



# Executive Summary

The Community Co-design Project at Muskeg Lake Cree Nation focused on gathering perspectives on different 'subdivision' layouts from Muskeg Lake Cree Nation community members and examining potential social, cultural, environmental, economic and health benefits from including community preferences in subdivision design. Note that the term 'subdivision' is used herein despite solutions including non-subdivision layouts. A community researcher functioned as a liaison between researchers and community members. The Covid-19 pandemic presented barriers to connecting the University of Saskatchewan team and Muskeg Lake Cree Nation community members. However, the importance of a community researcher facilitating engagement opportunities and connecting with the community meant this project could proceed safely.

The project used mixed research methods via a literature review, interviews, and a qualitative sorting survey of personal viewpoints on various subdivisions, to provide community members with opportunities to share their perspectives in the planning of their communities. A literature review on Indigenous community co-designing identified important areas of infrastructure design considerations on reserves and processes to follow to ensure meaningful engagement during future community planning. Interviews with community members provided qualitative data illustrating personal preferences in community development. The qualitative sorting survey provided a unique data set drawing on qualitative and quantitative information. We found that consideration of additional up-front costs associated with larger lot sizes (for more space, privacy, and cultural and natural connection) may result in lower overall costs associated with physical and mental health. For example, costs could be reduced for visits to the hospital resulting from living in an unsafe, crowded, and inadequate living environment. Additional research on these hidden costs is recommended.

Data collected during the project provided a cross-section of community perspectives giving a greater understanding of what Muskeg Lake members envisioned for future community development and what they considered important for maintaining and enhancing well-being. Community members indicated they value having adequate space between lots while maintaining community, cultural, and family connections. Members valued tree coverage on lots that provide can privacy and enhance the community's natural beauty. Safety and quality were also important design considerations.

The lessons learned during this process resulted in two primary outcomes:

- Improved understanding of how engineers and other consultants can adapt processes for engineering design, including details in initial scoping and feasibility documents, tools for gathering community input and feedback, and essential questions to ask.
- Appreciation for the importance of community stakeholders who can continue to engage in aspects of community life that support leaders and decision-makers in creating a community centred on local perspectives and future wishes.

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# Project Overview

A community-informed subdivision plan needs to be led by local perspectives on social, cultural, environmental, and human well-being. This project aimed to discover preferences for subdivision design and layouts guided by the community. A secondary goal was to learn from and share knowledge on how to improve the process of co-designing infrastructure and community. The perspectives shared by community members can be used to create unique and community-specific subdivision layouts that balance social, cultural, environmental, well-being, and financial metrics. Developing community-centred design processes can result in holistic, long-term benefits for present community members and future Muskeg Lake Cree Nation generations.

The Community-Centered Design (CCD) project was organized by the Department of Civil, Geological, and Environmental Engineering at the University of Saskatchewan by Principal Investigators Dr. Terry Fonstad and Dr. Kerry McPhedran. The CCD research team from the University of Saskatchewan is a multi-disciplinary team of supervisors and graduate students:

Dr. Lori Bradford (School of Environment and Sustainability) supervising Derek Eisner  
Dr. Wanda Martin (College of Nursing) supervising Shannon Hyslop  
Dr. Terry Fonstad (Associate Vice President of Research), and  
Dr. Kerry McPhedran (Department of Civil, Geological and Environmental Engineering) supervising Tanya LaBelle and Tim Vogel

The disciplinary backgrounds of the group are Civil Engineering, Nursing, and Environment and Sustainability. Each student conducted research related to their fields of study with the support of their supervisors. Others involved in the project were Muskeg Lake Cree Nation community members, Chief and Council, the Muskeg Lake Project Management team with Grant McKercher, representatives from Indigenous Services Canada (ISC), Saskatoon Tribal Council, engineers from BCL Consulting, and community researcher Steven Wiig. Parallel co-designed research at Muskoday First Nation allowed for input and direction from community members and leaders from Muskoday First Nation as well.

The CCD project team aimed to provide Muskeg Lake Cree Nation with information for developing a community-guided housing plan that included social, cultural, environmental, and human health impacts. This is known as a Triple Bottom Line (TBL) approach that goes beyond economics as the decision-making criteria toward a values-based approach (Elkington, 1997)<sup>1</sup>. The project's adoption of co-design allowed for the collective interaction of stakeholders and researchers, providing the communities with a voice throughout the planning process. Ultimately, the CCD project provides the framework for long-term policy change on how housing is developed

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<sup>1</sup> Elkington, J. (1997). The triple bottom line. *Environmental management: Readings and cases*.

in Saskatchewan First Nations Communities. A counsellor for Muskeg Lake Cree Nation summed up the project's main idea:

***"We are building a community, not a subdivision."***

To meet community needs and identify preferences for subdivision design and ISC's need to examine and reflect on their policies, the team settled on mixed methodologies for the social and process-evaluation research.

The academic aspects of the project included gathering and analyzing background information from engineering, health, and social sciences to provide context and explore the boundaries of western knowledge on community-specific designs. Unfortunately, in-person events and activities were affected by the health restrictions in place because of the Covid-19 pandemic leading to a need to use virtual platforms for the success of this project. Virtual forums, such as Zoom, Webex, Microsoft Teams, conference calls, emails and texts subsequently became the pathways for building relationships during this project. In-person engagement became possible with the easing of restrictions, and the research team was privileged to have the opportunity to visit and participate in a community event with Muskeg Lake Cree Nation in the winter of 2021. The quotes in this report were gathered during interviews with community members.



# Community Researcher

## Key Points

- A local community researcher is vital to the success of any research project.
- Knowledge of the community and residents allowed for building relationships that helped guide the research.

A community researcher was integral to this project to collaborate with collecting data and facilitating engagement with community members. In addition to the community researcher, many community members contributed to this project's outcomes. Steven Wiig, Food Security and Climate Change Supervisor at Muskeg Lake Cree Nation, was this project's community researcher. The role of Steven was central to the project, providing knowledge of the community that was important for relationship building between the community and the research team. From conducting interviews to participating in research team meetings and organizing in-person engagement, Steve's role was vital to this research project and within the community as a member of the food security team in Muskeg Lake Cree Nation. Figure 1 is a photo of Steven in the wâhkôtowin Food Forest on the shores of Paddling Lake.



*"I am impressed with the motivation of the research team and believe whole-heartedly in their desire to benefit the future housing developments on FN communities."*

Steven conducted the research interviews with community members and facilitated the viewpoint sorting exercise access and platform for community members using online technology. He was involved in planning the research, gathering and analyzing data, and creating outputs, including contributing to this report. He also shared important teachings with the students and research team on community values and social and cultural dynamics.

**Figure 1:** Muskeg Lake Cree Nation Community Researcher for Community Co-Design project, Steven Wiig

# Community Background

## Key Points

- This study provided an opportunity for Muskeg Lake community members to share their long-endured poor conditions and tough times because of early designs.
- Past community development did not meet the cultural and wellbeing needs resulting in overcrowding, family and community conflict, and Elders leaving the community. Housing and infrastructure did not meet the expectations of Muskeg Lake Cree Nation members.
- Recognition by community members of the hard work of past community members that led to engagement in this co-design work to make the community design more culturally, socially, and wellbeing-oriented.
- Interviewing was an effective way to learn about community background from Muskeg Lake Cree Nation members' knowledge system, perspective and experiences. This learning was relevant to understanding why some design features would be preferred.

## Past Infrastructure & Community Development

A community is a "body of persons or nations with a *common history or common social, economic, and political interests*" (Merriam-Webster, 2018). Conventional practice is that community design typically uses financial considerations as the main driver for decision-making, often using the lowest cost alternative without consideration of the social (including health and culture) and environmental impacts. For Muskeg Lake Cree Nation, several important themes were identified that community members felt were important considerations for a healthy living environment. The word cloud in Figure 2 shows the main ideas shared by interview participants on the essential aspects of health and wellbeing with consideration to subdivision designs. The larger the word, the more prevalent this was within the conversations.



Figure 2: Aspects of a healthy community

Canada's Indigenous communities are often negatively impacted by federal agencies that fail to account for community preferences when distributing funds, resulting in community layouts that are not culturally appropriate or adequate. The lack of Indigenous-led community subdivision development reflects the impact of European colonization on Indigenous communities disrupting the culturally embedded practices for community living. Before European settlement, Indigenous community and culture were intertwined. Communities were designed as extended families living close together. Traditional ways of living allowed community members to live beside who they chose, usually with family members. In the interviews, the project team learned many details about the struggles that living on reserve had caused for community members and how they felt trapped with the current allocation and design of the community's housing:

***"Yeah. We've been crammed in there, and even though we dislike the guy next door, that's the house we got, and that's not the way traditionally we were raised"***

Past Muskeg Lake housing was often overcrowded.

***"The log house my dad made, they had 16 kids. It accommodated, right?"***

We also heard from many that the community lacked sufficient infrastructure. These conditions were typical for on-reserve communities of the past. One Elder told us:

***"Well, from the past, all I remember is no power, no heat, like gas-wise, no water, had to do everything manual like haul our own wood for heat and haul our own water for drinking water, and using candles, stuff that we never had to turn on the switch kind of thing. It has come a long way. I don't remember what year, but when the power was getting hooked up to the houses. So, I would say about maybe 30 years, 40 years."***

Others told us that Muskeg Lake community development relied on the work carried out by community members themselves. This hard work was a factor that allowed for adequate housing conditions. One community member told us how things had changed from their past housing situations:

***"All our basic necessities years ago, we had to work. We had to keep warm. We had to, of course, build our log cabin. My dad made our home and stuff, and yeah, we had to work. We had to work to have a house. We had to work to have heat. We had to work to have light. We had to work at everything. That's the difference today."***



# Review of Previous Research on Co-Design

We reviewed online databases for other research published in peer-reviewed articles on co-designing community infrastructure with Indigenous communities to understand the impact of these approaches. Initially, we hoped to assess how co-designing community infrastructure could positively impact health and well-being, but there was not enough research on this area. We found eight peer-reviewed articles published in journals about studies that used some form of Indigenous community input when planning and designing infrastructure. The poster shown in Figure 3 provides an overview of the main results of this review.

As shown in the poster, we identified four main groups of benefits of co-designing community infrastructure with Indigenous communities across the eight articles. We titled the main benefits as follows: (1) incorporate exclusive local knowledge, (2) align with community needs and culture, (3) meet a broader set of needs, and (4) support community capacity. We have submitted this review for publication in a peer-reviewed journal and will share a version of the article when it is published.

## Papers from the Literature Review

1. Bradford, L. E. A., T. Vogel, K. E. Lindenschmidt, K. McPhedran, G. E. H. Strickert, T. A. Fonstad, and L. A. Bharadwaj. 2018. "Co-design of water services and infrastructure for Indigenous Canada: A scoping review." *Facets* 3:487-511.
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4. Hudson, A., and K. Vodden. 2020. "Decolonizing Pathways to Sustainability: Lessons Learned from Three Inuit Communities in NunatuKavut, Canada." *Sustainability* 12 (11).
5. Larcombe, L., L. Coar, M. Singer, L. Denechezhe, E. Yassie, T. Powderhorn, J. Antsanen, K. A. Kinew, and P. Orr. 2020. "Sekuwe (My House): building health equity through Dene First Nations housing designs." *International Journal of Circumpolar Health* 79 (1).
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7. Shelby, R., Y. Perez, and A. Agogino. 2012. "Partnering with the Pinoleville Pomo Nation: Co-design Methodology Case Study for Creating Sustainable, Culturally Inspired Renewable Energy Systems and Infrastructure." *Sustainability* 4 (5):794-818.
8. Wood, Clinton L., and Caroline M. Clevenger. 2012. "A Sampling of Community-Based Housing Efforts at Pine Ridge Indian Reservation." *American Indian Culture & Research Journal* 36 (4):3-27.

## **ALL FIRST NATIONS HAVE A RIGHT TO SELF-DETERMINATION, WHICH SHOULD INCLUDE PLANNING AND DESIGNING COMMUNITY INFRASTRUCTURE**

Much of the infrastructure (e.g., housing, water services, etc.) in First Nations communities has been impacted by external governments because of the requirements for how government funding can be used.

We looked at studies that included Indigenous voices in planning and designing infrastructure and found many benefits of this approach, also called a community-driven approach.

### **BENEFITS**

#### **Incorporate Exclusive Local Knowledge**

- Indigenous Peoples have deep knowledge of the community and the land, which can be used to choose appropriate infrastructure.
- For example, community members know areas that are prone to flooding which wouldn't be appropriate for new houses.

#### **Meet a Broader Set of Needs**

- Community members can think about the economic and environmental impacts of infrastructure (e.g., the potential to create jobs, the use of renewable energy).
- Community members can think about the future of the community

#### **Align with Community Needs and Culture**

- Indigenous voices are needed to identify and prioritize community infrastructure needs.
- With community-driven approaches the culture and traditions of the community can be incorporated into the planning process.

#### **Support Community Capacity**

- Community-driven approaches can reinforce the expertise that already exists in the community.
- Create opportunities to expand skillsets around infrastructure maintenance and preventative care.

We also found some comments on what constrains communities from being able to use community-driven approaches:

- Funding models can make community-driven approaches difficult when they have certain requirements, are short-term, or focus on up-front versus long-term costs
- Not all communities have equal opportunities to participate because of their location (i.e., difficult for remote communities)
- External building codes can restrict construction methods and what materials can be used

## **OVERALL, APPROACHES THAT INCORPORATE COMMUNITY MEMBERS' VOICES COULD SUPPORT INCREASED FIRST NATIONS CONTROL AND AUTONOMY OVER COMMUNITY DESIGN.**



*Figure 3 Poster with Results from Review of Published Literature on Co-Designing Community Infrastructure with Indigenous Communities*

# Community Layout Preferences

## Key Points

- Preferences in housing layouts in Muskeg Lake Cree Nation were prioritized based on four unique factors including: (A) More Space and Natural Connection; (B) Culturally Reflective Family Clusters; (C) Trees and Natural Landscaping; and (D) Connection to Water.
- Survey participants from Muskeg Lake Cree Nation prefer unique and connected designs with larger lot sizes, more space, and natural and landscaped privacy.

As a part of the co-design research, fifty-three Muskeg Lake Cree Nation members voluntarily participated in a sorting activity where community members were asked to examine and sort various community layouts and subdivision designs from most to least preferred. This activity was based on the research method known as Q-methodology.

Various features were represented in the survey layouts that were sorted to learn more about the opinions, perceptions, and likes and dislikes that the community can consider for future community design projects. Within this sorting survey, typical urban-style linear grid patterns, various lot sizes, different densities, curved or straight roads, water views, circular layouts, cul-de-sac family clusters, culturally symbolic designs, and rural acreages were each represented in 24 different aerial photos from unique First Nation communities across Canada (see Appendix document for all the layouts and outline of steps taken to complete the survey). Half of the designs had open views, and half had landscaped privacy, such as trees or forested areas.

At the end of the sorting activity, two short answer questions were optional for participants to give reasons for choosing some designs over others. The themes derived from these answers to the questions are presented in a word cloud in Figure 4. Privacy, more space, trees, family, culture, connection, water, safety, and design were among the most common reasons for layout preferences.



*Figure 4: Reasons for preferred layouts*



# Design Features

Figure 5 shows the four distinct groups selected by Muskeg Lake Cree Nation participants. Designs were sorted from the top 5 "Most Preferred" to the bottom 5 "Least Preferred" housing layouts.

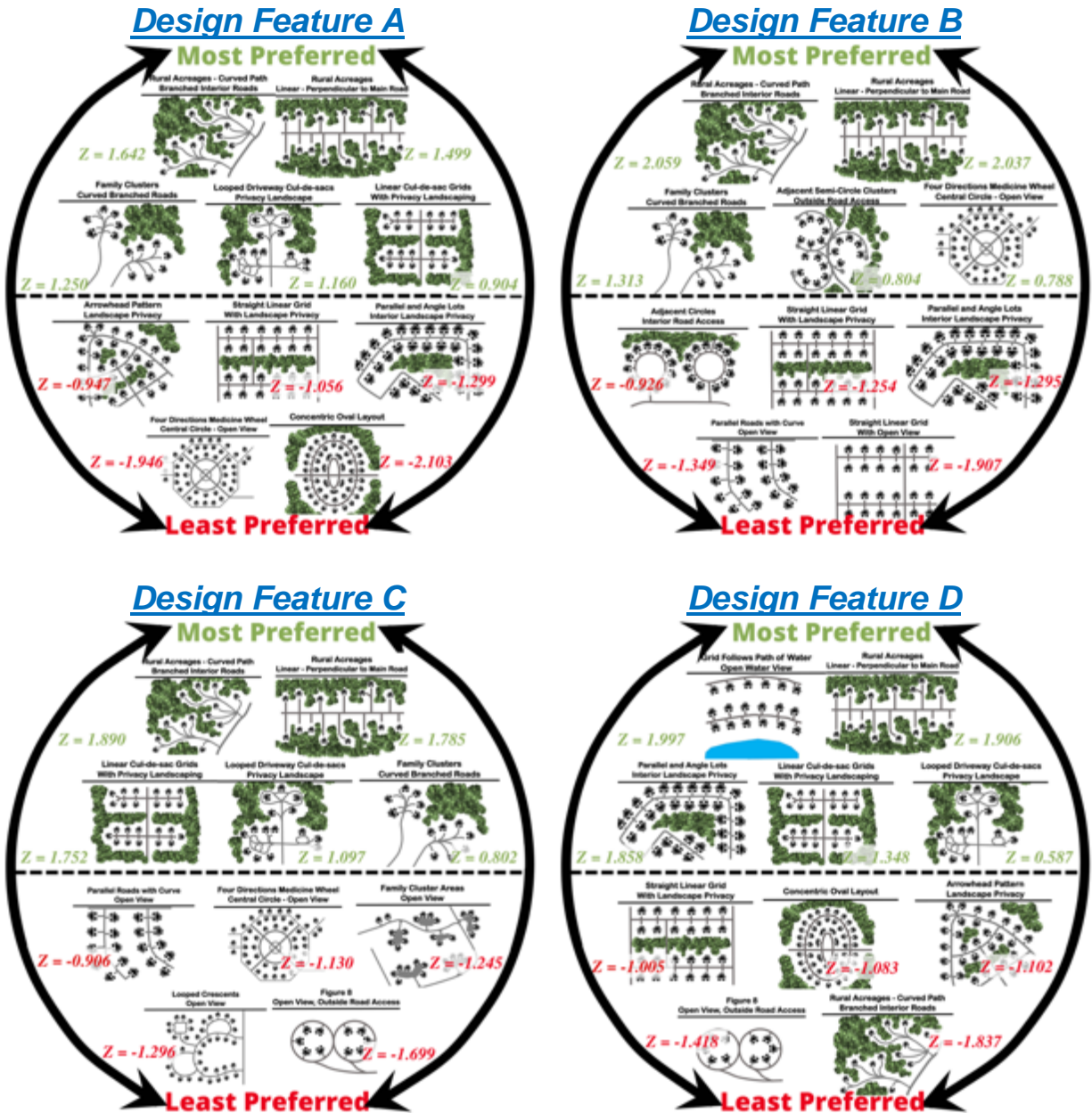


Figure 5 Muskeg Lake Cree Nation Most and Least Preferred Design Feature Groups

The survey results also gave a cumulative score for each potential layout's contribution to the overall design features in the form of Z-scores, as shown above in Figure 5 and Table 1 for the top two most preferred and two least preferred housing layouts. Higher Z-scores reflect a greater preference for the elements of the layout (shown in green), while lower and negative scores suggest a dislike of some aspect of the layout (shown in red), ranging from +3 (most preferred) to -3 (least preferred). Muskeg Lake community members conducted this sorting activity online through a survey link shared on Facebook or manually facilitated on a tablet by the community coordinator, such as at the Muskeg Lake Cree Nation Christmas supper on December 16, 2021.

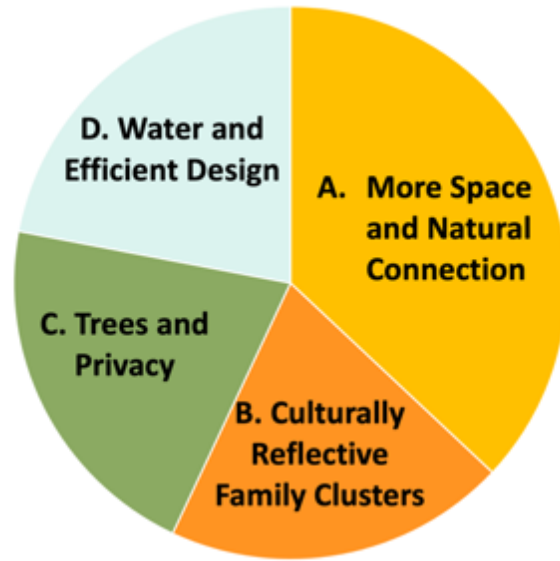
**Table 1** Data from the Q-Sort Survey showing Design Feature Z-Scores for two most preferred layouts and the two least preferred layouts

<b>Design Feature A</b>	<b>Z-score</b>
Rural Acreages, curved paths - least dense housing layout with natural landscape privacy	1.642
Rural Acreages, linear paths - second least dense housing layout with landscape privacy	1.499
Second most dense housing layout	-1.946
Most dense housing layout	-2.103
<b>Design Feature B</b>	<b>Z-score</b>
Rural Acreages, curved paths, least dense housing layout with natural landscape privacy	2.059
Rural Acreages, linear paths - second least dense housing layout with landscape privacy	2.037
Grid layout, with bend in road, no privacy or landscaping	-1.349
Linear grid layout with no privacy or landscaping	-1.907
<b>Design Feature C</b>	<b>Z-score</b>
Rural Acreages, curved paths with natural landscape privacy	1.890
Rural Acreages, linear paths with landscape privacy	1.785
Densely populated looped crescents with no trees or privacy	-1.296
Circular layout with no trees or privacy	-1.699
<b>Design Feature D</b>	<b>Z-score</b>
Houses with view of Water, following the path of Water in a linear way	1.997
Linear roads with natural landscape privacy	1.906
Circular layout with no trees or privacy	-1.418
Curved and branched roads in rural acreage layout	-1.837

By looking closely at the images and their descriptive titles and assessing how they were sorted within the distribution for each Design Feature, similarities and differences are noted. For example, in Design Feature C, it can be seen that trees and landscaping are a priority within this part of the community, and open views without privacy are not desirable. There was also an opportunity for participants to share their reasons for sorting and ranking preferences of their likes and dislikes of the various subdivision styles in their own words. The underlying viewpoints and perspectives of those that responded were identified within each Design Feature group. Upon further review of all available data, distinguishing statements for each Design Feature are revealed.



Of the 53 surveys completed in Muskeg Lake, it was found that four main groupings sorted preference in housing layouts in a similar way, as shown in the pie chart in Figure 6. Design Feature A: 36% of participants prioritized larger lot sizes, more space, privacy, with fences, trees and landscaping, while also preferring layouts in which natural connection with others would be maintained; Design Feature B: 22% of participants preferred family clusters and culturally reflective; Design Feature C: 20% of participants preferred natural connection with trees and privacy; and Design Feature D: 22% of participants prioritized proximity to water and infrastructure efficiency.



*Figure 6 Design Features Preferred in Muskeg Lake Cree Nation*

### ***Design Feature A - More Space and Natural Connection***

**Maintaining Connection with Larger Lot Sizes, More Space, and Privacy, with Fences, Trees, and Landscaping.** Part of the community prioritized larger lot sizes to provide more space between houses but highlighted that even with extra space, it is important to maintain a connection with each other and between families, as shown in Figure 7.

### ***Design Feature B – Culturally Reflective Family Clusters***

**Family Clusters and Culturally Reflective Designs.** There was a group within Muskeg Lake Cree Nation that preferred culturally reflective community layouts with family clusters and circular and semi-circular elements within the design. Cultural traditions, family clusters, living in a clan system, and inter-generational living were some of the reasons for the designs preferred by this part of the community, as shown in Figure 8.

### ***Design Feature C – Trees and Privacy***

**Natural Connection with Trees and Privacy.** Another group within the community preferred subdivision designs with trees and natural landscaping. Trees could help provide privacy and aesthetically pleasing natural beauty, habitat for animals, protection, and shade, as shown in Figure 9.

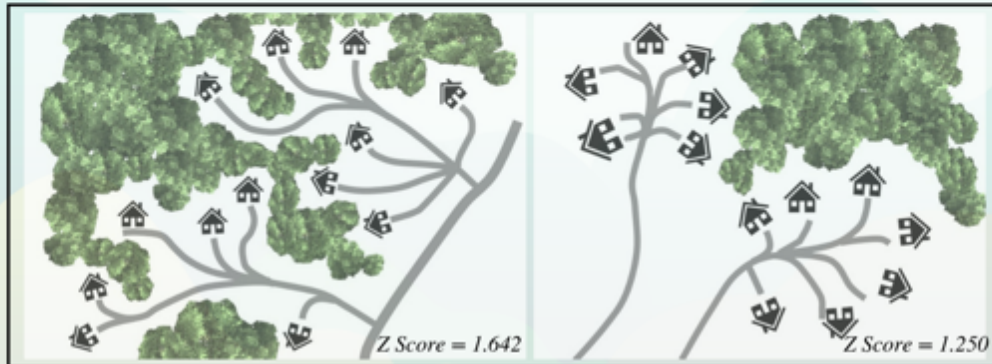
### ***Design Feature D - Water and Efficient Design***

**Proximity to Water and Infrastructure Efficiency.** Consideration of water was a crucial factor for an additional segment of the community who participated in the survey. Those who prioritized water also seemed to prefer designs with more linear qualities for infrastructure, and consideration of the efficiency of maintenance, roads, and infrastructure such as water, wastewater, energy, telecommunications, and emergency services, as shown in Figure 10.

# Muskeg Lake Cree Nation Preferences in Community Layouts

## Design Feature A: Maintaining Connection, with Larger Lot Sizes, More Space, and Privacy, with Fences, Trees and Landscaping

A total of 36% of participants in the survey responded in an analogous way, preferring larger lot sizes, choosing the layouts with additional space between homes, and liking the designs with trees for privacy. Members of this preference group also highlighted fences, natural green space, and gathering areas, where family and community connections would be maintained. Safety and support for others was an additional high priority value among this segment of the community.



Design Feature A: Two housing layout designs most preferred by those who prioritized larger lot sizes, more space, privacy, natural green space, and safe and cohesive family and community connections.

*“The best of both worlds. Privacy, lots of space to enjoy, but also closeness to other family members. Don’t want to be in each other’s business all the time, but close enough the kids can get to each other’s homes safely and independently and families can look out for each other. Family connection is everything. Especially as children grow and then have families of their own.”*

### Reasons for Layouts Preferred the Most in Design Feature A Responses:

The participants that responded similarly with Design Feature A, preferred less dense housing layouts that provided “space and privacy” with a unique “nice feeling/flow” to them, and a “safe, secure community feeling”. The responses indicated that additional “space and privacy, and more trees” would “offer a higher quality of life”, a more beautiful yard, and could have a positive influence on social connections, by decreasing neighborhood conflict and allowing for more “peace and quiet”. Community members stated that the more spacious designs potentially allowed “room for future growth and family groupings” or clusters to maintain connection between the generations. It was also highlighted that by providing gathering spaces, this could translate into “more access to support services” and overall better “community cohesiveness”.

### Reasons for Layouts Preferred the Least in Design Feature A Responses:

In contrast to the larger, more spacious lots, the increased housing density in the designs that were not liked by this portion of the community felt said that the layouts were “congested, like apartments with decreased family cohesiveness”. Overall, the layouts that were not desirable as this group felt “too crowded, too close together, and with no privacy”. Members stated that “potential neighbour conflict” and social issues were identified as reasons for not liking the “crowded designs”. It was also stated that when choosing a housing layout for the community, “cost should not be the deciding factor”. “Cost saving should not be the primary determining factor, rather the quality of community life should trump other considerations.”

**Figure 7** Poster of Design Feature A: More space and natural connection, with quotes from Muskeg Lake community members sharing reasons for housing layout preferences for this group.

# Muskeg Lake Cree Nation Preferences in Community Layouts

## Design Feature B: Family Clusters, and Culturally Reflective Designs

About 22% of participants in the sorting exercise prioritized culturally reflective designs and preferred layouts that followed the natural landscape, with branched or curvilinear roads. Family clusters and safety were also important factors of the designs preferred within this group.



*Design Feature B: Indigenous Architect Douglas Cardinal inspired layouts, with adjacent semi-circle style groupings, and four-direction, circular, medicine-wheel inspired layouts, were sorted among the designs most liked by this part of the community.*

*“The comfort level in living in close proximity to others may depend on the positive relationships with others. Whether we are familiar or familial, whether it has trees, open sky, a water source and easy access to medicines, and things we need for wellness. Some families have ceremonies and require “clean” space for their lodges. I think also part of me doesn’t want to see monijaw communities replicated in Cree land. Somehow, the design of the community should reflect our beliefs, history, culture and way of life, also considering the effects of colonization, as we are a community suffering the fall out of colonization, such as a violent erasure of our language, culture and traditions.”*

### Reasons for Layouts Preferred the Most in Design Feature B Responses:

Participants told us that they “liked small groupings suitable for family groupings with bushes that separate the groupings into units.” They also liked the “option for family cluster” and “family connection.” Cultural reasons (i.e., circular shape, seasons reflected in design), and designs that “promote togetherness” were noted in this group. Privacy provided by natural trees, forested areas, being more spaced out, and landscaping was also highlighted among the reasons for liking the layouts. Water and access to utilities was an additional factor for consideration in these preferred designs. Cultural activities of gardening and music were also mentioned.

### Reasons for Layouts Preferred the Least in Design Feature B Responses:

The designs that were not liked by this portion of the community were the houses that were too close together with no privacy. Participants in this group “dislike subdivisions, row housing, straight lines, and layouts that are

**Figure 8** Poster of Design Feature B: Culturally reflective family clusters, with quotes from Muskeg Lake community members sharing reasons for housing layout preferences for this group



# Muskeg Lake Cree Nation Preferences in Community Layouts

## Design Feature C: Natural Connection with Trees and Privacy

About one fifth, or 20% of participants in the sorting survey prioritized trees and privacy in the most preferred designs. Trees are essential and provide habitat for animals, shelter, food, aesthetic beauty and natural privacy.



*Design Feature C: Housing Layouts preferred because of the trees, landscaping, and privacy, while still maintaining connection*

### *“Love Trees and Privacy”*

*The preferred designs “look great with lots of trees to the back of the woods”*

*“Nicer, especially with the trees ”*

### Reasons for Layouts Preferred the Most in Design Feature C Responses:

Participants told us that they “Love trees and privacy” and thought these designs were “nicer, especially with the trees.” They said, “It’s like branching out for a new beginning.” The words ‘trees’ and/or ‘privacy’ were reasons given for preference in almost every response in this group of preferred layouts. They indicated that “Everyone needs their own space” and several mentioned the role trees can play in providing privacy. The chosen designs “look great with lots of trees to the back of the woods.” The preference of the design’s maintainability (i.e., snow removal, accessways) and feasibility (affordability, spacing) were also mentioned as reasons for most preferred layouts.

### Reasons for Layouts Preferred the Least in Design Feature C Responses:

The layouts that were not liked by this portion of the community were the designs with a “lack of privacy” or “no privacy”. Participants in this group said that they did not like “bare surroundings, boring, congested layouts” and those designs that do not have any landscaping or trees.

**Figure 9** Poster of Design Feature C: Natural connection with trees and privacy, with quotes from Muskeg Lake community members sharing reasons for housing layout preferences for this group

# Muskeg Lake Cree Nation Preferences in Community Layouts

## Design Feature D: Proximity to Water and Infrastructure Efficiency

Another 22% of participants in the survey prioritized proximity to water and the overall importance of water. This led to preference of more linear layouts for installation and maintenance of infrastructure such as water services, wastewater, roads, and electricity.



Design Feature D: Importance of water, proximity to water, as well as efficient layouts for infrastructure and maintenance, were prioritized for this group within the community.

*"As long as there was water close by, I was good."*

*"I like that there is water."*

*"I like linear, and I like privacy"*

### Reasons for Layouts Preferred the Most in Design Feature D Responses:

Proximity to water, access to water, and privacy, were amongst the most important factors in layout preference in this group of survey participants. In the more linear layouts, *"driving access is good and utilities are accessible."* *"Own homesteads, clan system, family cluster style"* layouts were also identified as important factors desirable in designs within this segment of the community. Green space and trees allowing for extra privacy are desirable features for this group. *"Housing which follows the lakeshore can be beneficial if development is limited and zoned to ensure we can still maintain a beautiful lakeshore – i.e. only portions of the lakeshore should be developed"*

### Reasons for Layouts Preferred the Least in Design Feature D Responses:

Participants in this preference group *"Dislike meandering roads, carved roads and hills"*. The layouts that were not liked by this portion of the community were the circular layouts and other designs that were deemed to be *"wasteful of land"* and had *"crazy roadways which look confusing and expensive to build – a waste of money"*. One participant added that the *"open view, interior seeing eyes, outside road access designs look odd and are a bit confusing."* There is a dislike of a more urban style and participants would prefer more creative designs.

**Figure 10** Poster of Design Feature D: Proximity to Water and Infrastructure Efficiency, with quotes from Muskeg Lake community members sharing reasons for housing layout preferences for this group



# Conversations with Community Members

## Key Points

- Reproducing urban style neighbourhoods with high-density contributes to the potential for poorer wellbeing outcomes.
- Privacy is an important consideration, and while houses should be in view of each other, lot sizes need to allow for a level of privacy.
- Fences would address several challenges regarding privacy and safety.
- Walkability, recreation, and greenspace need to be considered in the design process.

***"I think row housings, like what we have now is, it doesn't look good. It doesn't feel good. I think it... Some creativity has to take place too in the design. Maybe cul de sacs type of thing, those things. And separation, have barriers, either fence or bushes, just to separate the property."***

The community researcher had individual conversations (research interviews) with ten community members of different genders and ages living in different areas of the community. The conversations were used to explore what is working well or needs to be changed about the community design for new 'subdivisions.' Here are some characteristics of those who participated in the conversations:

- Ages ranged from 18 to 69, with 4 people over 60 years old
- One person identified as non-binary, 6 as female, 3 as male
- Half (5) had lived in the community for 20 years or longer

## Well-being

The main focus of the conversations with community members was how the community design affected well-being. The main topics of conversation included a sense of community, safety, family, space, privacy, recreation, and land. We also heard about how house design influences health. These topics are explained in greater detail below. A poster is also included at the end, as shown in Figure 6, that summarizes the information shared here.

## Community

Community members noted the importance of neighbour relations. This included how neighbours looked out for each other. Community members specifically mentioned the ability for children to play together and access community activity spaces (e.g., trails, play areas).

***"What I liked about the housing was the visiting, the opportunity to just support one another in terms of gardening, in terms of history, visiting, sharing stories, music... The fact that we were a community, that we were related, that we had a lot of things in common..."***

## **Safety**

Most community members mentioned how community design impacts a person's sense of safety. Safety considerations included the distance between houses and roads, the distance between houses, whether people had someone close by they could rely on, how fast people travel in vehicles, and whether there was fencing for protection from dogs. Community members wanted increased safety infrastructure such as streetlights or flood lights, improved visibility at road intersections, speed and traffic cameras, and the presence of tribal police. Safety impacted the ability of family members to be comfortable with children playing outside unsupervised.

***"Streetlights are a big thing, especially in an area where you're living in, not crowded, but you're living close to other people. You want that safety, with streetlights and housing with proper lighting, outside and make things bright, and it just gives a person more sense of security that way."***

## **Family**

Many community members mentioned the importance of family connections. There were multiple suggestions for house groupings by family units or people with other similarities, such as interests or age (e.g., Elders). Community members thought living in family units would allow for more support and guidance for children or others who need it.

***"First Nations people have always lived more in family units. And quite honestly, my yard, I love my yard. My brother-in-law's next door. Yes, you have your family issues every once in a while, but for the most part, your family, no matter what, you have to work it out. When you're not families, you're creating sometimes animosity, that is."***

## **Perspectives about Elders**

Elders are an essential part of the community. Accommodating Elders requires space for specific needs and promotes activities to enhance well-being. Muskeg Lake Cree Nation supports the development of Elder living, providing greater accessibility for both social engagement and physical mobility. Another important aspect of Elder living is providing a space that is away from noise, close to health facilities and developed with opportunities for gardening and other activities. Muskeg Lake community members noted the value of Elder teachings and perspectives as beneficial to the community.

***"That's where it would be so great to have a place to host things for them [Elders]. We keep talking just as much as we talk about how our children are our future; our children are so important. We're losing our elders, especially with Covid-19."***

## Space

Community members had different views on the amount of space that would be ideal between houses. Some people felt wide-open spaces would support healthier lives. Others expressed that if the houses were too spaced out, it would be harder to get help from others, which was particularly important for Elders. With houses a bit closer together, there was a greater sense of community, more places to walk, and it was easier to access services from each other.

***"It would be nice to see something planned out a little bit more spaced out, to give people a little bit more privacy, to be able to live comfortably and quietly so that they don't have to worry about all the other things that come along with living in a dense subdivision area."***

## Privacy

Privacy was a big concern. Fencing was suggested as a potential solution. Community members felt that better fencing between properties would provide more personal space in the house and yard. Fencing would protect people from dogs or other animals and children from wildlife or dangerous drivers.

***"I think that a lot of it has to do with privacy. And I've got plans for my garden. I had to put up a fence to keep the dogs out, I put that fence up last year after I planted the garden and after the dogs dug up, and did their damage, so I've got a fence there. Now, I've got to paint it. There's a lot of cost and maintenance that goes into privacy. It would be a lot better if that was pre-planned."***

## Recreation

Community members wanted to be able to walk around the community safely. Safe, marked pathways to the Band Office and school were encouraged, along with naturalized trails for recreational walking. The importance of being able to walk places was explicitly mentioned for people who do not have cars.

***"I think there should be pathways that are pedestrian-friendly, safe for people that are going to the Band's Office or people that are walking to school. Because some of the little paths that go to the school they're bushy and dark and not really easily accessible by the students to get there. So, if there was more of a path that was cleared to it, I think that would be better."***

Community members also spoke about the importance of having green spaces and other recreational spaces for families to play.

***"The planting of shrubbery and park space, or green space, should be built into the subdivision plan. There should be some park spaces with***

*playground equipment installed so that kids have a safe place to go. They're not just playing on the street."*

### **Land**

Many community members talked about the importance of building new houses on land that was not prone to flooding or too soft. They also talked about the importance of landscaping, trees, the direction of the sun, and shrubbery.

*"And for them to start looking at upgrading those buildings like that and to make sure that the landscaping is done. Right now, I notice that some of those houses, they go in there really quick, and they just grade it down, and then they build the houses. And there's been places where the ground has caved in around a house."*

Community members also said that without paved roads or landscaping, dust impacts air quality around the houses, which affects respiratory health.

*"Pave the roads, pave the driveways. If we were able to do that, the driveways and the approaches, so that when the grader comes in, they're not pushing the gravel all into the grass kind of thing. And then that way it's easier to keep clean. It keeps the dust down that way. You imagine having a house where you got a nice lawn and a nice asphalt driveway. When you go into the house, it's not going to track in dirt or anything like that."*

### **Housing Design**

Although this was not the main focus, community members told us the design of the houses was necessary for health and well-being, according to community members. Community members mentioned:

- **Accessibility** – The ability for a person to get in the house and access everything they need without going up or down stairs was important, particularly as people age.
- **Size** – Bigger houses are needed. The size of bedrooms and lack of storage areas were issues. Living in small houses could negatively impact family relationships by not having enough space to gather and share activities or meals. Houses that are too small could cause mould because of increased moisture due to the number of people in the house.
- **Quality of Building Materials** – Some houses were reported to be built with poor building materials that did not last. This was mentioned for trailers and Ready-To-Move houses.
- **Basements** – Community members (5/10) felt the houses needed basements for better temperature control and flexibility with space. The ability to create additional bedrooms in the basements was a benefit. However, potential negatives were small basement windows not big enough for people to escape in the case of a fire or the potential for mould developing after flooding.
- **Mould** – Community members with mould in their houses, spoke about the negative impacts on their health and well-being.



# CONVERSATIONS ABOUT COMMUNITY DESIGN



The community researcher had conversations with community members to explore how community layouts could be improved.

Main findings that relate to wellbeing are shared below with quotes.

## COMMUNITY

*Neighbour relations are important and can be impacted by community layouts.*

*"What I liked about the housing was the visiting, the opportunity to just support one another in terms of gardening, in terms of history, visiting, sharing stories, music... The fact that we were a community, that we were related, that we had a lot of things in common..."*

## SAFETY

*Community design impacts a person's sense of safety. Safety infrastructure need to be considered.*

*"You want that safety with streetlights and housing with proper lighting, outside and make things bright and it just gives a person more sense of security that way."*

## FAMILY

*Use of family units could allow for more guidance from family members for children and others.*

*"First Nations people have always lived more in family units. And quite honestly my yard, I love my yard. My brother-in-law's next door. Yes, you have your family issues every once in a while, but for the most part your family, no matter what you have to work it out."*

## SPACE

*Enough space between houses is needed for privacy, but close enough to create a sense of community.*

*"It would be nice to see something planned out a little bit more spaced out, to give people a little bit more privacy, to be able to live comfortably and quietly so that they don't have to worry about all the other things that come along with living in a dense subdivision area"*

## PRIVACY

*Privacy is an important consideration that may be addressed with fencing.*

*"I put that fence up last year after I planted the garden and after the dogs dug up, and did their damage, so I've got a fence there...There's a lot of cost and maintenance that goes into privacy."*

## RECREATION

*Walkability, green space, and places for recreation need to be considered.*

*"I think having things spread out with a little bit more green space, a park for kids and also other people to enjoy as well. That would go a long way for planning to ensure that you have a healthy community."*

## LAND

*Flood-prone areas, dust, and landscaping (e.g., trees, shrubs) are important to think about when designing the community.*

*"A lot of dust, a lot of traffic going by, a lot of dust. You can't even open your window, and there's dust collection as soon as the day is over."*

*Research completed with the University of Saskatchewan Community Centred Design Team*

**Figure 6** Poster with Results from Individual Conversations with Community Members about how Community Layout Could be Improved to Support Wellbeing



# Costs and Impacts

## Key Points

- Increased up-front infrastructure costs can result in decreased wellbeing costs in the long-term
- Up-front costs associated with increased lot size are minimal compared to wellbeing benefits

As a part of this project, we considered the up-front and long-term financial costs and well-being impacts of community designs. These costs and impacts are explored in two ways in this section. First, we provide an overview of how varying design features impact well-being and the associated costs of such impacts. Then, we discuss lot size specifically, evaluating well-being impacts and costs associated with larger lots.

## *Potential Costs and Wellbeing Impacts*

In some instances, increasing up-front costs for infrastructure could lead to long-term savings associated with well-being impacts, as many design features can contribute to enhanced well-being. It is possible to estimate a dollar amount for different well-being impacts; however, this would be a separate study with conversations focussing on costing. For example, The Aboriginal Housing Management Association (2022)<sup>2</sup> completed a study showing the difference in short- and long-term costs of housing in British Columbia. It used the results to advocate for increased funding. We used information from this study and the individual conversations the community researcher had with community members to create Table 2.

Table 2 includes design features that multiple community members mentioned favourably. The Table also includes potential positive well-being impacts community members shared in relation to the design features and broad areas for long-term savings. Examples of items that could be costed for each of the broad areas for savings follow:

- **Physical health** – Visits or stays in hospital, surgery, medication, follow-up visits with health practitioners, rehabilitation
- **Mental health** – Visits or stays in hospital, medication, counselling, or other therapy
- **Social** – Childcare, care for Elders or people as they age, income assistance
- **Enforcement** – Surveillance cameras, visits from police

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<sup>2</sup> [https://www.ahma-bc.org/s/AHMA\\_BCURNIHousingStrategy\\_220124.pdf](https://www.ahma-bc.org/s/AHMA_BCURNIHousingStrategy_220124.pdf)

**Table 2 Favourable Design Features, Potential Well-being Impacts, and Cost Savings**

<b>Up-Front Costs</b>	<b>Long-Term Savings</b>	
<b>Design Features</b>	<b>Potential Well-being Impacts</b>	<b>Savings Area</b>
<b>Family clusters or groupings</b>	Increased sense of community leading to reduced loneliness and improved social cohesion	Mental health
	Increased ability to rely on neighbours for mutual support leading to improved child development and senior or Eldercare	Social
	Increased ability for shared economy leading to equipment sharing and improved financial outcomes	Social
	Increased safety leading to decreased break-ins	Enforcement
<b>More space between the houses</b>	Increased personal space and privacy between houses, reducing stress and improved sense of security	Mental health Enforcement
	Decreased noise from neighbours, reducing stress	Mental health Enforcement
<b>More space from road to house</b>	Decreased traffic-related injuries, decreased dust contributing to respiratory illness	Physical health
<b>Fencing</b>	Increased safety for children leading to increased time outdoors, impacting physical and mental health	Physical health
	Decreased injuries from stray dogs and wildlife	Physical health
	Increased ability to have a garden and grow food due to protection from dogs	Physical health Social
<b>Green spaces or recreation spaces (e.g., parks, natural trails)</b>	Increased connection to nature	Mental health
	Increased time doing recreational activities leading to improved physical health and mental health	Mental health Physical health
<b>Ramps, elevators, or ground-level buildings</b>	Increased ability to complete activities of daily living	Physical health Social
<b>Proximity of houses to services with wide roads</b>	Increases physical activity because of increased walkability to Band Office, Medical Services, School, and other essentials reduces the need to drive	Physical, Mental health

Ideally, the up-front costs associated with implementing the design features in the first column would be weighed against the potential long-term savings associated with the well-being impacts of the design (second and third column). Considering both the up-front and long-term costs during design stages would provide a better understanding of the true costs of design features over longer periods.

## Design Features and Potential Savings

Generally, the important features to community members require a larger lot size, which has a greater cost to service with water and wastewater utilities. A few alternate lot sizes were compared to a typical lot (30m by 60 m with a 20m home setback) as an example of costs and benefits. A green checkmark was given if the lot size was seen to have improvements to themes from the previous table (safety, family, nature, privacy, access, or security). Likewise, a red X was used to show either a downgrade or no change to those themes. Increased capital costs were estimated as a percentage increase using values from an engineering consultant.

**Table 3** Costs of Features by Lot Size

The diagram illustrates three lot configurations: 'Wider' (45m wide by 60m deep), 'Cluster' (90m wide by 90m deep), and 'Deeper' (30m wide by 60m deep). Each configuration shows a house icon within the lot boundaries.

Safety	✗	✓	✓
Family	✗	✓	✗
Nature	✓	✓	✗
Privacy	✓	✓	✓
Access	✗	✗	✓
Security	✓	✓	✗
Capital cost of service	+30%	+15%	+10%

The more significant capital cost can be offset when considering the benefits to well-being. For example, wider lots will give more privacy and allow more land to be used to incorporate existing natural areas or have a garden. Access to community amenities and services is unlikely to be reduced with a moderate (50%) increase in lot width. Keeping the typical 30m by 60m lot size but setting the house further back can give the feeling of more privacy and reduce stress from traffic and road dust. An acreage lot shared by a family cluster of 3 homes can provide the privacy and natural connection that comes with a larger lot while creating a safe family environment and limiting service cost increase to 15% by having multiple homes on the same lot.

# Conclusion

Muskeg Lake Cree Nation is a unique and vibrant community moving towards more culturally appropriate and sustainable housing layouts within their community design. Reflections by community members on the past conditions in Muskeg Lake highlight the many challenges of inadequate on-reserve housing, requiring community members to work hard to maintain substandard infrastructure.

The qualitative survey (Q-methodology) findings of housing layouts indicate several preferences for future community subdivision designs. The main design features that are priorities for Muskeg Lake community members include (A) Community connection with subdivisions that have larger lot sizes, more space, and privacy, with fences, trees, and landscaping; (B) Family clusters and culturally reflective designs; (C) Natural connection with trees and privacy; (D) Proximity to water, and infrastructure efficiency.

These findings support what was shared in the conversations (*interviews*) with the community researcher, where safety, recreation, space, privacy, and family were among the most important priorities amongst community perspectives on what is important for well-being in future community designs.

The *literature review* highlighted the importance of co-designing with Indigenous communities showing the benefits of including local knowledge, thereby aligning with community needs and culture, within the context of developing community capacity.

*Preliminary costing projections* illustrate that a more significant initial investment in infrastructure, which would be required with larger lot sizes, may provide long-term savings associated with well-being. For example, developing a healthy, culturally appropriate community would result in fewer hospital visits requiring time and transportation costs.

*Research limitations* are inherent to any study. Qualitative research can be influenced by cultural bias on behalf of the researcher. Cross-cultural work can provide some barriers to communication, especially when in-person meeting and relationship building is prevented due to the necessity of medical safety protocols during the Covid-19 pandemic. A community member completed the qualitative interviews. A local researcher was good in some ways, as the participants were at ease with someone they knew. However, it meant the research team could not probe into certain statements, limiting their understanding from an outsider's perspective. Qualitative interviews and the Q-Sort survey were snapshots in time, and external events like a global pandemic may have influenced answers. The pandemic created housing challenges with restricted movement that may have led to conversations that may be different in a pre or post-pandemic world.

Additionally, inflation during this research period impacts the costs associated with infrastructure involved in community building projects. The information within this report has not yet been peer-reviewed. Once published, the research results can be used to inform and guide continued steps forward for community-centred design processes.

## Next Steps

**What follows are future research studies that could complement or extend the research shared in this report:**

1. *Costing Well-being Impacts*: A similar research study to the one done by the Aboriginal Housing Management Association (2022) (introduced in the Costs and Impacts section of the report), called a Social Return on Investment, could be done to explore the well-being costs of specific community layouts or design features. Such a study could demonstrate how well-being benefits and associated long-term savings can offset financial costs for community design.
2. *Recommendations for Indigenous Services Canada (ISC)*: Compiling community perspectives on community design and the issues resulting from current subdivisions can be shared with ISC in developing future communities. Further, community engagement preferences collected through the community engagement survey provide insight into what the community prefers when discussing future community development with ISC. Ideally, data and future academic work stemming from this project will facilitate future co-design of policy frameworks.
3. *Key Stakeholder Interviews*: Gaps in ISC housing policy were identified through interviews with key stakeholders in developing Indigenous community infrastructure. Future outcomes from these interviews can inform engineering firms and federal agencies in factoring infrastructure costs, hidden costs, health problems and the structure of managing bylaws. Overall, the perspectives of the Muskeg Lake community provided insight that, combined with consultant' experience, can better manage the increasing costs of construction, economics, funding frameworks, and inflation.
4. *Influence on future Community Development*: The Community Co-Design research project at Muskeg Lake Cree Nation can assist in reproducing co-designed communities both in urban and rural contexts. Other interested First Nations communities can apply some of the ideas in this report while adding their knowledge to further developing frameworks for culturally centred community designs.

## Acknowledgements

We are very thankful for every Muskeg Lake Cree Nation community member who shared knowledge with us in every step of this project. Steven Wiig was the community researcher for this project. His community connection was vital to the team's engagement with the Muskeg Lake community throughout the research that occurred during the many restrictions of the Covid 19 pandemic. Special thanks to Margaret Thomas, Warren Primeau, and Kimberley Greyeyes (and six additional participants who wished to remain anonymous) who were involved in the individual interviews with the community researcher.



Thank you for the invitation to the wonderful Muskeg Lake Cree Nation Community Christmas Supper and Party on December 16, 2021. The opportunity to witness your connected and vibrant community and see the excitement and energy of the wonderful children of your nation further illustrates the strength of your culture, family, and community connections that continue through the generations. We were so grateful for this opportunity and appreciated the chance to share the festive season with those we were privileged to meet in person at that event.

Hiy hiy to Harry Lafond for insight and guidance on traditional medicine wheel colours used at the Muskeg Lake Cree Nation Wellness Center and for local Cree translation of words for the graphic on the cover of this report.

We thank Ryan Arnold, Kyle Blixt, and Connor Traves from BCL Engineering for sharing reports and information with us. We appreciate the insight and perspectives of Chief Kelly Wolfe and Muskeg Lake Councillors, Elders, and community leaders. Thank you to the leaders of the Saskatoon Tribal Council for input on this project. Gratitude to members and research participants from Muskoday First Nation, who were also involved in co-designing the overall research project in a parallel study with Muskeg Lake. This research proceeded with input and updates at monthly Project Management Team (PMT) meetings, project manager Grant McKercher, and bi-weekly University Research team meetings. Gratitude to faculty and students from the University of Saskatchewan Department of Civil, Geological and Environmental Engineering, College of Nursing, and School of Environment and Sustainability. We are grateful for the guidance from the USask Indigenous Engagement leadership team and the USask Research Ethics Board, who ensured that this research was conducted with truth and respect, and within the framework of the First Nations Information Governance Centre's Principles of OCAP®. Thank you to all Muskeg Lake Cree Nation members, including on-reserve, urban, and off-reserve members, who shared perspectives, knowledge, and information of the past, present, and future of Muskeg Lake Cree Nation.



***Muskeg Lake Cree Nation Community Christmas Supper and Gathering on December 16, 2021***

# Appendix A: Research Methods

## Q-Sort

The housing layouts were used to create a survey where photos are ranked by preference to show what styles and features in a layout (linear roads versus curved, landscaping, shape, density, water) community members like and dislike. The results from the interviews and survey can directly influence the final designs of this research project. Q-sort is an exercise where participants are shown a series of photos or phrases, in this case, photos, and are asked to sort them based on like, dislike, and no preference. The participant then takes the sorted groups and further ranks the group from strongest preference to least preference. The researchers can find patterns in these responses across all participants, and themes can be derived for the group. These are the 24 layouts and associated aerial photographs from unique First Nations communities across Canada that the survey participants sorted.

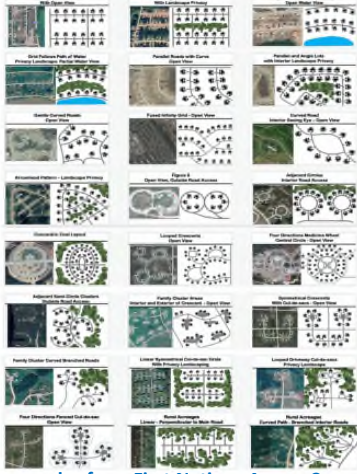


***Muskeg Lake Cree Nation Councillor Carol Lafond completing qualitative survey on December 16, 2021 (Shown Left to Right: Tim Vogel, Derek Eisner, and Carol Lafond)***

# Q – Assessor - U of S Housing Layout Survey

Step 1 - First Sort

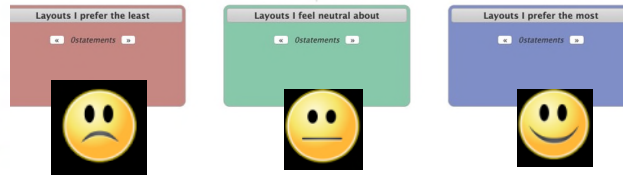
## Housing Layouts Legend



Instructions: Read each statement, decide how you feel about it, and then drag it to the most appropriate box. You can scroll through the statements using the arrow buttons. When you drag a statement, the available destinations where you can drop it will highlight.



Click and Drag Statement/Photo into most appropriate box based on your preference. Do this for all 24 layouts.



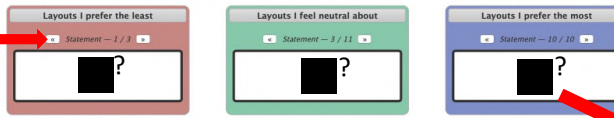
(24 examples from First Nations Across Canada)

Step 2 – Further Sort

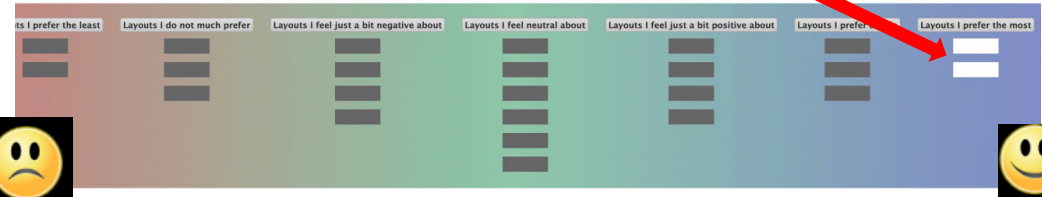
Instructions: Sort each statement from one of the three general categories into the grid based on the degree to which you feel the statement qualifies. Scroll through the statements using the arrow buttons. Drag the statements into the grid. Available destination spots are highlighted in white; the spot where you drop a statement will highlight in orange. When placed in the grid, the statements will shrink to fit, but you can read them in detail by moving the cursor over them. To move a statement within the grid, drag it from one spot to another.

You must fill the grid in this order: "Layouts I prefer the most" → "Layouts I prefer the least" → all the rest.

These arrows can be used to review your choices.



Further click and drag to sort your preferences, starting with the highlighted boxes. These boxes turn orange when you can drop photo in. Complete for all 24 layouts



Step 3 – Answer 2 Questions

### Additional Questions

Thanks for performing this first phase of this study – "Muskeg Lake First Nation Subdivision Co-Design Survey".

We would like you to answer these questions to complete this study. Please refer to your ordering of the statements as needed.

1. Why do you feel strongly about the layouts you sorted in the layouts I "prefer the least" column?

2. Why do you feel strongly about the layouts you sorted in the layouts I "prefer the most" column?

Submit Answers

Type Answers and Additional Perspectives Here

## Step 4 – Enter your name to win a tablet

Once you have completed the survey, please contact or email Steven Wiig at [climate@muskeglake.com](mailto:climate@muskeglake.com) or Tim Vogel [tim.vogel@usask.ca](mailto:tim.vogel@usask.ca) to let them know that you would like to be entered into a draw to win a tablet.

Thank you for sharing your perspectives.

Visual representation of steps to complete the on-line Qualitative Survey (Q-sort) for Muskeg Lake Cree Nation





Legend showing the 24 distinct layouts, with aerial photos taken from First Nations communities across Canada, that were sorted in the qualitative survey

## ***Individual Conversations/Qualitative Interviews***

The Community Researchers had individual conversations with a wide variety of community members (e.g., range of genders, ages, living in different areas of the community, different family sizes, etc.) about likes, dislikes, what makes people feel good, what works well and what doesn't with the community design, as well as how the community design impacts community members' well-being. The conversations were semi-structured, meaning the Community Researchers had a set of questions they could ask while also following the lead of the community member. All conversations were audio-recorded, transcribed into written form, and analyzed by two research team members for the common themes shared in this report.

### **Interview Guide**

1. Tell me about the community layout/housing layout/subdivisions in your community (past, or current where, how many, who lives there, how were they decided on).
2. What do you like or dislike about the housing layout/subdivisions (placement, density, design, shape, houses, and roads)?
3. What would you change about the current housing layout/subdivisions or future ones?
  - a. Why would you change them?
  - b. What do you think the changes would do to support people living there, in surrounding areas, and within all members of the nation?
4. What is important to your community about how the community/subdivisions are designed and built? (Probes: number of houses, design, size, health concerns, roads, flood control, placement on the reserve, landscaping, surrounding areas, density...)?
5. How do you feel the community layout/housing layout/subdivision design affects your well-being?
6. What makes you feel good when you think about the community layout/housing layout/subdivisions?
7. What works really well for you with how your community is designed?
8. Is there anything you would like to change about the way your community is designed?
  - a. Can you describe what you would change first?
9. If you had unlimited money and time, how would the community/the housing layout in the community look?
10. Are there any more concerns or things that you would like to share about community/housing/subdivision design?