

The Burnaby Tank Farm An Unacceptable Safety Risk to Simon Fraser University, University Highlands Elementary School, and the SFU Childcare Centre

Background

Trans Mountain's Burnaby Tank Farm is located on the south slope of Burnaby Mountain, adjacent to Burnaby Mountain Parkway and Gaglardi Way. These roads provide the **only access to/from**:

- the main campus of Simon Fraser University¹,
- University Highlands Elementary School²,
- the SFU Childcare Centre³
- the UniverCity⁴ residential community.

On an average day more than 26,000+ people can be on top of Burnaby Mountain:

- 1,500 students live in SFU residences,⁵
- 5,000+ people live in UniverCity condos and townhouses,
- 20,000+ students, faculty members, staff, and visitors are on the SFU campus.⁶

The Trans Mountain Expansion Project (TMEP) triples the oil storage capacity of the existing Tank Farm by adding 14 new, larger oil storage tanks to the existing site. These tanks, filled with volatile and toxic diluted bitumen, will be closer to each other, the surrounding forest, and the only SFU access roads.

The nearest oil tanks will be:

- ~ 60m from the Gaglardi Way access road;
- ~100m from the Burnaby Mountain Parkway access road;
- ~150m from the traffic light at the intersection of the two access roads;
- ~700m from the SFU campus.⁷

¹Simon Fraser University (SFU) is B.C.'s second largest publicly funded university. The main campus on Burnaby Mountain includes a complex of interconnected buildings spanning 1.7km. The University's administrative offices, faculty offices, main library, and a number of special collections, including First Nations artifacts, are located on this campus.

² University Highlands Elementary School has 40 children in kindergarten and 275 children in grades 1-7.
<http://universityhighlands.sd41.bc.ca>

³ The UniverCity Childcare centre is one of Canada's greenest buildings. It opened in 2012.
<http://www.sfu.ca/childcare/about-us/history.html>

⁴ UniverCity is a densely built community with population of 5,000+ (target population 10,000). Buildings range from 3 story townhouses to 14 story highrises. The community has a large Nesters grocery store and many other shops & services. A neighbourhood map and other information at:
<http://univercity.ca/the-community/>

⁵ In the fall/winter term there is a waiting list for the 1556 residence spaces.
<https://www.sfu.ca/students/residences/residences.html>

⁶ Nov. 2016 conversation with Mark LaLonde, Chief Safety Officer, SFU.

⁷ PGL Consultants, Nov. 20, 2016, pp. 2-3

The public health and safety risks, posed by Kinder Morgan's Burnaby Tank Farm, have been described in numerous reports submitted to:

- the National Energy Board (NEB) by intervenors;
- the Canadian government by the individuals, groups, and municipalities who made presentations to the Ministerial Panel for the Trans Mountain Expansion Project.⁸

Both Risk reports (McCutcheon 2015 and Genesis 2017), submitted by Kinder Morgan, have ignored or minimized the safety issues for Simon Fraser University, the UniverCity residential community, elementary school, and childcare facility.

The conclusion page of McCutcheon's Burnaby Terminal Risk Assessment (2015)⁹ states:

- "good road access from at least 2 directions is imperative".
- the radiant heat from a tank or ditch fire will cause significant injury within 100 seconds up to 224m from the dike wall and first degree burns up to 536m after 90 seconds (this will affect the road network northeast of the site);
- SO₂ will affect people in a radius of 5.2km from the site;
- a cloud of soot will travel up to 43km from the site.

The McCutcheon report concluded that the risk of expanding the Burnaby Tank Farm from 13 to 26 tanks is within the acceptable criteria of the "Risk-based Land Use Planning Guidelines" of the Major Industrial Accidents Council of Canada (MIACC)¹⁰

Many intervenors expressed concerns about McCutcheon's analysis. The report, submitted by the Burnaby Fire Department, included a series of maps & diagrams showing various risks.¹¹

Of particular concern to the SFU community and UniverCity residents was information in the Burnaby Fire Department's report that a boilover or fire at the Burnaby Tank Farm had:

- the potential for allowing one or more tanks to burn out over 2 - 4 days, subjecting many people to chemical exposure and heat & smoke discharge in the residential neighbourhoods around the Tank Farm and anyone driving on Burnaby Mountain Parkway or Gaglardi Way;¹²
- block access to/from SFU, making evacuation impossible for up to 4 days¹³ (fire engines and ambulances would not be able to evacuate injured persons)

⁸ See the References page for a list of the reports referenced in this document.

⁹ McCutcheon, Oct 2013, p.40

¹⁰ Ibid.

¹¹ Burnaby Fire Dept, pp. 68-69, 77-78

¹² Burnaby Fire Dept., pp 7-8

¹³ Burnaby Fire Dept. 2015, p.59 (Everyone at SFU, at UniverCity, the elementary school, childcare facilities, local stores, and visitors would be required to shelter in place, Thousands would not reach a safe place in time. Many families would be separated).

- spread from the Burnaby Tank Farm to the surrounding forest.¹⁴
- **a 4 day tank fire event would constitute an emergency evacuation on a provincial scale.**¹⁵

The NEB report contained a number of conditions. **Condition 22**¹⁶ required that Kinder Morgan conduct a second risk analysis that met the Risk-based Land Use Planning Guidelines of the Major Industrial Accidents Council of Canada.¹⁷

Kinder Morgan commissioned Genesis to conduct the second risk analysis. Genesis concluded that the risk to SFU is acceptable because SFU is an institution.¹⁸ The report did not mention:

- the densely populated UniverCity residential community, elementary school, or childcare facility adjacent to the SFU campus even though they are clearly shown on the attached Genesis maps;¹⁹
- the need for the road access/escape routes from two directions mentioned in the McCutcheon report;
- the probability that an incident at the Tank Farm would close both access roads (several Genesis maps show that portions of both access roads and the intersection where they cross are within the danger zone.)²⁰

An alarming part of the Genesis report is section 6.14 Emergency Response Time from the start of a fire to the start of foam application:

1. Full surface tank fire involving the new tanks (**20 minutes** to verify the fire & change the header)
2. Full surface tank fire involving the old tanks (**60 minutes**: 20 minutes to verify the fire; 40 minutes to have responders attach hoses)
3. Full surface tank fire using a portable foam cannon (**6 hours** to have responders on site).²¹

Using the very short exposure times described in the McCutcheon report, many drivers and bus passengers, using Burnaby Mountain Parkway and Gaglardi Way, would die.

In spite of the above omissions, the NEB accepted the Genesis report conclusion that the risk was within the MIACC guidelines.

¹⁴ Burnaby Fire Dept, p. 7

¹⁵ Burnaby Fire Dept, p. 56

¹⁶ NEB. "Trans Mountain Expansion Project, May 2016, p. 424.

¹⁷ MIACC, Risk Contours p. 12, 16 (diagram), 17

¹⁸ Genesis Report, 2017, p. 127

¹⁹ Genesis Report, pp. 121, 123

²⁰ Genesis Report, pp. 116, 120-121, 123-125.129

²¹ Genesis Report, Section 6.14, Emergency Response Time, pp. 40-41

When the Trudeau government appointed the Ministerial Panel for the Trans Mountain Pipeline Expansion Project in 2016, the Burnaby municipal government, residents, and SFU groups had a final opportunity to express their concerns about issues posed by the Burnaby Tank Farm. The Panel held 3 days of meetings in Burnaby, attended by more than 250 people. The Panel's November 2016 Report stated:

- when the panel moved to Burnaby "the focus shifted sharply to public safety"
- "residents . . . complained about Trans Mountain tripling the capacity of its tank farm at the foot of Burnaby Mountain, filling those tank with a highly volatile and toxic diluted bitumen".
- some of the scenarios described by fire officials and residents are severe.
- "Because the tank farm sits at the intersection of the only two access roads to SFU, . . . thousands of students and residents would have to "shelter in place" even in the face of a fire climbing the mountainside . . . and toxic fumes pushed by the fire and carried by the prevailing wind."
- ". . . the students, staff and faculty of Simon Fraser University and the residents of the adjacent community, UniverCity, currently have no other way off the mountain."²²

The November 28, 2016 issue of the SFU News contained an article titled "**Kinder Morgan tank farm expansion poses risks to SFU**". The article discussed the dangers enumerated in the Nov 2016 PGL Environmental Consultants report. SFU President Andrew Petter told the paper: "Any increase in risks to the health and safety of the SFU community resulting from this expansion is unacceptable to the University. The risks identified in this report are significant and deeply concerning."²³

Conclusion

Dr. Ivan Vince, a consultant with extensive experience in the U.K. and Europe, prepared a risk report for the City of Burnaby. Dr. Vince said: "The application for expanding the Burnaby Terminal would, in my opinion, have failed in the U.K. and in all probability throughout the E.U."

". . .the risk is already high and would become intolerably high (by my understanding of the MIACC criteria as well as the U.K. criteria) if the expansion went ahead in view of the logistical complexity of fire fighting on a congested and sloping site, the proximity of residential areas and forestry and the difficulty, in an emergency, of safely evacuating Simon Fraser University,"²⁴

²² Report from the Ministerial Panel for the Trans Mountain Expansion Project, Nov. 1, 2016. pp 16, 17, 56.

²³ SFU News, "Kinder Morgan tank farm expansion poses risks to SFU", Nov. 28, 2016

²⁴ Vince, p.8.

REFERENCES

Links

SFU Childcare Society, <http://www.sfu.ca/childcare.html>

University Highlands Elementary School, <http://universityhighlands.sd41.bc.ca>

Reports

Kinder Morgan

Doug McCutcheon & Associates, "Trans Mountain Expansion Project" Burnaby Terminal Portion, Risk Assessment", Oct. 2013

Genesis, "Burnaby Terminal Expansion Risk Assessment Report", Feb. 2017

Government

National Energy Board, "Trans Mountain Expansion Project", May 2016

Ministerial Panel for the Trans Mountain Expansion Project, Report, Nov. 2016, pp. 16, 17, 56.

Industry

Major Industrial Accidents Council of Canada, "Risk-based Land Use Planning Guidelines", June 1995. pp. 10-13; 15-18.

Intervenors

City of Burnaby Fire Department, Chris Bowcock, "Trans Mountain Tank Farm Tactical Risk Analysis", May 2015 (submitted by the City of Burnaby)

Dr. Ivan Vince, ASK Consultants, "Opinion on Potential Off-Site Risks of the Proposed Expansion of the Burnaby Tank Farm", May 2015 (submitted by the City of Burnaby)

Pottinger Gaherty, "Trans Mountain Expansion Project - Review of Human Health Risk Assessments, Evidence Report", May 2015, (submitted by Simon Fraser University)

PGL Environmental Consultants, "Trans Mountain Expansion Project (TMEP): Evaluation of Risks to SFU", Nov. 2016, (submitted by Simon Fraser University).

Takaro, Brubacher et al, "Major Human Health Impacts of the Kinder Morgan Trans Mountain Pipeline Expansion, A Report for BROKE and NOPE", May 2015, (submitted by BROKE and NOPE)

News Article

SFU News, "Kinder Morgan tank farm expansion poses risks to SFU", Nov. 28, 2016.