the case of a conventional survey, an EC can be replaced by a statutory iron post established on a Hybrid Cadastre survey plan provided Appendix B is submitted. Since the governing coordinate prevails in perpetuity, placing a new monument without submission of Appendix B will create a double monumentation.

11. Who can replace the Establishment Coordinates (EC) with governing monuments? What is the procedure and what sort of documentation is required? Is there a requirement to submit an updated plan showing new monuments?

Only an ALS can replace the ECs with governing monuments. Once monuments have been physically placed in the field at positions governed by the EC’s, the ALS is then required to submit the ‘Appendix B – Statutory Declaration for Monumenting Hybrid Cadastre Establishment Coordinate Positions’ provided in the Hybrid Cadastre Standard. The Appendix B must be submitted to the Director of Surveys Office at:

- Hybrid.Cadastre@gov.ab.ca

12. In the Hybrid Cadastre Standards under Section 3.2g in ‘Appendix B – Statutory Declaration for Monumenting Hybrid Cadastre Establishment Coordinate Positions’ form, do I need to mention the AEP/AER plan # _____ or the activity/disposition number such as an MSL# or LOC#?

When replacing the ECs with governing monuments, a reference to the AEP /AER plan # _____ is required under section 3.2g in ‘Appendix B – Statutory Declaration for Monumenting Hybrid Cadastre Establishment Coordinate Positions’ form. Providing the Disposition Number and version date will also assist in ensuring the points are uniquely defined.

13. Can the Establishment Coordinates (ECs) be replaced with monuments only by way of submission of ‘Appendix B – Statutory Declaration for Monumenting Hybrid Cadastre Establishment Coordinate Positions’ form?

Yes, the ECs **can only** be replaced with monuments by way of the ‘Appendix B – Statutory Declaration for Monumenting Hybrid Cadastre Establishment Coordinate Positions’. Once the monuments have been physically placed in the field at positions governed by the ECs, an ALS is then required to submit the Appendix B form to the Director of Surveys Office at:

- Hybrid.Cadastre@gov.ab.ca

14. Would there be a requirement to monument all Establishment Coordinates (EC’s) when public land is transferred to private ownership?

This will depend on the nature of the instrument. If it is an activity that will require a plan to be registered at the Land Title Office in order to define the boundaries of a registered interest (such as a right of way), then statutory iron posts will be required for the plan to be registered. If it is an activity that requires a plan to support a contractual agreement between the interest holder and the landowner (such as a lease), it will depend on what is acceptable to the parties to define the boundary.

15. According to Section 3.2 of the Hybrid Cadastre Standards – “Unlike a survey monument, an Establishment Coordinate can never be lost, but can lose its governing status upon replacement with

a statutory iron post”. What if this monument is lost? In that case, would the position be determined by the original Establishment Coordinate or the Re-establishment Coordinate for that monument?

When an EC is replaced with a monument, the EC loses its governing status and the monument governs that position thereafter. If this monument is lost, then that position will be determined by treating the lost monument no different than a conventional re-establishment and applying the 'hierarchy of evidence'. Of note, if the new plan is a Hybrid Cadastre survey plan then it is permissible to have a Re-establishment Coordinate (RC) for the monument. Replacing an EC incorrectly or out of tolerance will be treated as a survey error.

Geo-Referencing

16. Would CBN pillars and wellsite traverse monuments be acceptable as geo-reference points? Can existing iron spikes, re-bars or iron bars with Observed Coordinates from previous Hybrid Cadastre Plans be used as the geo-referencing monuments on new Hybrid Cadastre Plans?

Yes, Canadian Base Network (CBN) pillars are acceptable as geo-reference points. According to section 6.2 of the HCS, “RPs must be found or placed statutory iron posts, standard post/brass cap, found iron bar or appropriate Alberta Survey Control Markers (ASCMs)”

17. According to Section 6 of Hybrid Cadastre Standards for geo-referencing – “Acceptable methodology includes use of the Natural Resources Canada Precise Point Positioning (NRCAN PPP) service, ties to provincially integrated GNSS base stations, and ties to appropriate ASCMs.” Which stations are included in the list of provincially integrated GNSS base stations? Which ASCMs are being referred to as appropriate ASCMs?

Alberta Survey Control Markers (ASCMs) which are part of the NAD83 (CSRS) V7 Epoch 2010 subset list are being referred to as “appropriate ASCMs”. The subset list is available for download from the Director of Surveys webpage on the AEP website. The subset data is downloaded in xls spreadsheet format under the 'NAD83 (CSRS) Subset Data' product tab from the web link [ASCMs NAD83 \(CSRS\) Subset Data](#). This listing includes provincially integrated GNSS base stations.

- [Geodetic Control Unit - ASCMs NAD83 \(CSRS\) Subset Data](#)

18. What is the reason for only allowing NAD83 (CSRS) as the reference datum for Hybrid Cadastre plans, and not NAD83 (Original)? Which epoch should be used for NAD83 (CSRS) datum in Alberta?

The reason for selection of NAD83 (CSRS) as the datum to which Hybrid Cadastre plans are to be referenced is that it has the necessary inherent accuracy to support surveys conducted via GNSS where as NAD83(Original) may or may not, depending on the location in Alberta. In addition, NRCAN's Precise Point Positioning (PPP) service is consistent with NAD83 (CSRS) and specifically Version 7 at Epoch 2010, which is the current implemented derivation of NAD83 (CSRS) in Alberta. Again, Version 7 Epoch 2010 must be the version used for the NAD83 (CSRS) datum in Alberta.

19. Can we use coordinate systems other than the UTM for Hybrid Cadastre plans? What about 10TM or 3TM coordinate systems?

Section 4 of the Hybrid Cadastre Standards states that the mapping projection must be UTM. The use of 10TM and 3TM coordinates for Hybrid Cadastre Plans is no longer permitted.

20. When would all ASCM cards be updated with NAD83 (CSRS) V7 Epoch 2010 published coordinates? In the meantime, would it be acceptable to show the NAD83 (CSRS) Epoch 2002 Observed Coordinates (OC) for ASCMs shown on Hybrid Cadastre Plans?

While most ASCMs have published NAD83(CSRS) V7 Epoch 2010 coordinates, only those within the subset listing can physically and mathematically support GNSS surveying techniques. Thus, users are directed to use the ASCM NAD83(CSRS) subset as noted in FAQ 18 above. These ASCMs make up the provincial High Precision Network. Yes, it is equally acceptable to show NAD83 (CSRS) V7 Epoch 2010 Observed Coordinates (OC) for ASCMs on Hybrid Cadastre Plans if published NAD83 (CSRS) V7 Epoch 2010 coordinates don't already exist.

Plan Standards

21. In case some monuments are found or placed after the drafting has been completed, can a suffix be added to the existing point numbers in the Table of Coordinates for the new points without having to renumber and re-order the entire table and plan?

No, a suffix (or prefix) is not to be added to the existing point numbers in the Table of Coordinates for the new points. Please see section 5.3 HCS for information regarding 'Incremental Point Numbering'.

22. What is the difference between a LiDAR plan and a Hybrid Cadastre plan? Is a LiDAR plan acceptable when submitting a final plan?

A LiDAR plan was a plan prepared by an ALS that uses LiDAR remotely sensed data for the corner elevations required for well licensing and calculates the disposition corners in relation to evidence that has been tied in. It did not create boundaries and as such is deemed to be a sketch plan. With recent changes in AER's Directive 56, these plans are no longer applicable.

Conversely, a Hybrid Cadastre plan is a plan of survey prepared by an ALS in which the positions of the boundaries are determined by a blend of monuments in the ground and coordinates referenced to a network of control points of defined datum and projection and creates governing boundaries. With the changes in Directive 56 no longer requiring wellsite elevation corners, a hybrid plan can now easily be used to for application for an MSL and for well licensing.

23. Can I use the Hybrid Cadastre for surveying and completing a final disposition survey plan that shares a common boundary between public lands and private land? What Coordinate Type shall be used for the metes and bounds description corners?

Yes, it is acceptable to use the Hybrid Cadastre for surveying and completing a disposition survey plan that shares a common boundary between public lands and private land. The key in this case is the accurate retracement of the common boundary. It is also recommended to monument the common boundary to avoid any boundary uncertainty(s) in the future.

ECs govern public land disposition boundaries, but they do not govern private land boundaries. Note that survey plans to be registered at the Land Titles Office must be consistent with the *Land Titles Act*, the *Surveys Act*, and the Land Titles Procedures Manual.

24. Under the Hybrid Cadastre, do I need to place intersection points where a new disposition is intersecting an existing disposition? What Coordinate Type shall be used for the intersection points in the Hybrid Cadastre survey plan?

In an effort to better align existing survey practice within the Hybrid Cadastre and to comply with the MSP, the same standards as applicable to conventional surveys will be applicable to Hybrid Cadastre surveys. See Part D, Section 13.2 of the MSP for more details.

25. I am working on a Hybrid Cadastre plan for a public lands disposition that intersects or parallels dispositions defined by Part 2 and Part 3 monuments. Do I need to tie-in all existing Part 2 and Part 3 monuments to determine/establish the intersecting boundaries?

A Hybrid Cadastre Plan is essentially equivalent to a conventional plan of survey; the main difference is the fact that a coordinate can govern in place of a monument. Therefore, any existing posted or hybrid boundary that you are intersecting or paralleling with your disposition must be established in accordance with standard practice by finding the monuments or re-establishing the monuments from the best available evidence.

26. For coincident/common boundaries between two dispositions, do I need to tie-in all monuments of the existing disposition? What if, the existing disposition was done via Hybrid Cadastre?

In case of common boundaries between two dispositions, sufficient monuments must be tied-in around the existing disposition in order to accurately establish the common boundary and ensure that it is coincident. If the existing disposition survey plan was done via Hybrid Cadastre, then see FAQ 29 below for further information.

27. In case of intersecting or coincident boundaries with lost Part 2 or Part 3 monuments, do I need to physically re-establish the lost monuments? Is it acceptable to use Re-establishment Coordinates (RC) instead of physically re-establishing the lost Part 2 and Part 3 monuments?

See section 3.3 and 3.4 in HCS for information on re-establishing Part 2 and Part 3 monuments.

If the monument(s) are lost, a Part 2 monument must be re-established physically (i.e., monumenting). If a Part 2 location is unsuitable for posting, an RC may be placed at that location with a remark on the plan stating the reason why a monument was not placed. The same would apply for establishing previously non-monumented Part 2 locations by placing an EC and a remark on the plan if unsuitable to post. A Part 3 monument may be re-established by either monumenting or with an RC.

28. How are the monuments placed during a survey for defining boundaries of a disposition or for geo-referencing purposes referred to as or classified as? Do we show them as Establishment Coordinates (EC) or Observed Coordinates (OC) in the Table of Coordinates?

Under section 3.1 of the HCS, it is stated that “Monuments and coordinates co-exist in a Hybrid Cadastre. At any instant either a coordinate or a monument shall govern a position, but not both.” Therefore, monuments placed during a survey for defining boundaries of a disposition or for geo-referencing purposes govern the position rather than the coordinates shown in the Table of Coordinates. The coordinates shown in the Table of Coordinates must be called Observed Coordinates (OC) as they don't have any governing status.

29. In case a new disposition done via a Hybrid Cadastre plan is abutting an existing disposition also done via Hybrid Cadastre plan, how shall we describe/show the Establishment Coordinates (EC) along the common boundary in the Table of Coordinates? What is the standard for showing the Point Description for such Establishment Coordinates (EC)?

When showing ECs created on an existing plan, they should be labelled as existing establishment coordinates (XCs). The coordinates of XCs as shown on the plan that created them govern that boundary and will govern the boundary of a new adjoining survey. Due diligence needs to be taken when showing the coordinates of XCs on a new plan, as well as when accepting the coordinates shown on any subsequent plan.

30. Under the Hybrid Cadastre, what if a new disposition is surveyed abutting an existing disposition surveyed with a Hybrid Cadastre plan? Can the EC's on the common boundary be replaced with monuments? What sort of documentation is required to do so?

In the case where a new disposition is surveyed with a Hybrid Cadastre survey plan adjoining or intersecting an existing disposition also surveyed as a Hybrid Cadastre survey plan, the surveyor can either cross-reference the XCs as noted in FAQ 29 above or the surveyor can place posts at the XC locations. The exact sequence of the cross referencing is not prescribed; the critical element is that the point is uniquely identifiable, and that additional information may assist in ensuring this. There is no requirement to replace an existing hybrid corner with a physical monument.

Note that if a surveyor decides to replace the XC(s) with iron post(s) using the coordinates from the plan that created it, then they are required to submit the 'Appendix B – Statutory Declaration for Monumenting Hybrid Cadastre Establishment Coordinate Positions' form as found in Appendix B of the [Public Lands Survey Manual](#). This form is required when a monument replaces a position governed by an XC. See Section 3 of the HCS and FAQ 10 for further information.

31. I have a conventional as-built pipeline right-of-way survey plan crossing a hybrid plan. My conventional plan is crossing the hybrid between EC points XX and YY. My questions are: do I need to post this intersection? If so how do I show points XX and YY on our conventional survey? Is there any other information about crossing a hybrid boundary that needs to be stated on the conventional plan?

If you are intersecting, or adjoining an existing hybrid plan with a conventional plan, you need to treat those XCs in the same way as a found monument; however the XC symbol must not be used on a conventional plan. You should use your company's standard symbol for unmonumented points (e.g. “X” or other symbol) and place a note beside it on the body of the plan cross referencing the hybrid plan in the format stated in FAQ 29. (i.e. EC point #39 from MSL15XXXX, Plan # 142XXX

MS Dated dd/mm/yy). The exact sequence of the cross referencing is not prescribed; the critical element is that the point is uniquely identifiable, and that additional information may assist in ensuring this. See Section 3.4 of the Content Requirements for Survey Plans and Sketches for further information.

Unless the situation warrants otherwise (client preference, likely ambiguity, etc.) there is no requirement to replace an XC with physical monument(s).

You should mark all other uncommon/non-coincidental points along the common boundaries using the type of survey monument as prescribed in the AER/AEP PLAR Tables for the disposition type in question.

32. If two hybrid cadastre plans are being prepared simultaneously, then how do we show the governing coordinates on abutting boundaries? What if the order/ priority of registration is not known?

If a practitioner is surveying multiple adjoining dispositions on separate Hybrid Cadastre survey plans, the ECs can be used to define the common boundary. By showing them as ECs on one plan and XCs on the other, preferably the former on the one expected to be filed first, however if the latter plan gets filed first, the coordinates of the XCs will govern in the interim. Even if the surveyor does not know the disposition plan #, it is acceptable to cross-reference with your company job reference identification in the *Point Description* field (e.g., Point 99, LOC15XXXX (if assigned), PXXX Job# 123456, Rev #. The exact sequence of the cross referencing is not prescribed; the critical element is that the point is uniquely identifiable, and that additional information may assist in ensuring this.

33. What if an unregistered Hybrid Cadastre plan done by another surveyor was later on revised and eventually filed? Where do the Hybrid Cadastre plans which cross-referenced to that previously unregistered plan lie in that case? In this case, how do we show the Establishment Coordinates (EC) in the Table of Coordinates to avoid any discrepancies that may arise in future?

It is acceptable to show the coordinates of XCs created on a plan that has not yet been filed by cross referencing that plan. Those coordinates will govern that location for the purpose of that plan. If the coordinates on the other plan subsequently get changed, then the ECs created on that plan would be considered a different point than the XC shown on the other. In the case of conflicting activities, this would need to be resolved between the surveyors.

34. What is the standard for showing Establishment Coordinates (EC) and Observed Coordinates (OC) from an existing Hybrid Cadastre plan (version 1) on an amendment Hybrid Cadastre plan (version 2)? Should EC from version 1 be shown as “Existing EC” in coordinate type column in the Table of Coordinates?

The XCs from version 1 that will continue to be on the boundary must be cross-referenced in the amendment plan (version 2) taking care to not change the coordinates. After field validation, it is acceptable to copy any OCs and RCs from the existing plan or replace with a new value provided the new RC does not create any double monumentation(s). If an XC or RC has already been replaced with an iron post, their OCs must be shown instead.

All lines that are no longer boundaries may be shown in faded/phantom line/text on the plan if it does not clutter the plan; it is not required to show the coordinates values along these lines in the table of coordinates.

The amended plan (version 2) shall have an independent incremental point identifier series cross referenced to the existing plan (version 1) in the Point Description field, as appropriate. The exact sequence of the cross referencing is not prescribed; the critical element is that the point is uniquely identifiable, and that additional information may assist in ensuring this.

35. How can we show/ classify the Establishment Coordinates, Observed Coordinates and Re-establishment Coordinates on Hybrid Cadastre plans? Which symbol should be used for each coordinate type? Are there separate symbols for showing and splitting previously established coordinated positions from the newly established coordinated positions?

According to section 5.2 of the HCS, the abbreviations permitted for showing New Establishment Coordinates, Existing Establishment Coordinate, Observed Coordinates and Re-establishment Coordinates on the body of the plan and in the plan legend are EC, XC, OC and RC respectively. See the table in section 5.2 of the HCS for a complete list of abbreviations and symbols permitted under Hybrid Cadastre.

Note the new symbol for EC, while the symbol for XC is the same as EC in previous versions

36. What is the standard for putting Establishment Coordinates (EC) on a boundary that exceeds 1000m before it reaches a deflection or intersection? What if, the boundary is abutting another disposition or paralleling an existing disposition?

According to the HCS, there are no specific rules regarding distance (spacing) between Establishment Coordinate (EC) points. However, in this matter land surveyors are expected to follow standard practice.

If there is a good operational reason for placing more than just two ECs on a 1000 m boundary, it should be done. Certainly, the placement of additional ECs is not an onerous task and may make things easier in the future should physical monumentation come into play.

The key in doing Hybrid Cadastre survey plans is that while there are specific technical differences in how Hybrid Cadastre surveys are carried out, standard practice and requirements as outlined in the ALSA MSP, *Surveys Act*, etc. remain in effect.

37. In the Hybrid Cadastre, when establishing a point on a (assuming N ¼) blind line, should it be classified as an Establishment Coordinate (EC) or a Re-establishment Coordinate (RC)?

Placing a point on blind line is no different than placing a point on any surveyed line. However, if the Hybrid Cadastre survey plan boundary happens to coincide with the N ¼ on the blind line, a post must be placed if able to do so. In accordance with section 3.3, placing iron posts at the locations defined within Part 2 of the *Surveys Act* is mandatory. If unsuitable, an EC may be placed and a note is to be placed on the body of the plan outlining the reason(s) why,

38. Is it a requirement to run a static session on the geo-reference point directly? Instead would it be acceptable to log data to a temporary point (such as a placed spike that won't be shown on the survey), and determine the CSRS UTM coordinates of that point, but show a found pin connected through RTK ties to that point?

The HCS do not specify that the geo-reference points need to be static observations. They only need to meet the accuracy specification stated in section 4.2 of the HCS. How a surveyor achieves this is a matter of field and office procedures. From a practical perspective, the characteristics of a good RP are not necessarily the same as for a good base station.

39. Can an RC from previous Hybrid Cadastre plans be used in subsequent Hybrid Cadastre plans?

In accordance with section 3.5 of the HCS, due diligence must be exercised when deciding whether to accept a previously re-established coordinate from another surveyor. If you disagree with the coordinates, it follows the concept of conflicting evidence in section Part C Section 5.5 of the ALSA MSP. If you accept that coordinate, use the RC symbol as the previous plan, show those coordinates in the table and cross-reference the original point number and plan in the description column in the same manner as cross referencing XCs.

40. Is it required to put the notation "Fd. No Mark, Left No Mark" on a Hybrid Cadastre survey plan when the point is an RC?

No, surveyors are not required to use the notation "Fd. No Mark, Left No Mark" when the Hybrid Cadastre point is an RC. Use of the coordinate type RC implies that no mark was found at that particular location, although the statement may be used.

Intersections

41. With respect to descriptions on evidence re-establishments, is it okay to put the re-establishment description only in the table of coordinates, or only on the plan, or do the descriptions need to be in both places?

If the description does not clutter the plan, it's ok to put it on the body and/or detail as well as the table as long as it is consistent with the table. However, only the full description needs to be in the table.

42. A hybrid plan is a survey plan that can be used to apply for a public land disposition. What I haven't been able to find is documentation on whether or not an as-built plan or a statutory declaration is then required and at what period in time after construction it would be required?

Just as with a plan of survey, if your client applies for a short-term disposition with a hybrid plan, they only need to submit an as-built plan of survey (or hybrid plan) for the long term disposition if an amendment is required. The same thing applies for AER dispositions at the 5 year stage gate if applied for in OneStop.

43. Can I use the OCs shown on previously registered plans (provided I can validate their closure) to establish my position/coordinates on subsequent plans?

Yes, you can use the OCs shown on previous Hybrid Cadastre survey plans provided you validate the points. If your validation shows the previous plan's coordinates meet the accuracy requirements, then you can use the previous values. Conversely, if you find that the coordinates fall outside accuracy values as stated within the Standards, then use your values and as a professional obligation, inform the other surveyor(s) about this discrepancy.

44. Can we prepare a Hybrid Cadastre plan if the project is in both Crown and Freehold land?

Hybrid Cadastre survey plans are not currently acceptable at Land Titles Office (LTO) for registration as they don't fit under the mandate of the *Land Titles Act*.

Curvilinear Boundaries

45. How are curves defined in the Hybrid Cadastre?

Curves on conventional plans have a constant radius and are monumented at the beginning and the end of curve. In accordance with Part D, Section 1.4 of the MSP, the length of the curve, its radius and the central angle of the curve shall be shown on the plan. Chord length and bearing with length of sub-tangents may also be shown but not essential. The curve is defined by the location of the monuments at beginning and end of curve, the radius and the graphical orientation of the curve (concave or convex). Curvilinear boundaries created by conventional plans continue to be defined by these parameters even when depicted on a hybrid cadastre plan. PCs are not required to be shown on existing conventional curves. An EC along an existing curve is an indication of an intersection or termination of a new Hybrid boundary.

Existing boundaries using spiral curves should be replaced in accordance with Part D, Section 4.9 of the MSP

In the hybrid cadastre, where boundaries are defined by coordinates, new curves are defined by 3 curve defining points. They may be ECs, RCs or OCs. The 3 points may all be PCs or one of them can be the curve centre (CC). Designating the 3 curve defining points is best done in the description column of the Table of Coordinates. The standard curve parameters are also shown on the body of the plan but do not govern any more than the bearings and distances shown. Existing hybrid curves may be shown using the PCs from the plan that created the curve.

46. What are PCs and PTs?

To avoid ambiguity between "end of curve" and "establishment coordinate" (i.e., EC), we do not use BC and EC in those contexts for hybrid cadastre survey plans; instead we use the terms Point on Curve (PC).

A PC is a point that denotes that the boundary is not rectilinear. It may be used at the start and end of the curve. You need to either show a PC somewhere along the curve or coordinate the centre of curve (CC); the PC can be placed near the midpoint if there is no logical reason to show it elsewhere.

Under previous editions of the Hybrid Cadastre Standards a PT is a type of PC that denotes that the curve is tangential to its adjoining segment. It was typically used at the beginning and end of the curve. Version 2.2 has dropped the term.

Any other point along the curve is not a PC to avoid over-constraining the curve. Any new point where a new boundary intersects an existing curvilinear boundary will be an EC.

47. What do I need to show for curvilinear information on the body of the plan and in the Table of Coordinates?

On the main body of the plan, show the appropriate symbol for all PC's, the CC if used as a curve defining point, and other points along the curve. Dimension the curve with the radius, delta angles and arc lengths. Radial bearings should be shown in accordance with the MSP.

In the Table of Coordinates, show the point number and coordinates for the PCs, and other points along the curve; labelling them appropriately (EC, OC or RC) in the point type column. For every new curve, there needs to be three curve defining points. In the Point Description column, you can describe exactly what is happening at that point for clarity (i.e., "PC - on MSL XXXXXX boundary"). If the curve centre is used as one of the curve defining points, CC can be shown in the Table.

48. Under the Hybrid Cadastre, how do we re-establish existing curves? What coordinate type and information needs to be shown if original monuments on the curve are lost? Can we use PCs on existing curves where original monuments are all lost?

Re-establishment of curves that form a boundary (or boundaries) of a disposition within the Hybrid Cadastre regime is undertaken no differently than what is currently done for a conventionally surveyed disposition. Where the original monuments are lost, then they could to be defined using RC or placing a post depicting its OCs. PCs cannot be used since they are used to define governing coordinates. RC coordinated points are only the surveyor's opinion as to the location of the original monuments, but do not govern those locations.

Natural Boundaries

49. Under Hybrid Cadastre, what are the requirements to show natural boundaries? What coordinate type, abbreviation and symbol can be used to show the bank locations at the time of survey? Can EC's be used to show a riparian boundary?

Refer to sections 2.5, 3.7, 5.2 and 5.6 HCS.

50. How do I handle a situation where a disposition boundary is intended to be offset from a natural boundary (a bank for example) where that disposition boundary changes with the natural boundary?

To address issues where a disposition boundary is offset from a natural boundary, please contact the Director of Surveys Office

51. Appendix B statutory declaration was filed with DOS office stating that point 3 EC has been replaced with a post. What should be the correct way of showing the post at point 3 position in the subsequent plan? Shall it be shown as a PI.I or a Fd.I?

Do not show it as a PI.I in the subsequent plan. This may cause a double monumentation situation because the post was placed pursuant to Appendix B statutory declaration and should be shown as a Fd.I in the subsequent plan (not as PI.I) and its OC reflected in the Table of Coordinates.

A survey plan can never replace an existing EC; any attempt to do so would amount to double monumentation. This rule ensures the integrity of the database. Appendix B results in updating of the database which would trigger a change in governing status. Without this rule, it would be impossible to track changes to EC status. Once a monument is placed in field, unless Appendix B is filed, this is either a monument of unknown origin, or a double monumentation. As soon as Appendix B is filed, both these questions are answered. For the purpose of a plan, this monument now (after filing the Appendix B form) becomes a found iron post, and not a placed iron post.