

## North Midday Visual Assessment

## RDI Resource Design Inc

## December, 2020

- Viewpointswater_linear_flow_1
CTR100
waterbody_2
Landforms
09-CollectorRoute
North_Midday_Op_Area
—— Proposed_Roads
-_road_segment_1Highway
Results_WTRAwaterbody 2
FTEN_BlocksProposed_Blocks_FTEN Proposed_Blocks BCmapgrid


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## Background

Jeff O'Hara, RPF, Planning Forester, and Christian Shears, RPF, Practices Forester, BCTS Merritt Field team assembled a project file for the North Midday Visuals Project. Jeff forwarded it to Ches Clem on October 26, 2020. Ches provided the link to the project file to RDI on October 29, 2020.

The file included proposed cutblocks NH1238, NH1240, NH1241, NH1242, NH1243, NH1281, NH1282, NH1283, and NH1284 and the Operating Area boundary. In addition, the file also contained FTEN proposed cutblocks within Licence A18695, scattered existing FTEN openings, proposed and FTEN roads, and a few WTRA's. The link also included 21 viewpoints and the cutblocks placed in a KML file complete with viewpoints descriptions for reading in Google Earth. The viewpoints each had associated photography which were excellent for interpretation.

RDI converted the KML viewpoints into a layer file then into shapefiles in ArcMap and created a project file with blocks, roads, etc. RDI acquired a 3-D digital elevation model (DEM), hydrology, and additional roads from Maps Canada. RDI used the Visual Landscape Inventory area and the current forest VRI from our archive.

The 20 m DEM was entered into Visual Nature Studio along with the cutblock data and viewpoints for simulation. Cameras were set at each of the 21 viewpoints, 2 m above ground. Preliminary simulations were produced from each viewpoint. A significant effort was required to determine the Landforms as the VLI was complex within the Operating Area. All relevant units were assigned a Partial Retention VQO.

The Operating Area is bounded by the north side of Nicola River to the north, west side of Spius Creek to the west, then traverses the height of land generally forming the Mount McInnes landform. The viewpoints are located along and near Highway 8 (Merritt to Spences Bridge Highway), a single view from Miller Estates, and views along Aberdeen Road and Highway 97c which goes from Merritt to Logan Lake. The viewpoints are shown on the key map on page 1 and are listed on page 5.

RDI produced simulations from each of the viewpoints. For continuity and interpretation, RDI re-sorted the viewpoints as listed in the Table of Contents on page 2. The order is Highway 8 and associated viewpoints from west to east, then along Aberdeen Road from south to north, then along Highway 97c from south to north. Where Christian took a series of photo from a viewpoint, RDI placed them into panoramas using Kolor Autopana Giga.

Jeff O'Hara made recommendations for viewpoint assessment from Viewpoints 3, 5, 6, 16, and 8. Although Viewpoint 8 was considered most revealing, Christian was unsure if the cul-de-sac at Miller Estates would be significant, being off-highway. Using the simulations together with the excellent Shears photography, I decided to produce full analyses from Viewpoints $6,7,8,9,10,15$ and 18. Significant Shears viewpoints 3 and 5 are covered by Viewpoint 6 which is more open, 1800 m SE of VP 5 . I did not discount the Canco Gas Station "city view" (Viewpoint 16) but buildings intervened in the lower parts of the view whereas open views were available at nearby Viewpoint 10. I consider Viewpoint 8 to be significant, being an open, longterm, residential view and therefor was included in detailed analysis. It is closely replicated in Viewpoint 9 views from the mailboxes at the bottom of Miller Estates Road.

Five of the seven viewpoints selected by RDI for detailed assessment had panoramic photography built from multiple images provided by Christian. These were Viewpoints $6,7,8,9$, and 10. The additional two views, VP15 on Aberdeen Road, and VP18 on Highway 97a had single photos only. We produced panoramic simulations and percent alteration calculations from the panoramic viewpoints and single images and percent alteration calculations from the two single viewpoints. Renderings were produced for all remaining viewpoints for documentation without further analysis.

RDI produced a composite bare-land viewshed from all 21 viewpoints. The viewshed was instrumental in the delineation of the Landforms, together with the VLI polygons which were less precise in covering the visible areas (page 2) with the viewshed significantly expanding into formerly NVS (not seen) areas. The operating area includes all or parts of 7 VSU's, two of which are un-rated as they are either considered NVS or UA in the inventory (VLI_No 1655 and VLI_No 1390). All rated VSU's have VQO's of Partial Retention. By extension, RDI has assigned PR to the NVS or un-rated units containing proposed cutblocks. The landform contents are as follows:

| Landform Contents by VLI_No, VSU_No and Cutblock_No |  |  |  |  |
| :---: | :---: | :---: | :---: | :--- |
| Landform \# | VLI_No | VSU_No | EVQO | Comments |
| L1 | 1642 | 205 | PR | FTEN_Prop, NH1284w |
| L1 | 1650 | 213 | PR | FTEN_Prop (south), NH1283, NH1284, NH1241E |
| L1 | 1655 | 216 | "PR" | NH1241w, NH1242w, NH1243e, NH1282 in "NVS" - no VQO |
| L2 | 1669 | 219 | PR | NH1243, NH1243w, NH1243. |
| L2 | 1677 | 222 | PR | NH1238, NH1240, FTEN-E |
| L2 | 1390 |  | "PR" | in UA - no VQO |
| L3 | 1669 | 219 | PR | L3 has no openings proposed |
| n/a | 1648 | 211 | PR | distinct unit - no proposed alteration in northwest op. area |

All RDI landforms are comprised of either VSUs with a Partial Retention VQO or are un-rated but in close association with the PR VQO units. RDI has merged VSUs where appropriate, given their same VQOs or applied that same VQO to the neighbouring NVS units when seen in the composite viewshed.

Landform 1 is defined on the east by the topographic break between the Retention landform (VLI_No 1641) and VLI 1642 on the west, and follows the creek through VLI_No 1650 to reach and follow the heights of land of Mount McInness until reaching Pony Creek on its west side which divides the polygon considered "NVS" in the VLI but visible in the cumulative viewshed between VLI 1642/1650 on the east and VLI 1669 on the west. L1 then travels down the creek to the bottom of the hill, then along the hill bottom elevation and the bottom of the VLI polygons to connect the polygon. Notably, the landform extends 900 m east beyond the east boundary of the operating area to include all of the proposed FTEN blocks, as does VLI_No 1642, seemingly also making a more logical boundary for the operating area.

Landform 2 commences along Pony Creek in the middle of the NVS polygon, reaching the height of land of Mount McInnes and the upper proposed cutblocks, traversing westward down the heights of visibility identified in the cumulative viewshed and including a major portion of VLI 1669 to reach a concavity identifed in the VLI as a distinct dip south in the linework of 1669, down to the hill bottom and then east along the bottom of the VLI polygon and viewshed to connect to L1.

Landform $\mathbf{3}$ is a continuation of VLI 1669 to the end of cumulative visibility on the west. No cutblocks are proposed for this landform. It traverses the top and bottom of the VLI polygon and the cumulative viewshed.

VLI_No 1648. A broad gap in visibility was similarly identified in the VLI and viewshed between the RDI Landforms and VLI 1648, leaving VLI 1648 (PR) isolated, and outside of consideration as part of the RDI Landforms for purposes of this analysis.

RDI rendered VNS simulations from all 21 viewpoints to provide comparison opportunity with the related Shears photos. The preview mode allows quick rendering with the added benefit of displaying the attributes of any feature touched by the cursor, including viewing distance and elevation, and camera details. The exact location of the point is shown by a blue cross in the planimetric window. I use this function to correctly identify each and every proposed opening and existing FTEN openings, and to guide the assignment of labels in the rendered output. A sample window is provided in the adjacent image.

ESRI ArcMap is used to calculate perspective areas of the landforms and cutblocks in each view by importing the final simulation panoramas, and digitizing landforms and cutblocks in arbitrary square units as a shapefile. The dbf file from the shapefile is imported into Microsoft Excel for percent alteration calculations. The results are presented for each analysis viewpoint (VPs 6, 7, 8, 9, 10 15, and 18) and summarized in the Table on the next page.

## Results

## Landform 1

Landform 1 ranges from a low of $1.58 \%$ from VP7 to highs of $12.66 \%$ and $13.26 \%$ from VPs 15 and 18 respectively, with all but the last 2 viewpoints within or close to the PR limit of $7 \%$ perspective measure. The collective openings of the FTEN_proposed blocks are dominant from all tested viewpoints by percent measure. The design of the trio of FTEN_proposed openings are intricate, well-distributed, and lower down on the landform. No schedule was provided for the FTEN. The side-by-side openings of NH1283 and NH1284 are most focal and grab the attention, being very high on the landform, leaving only a thin weak cap of forest on top. Viewing distances to NH1284 from the assessment viewpoints are also presented in the table, ranging from 3900m from VP9 to 10300 from VP18. The position and elevation of VPs 15 and 18 may account for the higher percent alteration from those viewpoints. VP 18 is highest at 760 m elv., though VP15 is 640 m , slightly lower than VP $8(660 \mathrm{~m})$. The side landform cuts off portions of L1 from VPs 15 and 18, contributing to greater percent alteration, but not so much that they should be considered outliers and ignored, particularly as the east face of the landform has greater visibility and extent from these viewpoints. NH 1241 is scarcely seen at the western edge of the landform.

RDI was asked to recommend WTRA patches if needed, and will do so. I first recommend that BCTS review the proposals to see if any cutblocks or block components, including parts of FTEN_proposed causing the greatest percent alteration could be dropped or deferred. I have shown the trial effects of deleting NH1284 from the current plan on page 34 , bringing VPs 15 and 18 closer to the target maximum of $7 \%$ alteration with some more to go. At minimum, consider reducing the height and angularity of NH1284.

## Landform 2

Landform 2 ranges from a low of 4.03\% alteration (VP9) to highs of $12.15 \%$ and $15.52 \%$ (VPs 15 and 18 respectively). NH1242 contributes all of the alteration from VP15 (12.15\%) and most of the alteration from VP18 (9.93\%). Viewing distances to NH1242 are 9000 m from VP15 and 12000 m from VP18. Landform 2 is cut off to a large degree by the intervening landform on the right side of the view from both high percentage viewpoints and may be considered outliers and not reliable for percent alteration measures. All other viewpoints are within the Partial Retention limit of $7 \%$, with viewing distances to NH1243 ranging from 3000m (VP7) to 5800m (VP10) from these closer-in viewpoints. NH1243 percent alteration numbers show the sum for both openings by that number. NH 1282 is scarcely seen at the eastern edge of L 2 , and NH138, NH1240 and nearby existing FTEN openings have little influence at the top of L 2 .

At this initial review stage, I have no recommendations for deletion or reductions in Landform 2 cutblocks, pending agreement that VPs 15 and 18 are outliers when considering the results for L2.


VNS Project Window - a touch of the cursor on any point shows a blue cross in the planimetric window and details at the point.

## Summary

In summary, my initial review finds generally good design and achievement of the Partial Retention VQO in the landforms from several viewpoints. Landform 1 clearly exceeds the limit from 3 of the 7 viewpoints tested - VP10 on Highway ( $8.07 \%$ ), VP15 on Aberdeen Road (12.66\%) and VP18 on Highway 97A (13.26\%), and is just slightly exceeded from VP8 $(7.18 \%)$. L1 is cut off somewhat by intervening topography, but expands along the east face enlarging the landform. Landform 2 exceeds the limit from only 2 viewpoints - VP15 (12.15\%) and VP18 (15.5\%). The high percent alteration is contributed to by intervening topography cutting of much of L2. Pending discussion, those 2 viewpoint results affecting L2 may potentially be outliers.

The grouping and shapes of NH1283 and NH1284 together in their focal high position on the landscape are problematic even from viewpoints meeting the VQO in Landform 1. I have made a trial deletion of NH1284 to demonstrate the effects (page 34). Although well-designed, the openings of the FTEN_proposed cutblocks may also be the subject of your consideration. I was not provided a schedule for these openings. The overall plan requires some drastic reductions or deferrals before I might begin to suggest a few WTRAs

The photography and viewpoint locations in Google Earth were an excellent benefit to my assessment.
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RDI Resource Design Inc
December 11, 2020
VP 1. Pullout on Highway 8
VP 2. At Recreation Site 2 Pictures
VP 3. From Campsite
VP 4. Highway
VP 5. Pictures from Junction of Shackles Road and Petit Creek Road
VP 6. Mailboxes on Sunshine Valley Road
VP 7. Picture from Highway 8 Side View
VP 8. Cul de Sac at Miller Estates
VP 9. Pictures from Mailboxes at Bottom of Miller Estates
VP 10. Junction of Highway 8 and Woodward Road TNRD
VP 11. Leaving Lower Nich Pullout
VP 12. Playground at Lower Nich
VP 13. Junction of Yap Skim Road and Aberdeen
VP 14. Junction of Saskatoon Ln and Aberdeen Road
VP 15. Good View from Aberdeen Road
VP 16. From Canco Gas Station Lower Nich
VP 17. Highway 97c from Logan Lake
VP 18. From Highway 97c
VP 19. Highway 97c
VP 20. Highway 97c @ Road Junction
VP 21. Hw 97c

| Percent Alteration Landform 1 |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| VP | View Dist. <br> to NH1284 <br> $(\mathbf{m})$ | Total L1 | FTEN_Prop | NH1283 | NH1284 | NH1241 |  |
| $\mathbf{6}$ | $\mathbf{6 0 0 0}$ | $\mathbf{2 . 1 7 \%}$ | $0.55 \%$ | $0.73 \%$ | $0.26 \%$ | $0.62 \%$ |  |
| $\mathbf{7}$ | $\mathbf{4 5 0 0}$ | $\mathbf{1 . 5 8 \%}$ | $0.47 \%$ | $0.64 \%$ | $0.41 \%$ |  |  |
| $\mathbf{8}$ | $\mathbf{4 3 0 0}$ | $\mathbf{7 . 1 8 \%}$ | $4.28 \%$ | $1.59 \%$ | $1.30 \%$ |  |  |
| $\mathbf{9}$ | $\mathbf{3 9 0 0}$ | $\mathbf{5 . 7 1 \%}$ | $2.86 \%$ | $1.43 \%$ | $1.42 \%$ |  |  |
| $\mathbf{1 0}$ | $\mathbf{4 4 0 0}$ | $\mathbf{8 . 0 7 \%}$ | $4.08 \%$ | $1.85 \%$ | $2.14 \%$ |  |  |
| $\mathbf{1 5}$ | $\mathbf{7 5 0 0}$ | $\mathbf{1 2 . 6 6 \%}$ | $5.94 \%$ | $2.43 \%$ | $4.29 \%$ |  |  |
| $\mathbf{1 8}$ | $\mathbf{1 0 3 0 0}$ | $\mathbf{1 3 . 2 6 \%}$ | $6.48 \%$ | $2.75 \%$ | $4.04 \%$ |  |  |
| No alteration planned in Landform 3; not seen from VP's 15 or 18. |  |  |  |  |  |  |  |


| Percent Alteration Landform 2 |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| VP | View Dist. to NH1243 <br> (m) | Total L2 | NH1238 | NH1240 | NH1242 | NH1243 | NH1281 | NH1282 | FTEN-E* |
| 6 | 3700 | 4.99\% |  | 0.21\% |  | 4.79\% |  |  |  |
| 7 | 3000 | 5.24\% | 0.08\% |  | 0.35\% | 2.82\% | 0.96\% |  | 1.04\% |
| 8 | 5600 | 6.28\% | 0.15\% |  | 2.51\% | 2.38\% |  | 0.17\% | 1.06\% |
| 9 | 5000 | 4.03\% | 0.05\% |  | 0.92\% | 2.38\% |  | 0.03\% | 0.64\% |
| 10 | 5800 | 4.80\% |  |  |  | 4.80\% |  |  |  |
| 15 | 9000 | 12.15\% |  |  | 12.15\% |  |  |  |  |
| 18 | 12000 | 15.52\% | 0.19\% |  | 9.93\% | 4.32\% |  | 0.35\% | 0.72\% |
| *FTEN-E's not checked for VEG condition (shows as red in simulations). |  |  |  |  |  |  |  |  |  |



Viewpoint 1 - Pullout on Highway 8


Viewpoint 2 - Recreation Site with lower screening than in Photos




Viewpoint 5 Pictures from Junction of Shackles Road and Petit Creek Road


Viewpoint 6 - Mailboxes on Sunshine Valley Road




| Percent Alteration Viewpoint 7 |  |  |  |
| :--- | ---: | ---: | :---: |
| Name | AREA2 | \% Alt |  |
| Landform 1 | 644726.38 |  |  |
| A18695 Ften Prop | 734.01 | $0.11 \%$ |  |
| A18695 Ften Prop | 1856.18 | $0.29 \%$ |  |
| A18695 Ften Prop | 420.90 | $0.07 \%$ |  |
| NH1283 | 4140.91 | $0.64 \%$ |  |
| NH1284 | 2645.55 | $0.41 \%$ |  |
| NH1241 | 356.91 | $0.06 \%$ |  |
| Sum Alt L1 | 10154.45 | $\mathbf{1 . 5 8 \%}$ |  |
|  |  |  |  |
| Landform 2 | 476222.32 |  |  |
| NH1281 | 4560.81 | $0.96 \%$ |  |
| NH1242 | 1650.56 | $0.35 \%$ |  |
| NH1243 | 112.67 | $0.02 \%$ |  |
| NH1243 | 9557.70 | $2.01 \%$ |  |
| NH1243 | 2336.18 | $0.49 \%$ |  |
| NH1243 | 1413.30 | $0.30 \%$ |  |
| NH1238 | 359.51 | $0.08 \%$ |  |
| Ften-E | 4955.03 | $1.04 \%$ |  |
| Sum Alt L2 | 24945.77 | $\mathbf{5 . 2 4 \%}$ |  |
|  |  |  |  |
| Landform 3 | 62205.76 |  |  |
| Nil | 0.00 | $0.00 \%$ |  |
| Sum Alt L3 | 0.00 | $\mathbf{0 . 0 0 \%}$ |  |





Photos by Christian Shears October 14, 2020


Viewpoint 9 Pictures from Mailboxes at Bottom of Miller Estates



Viewpoint 10 - Junction of Highway 8 and Woodward Road TNRD


| Percent Alteration Viewpoint 10 |  |  |
| :--- | ---: | ---: |
| Name | AREA2 | \% Alt |
| Landform 1 | 315315.85 |  |
| A18695_Ften_Prop | 3465.93 | $1.10 \%$ |
| A18695_Ften_Prop | 3073.06 | $0.97 \%$ |
| NH1284 | 6762.80 | $2.14 \%$ |
| NH1283 | 5824.89 | $1.85 \%$ |
| A18695_Ften_Prop | 257.82 | $0.08 \%$ |
| A18695_Ften_Prop | 6069.62 | $1.92 \%$ |
| Sum Alt L1 | 25454.12 | $\mathbf{8 . 0 7 \%}$ |
|  |  |  |
| Landform 2 | 36132.83 |  |
| NH1243 | 1271.28 | $3.52 \%$ |
| NH1243 | 464.34 | $1.29 \%$ |
| Sum Alt L2 | 1735.62 | $\mathbf{4 . 8 0 \%}$ |
|  |  |  |
| Landform 3 | 10965.14 |  |
| Nil | 0.00 | $0.00 \%$ |
| Sum Alt L3 | 0.00 | $\mathbf{0 . 0 0 \%}$ |




Viewpoint 11 - Leaving Lower Nicola Pullout


Viewpoint 16 - from Canco Gas Station Lower Nicola


Partial Roadside Screening
Viewpoint 12 - Playground at Lower Nichola





Viewpoint 14 - Junction of Saskatoon Ln and Aberdeen Road


Viewpoint 13 - Junction of Yap Skim Road and Aberdeen Road



Viewpoint 20 - Highway 97c @ Road Junction


Viewpoint 19 - Highway 97c


Viewpoint 18 - From Highway 97c



Viewpoint 17 - Highway 97c from Logan Lake


Trial Reductions Viewpoints 8, 15, and 18

