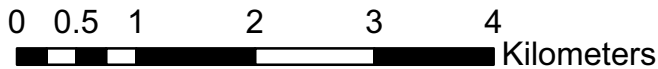


# Copper Creek 2017 Visual Assessment RDI Resource Design Inc December 26, 2017

- 2017\_Viewpoints\_West
  - 2017\_Viewpoints
  - Copper17\_Roads
  - GarrisonCTRClip
  - CascadesGarrisonScenicClip
  - Manning\_Prov\_Park
  - Copper17-26
  - Copper\_19-26\_New
  - CO84N\_L17
  - Copper\_Logged\_Recent
- REC\_EVQO\_C**
- NVS
  - M
  - P
  - PR
  - R



2017 Cutblock Layout Visualization  
Viewpoints Either Cleared for Open Viewing or No VRI Data - to be Field Verified



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RDI Resource Design Inc (RDI) was requested to conduct a visual analysis of the Copper 2017-2026 cutblocks by David Lishman August 8, 2017. The database was received from Sarah Cooke on September 13, 2017. RDI requested road files and WTRAs, and received those files on November 8, 2017 and November 22, 2017 respectively.

RDI had previously set potential viewpoints in a 2015 project and applied these to the assessment. That report was dated February 1, 2015. It is important to note that no field work was conducted by RDI neither for the original project nor for the 2017 project preliminary review. RDI has offered to participate in a summertime field review, subject to funding.

RDI assessed the potential viewpoints using Visual Nature Studio simulation techniques. Of the original 12 viewpoints determined in the 2015 project which one might encounter hiking along the Manning Park and Cascades Recreation Area boundaries, 6 were selected and an additional 5 were added in the 2107 assessment following vigorous testing. Some of the 2015 viewpoints were outside of the Park / Recreation Area boundaries and were considered not to be relevant, although viewing opportunity exists. The new and repeat viewpoints provide potential viewing coverage for all of the new and existing cutblocks as shown in the Summary Table on the next page with one exception: CO87Q, which is on a northeast aspect close to Copper River in the west portion of the assessment area. RDI has provided an aerial oblique overview covering this cutblock for confirmation purposes (VP 41).

Panoramas were constructed by stitching together individual 40 degree field of view (48 mm camera lens). Viewpoints 32, 37 and 41 are 40 degree FOV single images. Both proposed and recently harvested cutblocks were included in the simulations. If not already absent of forest data ("no VRI Data" in the table), viewpoints were cleared of vegetation in the simulation model ("cleared" in the table) to provide the best (worst) case viewing opportunities. This was also done as no actual field knowledge nor photographs were available. The simulations serve as open viewing conditions should harvesting occur up to the park boundary as has already occurred with harvested cutblocks CO5ZZ, CO808, and CO7ZQ, and with planned cutblocks CO80A and CO809.

RDI constructed 4 Landforms from the Visual Sensitivity Units (VSUs) provided by BCTS for Copper Creek by which to assess and measure the adequacy of the plan for meeting the established Visual Quality Objectives. The landform determination used the VSUs boundaries as a general indicator, with their VQOs. The VSUs were found to be too discontinuous relative to the multiple viewpoints established by RDI to assist visual analysis. RDI extended the boundaries to form the natural landforms following along creeks and/or ridgelines. The VQOs were generally Partial Retention. This VQO was selected as the main VQO for the assessment, though VSUs with a more restrictive Retention VQO were acknowledged.

Percent Alteration calculations were produced from 2 viewpoints - VPs 21 and 24. These were selected as they provided the most open and proximate views towards cutblocks CO7ZV and CO7ZL in Landform 1. David Lishman had emphasized the priority of these two cutblocks. General comments were provided such as ability of cutblock shapes and patterns to conform with visual force lines, and the potential to meet the VQO by Percent Alteration.

The angle of view down and across ridgelines created somewhat complex landform assessment. The presence of existing and proposed cutblocks in the immediate foreground also provided some challenges for measurement. RDI made the practical decision to defer any design intervention pending field review. Detailed assessment will follow once actual viewing conditions are known. Field review can take place with or without RDI participation, depending on managerial determination. Best viewing opportunities should be sought, marking the viewpoints with GPS. Panoramic photography should be taken.

Cutblocks CO7ZV and CO7ZL in Landform 1 have satisfactory appearance as seen from the viewpoints from the various viewpoints from which they can be seen. CO7ZV is moderate in size for the landform (VPs 21, 24, 27, 32 and 37) while CO7ZL is small, or small to moderate in background view (VP 2, VP 4), As these are priority cutblocks, both could be approved initially, with the proviso that actual visibility information is to be determined during a field visit which is anticipated by RDI to result in a reduction in visibility due to intervening tree screening. Further guidance is provided on each viewpoint analysis page.

Cutblock A70574-2 sits nearly completely within VSU 870 which has a Retention VQO. The single glimpse of the cutblock exceeds the VQO descriptor from VP 32. A narrow upper fringe of Cutblock CO8T5 sits within Retention VSU 892, being visible through the tree edge, and should be monitored. The northwest portion of existing cutblock CO84N sits within Retention VSU 889. One of the original viewpoints identified by RDI (VP 14) captures its presence, and likely exceeds the Retention Visual Quality Class. This potential non-compliance should be addressed by BCTS.

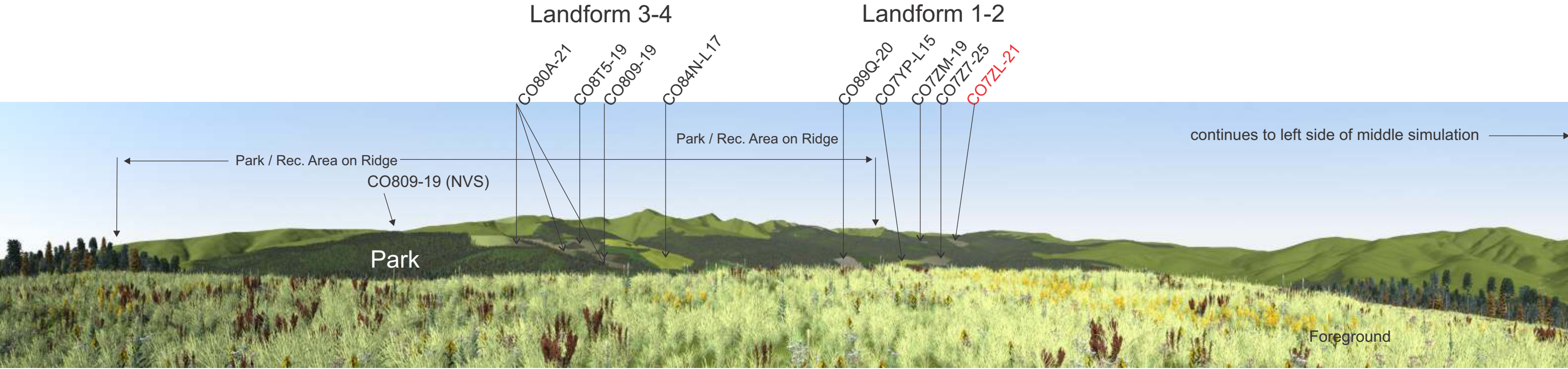
The task of depicting 21 proposed cutblocks and 6 recently harvested blocks was major. RDI considers the task very worthwhile as it provides BCTS with a comprehensive 13 viewpoint glimpse 9 years into the future which will greatly assist planning and scheduling while meeting Visual Quality Objectives as might be seen from Manning Provincial Park and the Cascades Recreation Area. The effort will be seen as an important component of due diligence on the part of BC Timber Sales.



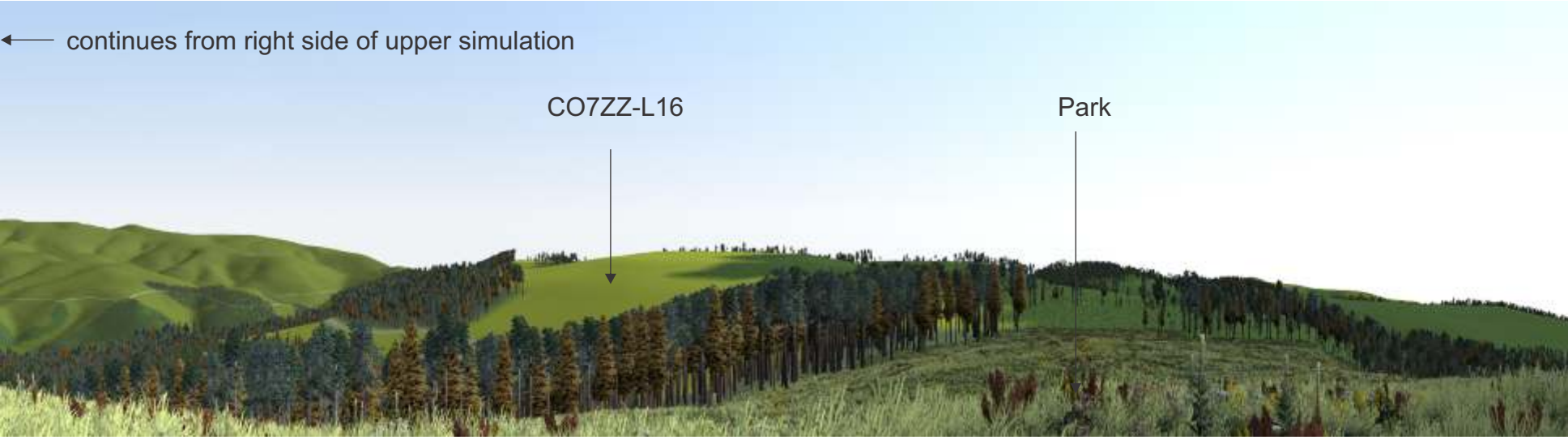
Ken B. Fairhurst, PhD, RPF  
RDI Resource Design Inc  
December 26, 2017

Copper 2017-2026 Cutblocks Arranged from East to West													
Garrison/Copper Blocks 2017-2026			2.2 cleared	3.1 cleared	4.2 cleared	6.1 cleared	10.1 no VRI Data	19 no VRI Data	G21 cleared	G24 cleared	27.1 cleared	32 no VRI Data	37 no VRI Data
2021	Landform 4	CO8U3						V	V	V			
2021	Landform 4	CO8UO							V	V			
2021	Landform 4	CO8OD							V	V	V		
2021	Landform 4	CO80E		V					V	V			
2018	Landform 4	CO80B		V			V			V			
2021	Landform 4	CO80A	V	V-FG	V		V		V	V		V	V
2019	Landform 4	CO809	V		V-FG		V						V
2019	Landform 3	CO8T5	V		V	V	V						
2020	Landform 3	CO89Q			V								
2025	Landform 2	CO7Z7	V		V								
2025	Landform 2	CO7XS							V		V	V	V
2025	Landform 2	CO7XR							V	V	V	V	
2019	Landform 1	CO7ZM	V		V				V	V	V		
2021	Landform 1	CO7ZL	V		V				V	V			
2020	Landform 1	CO87Q	V										
2020	Landform 1	CO87P											V
2020	Landform 1	CO7ZV							V	V	V	V	V
2019	Landform 1	CO80C											V
2025	Landform 1	CO7XV								V		V	V
2021	Landform 1	CO7XT								V			V
2026	Landform 1	A70574-2										V	
Logged - arranged from East to West													
2016	Landform 4	CO5ZZ	V-FG						V		V	V	V
2016	Landform 4	CO808				V-FG	V						
2017	Landform 3	CO84N	V		V	V							
2015	Landform 3	CO7YP	V					V	V				
2016	Landform 2	CO7ZQ							V-FG?				V
2017	Landform 1	CO7XU										V	V
V		Visible or potentially visible - requires field verification											
		Recently Logged - Visible or potentially visible - requires field verification											
cleared		Viewpoints cleared in VNS for open viewing - all require field check											
no VRI		no VRI data - require field check											
Landform		a collection of small VSUs grouping cutblocks into 4 logical units based on terrain											





Park / Rec. Area in Foreground and on Back Ridge above Cutblock Slopes  
 Upper simulation wraps around from Landform 4 on left (east), to L1 and 2 the centre (on west) and middle simulation continues around to L4 again on right .



Landform 3-4: VSU 871 is the far ridge 6 km from the viewpoint on the left in the upper simulation and in the immediate foreground on the left of the middle simulation. Cutblock shapes and pattern are compatible in the landform, including the existing CO84N logged in 2017. RDI makes no recommendations pending on-site determination.

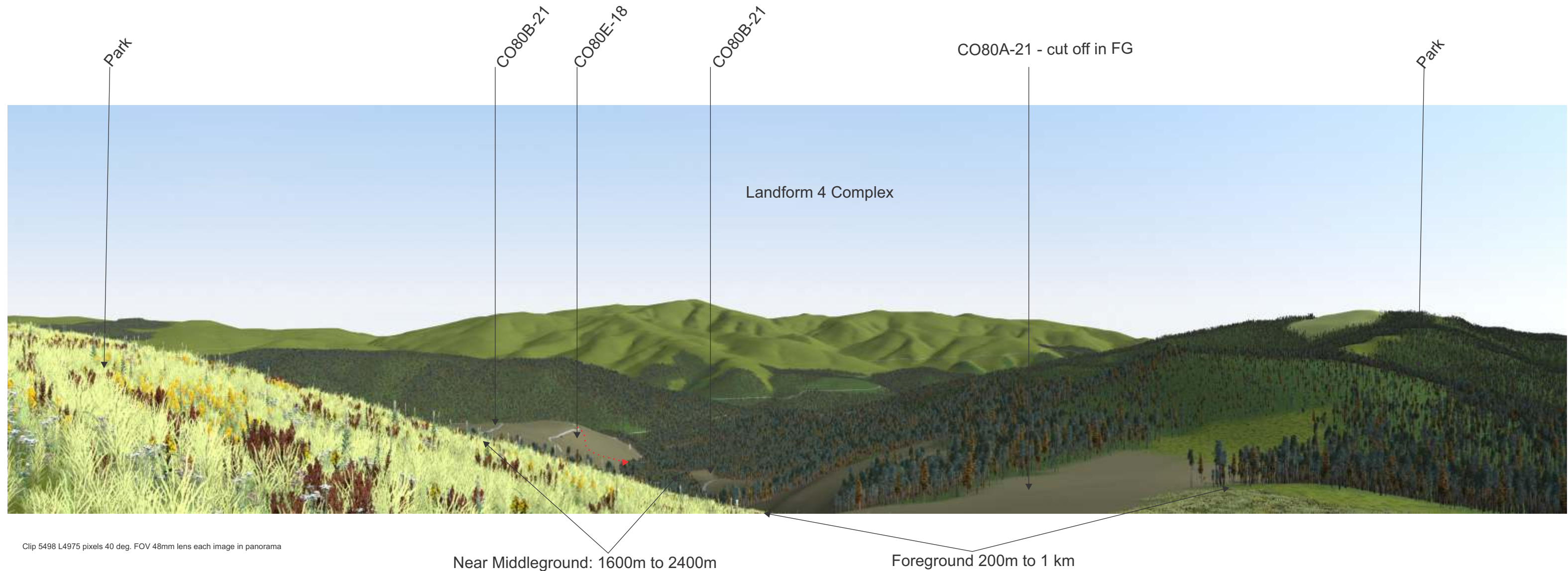
Landform 1-2: VSU 863 is 9 km from the viewpoint (Landform 1) in the upper simulation. Cutblocks are well-distributed and are shaped in conformity with the major force lines outlining the landform with possible rectangular shape noted in CO89Q. RDI makes no recommendations pending on-site determination.

CO7ZL is in view as a moderate-sized opening in the centre background (10 km) of the upper image. CO7ZV is not seen from this viewpoint. As these are priority cutblocks, both could be approved initially, with the proviso that actual visibility information is to be determined during a field visit which is anticipated by RDI to result in a reduction in Percent Alteration due to screening.



Viewpoint 2.21 - 2017 Pano (cleared)



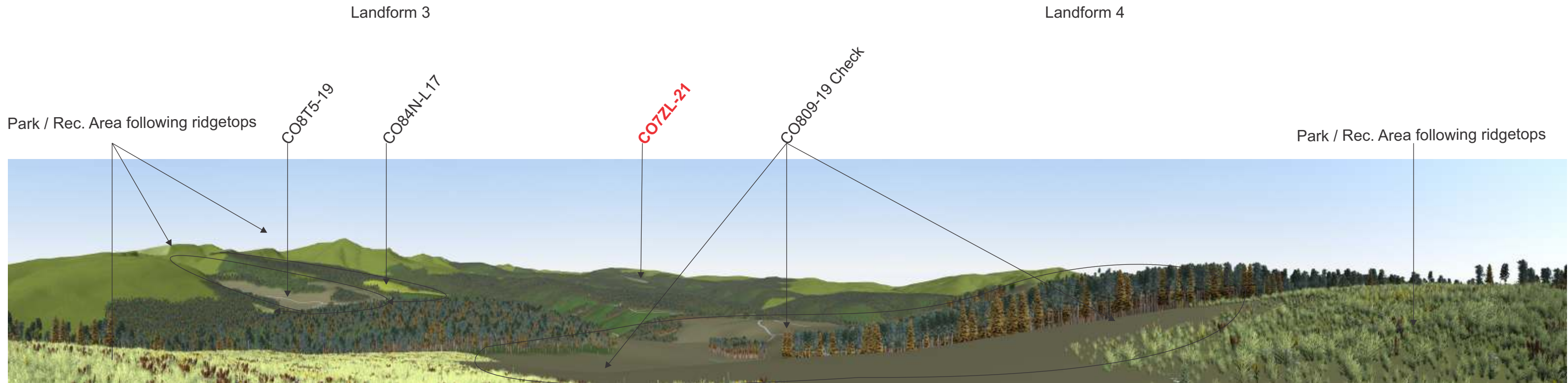


Landform 4: CO80A is seen in Landform 4 in immediate proximity to this viewpoint, in the foreground along the park boundary, along with CO80B and CO80E side-by-side, and also a separate part of CO80B.

Percent Alteration has not been calculated pending on-site viewability determination but is might be pushing the limits for Partial Retention given the large foreground presence of CO80A. RDI is anticipating the presence of screening will ameliorate the foreground presence. RDI makes no recommendations pending on-site determination.

CO7ZV and CO7ZL are not seen from this viewpoint.





Landform 4: CO809 is seen in Landform 4 in immediate proximity to this viewpoint, in the foreground along the park boundary.

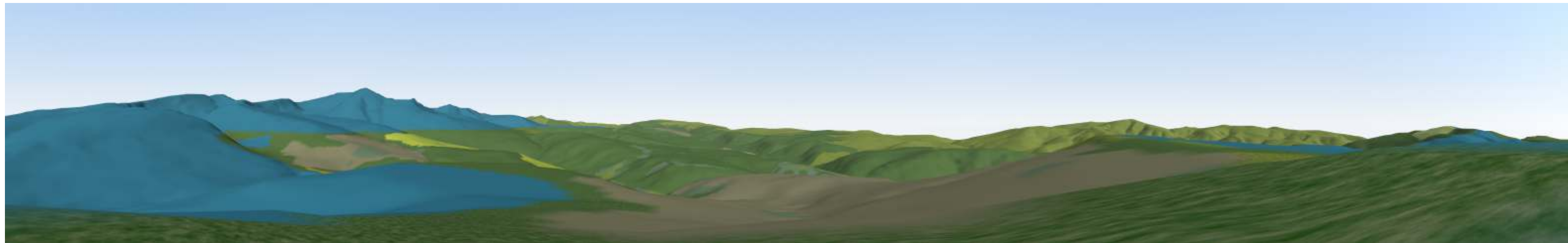
Landform 3: CO8T5 and CO84N (logged) are seen in Landform 5. CO8T5 is good in shape but large for the landform and likely exceeds the Partial Retention VQO.

Percent Alteration has not been calculated pending on-site viewability determination but is likely pushing the limits for Partial Retention. RDI is anticipating the presence of screening will ameliorate the foreground presence of the proposed cutblocks. RDI makes no recommendations pending on-site determination.

CO7ZL is a small well-shaped opening in the centre background (10 km). CO7ZV is not seen from this viewpoint.

Viewpoint 4.1 - 2017 Pano Cleared





13000 pixels

Viewpoint 863.1/4.1 - 2018 Pano

Landform 3

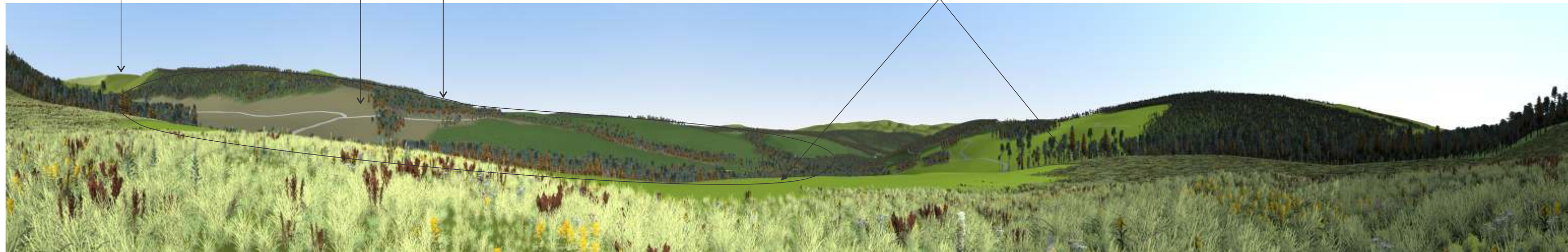
Landform 4

Parkland - no VRI

CO8T5-19

CO84N-L17 (NVS)

CO808-L16



Clip 9033 pixels 40 deg. FOV 48mm lens each image in panorama

Foreground to near middleground: 200m to 1600m (6m from Park boundary)



Landform 4: Only harvested cutblock CO808 is seen in Landform 4 in close proximity to this viewpoint. CO808 also is present in the foreground along the park boundary.

Landform 3: CO8T5 and CO84N (logged) are seen in Landform 5. CO8T5 is large for the landform and likely exceeds the Partial Retention VQO.

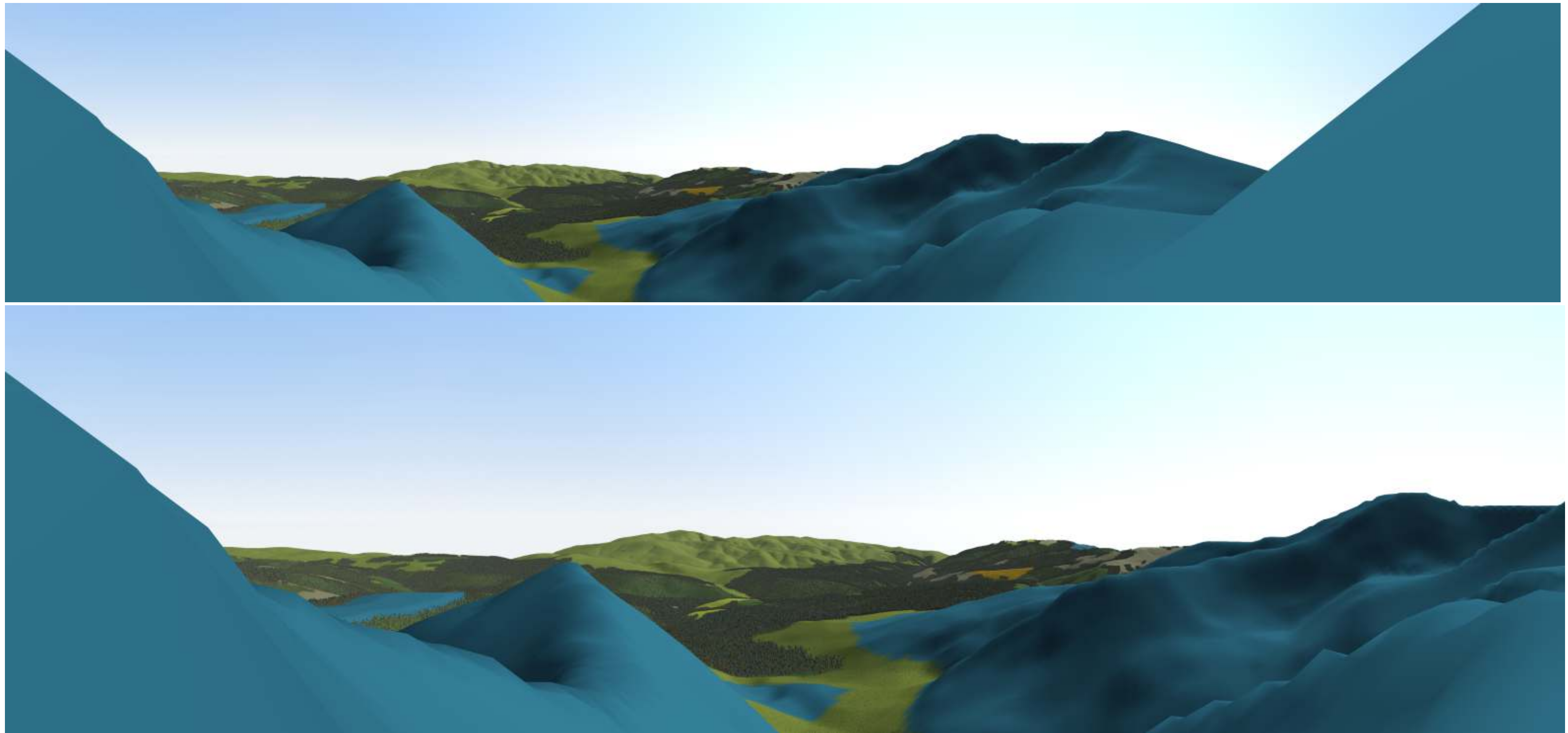
Percent Alteration has not been calculated pending on-site viewability determination but is likely pushing the limits for Partial Retention. RDI is anticipating screening to ameliorate the foreground presence of the existing and proposed cutblocks. RDI makes no recommendations pending on-site determination.

CO7ZV and CO7ZL are not seen from this viewpoint.

Viewpoint 6.1 (cleared)

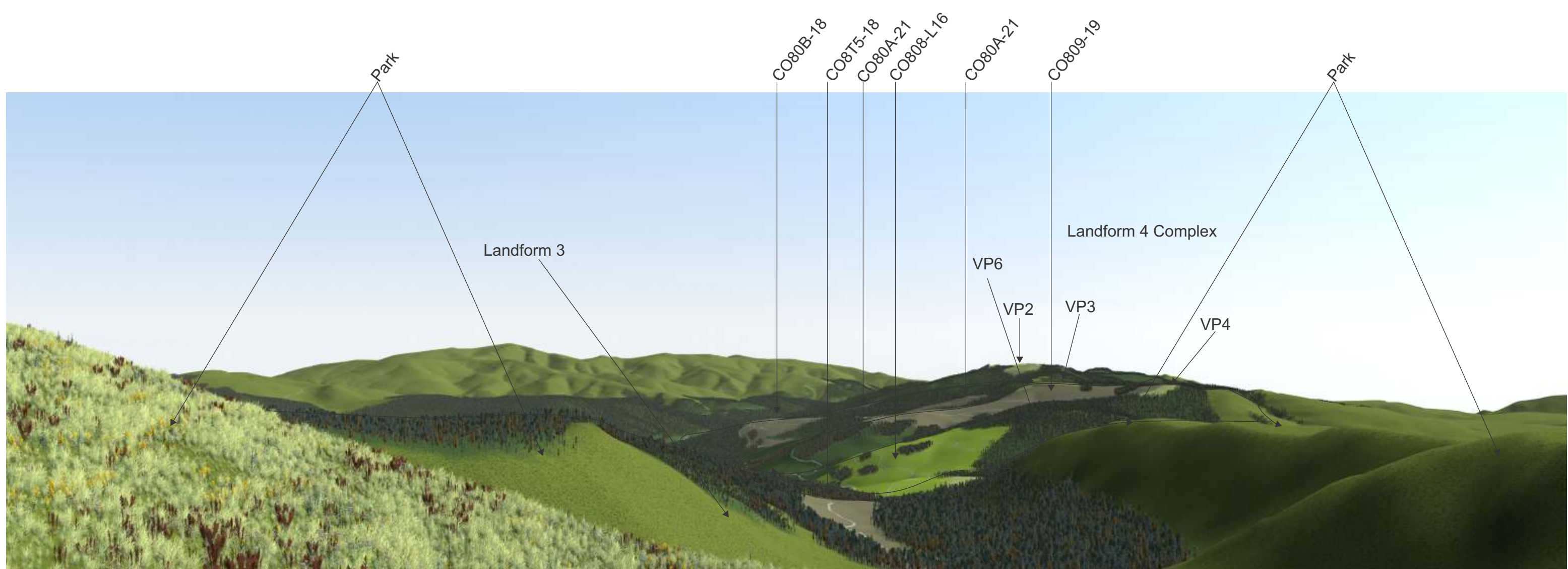
RDI Resource Design Inc  
December 26, 2017





7000 pixels

Viewpoint 879/6.1 - 2018 Pano



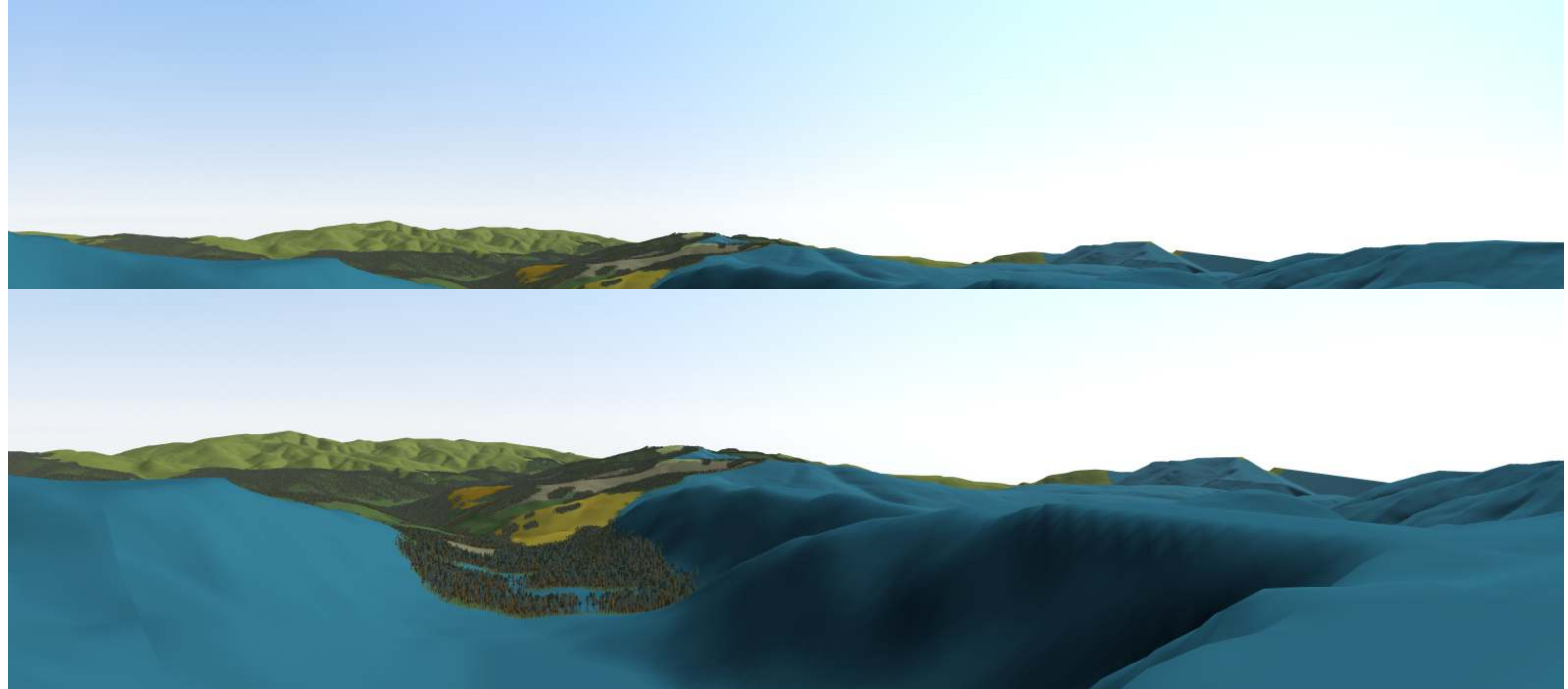
Clip 4713 pixels 40 deg. FOV 48mm lens each image in panorama

Landform 4: VSU 871 is a complex of parallel ridgelines or sub-landforms as seen from this viewpoint. Percent Alteration has not been calculated pending on-site viewability determination but is likely pushing the limits for Partial Retention. CO809 is long and sinewy, fitting the sub-landform shape. Other cutblocks also have good shape.

RDI makes no recommendations pending on-site determination.

CO7ZV and CO7ZL are not seen from this viewpoint.

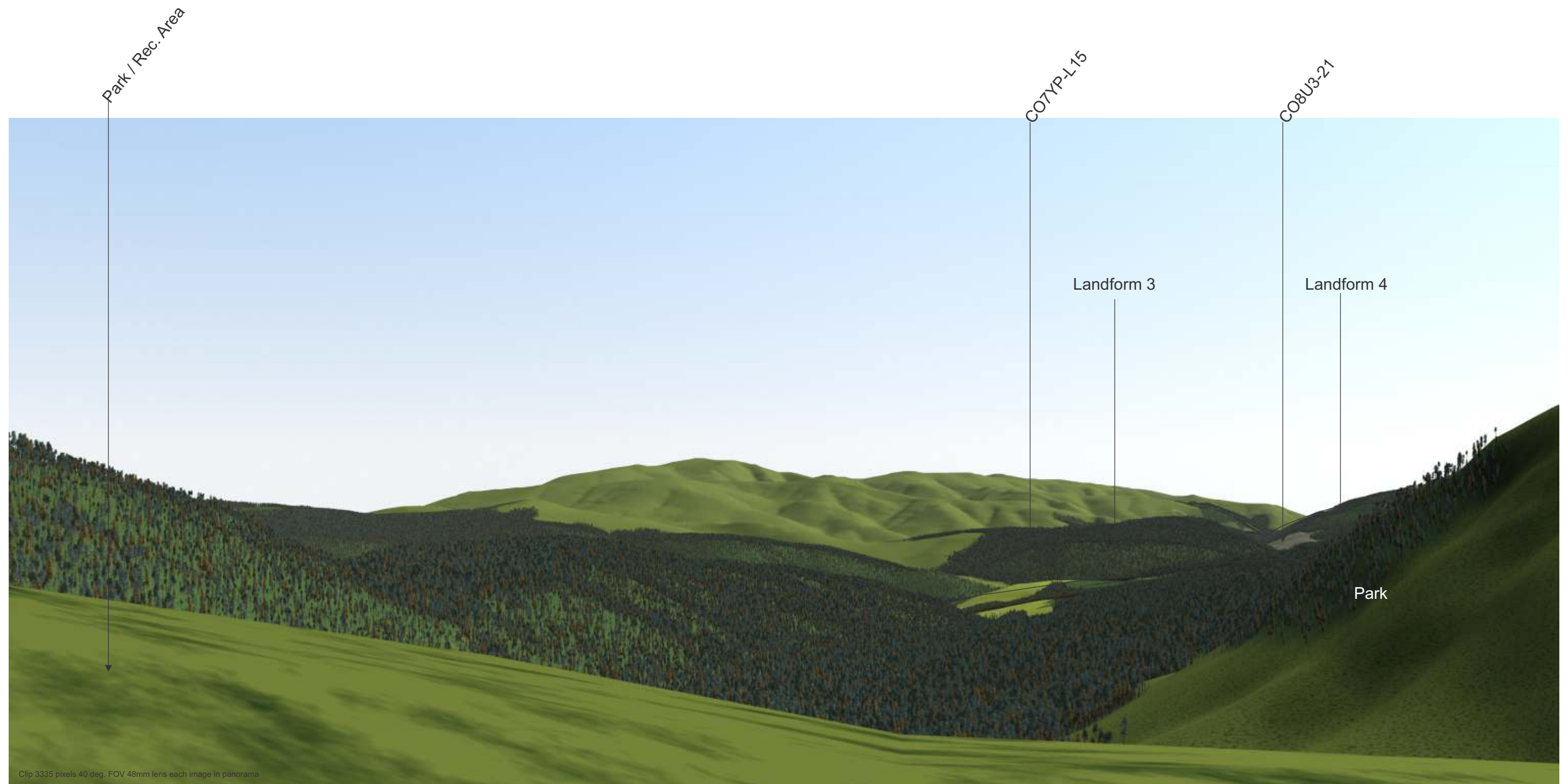




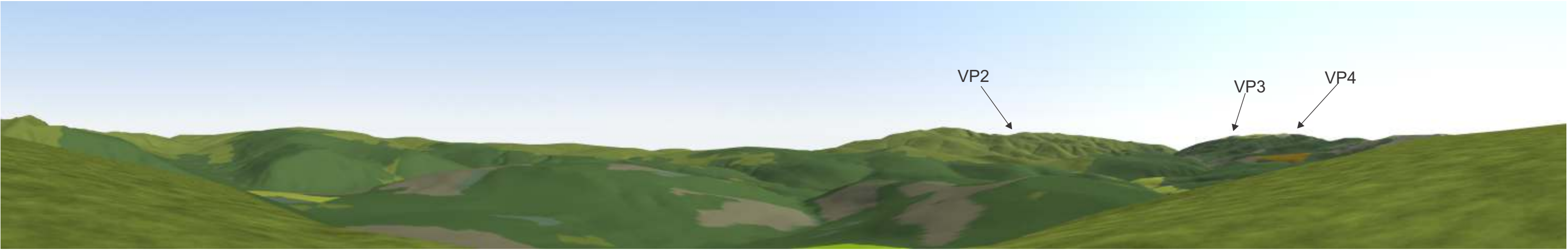
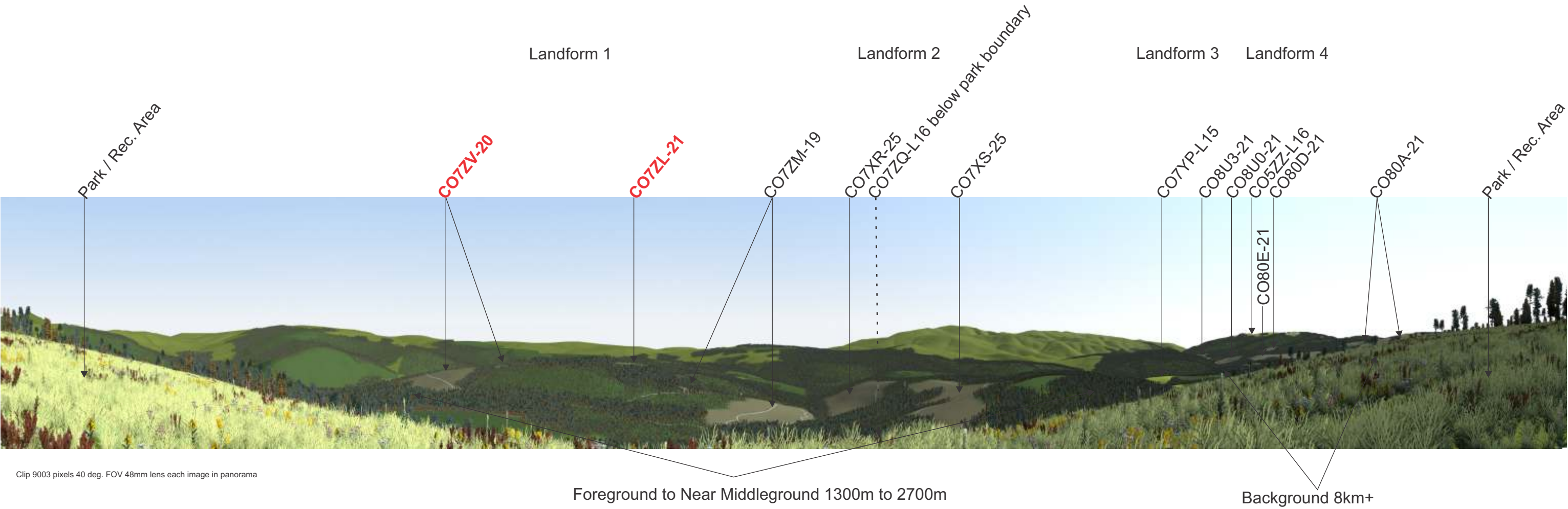
5600 pixels of 15360=131 Deg FOV



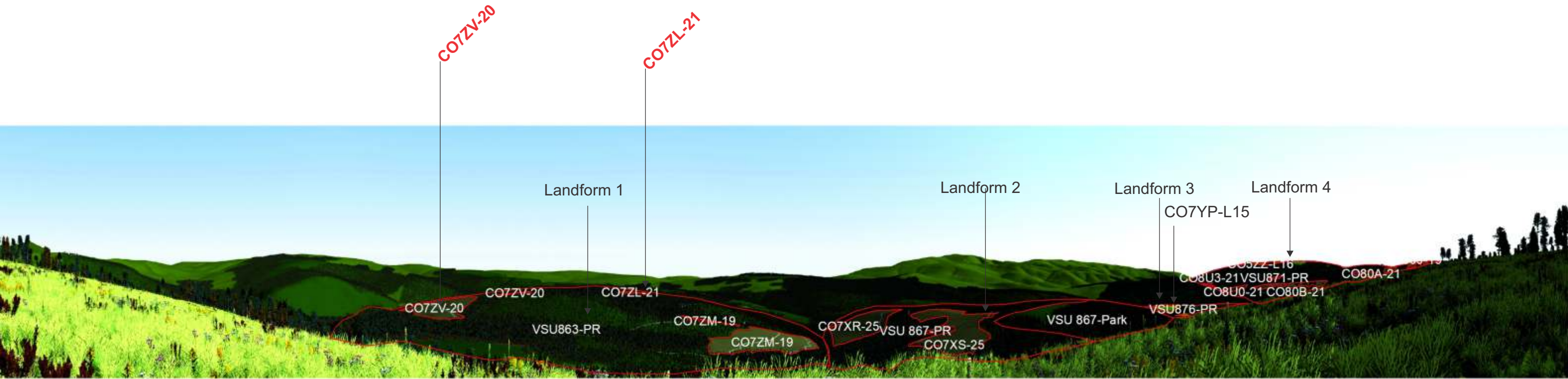




Landform 4: CO8U3-21 in Landform 4 is the solitary new cutblock visible from tViewpoint 19, and fits the small portion of the landform that is visible from this viewpoint, meeting Partial Retention. Existing cutblock CO7YP also is of good shape, fitting the landform. RDI makes no further recommendations pending on-site determination. Priority cutblocks **CO7ZV and CO7ZL are not seen from this viewpoint.**







VP 21 Percent Alteration		
Feature	Pers_Area	% Alt.
VSU863-PR	296536.07	
CO7ZV-20	8818.85	2.97%
CO7ZV-20	275.78	0.09%
CO7ZL-21	404.41	0.14%
CO7ZM-19	19093.45	6.44%
CO7ZM-19	644.96	0.22%
Sum Alt VSU863	29237.45	9.86%
VSU 867-PR - no park	119350.91	
CO7XR-25	12239.68	10.26%
CO7XS-25	21850.81	18.31%
Sum Alt VSU867 - no park	34090.49	28.56%
VSU 867-Park	44681.41	
Total VSU867	164032.32	
Sum Alt VSU867 with Park	208713.74	20.78%
VSU876-PR	6637.80	
CO7YP-L15	1105.35	16.65%
CO7YP-L15	240.98	3.63%
Sum Alt VSU 876-PR	1346.33	20.28%
VSU871-PR	50589.82	
CO8U3-21	180.08	0.36%
CO8U0-21	886.63	1.75%
CO80E-21	551.95	1.09%
CO80B-21	2104.56	4.16%
CO80D-21	248.79	0.49%
CO5ZZ-L16	34.56	0.07%
CO5ZZ-L16	406.82	0.80%
CO80A-21	909.86	1.80%
CO80A-21	447.12	0.88%
CO80A-21	95.40	0.19%
CO809-19	331.19	0.65%
Sum Alt VSU 871-PR	6196.97	12.25%

Landform 1

Landform 1: VSU 863 was expanded to natural breaks to complete Landform 1. If visible, the Landform would contain 9.86% alteration in perspective view, 3% above the maximum allowed for the Partial Retention VQO. Cutblocks are well-distributed and are shaped in conformity with the major force lines outlining the landform. **CO7ZV and CO7ZL are satisfactory in shape and account for just over 3% alteration together, within Partial Retention. As these are priority cutblocks, both could be approved initially, with the proviso that actual visibility information is to be determined during a field visit which is anticipated by RDI to result in a reduction in visibility due to screening.** RDI makes no recommendations for cutblock design pending on-site determination.

Landform 2

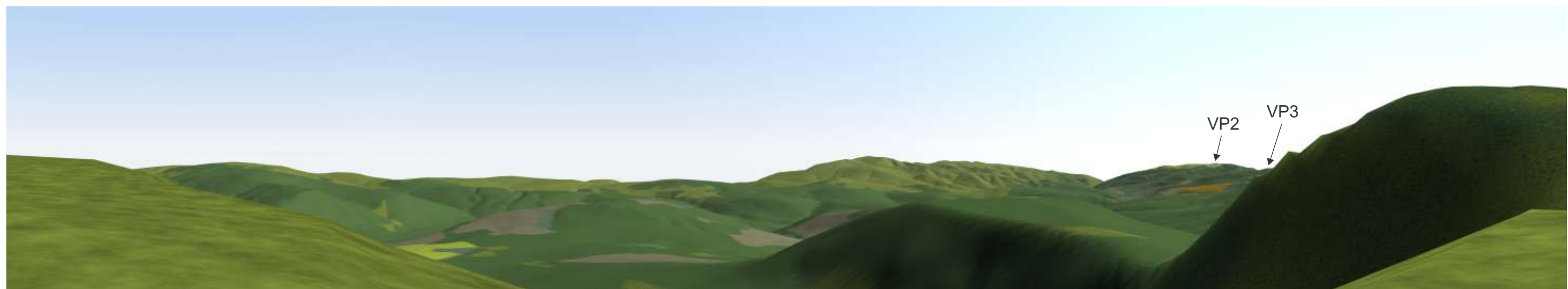
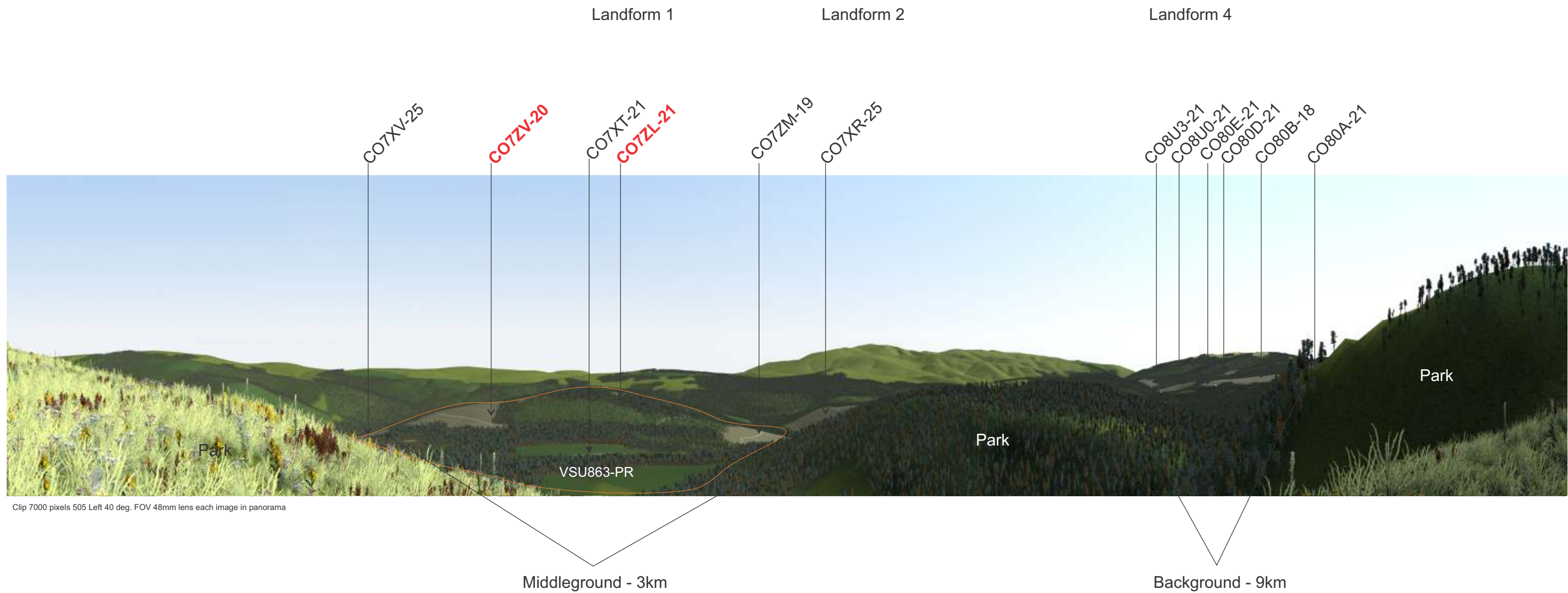
Landform 2: VSU 867 would have 28.56% alteration if clearly visible. If the park area on the same landform was included the %Alt would be reduced to 20%. RDI makes no recommendations pending on-site determination. Cutblocks are concentrated in the west portion of the landform, but are well-shaped in conformity with the major force lines outlining the landform. RDI makes no recommendations pending on-site determination.

Landform 3

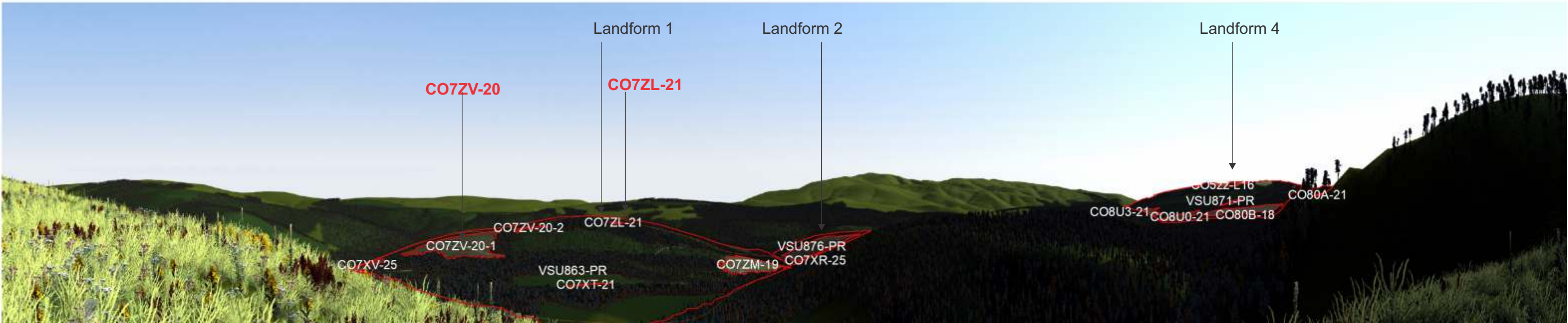
Landform 3: VSU 876 is a small sliver of a landform from this vantage point and is dominated by existing cutblock CO7PY logged in 2015. If visible, percent alteration of 20% would greatly exceed the PR VQO.

Landform 4

Landform 4: VSU 871 is the far ridge over 8km from the viewpoint. Percent Alteration is 12%, including 1.5% from existing cutblock CO5ZZ logged in 2016, exceeding the PR VQO if fully visible. Cutblock shapes and pattern are compatible in the landform. RDI makes no recommendations pending on-site determination.







Percent Alteration VP 24		
Feature	Pers_Area	%Alt
VSU863-PR	297880.61	
CO7XV-25	1031.71	0.35%
CO7ZV-20-1	14018.57	4.71%
CO7ZV-20-2	427.94	0.14%
CO7ZL-21	254.20	0.09%
CO7XT-21	238.54	0.08%
CO7ZM-19	7117.40	2.39%
Sum Alt VSU863	23088.36	7.75%
VSU876-PR	12811.41	
CO7XR-25	6927.02	54.07%
Sum Alt VSU876	6927.02	54.07%
VSU871-PR	49682.61	
CO8U3-21	788.44	1.59%
CO8U0-21	1372.80	2.76%
CO80B-18	3737.75	7.52%
CO80D-21	332.15	0.67%
CO80A-21	99.23	0.20%
CO5ZZ-L16	76.58	0.15%
CO5ZZ-L16	674.79	1.36%
Sum Alt VSU871	7081.74	14.25%

Landform 1

Landform 1: VSU 863 was expanded to natural breaks to complete Landform 1. If visible, the Landform would contain 7.75% alteration in perspective view, 0.75% above the maximum allowed for the Partial Retention VQO. Cutblocks are well-distributed and are shaped in conformity with the major force lines outlining the landform. RDI makes no recommendations pending on-site determination. **CO7ZV and CO7ZL are satisfactory in shape and account for just under 5% alteration. As these are priority cutblocks, both could be approved initially, with the proviso that actual visibility information is to be determined during a field visit which is anticipated by RDI to result in a reduction in visibility due to screening.**

Landform 2

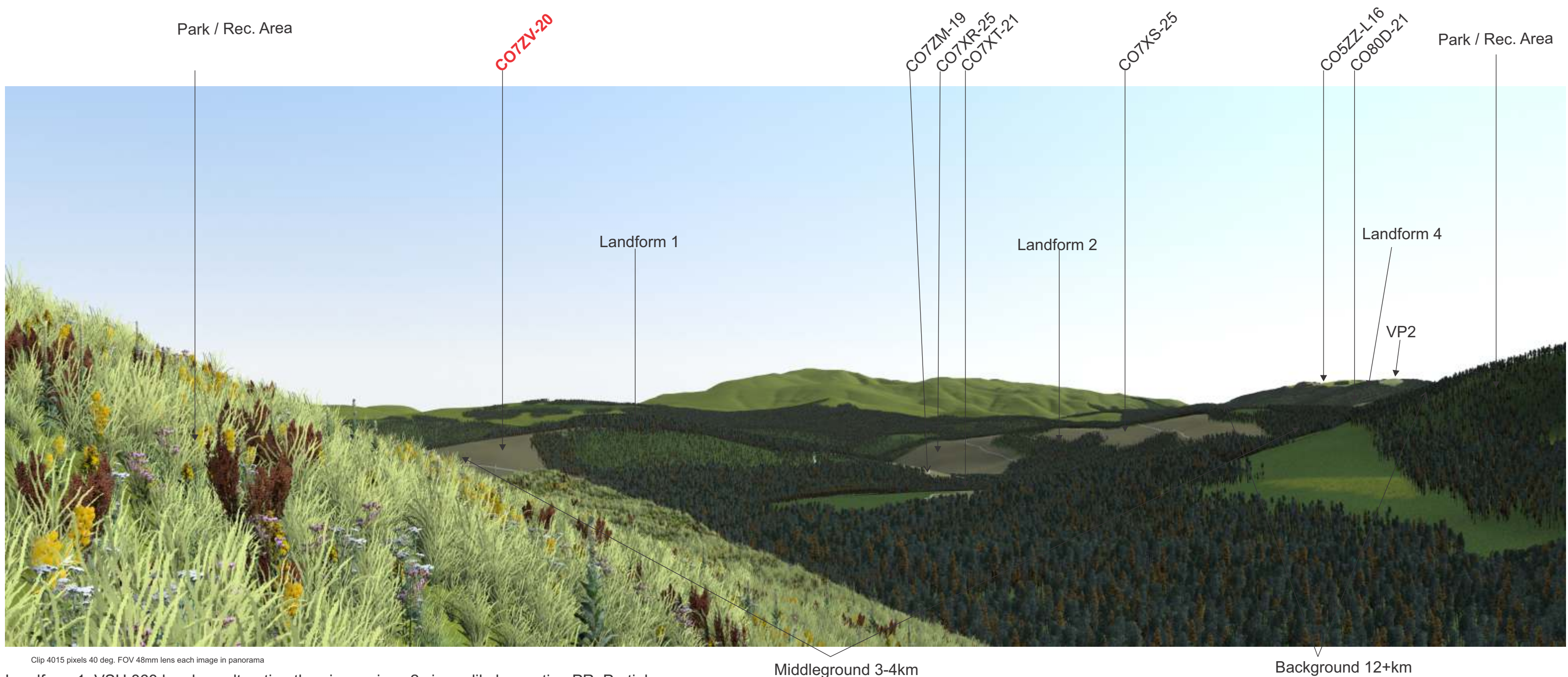
Landform 2: The small sliver of VSU 867 would have 54% alteration if clearly visible. RDI makes no recommendations pending on-site determination. The cutblock is well-shaped in conformity with the major force lines outlining the landform.

Landform 3: VSU 876 is not seen from this viewpoint.

Landform 4

Landform 4: VSU 871 is the far ridge over 8km from the viewpoint. Percent Alteration is 14%, including 1.5% from existing cutblock CO5ZZ logged in 2016, exceeding the PR VQO if fully visible. Cutblock shapes and pattern are compatible in the landform. RDI makes no recommendations pending on-site determination.





Clip 4015 pixels 40 deg. FOV 48mm lens each image in panorama

Landform 1: VSU 863 has less alteration than in previous 2 views, likely meeting PR. Partial Retention VQO. Cutblocks are well-distributed and are shaped in conformity with the major force lines outlining the landform. Percent alteration not calculated in this initial review. **CO7ZV has satisfactory shape though. appearing somewhat angular in this view due to foreground ridge visually cutting-off the landform. CO7ZL is not seen, As these are priority cutblocks, both could be approved initially, with the proviso that actual visibility information is to be determined during a field visit which is anticipated by RDI to result in a reduction in visibility due to screening.**

Landform 2: VSU 867 would have more alteration than in previous 2 views. Percent alteration not calculated in this initial review. Cutblock CO7XS seen as more sinewy along the ridge. RDI makes no recommendations pending on-site determination. Cutblocks are concentrated in the west portion of the landform, but are well-shaped in conformity with the major force lines outlining the landform. RDI makes no recommendations pending on-site determination.

Landform 3: VSU 876 is not seen from this view.

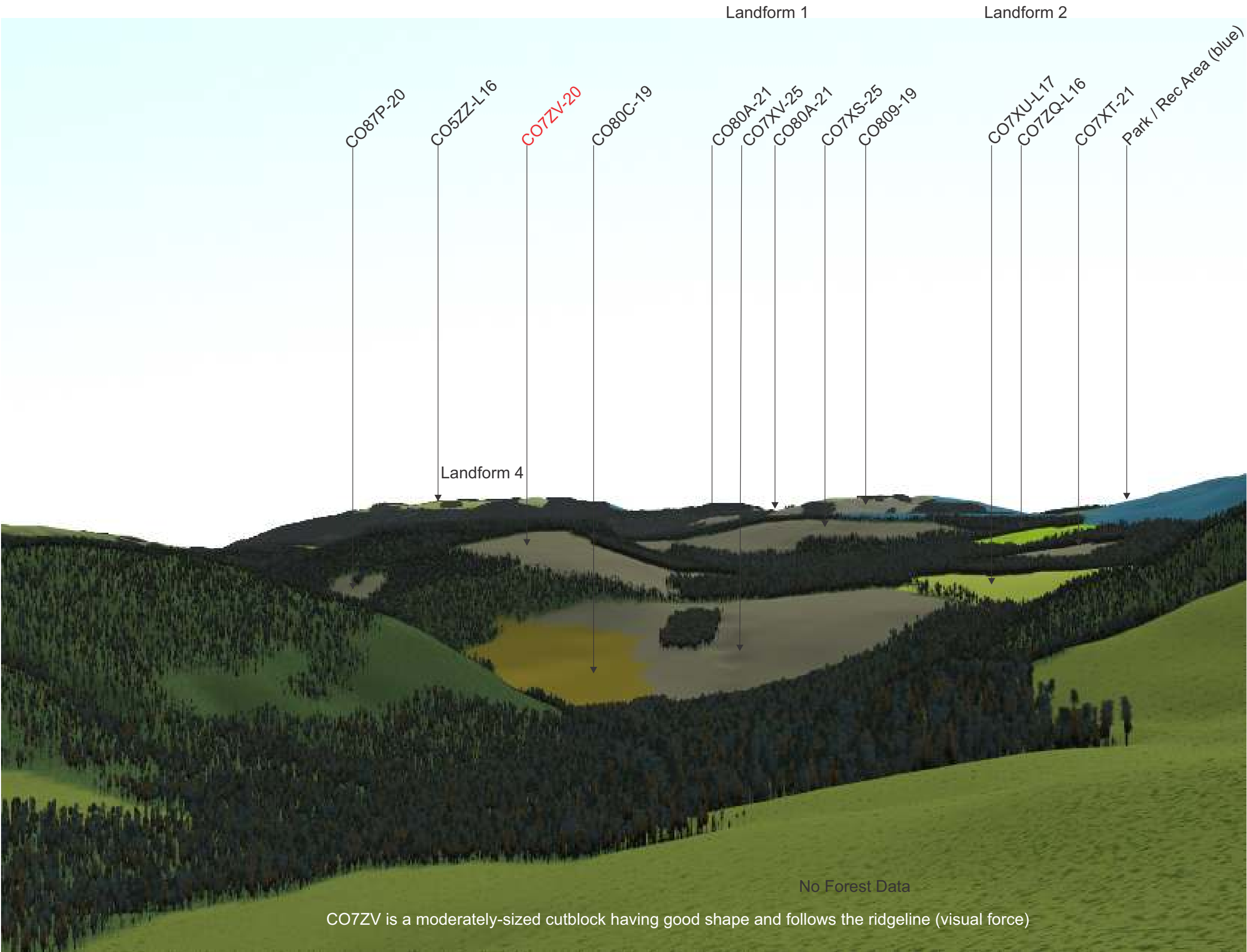
Landform 4: VSU 871 is the far ridge over 8km from the viewpoint. Alteration mainly limited to the existing cutblock CO5ZZ logged in 2016. exceeding the PR VQO if fully visible. Cutblock shapes and pattern are compatible in the landform. Percent alteration not calculated in this initial review. RDI makes no recommendations pending on-site determination.

Viewpoint 27.1 - 2017 Pano - Cleared

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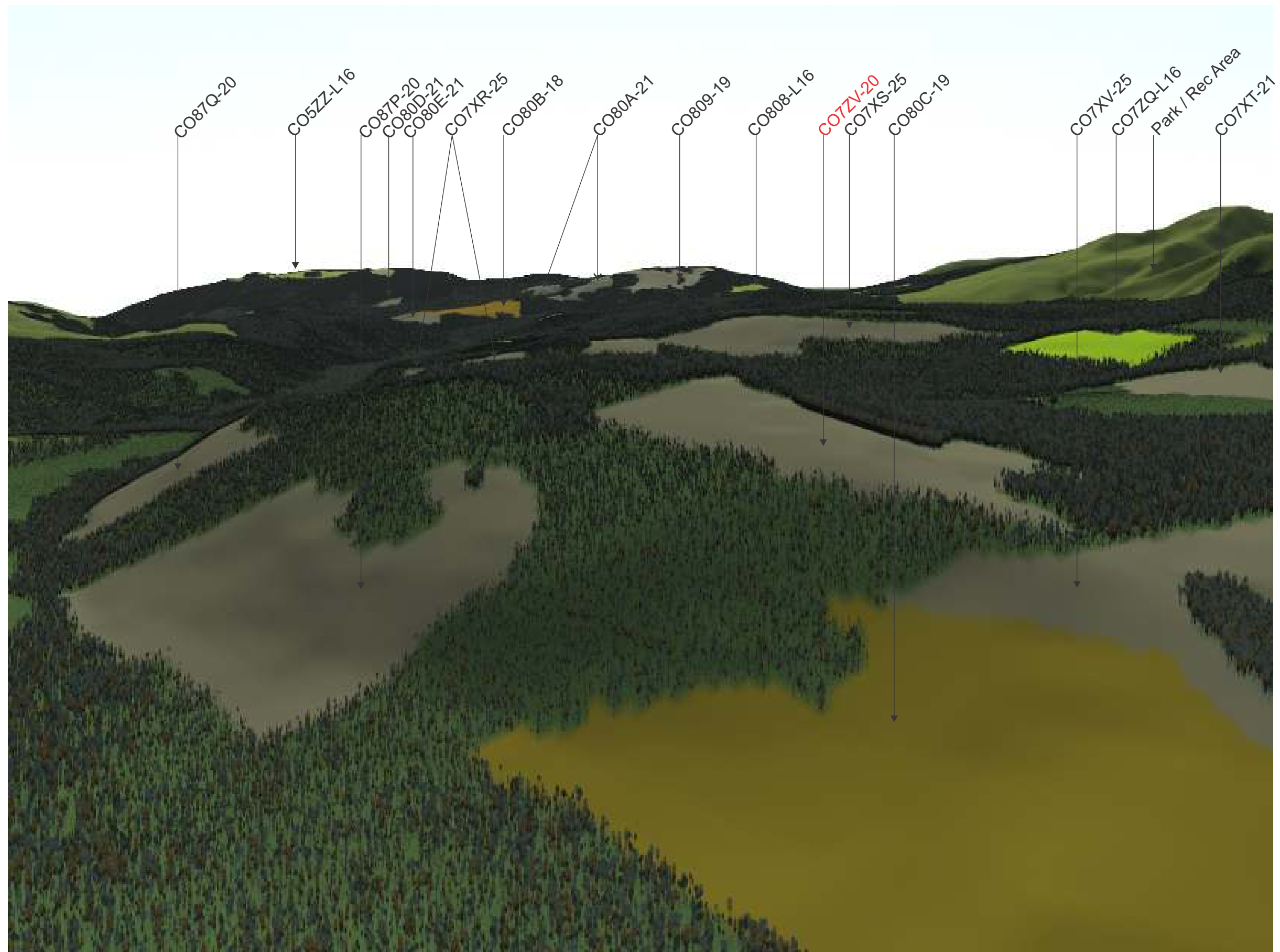




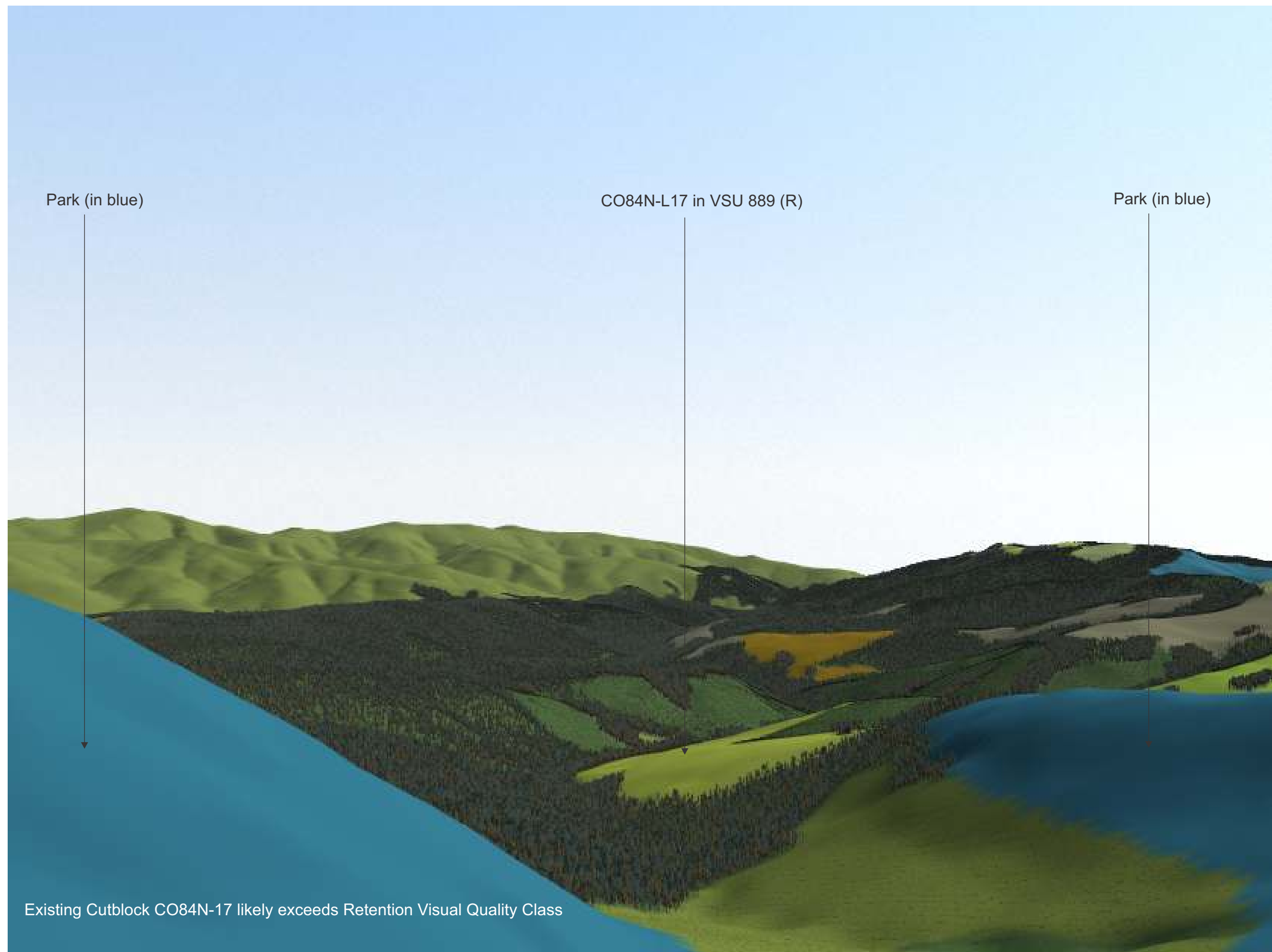


CO7ZV is a moderately-sized cutblock having good shape and follows the ridgeline (visual force)

Viewpoint 37 - no forest data in foreground)



Viewpoint 41 Aerial (for confirmation of CO87Q and other cutblocks presence only)



Additional Viewpoint 14



