

Cumulative Disturbance Report

For the Dawson Region

2021-12-02

Sam Skinner

Report was developed with contributions of many experts



YUKON LAND USE
PLANNING COUNCIL



DRPC Terms of Reference

10.1 The Commission will produce a number of products to fulfill its planning and public engagement responsibilities:

- d) Exploring the Cumulative Effects of Future Land Use in the Dawson Planning Region: This draft report will be reviewed by the Parties prior to being reviewed and endorsed by the Commission.



Parties “Review” of 2014 Draft Report

- Was focused on Cumulative *Disturbance* not Cumulative *Effects*
- Update should:
 - use new data if possible
 - use ALCES software to improve forecasting
 - focus on disturbance
- Form a Cumulative Effects working group to address effects

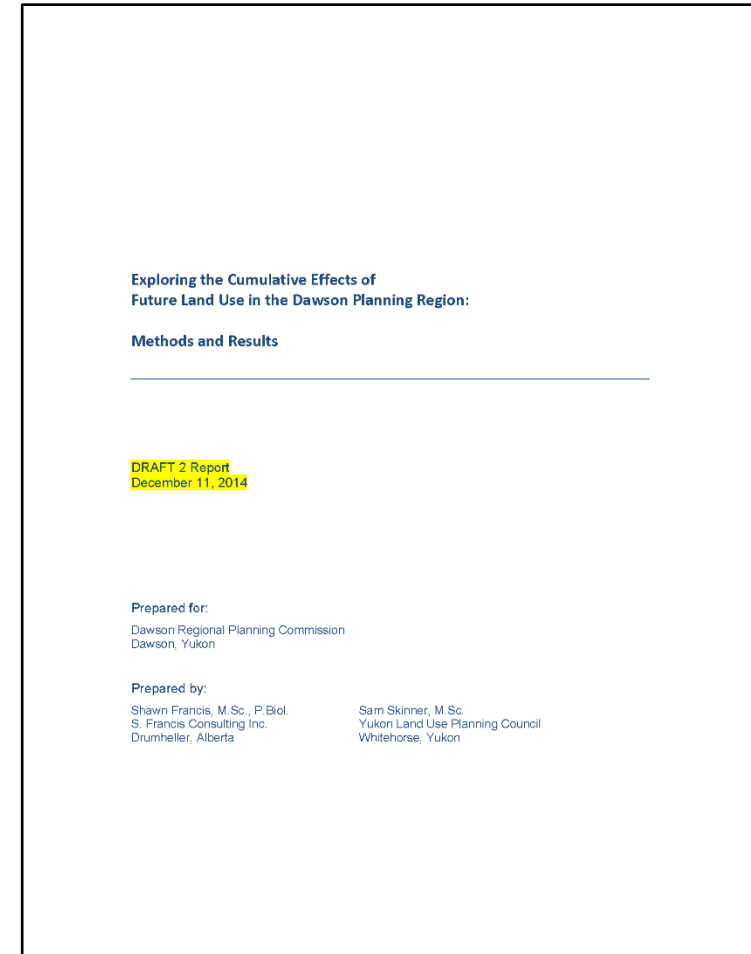




Table of Contents

1	Purpose.....	1
2	Background.....	1
3	Methods	2
3.1	Defining the Sector Scenarios.....	2
3.2	Land Use Modeling	3
3.2.1	Human Disturbance Mapping.....	3
3.2.2	Modeling Future Land Uses	4
3.3	Interpretation	4
4	Results	4
4.1	Current Situation	4
4.2	Future Situation	8
4.2.1	Forestry.....	8
4.2.2	Placer Mining.....	10
4.2.3	Quartz (Hard Rock) Mining	12
4.2.4	Oil and Gas.....	14
4.2.5	Cumulative Disturbance Levels.....	16
5	Discussion	21
5.1	Interpretation of Results.....	21



5	Discussion	21
5.1	Interpretation of Results.....	21
5.2	Future Levels of Human-Caused Disturbance.....	22
5.2.1	Level of Change Compared to Current Conditions	22
5.2.2	Major Factors Affecting Future Levels of Human-Caused Disturbance	23
5.2.3	Application of the North Yukon Land Use Designation System to the Dawson Planning Region 28	
5.3	Potential Effects on Values	30
5.3.1	Fish and Wildlife	30
5.3.2	Culturally Important Areas and Traditional Land Use.....	32
5.3.3	Valued Landscapes and Wilderness.....	32
6	Recommendations	33
6.1	Application of the North Yukon Land Use Designation System to the Dawson Planning Region 33	
6.2	Suggested Next Steps	34
6.2.1	Developing CE Indicator Levels.....	34
6.2.2	CE Indicator-related Implementation Activities.....	34
6.3	Future Considerations	34
7	References	35

Appendix A.1: Placer Scenarios

Appendix A.2: Quartz Scenarios



YUKON LAND USE
PLANNING COUNCIL

Cumulative Effects

Cumulative effects are changes in the environment and/or society that result from multiple interactions among human activities and natural processes in combination with other past, present and future activities.

CE Working Group

This report

Questions

How will the region change in the foreseeable future?



How will this effect the values of interest?



How can a plan shape the future of the region and impact values?

What are the Drivers of Landscape Change?



Scenarios (Possible Futures)



Ask experts:

- What is the highest and lowest growth expected for different industries?
- How can we map those as scenarios?
- What is the resulting disturbance?



Oil & Gas activity seemed unlikely given smaller region, political climate, remoteness, limited promise

Scenarios (Possible Futures)

Placer

Quartz
mining

~~Oil Gas~~

~~Forestry~~

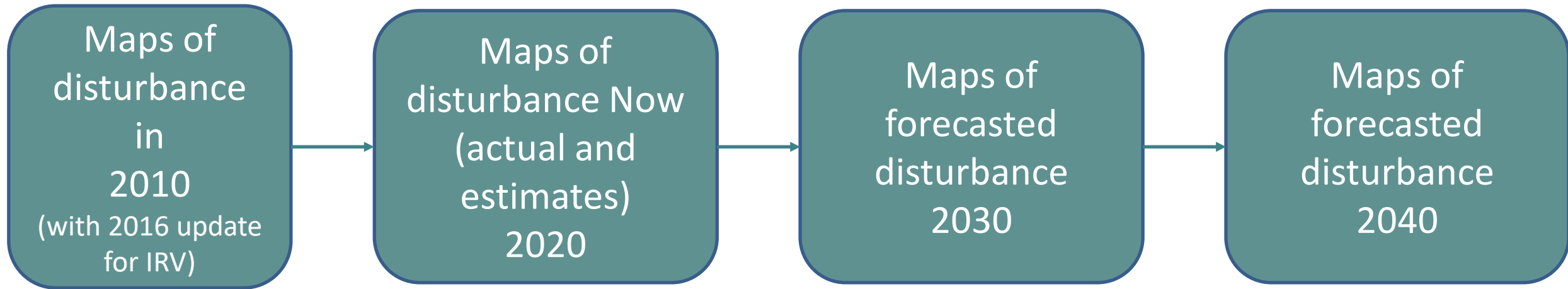
Ask experts:

- What is the highest and lowest growth expected for different industries?
- How can we map those as scenarios?
- What is the resulting disturbance?



Disturbance levels from forestry were expected to be small relative to the quartz and placer industries

Timeline of Scenarios



Developed and Modelled Scenarios

Land Use Sector	Level of Activity	Activity Summary	Timing	Locations
Placer Mining	Low	<ul style="list-style-type: none"> 35,000 oz. gold/year Few new roads will be created; mainly upgrades of existing roads and trails. 	constant	98% of activity in similar locations as current
	High	<ul style="list-style-type: none"> 100,000 oz. gold/year Some new roads will be required to access new step-out properties. 	constant	90% of activity in similar locations as current plus some expansion to “step-out” areas.
Quartz (Hard Rock) Mining	Low	<ul style="list-style-type: none"> 1 mine starts (Brewery Creek) 2 discovery/advanced exploration projects active per year totaling 16 over 20-30 years 	5 years (new mine)	Similar locations as current: central and southern portion of region.
	High	<ul style="list-style-type: none"> 3 mines start (Brewery Creek, Coffee and Whitegold) + 4th 20-30 years out 8 discovery/advanced exploration projects active per year totaling 19 over 20-30 years Northern Access Route required to support new mines 	5-20 years (new mines)	Similar locations as current: central and southern portion of region.



YG plans to rekindle firewood supplies

By TIM GILCK
Star Reporter

Winter is here, but Yukoners now have some extra options for keeping warm if they use firewood.

Energy, Mines and Natural Resources Minister John Streicker told the legislature last Thursday that some new measures are coming into place to relieve some of the pressure on firewood providers.

"Winter is now in full swing, and it's important for us to make sure that all Yukoners stay safe and warm. We recognize that wood supply is very important to Yukon communities, and many Yukoners rely on wood to heat their homes," Streicker said.

"We know that there has been some uncertainty around securing adequate fuelwood supply, but we

want to reassure Yukoners that there is enough wood for this winter and many winters going forward."

Anyone who is eligible and has applied for a commercial permit has now either received a permit or is in the process of receiving a permit, he said.

"It is great to see this activity as Yukoners prepare for the winter ahead. I am here to announce that we will be moving forward to the next stage of approving the Quill Creek timber harvest plan," Streicker said.

"The project scope is for the harvesting of 136,726 cubic metres of beetle-killed spruce and 26,429 cubic metres of green spruce over a 15-year time frame. This is more than 70,000 cords of wood for our homes.

"This is important progress

being made to ensure that the Yukon continues to have a sustainable timber supply to meet the growing demands that we are currently seeing here in the territory," he added.

Yukon Wood Products Association representatives met with the forest resources branch during the summer to express their concerns about fuelwood supply and, "in particular, their concern about the time that it was taking for the Quill Creek project to go through the assessment process," Streicker said.

"Now that the Government of Yukon has accepted the Yukon Environmental and Socio-economic Assessment Board's recommendations, our next step is to revise the timber harvest plan to be consistent with these recommendations.

"Harvesting in Quill Creek can commence in the beginning of December to get more fuel wood into the homes of those who need it."

Implementing the Quill Creek timber harvest plan will "provide long-term opportunities for commercial fuel-wood harvesting and help to ease pressures around future supply," Streicker said.

"We are eager to implement this harvest plan as it will provide more certainty to Yukoners."

Streicker also said forestry officials are expanding personal fuel-wood areas and making maps available that will allow the public to locate salvage wood from FireSmart areas.

"These additional measures are being put in place to secure future supply while continuing to work with industry and fuelwood suppliers to ensure that Yukoners have the wood they need."

Wade Istchenko from the Yukon Party had a few comments on the measures Streicker announced.

"Many Yukoners who rely on firewood to help heat their homes have already stocked up for the winter and, as we have learned, an unfortunate amount of that firewood will come from outside the Yukon," Istchenko said.

"In August, the Yukon Wood Products Association had to go to the media to raise their concerns about this. While we are glad to see the development that the minister has announced today, there is still a lot of work to be done, and we are concerned that the government isn't moving fast enough to address it."

In his Kluane riding alone, Istchenko said, "there are hundreds

that this has taken so long to get here. There is so much more work to do.

"We hope that the Yukon government agrees and starts to move more quickly to support this important industry."

NDP Kate White also had a few thoughts on the situation.

"Biomass energy use can be a win-win for greenhouse gas reduction and climate change adaptation," she said.

"Yukon's road map for climate action, Our Clean Future, stresses the importance of using our local renewable biomass sources for heating as ways that the Yukon can reduce our emissions and support the local economy.

"But, Mr. Speaker, this will only be effective if there is an ability to harvest lumber in the territory."

Like many, she said, she is "breathing a sigh of relief knowing that harvest permits will soon be released to Yukon's woodcutters in the Quill Creek area.

"With the implementation of the Quill Creek harvest plan, Yukon will have long-term opportunities that will allow commercial timber harvesters to plan, and that will allow Yukoners the ability to purchase biomass heating fuel that is both grown and harvested locally and is hopefully affordable."

The forest resources branch "really hustled," she said.

"They did a terrific job. They got some quick-cut blocks out around Fox Lake and around Haines Junction. This was important in the interim.

"The branch has been working to try to make sure that there is a continuous supply over time and

Allowable firewood cut on the rise

The Yukon government has increased the annual allowable firewood cut to 28,000 cubic metres per year on public lands in the Dawson Forest Resources Management Plan area.

According to a news release issued Friday, the decision was supported through collaborative work among the Tr'ondëk Hwëch'in First Nation, the Dawson District Renewable Resource Council and the Yukon government.

"This annual allowable cut will

help provide continued timber supply for sawlogs, firewood and biomass, while still protecting our vital resources for future generations," said Energy, Mines and Resources Minister John Streicker.

"Recognizing the long-term health of the forest is a key principle within the annual allowable cut determination and ensures the long-term viability of forests and the forest sector in the Dawson region.

"This determination incorporated the multiple forest values provided in the Dawson Forest Resources Management

Plan to help ensure the long-term health and viability of the forests and forest sector in the Dawson area.

"This annual allowable cut will provide continued timber supply opportunities for commercial industries," the news release stated.

This annual allowable cut determination was informed by input from First Nations, public and stakeholder consultation and is the first annual allowable cut decision under the Forest Resources Act and Forest Resources Regulation.

Shingles vaccine program expands

Land Use
Sector
Oil and Gas

Forestry

ads in
t Zone

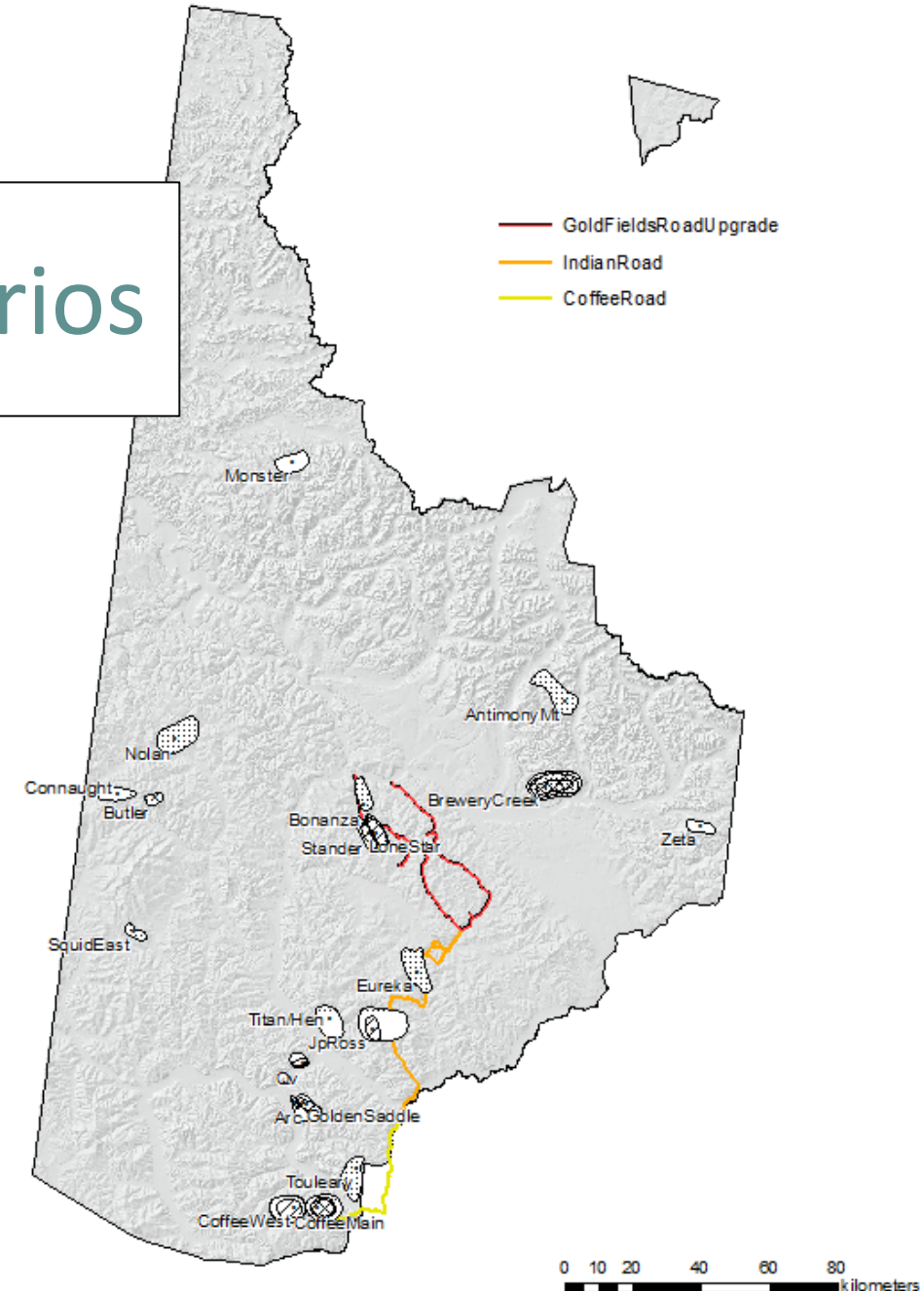
ads in FMZ

ON LAND USE
MINING COUNCIL

DRLUP ALCES Scenario - Low 5 - 10 Year

DRLUP ALCES Scenario - High 5 - 10 Year

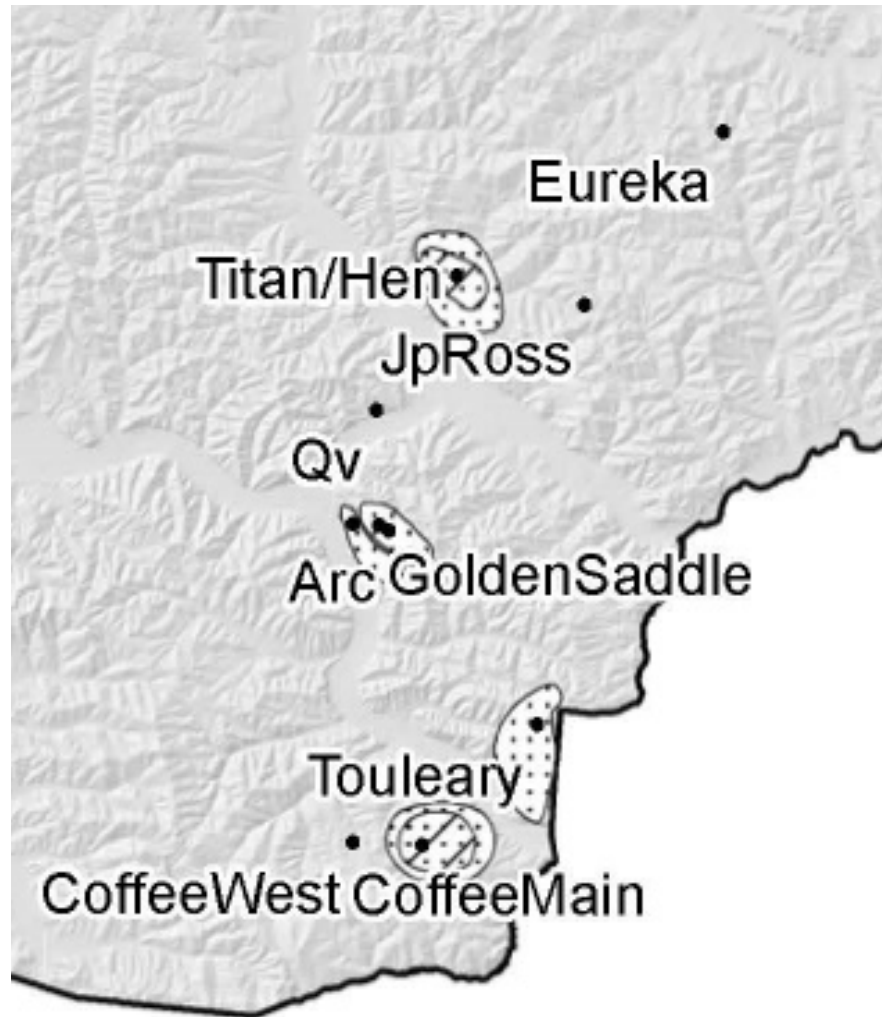
Quartz Scenarios



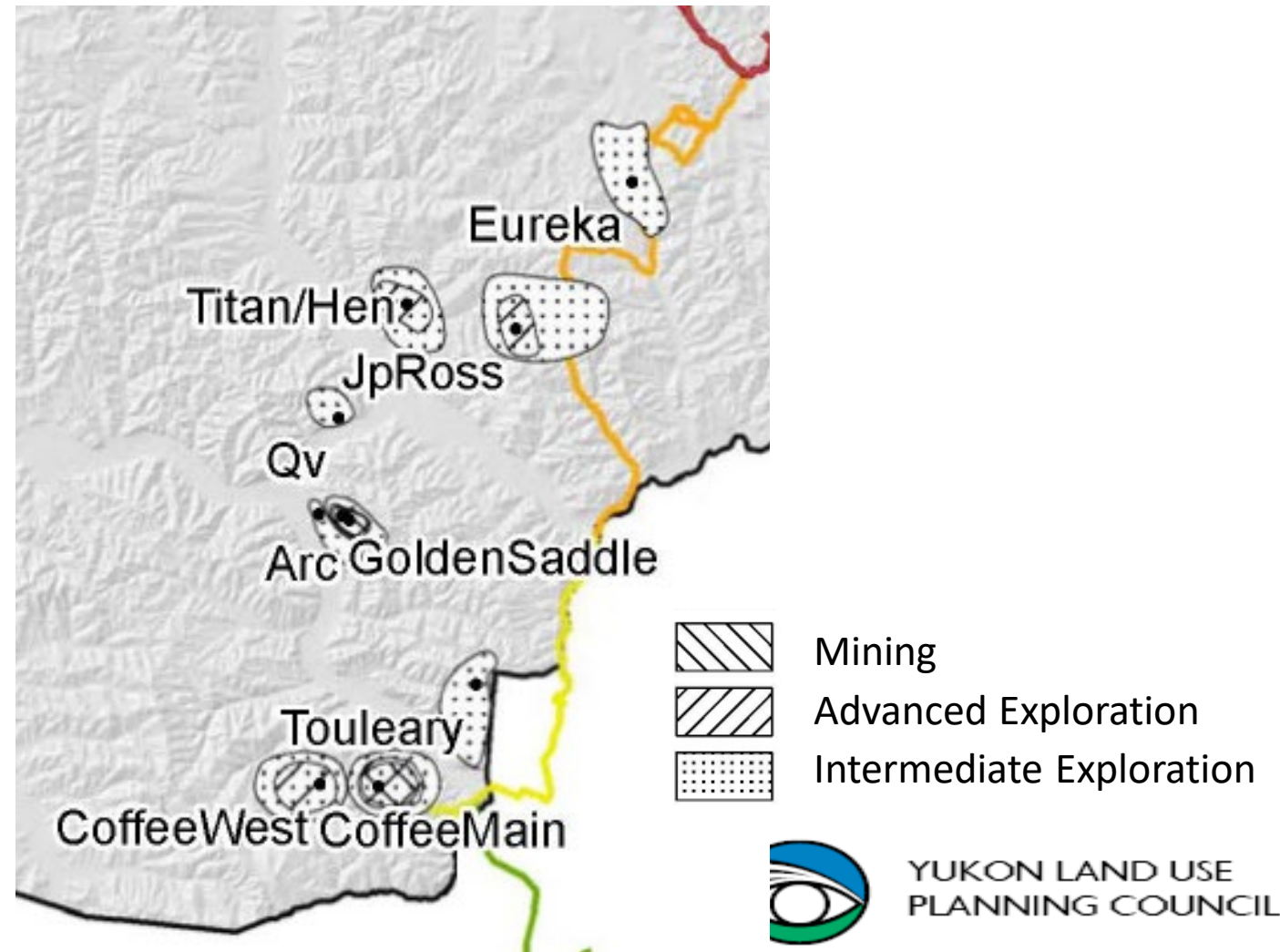


Quartz Scenarios

Low Scenario: 10-20 years

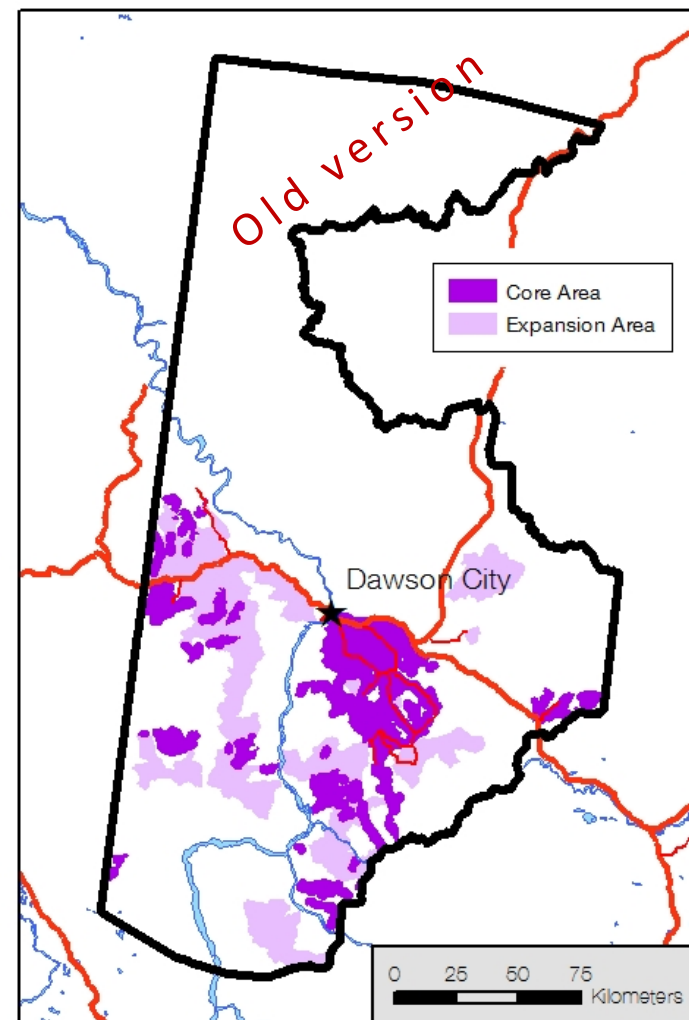


High Scenario: 10-20 years



Placer Scenarios

- Disturbance in Indian River valley were mapped in 2010 and 2016
→ how did it change?
- Patterns connected to:
 - General area
 - Core vs step-out area
 - Stream size
- → 13,300 oz gold/km² disturbed
- $35,000 \text{ oz/yr} \div 13,300 \text{ oz/km}^2 = 2.6 \text{ km}^2 \text{ disturbed/yr}$ (low scenario)



Disturbance Modelling

Scenarios

High Growth

Placer

Quartz mining

Low Growth

Placer

Quartz mining

Disturbance Mapping

2009-2010
Whole Region

2016
Indian River Watershed

Disturbance
Forecasting



Disturbance Forecasts

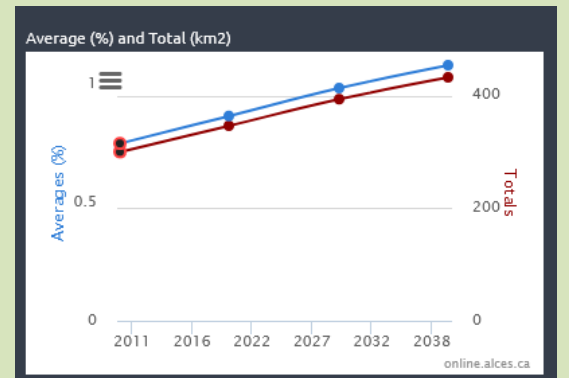
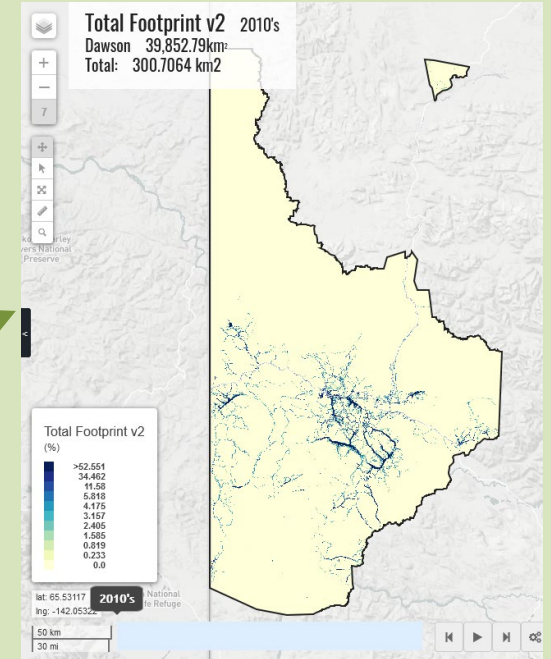
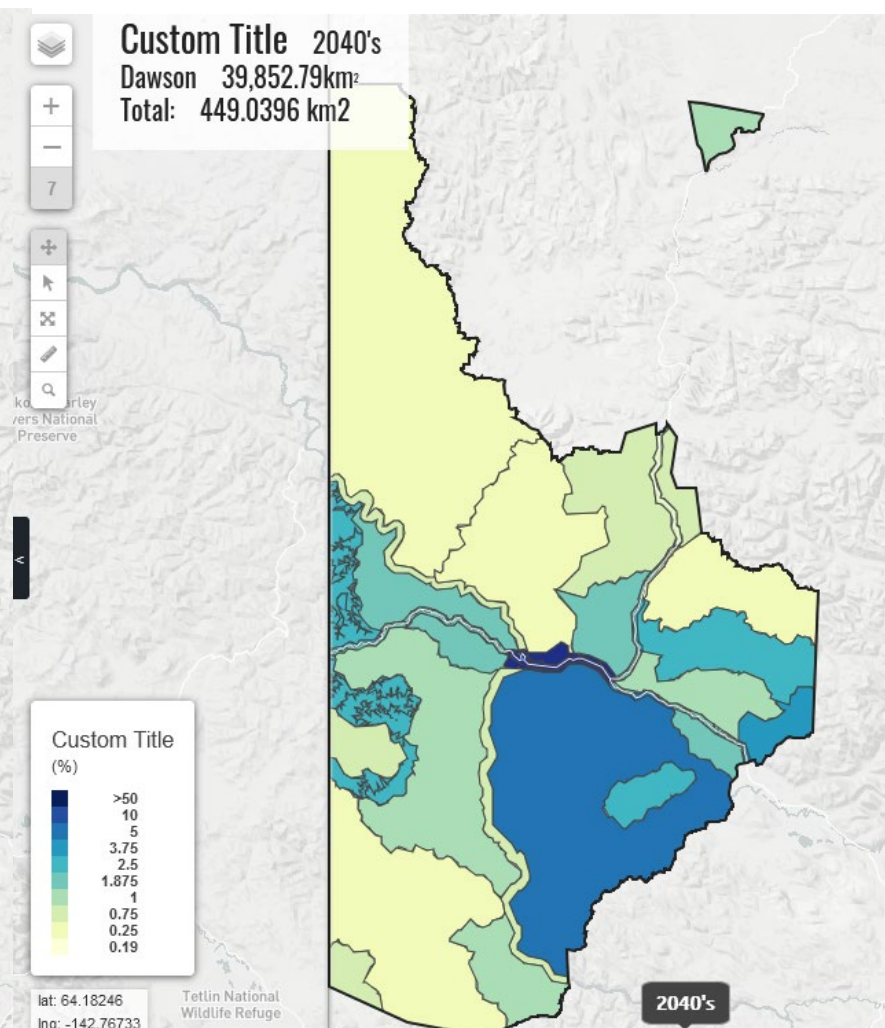
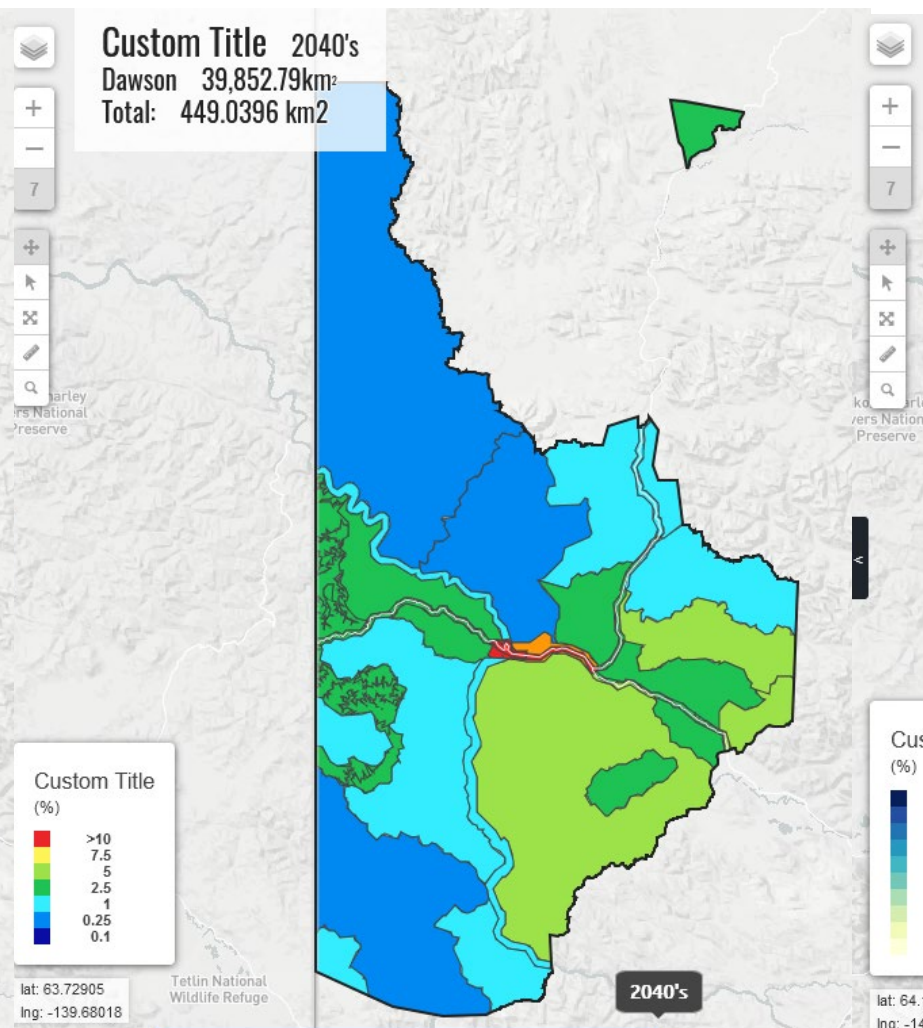
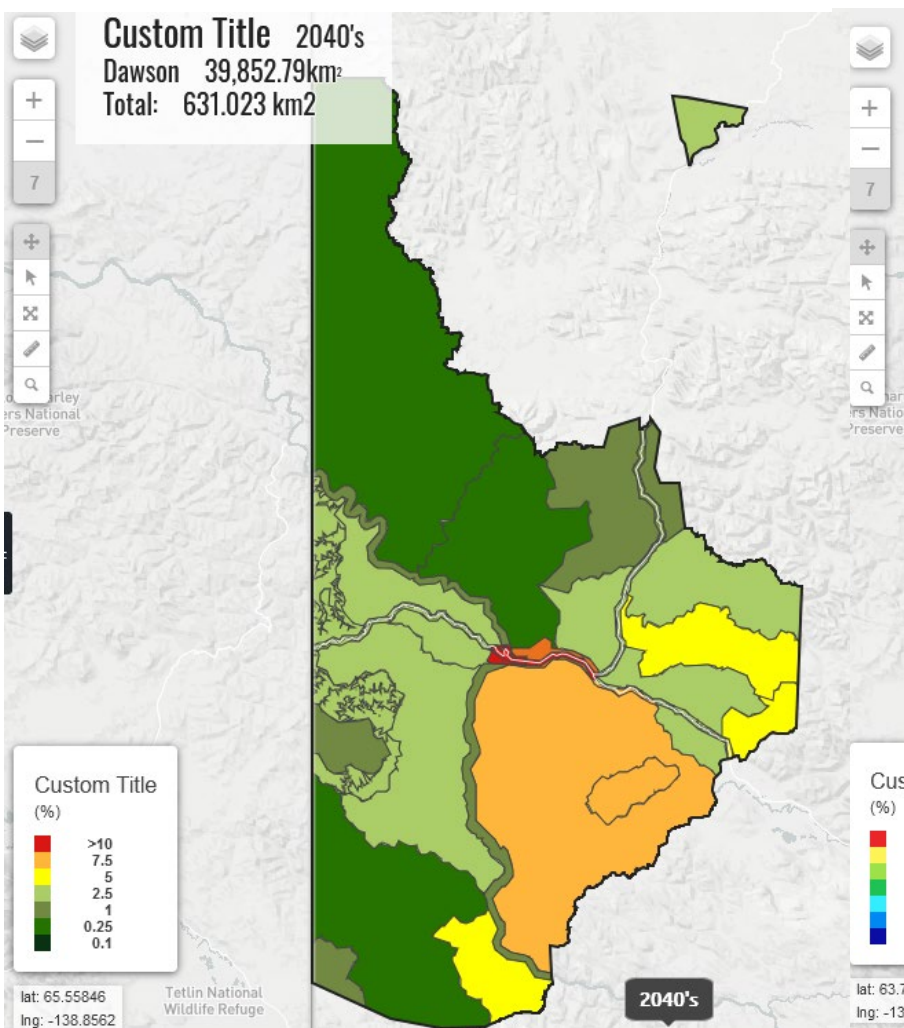


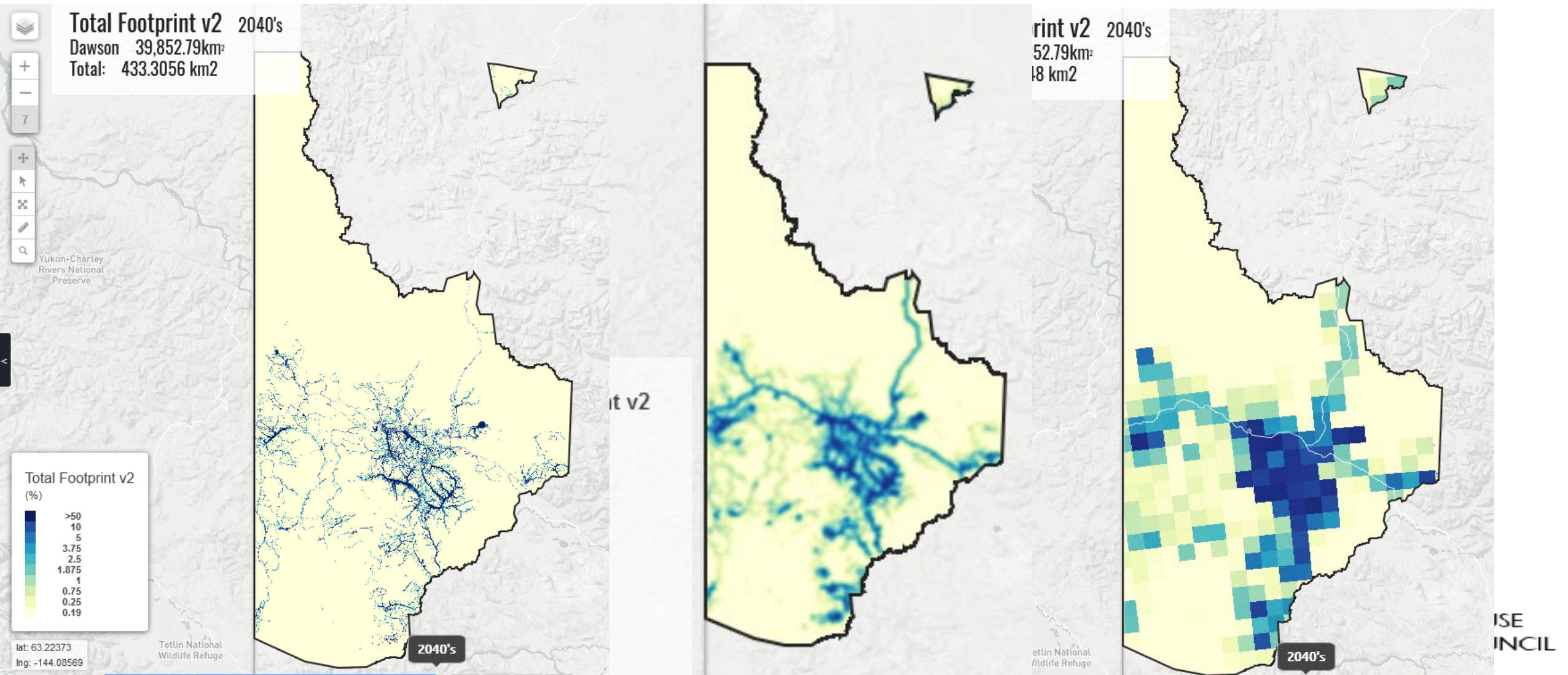
Table 9. Potential change in the level of cumulative human development footprint and linear features resulting from the low activity scenarios, summarized by LMU (LMU version: May 2014).

LMU		FUTURE DIRECT FOOTPRINT				FUTURE LINEAR FEATURES			
#	Name	New Direct Footprint (km ²)	Increase in Direct Footprint (%)	Total Direct Footprint (km ²)	Total Direct Footprint (% LMU)	New Linear Features (km)	Increase in Linear Features (%)	Total Linear Features (km)	Future Linear Density (km/km ²)
1	Kandik River	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Fishing Branch	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Miner River West	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Miner River	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Whitestone River	0.00	0.00	0.07	0.00	0.00	0.00	11.34	0.01
6	Eagle Plains	0.50	18.71	3.18	0.23	73.87	18.13	481.18	0.34
7	Upper Miner River	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Tatonduk River	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Eagle Creek	0.00	0.00	0.24	0.02	0.00	0.00	39.69	0.03
10	Coal Creek	0.00	0.00	0.05	0.00	0.00	0.00	16.06	0.01
11	Twelve Mile	0.00	0.00	1.29	0.05	0.00	0.00	236.99	0.09
12	Tombstone Park	0.00	0.00	2.40	0.11	0.00	0.00	90.84	0.04
13	Forty Mile River	0.34	4.86	7.29	0.55	0.67	0.20	333.00	0.25
14	Swede Creek	0.11	2.22	5.08	0.33	0.54	0.17	327.67	0.21
15	Rock Creek	0.38	0.90	9.10	0.80	0.00	0.00	607.07	0.53
16	North Klondike River	0.00	0.00	1.78	0.36	0.00	0.00	49.24	0.10
17	South Klondike River *	9.89	137.13	17.10	0.53	1.14	0.40	286.23	0.09
18	Sixty Mile River	3.52	14.43	27.88	0.81	43.68	4.13	1,102.34	0.32
19	Caribou Creek	0.00	0.00	0.63	0.29	0.00	0.00	80.48	0.37
20	Goldfields	16.55	14.47	130.87	4.44	11.69	0.49	2,416.03	0.82

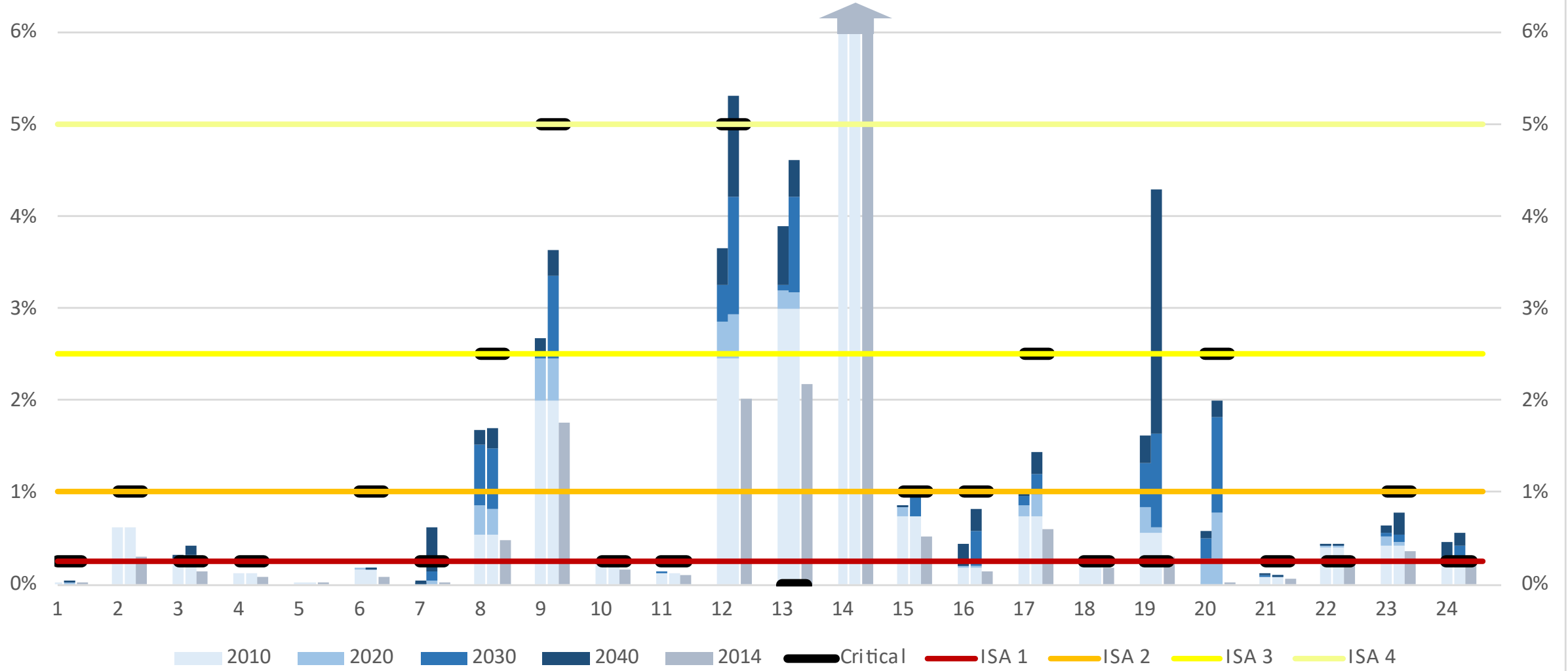
Maps – colour palettes



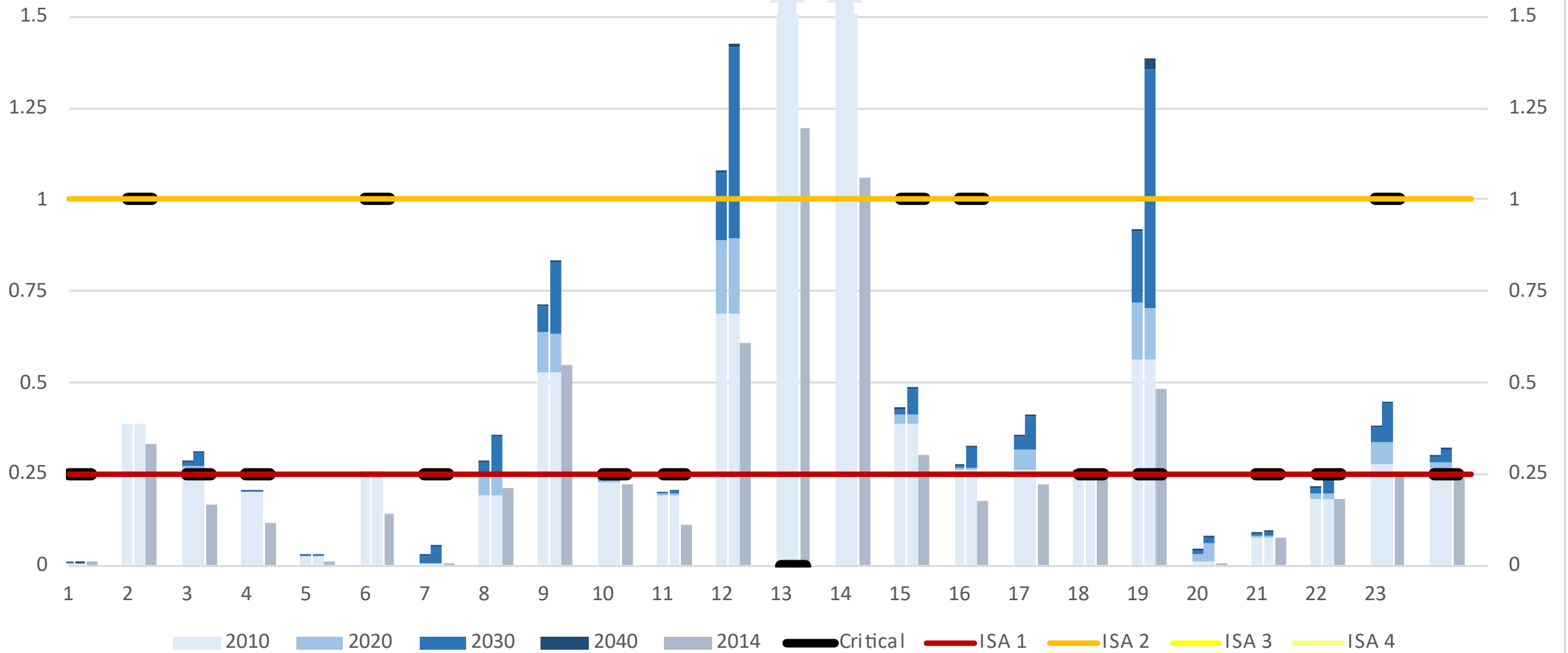
Maps - scale

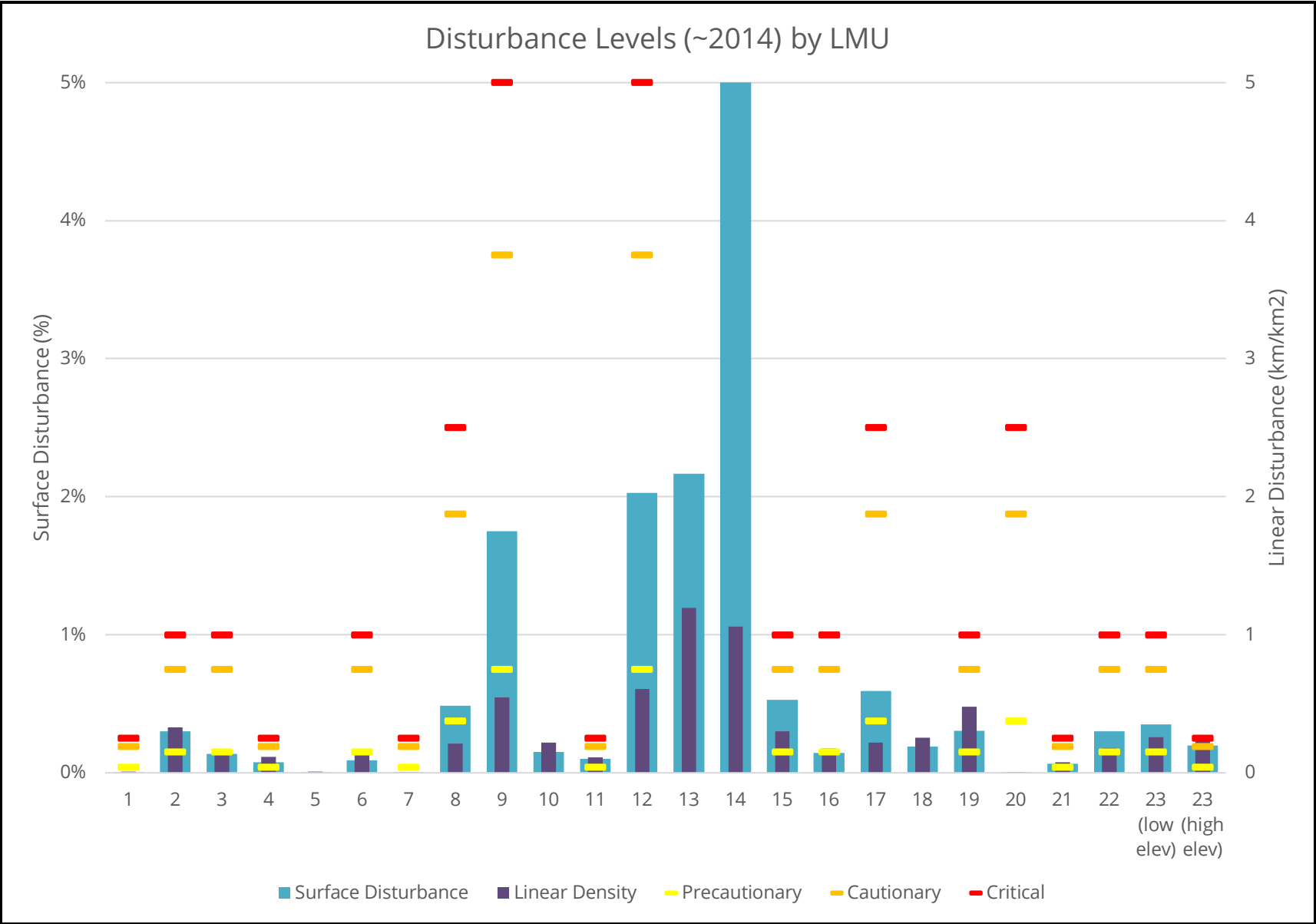


Estimated and Forecasted Surface Disturbance per LMU



Estimated and Forecasted Linear Disturbance per LMU





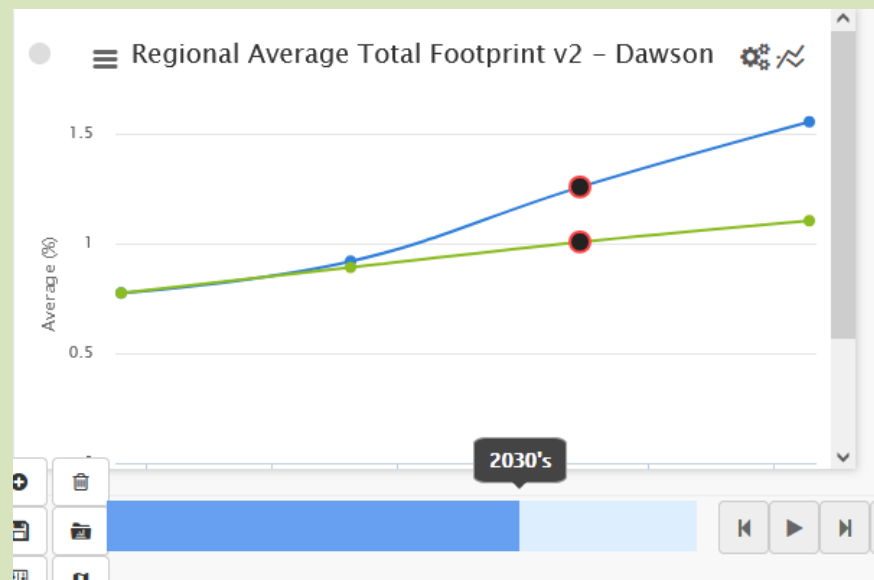
Next Steps

- Review the report (Merry Christmas!?), and approve and post it early next year.
- See if the CE Working Group can find useful connections between disturbance and regional values

→ Cumulative Effects!!



High and Low Scenarios

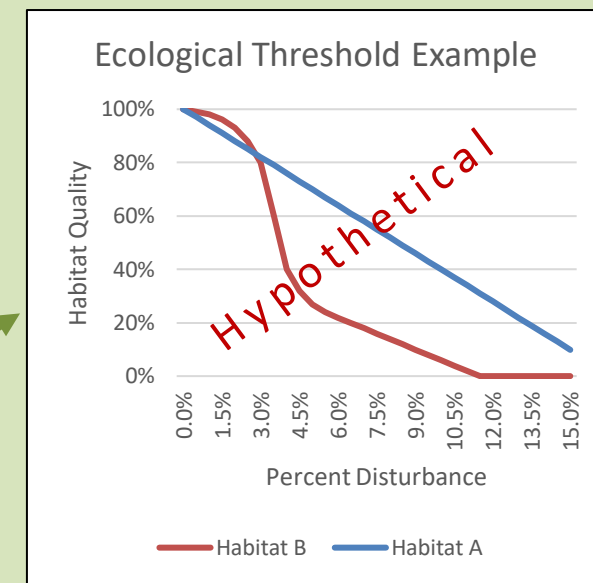


Effects Modelling

Effects Forecasting

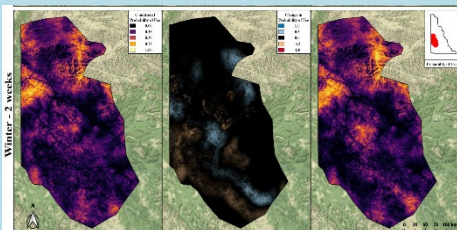


Effects Forecasts



Other data

Movement models



Habitat maps

Fire maps

Recommendations

- Revisit Linear Density thresholds – they are often wildly high and don't have to be the same number as Surface Disturbance
- Threshold options:
 1. Set thresholds based on ecological thresholds (data? time? may not happen)
 2. Adjust thresholds based on this report (weaker rationale)
 3. Option 2 as an interim + clear directions on how to adjust once data is in (who does this? Uncertain timelines...)

