

**ENGINEERING DESIGN PROJECT**  
**DELIVERABLE B –NEEDS IDENTIFICATION & PROBLEM STATEMENT**  
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**GNG 1103 – Engineering Design**  
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**Step 1: Who is the customer, and who is the user?**

- The user of our product will be the *Algonquins of Pikwakanagan Neyagada Wabandangaki Guardian Program*. The customer of this product will be Amber (insert Last Name).

**Commented [RA1]:** The Last Name of our client is unknown at time of writing!

**Step 2: List All Needs, Wants, Likes, and Dislikes (NO Technical or Metric Information At This Stage!!)**

Needs	Wants
<ul style="list-style-type: none"> <li>Space for community infrastructure</li> <li>Small Offices</li> <li>Space for work on various cultural events</li> <li>Kitchenette &amp; Washrooms</li> <li>Outdoor Lean-To</li> <li>Freezer Space</li> <li>Harvesting Space</li> <li>Space for vehicles, other cultural items</li> <li>Space for storing and drying medicines (Herbarium-Inspired Space)</li> <li>Storage for Handheld &amp; Water Sampling Tools</li> <li>Road Access</li> <li>Half-Parking Lot, Wooded Area</li> <li>Mobile Work Stations</li> <li>Large Table for Processor (On Wheels, For Optimized Space)</li> <li>Loading Dock Open Space for Work Table</li> <li>Sorting Space (for collected plants)</li> <li>Computer Lab</li> <li>Space to Back-Up Data, Admin Members to have access to data</li> <li>Board Room &amp; Training Room, for the Board Room Table</li> <li>Security Cameras</li> <li><b>End Goal of the design: For support of the project from proponents in the program</b></li> </ul>	<ul style="list-style-type: none"> <li>Dual Workspace</li> <li>Planned with the future in mind (?)</li> <li>Open Space Concept is Ideal</li> <li>Use local materials in the construction</li> <li>Cleanable material for work stations</li> </ul>
Likes	Dislikes
<ul style="list-style-type: none"> <li>Ideally reflect the people of the community</li> <li>Select the identity of the community</li> <li>Should reflect that the land is the foundation of the community</li> <li>The environment should be seen in the structure</li> <li>Plan the design on unlimited power</li> <li>Should contain cultural items</li> <li>Reflect the culture of the community</li> <li>The building should have units that can be rented out</li> <li>Reflect who the program is and its purpose to the community and the country, and the global environment</li> <li>Must be inspired by the culture <ul style="list-style-type: none"> <li>Aspects of Timber, Green Spaces, and a Circle Center</li> <li>Holistic Aspects</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Not and Industrial Look</li> <li>No religious items on structure</li> <li>No fixed structures in the building (prefer mobility)</li> <li>Land should not be located near bodies of water</li> </ul>

**Commented [RA2]:** This entry is aptly coloured because it both describes the need for a space for a freezer, and implies that there therefore must be a freezer as an element of the building.

**Commented [RA3]:** These dislikes are all comprised of different elements, and so I will leave them as is and they will move on independently to the next phase of organizing.

**Commented [RA4R3]:** After developing some criteria for what kind of need or detail each group should contain, I no longer feel that these are independent statements, as they all fit one of the four groups stated in the previous comment.

**Commented [RA5]:** LEGEND:  
•Blue: What Types of Spaces to Include  
•Green: What Elements to Include  
•Red: What Type of Building Is This?  
•Purple: Goals For What This Building (And Therefore Its Design) Represents

**Step 3: Organize Each Need According To Similarity And Remove Or Combine Redundant Needs**

<i>What Types of Spaces to Include</i>	<i>What Elements to Include</i>
<p><b>Grouped: Operation Facilities</b></p> <ul style="list-style-type: none"> <li>Space for community infrastructure</li> <li>Space for work on various cultural events</li> <li>Outdoor Lean-To</li> <li>Space for vehicles, other cultural items</li> <li>Space to Back-Up Data, Admin Members to have access to data</li> </ul> <p><b>Grouped: Lab Work &amp; Storage Space</b></p> <ul style="list-style-type: none"> <li>Harvesting Space</li> <li>Space for storing and drying medicines (Herbarium-Inspired Space)</li> <li>Storage for Handheld &amp; Water Sampling Tools</li> <li>Sorting Space (for collected plants)</li> <li>Freezer Space</li> </ul>	<p><b>Grouped: Worker Utilities</b></p> <ul style="list-style-type: none"> <li>Kitchenette &amp; Washrooms</li> <li>Security Cameras</li> </ul> <p><b>Grouped: Lab Work &amp; Production Areas:</b></p> <ul style="list-style-type: none"> <li>Small Offices</li> <li>Freezer Space</li> <li>Mobile Work Stations</li> <li>Large Table for Processor (On Wheels)</li> <li>Loading Dock</li> <li>Open Space for Work Table</li> <li>Computer Lab</li> <li>Cleanable material for work stations</li> <li>Board Room &amp; Training Room, for the Board Room Table</li> </ul> <p><b>Grouped: Cultural Relevance:</b></p> <ul style="list-style-type: none"> <li>The Environment should be seen in the structure</li> <li>Should contain cultural items</li> <li>Must be inspired by the culture                             <ul style="list-style-type: none"> <li>Aspects of Timber, Green Spaces, and a Circle Center</li> <li>Holistic Aspects</li> </ul> </li> </ul>
<i>What Type of Building Is This?</i>	<i>Goals For What This Building (And Therefore Its Design) Represents</i>
<p><b>Grouped: Overall Look &amp; Theme</b></p> <ul style="list-style-type: none"> <li>Half-Parking Lot, Wooded Area</li> <li>Dual Workspace</li> <li>Open Space Concept is Ideal</li> <li>Not an Industrial Look</li> <li>Road Access</li> <li>No fixed structures in the building (prefer mobility)</li> </ul> <p><b>Grouped: Location &amp; Inherent Characteristics</b></p> <ul style="list-style-type: none"> <li>Planned with the future in mind</li> <li>Use local materials in the construction</li> <li>Land should not be located near bodies of water</li> </ul>	<ul style="list-style-type: none"> <li>Create a culturally-inspired design that focuses on the importance of the community's identity and the program's purpose</li> <li>Think Big in terms of what the building can do and has access to!</li> </ul>

**Commented [RA9]:** These two items are grouped because they are elements of the building that are necessary for worker safety, hygiene, and nutrition, all important tenets of a Healthy Working Environment.

**Commented [RA10]:** This entry is aptly coloured because it both describes the need for a space for a freezer, and implies that there therefore must be a freezer as an element of the building.

**Commented [RA6]:** These items are grouped because they are spaces for the operation of the building, such as for parking space, an outdoor lean-to, and so on. Therefore, they can also be summarized for optimal ranking in the next step.

**Commented [RA11]:** These items are grouped because they are all areas, stations or spaces in which work will take place, whether for Laboratory Work, other types of Processing or Experimental Labour, or for more general work within the building. Therefore, they can be summarized for optimal ranking in the next step.

**Commented [RA7]:** This entry is aptly coloured because it both describes the need for a space for a freezer, and implies that there therefore must be a freezer as an element of the building.

**Commented [RA8]:** These items are grouped together because they all fall under the category of being spaces for Lab Work and for Storage. Therefore, they can be summarized for optimal ranking in the next step.

**Commented [RA12]:** The redundancy of this statement is that, by the building being inspired by the culture of the community, it implies that one of the elements of the building must be cultural items.

**Commented [RA13]:** These items are grouped together because they all express the need for elements of the building to reflect the rich and vibrant culture the community possesses, and to showcase it in a meaningful and important way.

**Commented [RA16]:** The items here are summarized from the items in purple in the last step. They can be summarized into these points, and so there is not even a need to group them because their redundancies can be combined to provide a general but perceptive overview of what this building will ...

**Commented [RA14]:** These items are grouped together because they inform us, as a team, on the overall look of the building, what type of theme should run through the entire structure (besides the cultural and program representation), ...

**Commented [RA15]:** These items are grouped because they tell us, as a team, what the building will be made with, where it should not be located, and how it should be planned. These are the labels attached to the whole design, that will ...

**Commented [RA17]:** These constraints are largely arbitrary and even vague what they express, and will most likely lead to further interviews or meetings to gather more information and clarification on what it means exactly to ...

**Commented [RA18]:** These items are slightly below the prioritized because these are needs that come after the functional requirements but before the non-functional. These are elements of the design that are secondary to the ...

**Commented [RA19]:** These items are prioritized because they are functional elements that affect the functionality of the building. For example, if we do not prioritize building and including lab spaces, that would be a substantial amount of ...

**Step 4: Establish Hierarchical Order Of The Importance Of Each Need (A 3-Scale Sorting)**

3	4	5
<ol style="list-style-type: none"> <li>Create a culturally inspired design that focuses on the importance of the community's identity and the program's purpose</li> <li>Think Big!</li> </ol>	<ol style="list-style-type: none"> <li>Location &amp; Inherent Characteristics</li> <li>Cultural Relevance</li> <li>Worker Utilities</li> </ol>	<ol style="list-style-type: none"> <li>Operation Facilities</li> <li>Lab Work &amp; Storage Space</li> <li>Lab Work &amp; Production Areas</li> <li>Overall Look &amp; Theme</li> </ol>

**Commented [RA19]:** These items are prioritized because they are functional elements that affect the functionality of the building. For example, if we do not prioritize building and including lab spaces, that would be a substantial amount of ...

***Step 4: Devise A Problem Statement Identifying The Problem And What The Solution Should Be***

A need exists for the Algonquins of Pikwakanagan Neyagada Wabandangaki *Guardian Program* to acquire a building for laboratory work and processing, and community events and involvement, which would reflect the values of their community and will act as a multifunctional space for the work done by the *Guardian Program*.