

Living in the Liminal: Finding Resilience in Rural British Columbia

by

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Dalhousie University is located in Mi'kmaq'i,
the ancestral and unceded territory of the Mi'kmaq.
We are all Treaty people.

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For Scrappy Sue

Contents

Abstract	v
Acknowledgements	vi
Chapter 1: Introduction	1
Personal Anecdote: Design Build, Tahsis BC	4
Chapter 2: Forest and Town in the Liminal	7
Extraction vs. Exchange	7
Extraction.....	9
Fragmented Landscapes	9
Single Industry Boom and Bust	26
Identity Erasures.....	30
Chapter 3: Vancouver Island Interchange	34
Exchange.....	34
Natural Cycles	34
Trade	38
Zero-Waste	39
Bricolage.....	42
Limited Palette	43
Self-Sufficient	46
The Unfinished Form	49
Chapter 4: Sourcing, Siting, and Improvising [Methods]	51
Extracting Inventories	51
Local Waste Inventory	51
Regional Waste Inventory.....	55
Demographic Inventory.....	57
Superpositioned Siting.....	58
Fragments and Traces in Ruin.....	60
Improvising Ad Hoc.....	63
Chapter 5: Design Sequence	65
Phase I: Extracting Waste	66
The Small Mill	66

Phase II: Producing Exchange	78
The Trading Post	78
Modular Systems	87
Phase III: Restoring Place	99
Forest and Town in Repair	99
Chapter 6: Conclusion	106
Appendix A: Tahsis Inventory	107
Appendix B: Tahsis' Civic Building Costs.....	108
References	109

Abstract

Off the coast of Vancouver Island, the first Redwood Cedar was felled for industry only a few kilometres from Tahsis, British Columbia. Since then, forestry remains a cornerstone to British Columbia's economy and its provincial identity. However, uncompromising extraction has caused Tahsis and many other single-industry towns to face economic and environmental obsolescence due to globalized markets, high operational costs, and diminishing resource supplies. As a result, considerable amount of underutilized industrial waste and associated architecture is being left idle, at risk of abandonment or decay. Through concepts of bricolage and secondary use, this thesis reimagines regional waste streams as a limited palette for construction. Consolidated and tested into a new informal architecture, the wastages aim to extend the lifespan of post-industrial materials, towns, and associated landscapes. Employed as flexible programmatic functions, using participatory methodologies, a renewed interconnectedness between man and nature is established, fundamental to rural and societal prosperity.

Acknowledgements

First, I would like to acknowledge that this thesis is situated on Mowachaht/Muchalaht Territory. Here, I am aware of my age, gender, and ethnography as I study, learn, interpret, and project my thoughts and design intentions throughout this thesis.

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Chapter 1: Introduction

Human consumption is increasing ever more rapidly into the 21st century. Consumption and the resultant waste require an understanding of the human behaviour, the industries being fed, and the resulting impacts experienced. The forest industry and the adjoining built environment are large contributors to systemic societal issues central to wastefulness in British Columbia, having great effects on its land, water, energy, and raw materials. The province's current resource dependant economic model along with its increasingly urbanized trajectory are bound toward surpassing the natural limits of cyclical replenishment and approaching a gradual collapse of human and non-human prosperity.

Changing the architectural discourse surrounding material flows in regards to waste streams can act towards significantly reducing environmental degradation, consumption behaviours, and global warming. This design proposal explores two system conditions: Vancouver Island's northwest forests and a former single-industry mill town, Tahsis, BC. This report investigates the interconnectivity between these two systems to better define the resulting impacts of forest mismanagement and the transcending effects surfacing in surrounding landscapes and towns. Through a critical line of inquiry, this thesis asks; how can traces of industrial waste in combination with natural features be extended into value-added repositories for rural revival?

The architectural methodology of this document follows an organization of sequential staging of ontology: observing, sourcing, improvising, and evaluating respectively. Observing

characterizes regional obstacles, historical significance, and place identity. Sourcing develops an inventory of both material and immaterial assets found in the studied locale. Improvising interprets the combination and recombination of various relationships between the various observations and inventories forming various modes of bricolage. Finally, evaluation is determined through quantifiable efficiencies, marked by the thesis' aim to achieve economic, environmental, and ideological resilience.

This architectural proposal exhibits the methodologies outlined above throughout a series of iterative phasing, where the initial interventions manifest the subsequent phases in anticipation of both additive or subtractive developments of the locale. The nature of these adaptive interventions follows the regions liminality, where flexible architectures appropriately respond to changing economic, demographic, and environmental conditions.

The informal architectural outcomes are proposed as modest and purposefully un-finalized arrangements, designed principally in response to the regions innate physicality, and from its post-industrial palette. Repositioned with new meaning and flexible programmatic functions, these arrangements aim to derive a replicable lexicon for post-industrial towns and landscapes beyond Tahsis' criterion with transferable ideations for rural prosperity.



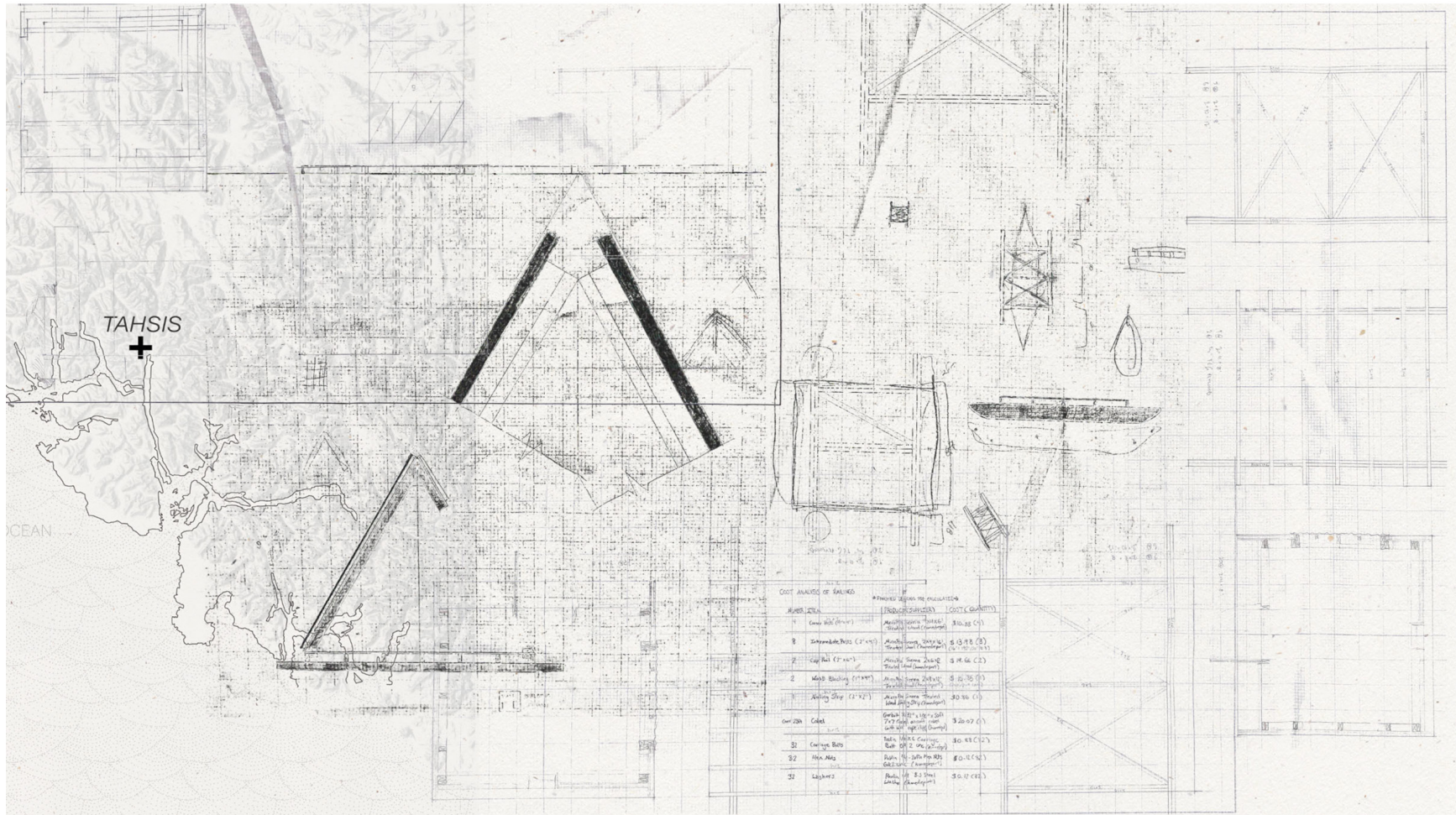
Wish image depicting the liminality between forest, water, and town, fundamental to this thesis.

Personal Anecdote: Design Build, Tahsis BC

In 2019, a group of six architecture students and one young architect traveled to Tahsis, BC to pursue a two week long design build workshop. Supervised by a sessional instructor, the 'Freelab' involves students directly in issues of construction, performance, materials, and design. The brief for this project was a short-term artist residency shelter, only big enough for a mattress and nightstand.

Sketching on top of the Nootka Sound alpine, the students brought forth schematic iterations of what they imagined for the build. Through this iterative process, both the client and architect's critiques began to drive the design from what started as a 100SF pitched roof cabin on pile foundation into a more manageable and affordable A-frame cabin on platform and skid.

These changes were largely in response to place and time. Tahsis BC, is a rural town on Vancouver Island about 150 kilometres from the nearest urban centre, of which the last 50 kilometres are navigated on un-paved roads. With only one pickup truck available, and about one week to build, the group could only count on one haul from a major building store. This limitation is a typical reality for the people of Tahsis, a place requiring resourcefulness and self-sufficiency. The students quickly adopted this mindset, modifying the scale and budget to better fit these challenges.



Student sketches from Freelab 2019.



Photograph of A-frame corrugated plastic door on hinge.



Photograph of A-frame interior framing and partial shou sugi ban finish.

This was one of my first experiences participating in a build as an architectural undergraduate student. This was also where I learned to cost-estimate a project, measure a truck's deck and weight load, rummage through salvage yards, burn reclaimed wood as Shou Sugi Ban cladding, detail flashing with old tire tube, install abandoned door hardware, and barter local labour with beer. As a process of negotiating the liminal, our design process followed the modes of resistant familiar to those of Mikhail Bakhtin, who writes; "moments of crisis and rupture, which creates conditions for potential transformations of self, society, and history" (Fierro et al. 2017). In this sense, our design-build hit many walls of resistance, but through moments of resistance we found opportunity in unconventional waste streams and through community engagement, which challenged the group to reach refined architectural outcomes. This is where the nascent theories driving my thesis were derived.



Artist inhabiting A-frame. (Photograph by Moth n.d.)

Chapter 2: Forest and Town in the Liminal

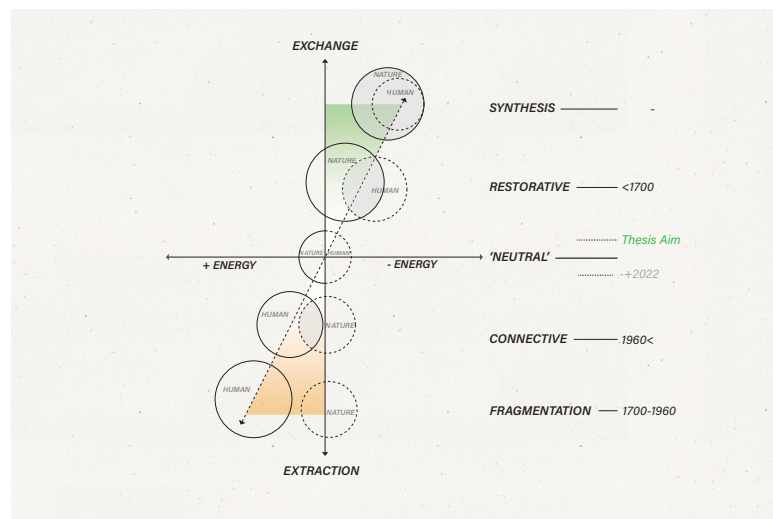
Extraction vs. Exchange

Extraction is defined in numerous ways, the Merriam Webster Dictionary defines the verbiage 'extractive' as follows: "Tending toward or resulting in withdrawal of natural resources by extraction with no provision for replenishment" (*Merriam-Webster Dictionary* n.d.). Predicated from its definition, extraction is characterized as one sided, resulting in a disproportionate distribution between what is taken away and what is given back. By contrast, exchange is defined as the act of taking one thing in return for another (*Merriam-Webster Dictionary* n.d.). A relationship built upon an equilibrium between two entities.

As man continues to disproportionately extract from nature, adverse impacts surface in the form of unprecedented environmental events, diminished natural resource supply, and unhealthy global states. In the following diagram, a deconstructed dichotomy between extraction and exchange reveals the spectrum in which society has historically functioned. Between the two extremes, and prior to the industrial revolution, I would argue a significant portion of human existence has been positioned around the 'restorative' and 'synthesis' state. Indigenous peoples often worked with nature and nurtured it by limiting their extractive impact and respecting its natural regenerative cycles. However, being impartial to this romantic statement, I acknowledge societal development has endured enormous shifts in populations, living standards, and quality of life, which cannot be afforded today as it was by our predecessors.

Following the Industrial Revolution, globalization of resource markets drove society towards a fragmentation state, where enormous amounts of energy were afforded to reach foreign markets for monetary gains, diverging man from nature. By the 1960s, the scientific community began to publish significant accounts of environmental fragmentation and inspired the environmental movement. For many, this revealed the first acknowledgement of a societal association between man and nature, the 'connective' state. However, it was not until the 1970s that foresters and other resource scientists began to apply sustainability principles (Pike et al. 2010). Beyond the connective state, I would argue the modern 21st century has narrowly ascended the spectrum. Apart from the privileged, who can afford to explore neutral living through advanced technologies, most remain within an energy output deficit.

This thesis criticizes these current trends in an attempt to curtail a downward or static trajectory, while positioning architecture within this spectrum at a status which celebrates connectivity, takes actions towards neutrality, and in some cases envisions restorative measures.



Extraction versus exchange spectrum.

Extraction

Extraction in the realm of the forest industry can be understood as a parasitism or predation between man and forest, where man benefits at the expense of nature. Although its understood man must be extractive to a certain degree; needing sustenance to survive, wood for shelter, crops to grow food, and water to drink, it is often forgotten what man's role is in restoring nature.

Fragmented Landscapes

Prior to European settlement, indigenous Mowachaht/Muchalaht peoples successfully managed Nootka Sound's landscapes and resources for over 4000 years (Grumet 1985, 706). This Nootka tribe's lifestyle was dependent upon controlled use of available resources, where seasonal transience allowed for environmental repair during their absence (Arima 2006).

Colonialism by contrast began the eco-transformation of rural landscapes, shifting the role of the land and resources in these regions from a landscape of production to a landscape of consumption. Today, industrialized logging continues to represent one of Vancouver Island's primary extraction methods, where an overexploitation of timber is driven by globalized consumer markets and primed to reap all of nature's financial bounties (Barry et al. 2010, 11).



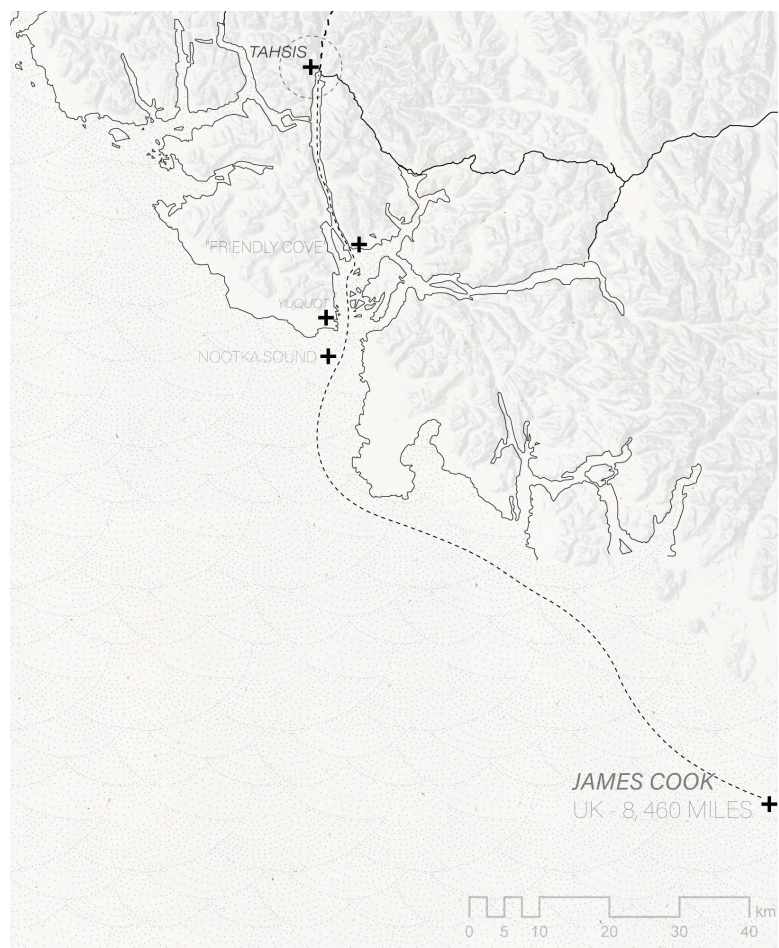
Captain James Cook is shown meeting Nootka leader Muquinna at Nootka Sound on what is now Vancouver Island, in 1778, during his explorations of Canada's northwest coast.

Evolution of Vancouver Island Logging

Beginning with Captain James Cook, when he and his crew anchored in Nootka Sound in 1778, the first recorded use of BC timber by European men were felled to repair masts for their sailing ships (Historica n.d., 1). Within a decade, British sailor Captain Meares records the first timber export, taking

spars to China. By the mid-19th century, colonial logging companies considered Tahsis, BC for its deep ocean inlet and the proximity of old-growth trees along the waters edge. Tahsis' coastline made moving logs through the water advantageous despite difficult and often steep terrain.

Early logging practices were only as efficient as men with axes, a deficiency limiting their efforts of extraction. However, by the mid-20th century, the market for lumber grew as war was developing in Europe, causing a sharp rise in the use raw resource exports. Chainsaw logging rose to the demand, felling forests at incredible speeds with relatively little effort (Historica n.d., 2).

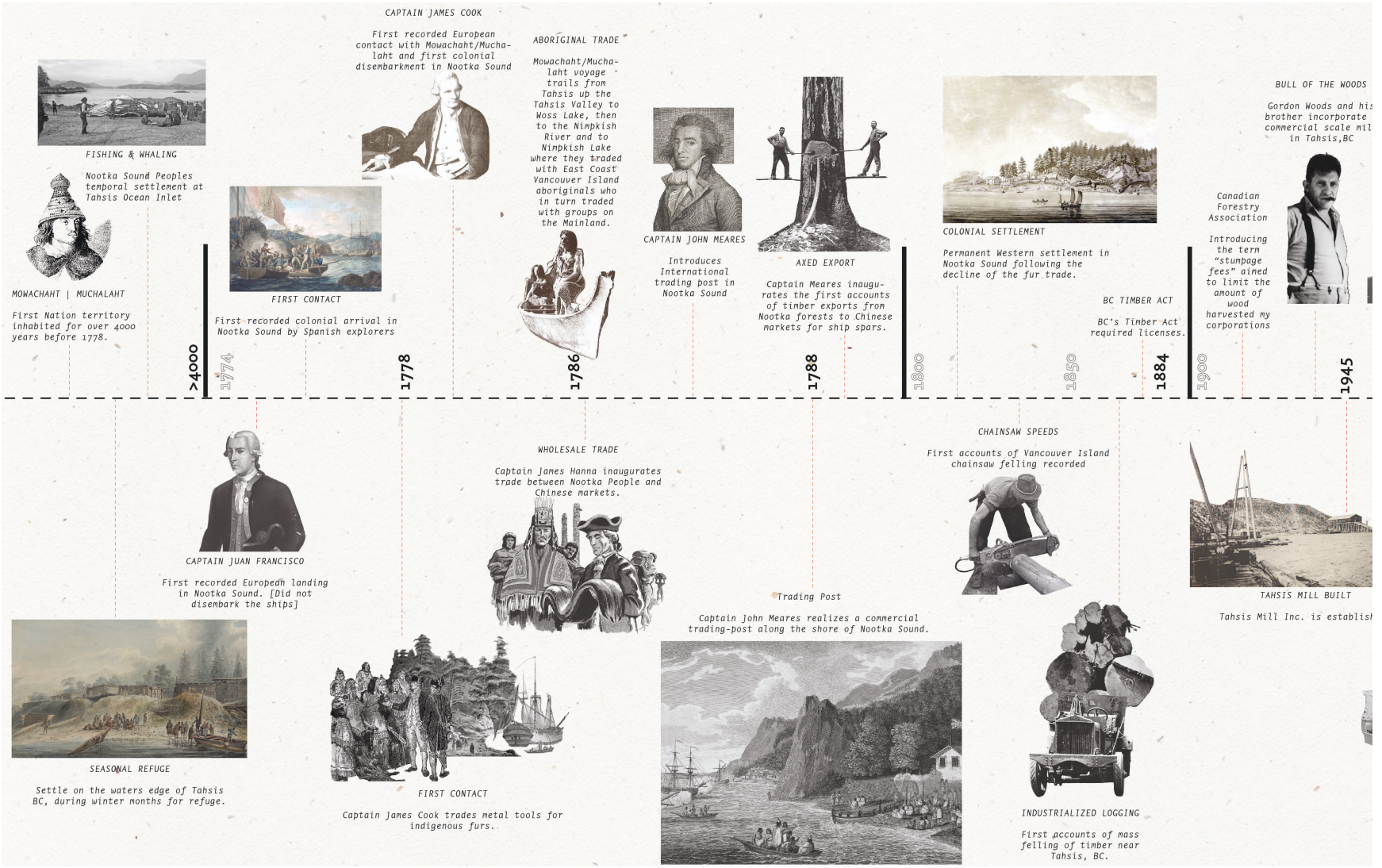


Map of James Cook's voyage along the northwest coast of Vancouver Island and entry into Nootka Sound towards Tahsis Inlet. (Base map made using GIS data; information from Orchiston and Wells 2020)

By the 1950s, many coastal sawmills, including Tahsis Mill were increasingly modernized with large scale felling machinery and fast paced milling facilities, cutting over one million board feet annually and exporting most of its lumber to foreign markets. These large scale exports extended beyond the war and into the realm of globalized consumer market.

Despite the seemingly incessant pace at which forests were being felled, there were also early accounts of market restraint. In 1884, BC's Timber Act required licences to harvest and imposed a fee based on volumes cut (Historica n.d., 2). Additionally, by 1900, the Canadian Forestry Association formed, introducing terms such as "stumpage fees", which are defined as the amount payable for crown timber in addition to rents, royalties, and taxes used to curtail unregulated harvesting (Historica n.d., 2).

By the end of the 20th century, The Forest Renewal Plan became publicly available, reporting on the deterioration of Vancouver Island's old-growth forests and its transcending ecological and environmental consequences. This knowledge incited one of the largest acts of mass protests in Canadian history. Demonstrations against old-growth logging ensued. Positioned just south of Tahsis BC, in the Clayoquot Sound, the protests aimed to prevent the logging of 350,000 hectare of wilderness areas on the Island. These protests ultimately prompted the protection of the 87,600 hectares, but failed to reach political protocols strict enough to curtail the trajectory towards an old-growth deficit (Historica n.d., 2).

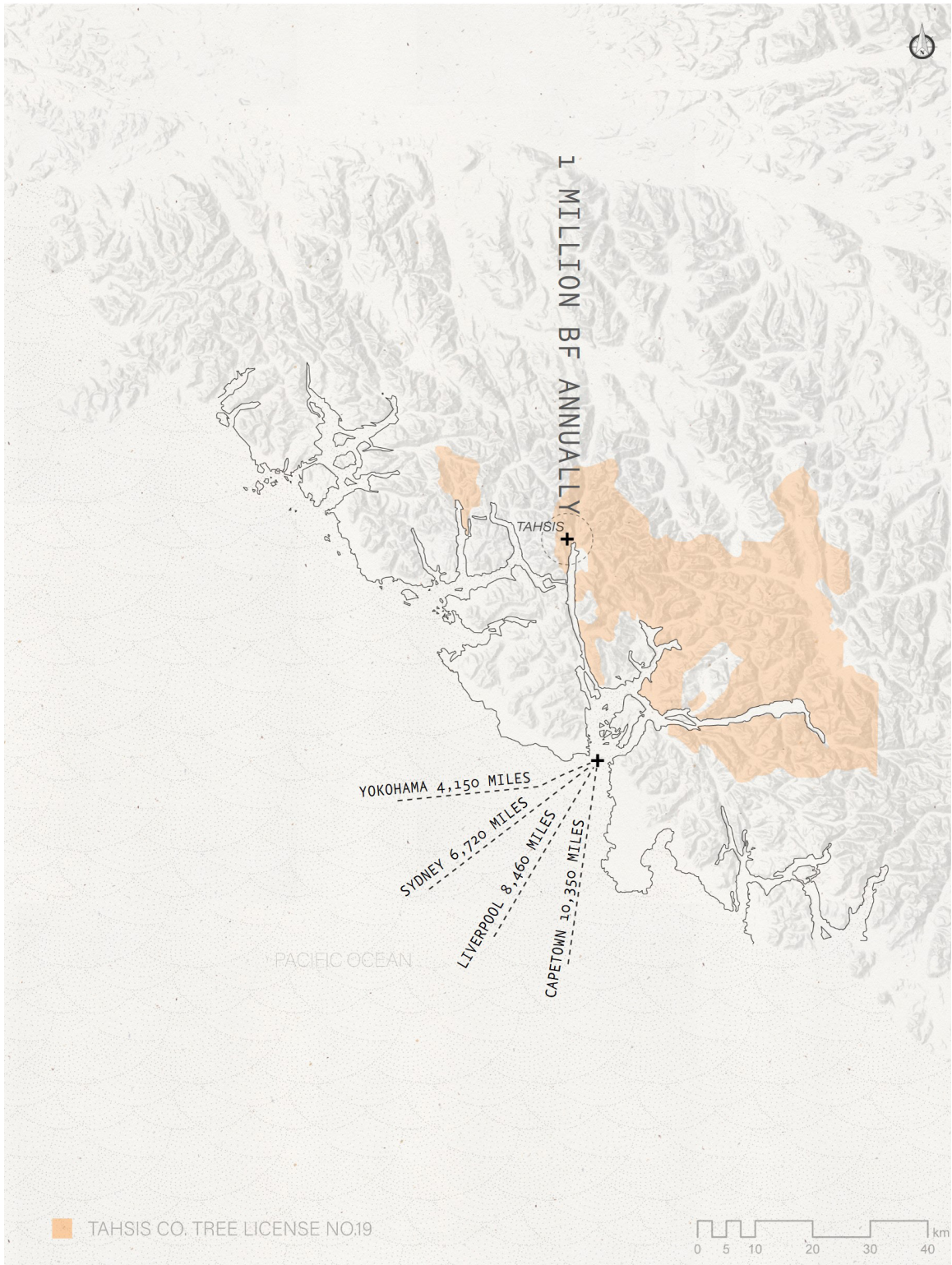


Historical timeline of major dates of the Nootka Sound and the development of Tahsis' forest industry (Images from Tahsis Museum n.d.; dates from Historica n.d.)

Today, Environment Canada still considers the forest industry as one of the key contributors to Canada's environmental crises (Barry et al. 2010, 4). Between 2001 and 2016, raw log exports doubled in the sum of 6 million cubic meters, characterizing the enduring and extractive climate of the modern logging industry (Historica n.d., 2).

My commentary of the development and current state of logging practices is the departure point of my critique of disassociation between man's extractive measures and the prosperity of natural systems. My position tends towards environmental stewardship, which still affords logging to be performed, but with more sustainable measures. In this critique I acknowledge that logging remains essential to British Columbian's livelihoods and economic prosperity. However, pertinent to this case study, a bid for locally based forest management systems could take advantage of the forests regenerative function. By limiting extraction towards locally based needs, a more reciprocal relationship between man and nature can materialize as binary prosperity.

During a meeting with the mayor of Tahsis, Martin Davis advocates for Community Forest Agreements as an alternative mode of forestry licensure available to rural communities, one which supports long-term sustainable logging practices. These agreements are community-led and managed by local governing entities and First Nations groups in an effort to benefit all local stakeholders, including the forests and surrounding environment. The more selective harvest methods attuned to Community Forest Agreements have been proven to support natural ecosystems, watershed management, forest regrowth, and provide a source of revenue (British Columbia. Ministry of Forests Lands 2019). Additionally, Davis familiarized my research



Map of Tahsis company's tree licensure agreement and international boat distances to foreign markets from the Nootka Sound coast (Base map made using GIS data; information from Dominion Map Limited 1960)

with First Nations Woodlands Licenses, which are area-based tenures and can assist in the protection of traditional practices, but aim to secure investments in relation to the woodlands (British Columbia. Ministry of Forests Lands 2019). Together, these locally based forestry functions have the potential to facilitate a healthy forest through its natural regrowth cycles, but also serve local needs and economies.

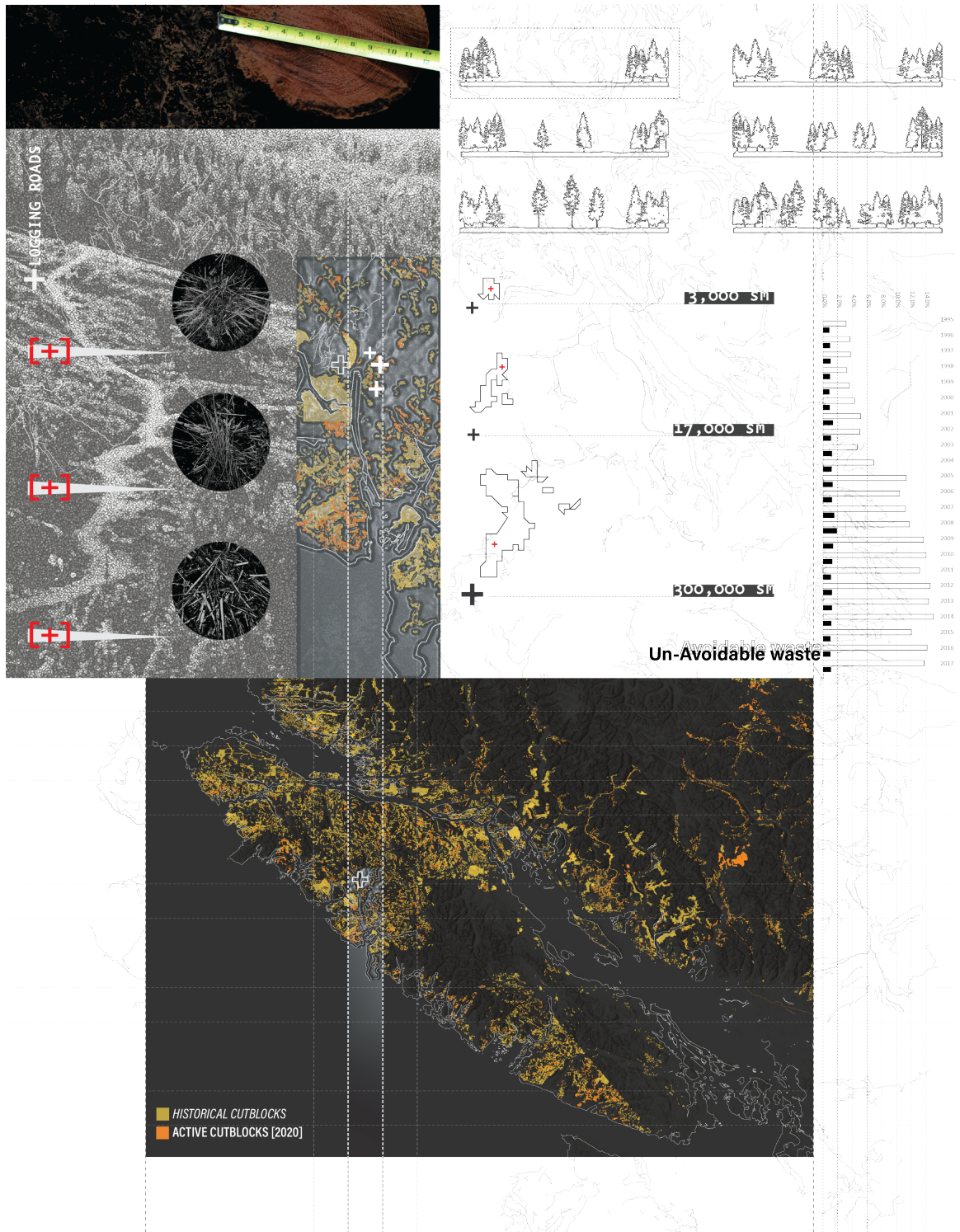
My criticism of Vancouver Island's logging industry remains prudent and should not convey an industry that is entirely problematic, but it should be identified as fragmented. For the scope of this project, this section is admittedly a simplification of the complexities of the industry, but aims to isolate some of the key issues at play. The key issues being: overexploitation of a singular resource, dependence on foreign market exports, and the negligence of post-industrial landscapes. Without any urgency to criticize or suggest alternatives, these issues will continue to contribute towards accelerated climate effects, which have undoubtedly distanced man and nature (Wieting 2019, 4).



An aerial view of old-growth clearcut logging on the Tahsis coastline in 1960. (Tahsis Museum n.d.)

Cutblocks

As referenced in the previous section logging practices have progressively evolved from a slow and more sustainable harvesting method of “single selective”, towards a “clearcut” typology, which represents a complete desolation of the forest canopy and floor. Within the past century, 90% of old-growth forests in southern Vancouver Island have been cut, the majority being clearcut due to the efficiency this felling typology possesses (Ancient Forest Alliance 2018). This exhaustive approach is a self-destructive system, cutting more than it requires in response to competitive market standards. Clear-cutting involves a “Cutblock”, which can be



Hybrid drawing showing a series of drawings of Vancouver Island cutblocks, the typical sizes of these cutblocks, the volume of waste wood in cutblocks, slash pile observations and logging roads through these zones. (Base map made using GIS data; information from Forest Tenures 2021)

described as an area of crown or private land in which timber can be harvested, strict in its limits, but often heinous in its treatment. Cutblocks range anywhere from a few thousand square meters to several hundred thousand, with the majority being somewhere in the realms of 17,000 square meters, or approximately the size of two soccer fields (Barry et al. 2010).

The Sierra Club characterizes clearcuts as 'dead zones', composed of decaying slash, which emit more greenhouse gasses from decomposing matter than newly replanted trees can absorb (Hennig 2019). Old-growth forests, including those found on Vancouver Island, are particularly adept at capturing carbon, storing over 1,000 tonnes of carbon per hectare, which is one of the highest rates on earth (Hennig 2019). Without the old growth, these barren landscapes, although replanted, become significantly monotonous and vulnerable to disease.

One of few remaining old-growth forests of Vancouver Island is situated within the McKelvie watershed, which represents the dominant water source for the town of Tahsis. Apart from the McKelvie watershed, most of Tahsis' surrounding forests have endured one or two clearcut cycles. Despite previously pending logging acquisition of the McKelvie watershed, the town has successfully ordained the land to stand protected. However, clear-cutting continues to expand in areas surrounding the McKelvie watershed deemed less susceptible to affect surrounding communities.

Logging Roads

To access the remote cutblocks, expansive logging road networks are carved into the landscape. These logging roads are constructed by stripping the foliage and compacting the

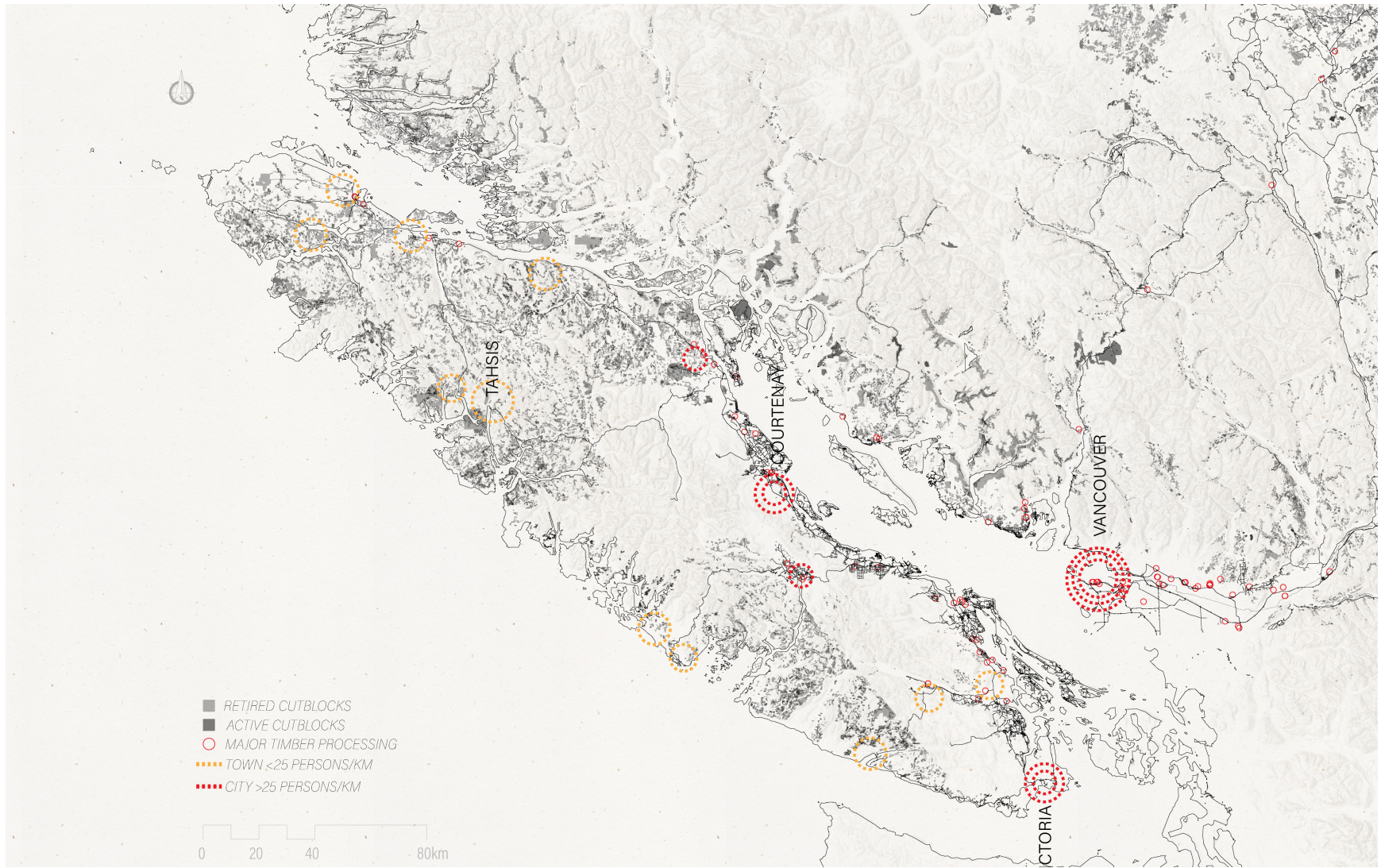
earth into dirt roads, which negatively impact the landscape's soil retention and diverge natural water courses. Logging roads are developed and maintained by the company or entity holding the timber cut license. The owners are responsible for the road's lifecycle, but once closed the roads are often never restored back to natural states and continue to alter the biological functions of the region.

Logging roads do hold social and economic value, both active and abandoned road infrastructure are often shared with recreationists, who use them as way finding device



Map of Vancouver Island's extensive logging road networks, significant in the northernly portion of the island. (Map made using GIS data; information from Forest Tenure Road Section Lines 2021)

to access unchartered territories. These alpine roads enable bikers, skiers, hikers, or cavers to traversing steep topographies before reaching forests and secondary paths of interest. The shared occupancy of the road networks can become valuable for places like Tahsis, which host topographic features appropriate to many adventurers and tourism driven economies.



Map of Vancouver Island's disconnect between major metropolitans and where the majority of logging ensues. (Base map made using GIS data; information from Forest Tenures 2021 and personal research)

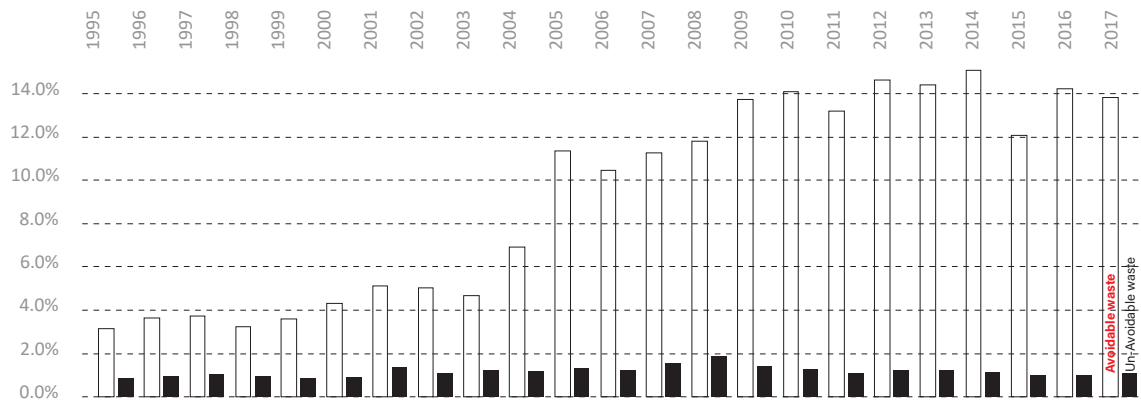
Wood Waste

British Columbia’s forest management practices have become perpetually unsustainable, and increasingly wasteful. A government study suggests avoidable clearcut waste has increased exponentially in the last couple decades and in some cases the amount of waste fiber was greater than the amount of timber harvested (British Columbia. Ministry of Forests 2017, 3). Prior to 2003, avoidable waste fiber on the coast was less than 5% of the harvest volume, or about 0.8 million cubic meters per year. By 2017, the waste increased to more than 18% of harvest volume, or approximately 2.4 million cubic meters per year, enough to fill over 800 Olympic-sized swimming pools (British Columbia. Ministry of Forests 2017, 3).



Photograph depicting usable wood being poached in-situ in a closed McKelvie cutblock.

Current clearcut practices afford a level of waste wood or “slash”, composed of treetops, limbs, and wood material deemed un-profitable by loggers to be piled up and left idle in-situ. The government of BC has provided protocols on how slash piles are dealt with post harvest. The slash is authorized to be stacked and left to decompose naturally, piled to be burned in the wet winter months, or mulched through mastication treatments (Parfitt 2020). It has been



Avoidable and unavoidable waste in the woods. (Statistics from British Columbia. Ministry of Forests. 2017)



Troy walking through a cutblock. (Mark's 2019)



Troy sourcing wood from a slash pile in a cutblock. (Mark's 2019)



Troy cutting usable slash. (Mark's 2019)

found that logging contractors are reluctant to mulch wood waste or burn it in-situ because its timely and costly. As a result, most slash is left in large piles to decompose, which in small volumes would replicate natural systems, but at its industrial scale large discarded logs and foliage piles take a lot longer to decay. The average period required for slash to disintegrate is around 15 years for hardwood and between 17 and 29 years softwoods (Spaulding and Hansbrough 1944, 3).

Within this thesis, the wood waste found within these forests becomes a primary character and repositioned as a value added waste inventory further explored in subsequent chapters.

Poaching Slash

Slash wood has increasingly grown in scale and has become readily available to what loggers characterize as 'poachers'. Poachers exist within a grey area of the logging industry. They are people who are not necessarily authorized to be in active clearcuts, but may traverse recently harvested logging roads in search of left behind waste wood. In legal terms the slash wood is still owned by the harvesting company, however, the BC government has recently recognized the viability of finding secondary-use for this slash before it reaches unusable levels of decay. Small-scale Salvage Licences grant citizens the ability to harvest up to 2,000 cubic meters of waste wood within any cutblock in British Columbia.

The BC government defines salvage as:

1. Dead and/or dying timber;



Troy hauling harvested tree limbs waste from cutblock. (Mark's 2019)



Troy carving wood waste. (Mark's 2019)



Wood waste reinterpreted back in the forest as sculpture. (Mark's 2019)

2. Trees which have been damaged or infested with insects and will die within one year; and

3. Logging residue

Troy Moth, a local artist and resident of Tahsis uses his small scale salvage license towards his artist pursuits and value-added ideologies. In this photo series, taken from a short film following his work, Troy salvages unique logs, roots, and trunks from nearby cutblocks in an attempt to salvage the wood and celebrate the innate sculptural qualities often found in these pieces. Troy casts many of his pieces in solid bronze and black patina to preserve the integrity and natural textures of the wood. This experimental mode bricolage celebrates the innate qualities of waste in a new life form. In his featured documentary Troy is quoted:

I just feel a complete and utter sense of wonder when I enter a cutblock. Just seeing this open area, and you know that there is something in there. You know there is a beautiful form. I'm grabbing pieces that one day, may not exist. If I don't grab it, they're going to burn it or its going to rot. I really love the sense of discovery, the collaboration with time and nature. As I'm discovering these new forms, I'm also discovering the form of my family, and my heritage. (Mark's 2019)

Within his monologue Troy inadvertently critiques the wastefulness of the logging industry. Finding both monetary value and delight within a cycle destined for blight.

Sinking Town: Sawdust in Decay

Tahsis' valley floor has always been naturally quite flat and produced the appropriate conditions to host a bush plane runway. In the 1940s, enormous amounts of offcut wood and sawdust produced from Tahsis' mills were purposefully, yet naively discarded onto landscapes without plans for its return to natural systems. Packed down at the mouth of the Tahsis estuary, the sawdust provided a good landing strip for



Hybrid drawing showing the areas within Tahsis suffering from the former sawdust dumping site and buildings in danger of seismic issues due to significant ground settling.

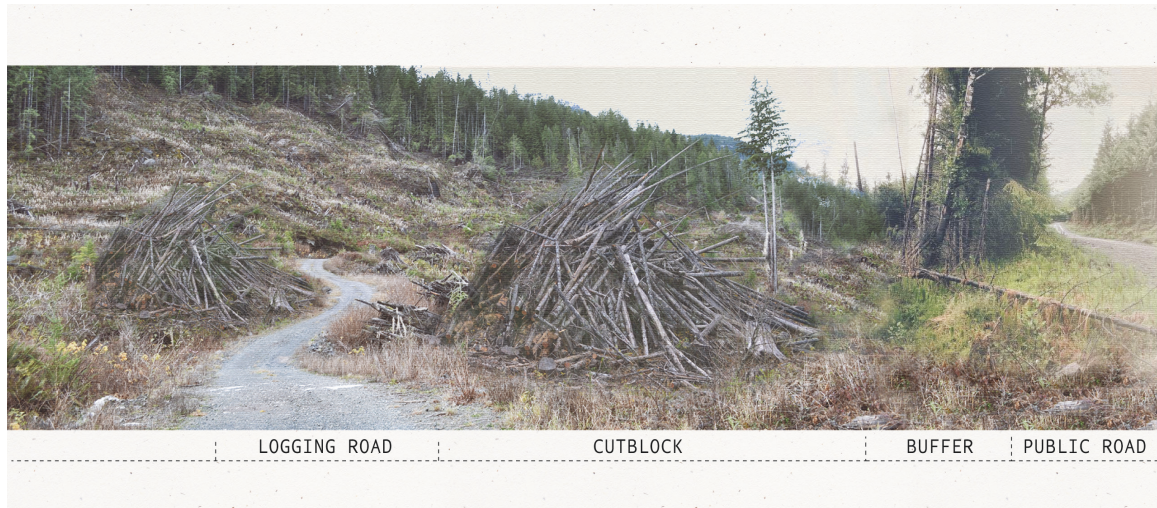
the bush planes. The runway was primarily used in the early development of Tahsis, affording much quicker access by air than by boat. Eventually, as the town grew with a settled population, large portions of the town were built upon the former sawdust runway and wood chip dumping grounds. 50 years later the wood material is decomposing and the portions of the town that exists on these grounds are now experiencing the adverse effects of this evolving landscape. The decomposing sawdust is contributing to uneven settling and becoming increasingly vulnerable to seismic activity. Some of the town's most instrumental civic buildings and a large portion of the town's row housing are now sinking into the landscape. Some structures have become condemned due to foundation cracking and increasing liability. In a way, the sinking buildings represent the interconnectedness between man and nature and the reverse.

Invisible Exhaustion: Buffer Zones

Politicized industry regimes have strategically hidden fragmented landscapes for decades, covering the scene of the extraction with 'buffer zones'. A deliberate and strategic barrier of untampered trees line the edge of the clearcuts shielding the current extractive logging practices from the public realm. These false facades intentionally cover the scene between clearcuts and people and facilitate business as usual practices without any discernable criticism or urgency towards change.

Human behaviour often operates in the present because it's difficult to anticipate the projected impacts and respond to them amidst more imminent issues faced on a daily basis. Repositioning these issues on the forefront of people's environmental consciousness can become a mode of

operation towards societal pressure, which has the power to impose change, as exemplified in the 1993 Clayoquot Sound blockades recounted earlier in this report.

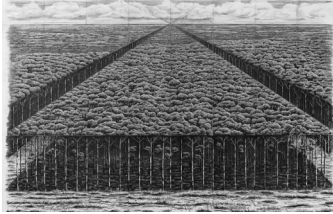


Collage defining the role of the 'buffer zone' between passerby and cutblock.

Invisible Exhaustion: Secondary-Growth

Following any timber harvest, companies holding the licensures of these logged landscapes are responsible for the forest until it reaches a point termed "freedom to grow", which could be described as a restored status (Forest Products 2019). Despite this responsibility, secondary replanting is rarely regenerative in terms of restoring forests to their predeceased states prior to logging activities. Often secondary growth impersonate a complete reconstructed forest to an untrained eye, but in reality are oversimplified shadows of natural systems. Although the companies are provided a list of species to plant based on the regions composition, they tend to choose the fastest growing tree typologies to expedite the release from their legal responsibilities (Forest Products 2019). Ecologically

speaking, these landscapes are left far more exposed to disease, forest fire, and ecosystem oversimplification, which affects soils conditions, water hydrology, and animal inhabitation (Barry et al. 2010, 19).



“Trees by man” (Amery 2016)

Similar invisibility tactics found in British Columbia’s forests are found in the works of Michael Amery, who tackles the effect of consumer culture on the natural world. At first glance, many of Amery’s drawings from *trees by man* appear to be reflections on time spent in forests. However, upon closer examination, the tranquility of the works gives way to something more synthetic. Amery writes, “The realization of the forest’s symmetry, all perfectly spaced, and situated upon a dead forest floor, project something largely distanced from what we understand as a natural landscape, something lifeless” (Amery 2016). All the works in this series are depictions of alien plantations, which are in fact quite unnatural and a result of an illusive industry. Second-growth is honestly criticized in Amery’s images, where a full canopy, does not necessarily correspond as a repaired landscape.

Single Industry Boom and Bust

The historical trends of the lumber industry are difficult to summarize, but could be noted as being subject to the typical ‘booms and busts’ of any other single-resource industry. Forestry communities, like all single industry communities in British Columbia are facing difficult times and unprecedented economic, environmental, and political pressures. Presently, forest industry operators are more likely to succeed with larger sawmills, licenses, lumber crews, and control over their own transport. As a result, patterns of amalgamation

and monopolization of the industry continue to grow as competitive markets favour corporate dominance.

However, Daniel Dufour indicates that the lack of diversification in Canada's export markets still positions large forestry corporations in a volatile position (Statistics Canada 2009). Forest products account for 7% of Canada's total exports with the major destinations being the United States, China, and Japan, which together represent 87% of all forest exports (Forest Products 2019). However, these exports continue to decline as foreign markets become more self-sufficient in terms of their locally renewed supply of forest resources (Statistics Canada 2009).

The Rural and Small Town Programme published a report on what they describe as the "perfect storm" towards the failure of single-industry towns (Rural and Small Town Programme 2007, 9). The Programme indicates it's a combination of several colliding factors which ultimately cause this failure. Typically these factors include: emergence of new technologies, higher energy costs, shifts in demand, market changes, resource depletion, lower cost competitors, globalization, and corporate downsizing to name a few (Rural and Small Town Programme 2007, 8). These changes cause a variety of impacts, including: economic instability; layoffs; closures; population loss; a shrunken tax base; indirect job losses; and many other related social problems (Rural and Small Town Programme 2007, 10).

Tahsis BC, is formerly known as a single industry sawmill town and has experienced a number of boom and busts throughout several corporate ownerships. The first bust could be attributed to natural cause, in the form of a fire, which burnt down the entirety of the mill. Rebuilt shortly



Map of Vancouver Island active and closed mills. (Map made using GIS data; information from Widman's Lumber Forecast 2019, and personal research)



Photograph of abandoned Tahsis mill site facing south towards the fjord.

after with new ownership, the second bust was attributed to lower cost competitors ruling the mill obsolete. Finally in its final cycle, the mill became quite competitive with advanced machinery and leading technological milling capacities. However, by 2001 a larger corporation bought and amalgamated the mill, relocating all of the machinery south to their larger urban facilities. Soon after its closure, most mill workers and loggers abandoned or were forced to leave town to follow new work. Between 2002 and 2022 the town has lost its permanent population ten fold, from about 2,500 people down to its current population of 250 people.

Today, the former mill site sits empty, stripped of all its former industrial buildings, leaving nothing but a large concrete plinth and some foundational remnants of the former mill infrastructure. The site has now sat empty for over 20 years, with about 10 more years before the plot is released from its previous ownership. During this period no signs of renewal of the mill have been attempted.

During these times of bust, towns often exist in the liminal, in need of economic, demographic, and ideological reinvention. William Bridges divides these single-industry towns into three stages of transition: endings, neutral zone, and new beginnings (Bridges 1980). Tahsis exists between the realm of a neutral zone and new “beginnings” as they struggle to establish new long-term economic ventures. However, the town has been exploring small initiatives apart from logging and towards a diversified tourism-centric identity. Currently, appealing to both settled and transient demographics, Tahsis positions itself as a scenic and rural refuge for retirees and rural dwellers who can take advantage of Tahsis’ affordable real estate and low costs of living. Additionally, Tahsis’ physiology tends to attract

tourists and adventurers interested in water, mountain, and forest activities.

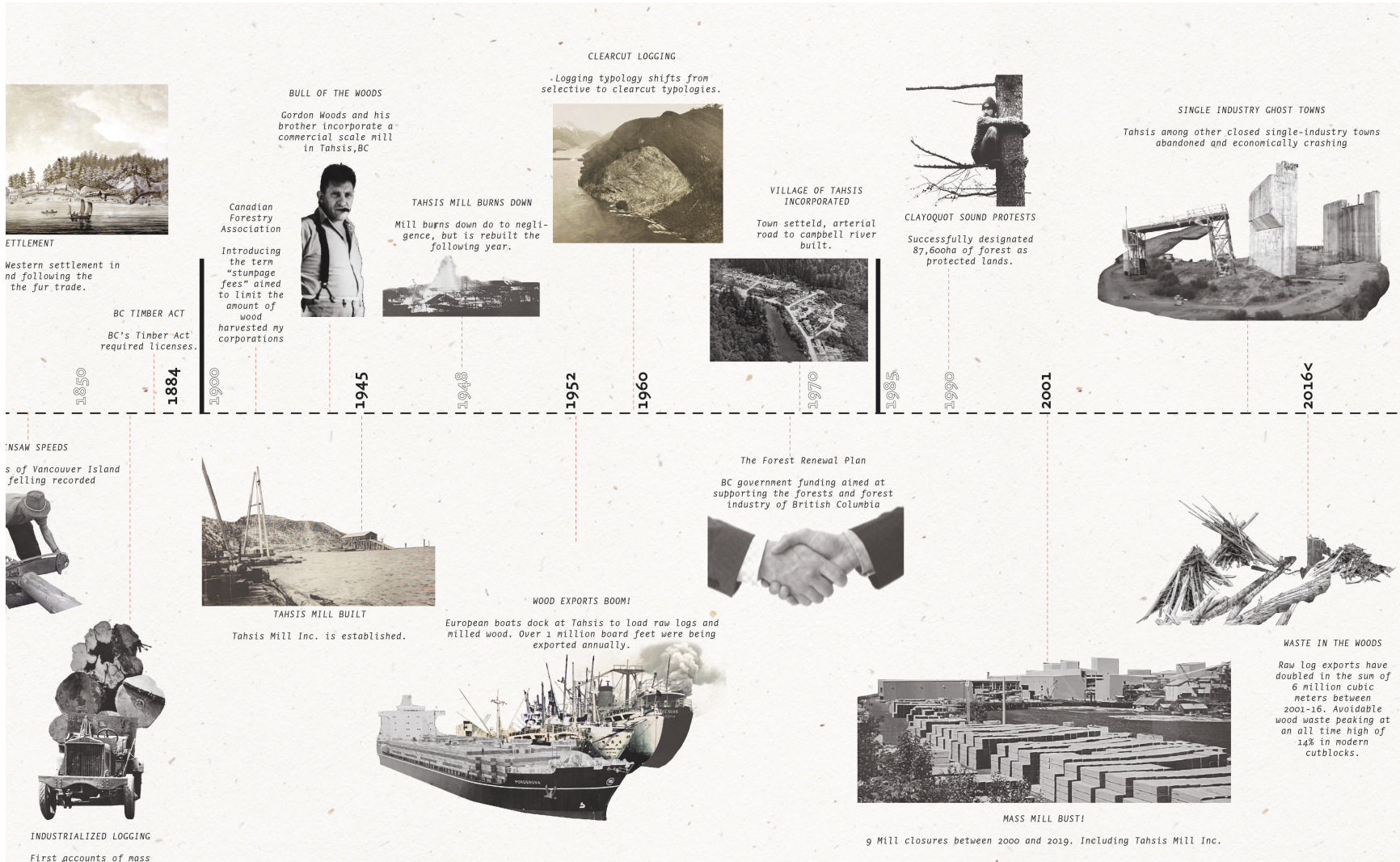
According to The Rural and Small Town Programme, all transitional towns who find success share certain characteristics in common:

Taking risks; being receptive, flexible, and optimistic; having good leaderships and cooperation; developing an inclusive community economic development plan . . . and above all, being resilient means having the ability to cope with adversity. (Rural and Small Town Programme, 13)

In our current socio-economic world, a healthy economy largely dictates the resilience of any town, of any scale. Communities who remain dependent upon a singular sector become vulnerable as markets shift, technologies evolve, and demands alter. A diversified economy is defined by Page and Beshiri as “an increase in community employment through the introduction of a new industries or through the expansion of an existing industries other than a single sector or dominant industry” (Page and Beshiri 2003, 2). In this sense, diversification of economic streams reduces a community’s exposure to the moving targets of today’s global markets. In Tahsis, shifting towards a variety of tourism related economies is a good start towards diversification, but will not address the seasonality of this economy. In chapter 5, a proposal for alternative endeavors beyond tourism-lead economies will be explored.

Identity Erasures

Tahsis is situated on Mowachaht/Muchalaht Territory. It is recorded that for over 4000 years these Indigenous groups used Tahsis territory as their winter refuge, away from the coastal storms. The industrialization of Tahsis, marked the by colonial settlement prompted indigenous groups to recede



Historical timeline of major dates of the Nootka Sound and the development of Tahsis' forest industry (Images from Tahsis Museum n.d.; dates from Historica n.d.)

away from the immediate region as the lands became overexploited and less productive. Furthermore, conflict between differing ideologies, in respect to land management, prompted a cultural gentrification of the indigenous peoples towards regions more acquainted to their lifestyle.

Today, the ephemeral presence of the relatively short-lived success of the former mill has challenged Tahsis' ideologies. The disappearance of the local mill, had a major shift within the town and prompted a massive displacement. The remaining population is composed of those able to retire or those wanting to remain within the rural and affordable context. Newcomers are drawn to the unplugged nature of the place, the affordable property, and possibilities to work remotely and prosper individually. Apart from these two distinguished groups, transient locals in the service and tourism industry rely upon seasonal tourism. Due to its natural spectacles of forest mountains and deep ocean inlet, Tahsis has a fluctuating tourist population that peaks during the summer months, with around 1,500 tourists coming to the town every year.

Representative of Tahsis' former industry-lead populations and newcomer demographics, Denis E. Cosgrove distinguishes the "insider" from the "observer". In an Tahsis' context, the insider could be described as the logger or mill worker, whose livelihood remains dependent on industry and whose daily life is intertwined within this work. Within this sensibility, former mill workers may be partial to romanticize industry as an indicative part of their identity. Soren Larsen writes: "As residents and others appropriate the environs, they imbue simple locations with deep meaning as the locales in which livelihoods and life histories are made" (Larsen 2004, 948).

As Tahsis transforms from a mill town towards a more diversified community, its newcomers and transient “observers” will inevitably inform former industry “insiders” to restructure their ideological contexts. This is where Harner emphasizes a renewed identity will require a coherent faction, which breathes new means and meaning into “hegemonic equilibrium” (Harner 2010, 675). In his writing, Harner uses the term “means” not only in the realm of productive activity, like industry, but also the social and ideological power needed to access and manage the value-added process. “Meaning”, by contrast, refers to the symbolic and emotive forms of human social and environmental interaction (Harner 2010, 665). Therefore, a hegemonic equilibrium will only be established in Tahsis if dominant vernacular uses and interpretations are intertwined within modern ones to some capacity (Harner 2010, 676).

In chapters 4 and 5, the architectural methodology and design proposal will use explicit language to deliver a spatial framework, used to encourage interconnective hegemonies between “insiders” and “observers”. As settled populations and newcomers become intertwined, their representation is considered programmatically and will purposefully include both historical and progressive “means” and “meaning” to the place identity of Tahsis. Additionally, these spatial interventions will aim to re-introduce an active presence of the Mowachaht/Muchalaht peoples in an effort to share historical knowledge from these “insiders”, which will aim to inform and restore Tahsis’ place identity.

Chapter 3: Vancouver Island Interchange

Exchange

In terms of the relationship between man and nature, “exchange” suggests a level of interconnectedness and dependencies. Globalization has altered our language of exchange and commodified landscapes for their land value and monetary productivity, rather than for their natural productivity (Cosgrove 1998, 231).

For a region as isolated as Tahsis, unlikely and monumental exchanges have proceeded in the region for centuries. A locale of interchange built upon exchanges between different demographic and ethnographic groups who have historically traded both material and immaterial commodities. Tahsis’ fruitful resource reserves in combination with its natural geographical features and water accessibility have transcended into modernity, represented in new forms, but with synchronous translations. Today, Tahsis’ exchanges have evolved from physical goods, predominantly in the mode of lumber exports, towards more service-driven functions as the town becomes more diversified in the realm of eco-tourism and accompanied services.

Natural Cycles

Before human settlement, the first exchanges in the Tahsis region existed as a self-determining landscape composed primarily of rich old-growth forest complexes, estuaries, and riparian conditions. Within this realm, complex biological systems concurrently exist, but exceed the limits of this thesis. This section’s purpose is to emphasize the interconnectedness of our regional biospheres, criticize

man's discontinuity within this framework, and describe the transcending effects surfacing in Tahsis. By addressing these challenges, this section speculates upon some of the region's current adversities and imagines alternative directions.

Critical Zones

Beyond our geological epoch, life during the Anthropocene is lived within a narrow 'skin', only a few kilometres up and a few kilometres down from the earth's surface (Latour 2018). In comparison to the astronomical scale of the Earth, Bruno Latour subjects this thin "skin" as the "critical zone" (Latour 2018). This concept provides a new framework for understanding the world says Latour; "not as a globe, nor exactly as a serene, self-healing Gaia, but as the thin, contested skin of the Earth on which we actually live" (Latour 2018). The "critical zone" is where everything we've experienced as humans has, and will continue to unfold, the zone in which human beings have an effect on. Tahsis' "critical zone" is composed of the McKelvie watershed, Pacific north-west old-growth forests, karst geology, all intertwined with an incalculable number of living species.

Deforestation has contributed to the fragmentation of Tahsis' regional environs, which is having a negative stack effect on the dependents of the region. By examining Tahsis' cross sectional composition, impacts of logging activity on the regions forests have begun to surface. The majority of the villages buildings sit at the basin of previous and actively logged alpine, next to the Tahsis River riparian, and at the mouth of the McKelvie estuary condition.

For six months of the year, rain exceed 100mm per month, with December and January reaching the greatest volumes



LOOKING NORTH TOWARDS TAHISIS
 1) TONGUE VILLAGE
 2) HUNTER HILL SITE
 3) MCKELVIE WATERSHED
 4) LINDEN ESTUARY
 5) ACTIVE CATHOLICK
 6) LINDEN GRADY
 7) MOUNTAIN ALPINE

Aerial image of Tahsis and its physical surroundings.

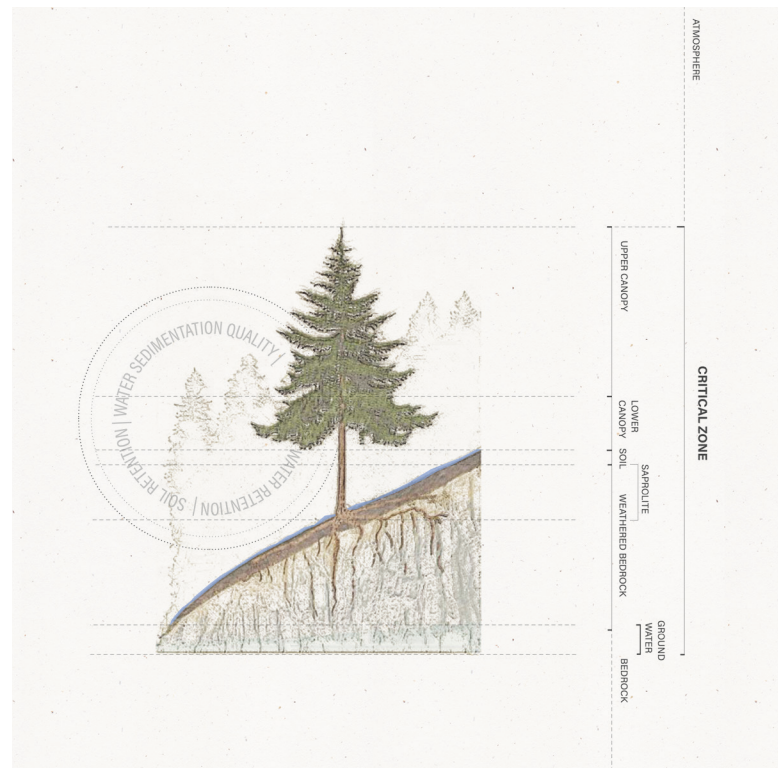
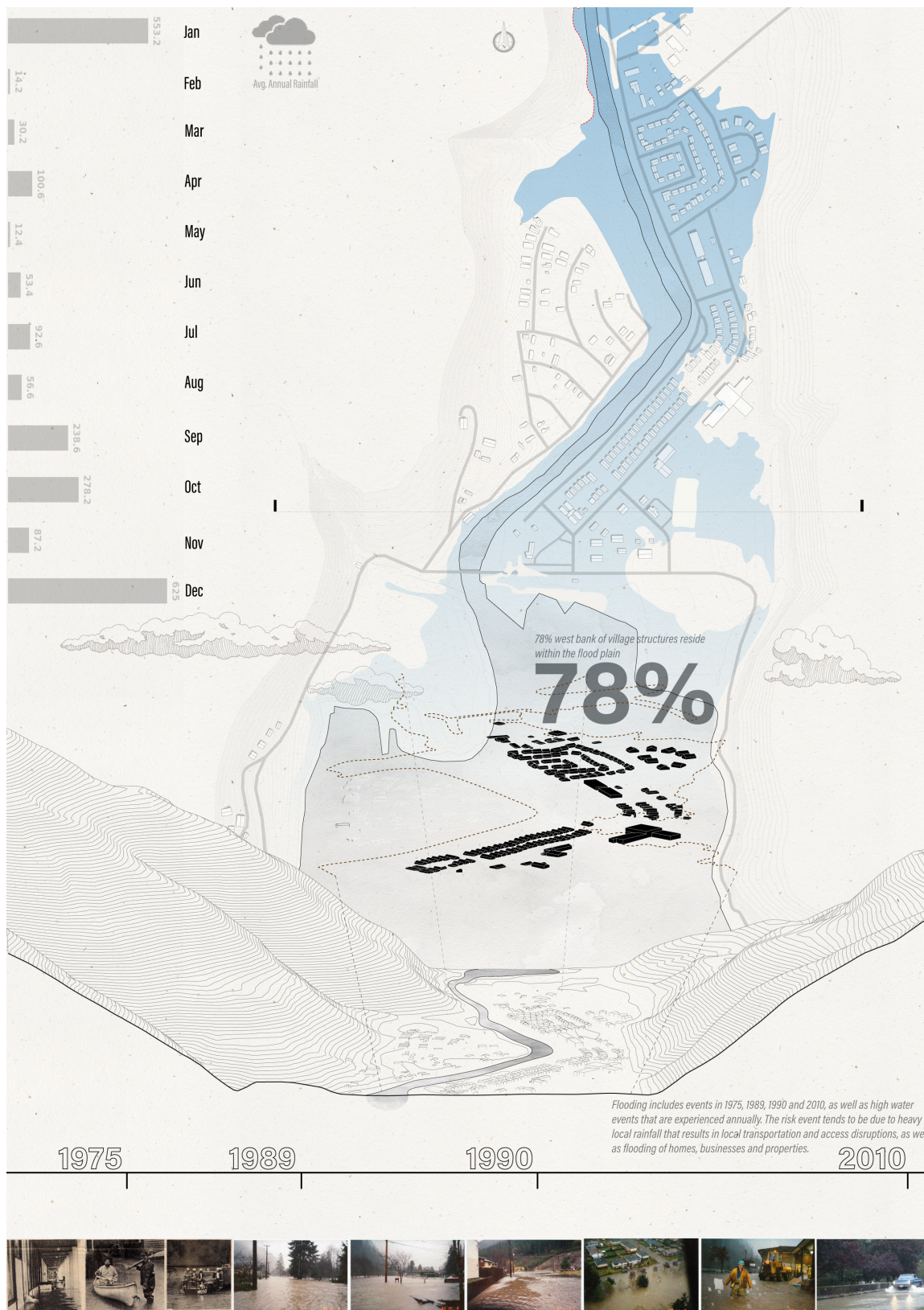


Diagram depicting Tahsis' critical zone and its cross-sectional geological and biological contexts.

in the 500-700mm range per month (Townfolio 2019). Replanted secondary growth forest floors cannot retain the same capacity as its old growth predecessors, eroding a sediment-filled runoff, which deteriorates the water quality marine ecosystems rely upon. These forests have also significantly lost their ability to retain water during heavy rains, small secondary growth canopies allow higher volumes of water to reach the forest floor, which contributes to faster runoff and more flooding.

Tahsis lies at the basin of a steep alpine and lines the Tahsis River. A flood risk assessment reports 78% of the towns valley housing and municipal assets are situated within these flood-risk areas (DeGagne 2019). As industrial scaled logging persists in the region, Tahsis continues experience flooding. Major flooding events experienced in Tahsis



Map of Tahsis showing the areas within the floodplain. (Base map made from Tahsis Flood Risk Assessment by Mark DeGagne, McElhanney Consulting Services LTD. 2019)



2010 floods breach the Tahsis River concrete barricades. (DeGagne 2019)

include: 1975, 1989, 1990, and 2010, as well as smaller high water events that are experienced annually. The extreme events were principally due to heavy rainfalls and resulted in access disruptions and damage to both homes and business properties. Some small interventions have been granted in an attempt to pump, pool, and diverge waters away from the village. However, these interventions will not significantly protect the town in larger flooding events, as seen in 2010, when the water levels breached the Tahsis River's retention barricades.

Trade

Trade and bartering represents the nascent beginnings of our current global financial systems and rudimentary modes of exchange. Raw resources have defined Canada's role in the global markets since the days of fur trading and ship building. Captain James Cook's haphazard arrival in the Nootka Sound region incidentally recounted one of the first cultural exchanges in the area between the First Nations and Europeans. During their exchanges, the Nootka peoples offered various animal skins, carvings, spears, and fish hooks for trade (Arima 2006). In exchange Mowachaht/Muchalaht wanted knives, chisels, nails, buttons and any kind of metal which were considered new commodities to the indigenous tribes of the 18th century.

Trade was not exclusively performed between aboriginals and Europeans. The Nootka Mowachaht/Muchalaht tribes used trails emanating up the Tahsis Valley to reach the Nimpkish River, where they traded with east coast Vancouver Island aboriginals, who in turn traded with groups on the mainland (Arima 2006).

As exchange systems developed in British Columbia, British Captain James Hanna inaugurated wholesale trade in 1785, introducing a commercial fur trade between Nootka and China markets (Arima 2006). By 1788, British Captain John Meares built a small trading post at Friendly Cove and for twenty years the Nootka Sound became the epicenter of pacific coastal trade, hosting hundreds of exchanges as voyage paths became more established (Arima 2006). By the early 1800s, a decline of available furs marked the collapse of the Nootka Sound trading post, but began western settlement of the area (Arima 2006).

Zero-Waste

In Martin Pawley's "So Long Recycling, Here Comes Secondary Use," he criticizes 'recycling' as an outdated term and an enabler to the environmental crisis (Jenkins and Pawley 2007). Pawley argues the terminology has become fashionable in the household, but an underlying monetary inefficiency exists within the system, where the cost to recycle outweighs its energy savings, a fact that lies outside of most consumers knowledge. Secondary-use by contrast involves finding new uses for post-consumer waste. Pawley's architectural works explore "Garbage Housing" with an evocation palette consisting of post-consumer containers and packaging, giving the items new life forms. Compared to modernist architects of his era, Pawley's architecture can be described as informal, but however crude, this mode of working begins to produce a successful critique of capitalism with a clear attempt to escape commodified architecture.



Martin Pawley's house made of post-consumer containers. (Pawley 1975)

Tahsis has developed a considerably sophisticated method of minimizing household waste and finding alternative ways to redistribute it to the hands of others before its considered

for final disposal. Besides familiar bins labeled as; glass, plastics, metals, paper, and cardboard, lies a more bizarre station marked as “Free Store”. This open shed is filled with household goods, old keepsakes, clothing, and miscellaneous objects free for the taking. On a daily basis, the items disappear with new ones filling their places shortly after. This exchange of items is a product of a few different dynamics; limited budgets, remoteness, and community. From a budgetary position, it can become costly to buy or dispose of anything in isolated communities, like Tahsis. The nearest metropolitan city with box stores, modern amenities, and a civic dump are stationed 150km away in from Tahsis in Campbell River, BC. Furthermore Tahsis’ remoteness has informed a concerted effort to rely upon the locale and what it has to offer, over consuming new products from urban settings or foreign markets. Finally, from an community perspective, the “free” aspect becomes a mode of connection, where items shared amongst neighbours develops bonds through the common ownership of the items and invites conversations about the historical significance or the sentimental value of the artifacts being exchanged. In addition to the “Free Store” and recycling depot, are loggers



Collage of the evolution of the ‘Free Store’ throughout a day in Tahsis, BC. Household items include: appliances, building supplies, clothing, and furniture.

salvages and auto and boating salvage yards. The yards act as informal retailers, depicting a similar value system to that of Pawley's and considers post-industrial and consumer goods beyond their initial function, singular ownership, and final disposal.

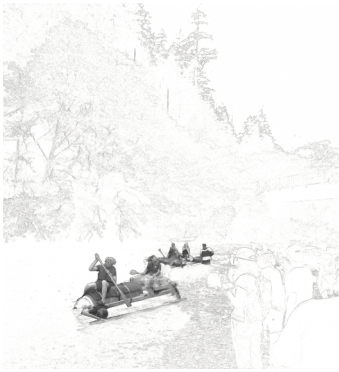


Image of "Tahsis Days" boat race.

Many of Tahsis' cultural traditions suggest the community has embraced ruralness, its limited palette, and incorporated ideas of zero waste into everyday life. "Tahsis Days" is an annual summer event which spans the full extent of the town, along the Tahsis River. The event is a boat race of sorts, designed for locals to gather in teams, sporting their informal DIY boats made of everyday items. Prior to race day, participants are limited to a one week build. The goal of the event is to reach the rivers end first, not as a serious race, but more of a comical performance. The haphazard builds celebrate the creativity of the boat designers and the personalities of everyone involved, which undoubtedly entertains observers with unlikely successes and inevitable failures.

Today, Tahsis has adopted digital means towards zero waste through a not-for-profit organization named Buy Nothing. The organisation offers people a new way to give, receive, share, and lend through a worldwide gift economy network. Fundamentally this system builds upon ancient exchange and bartering sensibilities through modern methods of both material and immaterial sharing by way of digital resources. As these modes of connectivity become more available to rural regions, self-help ideologies can continue to thrive with better access to information, but without succumbing to societal pressures of urban consumption habits and contexts.

Bricolage

Fragments contain a certain potentiality, representing their existing forms and signification, but when recomposed can be introduced as something new. This recombination is what defines the concept of Bricolage. Developed from the French anthropologist Claude Levi-Strauss, who distinguishes the work of the engineer from that of the bricoleur as follows:

The bricoleur is adept at performing a large number of diverse tasks; but, unlike the engineer, he does not subordinate each of them to the availability of raw materials and tools conceived and procured for the purpose of the project. His universe of instruments is closed and the rules of his game are always to make do with 'whatever is at hand', that is to say with a set of tools and materials which is always finite and is also heterogeneous because what it contains bears no relation to the current project, or indeed to any particular project, but is the contingent result of all the occasions there have been to renew or enrich the stock or to maintain it within the remains of previous constructions or destructions. (Levi-Strauss 1966, 11)

Translated into a mode of design, bricolage represents a technical metaphor for a loose cognitive and creative process, which is fairly representative to that of architectural processes, yet lacks a means for completion of a typical project (Johnson 2012, 357). This undefined scope is where Levi-Strauss characterizes the bricoleur as a 'savage', who only uses a limited set of pre-constrained tools to develop a project. This mode of working allows disparate artifacts to find secondary meaning or secondary use beyond their original design. Apart from exploring the recombination of physical fragments, Levi-Strauss suggests "fragments of mythical thought", built up of a set of remnant events which can reinterpret memory into a particular design idea, where visual signs and erasure are equally enacted upon ontologically (Johnson 2012, 361). Bricolage embraces ruralness, self-sufficiency, limited palettes, and the unfinished, using them

as design parameters to work within these finite and closed systems. In this sense, bricolage represents an appropriate mode of working within Tahsis' rural and post-industrial contexts and will be further explored as a key methodology towards the design proposal described in chapter 5 of this report.

Limited Palette

What covets and hinders ruralness is its proximity to modern conveniences and amenities. Ruralness is coveted by transient demographics who seek the 'unplugged' nature of these regions to escape their fast paced urban lifestyles. By contrast ruralness often represents a disadvantage for locals who encounter a limited supply of desired goods and services. However, rural communities while often poor within these domains, are wealthy in resources such as raw materials, labor, skills, traditions, and time. By leveraging these physical and cerebral assets, a limited palette can be activated as modes of resistance and directed towards innovative solutions and desired outcomes.

Carmen Corneil suggests a limited stock facilitates unique improvisation of 'found objects and spaces', as opposed an unlimited range, which accepts and relies upon more standard results (Corneil 1987). Limiting design to found objects and spaces has been explored by numerous architects, Sou Fujimoto explains, "The notion of 'found architecture' is represented by juxtaposing human figures and ordinary objects found in everyday life" (McKnight 2015). By limiting his design palette to ordinary found objects, Fujimoto attempts to inspire innovative concepts, which might seem coincidental at first, if not fortuitous, but exhibits a methodology towards imaginative results.

This approach is transcendent back into Marcel Duchamp's "ready-mades", which were modern sculptures made of everyday objects. Duchamp's 'bicycle wheel' combines two utilitarian items; a stool and a bicycle wheel. This unlikely pairing could be considered superficial or un-functional, yet the restraint of his palette and the re-application of found objects demonstrates a critique of commodified art which is subversive to the outcome. These boundaries become vital modes towards Duchamp's artistic design, and are necessary to make one decision over the next and drive innovation.

A similar criticism towards the superfluous and often commodified modernist movement can be attributed in architecture. Architects Alison and Peter Smithson employ an "As Found" terminology towards a truthfulness of the here and now and the common and the ordinary (A. Smithson and P. Smithson 2005, 97). In this case, the Smithson's are not seduced by avant-garde architecture, nor are they catering to visions of remoteness ideals, instead the "As Found" is described as: "Carefully observing everyday life, to discover its qualities, to follow the traces of what's already there and use it as a basis for new insights and new form" (A. Smithson and P. Smithson 2005, 98).

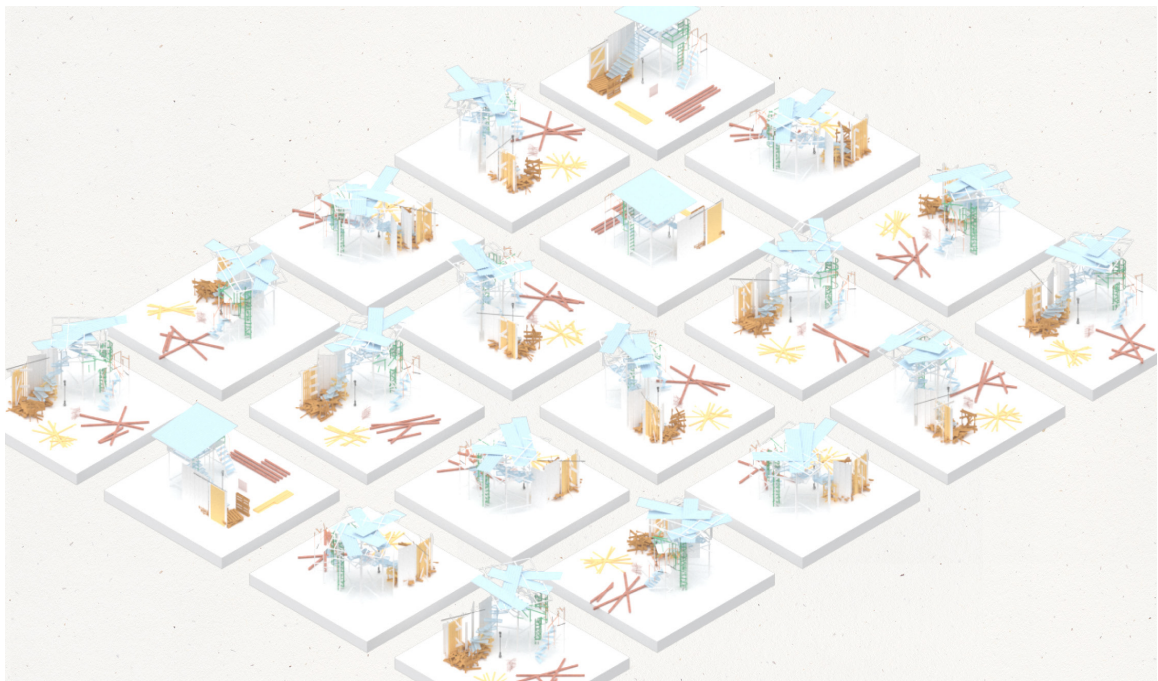


An assisted 'readymade', made by combining more than one utilitarian item to form a work of art, and in this case bicycle wheel. (Duchamp 1913)

Drawing parallels between careful observation of everyday life and "As Found" principles, further underlines the value of the ordinary and how it can be re-deployed as something new. Derived from ruralness, resourcefulness, and self-sufficiency, a limited palette of found objects can extract a modest design lexicon for those with fewer resources. Transposed towards post-industrial landscapes, transforming waste by simply putting them back together

in new and exciting ways can elicit a value added systems approach.

In the following diagram, I am testing both a limited palette and “As Found” methodologies by selecting a group of waste materials sourced from my inventory archive, which is composed of post-industrial left overs found in and around Tahsis. Though haphazard assembled, I am pulling the elements apart, observing their architectural potentiality, and recombining them anew. With an architectural lens, opportunity reveals itself in the form found space during this iterative process. However, without a degree of hands-on refinement, the compositions lack pragmatic structure or defined spaces. By evaluating this method, I conclude collaboration between the illusive “As Found” methods demand a degree of guided direction to reach made and usable spaces. This early procedure will be tested to a greater degree of accuracy and rigor in chapter 5 of this report.



Architectural exploration of irregular assemblies derived of a limited palette.

Self-Sufficient

Self sufficiency is a derivative of a limited palette, where an inaccessibility to help or amenities cultivates a culture of Do-It-Yourself (DIY) processes and community enactment based upon its isolating contexts and hearty demographics. DIY projects and home maintenance become important activities in understanding rural identities, and act as an accurate portrayal of individual household needs and desires. 'DIY(ing)' with familiar artifacts and materials can be important to peoples relationships and their senses of self (Cox 2016, 45). In *Freedom to Build*, John F.C Turner writes, "Architecture, made by the people who will use it and with materials they have collected, can foster a sense that place or building belongs to them" (Turner and Fichter 1972, 159).

In rural contexts, physical representations and community engagement can provide points of discussion within a small community, bridging the barrier between public and private space and showcasing individual interests and personality. Gerald Pocius finds DIY activities performed in the yards of rural settings become performances of sort, displaying outwardly to the community in an informal manner, encouraging impromptu conversations about the work, often triggering many hands and minds to become part of the project (Pocius 1991). The majority of Tahsis' housing vernacular currently characterizes any urban suburb, two story houses with vinyl or wood siding, and simple gable roofs. Despite the monotony, small additions, ongoing maintenance and aesthetic alterations exemplify an interest in individual expression.

Beyond a sense of self representation, it's important to note that self-sufficiency, although singular by terminology, still involves a community-led ideology. An ideology that I would argue is largely lost in urban contexts due to an increasingly capitalistic minded population who covets private ownership and privacy over community interests. By contrast, the daily existence of rural individuals is based fundamentally on the spatial concerns of limited and shared resources (Pocius 1991).

Gordon Gibson, one half of the Gibson Brothers Inc. who built and owned the first mill in Tahsis, BC back in the 1940s, is the self-proclaimed "Bull of the Woods", which he titles his autobiographical novel depicting events of this rural and precarious logging lifestyle. Gibson writes about his vision for his mill camps as follows:



Photograph of Gordon Gibson's earliest logger row housing taken in 1940. (Tahsis Museum n.d.)

Now that Tahsis is incorporated, houses are being built for private ownership, and people are looking forward to having a say in town management. Providing houses in Tahsis was a good example of what can be done to promote community spirit in isolated area, a man was allowed to improve his house as long as he occupied it, making them comfortable. Any man who invested time in his own home would be more likely to remain loyal to us and would be happier when his family came to join. (Gibson and Renison 1980)

Gordon Gibson's anecdote depicts similar participatory principles as Turner, both of which connect self-directed construction as a mode towards self-sufficiency, but also accurately representing the individuals and the lifestyles they lead.

I believe we live in culture tending towards self-help as greater access to informative media continues. As individuals gain more autonomy of their own lives through entrepreneurship, remote work, and self-taught aspects of life, corporations and urban life may become less essential.



Panoramic photography of Tahsis housing with additions, ongoing maintenance, and unique aesthetic alterations to otherwise monotonous suburb housing.

In the following methodology and design chapters, participatory design and self-sufficiency principles will guide the proposal beyond my authorship with an aim to include and follow the community's developing needs. Within this capacity my proposal will guide a developing, yet unfinished arrangement open to further advancement.

The Unfinished Form

Recombining Fragments

The unfinished form can be interpreted as an estrangement of fragments without definite architectural conclusions. Fragments can exist in both the material form as matter, or the immaterial form as memory, stories, or ideas (Bergdoll, Oechslin, and Middleton 2006). Although ambiguous, the unfinished is also intriguing, leaving unfinalized tasks open to a diverse range of possible outcomes. These unfinalized fragments trigger the creative force of our imagination towards ideas of completion, where the fragment's historical significance, present signification, and its future potentialities demonstrate an array of possibilities. Architectural historian Neil Levine claims that even if a building is visibly unfinished, it can still fulfil its purpose, and therefore be understood as 'complete' (Bergdoll, Oechslin, and Middleton 2006, 325). The unfinished develops upon the same principles of bricolage, which appears to trigger an innate desire to complete the incomplete, and moreover reinvent through combination and recombination of a diverse range of assemblies that find new meaning. Therefore, I conclude that it's the intentions of the architect, wishes of the client, or the expectations of the people involved in the project who determine the subjective semantics of the finished form. And within this spectrum, contextual or demographic changes

will continue to alter this perception during the life span of any building.

Attuned to the unfinished sensibilities, the architecture proposed in this thesis will only represent a moment in the life of a building and the wastages currently available. In theory, this project's completion would surpass my inclusion as it unfolds with changing contexts and the addition of new participants and user needs. This is where I embrace the unfinished nature of architecture, through a series of phases which unfold as several moments of completion during the building's lifetime. Between these moments, additive and subtractive iterations develop as the project responds to fluid outcomes. In chapter 5, these phases of construction will be further unpacked, each adopting a level of unfinished arrangements, which aim to employ adaptive contextual responses, flexible spatial programming, and prompt local participation.

Chapter 4: Sourcing, Siting, and Improvising [Methods]

Extracting Inventories

Rural communities while often poor in money, are wealthy in resources such as material, labor, skills, traditions, and time. A post-industrial locale, such as Tahsis also possess a significant reserve of wastages left in-situ.

As an initial methodology, I developed an inventory composed of local wastages found in and around Tahsis during the development of this project. Secondly, I sourced some additional wastages from the regions neighbouring communities to help fulfill gaps in the inventory lists. Finally, I developed an inventory which personifies the skills, employment and lifestyles of the Tahsis' current demographic.

Local Waste Inventory

Post-Industrial

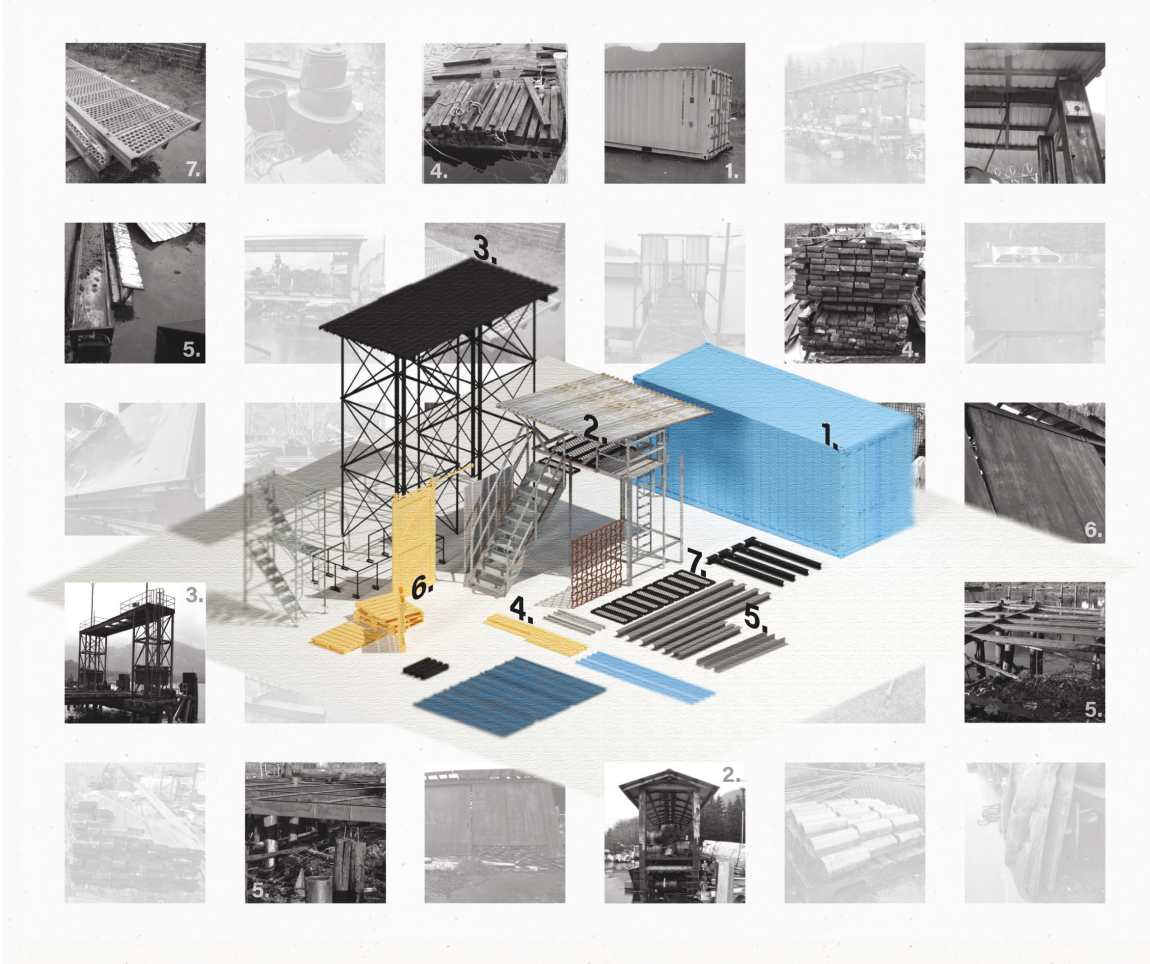
Sourcing scrap yards, former logger camps, and former industrial mill sites in and around Tahsis, I photographed and catalogued the local inventory and digitally modeled some of the various artifacts that I found. A significant amount of useful building materials I've documented do not exhibit any continued ownership as they continue to weather in-situ. Some of this inventory includes, but is not limited to; wide angled beams, channel, hollow structural sections, expanded metal meshes and treads, corrugated panels, scaffolding, miscellaneous hardware, and dimensioned lumber.



Photographic inventory of post-industrial building elements found near and around Tahsis



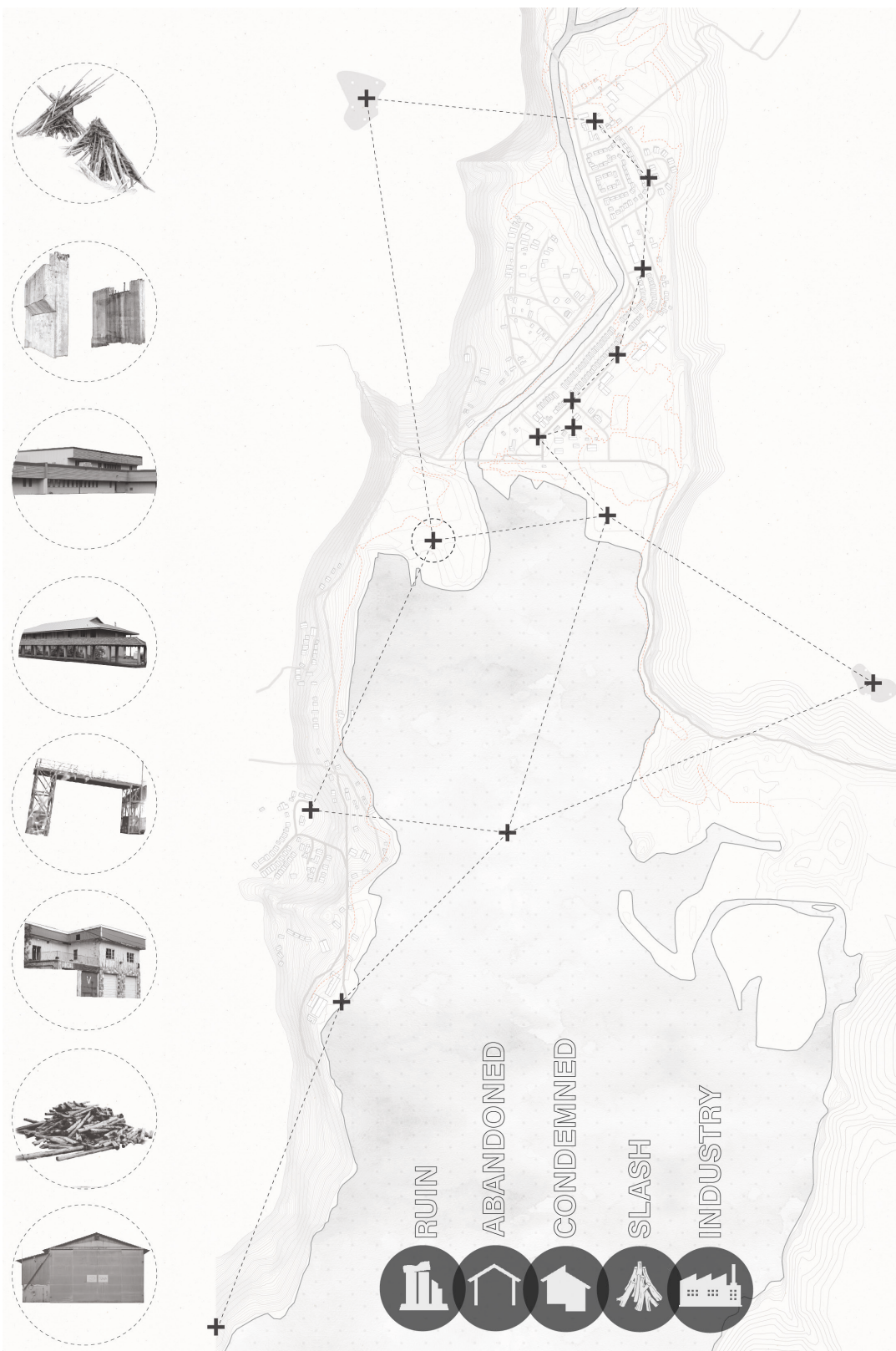
Digital inventory specifying item size, number, location, and status of the artifacts.



Photographs of post-industrial left overs digitally model to scale, consolidated together to be explored as building elements for new architectural forms.

Local Waste Inventory: Abandoned + Condemned

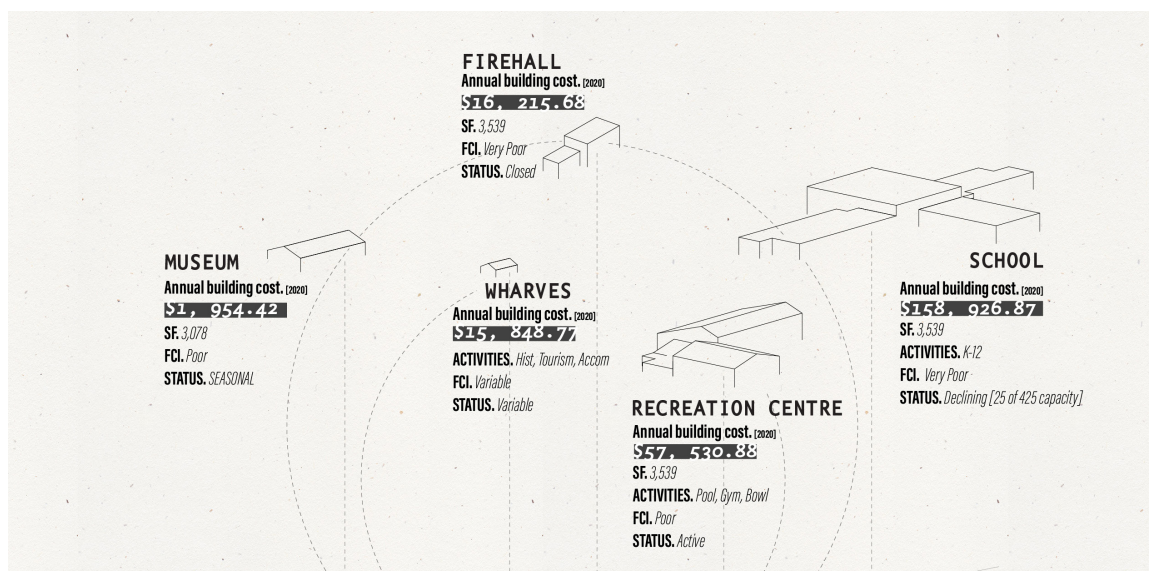
During my site visit in fall of 2021, I met with a number of locals and developed a sense of the town's current socioeconomic status. During my conversation with the Mayor of Tahsis, Martin Davis, he revealed that although Tahsis is a small town, the community hosts a significant inventory of modern amenities, which at one time appropriately reflected the village's growing population, but have now become a financial burden as the population diminished. Buildings including a local hotel, motel, and restaurant have been abandoned for a number of years due to their inactivity.



Waste streams within Tahsis town limits. Waste can be found in the form of ruin, abandoned buildings and infrastructure, condemned or to be condemned buildings, slash left from logging, and former industry buildings and infrastructure left overs.

and disability to adapt to changing town conditions. Others, like the fire hall, have been condemned due to settling issues, which was expanded upon in earlier sections of this report. Finally, civic amenities including the public school, community centre, wharfs, museum and library, which are still used on regular basis, though in lesser capacities, are becoming increasingly damaged as fewer resources field the maintenance costs they require. Particularly its been the scale and performance of these structures that Davis foresees as the main obstacle facing this maintenance.

During my correspondence with Tahsis' cost analyst Ian Poole, he reported on the challenges and increasing costs of maintaining the civically owned buildings during the 2020 fiscal year. He reports that the maintenance costs currently exceed the various grants, fees, and taxations, subjecting the town into a structural deficit. At this stage, the town is balancing its books from previous years surpluses, but acknowledges this is not sustainable in the future. The towns tax basis has also been severely cut with the closure of the



Structural deficit diagram of existing civic buildings costing the town more than budgets may support. (Poole 2020)

mill in 2001, which had collateral damages in the form of regional de-population, reduced land values, and weakened disposable income streams.

Deliberating on these analyses, I suspect some of these local amenities will be foreclosed as budgetary limits unfold. Therefore, a part of my inventory list includes the programmatic elements within these buildings, as well as some of these building's salvageable elements in anticipation of their closure or abandonment.

Regional Waste Inventory

Waste in the Woods

As discussed in earlier sections of this report, a large amount of slash waste wood continues to pile up in the regional vicinity of Tahsis. The useful and salvageable logs from nearby cutblock sites implore a major role in my inventory list, as their collection actively contribute towards reducing the negative environmental conditions they currently produce on a local and global scale. Intervening in the early stages of slash decay aims to reduce its environmental impacts, find secondary-use for the material, and extend its lifespan as a building component.

Regional Waste Inventories: Uchuck III

Tahsis' condition is not unique, a number of neighbouring single-industry towns including Gold River, Zebellos, and the Kyuquot region are experiencing similar challenges in respect to decreasing resiliency and developing accounts of waste. My inventory will develop upon the unification of these regions and their collective network in combining regional waste to form new propositions. The regional waste is proposed to be initially consolidated in Tahsis and



Uchuck III docking in the Nootka Sound. (GetWest Adventure Cruises 2018)



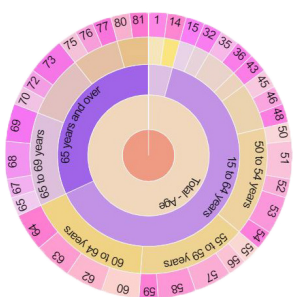
'Poaching' large slash wood waste from nearby industrialized cutblocks and extracted on skid via publicly accessible logging roads.

employed as a case study, which could later be replicated if this model finds success and affords rural resiliencies.

The logistics of consolidating these regional inventories could employ the Uchuck III, which already assumes the primary boating network between these remote regions. Originally built in Oregon in 1942, the MV Uchuck III has been totally refitted to accommodate 100 passengers and up to 70 tons of freight. Stops are currently made along her route at camps and settlements in the Nootka Sound and include docking in Tahsis. The Uchuck III is routinely deployed to deliver supplies and passengers to these remote areas. The ship is equipped with large hoists used to load and unload freight and deploy wet launches. In the following design section, a systems approach, will employ the Uchuck III as a mode of deploying regional waste inventories, continue transportation of tourists, and encourage recurring trade.

Demographic Inventory

Currently Tahsis' population sits around 250 residents. The average age is quite high, around 45 years old, most of which are retirees who found Tahsis for its affordable real-estate, scenic beauty, and slow lifestyle. Progressively, younger families and remote entrepreneurs who are interested in rural living and affordable housing options are beginning to populate Tahsis. A seasonal up haul of adventure tourists with interests such as hiking, biking, caving, and water sports have an influx in summer months. Finally, there is a minority group of indigenous peoples who reside near Tahsis, but have not been represented despite Tahsis being on Mowachaht/Muchalaht territory.



Local demographic diagram.
(Statistics Canada 2021)

Superpositioned Siting

Sites built upon previous ones illicit a degree of palimpsest, they offer the opportunity to both conceal or reveal former uses, to celebrate historical, cultural, or ideological signifiers or denounce them. Anne Lacaton speaks about superposition, its layers and how they might enrich architectural siting:

The project invents then a new situation, enriched by all the previous stories and of all the existing layers. In architecture and in urbanism, we believe in the importance of superposition, the more a space generates combine multiple imaginative worlds, the more stimulating to live in it seems to be, and the more new relationships are triggered. (Lacaton 2013)

Most events remain invisible, ambiguous in today's contexts, but can be signified through architectural strategies. Through spatial organization or represented through physical traces, aims to trigger a renewed phenomenon associated with past events. In chapter 5, the architectural proposal will demonstrate how signifiers might reveal some of Tahsis' rich historical contexts.

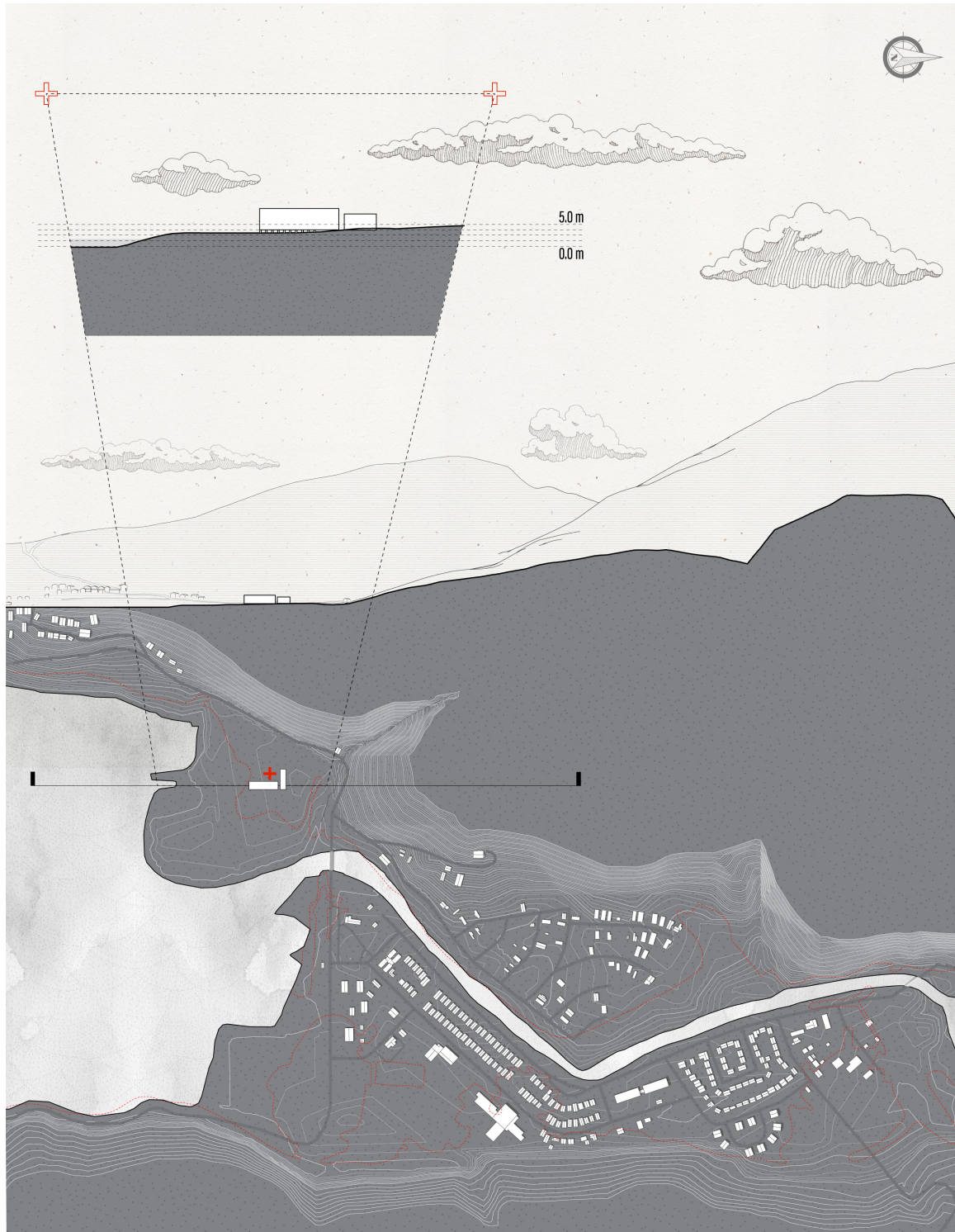
Site Specifications



Aerial view over the Tahsis and facing the Fjord, looking south.

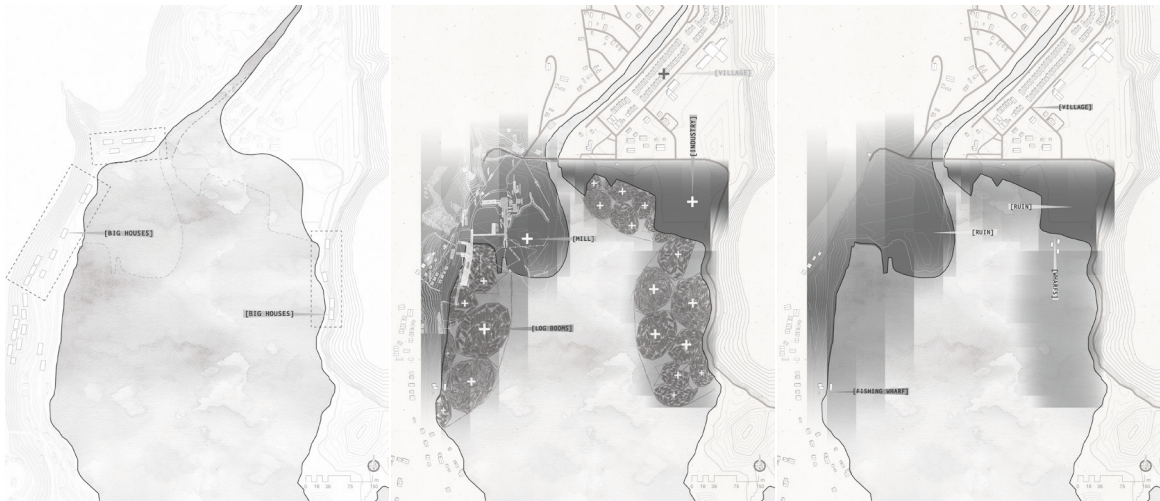
At the mouth of the Tahsis Inlet lies the former mill site, lining the town's primary arterial road, a prominent site visitors and locals pass by on a daily basis. Although the former mill site was historically the beacon of life in Tahsis, withholding proud memories with residents who formally worked there, it now sits barren and closed off from the public. The site remains under private ownership of the previous milling company for another 10 years, beyond then, access can be regained by the community.

The site is substantial, covering about one million square feet, with approximately one third of the site on higher ground in the range of 3-5m above sea level and above



Diagrammatic plan and section of proposed siting of the thesis. The new siting is west of the current town and estuary, placed on top of the former mill site plinth, the architecture is primarily oriented north south towards the fjord.

the high water levels of the flood zone. The site reclaims the waters edge from its industrial predecessors who dislocated the town and the waters edge with an industrial buffer of equipment, facilities, and log booms. Reminiscent of indigenous temporal coastal settlement the project aims to lightly reoccupy the edge while restoring some areas back to its natural state. Despite the challenges of the site, it still retains regional significance and the most prominent views of the Tahsis fjord. This is where I am proposing to situate my project.



Reading these diagrammatic site plans from left to right; an evolution of the waters edge can be followed from the 'Big Houses' of the Mowachaht/Muchalaht, to the industrial loggers log booms, to the post-industrial wasteland.

Fragments and Traces in Ruin

Fragments of Ruin

Fragments of manufactured ruin expose materials with low adaptability, but higher lifespans. Ruin can be characterized low in adaptability due to its static and seemingly singular presence within contexts which have discontinued, transformed, or been relocated. It's often the material's composition which denies alternative uses. Within decommissioned industrial sites, I am categorizing

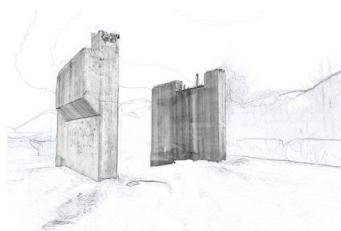
fragments into three states; repurposed, disposed, or abandoned.

Repurposing is allocated to fragments which are considered valuable, transformable, and can be reused in new contexts. Disposable fragments are acceptably discarded into current waste streams, but despite holding some potential value they are perhaps more difficult to repurpose or too inefficient to transform into new contexts. Ruin situates the abandonment state, as fragments with little value apart from where they reside. Ruin is difficult to break down or incapable of physical displacement due to their material composition, which is why it's often abandoned in-situ.

This project attempts to lengthen the life-span of various fragments left behind, on and near my chosen site, with intention of repurposing and integrating them into the architecture to reach greater potentialities.

Traces of Ruin

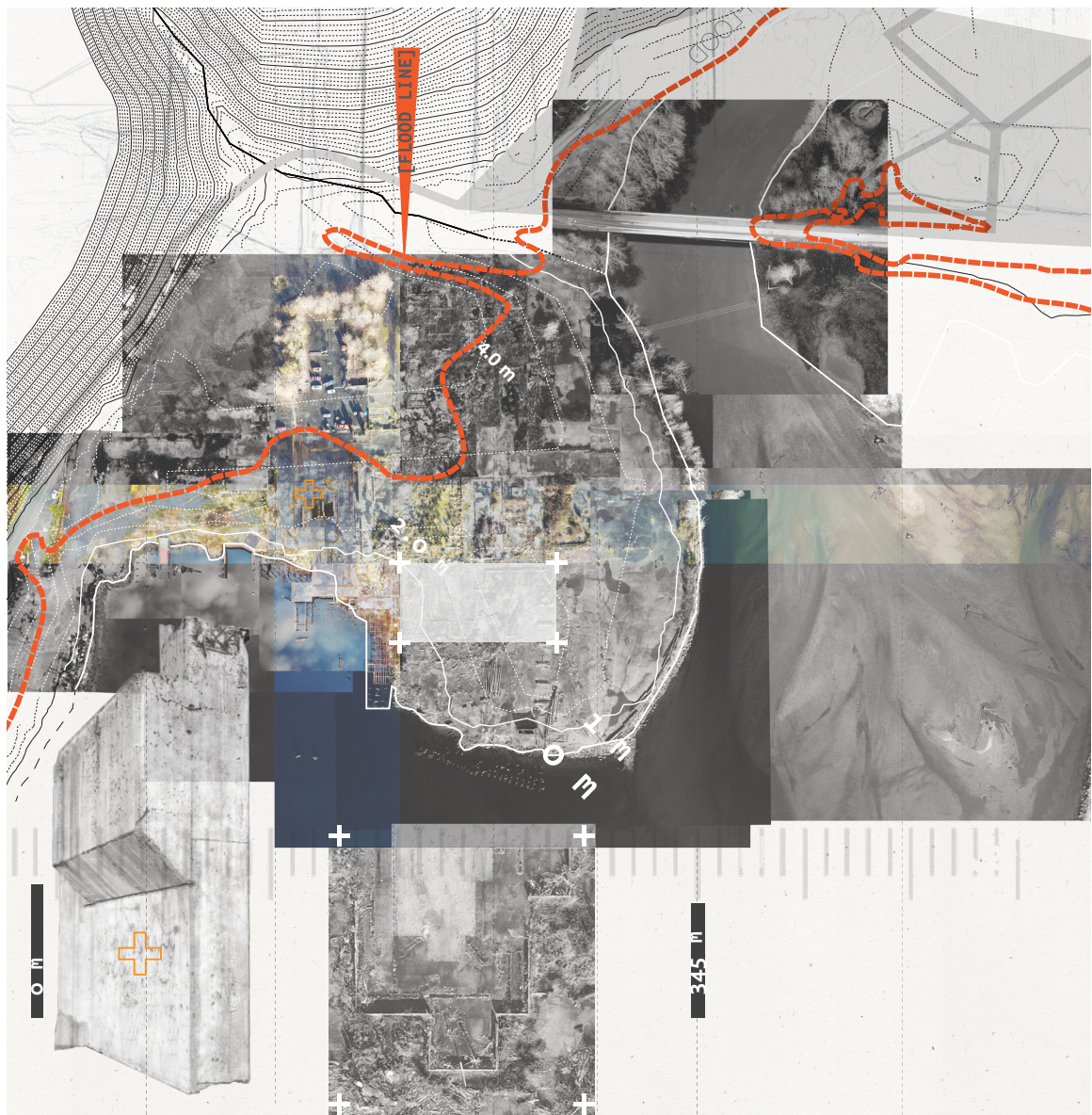
Tahsis' ruin holds some cultural significance. Traces left behind mark physical emblems, which reflect the presence of the people and events that have shared the same place. The importance of traces may not be considered functional in a practical sense, but have heritage value for those who can commemorate the slivers of the former artifacts and their phenomena.



Former mill fragments left in ruin.

In Tahsis, the former mill's plot has sat empty since its closure over 20 years ago. The mill's plinth currently acts as a post-industrial wasteland. However, traces of the mill, seen both on the ground level and from above, reveal distinguishable floor plans from the remaining foundation walls and structural pillars.

As this proposal unfolds these synthetic concrete markers do not hold significance in terms of an elegant ruin, but they do hold some cultural significance to the people who might remember building and working at the mill for decades. Additionally, the traces of concrete still hold some structural integrity, and will provide some design resistance in the organization of the architecture and accompanied landscaping, but will be described more accurately in the following design chapter.



Former Tahsis sawmill site collage: exhibiting, the sites scale height, high water line, traces of ruin and the sites infrastructural, water, and alpine contexts.

Improvising Ad Hoc

Although improvisation takes on countless schemes depending on the type of activities being performed, the terminology is an established method for design and innovation. Ad hoc is a derivative of improvisation, and constitutes a desire for immediate and necessary action, addressing present challenges with existing means.

In *Adocism*, Charles Jencks and Nathan Silver challenge the tight and systematic models of modernism towards concepts of ad hoc, which employs a limited set of tools to execute real world solutions with a looser approach analogous to bricolage. Jencks equates the bricoleur and the adhocist as indistinguishable entities, where both undertake “his job immediately, with whatever resources are available” (Jencks and Silver 2013,16).

Part of mobilizing ad hoc sensibilities is organizing a self-determining system that encourages an exchange of past, present, and future actions representative of all stakeholders involved. Using an additive approach of ad hoc aims to explore the needs of the immediate environment, while also preserving generational developments, rather than strictly suppress them anew with innovation.

Sticking to existing resources as long as possible is a method of resistance which tests unproven concepts, but also invites innovation. Jencks debates how “the new” comes into being, and concludes its not exclusively the unprecedented that characterizes something new, its also the rearrangement of existing elements, developed into new patterns which breathe innovation (Jencks and Silver 2013,18).



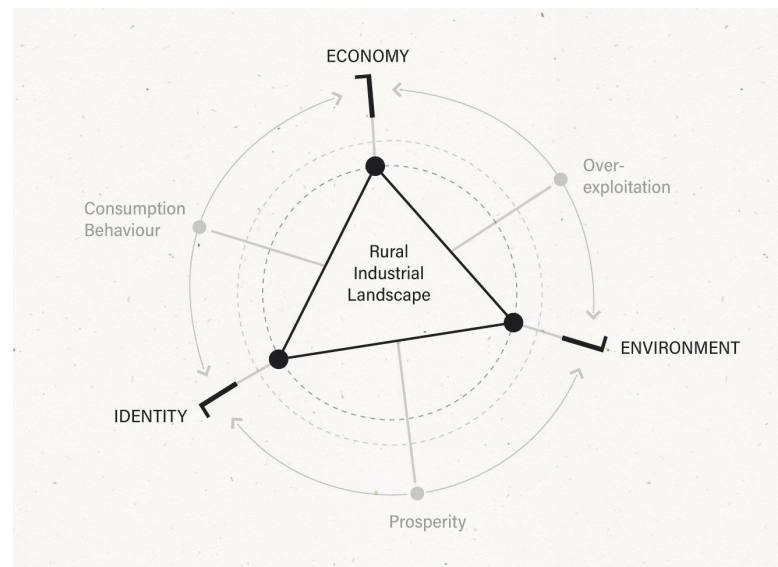
The usability of these inventories are judged for their potentialities as possible building elements. Through an iterative approach of assembly and reassembly elements are tested.

Ad hoc, though allusive by contrast to a precedented or replicable system, can be applied as a quantitative tool for this thesis, measuring the success of the architecture based upon its adaptability, rather than straining to unique situations of a typical hierarchical process. As the architecture unfolds in the following chapter, the proposal responds to both its current and developing challenges by employing an ad hoc approach to anticipate, mature, and restructure as new problems arise. Restricting the transformations to the sites immediacies, the proposal aims to resonate with the limitations of the rural and liminal vernaculars.

Chapter 5: Design Sequence

The architectural methodology of the design proposal unfolds in sequential stages developed in the previous chapter: siting, sourcing, and improvising. Through a series of three phases, the initial interventions manifest the subsequent phases in anticipation of both additive or subtractive developments of the locale.

Each phase exhibits the goals of the thesis to a varying degree, which is largely determined by both the towns immediate and anticipated needs. In this way, a phased approach aims to remain respectful of the economic, demographic, and environmental realities of Tahsis, but also provide a model that is adaptive beyond this regions liminal position. By developing a flexible architecture that appropriately responds to the conditions Tahsis' post-industrial transformation positions itself as a replicable antecedent that can be built upon beyond the bounds of this proposal.



Design goals include: developing economic diversity, increase representation of locals and areas of historical significance, and build environmental stewardship.

Phase I: Extracting Waste

Phase one acknowledges the limited resources and assets Tahsis has at its disposal. The proposal for phase one has four major interventions; first to consolidate available waste streams together onto the site, where potentialities can be explored and assemblies can be tested. Second, build networks of mobility to the site and waters edge. Third, to append the former abandoned industrial mill site with the introduction of a small scale milling production facility. Finally to celebrate the sites coastal resettlement with outdoor park and gathering spaces oriented towards the scenic Fjords.

The Small Mill

The mill, unlike its predecessors, is constructed of waste material recovered from former industry and assumes a trajectory towards secondary modes of production throughout its lifespan. The informal assembly of the wastages although haphazard, still follow a grid system of which the volumes



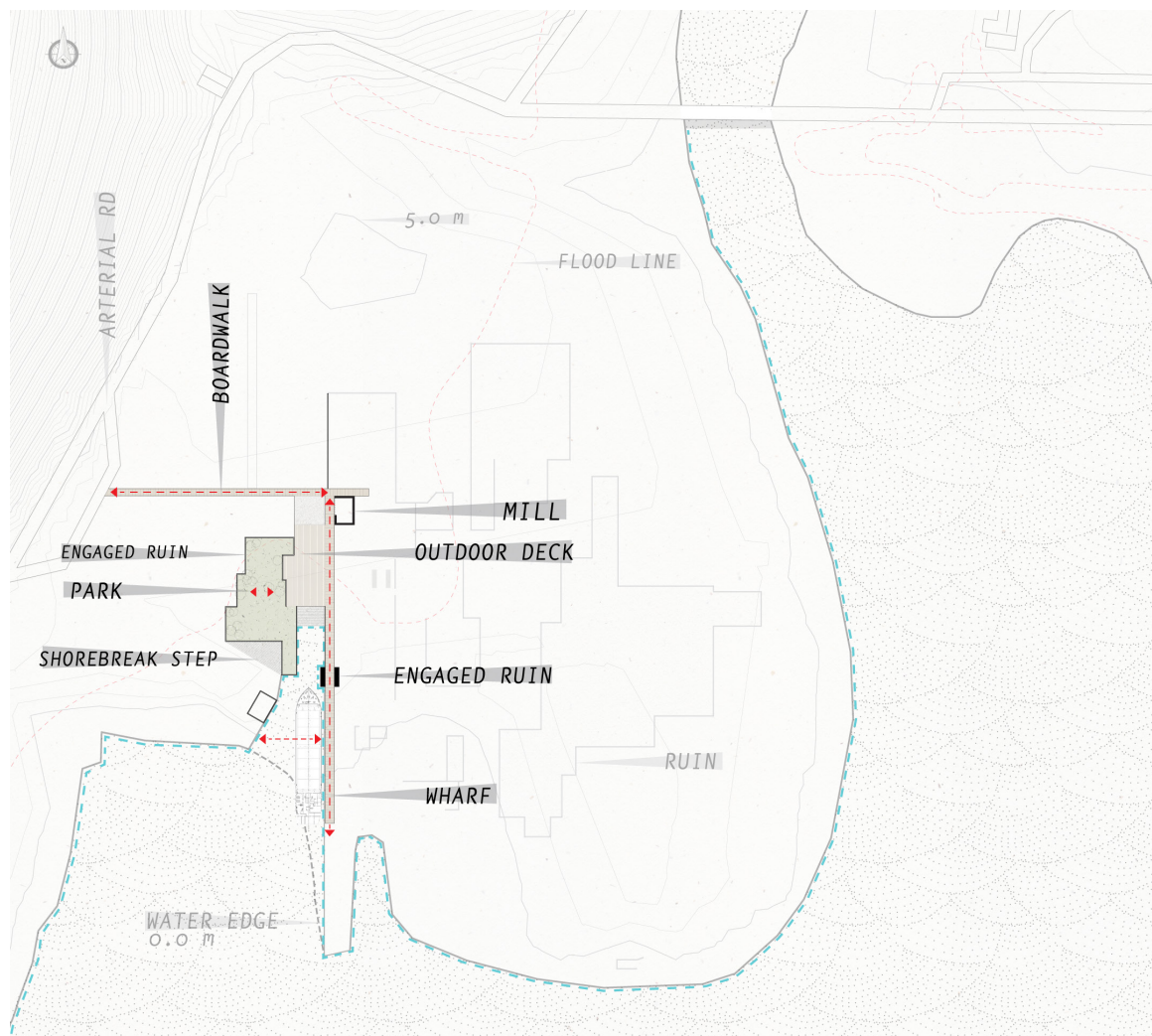
Phase I: the siting of the small mill makes use of the locale, accepting its limitations, but finding secondary use of what is left in a post-industrial landscapes and town. Deploying measures of production-based architecture and landscape architecture.

anticipate future additions for the alternative production schemes and expanded programmatic fields.

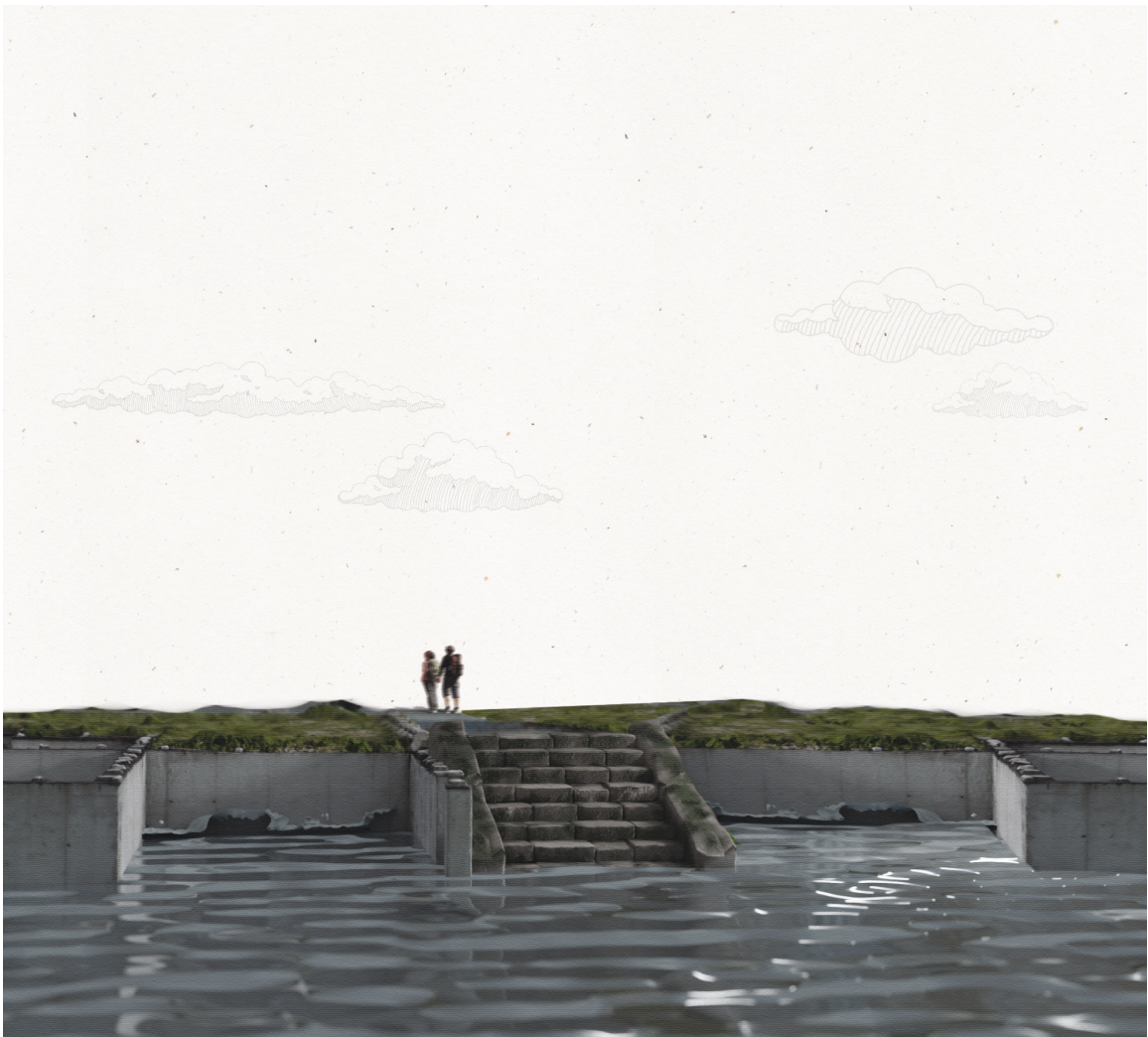
Siting: Engaged Ruin & Landscape Procedures

The existing site boasts one million square feet, barren for the most part, except for the traces of the former mill left in ruin. The ruin provides modes of resistance, used as guiding principles to transform both the architecture and the site's landscaping.

The supporting infrastructure, which encircles the Mill during phase one, performs more community driven experiences, reconnecting the community to the Tahsis inlet with



Phase I: engaged ruin and landscape procedures



Ruin of the former sawmill's foundations and structural elements left in-situ. Currently used as an informal zone for the community wishing to escape the Tahsis' suburbs and where many find solitude and introspection walking their dog or enjoying the expansive views.

boardwalks, park space, and gathering decks. Spanish steps act as both wave breaks and access to leisure activities for locals and tourists alike. The elongated pier acts dually as a docking system and a threshold of arrival to those reaching Tahsis by water.

Integrating the ruin into the pier design recalls historical signals of representation to those who remember and cherish the former mill days or symbolize the critical demise of industry.

The threshold between the ruin acts as a way framing the scenic fjords and to support the boardwalk wharf itself. Similarly, but perhaps less palpable to the concrete pillars is the ground work ruin. Foundation fragments, left behind by former mill buildings act as the beginnings of elevated parks and shore breaks. In this sense, the integration of the former mill's ruin is an acknowledgment of industry, but also a retirement towards new futures.

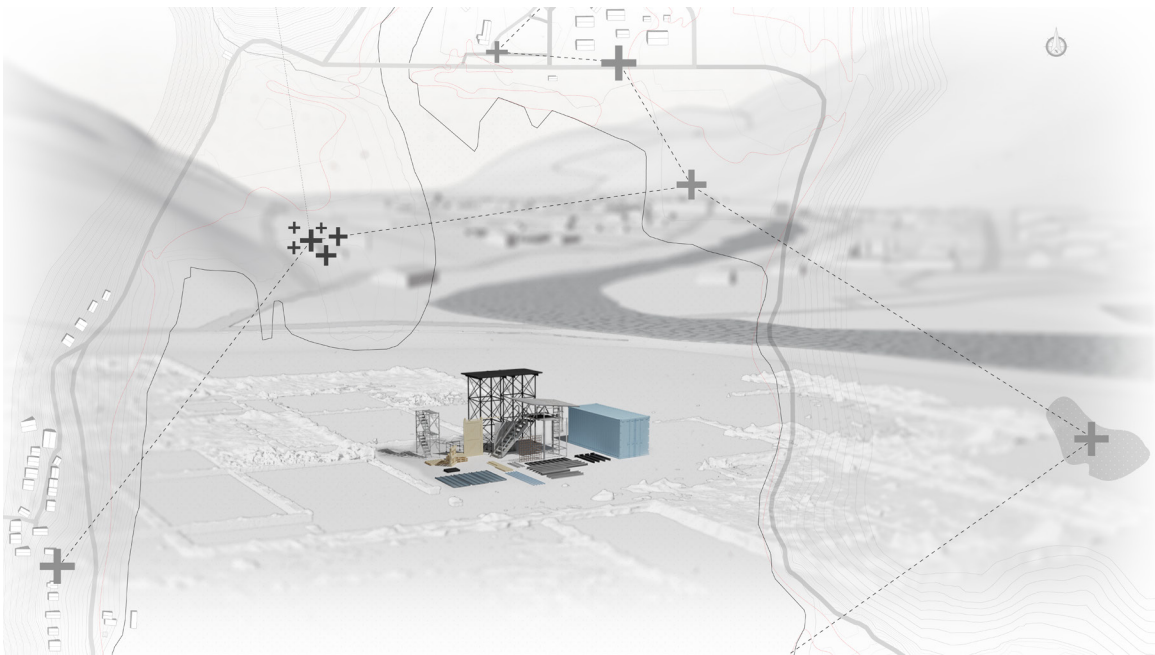
The site's asphalt plinth is purposefully fissured below and along the boardwalk to allow water to reach its more natural limits and restore to its natural conditions. The cut also provides water access to those arriving or departing by boat.



Boardwalk and wharf are fastened to structural efficient ruin pillars and enclosed by temporary wood frame, used to elevate and direct an experience towards the fjord.



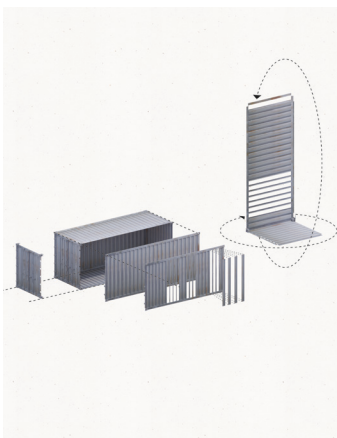
Foundation walls remaining from the former mill are built up as elevated parks spaces, softening the post-industrial site towards more natural coastlines. Spanish steps act both as shore breaks and renewed access to the waters edge.



Post-industrial building waste, sourced from the former mill sites and salvage yards are consolidated on site to be measured, pulled apart, and reassembled as productive architecture.

Sourcing: Consolidation of Waste

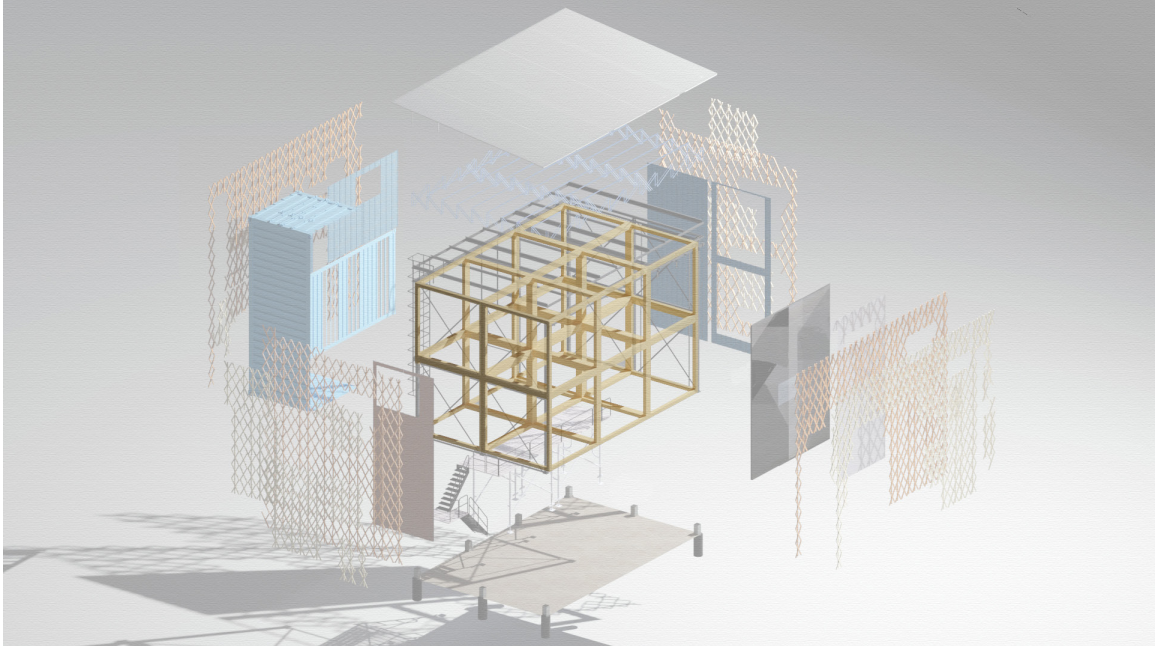
Understanding the limited budget the town holds, the various waste streams are categorized and produce my limited inventory for phase one. Consolidation of the resources currently available to the project include: industrial structural steel left over from the deconstruction of the former mill, elements taken from abandoned loggers camp and local buildings, and wood gathered from slash piles in the nearby cutblocks. Together, the limited palette provides the framework for the architecture to work within. Through an iterative approach of extracting usable structural elements and reorganizing them anew, the prolonged life span of these wastages is explored.



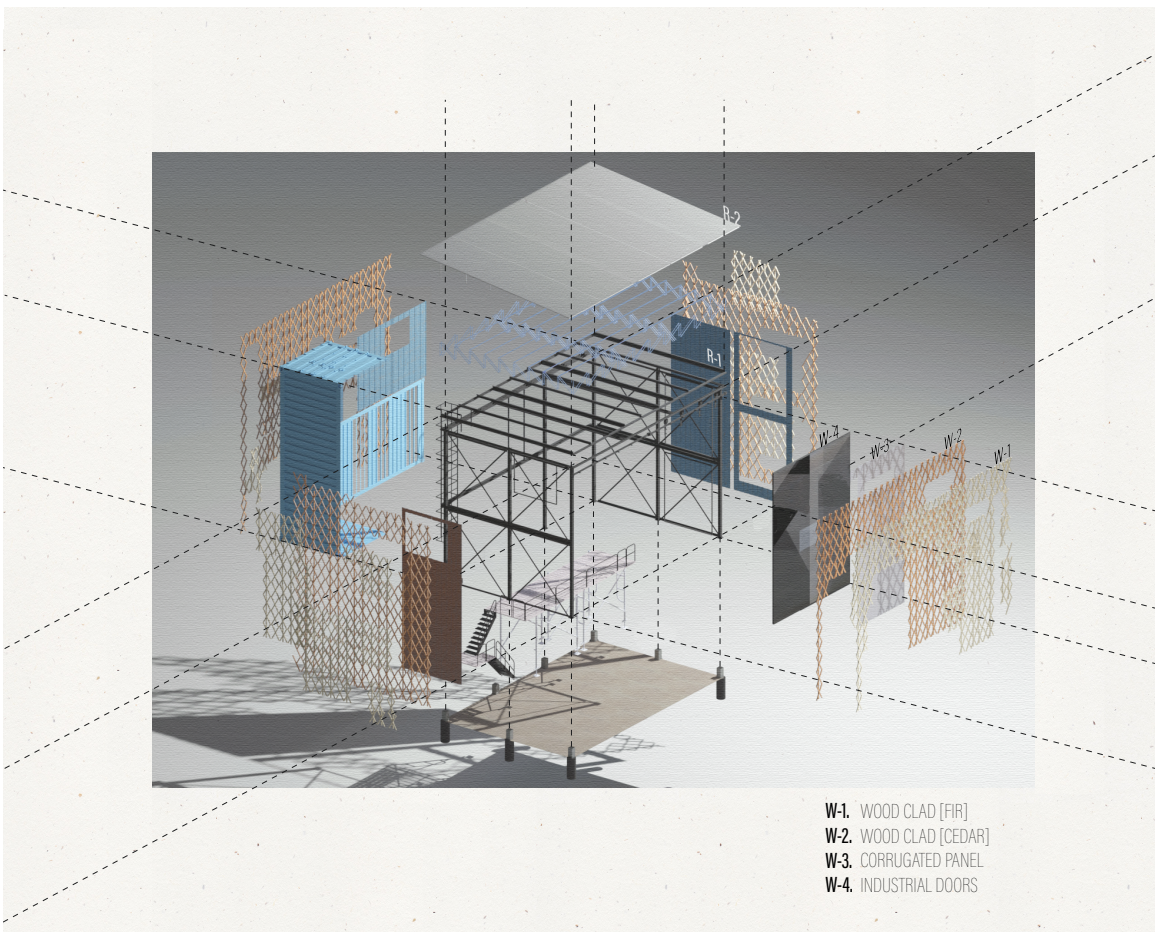
A sea-can is pulled apart, rotated, and reassembled as new building elements expressing a variety of structural potentialities.

Assembly

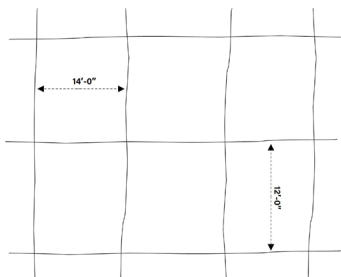
Although strict in its dimensions, modular construction provides a level of repeatability, which enables flexibility to assemble and disassemble depending on the needs of



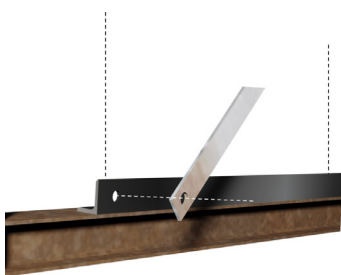
Anticipated module additions employed in subsequent phases is used to organize disparate elements together into an efficient and pragmatic assembly.



Exploded isometric of sourced materials assembled together to form the small mill.



Modules measuring 14'-0" x 14'-0" x 12'-0" organize the assembly of the disparate structural members.



Shear bracing using flat aluminum bracing fastened to L-channel on W-beams.

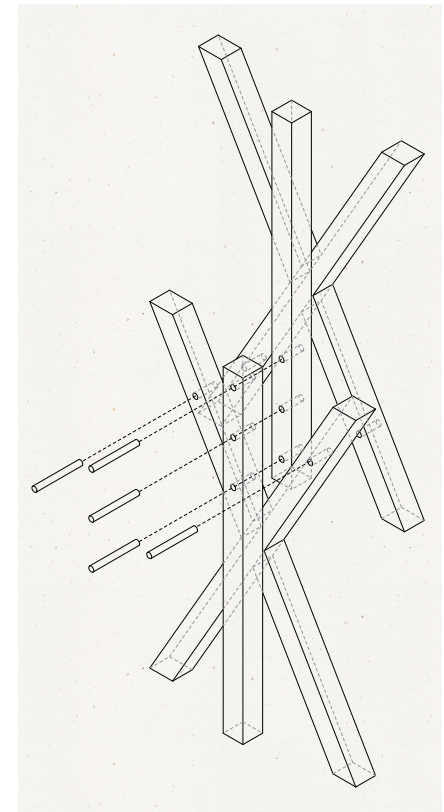


Foundation and primary structure: Inverted W-beams on top plate fastened to concrete piles driven into plinth

the users. Therefore, the construction of the mill follows a strict grid system, twelve invisible 14'-0" x 14'-0" x 12'-0" volumes guides the informal assembly of the various waste elements, giving a set of resistances to work towards structurally pragmatic spaces. The volume's dimensions anticipate the mill activities taking place in phase one and beyond. The double height mill allow production of various scales to take place and afford a breathable space to work. The grid anticipates future expansion of sequential phases of the proposal, but also allowing the mill to integrate with subsequent 14'-0" x 14'-0" x 12'-0" modular construction methods.

The small mill sits on a series of concrete piles anchored into the existing concrete plinth. Steel webbed beams act both as columns and beams as the mill's primary structure. L-shaped channel acts as shear bracing on the north and south elevations, while 1/4" corrugated steel sourced from sea-cans provide strength in shear along the east and west elevations. Channel and cable ties are assembled as a diaphragm truss system and support the corrugated metal roof system. The mill is enclosed using various cladding materials sourced from a number of abandoned buildings in town, along with some assumed donations from household left overs.

Unbeknownst of its sometimes crude industrial looking assembly, a more refined secondary facade attempts to soften the mill facility with a wooden lattice panel system, which is developed using the small scale log planar and machining equipment from the abandoned loggers camp. Engaging small member waste wood into a secondary façade aims to represent the potentialities of this waste material. The wood façade system can grow or shrink. As



Engaging with the wood waste material aims to educate through participatory activities and encourage a reflection on the waste being left in the woods. The manageable 2"x2" member assembly, machined and fastened with a simple peg joint fastens the members together and can then be nailed onto frame and hung from the primary structure. The scalability of the facade system allows participants of any age to engage with the material and begin to take ownership of the architecture.

more wood is salvaged, the cladding thickens, iteratively encasing the mill, and in this way, visibly measuring the ongoing wastefulness in the surrounding cut blocks.

At a distance, the lattice acts as a sort of autostereogram, concealing the inner structure, though at a closer distance the expanded facade allows the passerby to experience both inner and outer facilities.

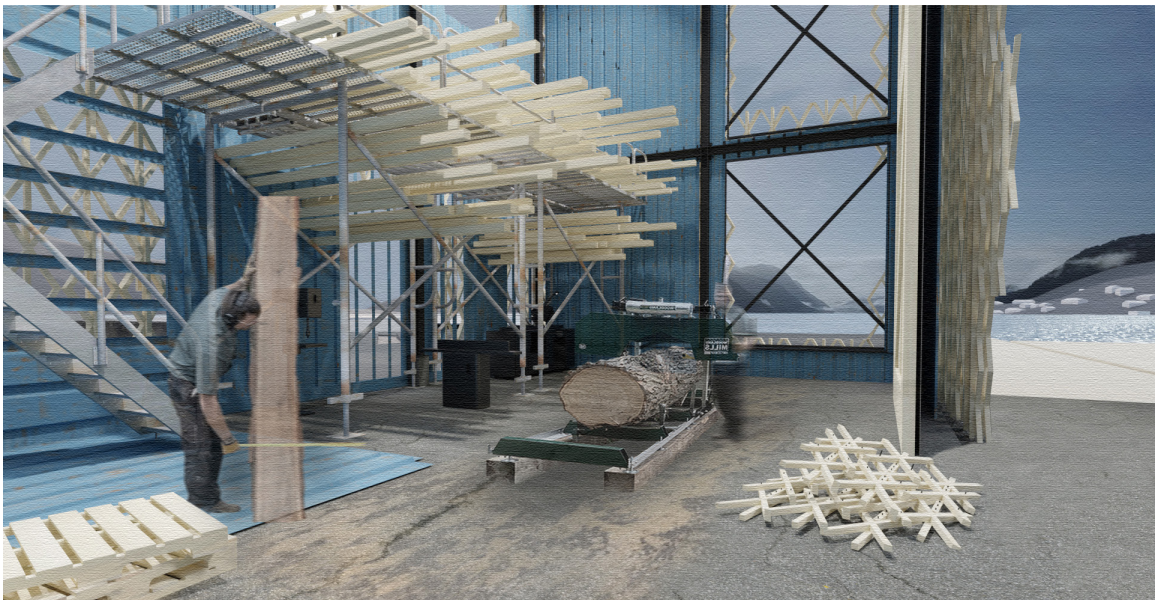
Organization

The mill itself is organized into three primary areas, the small scale mill and machining area, the assembly area, and the staging area. During this first phase, the proof of concept is initiated, taking raw slash from nearby cutblocks, planing and machining it into small member dimensioned wood.

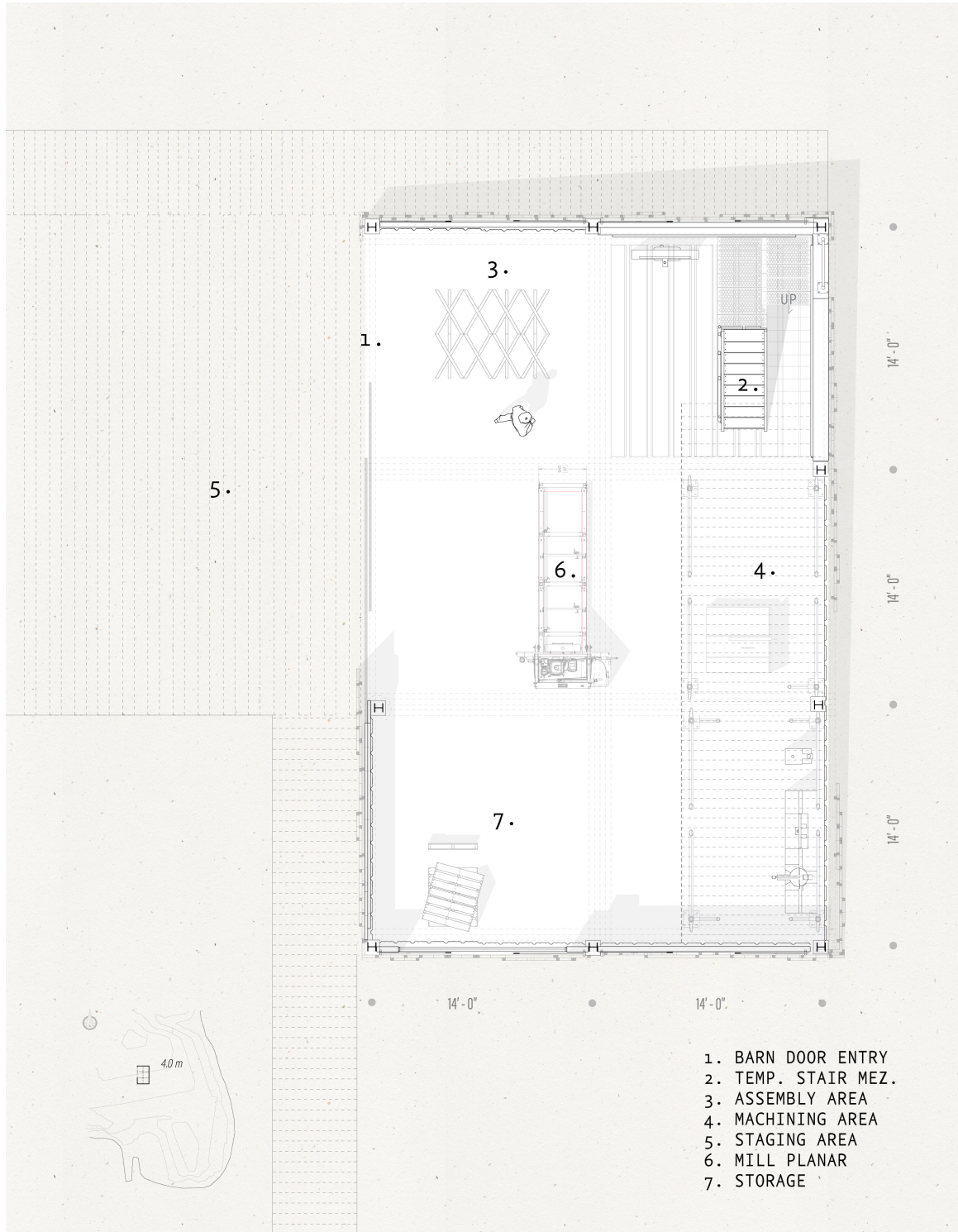
This is not the mill's only mode of production, in phase two the mill's intentions exceed small scale material and intend to involve more economically progressive productions including glue laminated assembly of small scale wood waste.



Slash extracted from cutblocks via skid is pulled out front the mill.



Temporary scaffolding holds lumber produced by the mill and creates an exciting atmosphere that displays the wood waste potentialities in an efficient manner.



Ground floor plan of the small mill.



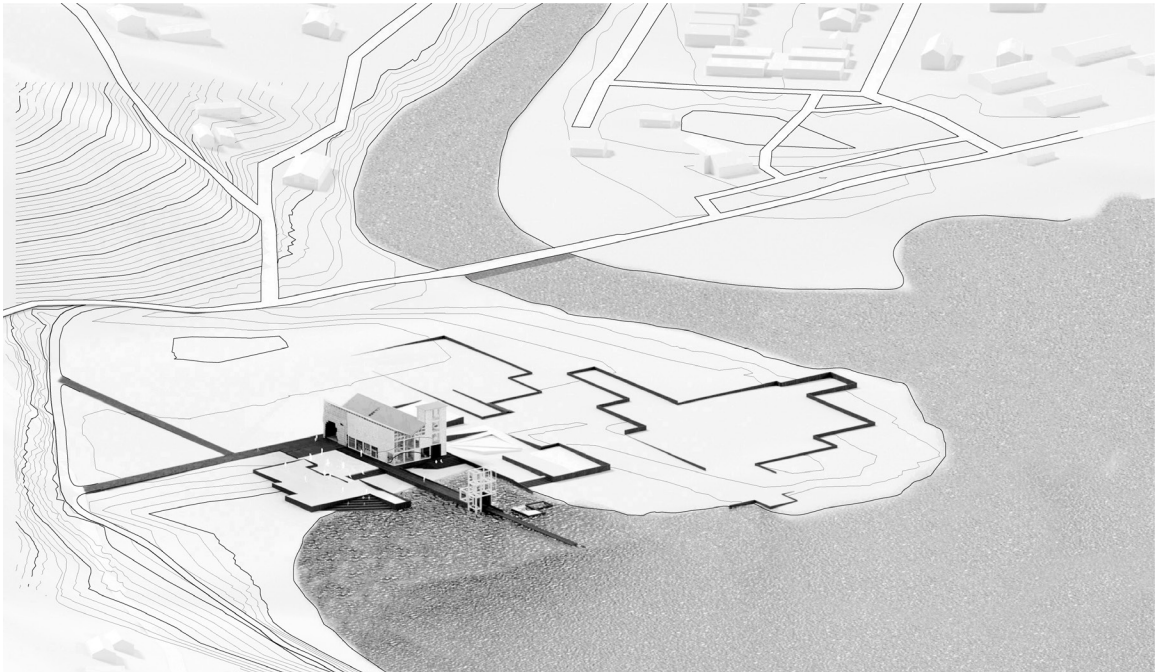
Perspective view of the small mill and ghosted modular construction anticipated in phase II.

Phase II: Producing Exchange

Exchange is predicated on reciprocity, however competing cycles, events, or disruptions change circumstances and alter the dynamic of these exchange systems. In these instances, the 'taking' entity can extend for long periods of time before being balanced out. Tahsis represents a place with recurring exchange deficiencies, often gravitating towards extraction. Phase two develops an architectural system that places an emphasis on a more flexible typology aimed to encourage diversified economies, hospitalities, and climate responses and geared towards more equitable exchange values.

The Trading Post

Tahsis resides in the liminal, within the threshold of both anticipated and unprecedented change. The trading post represents more than a place to exchange goods or services. The architectural language resonates with the exchange



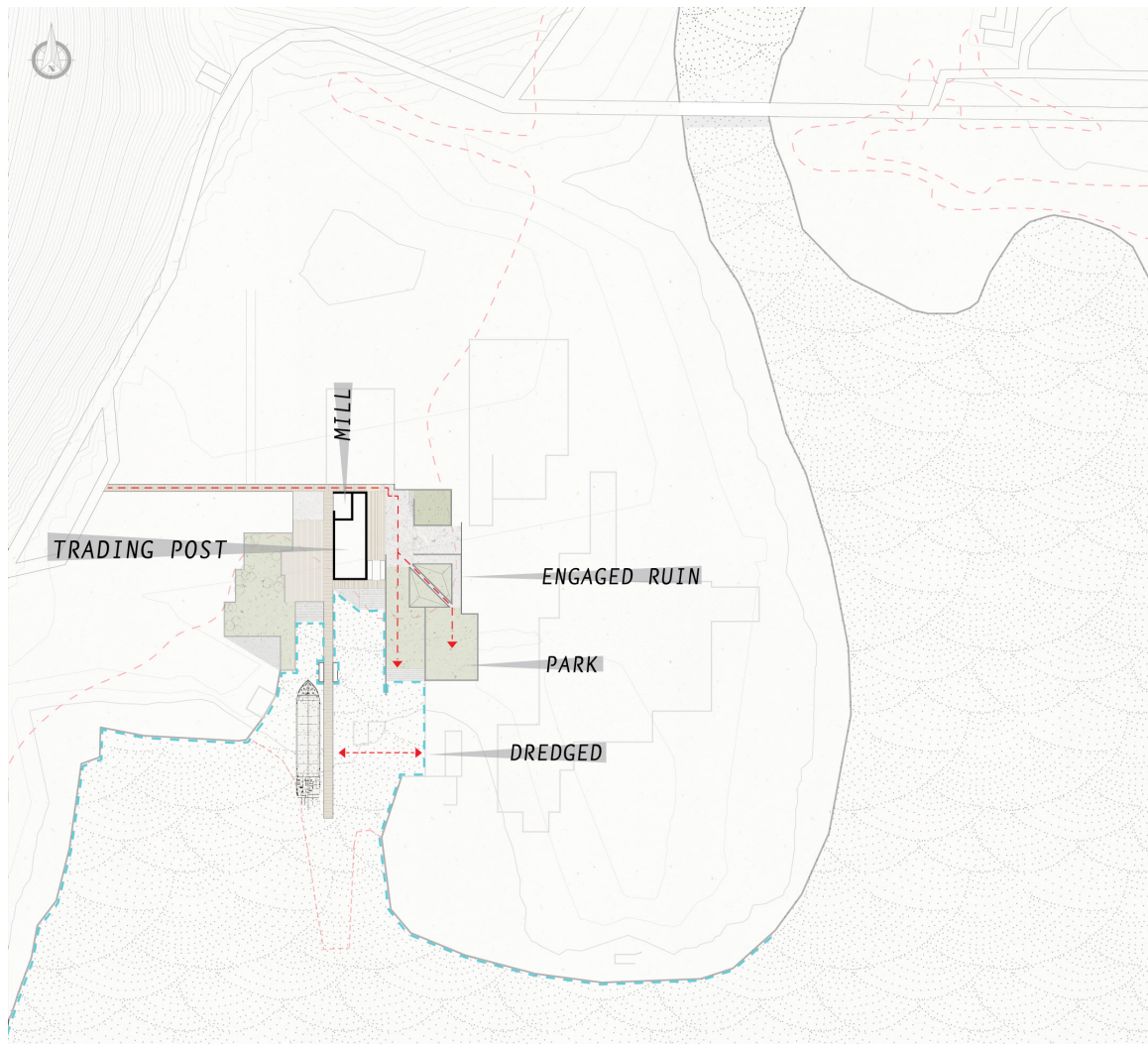
Phase II: the siting of the trading post aimed to exchange goods, services and generational knowledge between both local and regional populations.

system through ways of flexible spaces, which can cater to the changing circumstances of the town's needs.

Siting: Engaged Ruin and Landscape Procedures

The siting of the trading post follows the language of phase one, orientated towards the view along the north-south spine of the ruin and boardwalk.

Additional elevated parks are added to the east side of the site, softening the artificial landscape towards more natural states. Again, the plinth is cut, this time on the east side of the boardwalk inviting water to recede back towards its natural edge condition.

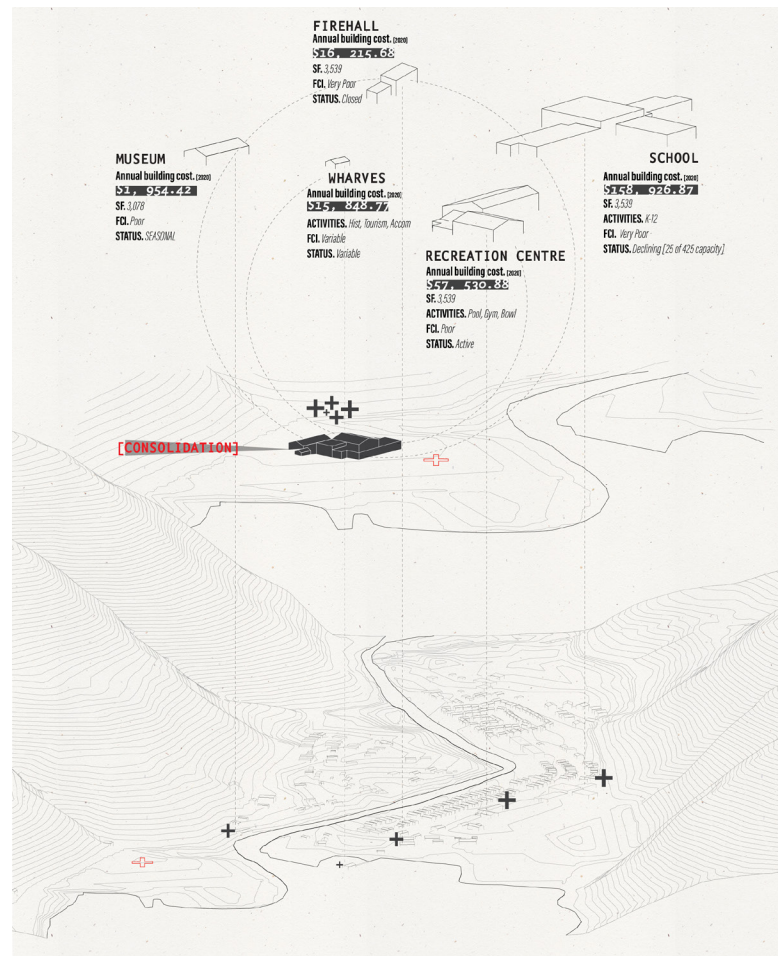


Phase II: engaged ruin and landscape procedures

Sourcing: Local Consolidation

The town of Tahsis is facing a structural deficit, buildings are becoming abandoned, condemned, and weathered. As analyzed in previous chapters, the current ground conditions are becoming increasingly disruptive and costly to Tahsis' building stock. With so much of the town's valued assets within these dangerous zones, an iterative migration of these amenities is proposed and re-programmed within the trading post.

Buildings including: the recreation centre, fire hall, and loggers camp all face different challenges, but are all at risk

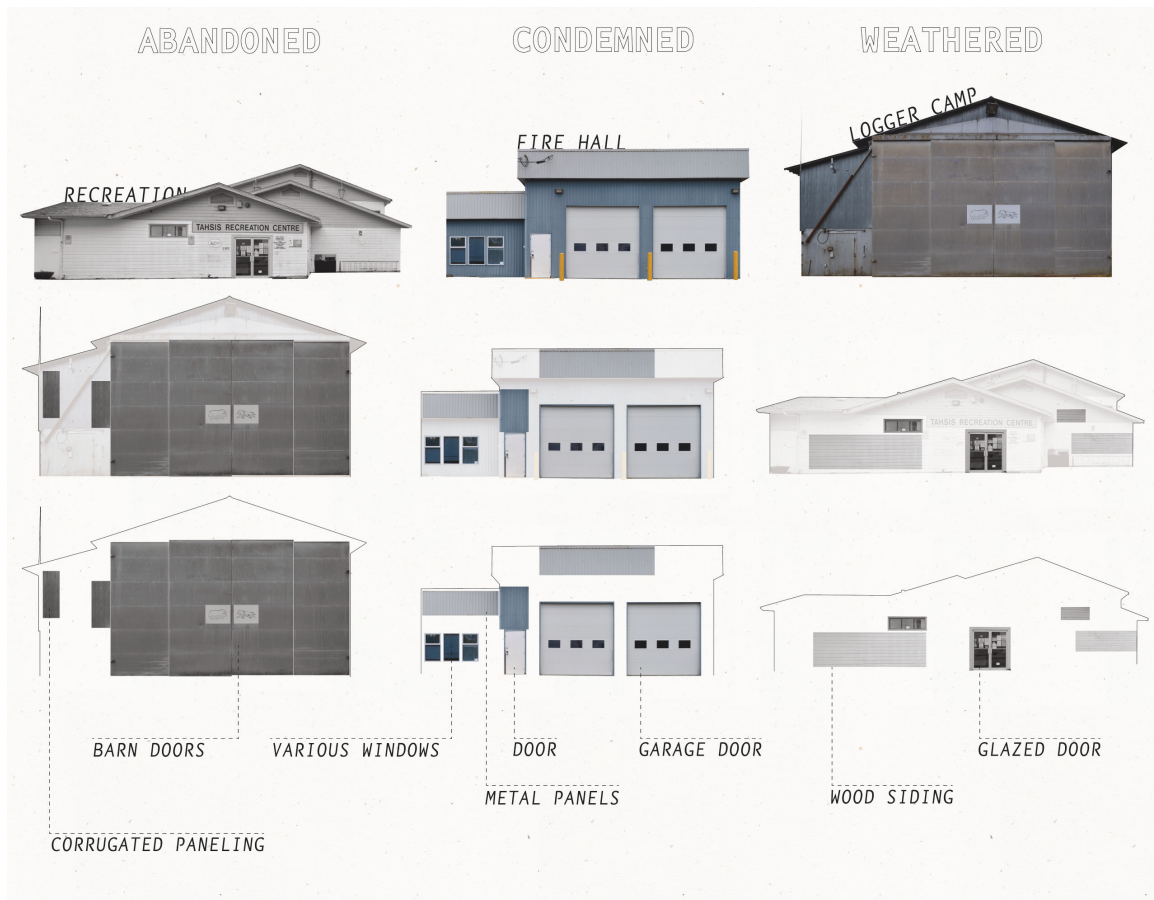


Structural deficit diagram depicting the civic buildings of Tahsis currently in danger of closing in the near future. The proposal aims to consolidate these programs into more manageable and affordable assemblies.

of becoming obsolete. Therefore, phase two repurposes the useful elements of the buildings within, or anticipated to become within this spectrum, and employs them anew. The re-implementation of these building components extends the lifespan of these buildings, but also redirect the activities enjoyed within them in a more manageable and affordable manner.

Sourcing: Regional Consolidation

The MV Uchuck III is a voyage and freight ship capable of moving several tonnes. The Uchuck currently stops at multiple docks along the Nootka Sound, delivering supplies, goods, and tourists to these rural regions and communities. The ship's route allows the region to develop an exchange system that supports the mechanisms of the trading post.



Some of Tahsis' civic buildings at risk of becoming abandonment, condemned, or weathered.

The dock, crane, and trolley on the south end of the trading post facilitate the loading and unloading of regional waste from the Uchuck. In this scheme waste brought to the trading post site can be installed or stored, thus extending its life as a building material. Additionally, artifacts repurposed within the construction of the trading post can become signifiers to celebrate their iconographic significance and trigger conversations of their histories.



MV Uchuck III cruise ship route and stops through the fjords of the Nootka Sound. (Base map produced using ArcGIS and GetWest Adventure Cruises 2018)



Perspective view of the Uchuck III porting in Tahsis with supplies for the trading post.

Improvising: Exploring Waste Envelopes

As residential and civic buildings continue to deteriorate in the old town, waste supplies become more abundant. Employing these wastages as cladding within the trading post circulates the life expectancy of some of the more useful building elements that would otherwise be lost. These elements although tired in terms of weathering, often still have an opportunity to live beyond the predeceased building.

Appropriated building facades carries regional history and stories in their own right. For the aging population of Tahsis,



Possible recombination of various facade wastages applied as modular facades.

memories, stories, and experiences are intertwined with the buildings in which they worked, helped construct, or formed relationships in. For the locals, these familiarities, redeployed as building facades become signifiers towards conversation beyond the artifact itself, but facilitate new multi-generational connections.



The unconventional reassembly of waste material provides a degree of visual stimulus, engaging a new narrative towards secondary use of used building materials.



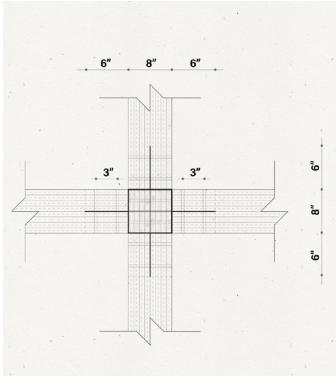
Possible aggregation of waste material assembled anew through modular construction methods and tested with new adjacencies.



West elevation of the trading post re-imagines the waste material as a renewed and engaging public realm.

Modular Systems

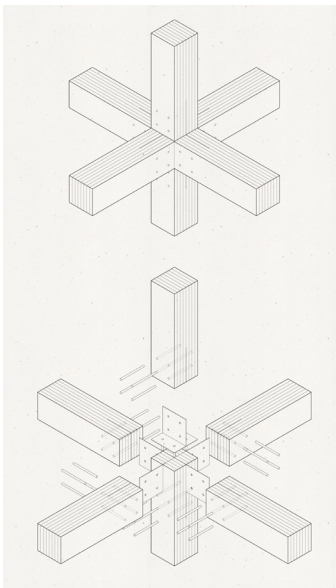
Assembly



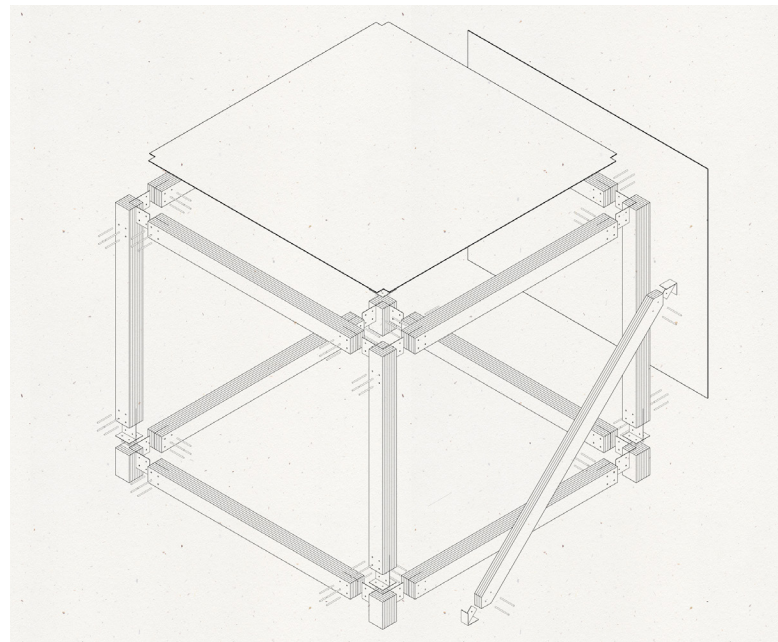
Plan view detail of the glue laminated timber connection detail.

Modular construction although strict in its dimensions, offers a malleable systematic approach to encourage flexibility towards the town's future architectural needs. The structure of the trading post is of modular design, allowing the system to increase or decrease in size by adding or removing basic modules, which all share compatible dimensions and identical joinery components.

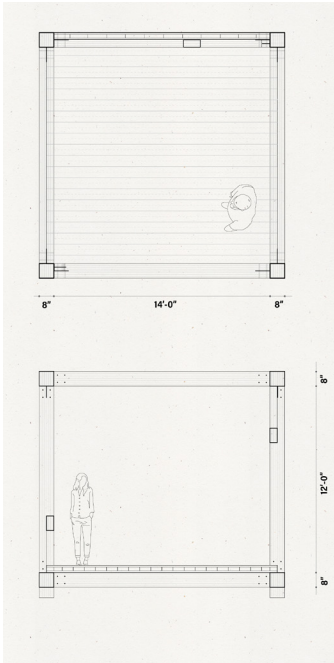
The construction method employed is a structural glue-laminated timber assembly. A number of small scale wood members, salvaged from both felled timber and slash, are milled and laminated into 8"x8" beams and columns. The joints are made with metal fittings, inserted within the laminated assembly and bolted together afterwards. A typical module, when assembled, measures 14 feet in length and width, and 12 feet in height. The structural columns and beams are 8" thick, and when combined boast



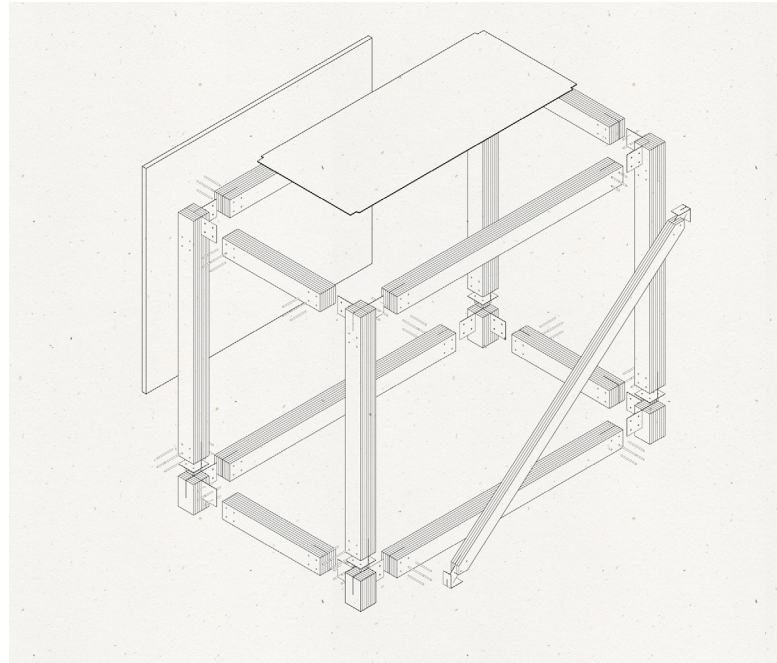
Isometric view of the glue laminated timber steel plate connection assembly.



Exploded isometric of a single module assembly.



Single module plan and section.

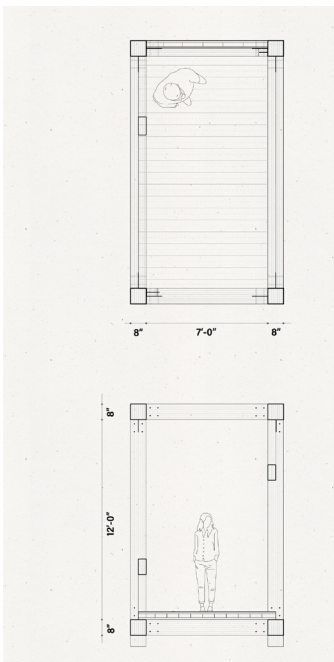


Exploded isometric of a half module assembly.

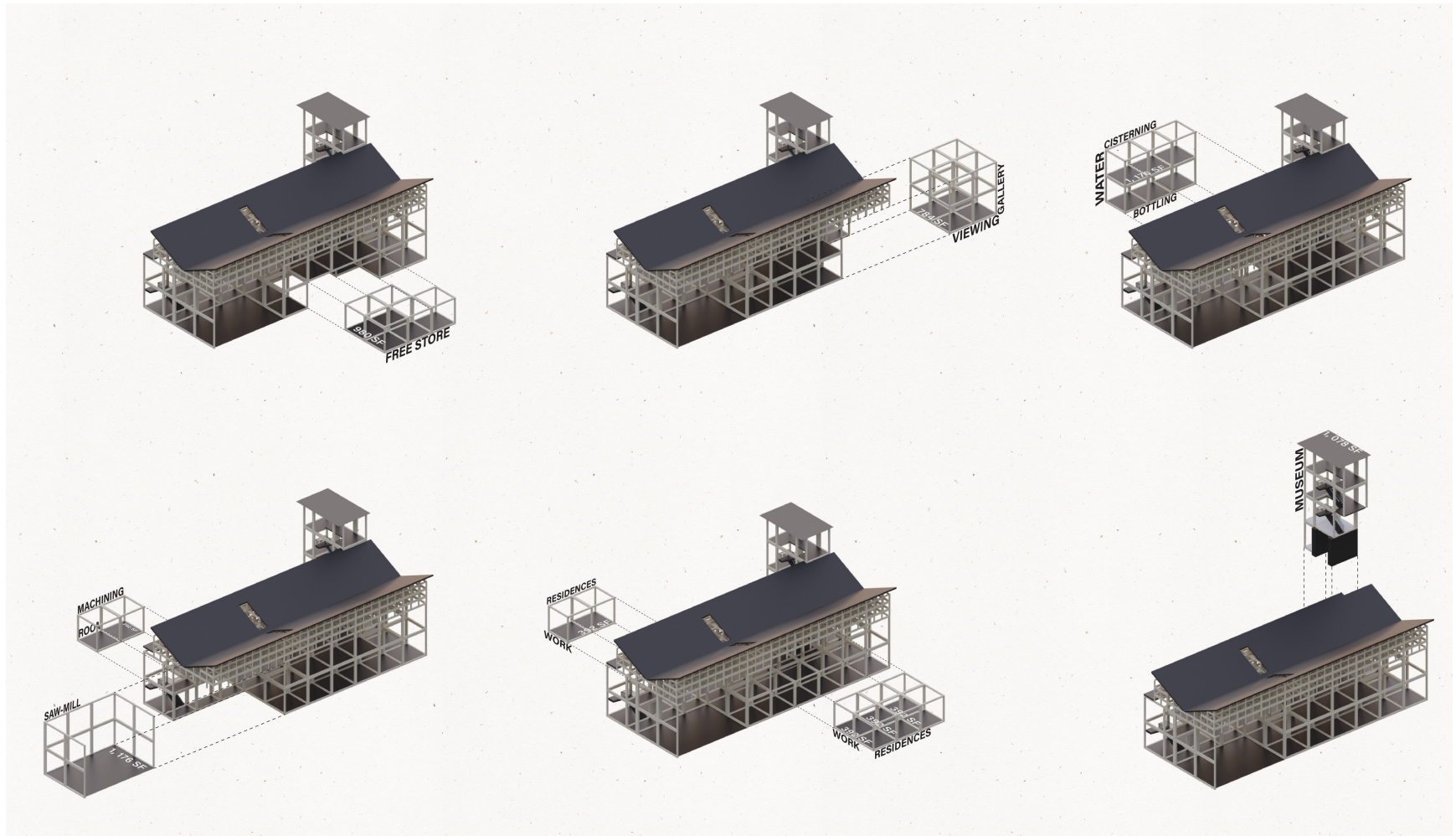
enough depth to become insulated wall assemblies. Inserted plate connections allows the assembly and disassembly of the members with a logical interchangeability, which is sympathetic to ongoing maintenance sensibilities prudent to Tahsis.

Organization: Trading Post

Phase two proposes an aggregation of modules hosting a series of shared spaces, which form the 'trading post'. The programming of the trading post anticipates the closure of several of the towns buildings currently at risk of expiring and relocates them to the proposed site. The programs are not definite, adjusting based upon economic shifts and seasonal changes. In this proposals schema, the major programs include the expansion of the production mill, the relocation of the 'free store' and museum, the introduction of interstitial gathering spaces, living quarters, office/retail spaces, and water retention and bottling facilities.

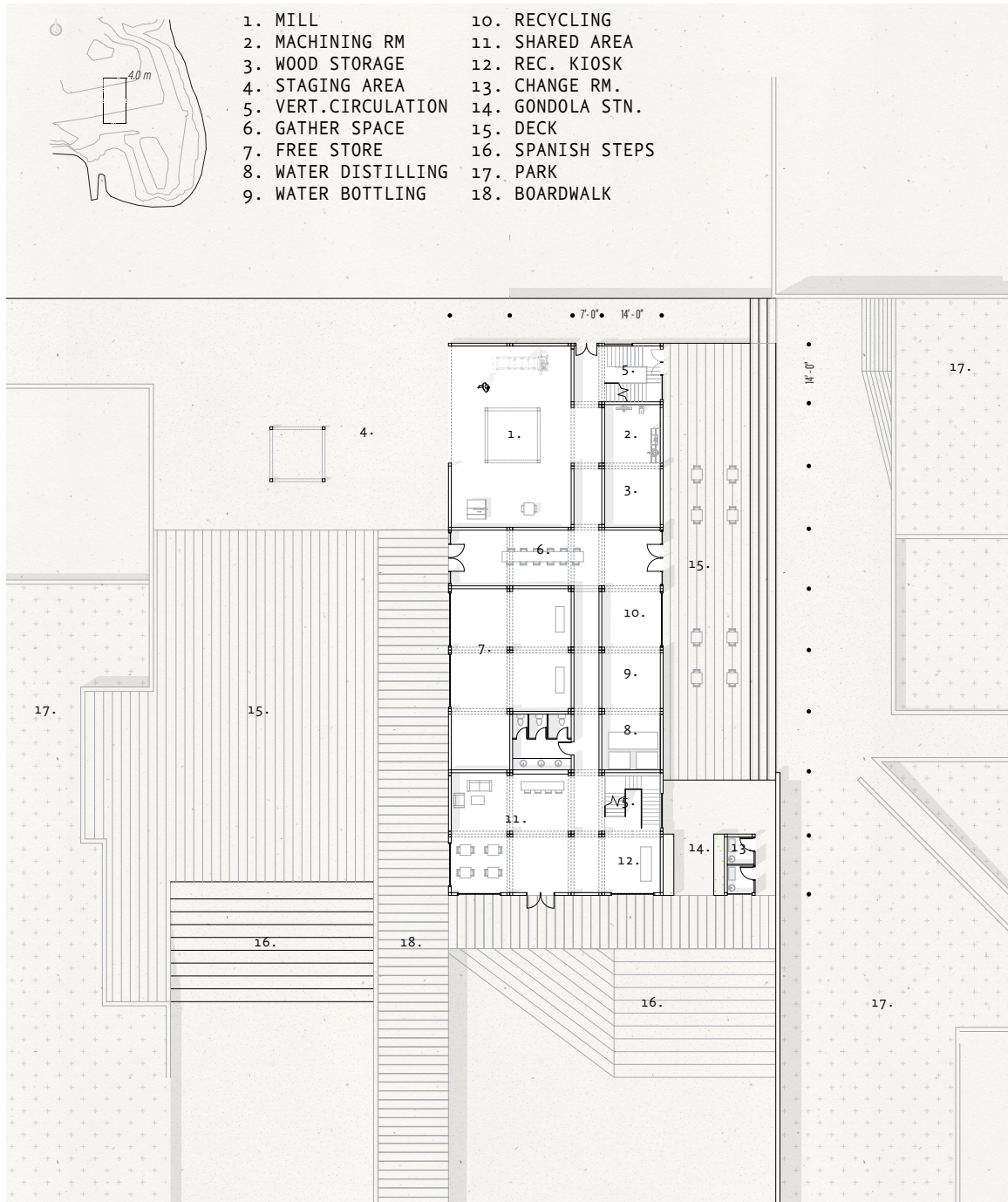


Half module plan and section.



Six primary programs are proposed within the trading post: free store, interstitial gathering and viewing gallery, water capture and bottling facility, production mill, residence work/live modules, and a vertical museum archive.

The trading post follows a cruciform plan, the main axis faces towards the fjord, while the shorter axis gives mobility between eastern and western conditions of the site throughout the day. The spaces organized along the half module spine allows circulation between the programs east-west of these interstitial modules.



Phase II: ground floor plan of the trading post.



- 1. WORK/FLEX
- 2. SHARED W/C
- 3. ARTIST BUNK
- 4. TOURISM BNB
- 5. WATER CISTERN RM
- 6. MUSUEM ARCHIVE



Phase II: second level floor plan of the trading post.

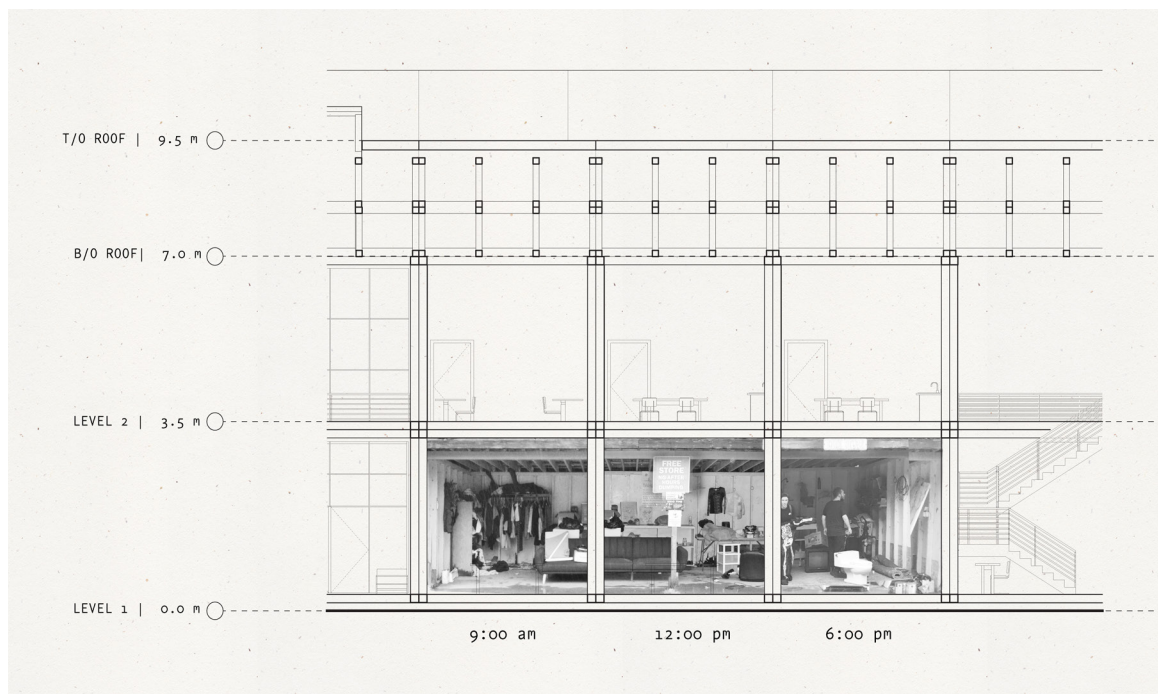
In this configuration, the second floor of the Trading Post possesses about half of the floor area, allocating the other half as double height spaces to invite natural light to reach further into the spaces throughout the seasons.

Organization: Mill

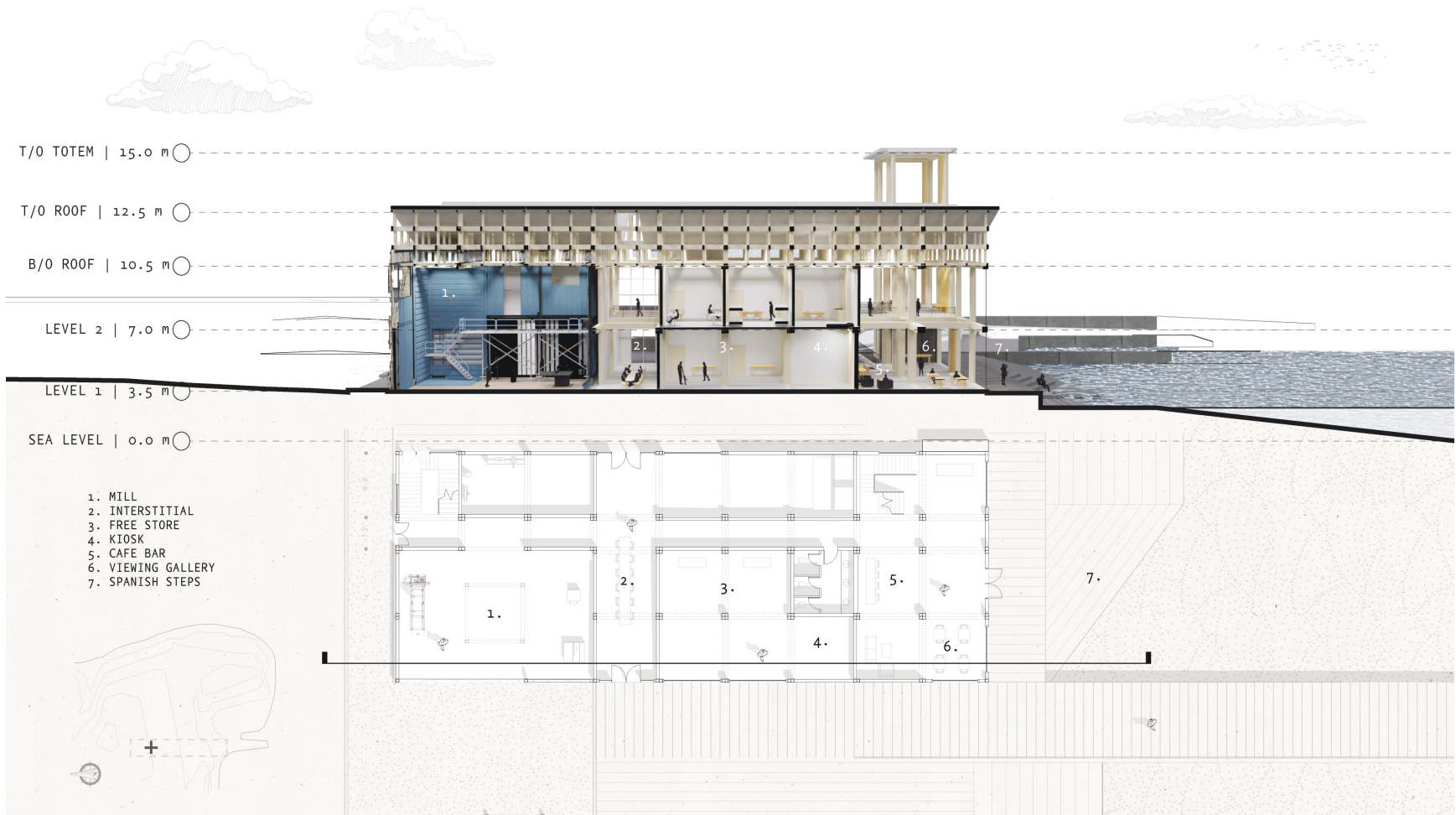
The expansion of the Small Mill opens up the floor for the second phase of production; cross laminate post and beam construction. The expansion affords enough space for the mill to become self productive and in theory manufacture the other modules of the trading post or any additional modules required to meet further expansion requirements.

Organization: Free Store

The free store aims to reposition itself for both local and tourism use. Now, centrally located along the main north-south spine of the site, people passing by can borrow, trade, and dump everyday items as a fluid exchange system.

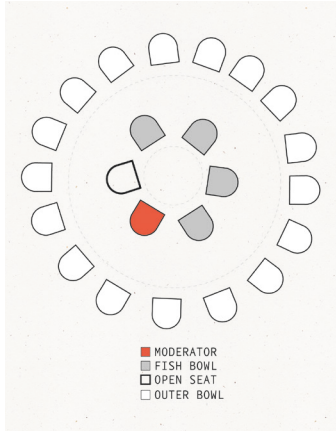


Section overlaid with Tahsis' current free store's life throughout the course of one day.



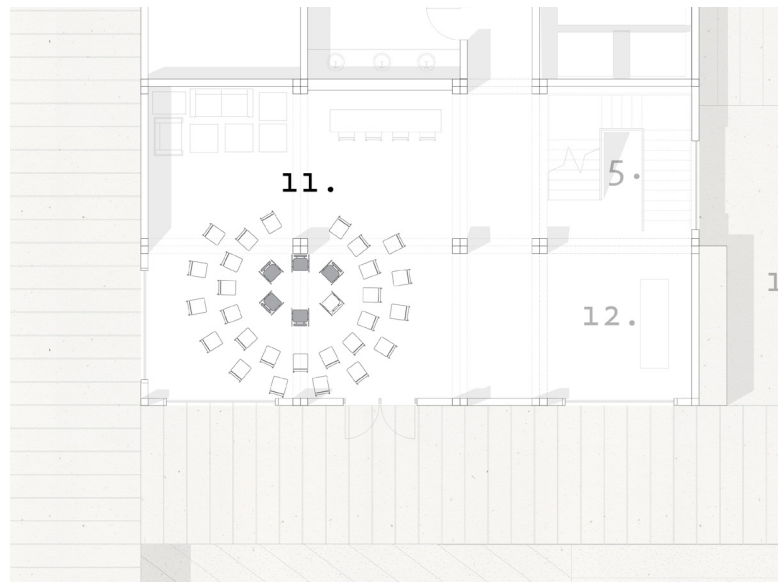
North-south section cutting through the production mill, interstitial gathering zone, free store, retail kiosk, viewing gallery and outdoor deck and steps.

Organization: Fishbowl Gallery

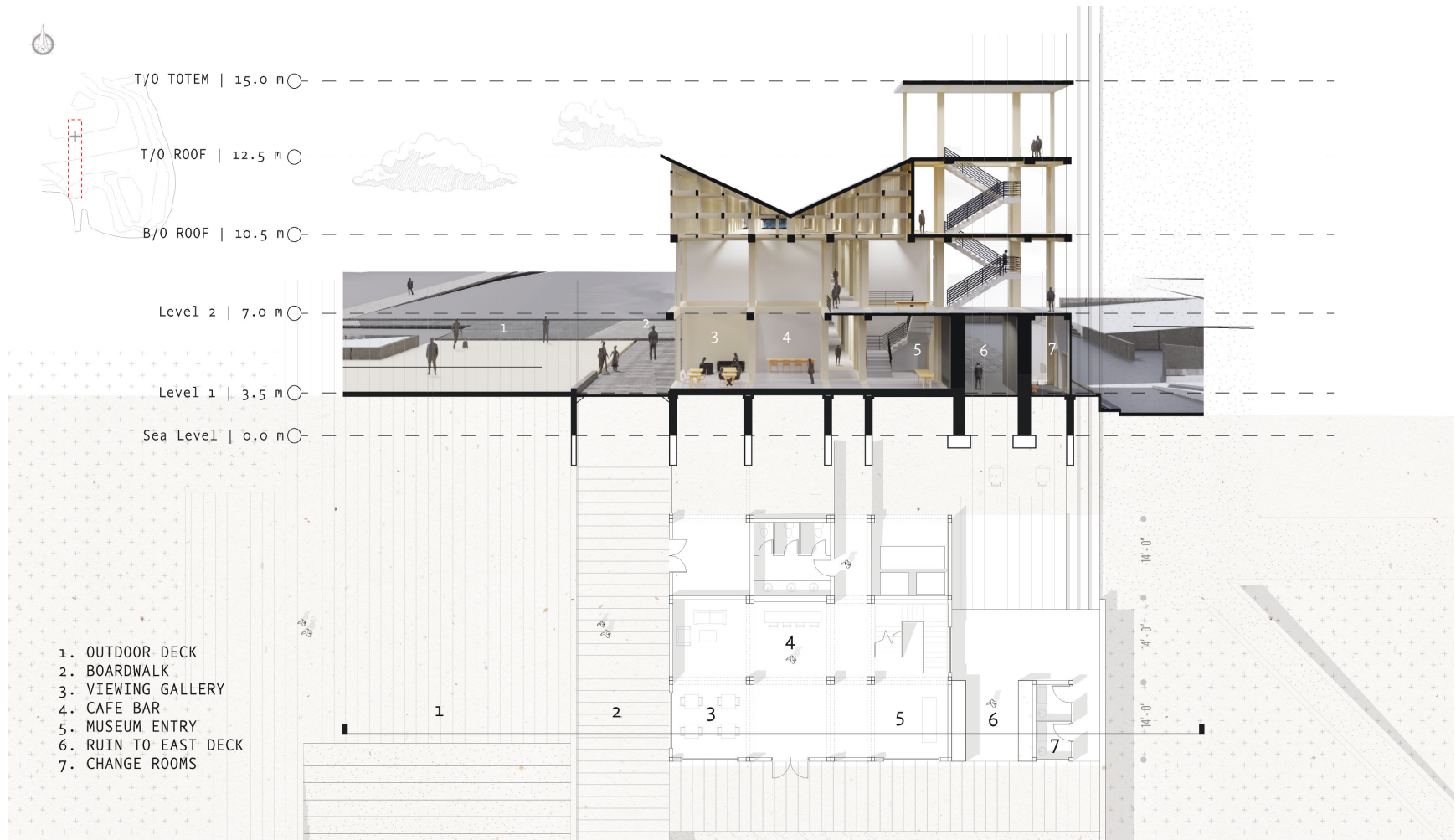


Fishbowl seating diagram uses an atypical seating arrangement to facilitate participatory conversations between moderators and the crowd.

The viewing gallery is designed to transform from a typical viewing gallery, directed towards the expansive fjord, into a double height thoughtful discussion area. The gallery is meant to host multi-cultural discussions between the Mowachaht/Muchalaht people and Tahsis residents. During these discussions, a fishbowl seating arrangement is used rather than a stage and podium typical to most meetings, workshops, presentations or conferences. The fishbowl arrangement allows participants from the crowd to easily interject and lead the discussion by briefly filling the open seat within the inner circle. This tested arrangement will prompt participatory discussions and enable participants to take some ownership of the discussions at hand, as opposed to a traditional delivery where the presenter dictates the direction of the discussion. The objective here is to purposefully encourage a place where inclusionary discussions can take place about regional topics including: indigenous reconciliation and environmental protection, or any other social, political, or economic topics.



Transformed viewing gallery into a fishbowl discussion arrangement at the southern most part of the trading post.



East-west section cutting through the outdoor deck and boardwalk, viewing and gathering gallery, cafe and bar, museum, former mill ruin, and change rooms.

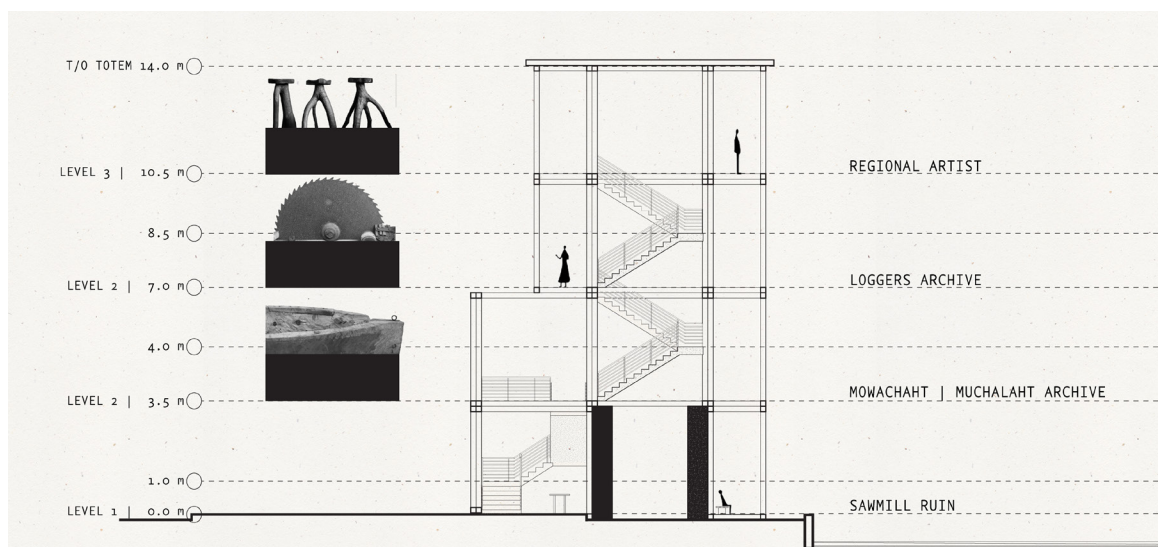
Organization: Museum

The relocation of the museum, currently in danger of flooding, physically repositions the historical artifacts onto a safer site, but also aims to celebrate a diversified gallery.

Built upon the ruins of the former sawmill, the wood frame museum sits above as a symbology of the Mowachaht/Muchalaht peoples totem poles. The totem aims to commemorate the ancestry, histories, and events of the region, which include both the first nation and the colonial settlers.

The three levels represent the regions history, from bottom up. Above the ruin, on the first platform, the Mowachaht/Muchalaht peoples archives and keep sakes. On the second are the loggers archives, and the third is designated to local and regional artists to display their current works.

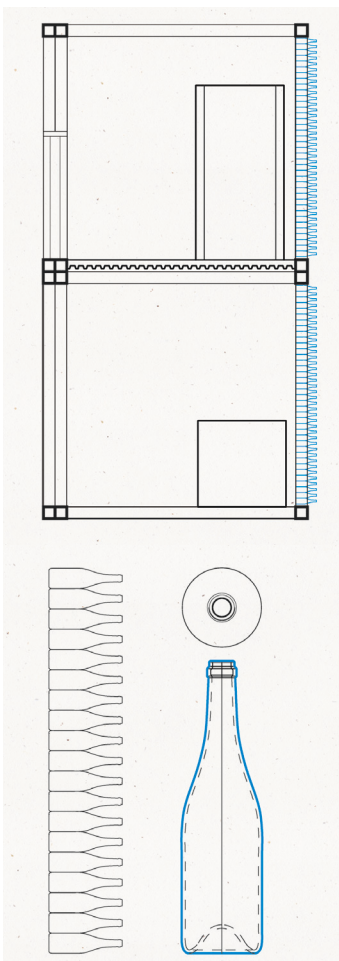
Combining both the Mowachaht/Muchalaht and the former loggers histories into one museum archive aims to reconnect an understanding of peoples and their histories in an intergenerational fashion.



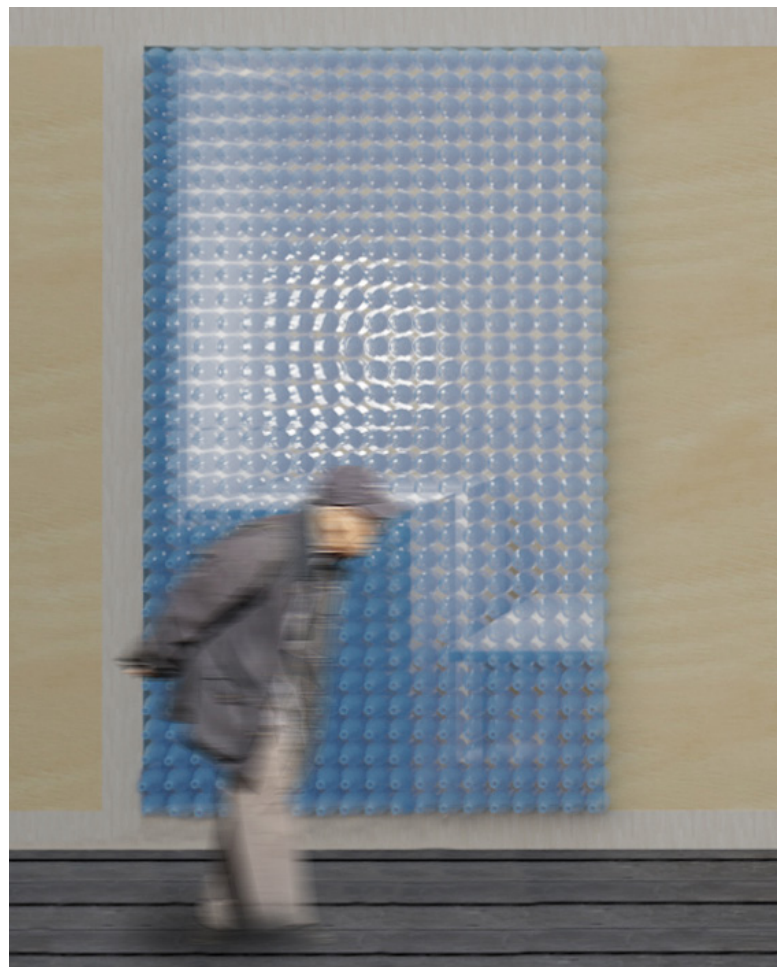
Section of museum totem hosting the three tiers of archives: First Nation, loggers, and artist archive

Organization: Water Bottling Facility

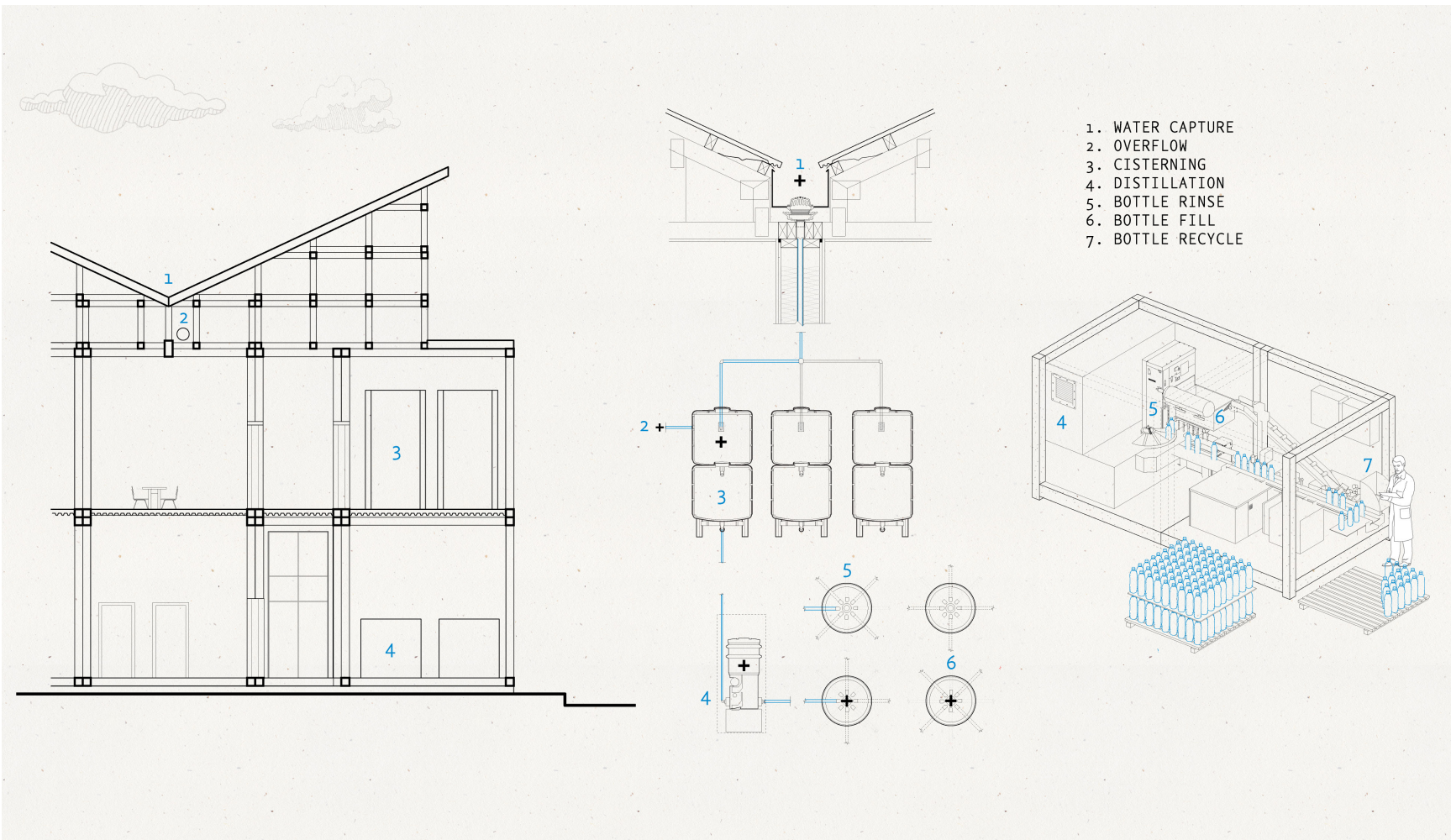
The inverted roof of the trading post, though counterintuitive to the rainy vernacular, aims to collect and store the water. Captured rain water is directed from the roof to the cisterns on the second floor. The water is then directed from the storage cisterns to the filtration room directly below. Once filtered through the reverse osmosis unit, glasswear is rinsed and then filled. Visitors may buy the bottles as a keepsake and prompt a return to the trading post for refills. The glasswear becomes a reusable staple within and outside of the community, where repeated recycling aims to bring people back to the site to refill, recycle, and mingle.



Glass bottle wall makes use of discarded glass wear as a building cladding system.



Bottle wall uses waste materials as building components and provides a transparency to the passerby to engage with the bottling and recycling activities unfolding inside.



Water bottling capturing, distilling, bottling, and recycling procedure and organization.

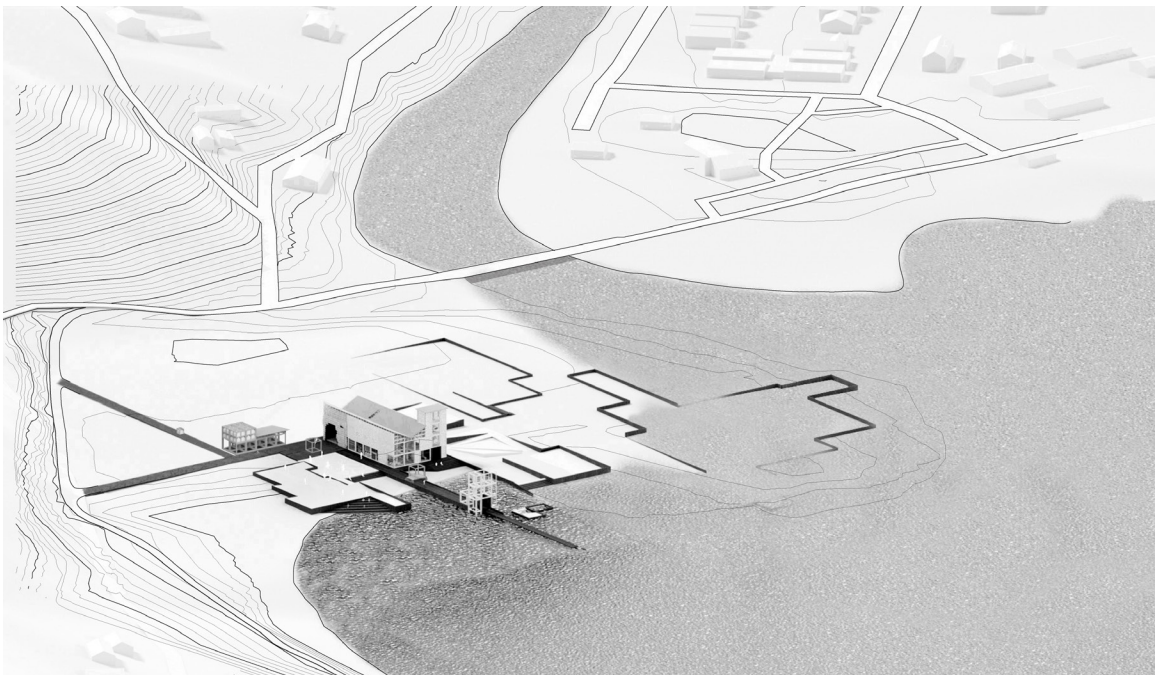
Phase III: Restoring Place

Phase three develops towards restorative goals of the thesis. First, this phase aims to restore the town's housing stock with an alternative modular typology. Second, a proposal to restore portions of the primary site back to its natural coastal state. Finally, dispatched satellite sites beyond the limits of the coastal site become actors in support of ongoing restoration efforts of tree planters, but also mobilized as cabins to develop societal re-connectivity to the forests.

Forest and Town in Repair

Mobile Dwellings

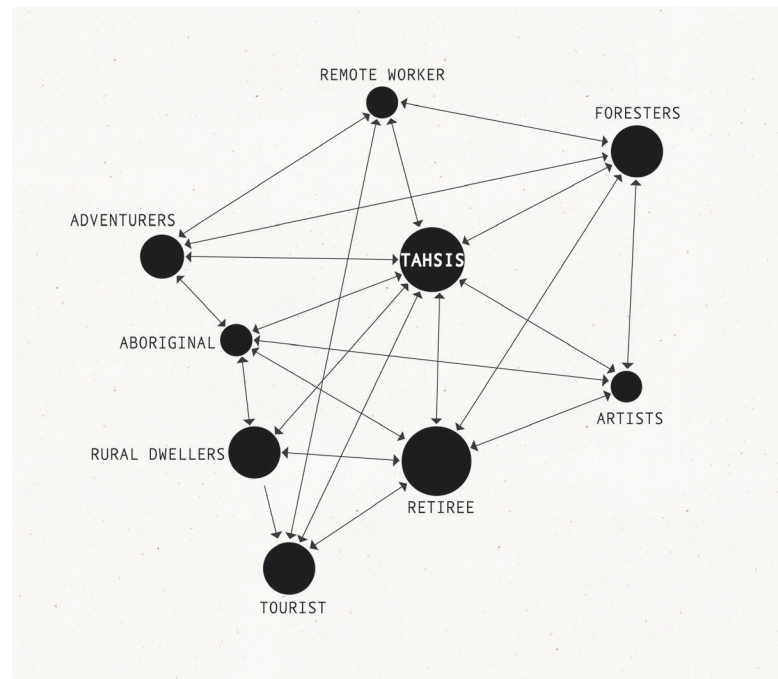
In phase three, the production of the modules are explored beyond the lexicon of the standard modules specified in phase two. Scalable housing modules are explored as affordable mobile housing typologies. Rigged on skid foundations, the housing modules are meant to be deployable. The modules become a part of the exchange system of the trading post,



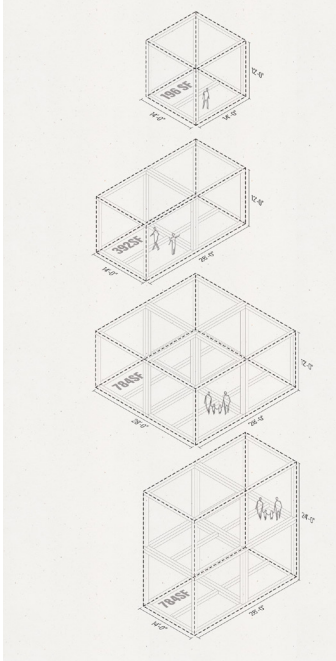
Phase III: the temporal staging of mobile housing modules produced in the GLT mill.

Sourcing: Demographics

Tahsis' population is composed of two dominant demographics: retirees and tourists. The retirees represent a level of dwelling permanence, while tourists remain transient and attuned to seasonal visits. Meanwhile, a new growing population of young families are migrating to Tahsis for its affordability and desirable rural lifestyle. Sourcing this younger and motivated demographic aims to recruit a population capable of engaging with a participatory design methodology and renewed environmental stewardship principles. In theory, those deploying the mobile architecture to satellite sites will not only be engaged with construction of their house, but become responsible for the landscape in which they situate. The participatory method will be further unpacked through the organization section of phase three and will describe how these principles aim to re-engage residences with the architecture and landscapes of which their lives unfold.



Proportional diagram of demographics currently populating Tahsis.



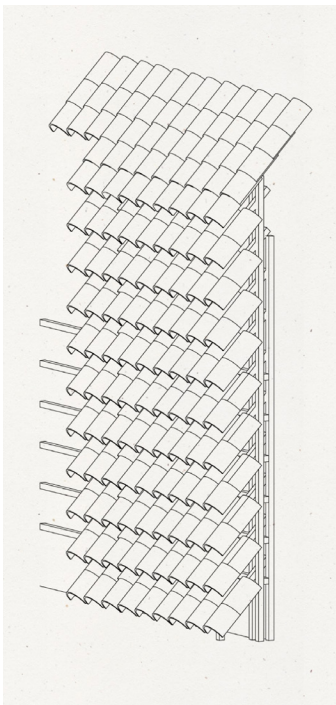
Scalable housing modules.

Improvising: Participatory Assembly

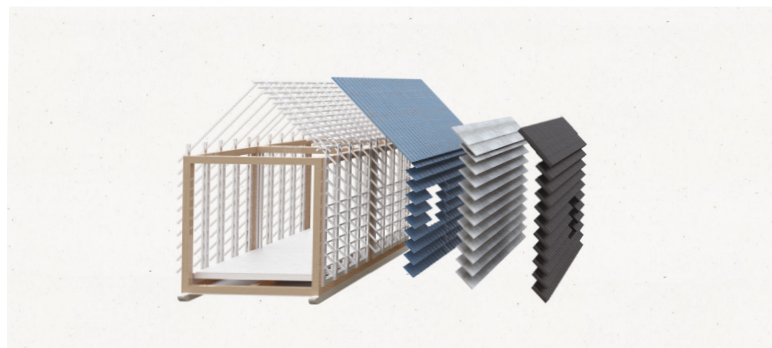
The modules match the construction methods developed in phase two. Singular units house those interested in micro living with just over 100sf of floor area. However, as modules aggregate together, they offer larger spaces pertinent to the needs of the end users. The modules are meant to be small, but affordable. Using small member wood construction on skid foundation these mobile homes come with the primary structure intact and the secondary structure elements housed within the module, as a self-deployable kit of parts.

The housing typologies offer an open building function, which supports the transition to a society based on co-creation, participation, and inclusion. The process of the open building system engages residents in the early stages of the project, susceptible to the ideas and interpretations of the participants. The engagement speculates that an understanding of the construction methods could encourage ongoing skill development and prideful maintenance, which inherently fosters longer building lifespans.

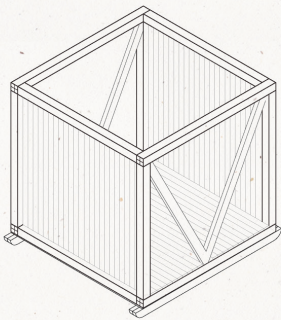
A demountable skin system is explored in an attempt to criticize outmoded secondary use of building materials, and aims to refine waste in a way that inspires replication and expands material lifespans. The secondary cladding



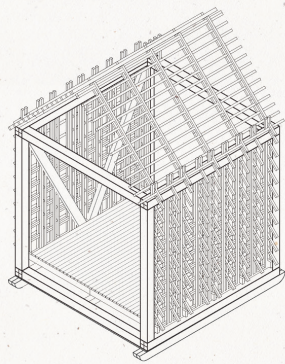
Demountable skin system diagram.



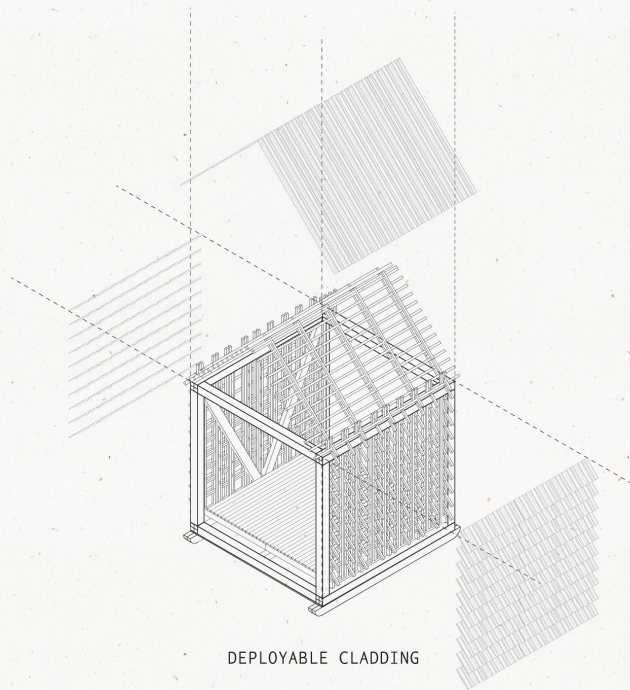
The open source cladding system allows a uniform typology to deploy new modes of self-representation and self-assembly.



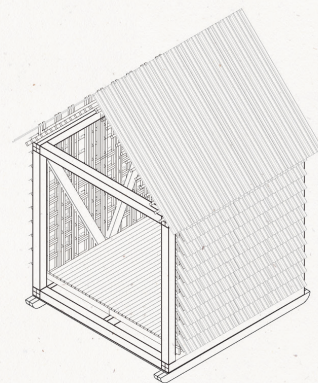
MOBILE MODULE KIT ON SKID



SMALL MEMBER CONSTRUCTION

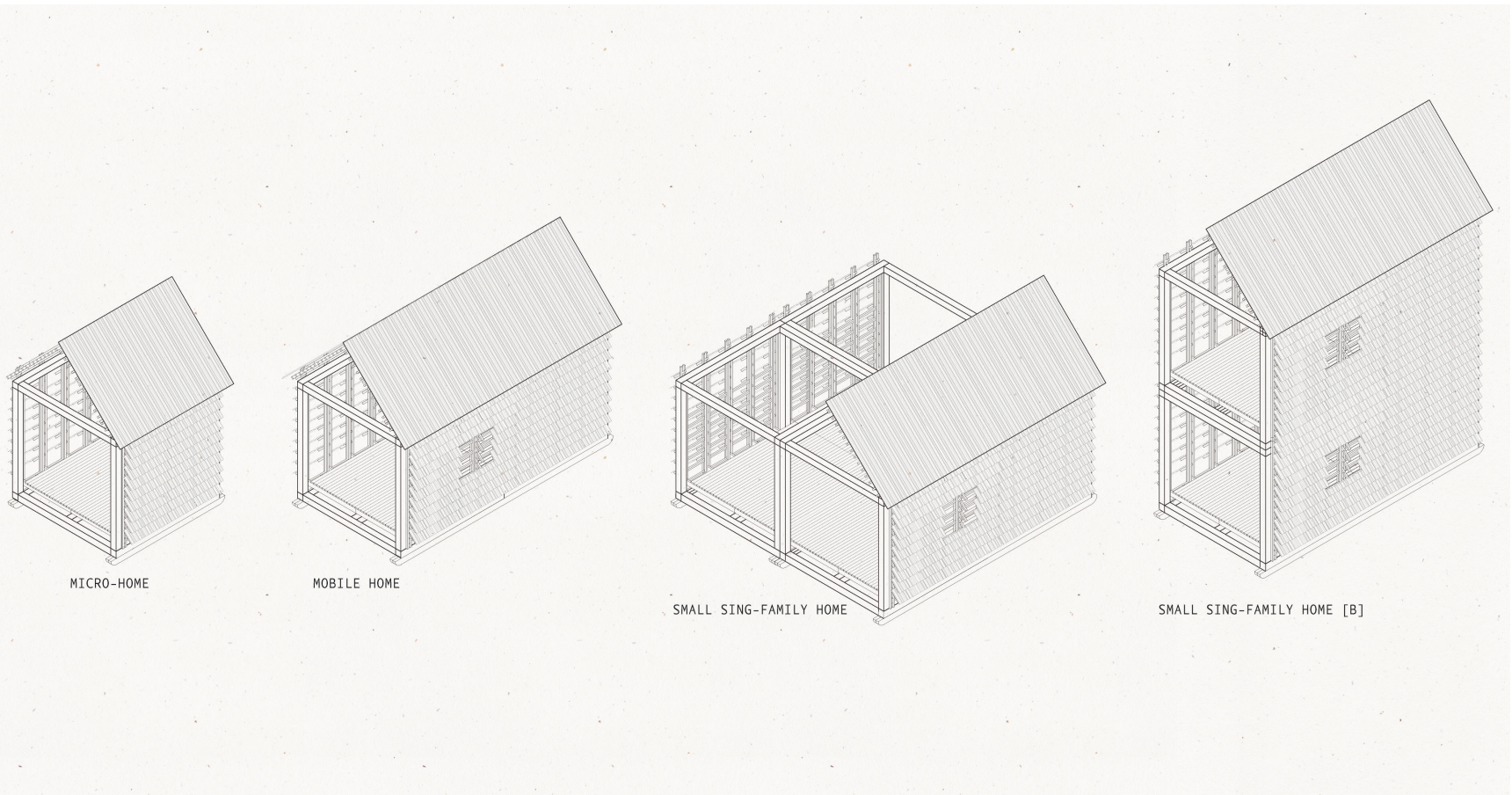


DEPLOYABLE CLADDING

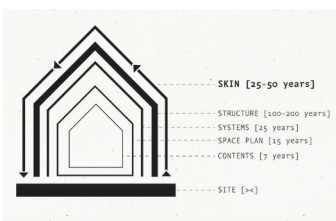


SINGLE-MODULE MICRO HOME

The modules are meant to be small but affordable, using small member wood construction on skid foundation these mobile homes aim to be user built, out of a kit of parts.



The modules can be added to as families grow or needs alter.



“Give people buildings that they can easily adapt to changing requirements or uses with inexpensive materials. For a long lifespan of a building, the change of the ‘faster’ layers should not be hindered by the ‘slower’ layers” (Brand 1994).

system is dislocated from the primary structure and is able to uniformly deploy numerous categories of waste material. The flexibility of this system responds well to climates like Tahsis, which often take on harsh wet conditions for large portions of the year. The system follows that of Frank Duffy, an architect who explores ‘shearing layers’, a concept that evaluates buildings by their layers, rather than a singular entity. Demountable systems approaches anticipate the varying life spans of the layers and subjects each to become less consequential to the overall life span structure.

Although the modules of each structure are identical in dimensions, the open cladding system affords a sense of ownership, self-expression and participation, which is often lacking in monotonous mobile homes. In this way, involvement in the developing design process elevates the use of any locale and match the DIY ideologies already being practiced in rural contexts.

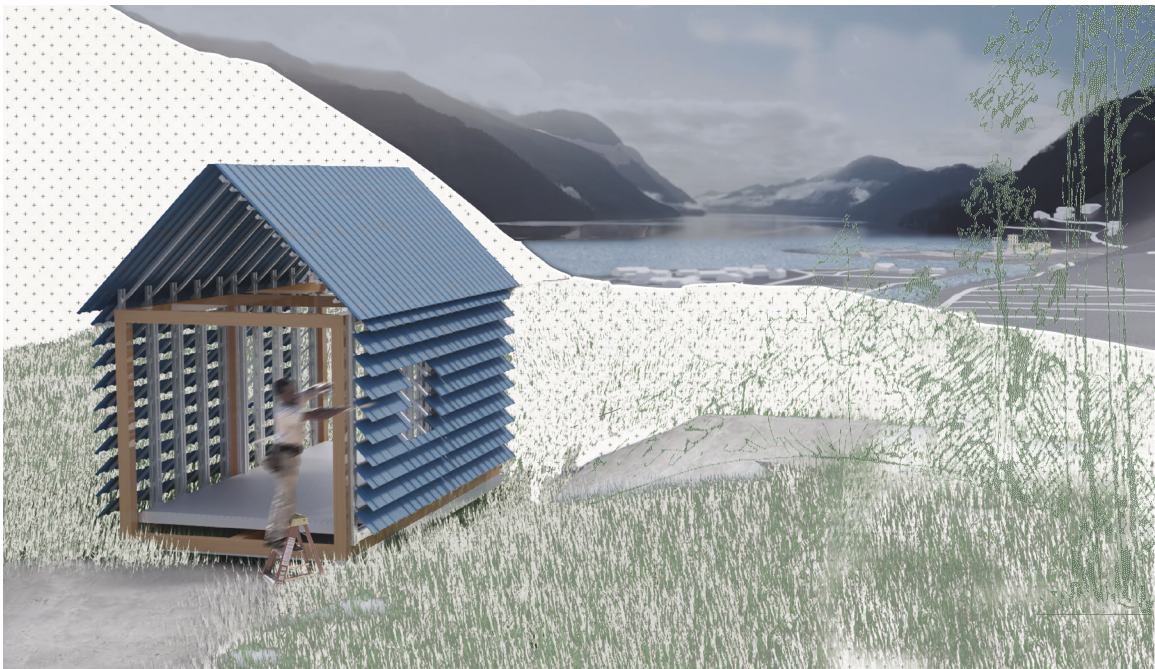


Image of a mobile home pulled onto a rural site, overlooking the Tahsis fjord. Within these contexts, rural dwellers grow with their home through self-deployable systems, which can be expanded, reduced and maintained as needed. Now occupying the rural forests, the owners become responsible stewards of the plots in which they occupy and their ongoing health.

Chapter 6: Conclusion

An enduring challenge for architecture is to acknowledge a level of impermanence and to embrace the continual transformations of built outcomes. During the drawing of this thesis, the design has hit areas of resistance, which altered numerous perceivable outcomes. This thesis embraces that the entire basis of the proposed architecture may return into the liminal as foreseen and un-foreseen events unfold. Some of the transformations observed within this thesis include: changes of demographic needs, natural disaster in the form of climate events, or a significant alteration to economic situations.

In response to these transformations, this thesis explores alternative modes of building in a post-industrial context at the scale of the building, the town, and the landscape, while acknowledging a general global perspective. At all scales, 're-design' is often associated with fragmented systems, and I would argue it has become common-place to quickly declare existing systems obsolete when it fails to adapt to changing contexts. To determine better outcomes, complete renewal dominates our building culture. This thesis positions architecture beyond consumer-driven building practices towards a zero-waste ideology, which embraces secondary-use, local palettes, and fluctuating contexts.

Appendix A: Tahsis Inventory

DWG.	ITEM	SIZE	DESC.	NO.	LOCATION	STATUS
a.	4" cable clamps & fasteners	5/16" dia.	cable tie downs clasps & misc. fasteners.	6	mill A.scrap	Loggers Salvage
b.	alloy steel hooks	1/2" dia.	various steel hooks and fasteners.	10+	mill A.scrap	Loggers Salvage
c.	steel ship tie-down	2' x 1'	Dock tie-down, steel plate, hss tube steel 5" dia.	2	mill A.scrap	Loggers Salvage
d.	steel decking	12' x 3'	perforated steel decking ramp treads	6	mill A.scrap	Loggers Salvage
e.	steel decking	16' x 3'-6"	walkway steel grating stair platform	2	mill A.scrap	Loggers Salvage
f.	I-Beam + decking	30' x 3'-6"	I-Beam structure w/ steel grating stair platform	2	mill A.scrap	Loggers Salvage
g.	wire mesh screen	5' x 3'	Mesh Wire 10 mm woven steel wire mesh	1	mill A.scrap	Loggers Salvage
h.	fense boards	1.5x3.5" x 10'	400n perineter fencing boards [1200] boards 133 posts [4x4]	1200	mill A.scrap	WFP
i.	dimensioned lumber	2" x 6" x 10'	2x6 stack of lumber [weathered]	190	mill A.scrap	Loggers Salvage
j.	dimensioned lumber	2" x 6" x 12'	2x6 stack of lumber	8	mill A.scrap	Loggers Salvage
k.	cut lumber	2'x2'-6" x 12'	Raw edge planned lumber stack	28	mill A.scrap	WFP
l.	character wood	[+/-] 6-8" x 3-4' x 8-10'	Raw edge character wood pieces planned and unfinished	6	mill A.scrap	WFP
m.	Doors	3'-6" x 7'-6"	standard door sizes	13	mill A.scrap	Loggers Salvage
n.	sheet metal panel	3" x 4' x 10'	double sided rusted steel panels	4	mill A.scrap	Loggers Salvage
o.	sheet metal panel	1/2" x 5' x 10'	cubic tank; 4 panels [cut]	4	mill A.scrap	Loggers Salvage
p.	sheet metal panel	1/4"x 3' x 5'	rusted sheet metal pane	1	mill A.scrap	Loggers Salvage
q.	sheet metal panel	1/8"x 5' x 8'	rusted sheet metal pane	1	mill A.scrap	Loggers Salvage
r.	HSS steel	1/4"x 6" x 12'	rectangle HSS steel tube	3	mill A.scrap	Loggers Salvage
s.	c-channel	1/4"x 6" x 8'	c-channel steel lengths	14	mill A.scrap	Loggers Salvage

Waste inventory 'A': sourced and documented by author

DWG.	ITEM	SIZE	DESC.	NO.	LOCATION	STATUS
t.	steel angle	1/4" x 3'	short steel angle	6	mill A.scrap	Loggers Salvage
u.	HSS pipe	2" dia.x 10'	HSS steel pipe	7	mill A.scrap	Loggers Salvage
v.	HSS	1" x 7" dia. 1'-6"	Octagonal HSS pipe shorts	18	mill A.scrap	Loggers Salvage
w.	steel cable	2" dia 20'	steel wire rope	2	mill A.scrap	Loggers Salvage
x.	fisherman rope	2" dia 40'	woven nylon rope	1	mill A.scrap	Loggers Salvage
y.	fisherman rope	1" dia 50'	woven nylon rope	1	mill A.scrap	Loggers Salvage
z.	Rubber sheet	1/16" x 5' x 10'	Neoprene Rubber Sheet, Rolls, Strips Long Solid Rubber	1	mill A.scrap	Loggers Salvage
aa.	steel stair	3'-6"x 11"	expanded metal tread stair case [in-tact] 6 step and landing	1	mill A.scrap	WFP
bb.	steel stair	3'-6"x 11"	diamond plate 6 step stair and landing	1	mill A.scrap	WFP
cc.	ladder	3'-6"	4 rung steel ladder and landing & rail	1	mill A.scrap	Loggers Salvage
dd.	wide flange	10" x 2'	Short wide flange I-beams	12	mill A.scrap	Loggers Salvage
ee.	wide flange	10" x 8'	med wide flange I-beams	8	mill A.scrap	Loggers Salvage
ff.	wide flange	14" x 15'	large wide flange I-beams	4	mill A.scrap	Loggers Salvage
gg.	wide flange	10" x 25'	large wide flange I-beams	5	mill A.scrap	Loggers Salvage
hh.	steel angle	1/4" x 8'	gable bent steel angle roof joists	12	mill A.scrap	Loggers Salvage
ii.	wide flange	8" x 10'	large wide falnge I-beam on bot. plate	8	mill A.scrap	Loggers Salvage
jj.	small windows	3-5' x 3-5'	Wood franed single pane glass window	18	mill A.scrap	Loggers Salvage
kk.	Large Windows	6-8' x 6-10'	Wood franed single pane glass window	6	mill A.scrap	Loggers Salvage
ii.	dimensioned posts	4"x4"x 10'	post / bean dimensioned lumber	66	mill B.scrap	WFP

Waste inventory 'B': sourced and documented by author

DWG.	ITEM	SIZE	DESC.	NO.	LOCATION	OWNER STATUS
jj.	rope spool	5' dia. 3'-6"	Large table rope spool	2	mill B.scrap	WFP
kk.	palettes	48"x40"	standard shipping palettes	44	mill B.scrap	WFP
ll.	flat steel	1/2"x2"x10'	flat steel bar	13	Loggers scrap yard	Loggers Salvage
mm.	steel angle	1/4" x 10'	Long steel angle	9	Loggers scrap yard	Loggers Salvage
nn.	wide flange	12" x 12'	large wide flange I-beams	34	mill A.scrap	Loggers Salvage
oo.	steel piles	15'+	Steel HSS pipe piles	72	mill B.scrap	WFP
pp.	barn doors	8'x 6'	Slidding track doors	3	mill B.scrap	WFP
qq.	HSS pipe	1" dia x 10'	hss steel pipe	10	Loggers scrap yard	Loggers Salvage
rr.	steel stair	3'6" x 11"	expanded metal tread stair case [in-tact] 27 step and landing	1	mill A.scrap	WFP
ss.	cable tie	6" cable clamps & fasteners	cable tie downs clasps & misc. fasteners.	2	mill A.scrap	WFP
tt.	steel handle	8"	sliding door handle	3	mill A.scrap	WFP
uu.	raw logs	1-3.5'x 20'	large salvaged logs	29	Loggers scrap yard	Loggers Salvage
vv.	raw logs	4-8"	med salvaged logs	116	Loggers scrap yard	Loggers Salvage
ww.	raw stumps	8"-2.5'	salvaged stumps	73	Loggers scrap yard	Loggers Salvage
xx.						
yy.						
zz.						
kk.						
ii.						

Waste inventory 'C': sourced and documented by author

Appendix B: Tahsis' Civic Building Costs

Village of Tahsis Analysis of Village Owned Building Costs

Fiscal Year: 2020

GL Name	Name Dept.	Village Office	Fire Hall	Recreation Centre	Public Works Shop	Museum / Info	Wharves
		110	121	140	130	145	137
x.2242	Insurance	12,539.21	4,789.76	12,464.84			15,848.77
x.2245	Utilities	6,103.01	7,131.61	26,496.92	3,964.14	1,595.02	
x.2246	Propane			12,691.28	5,469.37		
x.2247	Fuel				18,325.65		
x.2250	Alarm Monitoring	1,068.24	359.40	420.00	360.00	359.40	
x.2252	Alarm Systems	831.80					
x.2300	Bldg Maintenance	426.33	3,934.91	5,457.84			
	Total	20,968.59	16,215.68	57,530.88	28,119.16	1,954.42	15,848.77

Analysis of Village Owned Building Costs. (Poole 2020)

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