Notice of Proposed Directive Amendments
Directive PNG006: Horizontal Oil Well Requirements

Background

The Ministry of Energy and Resources (ER) is consulting the oil and gas industry on proposed amendments to *Directive PNG006: Horizontal Oil Well Requirements* (the amended Directive). The proposed changes aim to clarify requirements for set-backs, drainage area determination, provincial crown and freehold pooling, and to now include horizontal gas wells as being subject to the Directive.

The Process

ER is launching industry consultations on the amended Directive from September 19, 2022 to October 14, 2022. Once this consultation period is concluded, ER will review all consultation feedback in preparation of a final draft of the amended Directive. The amended Directive is expected to come into effect in the second half of 2022.

Summary of Proposed Changes

The majority of proposed changes are intended to enhance readability of the directive and ensure clarity of ER's rules around horizontal oil and gas wells. A key change is the introduction of new requirements for horizontal gas wells and update of the directive title from "Horizontal Oil Well Requirements" to "Horizontal Oil and Gas Well Requirements" to clarify that the requirements are in relation to spacing and production associated to oil and gas production wells only.

While horizontal gas wells will now be officially subject to Directive PNG006, the rules outlined are reflective of past approvals ER has given to such activity and do not reflect net new requirements.

Other notable changes include:

- Update to multiple definitions and terminologies used, to promote consistency and better understanding.
- Clarification of rules for reduced set-back, drainage area determination, exceptions to set-backs for oil wells including situations involving different Crown pooling, road allowance and wells crossing unit boundaries.
- Removal of repealed sections of the *Oil and Gas Conservation Regulations, 2012.*
- Addition of a new Appendix 2 template for horizontal wells crossing unit boundaries.
- Addition of tables and figures to provide clarification.

Review of Draft Directive

ER is seeking written comments on the proposed amendments outlined in a side-by-side document attached to this notice as Appendix A. Please direct any comments or questions about the proposed amendments to:

ER Service Desk at er.servicedesk@gov.sk.ca
Attn: Mehr Tajik

The deadline for submitting written comments is **October 14, 2022**.

Changes to Directive PNG006: Horizontal Oil Well Requirements

<table>
<tr><th>Existing Section/Wording</th><th>New Section and Wording</th><th>Explanation of Proposed Changes</th></tr>
<tr><td>Title: Horizontal Oil Well Requirements</td><td>Title: Horizontal Oil and Gas Well Requirements</td><td>Included ‘Gas Well’ to accommodate for horizontal gas well requirements and ensure the directive applies to only gas and oil well types.</td></tr>
<tr><td>1. Introduction

This Directive sets out the policies and requirements of the Saskatchewan Ministry of Energy and Resources (ER) for regulating horizontal oil wells in Saskatchewan. It provides details on determining set-backs and drainage areas for horizontal wells.</td><td>1. Introduction

This Directive sets out the policies and requirements of the Saskatchewan Ministry of Energy and Resources (ER) for regulating horizontal oil and gas production wells in Saskatchewan. The requirements set forth are in relation to spacing and production associated to oil and gas wells only.</td><td>Included sentence clarifying that the Directive is only for horizontal oil and gas production wells only.

Changed set-backs to spacing requirements to accommodate horizontal gas wells, which set-back rules are not applied to as they are regulated by target area spacing requirements.

While horizontal gas wells will now be officially subject to Directive PNG006, the rules outlined are reflective of past approvals ER has given to such activity and do not reflect net new requirements.</td></tr>
<tr><td>1.1 Governing Legislation

The requirements outlined in this Directive are authorized under and supported by:
• The Oil and Gas Conservation Act (OGCA);
• The Oil and Gas Conservation Regulations, 2012 (OGCR);
• Associated Directives and Guidelines
  • Directive PNG003: Well Survey Requirements: provides details on the survey of horizontal wells;
  • Directive PNG010: Well Logging Requirements: provides details on the well logging requirements for horizontal wells; and
  • Directive PNG012: Allowable Rates of</td><td>1.1 Governing Legislation

The requirements outlined in this Directive are authorized under and supported by:
• The Oil and Gas Conservation Act (OGCA);
• The Oil and Gas Conservation Regulations, 2012 (OGCR);
• Associated Directives and Guidelines
  • Directive PNG003: Well Survey Requirements;
  • Directive PNG010: Well Logging Requirements;
  • Directive PNG011: Allowable Rate of Production: Gas Wells;
  • Directive PNG012: Allowable Rate of Production: Oil Wells;
  • Guideline PNG 021: Determining Drainage Units and Target Areas;
  • Guideline PNG024: Reclassification and</td><td>Included guidelines and directives that were missing from the list; removed unnecessary directives descriptions and removed reference to repealed sections 37 and 39 of the OGCR.

Minor correction in PNG012 title - removed ‘s’ from Rates.

Corrected reference from section 17.1 to subsection 17(1) to align with OGCA.</td></tr>
</table>

Production: Oil Wells: contains details on theallowable rates of production for horizontal wells Sections 17.1 of the OGCA provides the Minister with the authority to make orders approving plans for horizontal wells. Regulations specific to horizontal wells are contained in sections 37 to 39 of the OGCR. Licensees should consult these documents in conjunction with this Directive.	*Recompletion; and* • *Guideline: Gas Well Absolute Open Flow (AOF).* Subsection 17(1) of the OGCA provides the minister with the authority to make orders approving plans for horizontal wells. Regulations specific to horizontal wells are contained in section 38 of the OGCR. Licensees should consult these documents in conjunction with this Directive.	
Commonly-owned lands: these are mineral lands where the mineral ownership, lessees and partners, well ownership and operator, farm-in agreements, etc., are identical. **Diversely-owned lands:** these are mineral lands where the mineral ownership, lessees and partners, well ownership and operator, farm-in agreements, etc., are <u>not</u> identical.	**Commonly-owned lands:** these are mineral lands where the lessors and lessees between parcels are identical. **Diversely-owned lands:** these are mineral lands where the lessors or lessees between parcels are <u>not</u> identical.	Simplified wording and removed unnecessary details on farm-in agreements. The extra verbiage isn't needed as they are all covered under lessors and lessees.
Horizontal well: means a well that has a productive interval of at least 100 m and that is 80 degrees from vertical, or is deemed by the minister to be horizontal.	**Horizontal well:** means a well that has a productive interval of at least 100 metres (m) and that is at least 80 degrees from the vertical, or is deemed by the minister to be horizontal.	This is the first time metres is being used, so it's defined in parentheses, and then 'm' is used after throughout the document. Included 'at least' wording, to align with horizontal well definition in OGCR.
	Intermediate Casing Point (ICP): is the point at which the production casing in a horizontal wellbore has landed within the stratigraphic unit or zone of interest.	Added a definition for 'Intermediate Casing Point', as this term is used in the directive. This definition was taken from PNG013: Well Data Submission Requirements.
Inter-well set-back: this is measured as the distance between productive intervals of adjacent wells producing or capable producing from the same pool.	**Inter-well set-back:** this is measured as the distance between productive intervals of adjacentwells producing or capable of producing from the same pool.	Updated grammar.

Landing point: refers to the point where the well path has reached horizontal or near horizontal position within the target pool.	**Landing point:** refers to the point where the well path has reached at least 80 degrees from the vertical position within the target pool, referenced in lieu of intermediate casing point when the intermediate casing is not run.	Updated definition for clarity.
Lease boundary set-back distance: this is measured as the distance between the productive interval of a horizontal well and the inside edge of the lease boundary.	**Lease boundary set-back:** this is measured as the distance between the productive interval of a horizontal well and the edge of the lease boundary.	Removed distance to keep it consistent with inter-well setback definition wording. Changed 'inside edge' to 'edge,' as it's just referencing a line.
Monobore well: refers to a horizontal well with a single string of production casing, with uniform diameter, cemented from total depth of the horizontal well to surface.	**Monobore well:** refers to a horizontal well with a single string of production casing, with a uniform diameter, cemented from the total depth of the horizontal well to the surface.	Updated grammar for clarity.
Productive interval: is the section of a horizontal well from the intermediate casing point to bottom hole. On a monobore well, the productive interval is defined as the landing point (LP) to bottom hole, where any perforation must be at a deeper measured depth than the LP, unless otherwise approved.	**Productive interval:** is the section of a horizontal well from the intermediate casing point (ICP)/landing point (LP) to the bottom hole, unless otherwise approved. A contact interval may not be added at a measured depth above the ICP/LP, unless otherwise approved.	Changed wording to provide clarity.
	Tract: refers to an area of land for production allocation purposes.	Added a definition for 'Tract' as this term is used within the directive.
Vertical drainage unit: refers to the spacing assigned to vertical wells. Assistance in determining these is provided in *Guideline PNG021: Determining Drainage Units and Target Areas*. **Ultimate drainage area:** refers to an area calculated using a radius around the proposed well productive interval that is half of the minimum inter-well set-back distance	**Ultimate drainage area:** refers to an area calculated using a radius around the well productive interval that is half of the minimum inter-well set-back distance. **Vertical drainage unit:** refers to the spacing assigned to non-horizontal wells.	Changed the order of definitions, to maintain the right alphabetic order. Updated wording for vertical drainage unit to 'non-horizontal' so that directional wells are accounted for. Removed reference, as this shouldn't be in the definition section. Removed 'proposed' from the 'Ultimate drainage area' definition to account for all wells (proposed and drilled).

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2. Minimum Set-back Requirements

The productive interval(s) of horizontal wells must adhere to specific minimum inter-well and lease boundary set-backs. These set-backs are defined in pool orders, spacing area orders and regulations in the OGCR, but brief descriptions of the minimum inter-well and lease boundary set-back requirements for horizontal wells are presented below.

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2. Minimum Set-back Requirements

<u>Oil Wells</u>

The productive interval(s) of horizontal oil wells must adhere to specific minimum inter-well and lease boundary set-backs. These set-backs are defined in pool orders, spacing area orders and in the OGCR. A brief description and table of the minimum inter-well and lease boundary set-back requirements for horizontal oil wells, as identified within the OGCR, are presented below:

<table>
<tr><th>Set-back Requirement</th><th>Spacing Area E</th><th>Outside Spacing Area E</th></tr>
<tr><td>Minimum Inter-well Set-back</td><td>100 m</td><td>150 m</td></tr>
<tr><td>Lease Boundary Set-back</td><td colspan="2">100 m</td></tr>
</table>

Proposed and ‘as-drilled’ survey plans must show the minimum inter-well and lease boundary set-backs (see *Directive PNG003*: *Well Survey Requirements* for more details).

Exceptions to the minimum set-back requirements are outlined in section 4 of this Directive.

<u>Gas Wells</u>

Horizontal gas wells do not have minimum set-back requirements. One horizontal gas well is permitted per vertical drainage unit. This is applicable to both horizontal and non-horizontal gas wells. For example, if there is one vertical gas well capable of production within the drainage unit, a Spacing Modification application and approval is required for a second gas well, prior to submitting a well licence application.

The productive interval of a gas well must be fully contained within its defined target area (see *Directive PNG007: Off Target Well Requirements* for more details) or identify the well as off-

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Added a table for oil well set-back requirements for visual aid purposes.

Included clarification on horizontal gas well requirements and separated out oil and gas wells.

Pulled information from 2.1 regarding ‘as-drilled’ survey plans and included them in section 2.

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	target. A productive interval of a well may not be in more than one drainage unit without approval. Both horizontal or non-horizontal gas wells are subject to the drainage unit and target area assignment for well location and spacing requirements. The following sections 2.1, 2.2 and 4 are not applicable to gas wells.	
2.1 Inter-well Set-backs Unless defined by a pool order or spacing area order, the productive interval of a horizontal well must have a minimum 150 m inter-well set-back, as set out in section 38(b) of the OGCR. Wells drilled within the stratigraphic units and areas specified by Spacing Area E (see http://publications.saskatchewan.ca/#/products/82401 for more information relating to Spacing Area E) must have a minimum 100 m inter-well set-back. Proposed and 'as-drilled' survey plans must show that the minimum inter-well set-backs will be,or have been, met (see Directive PNG003 for more details).	**2.1 Oil Well Inter-well Set-backs** Unless defined by a pool order or spacing area order, the productive interval of a horizontal well must have a minimum 150 m inter-well set-back, as set out in section 38(b) of the OGCR. Wells drilled within the stratigraphic units and areas specified by Spacing Area E (see http://publications.saskatchewan.ca/#/products/82401 for more information relating to Spacing Area E) must have a minimum 100 m inter-well set-back.	Updated subtitle to apply to oil wells and removed 'as drilled' survey plan information and relocated to section 2.
2.2 Lease Boundary Set-backs Unless defined by a pool order or spacing area order, the productive interval of a horizontal well must have a minimum 100 m set-back to a diversely owned lease boundary, as set out in section 38(b) of the OGCR.	**2.2 Oil Well Lease Boundary Set-backs** Unless defined by a pool order or spacing area order, the productive interval of a horizontal well must have a minimum 100 m set-back from the held lease boundary, as set out in section 38(b) of the OGCR. The road allowance is not part of the lease and therefore cannot be included in the 100 m set-back distance.	Added clarification on road allowances not being included in 100 m set-back distance.
3. Drainage Area Determination All horizontal wells must have their drainage area identified when an application is submitted for a horizontal well licence. A drainage area is determined based on the productive interval of the well and the size of the vertical well drainage unit (e.g., 1 legal subdivision	**3. Drainage Area Determination** <u>Oil Wells</u> All horizontal wells must have their drainage area identified when an application is submitted for a horizontal well licence. A drainage area is determined based on the productive interval of	Added clarification on horizontal gas well requirements and separated out oil wells requirements.

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<td>[LSD], 2 LSDs, etc.).

All vertical well drainage units within the lease boundary set-back of the productive interval of the horizontal well will make up the drainage area.

A company must have agreements in place with all mineral owners of lands that make up the drainage area of a horizontal well prior to submitting an application for a horizontal well licence.The following are a few examples of how to determine the drainage area of a horizontal well given different sizes of vertical well drainage unit.

Figure 1. In this example, the size of the vertical well drainage unit is 1 LSD. The intermediate casing point (ICP) of the proposed horizontal well is 120 m west of the east boundary of Section 26 and 200 m north of the south boundary. In this scenario, the drainage area for a horizontal well will include LSDs 1, 2 and 3 of Section 26.</td>
<td>the well and the size of the vertical well drainage unit (e.g., 1 LSD, 2 LSDs, etc.).

As outlined in section 2, all vertical well drainage units within the lease boundary set-back of the productive interval of the horizontal oil well will make up the drainage area.

A company must have agreements in place with all mineral owners of lands that make up the drainage area of a horizontal well prior to submitting an application for a horizontal well licence.The following are a few examples of how to determine the drainage area of a horizontal oil well given different sizes of vertical well drainage units.

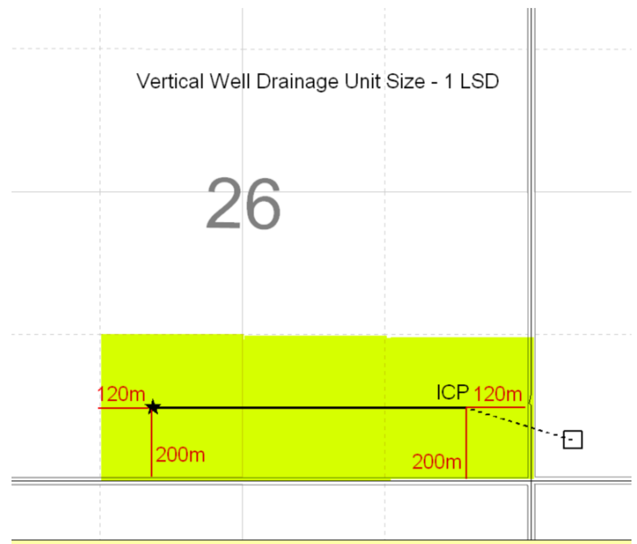

Figure 1. In this example, the size of the vertical oil well drainage unit is 1 LSD. The intermediate casing point (ICP) of the proposed horizontal well is 120 m west of the east boundary of Section 26 and 200 m north of the south boundary. In this scenario, the drainage area for a horizontal well will include LSDs 1, 2 and 3 of Section 26.</td>
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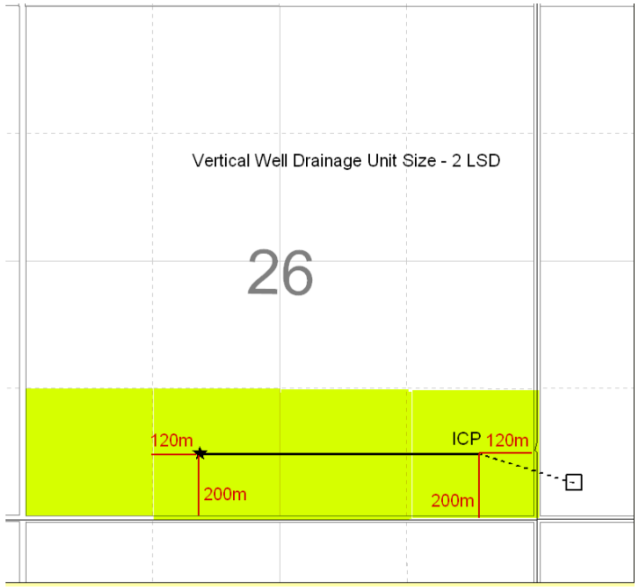
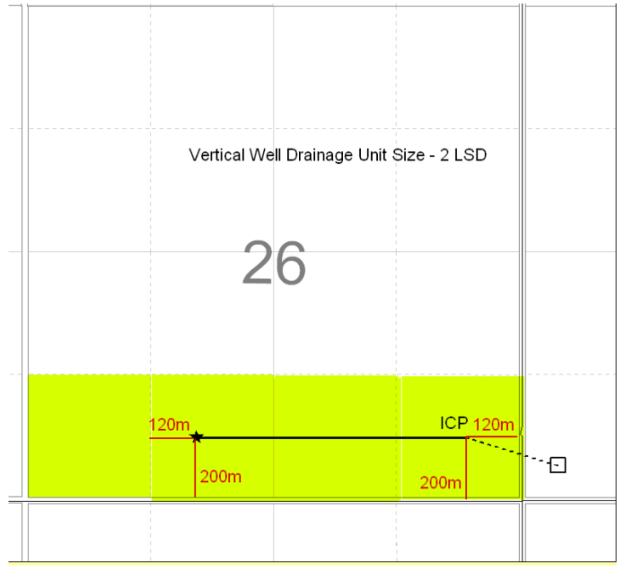
 ***Figure 2.*** *In this example, the vertical well drainage unit covers 2 LSDs. The ICP of the proposed horizontal well is still 120 m west of the east boundary of Section 26 and 200 m north of the south boundary. For thisscenario, the drainage area for a horizontal well will include LSDs 1, 2, 3 and 4 of Section 26.*	 ***Figure 2.*** *In this example, the vertical oil well drainage unit is 2 LSDs. The ICP of the proposed horizontal well is still 120 m west of the east boundary of Section 26 and 200 m north of the south boundary. For this scenario, the drainage area for a horizontal well will include LSDs 1, 2, 3 and 4 of Section 26.* Gas Wells The drainage area for a horizontal gas well is the vertical well drainage unit, unless otherwise approved.	
4. Exceptions to the Set-Back Requirements **4.1 Reduced Inter-Well Set-Backs** A reduced inter-well set-back is permitted if the offset well has 12 months of production where the average production is less than 1 m^3/day. This must be a true average, not artificially obtained, but calculated from natural decline and sustained production.	**4. Exceptions to the Set-Back Requirements Oil Wells** **4.1 Reduced Inter-Well Set-Backs** A reduced inter-well set-back is permitted if the last 12 months of reported production of the offset well has an average production of less than 1 m^3/day. This must be a true average, calculated from natural decline and sustained production.	Included clarification that the last 12 months of reported production should be used for calculating average production.

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<td>4.2 Reduced Diversely-Owned Land Boundary Set-Backs

Reductions to the set-back for diversely-owned lands are permitted if certain conditions for approval are met. These conditions depend on the type of diversely-owned boundary.

• If a minimum lease boundary set-back is not met between diversely-owned disposed Crown minerals, an agreement must be in place between the Crown disposition holders.
• If a minimum lease boundary set-back is not met between diversely-owned freehold mineral lands, there must be a pooling agreement in place between the freehold mineral owners.
• Section 4.3 of this Directive sets out the requirements if a minimum set-back is not met between Crown and freehold land.

Example 1: The productive interval of a well is on FH mineral owner A's land and is less than 100 m from the boundaries of freehold mineral owner B's land. Freehold mineral owner A and freehold mineral owner B have formally agreed to a pooling of interests for the well; therefore the drainage area of the well will include freehold mineral owner B's affected land.

Example 2: The productive interval of a well is less than 100 m from the boundaries of freehold mineral owner A's land. Freehold mineral owner A provides consent allowing for a set-back

reduction from their lands. The drainage area of this well would not include any land owned by freehold mineral owner A and a pooling agreement is not required.

If a minimum set-back is not met and the offset</td>
<td>4.2 Reduced Diversely-Owned Land Boundary Set-Backs

Reductions to the set-back for diversely-owned lands are permitted if certain conditions for approval are met. These conditions depend on the type of diversely-owned boundary:

• Diverse Provincial Crown Lands - if a minimum lease boundary set-back is not met between diversely-owned disposed Provincial Crown minerals, an agreement must be in place between the disposition lessees.
• Diverse Non-Provincial Crown Lands - if a minimum lease boundary set-back is not met between diversely-owned Non-Provincial Crown mineral lands, there must be a pooling agreement in place between those mineral owners.
• Provincial Crown and Non-Provincial Crown Lands - Section 4.3 of this Directive sets out the requirements if a minimum set-back is not met between Provincial Crown and Non-Provincial Crown land.

If a minimum set-back is not met and the offset party (Non-Provincial Crown mineral owner or Provincial Crown lessee) has consented to a reduced lease boundary set-back, those lands would not be included in the drainage area of that horizontal oil well. The following are a few examples of how to determine the drainage area of a horizontal well using different scenarios of the minimum set-back not being met.</td>
<td>Corrected 'freehold' to the Non-Provincial Crown, and Crown to 'Provincial Crown' because federal CR land is treated as freehold land.

Moved wording for reduced setback consents to top (order of importance).

Added clarity for when consents are not acceptable.

Included figures for examples, and updated figure numbers.

Corrected grammar from 'an LSD' to 'a LSD'.</td>
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</table>

party has consented to a reduced lease boundary set-back, those lands would not be included in the drainage area of that horizontal well.

Note: Consent will not be accepted to exclude an LSD that must be included due to sharing a vertical well drainage unit with the offset LSD.

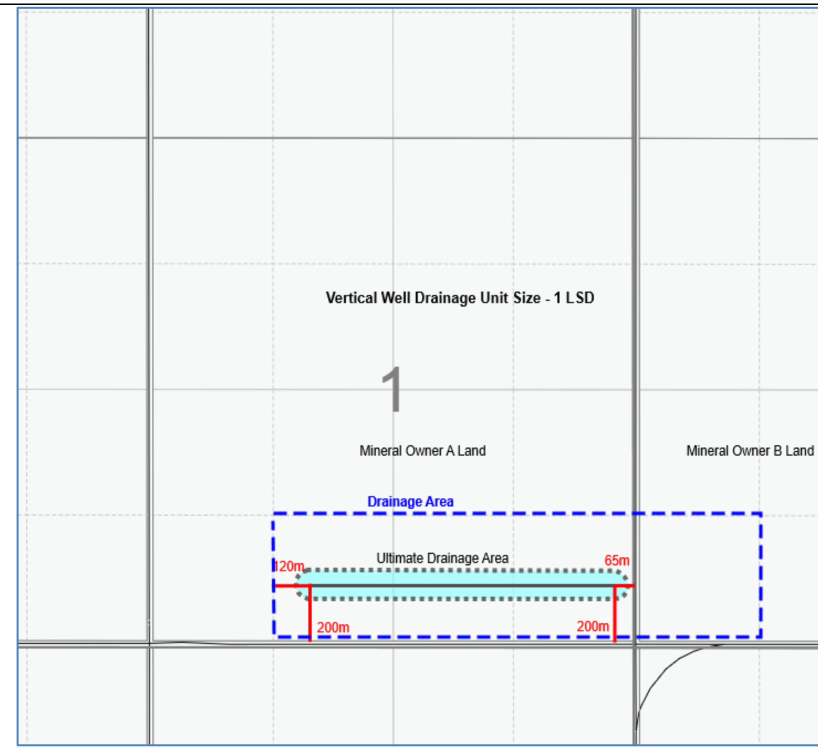


Figure 3. *In this example, the productive interval of a well is on mineral owner A's land and is less than 100 m from the boundaries of mineral owner B's land. Mineral owner A and mineral owner B have formally agreed to a pooling of interests for the well; therefore, the drainage area of the well will include mineral owner B's affected land. Provincial Crown lands would require agreements between the Crown lessees if different (Diverse Provincial Crown Lands) and Non-Provincial Crown lands would require agreements to be in place between the mineral owners (Diverse Non-Provincial Crown Lands).*

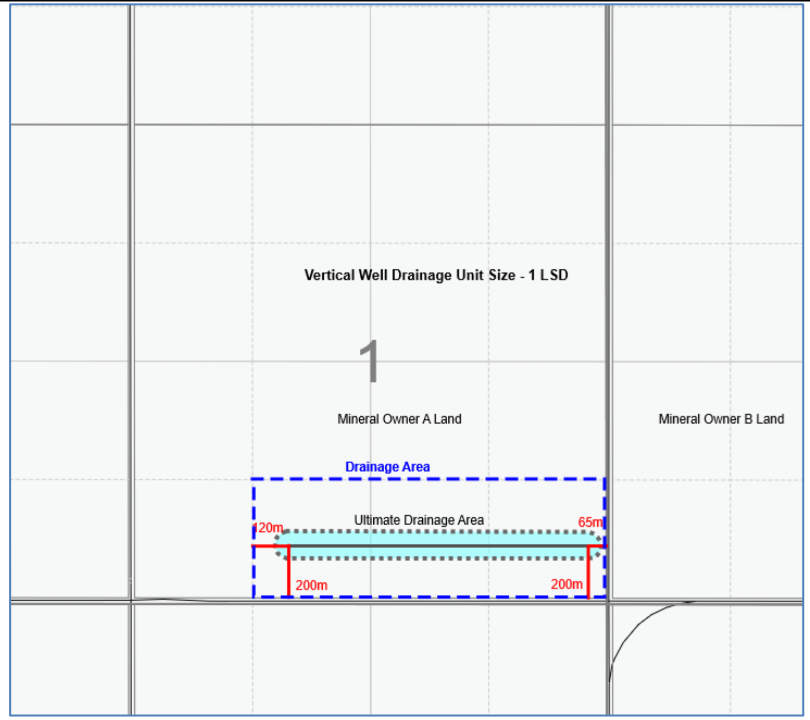
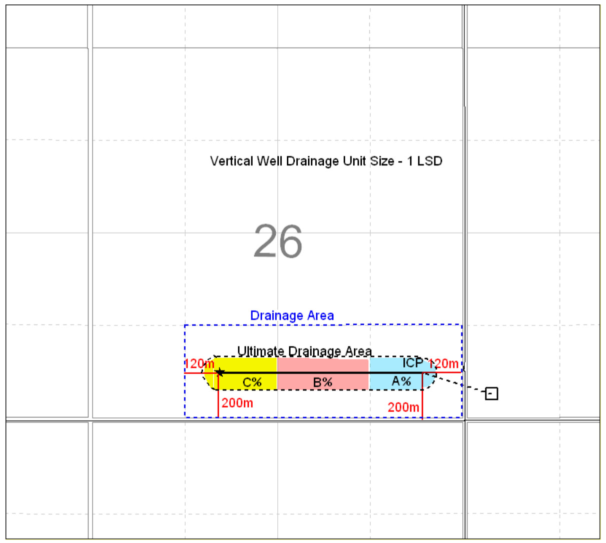
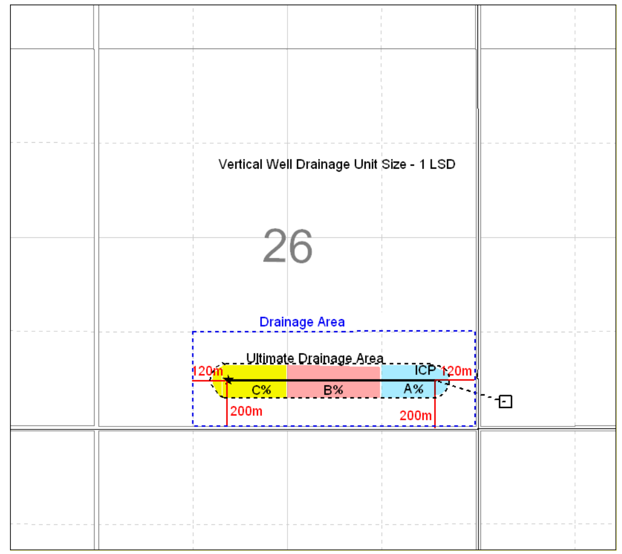


Figure 4. *In this example, the productive interval of a well is less than 100 m from the diverse mineral owner B's land. Owner B (lessee of provincial Crown land or Non-Provincial Crown land owner) provides consent allowing for a set-back reduction from their lands. The drainage area of this well would not include any land associated to mineral owner B as they have consented to the well not meeting the equity boundary setback and a pooling agreement is not required.*

Note: Consent will not be accepted to exclude a LSD that must be included due to sharing a vertical well drainage unit with the offset LSD. Consent is also not acceptable if a portion of the productive interval of the well is contained by the lands to be excluded.

4.3 Situations Involving Crown/Freehold Pooling The following examples illustrate exceptions to the minimum inter-well set-back where the drainage area of a horizontal well covers both Crown and freehold tracts, and the Crown disposition holder and the freehold owners have a pooling agreement.  ***Figure 3.*** *Determining the drainage area and ultimate drainage area of a horizontal well where theCrown/freehold pooling agreement covers a vertical drainage unit of 1 LSD.* In the example in Figure 3, the minimum inter-well set-back is 150 m, so a 75 m drainage radius (half of the minimum set-back) is used when calculating the ultimate drainage area (UDA) of the productive interval of the well.	**4.3 Situations Involving Provincial Crown/Non-Provincial Crown Pooling** The following examples illustrate exceptions to the minimum diverse boundary set-back where the drainage area of a horizontal well covers both Provincial Crown and Non-Provincial Crown lands, and the Provincial Crown disposition holder and the Non-Provincial Crown owners have agreed to pool.  ***Figure 5.*** *Determining the drainage area and ultimate drainage area of a horizontal oil well where the Provincial Crown/Non-Provincial Crown pooling agreement covers a vertical drainage unit of 1 LSD.* In the example in Figure 5, the minimum inter-well set-back is 150 m, 75 m is therefore the drainage radius which is used for calculating the ultimate drainage area (UDA) of the productive interval of the well. Each LSD within the drainage area is a tract. The tract for each LSD is based on the percentageof the UDA within that LSD. As shown in Figure 5, LSD 1 would be allocated production in accordance with A% of the UDA, LSD 2 would be allocated B%, and LSD 3 would be allocated C% of the UDA.	Included production allocation table, for example purposes. Corrected inter-well set-back to diverse boundary (as this is where the set-back is being measured from). Clarified wording and included two production allocation tables, which show the formulas used in allocating production for figures 3 and 4 (now figures 5 and 6). Updated figure 4 (now figure 5) to make it more clear for industry, since on survey plans their tract are split between each LSD and are not already summed up (as the old figure 4 showed for allocation A). The new table for figure 4 (figure 5) shows that LSD 1 and 2 are summed, so the figure should reflect this. Added information on when the Crown approves the proposed tract allocation for clarification purposes. Updated figure numbers.

Each LSD within the drainage area is a 'tract'. The tract for each LSD is based on the percentageof the UDA within that LSD. As shown in Figure 3, LSD 1 would be allocated production in accordance with A% of the UDA, LSD 2 would be allocated B%, and LSD 3 would be allocated C% of the UDA.

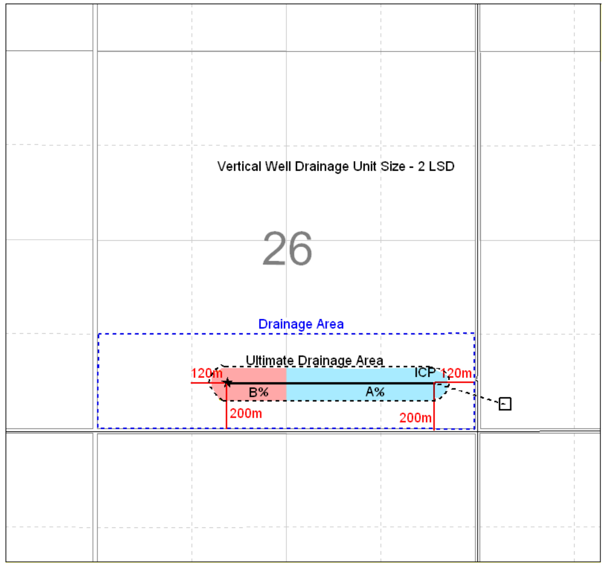


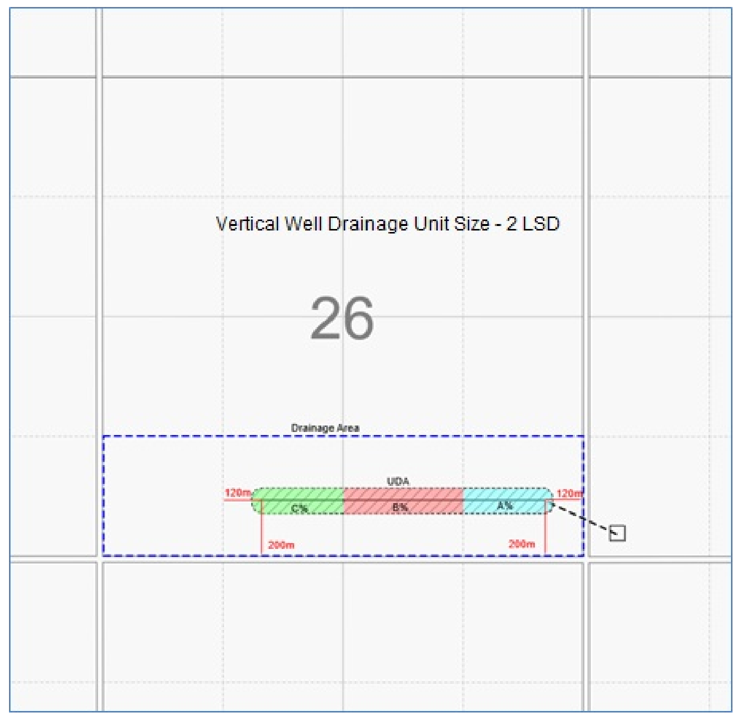
Figure 4. *Determining the drainage area for a horizontal well with a Crown/freehold pooling agreement in place, where the vertical drainage unit area covers 2 LSDs.*

In the example in Figure 4, the minimum inter-well set-back distance is 150 m, so a 75 m drainage radius (half the minimum set-back) is used for calculating the UDA. However, the vertical drainage unit size is 2 LSDs (80 acres); therefore LSD 4 of Section 26 is now included in the drainage area. Each LSD within the drainage area is still a tract, but the allocation of each tract is divided evenly within each vertical drainage unit.

For example, LSD 1 is allocated A/2 % of the UDA, LSD 2 is also allocated A/2%, LSD 3 is allocatedB/2%, and LSD

For example, the production would be allocated as per the below table where the total allocated production will add up to 100%. For clarity purposes, the table shows the derivation of the production allocation from UDA lands.

LSD-SEC	UDA (ha/ac/m^2)	Production Allocation (%)
1-26	A	$\frac{A}{D} * 100$
2-26	B	$\frac{B}{D} * 100$
3-26	C	$\frac{C}{D} * 100$
Total	D	100%



4 is allocated B/2%. The total allocated percent of production will add up to 100%.

All mineral owners within the drainage area must be a part of the agreements in place and thepooling declaration letter (see Appendix 1) must be attached to the horizontal well licence application.

Figure 6. *Determining the drainage area for a horizontal oil well with a Provincial Crown/Non-Provincial Crown pooling agreement in place, where the vertical drainage unit area covers 2 LSDs.*

In the example in Figure 6, the minimum inter-well set-back distance is 150 m, 75 m is therefore the drainage radius which is used for calculating the UDA. In this example, the vertical drainage unit size is 2 LSDs; therefore LSD 4 of Section 26 is now included in the drainage area. Each LSD within the drainage area is still a tract, but the allocation of each tract is divided evenly within each vertical drainage unit.

For example, LSD 1 is allocated A/2 % of the UDA, LSD 2 is also allocated A/2%, LSD 3 is allocatedB/2%, and LSD 4 is allocated B/2%. The total allocated percent of production will add up to 100%.

The production would be allocated as per the table below, where the total allocated production will add up to 100%. It is assumed that the UDA allocation is derived from UDA lands.

LSD-SEC	UDA Allocation (%)	Production Allocation (%)
1-26	A	$\frac{A+B}{2}$
2-26	B	$\frac{A+B}{2}$
3-26	C	$\frac{C}{2}$
4-26	0	$\frac{C}{2}$

	Total	100%	100%	

All mineral owners within the drainage area must be a part of the agreements in place and thepooling declaration letter (see Appendix 1) must be attached to the horizontal oil well licence application. The Provincial Crown provides approval of the proposed allocation by the issuance of the licence.

4.4 Situations Involving Road Allowances

All road allowances are considered 100% Crown-owned land. However, when determining drainage areas, road allowances are only taken into account if the proposed well pools both Crown and freehold minerals. In these situations, the road allowance percentage is added to the UDA percentage of the nearest Crown tract within the drainage area, as shown in Figure 5.

If there is a Crown/freehold split on either side of the road allowance, the road allowance is divided evenly between the tracts on either side of the road allowance, as shown in Figure 6.

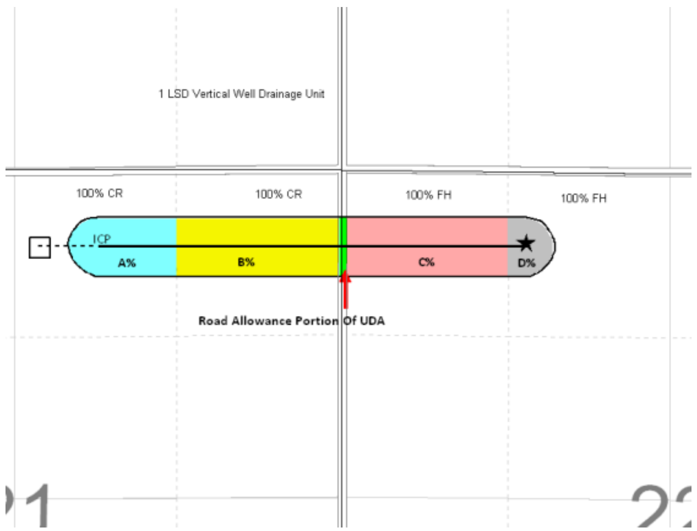


Figure 5. *Example of a road allowance allocation for a pooling agreement involving Crown and freeholdtracts. In this situation, the percentage of the drainage area allocated to the road allowance portion ofthe UDA would be added to tract B in LSD 16 of Section 21, since this is the nearest Crown tract in the drainage area.*

4.4 Situations Involving Road Allowances

All road allowances are considered 100% Provincial Crown-owned land. However, when determining drainage areas, road allowances are only considered if the proposed well pools both Provincial Crown and Non-Provincial Crown minerals. In these situations, the road allowance percentage is added to the UDA percentage of the nearest Crown tract within the drainage area, as shown in Figure 7.

If there is a Provincial Crown/Non-Provincial Crown split on either side of the road allowance, the road allowance is divided evenly between the tracts on either side of the road allowance, as shown in Figure 8.

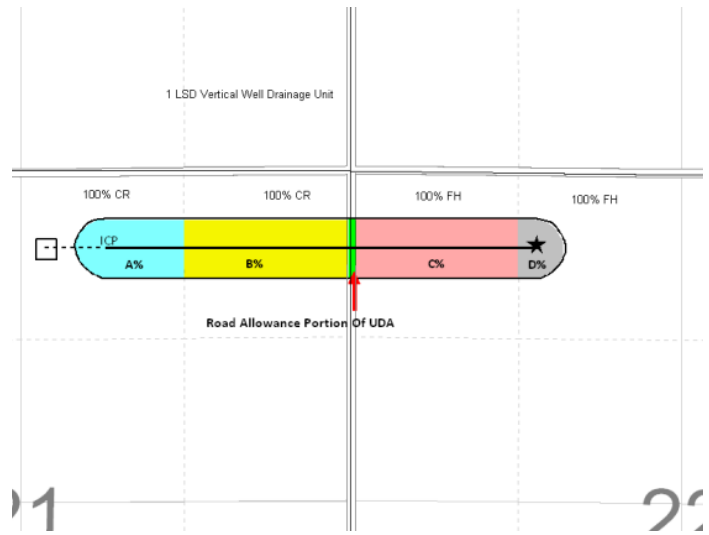


Figure 7. *Example of a road allowance allocation for a pooling agreement involving Provincial Crown and Non-Provincial Crown tracts. In this situation, the percentage of the drainage area allocated to the road allowance portion ofthe UDA would be added to tract B in LSD 16 of Section 21, since this is the nearest Crown tract in the drainage area.*

For example, the production would be allocated as per the table

Added examples and tables to support the information in figures 5 and 6 (now figures 7 and 8), to show how the production allocation is calculated.

Added in clarification for when changes can be made to the production allocation percentages.

Updated Figure numbers.

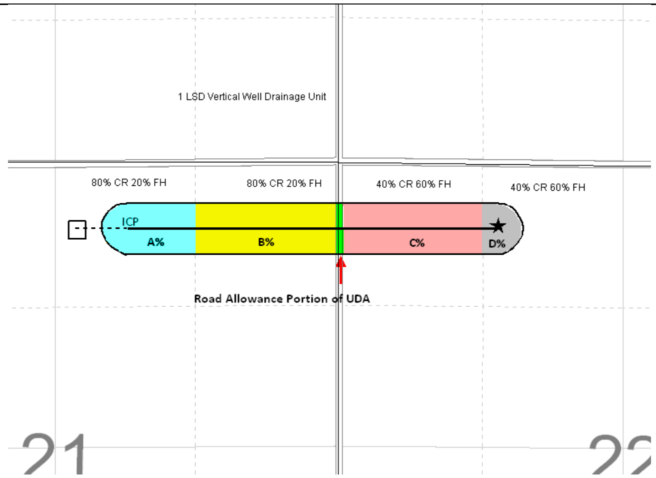


Figure 6. *Example of a road allowance allocation where the Crown and freehold tracts in a pooling agreement are split between the road allowance. In this situation, the road allowance percentage of the drainage area would be divided evenly between tracts B and C. Tract B in LSD 16 of Section 21 would have50% of the road allowance portion added, and tract C in LSD 13 of Section 22 would have 50% of the road allowance portion added.*

If the well has any tract that is 100% Crown-owned, the road allowance percentage would be added to that LSD, even if it is not directly adjacent to the road allowance.

The same rules would apply if the vertical well drainage unit size was greater than 1 LSD. Theroad allowance portion would be added to the UDA percentage of the entire vertical drainageunit. Then this total percentage would be divided down to the LSD level.

below, where the total allocated production will add up to 100%. It is assumed that the UDA allocation is derived from UDA lands.

LSD-SEC	UDA Allocation (%)	Production Allocation (%)
15-21	A	A
16-21	B	B + RA
13-22	C	C
14-22	D	D
Road Allowance	RA	N/A
Total	100	100

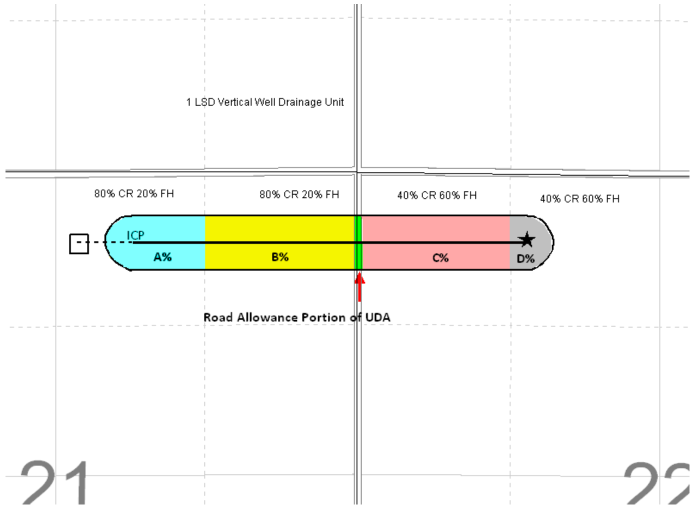


Figure 8. *Example of a road allowance allocation where the Provincial Crown and Non-Provincial tracts in a pooling agreement are split between the road allowance. In this situation, the road allowance percentage of the drainage area would be divided evenly between tracts B and C. Tract B in LSD 16 of Section 21 would have 50% of the road allowance portion added, and tract C in LSD 13 of Section 22 would have 50% of the road allowance portion added.*

For example, the production would be allocated as per the table below, where the total allocated production will add up to 100%.

It is assumed that the UDA allocation is derived from UDA lands.

LSD-SEC	UDA Allocation (%)	Production Allocation (%)
15-21	A	A
16-21	B	$B + \frac{RA}{2}$
Road Allowance	RA	N/A
13-22	C	$C + \frac{RA}{2}$
14-22	D	D
Total	100%	100%

If the well has any tract that is 100% Crown-owned, the road allowance percentage would beadded to that LSD, even if it is not directly adjacent to the road allowance.

The same rules would apply if the vertical well drainage unit size was greater than 1 LSD. Theroad allowance portion would be added to the UDA percentage of the entire vertical drainage unit. Then this total percentage would be divided down to the LSD level.

Amendments to the drainage area and/or the production allocation percentages can be made after the well is drilled and

	completed. It is the responsibility of the licensee to ensure agreements in place remain valid for any changes in production allocation.	
	4.5 Situations Involving Unit Boundary Crossings A horizontal production well can be proposed to licence with the productive interval crossing a unit boundary. On the licence application within the completion detail: • Indicate the well is crossing a unit boundary. • Specify the production allocation as per this section. • A declaration must be made that the proposed well is **not** meeting equity setbacks and that agreements are in place between all parties (i.e. between units or between unit(s) and non-unit) • An attachment must be provided that shows the impacted units and other parties that make up the drainage area of the well and confirms agreements are in place with said parties to allow for production allocation.	This new subsection presents information related to scenarios when horizontal wells are crossing unit boundaries. This information is currently on Saskatchewan.ca, however, it should be in the directive for easy reference. The website may be updated to remove this information once the directive change is approved.
Appendix 1: Crown/Freehold Pooling Declaration Letter **DATE** **<u>ABC Company</u>** **Address** **Address** **Subject: Proposed Well (1-1) 1-2-1-1 W2M** **With regards to the proposed well outlined by survey plan number XXXXXXXXX, agreements are in place to allow pooling between <u>ABC Company</u> and all freehold/non-provincial crown mineral owners within the Drainage Area of the subject well. The agreements in place must allow a**	**Appendix 1: Provincial Crown/Non-Provincial Crown Pooling Declaration Letter** **DATE** **<u>ABC Company</u>** **Address** **Address** **Subject: Proposed Well (1-1) 1-2-1-1 W2M** **With regards to the proposed well outlined by survey plan number XXXXXXXXX, agreements are in place to allow pooling between <u>ABC Company</u> and all Non-Provincial Crown mineral owners within the Drainage Area of the subject well. The agreements in place must allow a portion of production to be allocated to the provincial Crown in accordance with the requirements outlined**	Updated wording to change 'freehold' to 'Non-Provincial Crown' and 'Crown' to 'Provincial Crown'.

portion of production to be allocated to the provincial Crown in accordance with the requirements outlined within *Directive PNG006*. The agreements in place must also allow for the production allocation percentages to be adjusted based upon the as-drilled well detail and be assigned as per *Directive PNG006*. The following shows the freehold/non-provincial crown mineral owners that are within the drainage area of the well and are therefore party to the agreements that are required to be in place: MINERAL OWNER — ASSOCIATED LANDS J Smith — 1-2-1-1 W2M G Beck — 2-2-1-1 W2M Federal CR Land — Portion of 3-2-1-1 W2M It is understood the Ministry may require ABC Company to provide documentation supporting the above statement at any time. Failure to provide documentation within seven business days of request may result in an action being taken against the licence or well. By signing below, ABC Company, is certifying the above information is accurate and complete. Signed,	within Directive PNG006. The agreements in place must also allow for the production allocation percentages to be adjusted based upon the as-drilled well detail and be assigned as per *Directive PNG006*. The following shows the Non-Provincial Crown mineral owners that are within the drainage area of the well and are therefore party to the agreements that are required to be in place: MINERAL OWNER — ASSOCIATED LANDS J Smith — 1-2-1-1 W2M G Beck — 2-2-1-1 W2M Federal CR Land — Portion of 3-2-1-1 W2M It is understood the Ministry may require ABC Company to provide documentation supporting the above statement at any time. Failure to provide documentation within seven business days of request may result in an action being taken against the licence or well. By signing below, ABC Company, is certifying the above information is accurate and complete. Signed, Company Representative Name Company Title/Role, ABC Company	

<table>
<tr><td>Company Representative Name Company
Title/Role, <u>ABC Company</u></td><td></td><td></td></tr>
<tr><td></td><td>Appendix 2: Unit Boundary Crossing Letter

DATE

<u>ABC Company</u>
Address
Address

Subject: Proposed Well (1-1) 1-2-1-1 W2M

With regards to the proposed well outlined by survey plan number XXXXXXXXX, the well is not meeting equity setbacks, and agreements are in place between all parties (i.e between units or between unit(s) and non-unit) to allow for production allocation across the unit boundary within the Drainage Area of the subject well.

The agreements in place must also allow for the production allocation percentages to be adjusted based upon the as-drilled well detail and be assigned as per Directive PNG006.

The following shows the impacted units and any non-unit parties that make up the drainage area of the well and are therefore party to the agreements that are in place:

<table>
<tr><th>OWNERSHIP</th><th>ASSOCIATED LANDS</th></tr>
<tr><td>Unit: SK UN UXXXX
Unit Operator : XXXXX</td><td>1-2-1-1 W2M</td></tr>
<tr><td>Non-Unit Lessor: XXXXX</td><td>2-2-1-1 W2M</td></tr>
<tr><td>Non-Unit Lessee: XXXXX</td><td>2-2-1-1 W2M</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
</table>
</td><td>Added a new Appendix 2, to provide a template for HZ wells crossing unit boundaries.</td></tr>
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It is understood the Ministry may require <u>ABC Company</u> to provide documentation supporting the above statement at any time. Failure to provide documentation within seven business days of request may result in an action being taken against the licence or well.
By signing below, <u>ABC Company</u>, is certifying the above information is accurate and complete.
Signed,
Company Representative Name Company Title/Role, <u>ABC Company</u>
</td>
<td></td>
</tr>
</table>