Hants County, 45°6’10”N 63°44’2”W

by

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in
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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

ABSTRACT

How can regionalism and modern building practices synthesize to develop a localized building culture? While regionally conscientious modern architecture demands efficiency, sustainable resource equilibrium may be the ultimate goal of vernacular architecture. Local building culture blends the vernacular and modernism, engaging local resources and building culture in architecture. Local labor economies and building resources are influenced directly by the architect, where architecture aggregates in a sustainable and robust building culture. The objective of this thesis is to investigate the middle ground where the aspects of vernacular and modern architecture collide.

A site in Hants County, Nova Scotia is the location for an off-grid farm. Instead of an architecture that circumvents locality, with local building culture, design is a process of regional discovery. Using photography to document the regional architecture, the design develops a context for an architectural project. Through the experiences gathered on site and throughout the area, architectural ideals that are regionally conscientious manifest themselves. By engaging a local building culture, the dialogue between landscape and structure becomes continuous, never meant to stagnate or become static.

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With gratitude and sincerity, I thank my parents Florence and Eugene, my wife Eliza and my daughter Neve. I would never have come to this exact spot without all of your love and support - Thank you.

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INTRODUCTION

I had been working with a firm in Halifax for about 10 months, enjoying a professional work environment. It was a place with amicable co-workers and a beautiful view of the Halifax harbor. I enjoyed all aspects of the work but was keen for some additional design work. Not seeing the opportunities at the office, I wondered about possible small projects on the side.

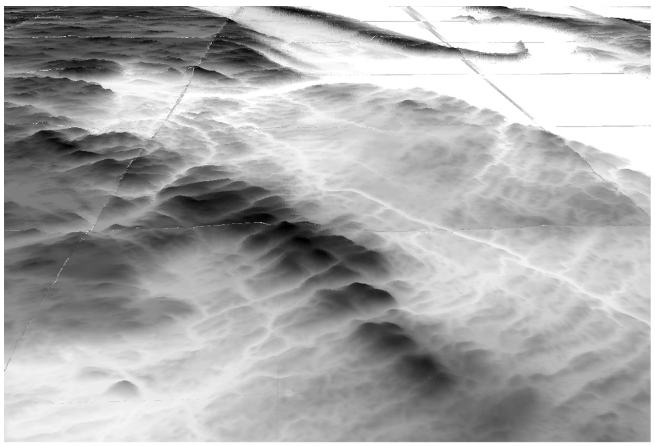
It was the middle of winter, not a great time to be cycling to and from work but this is what I was doing. During these rides I did my best to stay alert and not drop my guard. There were too many transfer trucks driving the streets of downtown Halifax, ready to roll over cyclists like speed bumps. My mind did wander during these rides though, and I frequently wondered how I could find some moonlight design work.

In an interview, Kenneth Frampton said "Architects look reality in the face because the client, for which the building is being built, is that reality."[1] This idea really spoke of the place I wanted to be. Looking at a real project head on.

[1] Frampton, Kenneth. "Kenneth Frampton Interview." Archiculture Film Extra Interviews. May 1, 2013. Accessed May 12, 2015. http://www.archiculturefilm.com/extra-interviews.html.



Fig.1: Winter on North Street, Halifax, Nova Scotia.



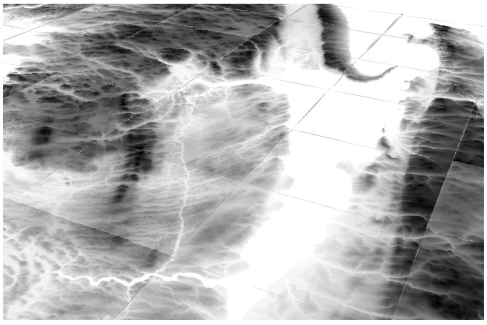


Fig.2: DEM Map of Hants County, Nova Scotia.

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I didn't really take action, but something did just come my way. Maybe I mentioned something in passing to a friend, I'm not sure. Whatever the case, a friend's business partner was interested in talking to someone about designing a house on his property outside of town. My friend said that we should meet and go to his property to check it out together. He told me it was in the Rawdon Hills and that there was probably gold somewhere underneath his land. I thought that this seemed like a great opportunity on the side and said I would be interested in meeting him and walking his property.

A few weeks later I received a call from MacDougall, my friend's business partner. An established entrepreneur, he had several successful businesses and I knew some of his employees. Well connected with the contractor world of Nova Scotia, he told me early on all I had to know about contractors was the first three letters of their job title.

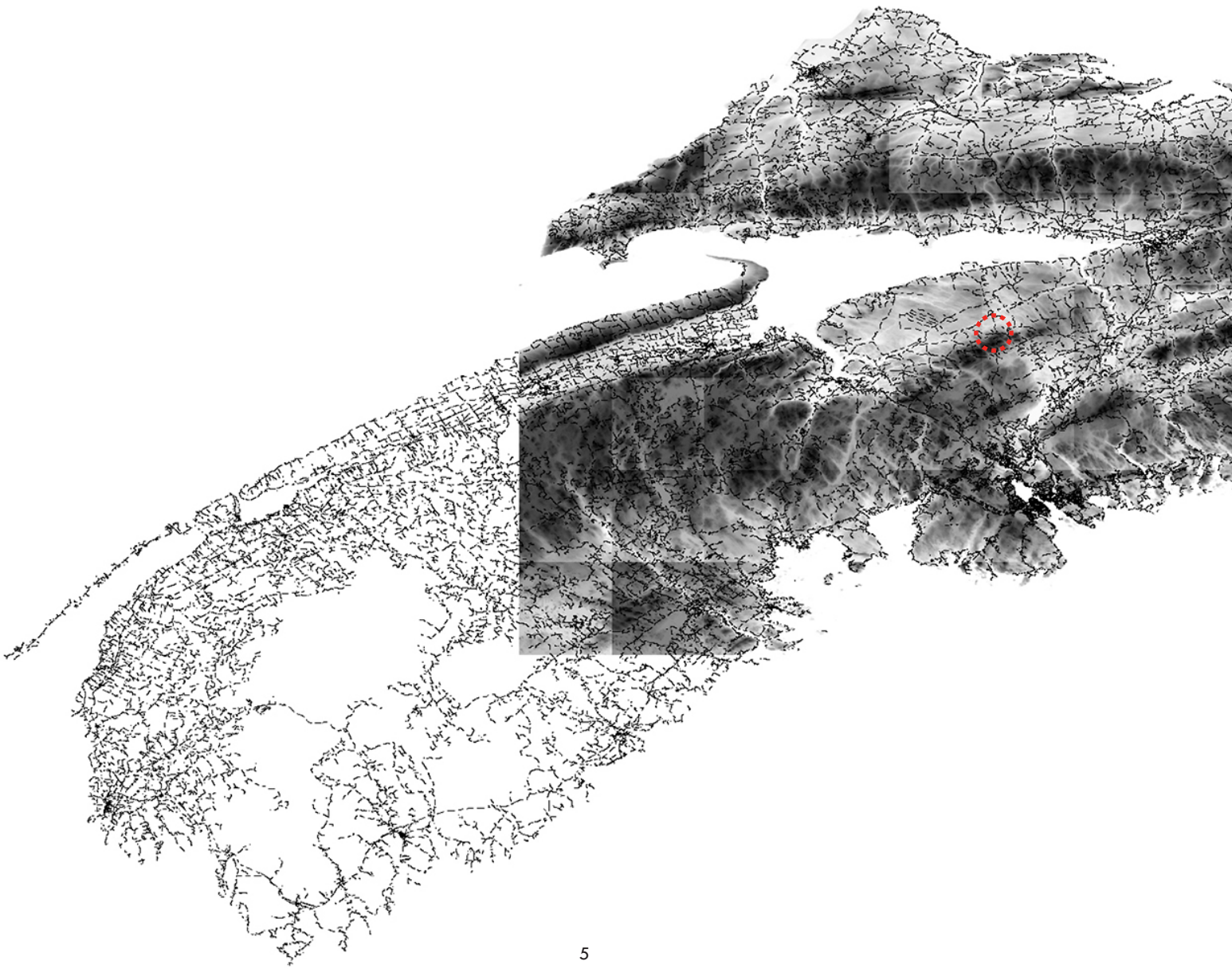




Fig.3: Map of Nova Scotia



Fig.4: Site Image #1

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After our first conversation, I decided I would take a look at pictures and maps of Hants County. His property was on the north side of the Rawdon Hills in West Gore. I couldn't help but wonder about the isolation of his property and the wildlife that must frequent his site.

The north side of the Rawdon hills are oriented towards the Bay of Fundy, more accurately to the Minas Basin. You could see water in the distance from his land, though he wasn't sure of the direction.

From maps, the area looked topographically interesting. The hills were dramatic closer to Gore, gradually flattening out to the north, providing plenty of land suitable for farming between the hills and the water, which was about twenty kilometers away as the crow flies.

This area may embody a certain fullness of Maritime geography quite well, and I wondered about the buildings and communities in the area. Infrequently travelled, it was more out of the way than in. I imagined a hyper-localized building culture.





Fig.5: Client & Site, Gore, Nova Scotia

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MacDougall and I met to make the drive out to the site together. On route we discussed what he was looking for and explained he had been working on his property since he acquired it. He had been making the 45 minute drive from Halifax regularly, leaving supplies on site.

Driving on to his property, you could see how the land had been worked, portions were deforested and turned into a patch-work of vegetated berms. Past these bermed fields was the treeline of a forest. From what I could see, he had cleared quite a bit of land – maybe 15 acres – and harvested a fair portion of the timber that was stacked on his property. I didn't quite see it then but in hindsight I believe I understood what was being asked of me, indirectly or directly. The land had been worked with purpose and intent but the end use of the property was still undecided.



Fig.6: Site Image #2





Fig.X: Site Build Location #1



Fig.8: Site Build Location #2

. . . . .

The parcel was 50 acres with its long edge running against the access road called Simms Road. The driveway cut across the short direction, probably five acres deep. It crawled uphill, bending a few times, finally settling on a bit of a plateau of exposed slate. The road was the width of a car, no more, just enough room to drive a truck up in winter.

It was in the middle of March and there was still quite a bit of snow on the ground. We came to the forest tree line edge, walking probably 200 meters from where we parked. He seemed to think this is where he would like to build, a good vantage point of the view towards the Minas Basin, and the lands beyond, notably Cape Split to the west north-west and the foothills of the Cobequid Mountains to the north.

It would be a lot of work – exposed bedrock was everywhere in that one spot, a driveway extension would have to be built, a water well dug, and a septic system installed. He said he would make the remaining 100 to 200 meters of driveway to the site when we decided on the design and exact location. He would oversee the excavation, and installation of the foundation, and septic system. The water well would be outsourced. We left it at that and headed back to town.

. . . . .

We met a month later to discuss ideas for his property. I had made some hand drawings and I gathered mapping information about the site. It was a scant spread but I did my best to show a range of concepts and orientations. The drawings were mostly two or three point perspectives. It seemed to be a good starting point, and they were well received by MacDougall himself and his wife. We talked about what would be essential, what could be useful, and how a house would function.

At this point I had to inform him I would be travelling to Waterloo for school but wanted to continue on this project. I mentioned that I believed this type of project may be suitable for a thesis, making a more robust project. And so, the project was now an academic one, one that would inform the future project on the site.





Fig.9: Site Build Location #3



Fig.10: Map of the Minas Basin & Central Nova Scotia

HANTS COUNTY, 45°6'10"N 63°44'2"W

There is a tension between what we are asked to do and what we feel we need to do. Creation, from beginning to end, is never easily defined in architecture. The dynamic typically begins with a client and ends with a client - making the architect-client relationship the core of a project. The desire and passion to produce the best work for the given circumstance is one of the pillars of an architect's responsibilities. However, the ethical responsibilities between the practicing architect and the client, the site, the context, and the built project are not simple. Ethics is the name not for a code or a set of principles, but rather for a discourse.[2]

There is always the possibility that the client lacks a clear vision of their impending design. This can empower the architect. But in its essence it was the client's dream before it was the architect's, however undefined the original thought may have been. The design process must take time to decipher the project. The genesis of a new, more accurate vision should be the collaboration between client and architect.

[2] Harpham, Geoffrey Galt. "Architecture and ethics: 16 points." In *Architecture, Ethics and Globalization*. Edited by Graham Owen. New York: Routledge, 2009. 34.

The ethical praxis of architecture lies in its poetic and critical ability to address culturally specific questions crucial for humanity.

Alberto Perez-Gomez

"Ethics and Poetics in Architectural Education"[3]

[3] Perez-Gomez, Alberto. "Ethics and Poetics in Architectural Education." In *Architecture, Ethics, and the Personhood of Place*. Edited by Gergory Caicco. Hanover: University Press of New England, 2007. 123.

The distinction between what a client wants and what a client needs is a metaphorical seed. What grows will address these requirements but will also take on a spectrum of other factors, other ideals. These ideals could very well be the architect's practicing beliefs at that time – influenced by trends, economy, technology, the arts, science, the environment, political views, and so on. The architect must be able to decipher what their client really cares about and know how to develop a project based on the flexibility of the client's intentions.

Architecture would not be possible without a client. Depending on the size and program of a building project, an architect may never become involved, however the client is ever-present. It has been said that 90% of buildings in the US fall into this category, where the architect is not involved.[4] If architects are involved in a project, they provide architectural design, construction administration, document production, or consultation.

[4] Frampton, Kenneth. "Intention, Craft, and Rationality." In *Building (in) the Future: Recasting Labor in Architecture*. Edited by Peggy Dreamer and Phillip G. Berstein. New Haven: Yale School of Architecture, 2010. 34.



Fig.11: Mies van Der Rohe

The idea of buying architecture is probably one of wide belief in capitalist society. However, architecture cannot be bought outright, but it can be created in the right circumstances. The architect-client relationship is a dynamic and integral part of the creation of architecture. Whether it is subdued-and-controlled or collaborative has always been an interesting question.

Would you comment on architect/client relationship?

Never talk to a client about architecture. Talk to him about his children. That is simply good politics. He will not understand what you have to say about architecture most of the time. An architect of ability should be able to tell a client what he wants. Most of the time a client never knows what he wants. He may, of course, have some very curious ideas, and I do not mean to say that they are silly ideas. But being untrained in architecture they just cannot know what is possible and what is not possible.

Do you submit alternative schemes to a client?

No. Only one. Always. And the best one that we can give. That is where you can fight for what you believe in. He doesn't have to choose. How can he choose? He hasn't the capacity to choose. No, it is much better to have just one idea, and if the idea is clear, then you can fight for it. That is how you get things done.

Mies van der Rohe
Conversations with Mies van der Rohe[5]

[5] Rohe, Ludwig, and Moise Puente. *Conversations with Mies van der Rohe*. New York: Princeton Architectural Press, 2008. 20.





Fig.12: Rawdon Hills #1

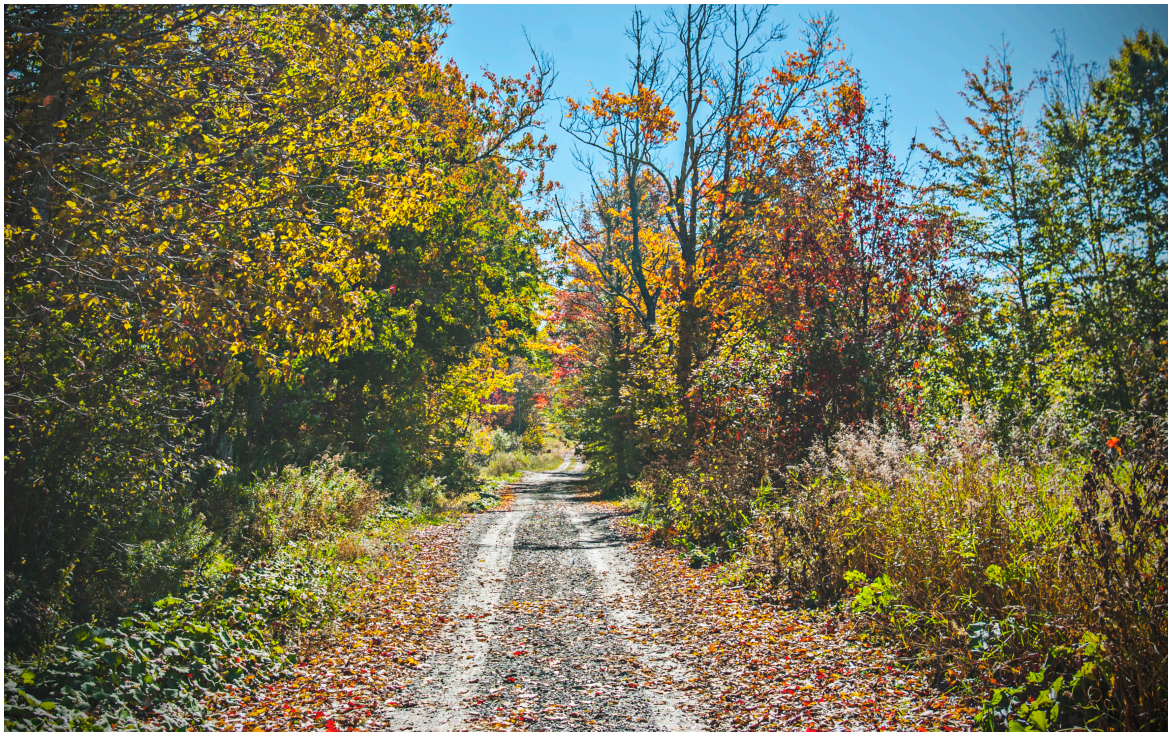


Fig.13: Simms Road

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I returned to Nova Scotia in October, planning to visit the site for a second time and document the surrounding area. The client and I would meet at 12:00pm at the site to focus on the placing of the dwelling and talk about infrastructure. I suggested we walk to the rough site of the build and take the route that would be the extended driveway to be built in the winter or early spring, when the ground was frozen and earth could be moved around without machinery sinking into the ground. There was a slight dip and then a climb back up to the site; the driveway extension would be roughly 150 meters.

When we arrived where we thought the site would be, and we established the potential orientation. The longest view was at 300 degrees west northwest. The long view varied but it was available from 280 degrees west northwest to 30 degrees north northeast.



Fig 1.4: Exposed Slate on Site

We talked about siting the building in the landscape, but we would have to explore just how far down the bedrock was and how hard it would be to break up. We agreed: the rock wouldn't be that far down; it was visible in the rough area but not right in this location; also, we thought the rock might break more easily – the exposed slate would flake off with the excavator impact hammer, the grain was oriented well for breaking this way. Also, we would have to push a lot of earth around to make the building naturally fit in with the landscape. In any case, building the road would be a good opportunity to assess the bedrock.



Fig.15: Grubbing Pile





Fig.16: Site Image #3

When we walked around the site, I could see he wanted to do a lot with this land; it looked like he wanted to farm. The land had been prepared for this; plenty of top soil was ready to be spread back over the land, creating a pasture with the grubbing piles he had built up. MacDougall wanted to live on this land and bring something to market, as well as have a garden for produce for his family. Past being "sustainable", he didn't really know exactly what he wanted to do with the land but he certainly worked like he had a notion of what it could be and that it would be productive.

When I come across a building that has developed a special presence in connection with the place it stands in, I sometimes feel that it is imbued with an inner tension that refers to something over and above itself.
It seems to be part of the essence of its place, and at the same time it speaks of the world as a whole.
When an architectural design draws solely from the tradition and only repeats the dictates of its site, I sense a lack of a genuine concern with the world and the emanations of contemporary life.
If a work of architecture speaks only of contemporary trends and sophisticated visions without triggering vibrations in its place, this work is not anchored in its site, and I miss the specific gravity of the ground it stands on.

Peter Zumthor
Thinking Architecture[6]

[6] Zumthor, Peter. *Thinking Architecture*. Baden: Lars Müller, 1998. 29.



Fig.17: Context #1



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The idea of regional architecture is timeless. Building traditions around the world have developed precise and functional vernacular forms; producing unique doctrines of construction. These different building styles and techniques have created a tapestry of building history that can be traced region to region and back in time.

In present times, contemporary regionalism may be defined as an approach to architecture that is, at same time tied to modern design practices but also local building culture context. In essence, one part modern, one part traditional. In recent times, Kenneth Frampton introduced the desirability of a new kind of regionalism, more attuned to the climate and culture of its area.[7] However, this leaves a wide spectrum of architectural design interpretation.

The idea of contemporary regionalism may be more important than ever as formal design intentions and mass produced material pallets tend to supersede regional building culture, its wisdom and concerns. Modern architectural practices often mimic the look of regional architecture in its features; however this ends up appearing merely as a veneer with little to no connection with local resources, craftsmanship, or labor economies. How can regionalism and modern building practices synthesize to enable a robust architecture of cultural significance?

[7] Soeters, Sjord. "On being a humble architect." In Architecture and Its Ethical Dilemmas. Edited by Nicholas Ray. London: Taylor & Francis, 2005. 71.

Today's construction techniques often offer no more than an assembly of catalogued parts – and for the most part these products are produced in places which are not 'just around the corner'. This conflict with the idea of regionalism has created an industry mimicking textures and faux finishes, concerned only with the visible and not the entirety of a project.

Modern building culture offers many solutions for weather-tight, ready-built construction, but how can it relate to regionalism when it has become so plastic and unnatural? Priced to sell and advertised to the architectural design world, authentic regional architecture has had a hard time competing with the business of modern building parts.

At the core of local building is the selection of available building materials. Material sourcing has been essential to the development of any regional architecture. As local material pallets and building techniques vary greatly even in close proximity to one another, distinctions between regions can be subtle. Landscape and topography can dictate how construction may best occur and with what materials. The tectonics of regionalized architecture are, for the most part, largely defined by the building materials at hand, local craftsmanship, and the landscape they are intertwined with.





Fig.18: Context #2



Fig.19: Context #3

Mass production and mass destruction are the twinned pinnacles of twentieth-century life, as we still pledge our allegiance to them at every moment. One consequence of this fact is the inescapability of capitalism – something which is sometimes challenged but mostly just accepted, indeed celebrated.

Mark Kingwell
"Building, Dwelling, Acting"[8]

[8] Kingwell, Mark. "Building, Dwelling, Acting." In *Architecture, Ethics and Globalization.* Edited by Graham Owen. New York: Routledge, 2009. 41.





Fig.20: Context #4

Resource equilibrium may be an unspoken pursuit of regional and vernacular architecture – defining wants from needs over the long term, with performance and durability at the forefront of desirable building characteristics. When we maintain local resources it leads a region into a more sustainable and healthy building cycle. How can local tectonics and modern architectural advancements better enable a dynamic regionalism?

A dynamic regional architecture must be open to change however, never loosing site of its roots. A region may develop ideas and a region may accept ideas - imagination and intelligence are necessary for both.[9] The need to be both resource and environmentally conscious should be at the core of local building ideals and concerns.

Moving towards a dynamic regionalism requires significant measures that have to be enacted at an architectural design level and also a political level. Architectural design strategies must continue a dialogue between regional architecture and the particularities of site. Emphasizing passive strategies and new technologies to improve on building performance, building life cycle, structural strategies, site environmental impact and resource requirements is critical to sustainable building.

[9] Harwell Harris, Hamilton. "Liberative and Restrictive Regionalism." Address, Conference for the Northwest Chapter of the AIA, Eugene, Oregon, August 12, 1954.

New projects should have a repurpose/reuse strategy or life cycle plan in place prior to construction. Understanding local labor economies, local environmental concerns, and material sourcing and flow cycles will enable better suited regional architecture.

Building Material & Labor Force Websites would allow access to databases which indicate; embodied energy and recyclability of material, how far construction materials travel, and local contracting/fabricators with transparent and credible description of practice.

Education sessions should be offered to design and construction professionals on best practices and provide proper information sourcing to enable greater self-education in conjunction with the National Building Code. Regionally significant heritage buildings would need government funding assistance for repurposing or renovation.

In essence, moving towards a dynamic regionalism would require an emphasis on sustainable local material sourcing and an understanding of material flow, engaging local labor economies and craftsmen, and placing emphasis on the idea of Frampton's "place-forms" which engage the particularities of site and also gather an understanding of vernacular and regional architectural wisdom.





Fig.21: Context #5

The life span of buildings is considered in a linear way as opposed to a cyclical one. The reuse or repurposing of buildings may be difficult to predict and ultimately unnecessary to get a project off the ground. A certain amount of life span consideration may be of significant value for certain building types, for example agrarian and household. There may be added value to projects if building designs allow for more flexibility in long term use, be it relocation or easier deconstruction and reuse of structure or other building parts.

Regionalism may benefit from an adaptation of nomadism or movable buildings. Differing from temporary structures in offering the option of long term placement or permanence. Of course, all building parts cannot be maintained so if anything would be damaged or rendered unusable it would be the skin, the envelope, and not the major interior protected aspects of the building. Prefabrication and modular strategies may allow for greater reuse and repurposing down the road. The need for construction typologies which have an expanded range of mobility and reusability may be more pertinent in the foreseeable future.

Although the cost of placing a structure in the ground has remained constant across a long period of time, the largest segment in any building budget today is devoted to the provision for electrical and mechanical services, with the result that the proportion spent on the enclosure has dropped from around 80 percent at the beginning of the twentieth century to approximately 20 percent today.

Kenneth Frampton
"Intention, Craft, and Rationality"[10]

[10] Frampton, Kenneth. "Intention, Craft, and Rationality." In *Building (in) the Future: Recasting Labor in Architecture*. Edited by Peggy Dreamer and Phillip G. Berstein. New Haven: Yale School of Architecture, 2010. 32.





Fig.22: Context #6



Fig.23: Context #7

Vernacular architecture does not go through fashion cycles. It is nearly immutable, indeed unimprovable, since it serves the purpose of perfection. As a rule, the origin of indigenous building forms and construction methods is lost in the distant past.

Bernard Rudofsky
Architecture without Architects[11]

[11] Rudofsky, Bernard. *Architecture without Architects: an Introduction to Nonpedigreed Architecture*. New York: Museum of Modern Art; Distributed by Doubleday, Garden City, N.Y., 1964.





Fig.24: Context #8

. . . . .

Vernacular architecture is an intrinsic part of culture and is a distinct aspect of regional culture like anything else – a piece of the greater whole. At its core, vernacular is a confession of regional building science, construction techniques, weathering patterns, and functionality. Vernacular architecture seeks a sustainability comfort zone – an equilibrium between resource consumption and a healthy building cycle.

Vernacular is considered a static concept, uninfluenced by modern trends. A durable design strategy for weathering with its climate, vernacular building design seeks for balance. In some instances a vernacular architecture may be kept intact by law.

Lunenburg, Nova Scotia is a UNESCO World Heritage site filled with vernacular architecture and will stay this way with prohibitive construction bylaws in place. In turn, the community appears like a time capsule with modern amenities retrofitted in place.

Regionalism is never static and undergoes a permanent evolution – a kind of endless fermentation of building culture. The local construction wisdom of vernacular means it is a major contributor to regionalism, however regionalism seeks a more efficient balance with modern sustainable design strategies and material flow principals.



Fig.25: Map of Maritime Home Typologies

Capitalism and globalization counteracts regionalism in the sense of shipping materials vast distances, cost advantaged to more localized resources. There is no negating this, large architectural projects experience this pricing difference more than small to medium size projects. In any case, the business strategy of globalism may be unsustainable being highly dependent on affordable transport costs to ensure profitability. Though presented as a way to eliminate economic disparities and magically expand multinational revenue streams, globalization is, simply put, still a barely profitable and perplexing strategy for most companies.[12]

Intellectual globalization of expertise and technology is necessary to the evolution of construction and sustainable building operation. The exchange of ideas over vast distances is vital to architecture, however the material sourcing should not follow this same ideology. Isolationism in the sense material sourcing and labor economies would be of benefit to development of regionalist building culture. Protectionist means of subsidizing local materials would also bolster the generation of local building culture. Greater concern for regional building culture and the global exchange of best architectural practices is critical to sustainable advancement.

[12] Rothfeder, Jeffrey. "The Great Unraveling of Globalization." Washington Post. April 24, 2015. Accessed May 1, 2015.



Fig.26: Context #9



Fig.27: Context #10

While it is not possible for any technological system to reconstitute all of the energy consumed in its own creation, architecture—or, "place-forms" as Frampton would have it—can certainly participate far more effectively in the natural energy flows of a place than current technological practices do. It is through such participation that entropy might be radically reduced.

Stephen A. Moore
"Technology, Place, and Nonmodern Regionalism"[13]

[13] Moore, Steven A. "Technology, Place, and Nonmodern Regionalism." In *Architectural Regionalism Collected Writings on Place, Identity, Modernity, and Tradition*. Edited by Vincent B. Canizaro. New York: Princeton Architectural Press, 2007. 439.





Fig.28: Context #11

. . . . .

After my second visit to the property I decided to document and explore the property solo. I was particularly interested in the ground condition, plants, trees, and animals that would be on site. My research suggested there would be raccoon, snowshoe hare, white tailed deer, red fox, bear, bobcat, coyote, porcupine and a variety of birds. There were deer tracks at the edge of standing water, otherwise I didn't see any animals other than hawks overhead. The trees were mostly red spruce, hemlock, eastern pine, balsam fir, ash, birch, maple, oak, and alder. Not a pure old growth forest and not a replanted monoculture, the property was a new growth mixed forest.

The plants were of more interest. There were numerous types of flowers and were everywhere on the property. The way the land had been worked lead to this. The grubbing piles had created perfect spaces for wildflowers to grow. There was little growth on the ground in between the grubbing piles giving wildflowers direct light.

While walking around I was looking for surface water flow conditions that may exist. The site had been swaled appropriately, the road was protected and the building site was well away from streams due to drainage work. GIS mapping work I produced showed that flowing water was far to the north east and to the south from where we wanted to build. My on-site observations supported the GIS mapping. Work would have to be done to ensure the immediate building site would shed water properly. Frampton's eighth point came to mind while surveying the site and imagining how to build.

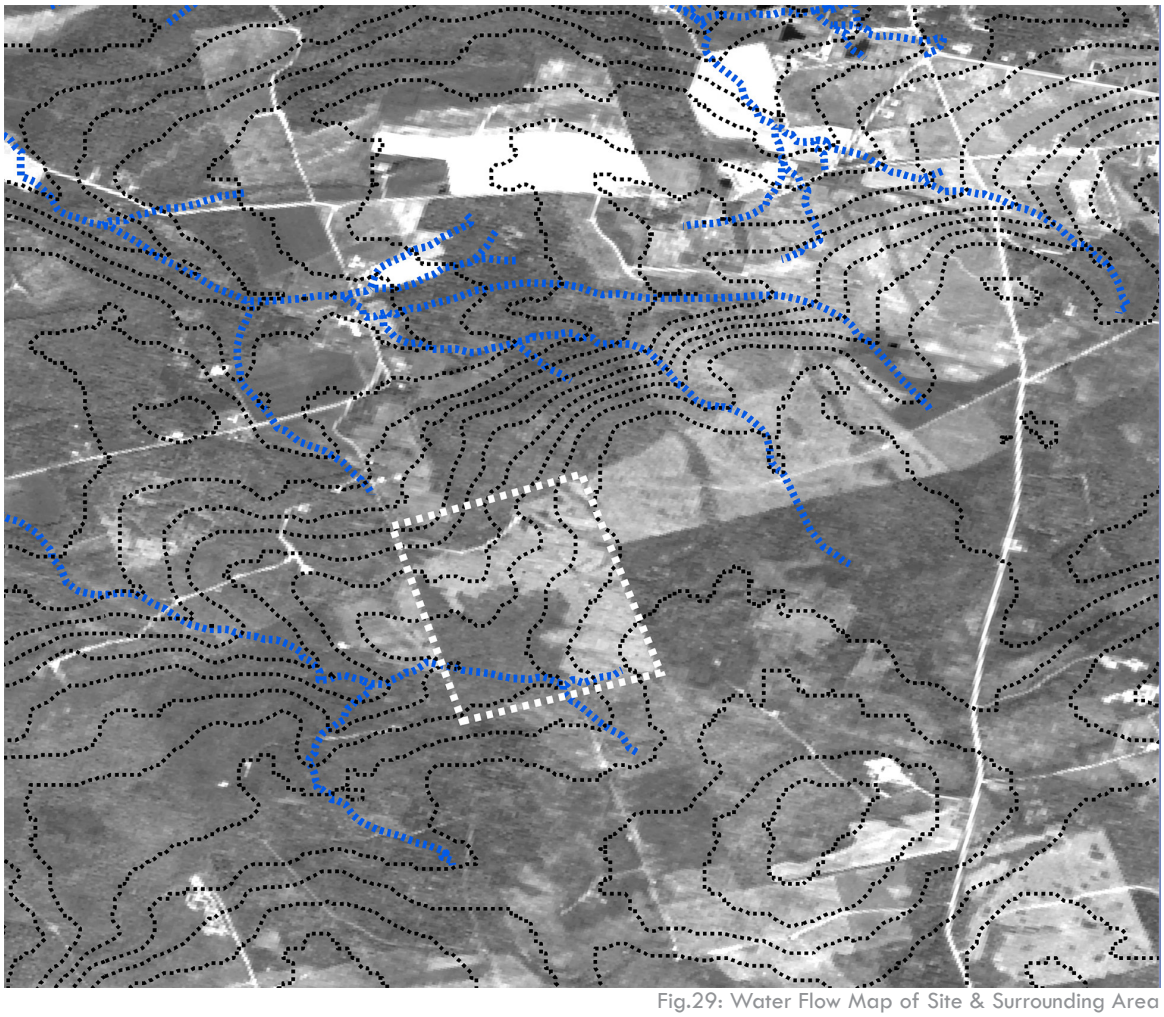


Fig.29: Water Flow Map of Site & Surrounding Area

Fig.30



Queen Anne's Lace

Fig.31



Centaurae (Knapweed)

Fig.32



Goldenrod

Fig.33



White Aster



Fig.34: Context #12

Point 8 – Artificial/Natural

More than any other art form, building and architecture have an interactive relationship with nature. Nature is not topography and site, but also climate and light to which architecture is ultimately responsive to a far greater degree than any other art. Built form is necessarily susceptible to an intense interaction with these elements and with time, in its cyclical aspects.

Kenneth Frampton
"Ten Points on an Architecture of Regionalism:
A Provision Polemic"[14]

[14] Frampton, Kenneth. "Ten Points on an Architecture of Regionalism: A Provision Polemic." In *Architectural Regionalism Collected Writings on Place, Identity, Modernity, and Tradition*. Edited by Vincent B. Canizaro. New York: Princeton Architectural Press, 2017. 383.





Fig.35: Minas Basin #1

Buildings on this site had every opportunity to be responsive to their surroundings. The interaction with the site could attempt to create an artificial but symbiotic relationship with water, waste, energy, animals, and plants. The property size enables this in varying degrees over time, more isolated with less impact in the beginning but growing more complex in the future with expansion.

Though you could see water the physical detachment between the property and the Minas Basin was distant. On certain days with the right wind you could smell the salt in the air, experiencing the sea. There is a connection but one which is intermittent with the weather and season.

The Minas Basin tides are dramatic and powerful, with a tidal swing of 16.5 meters (54') in water level. The threshold which the Bay of Fundy tides produces is one so vast that it can give people kilometers of ground to walk on and explore and hours later submerge it out of sight. This water line is a threshold between land and sea which allows the landscape to expand and contract.

The area's history was one of self-sufficiency and abundance and the water was the means by which the area developed wealth. It was the deep water ports that allowed for the export of raw goods. This gave the area the ability of being a source of its own wealth.

Gold, gypsum, barite, timber, fish, and oil were all part of the lands history. Hants County was built on exporting raw goods. It was also the last strong hold of anti-confederacy in Atlantic Canada. Nova Scotia anti-democratically joined the Canadian confederacy which stoked the fires in Hants County, however this anti-confederacy spirit died out over time.

Architecturally, agrarian buildings are a common building typology in the area. They had, for the most part, stood the test of time better than households of similar age. Their durability was in part a combination of working with their sites and the necessary maintenance that goes into keeping them functional. The programmatic range of these farming buildings probably changed during their lifespan. This, for the most part, was visible. Additions, modifications, supplementary buildings were added to the buildings and sites allowing greater functionality.

Buildings take on the qualities of the place wherein they are sited, their colors and surface textures being modified by and in turn modifying those of the surrounding landscape.[15] The "weathered" barn is a common site in this area. The lack of insulation has allowed these buildings to breath over time. Enabling wood envelopes to avoid rot. Moisture could go and come as it would through the seasons but not get trapped in the process. Thus the building's skin ages, wooden board's brown and tan like on no other building type. If these buildings were homes with insulated walls, roofs, and floors, heating systems, and indoor plumbing they would have experienced unforeseen incidents leading to rot or mold growth. The highly breathable, pure form of the barn is admirable.

[15] Mostafavi, Mohsen, and David Leatherbarrow. *On Weathering: The Life of Buildings in Time*. Cambridge, Mass.: MIT Press, 1993. 69.



Fig.36: Context #13



Fig.37: Site Texture

Ethics is a way of posing questions or phrasing concerns that includes both a drive for resolution, and also room for a reflective or deliberative pause in which relevant factors are considered, in which the worthiness of specific needs and desires is tested against larger, invariant principles.

Geoffrey Galt Harpham
"Architecture and ethics: 16 points"[16]

[16] Harpham, Geoffrey Galt. "Architecture and ethics: 16 points." In *Architecture, Ethics and Globalization*. Edited by Graham Owen. New York: Routledge, 2009. 34.





Fig.38: Context #14

. . . . .

The practice of architecture is an ethical pursuit. As architecture is at the center of civilization, it is an idea and a fact of life that people interact with every day. The importance of architecture is crucial to our survival, productivity, and ultimately our well-being. Our built environments offer us spaces that enhance our daily rituals and interactions and add an immeasurable value and dignity to human existence.

In past and present times, the practicing architect has been a culturally engaged professional – one who is responsible to the public and therefore has an ethical agenda. This resonates with the Aristotelian view of being responsible to the polis or the city-state; having an agenda to the public common good and an optimistic view of built cultural at its center point.

Ethical considerations have changed over time in practice and are challenging to discern when looking for chronological junctions in evolving modes of thought. When confronted head on, the complexity and range of decisions placed in the responsibility of the architect has been the basic impetus towards new ethical discussion.

While the architect must pursue their work ethically they may still in fact look for the unseen or the unknown in their process. The instinctual pursuit of design can lead to further ethical questions. As you cannot subtract instinct from a creative profession the ethical dynamics of architecture must remain debatable and modifiable. Because of this it is impossible to define an exact ethical manuscript or manifesto for the modern practice of architecture. There can only be amendable guidelines with grey areas open to interpretation and debate.

The need for architecture to be at the forefront of ethical debate is a renewed concept gaining momentum. Now, more than ever the discipline of architecture has the chance, the ability, and the means of pushing modes of habitation to new levels. Ethical discourse needs to constantly pursue the moving target that is the practice of architecture.

Regionalism can be considered an important aspect of ethical discourse for several reasons. The transport of building materials over vast distances is common place especially in luxury construction projects. Importing individually wrapped tiles from Italy or fixtures from Japan may sound appealing and exotic to the user however in practice this may be ethically dubious on the architect's s part. Vitruvius commented, sometime around 15 BC, on the obligation of economy that the architect must observe.

Economy denotes the proper management of materials and of site, as well as a thrifty balancing of cost and common sense in the construction of works. This will be observed if, in the first place, the architect does not demand things which cannot be found or made ready with great expense. For example: it is not everywhere that there is plenty of pitsand, rubble, fir, clear fire, and marble, since they are produced in different places and to assemble them is difficult and costly. Where there is no pitsand, we must use the kinds washed up by rivers or by the sea; the lack of fir and clear fir may be evaded by using cypress, poplar, elm, or pine; and other problems we must solve in similar ways.

Vitruvius
Ten Books of Architecture[17]

[17] Morgan, M.H. *Vitruvius: The Ten Books of Architecture*. New York: Dover Publications, 1960. 8.



Fig.39: Context #15



Fig.40: Context #16

Alvaro Siza describes the architect as a specialist in non-specialization.[18] Because of this non-specialization the architect has the ethical authority to investigate best practices for a project location thus enlist regional expertise. The ethical responsibility to engage local labor economies to invigorate local building culture and craftsmanship progresses collaboration and knowledge within regions. Craft in architecture is closely tied to detail - architectural detail is largely a product of the relationship of design to industry.[19]

Practicing architect's concerned with the development of regional architecture essentially wear two hats. They must analyze context and understand localized building doctrines and at the same time be open to new architectural methods from other regions. Ethically, the regional architect must be able to synthesize local building culture with appropriate modern architectural wisdom. In doing so, a more robust regionalism can be generated.

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[18] Frampton, Kenneth. "Intention, Craft, and Rationality." In *Building (in) the Future: Recasting Labor in Architecture*. Edited by Peggy Dreamer and Phillip G. Berstein. New Haven: Yale School of Architecture, 2010. 34.

[19] Marble, Scott. "Imagining Risk." In *Building (in) the Future: Recasting Labor in Architecture*. Edited by Peggy Dreamer and Phillip G. Berstein. New Haven: Yale School of Architecture; 2010. 40.





Worn-down shacks of labour past, on a hill of broken stone,
Once brought by men to the stamping mills to crush away the gold;
But before it could pass to their sons, the glory left the hole,
The Rawdon Hills once were touched by gold.

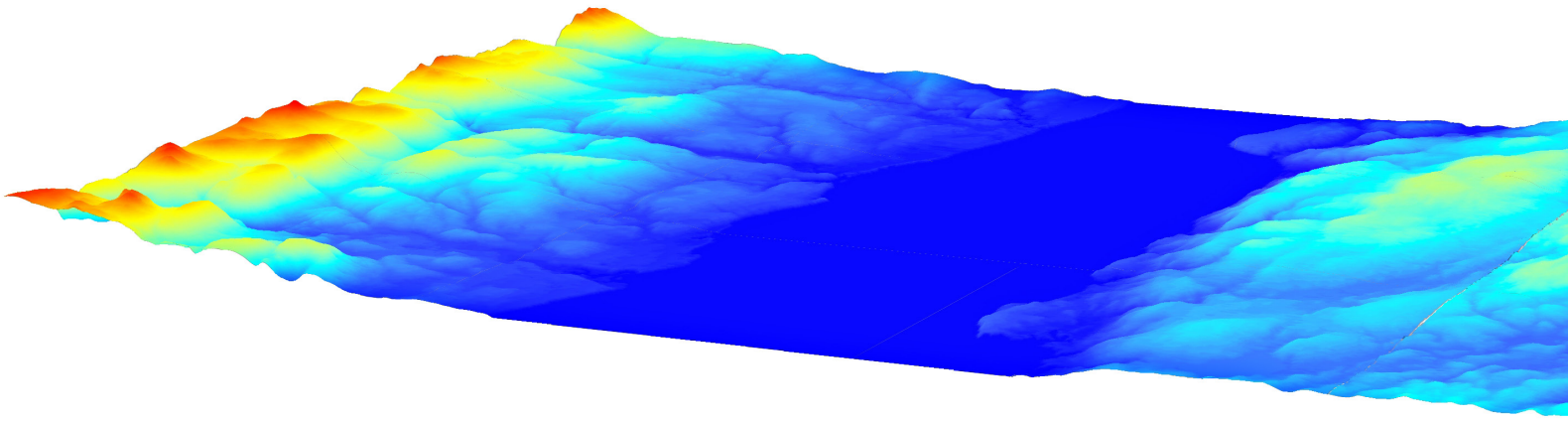
The grandsons of the mining men scratch the fields among the trees,
When the gold played out they were all turned out with granite dusted knees;
But at night around the stoves, sometimes the stories still unfold,
How the Rawdon Hills once were touched by gold.

Grandsons of the mining men, you'll see it in your dreams,
Beneath your father's bones still lies the undiscovered seam
Of quartzite in a serpentine vein that marks the greatest yield;
And along the Midland railway, it's still told,
How the Rawdon Hills once were touched by gold.

Eighty years has been and gone since there was color in the hole,
And the care-worn shades of the hard-rock men surround the old Cope lode;
And through the tiny hillside farms, the miner's tales grow old,
The Rawdon Hills once were touched by gold.

"The Rawdon Hills", folk song written by Stan Rogers, recorded in 1977.

Fig.41: Rawdon Hills #2



Topographic Section

This topographic section is cut on the North-South axis through the Rawdon Hills (right page), the Minas Basin, and into the Cobequid Mountains (above) on the North side of the basin.

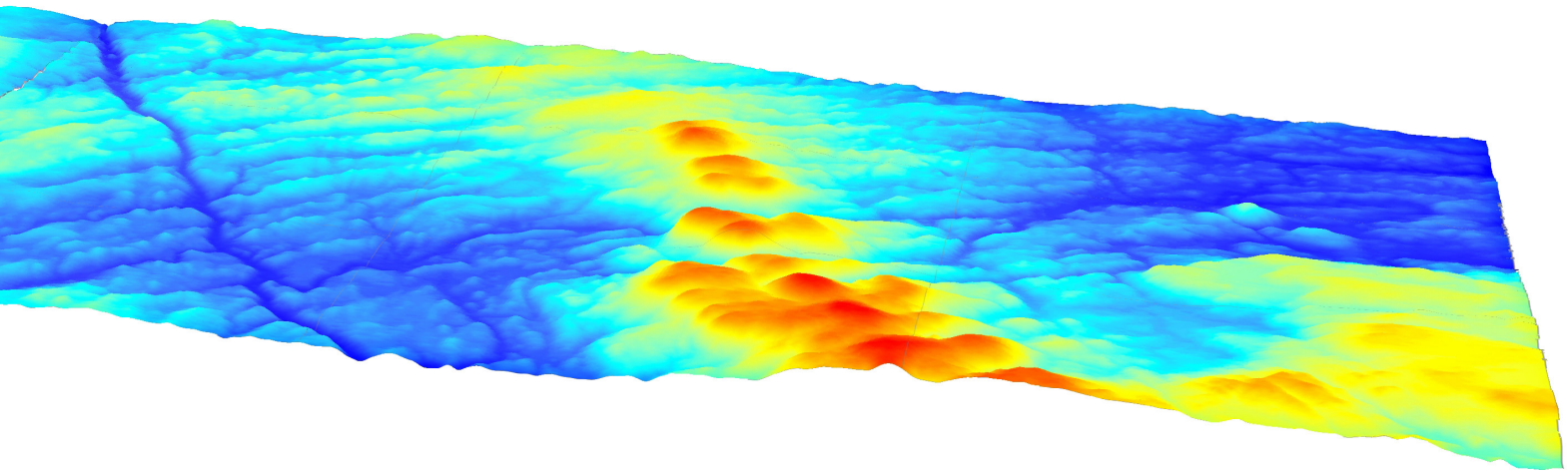


Fig.42: Topographic Section Map

DESIGN

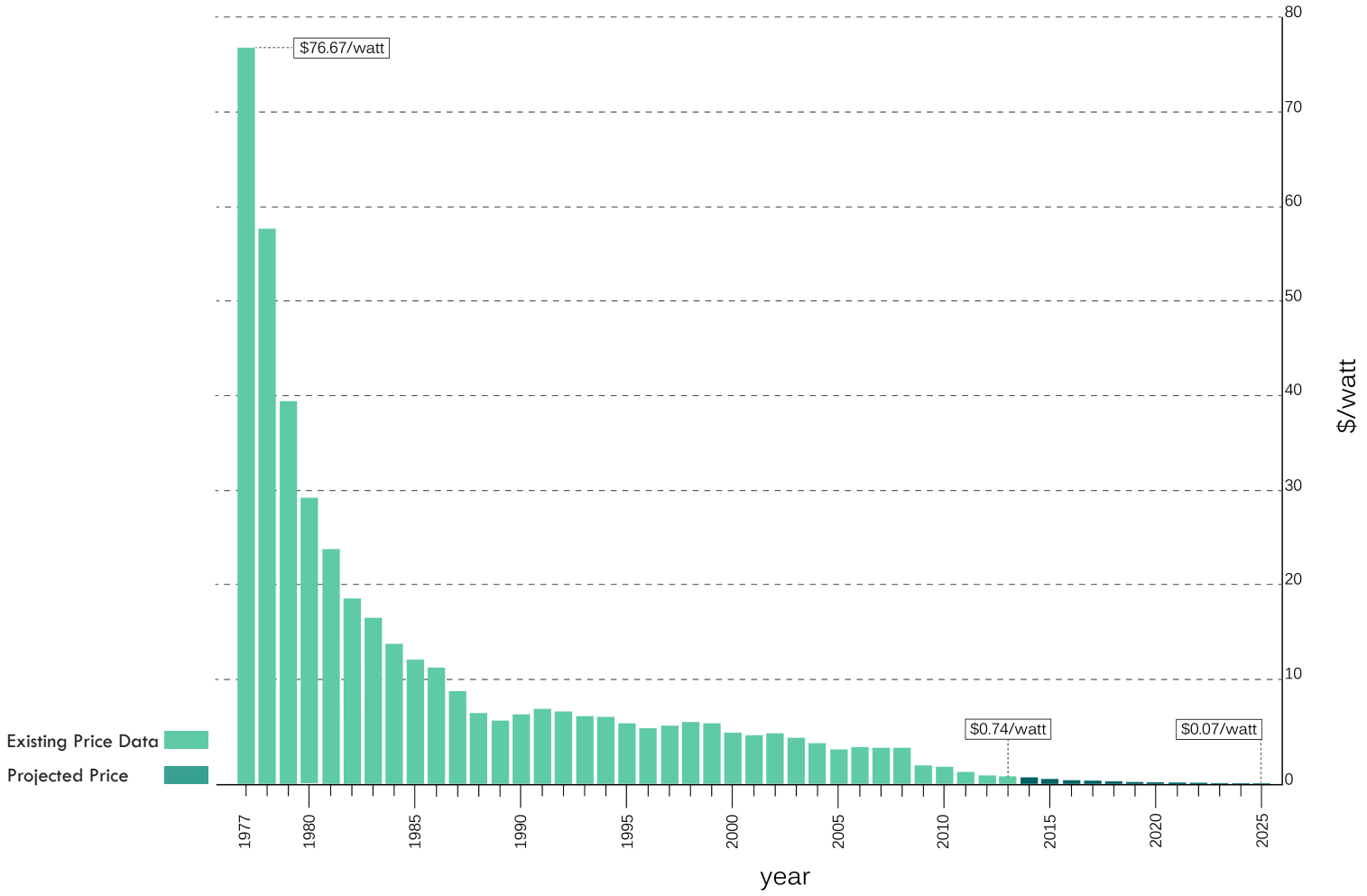
The location of the property is off the grid. The infrastructure that could run grid power to the site would be between 40-70 power poles. The road accessing the site is unmaintained by the municipality and province. It is self-maintained by those who are interested. Once off this road and onto the property there is a definite sense of peaceful isolation.

Modern technology has allowed for a greater capacity for off grid living. Off-grid systems provide an independently regulated power supply that has at least the same reliability and quality as a public power grid.[22] Solar photovoltaic panels have become more efficient and affordable and will continue to do so into the future. By 2025, the investment in high performance PV panels will rival grid sourced electricity cost across the majority of North America resulting in grid parity. In combination with battery storage, this will allow households to operate independently or communities to establish micro grids at a competitive edge to grid sourced power. If you are on-grid you are vulnerable to energy prices fluctuating - going off-grid is a way to avoid these domino effects.[23]

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[22] El Bassam, Nasir, Maegaard , Preben and Schlichting, Marcia. *Distributed Renewable Energies for Off-Grid Communities: Strategies and Technologies toward Achieving Sustainability in Energy Generation and Supply*. Watham:Elsevier, 2013. 87.

[23] Grant, John. *Co-opportunity: Join Up for a Sustainable, Resilient, Prosperous World*. Southern Gate: Wiley, 2010. 121.



Swanson's Law

Swanson's Law is an observation of the pricing of photovoltaic modules - in basic terms the price of these modules tends to cut in half every 3 years.

This chart takes real pricing data and projects it towards the year 2025 - if the law holds true than PV power will undermine grid sourced electricity sooner than later. The projected price in 2025 is $0.07 per watt - predictably creating grid parity across much of North America.

Fig.43: Photovoltaic Cost Projection

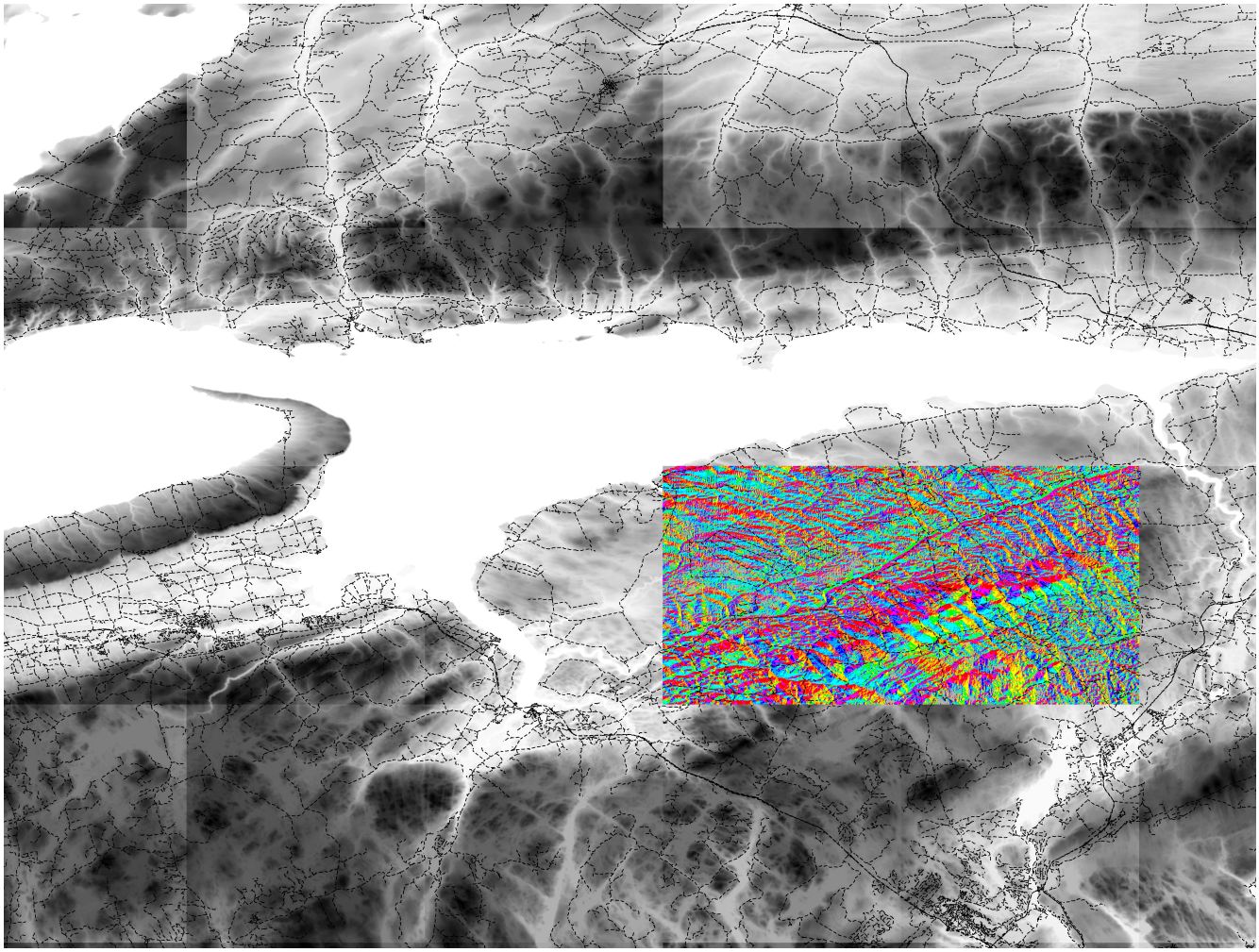
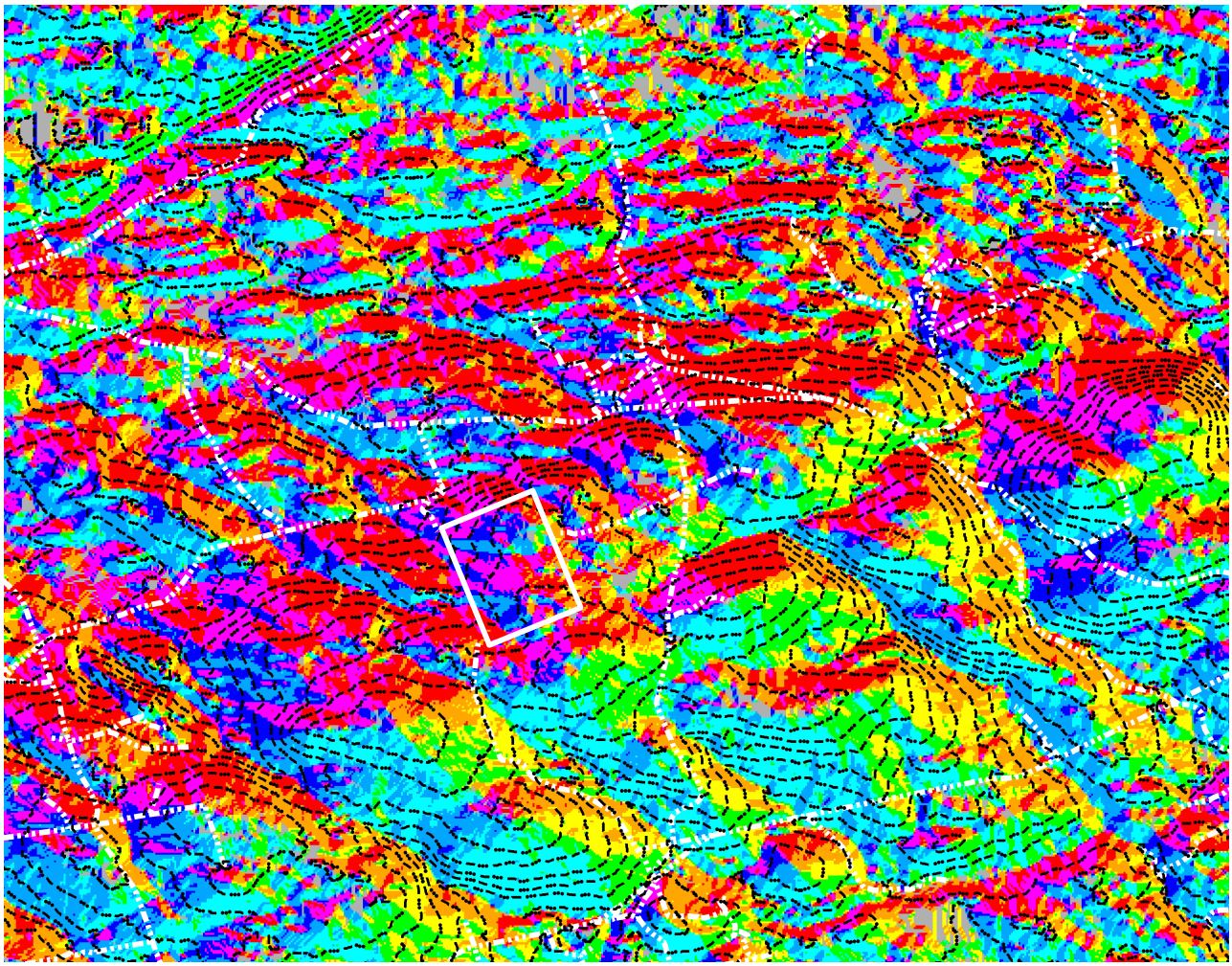


Fig.44: Aspect Map - Rawdon Hills



Flat Area
North
North East
East
South East
South
South West
West
North West

Aspect Map

This aspect map indicates the facing orientation of land. The north side of the Rawdon Hills primarily orient to the north west.

Fig.45: Aspect Map

The off-grid strategy for this site is to employ two power generation sources: PV panels and wind turbines. A budget of 15-20 thousand is estimated to cover all the necessary equipment to operate a modest home off the grid with 11kWh of available power. Mounting the 250 watt PV panels on the south east facing roof of the house and placing 160 watt wind turbines uphill offers two sources which can work in tandem to charge the battery bank of 24 deep cycle batteries. A robust inverter is important to the system functioning similarly to on-grid systems, this will allow more power to be drawn at one time. The PV panel strategy involves 16 panels installed on the south east facing roof of the house which has a capacity of 32. This eliminates the expense and maintenance of self-supporting racks needing to be installed on site. The turbine strategy involves the use of two self-supporting 160 watt wind turbines. A small backup generator will be housed onsite to be used infrequently when needed to charge the battery bank directly, this could be powered by propane or diesel. A wood stove will be used in concert with electric baseboard heaters and radiators to heat the house. Low energy consumption appliances and energy efficient LED lights (12 fixtures) can help stretch the energy produced and stored on site. The barn would have a parallel system but at 46 PV panels (64 panel capacity), a robust inverter, 48 deep cycle batteries, and 22kWh of available power.

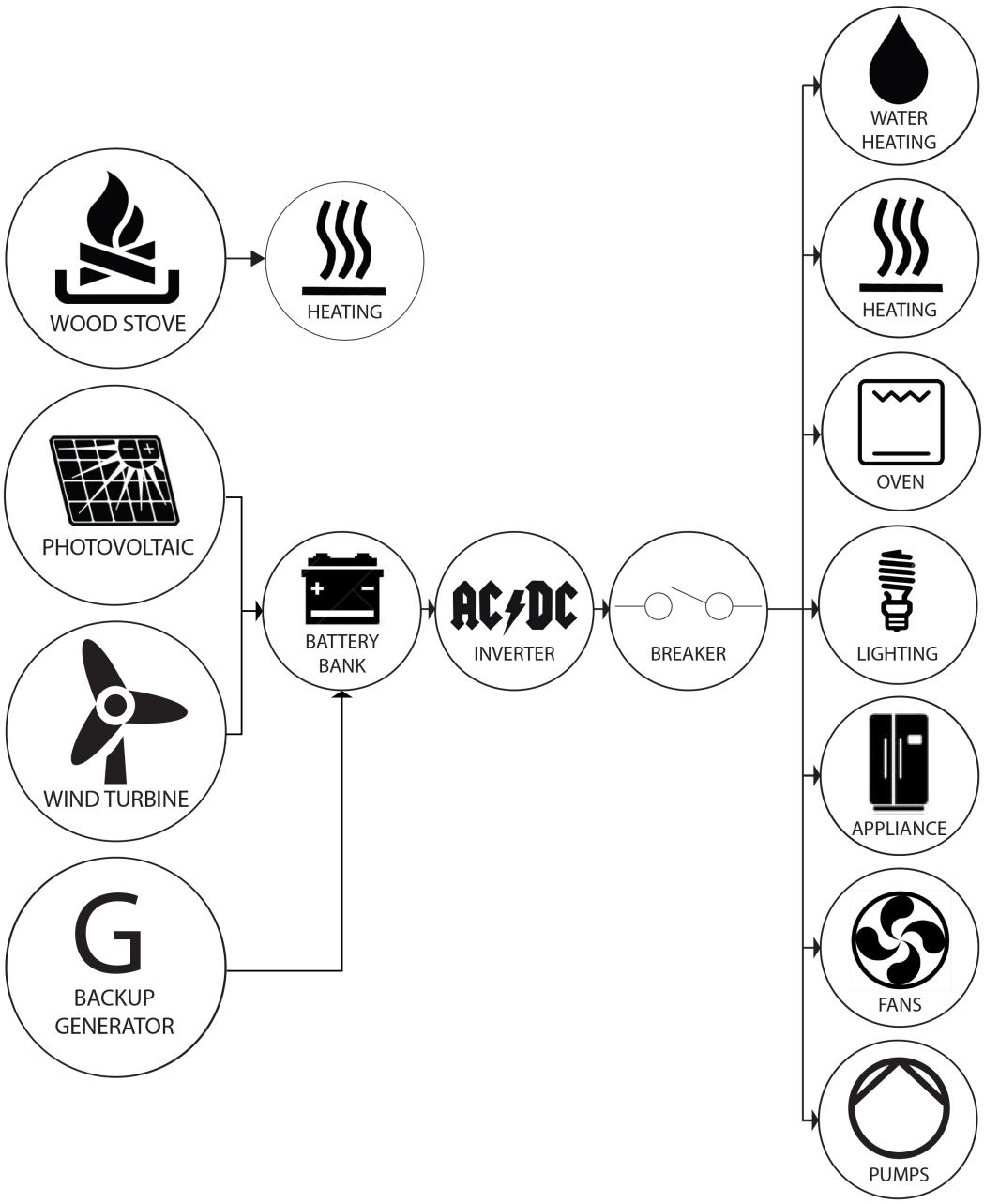


Fig.46: Energy Flow Diagram

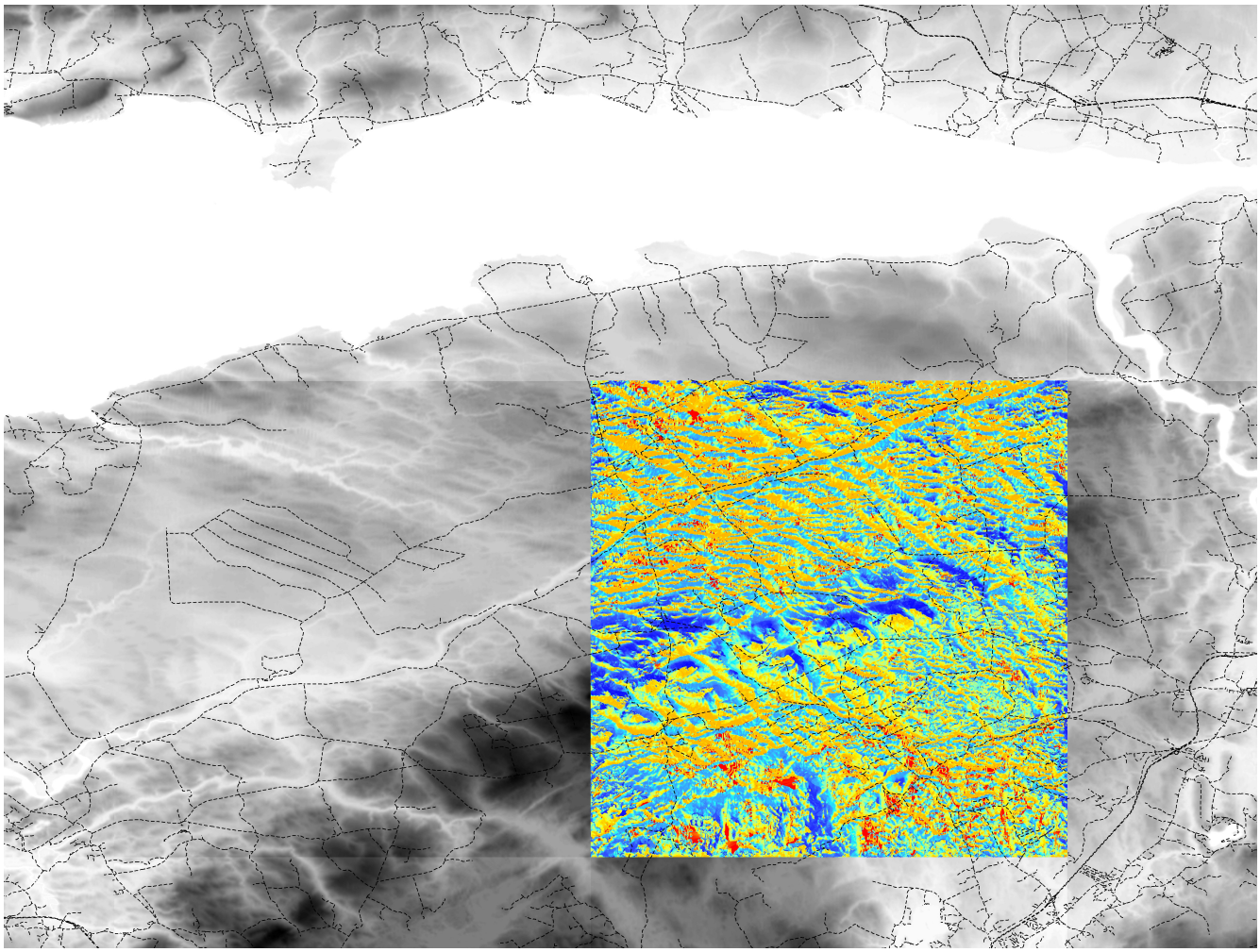
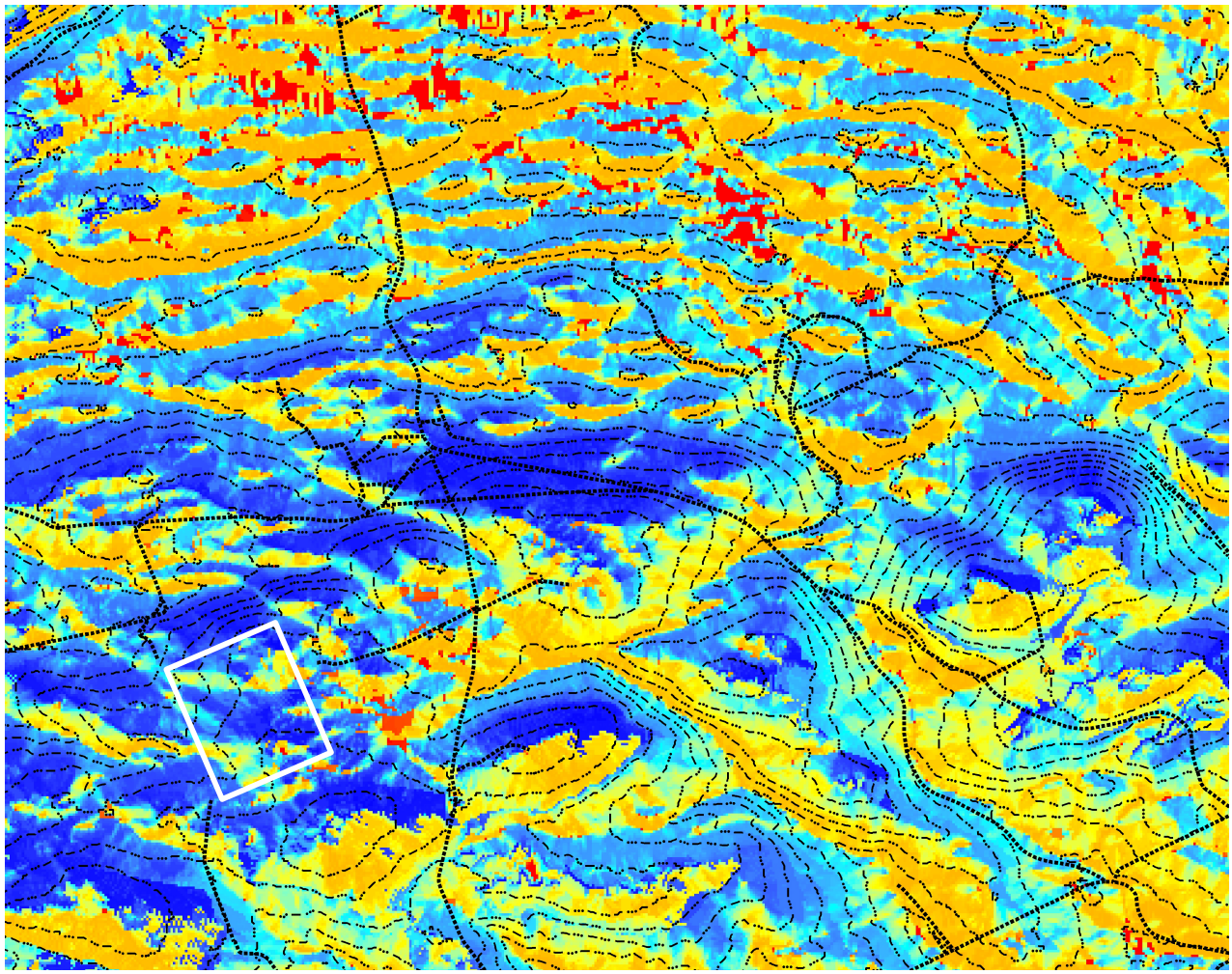


Fig.47: Solar Irradiation Map - Rawdon Hills



High
Med.-High
Med.-Low
Low

Solar Irradiation

The solar irradiation map indicates the areas of highest and lowest solar levels at ground level. This map allows for assessment of locations for solar power capture.

Fig.48: Solar Irradiation Map

Taking advantage of the rainfall, a water catchment strategy is in place. Rain water is directed from the eavestroughs to subterranean sand filtered grey water cisterns – one cistern per building. The water from these cisterns can be used for exterior cleaning and irrigation. A water well will be installed for potable water. Water from this source that is used for personal care and laundry will be filtered post use and be stored in another grey water cistern. This water will be used for toilets, exterior cleaning, and irrigation. This two part strategy is meant to limit the consumption and over use of clean potable well water. By taking advantage of the rain fall, water can be stored and used regularly for cleaning, and farming or gardening irrigation. Depending on watering needs, mobile tanks can be filled and be moved around the site as needed for the operation.

As the water in house moves through its cycle, it eventually ends up in a black water septic tank. This septic tank moves on to a septic field which is run downhill of the house and water well. This black water waste is then reabsorbed back into the earth and allows for the cycle to complete.

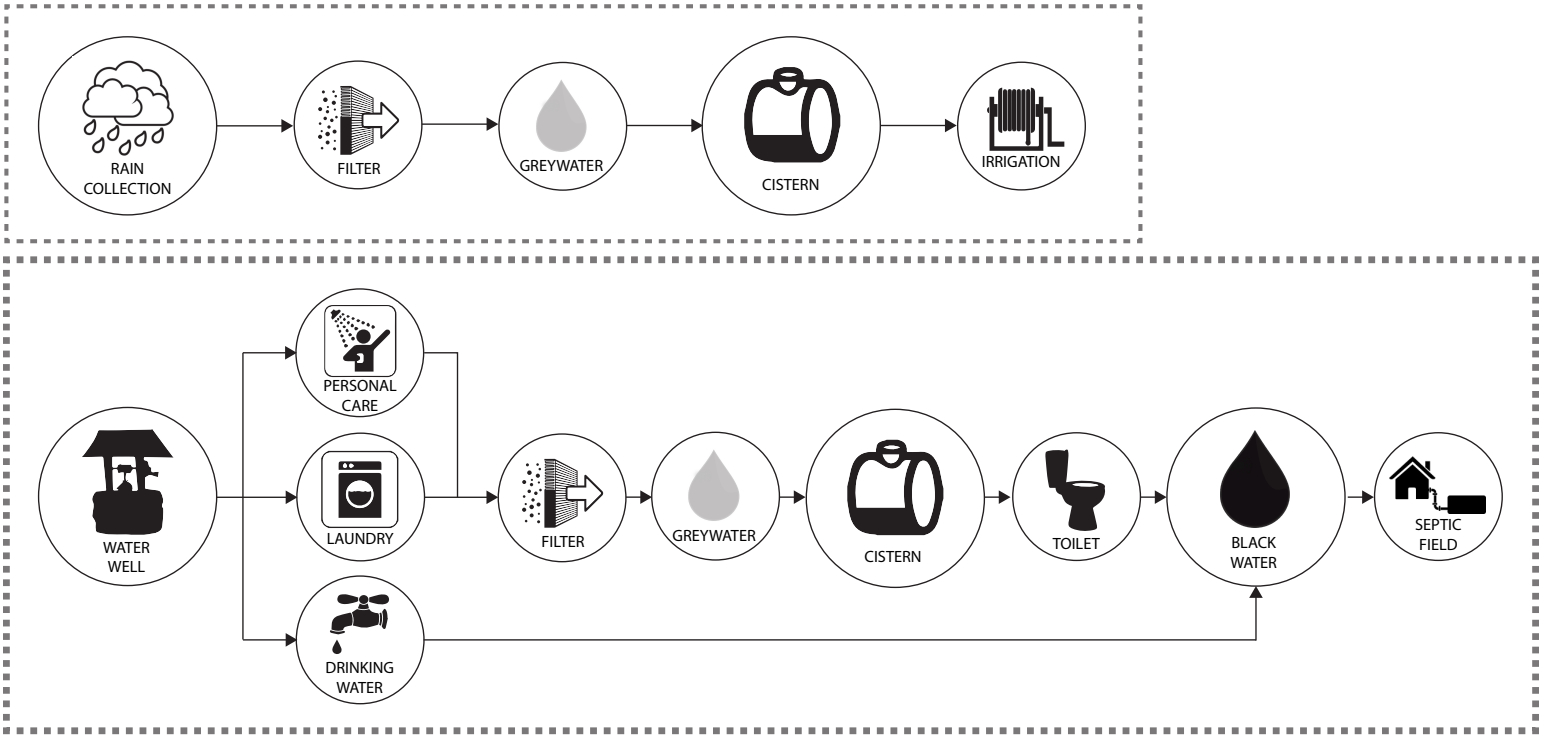
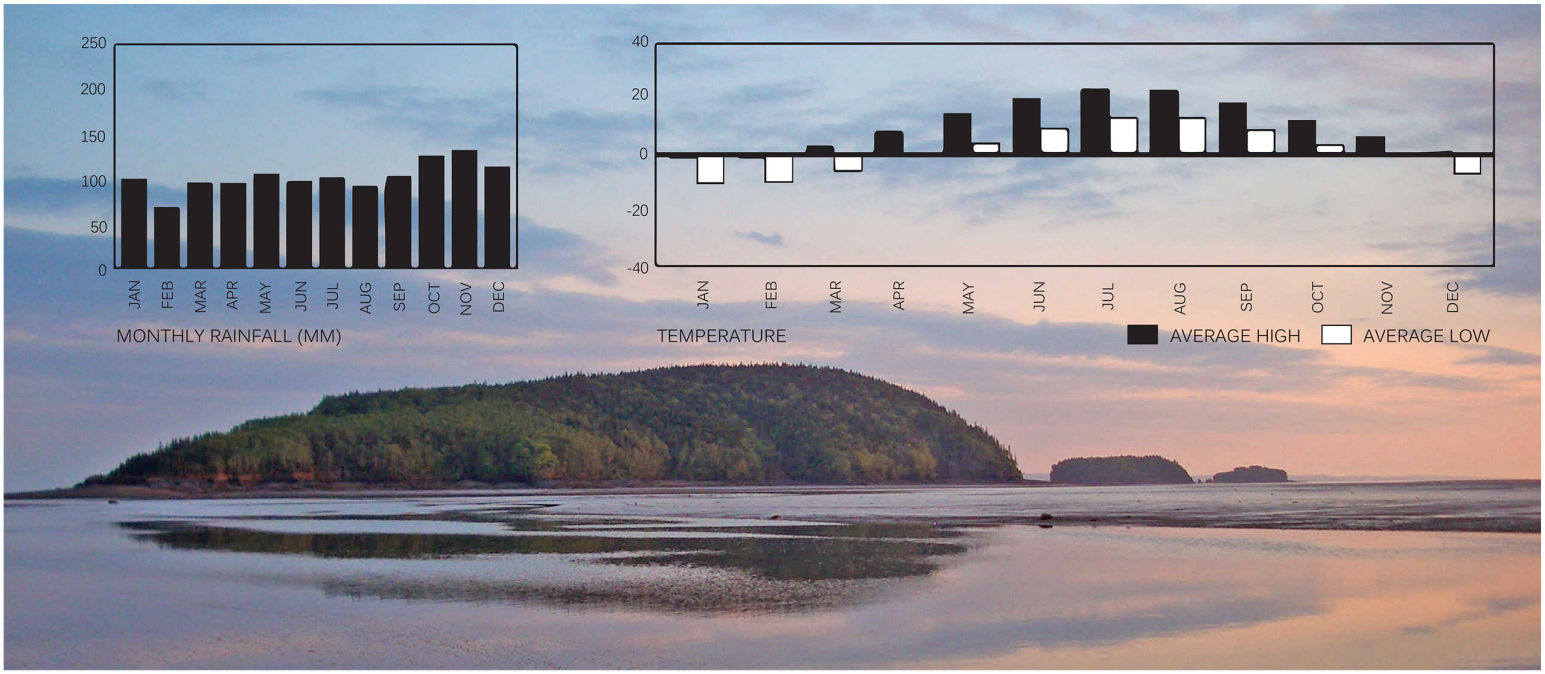


Fig.49: Water Flow Diagram

Canada's Atlantic region is dominated by a Mid-Latitude Wet climate, subject to the warm Gulf Stream from the south and the Labrador currant from the north – which brings the cooling influence of icebergs in spring – resulting in widely varying ocean temperatures and highly variable weather.

John McMinn
41° to 66°: Regional Responses to Sustainable Architecture in Canada[21]

[21] McMinn, John. *41° to 66°: Regional Responses to Sustainable Architecture in Canada*. Cambridge, Ont.: Cambridge Galleries, Design at Riverside, 2005. 53.



Weather

Average monthly rainfall/ precipitation for the area is roughly 90mm. The annual temperature range is a winter average of -6°C and a summer average of 18°C.

Fig.50: Hants County Weather Graphic

Material flow considerations are used to allow for greater sustainability in construction. By seeking out local sources for materials, the transportation distance of building materials naturally goes down. On site work will generate useable building material in the form of backfill from excavation material. Salvaged and recycled timber can be used for trim, wall studs and plates, floor joists and rims, columns and beams, and rafters when the wood is in good condition and of appropriate dimension. Dimensional lumber or rough sawn timber can be used and further modified to glulam for larger dimensions. With silviculture and selective timber harvesting in wide practice regionally, sustainable timber products can be sourced and prepared locally. New building materials should have the lowest embodied energy and be recyclable, reusable or biodegradable.

The entire life cycle of a building should allow for deconstruction and recycling at the end of the buildings use by making building assemblies to be more easily disassembled. Using screws and bolts for fasteners as opposed to nails for structure would allow for disassembly and greater potential for material salvage. Insulation choices like mineral wool fiber or polystyrene panels could be reused as opposed to spray foam insulation types. Regardless, 100% of building material will not be reusable however even a modest portion would make a difference.

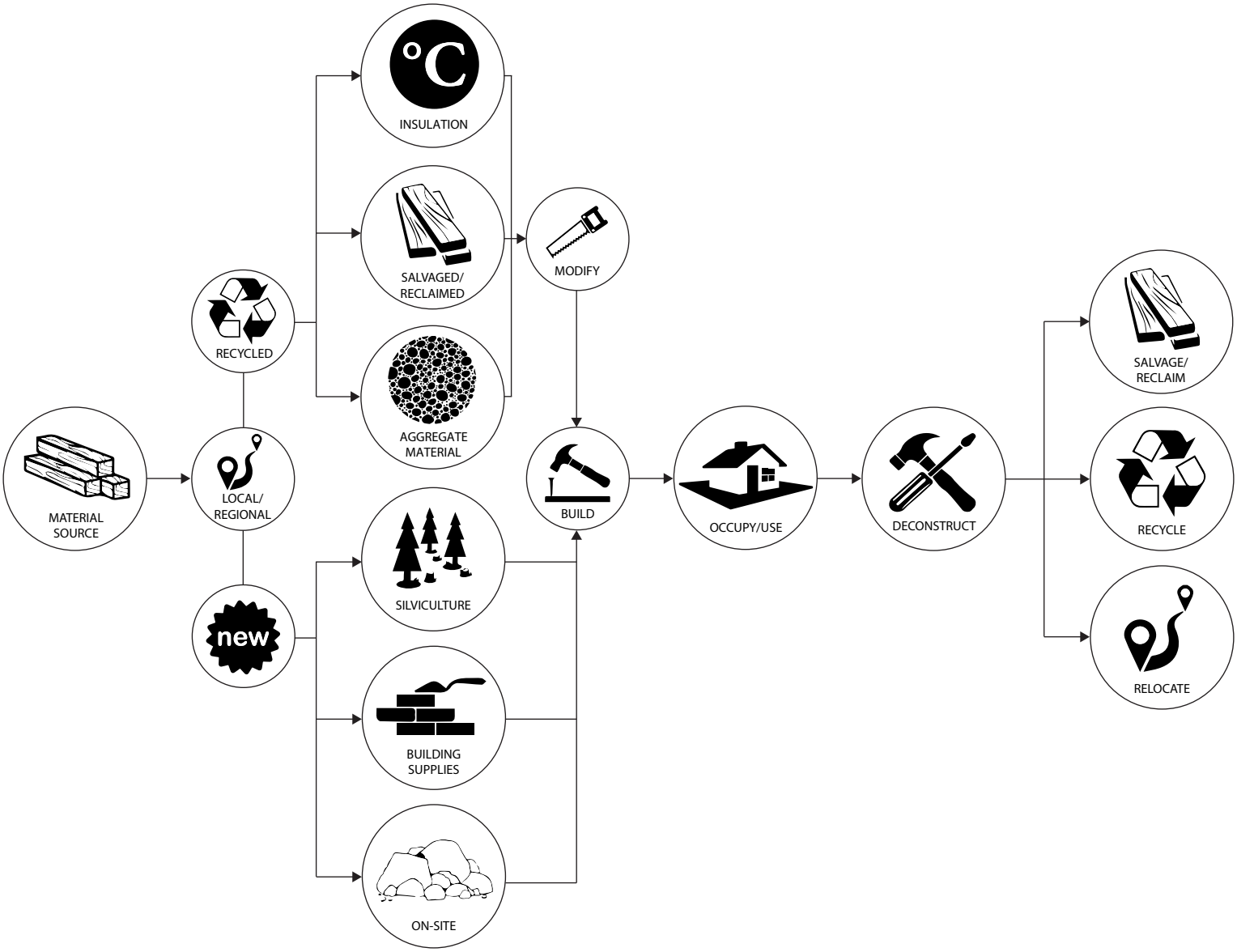


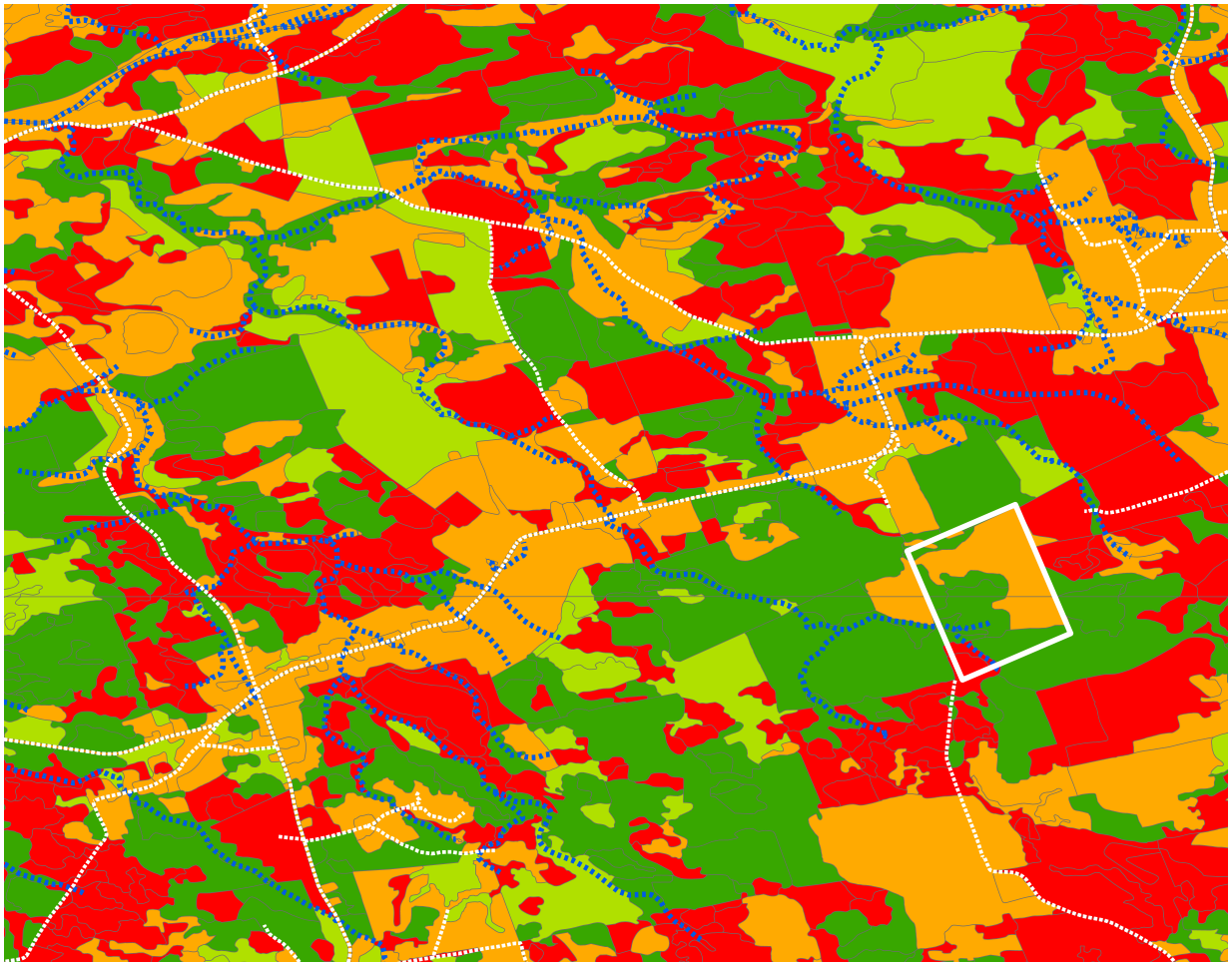
Fig.51: Material Flow Diagram

Sustainable construction considers the role and potential interface of ecosystems in providing services in a synergistic fashion. Integration of ecosystems with the built environment can play an important role in resource-conscious design. Such integration can supplant conventional manufactured systems and complex technologies in controlling external building loads, processing waste, absorbing storm water, growing food, and providing natural beauty, sometimes referred to as environmental amenity.

Charles Kilbert

Sustainable Construction: Green Building Design and Delivery[24]

[24] Kilbert, Charles. *Sustainable Construction: Green Building Design and Delivery*. Hoboken: Wiley, 2008. 75.



0%-70% Forested

75% Softwood

Mixwood Forest

75% Hardwood

Forest Distribution

This map indicates the distribution of forest types and landcover in the area. Softwood is abundant and hardwood is quite common in the region as well. The property is moderately forested on the North and East sides, Mixedwood and softwood forest cover the west and south with 60% of the total area.

Fig.52: Forest Distribution Map

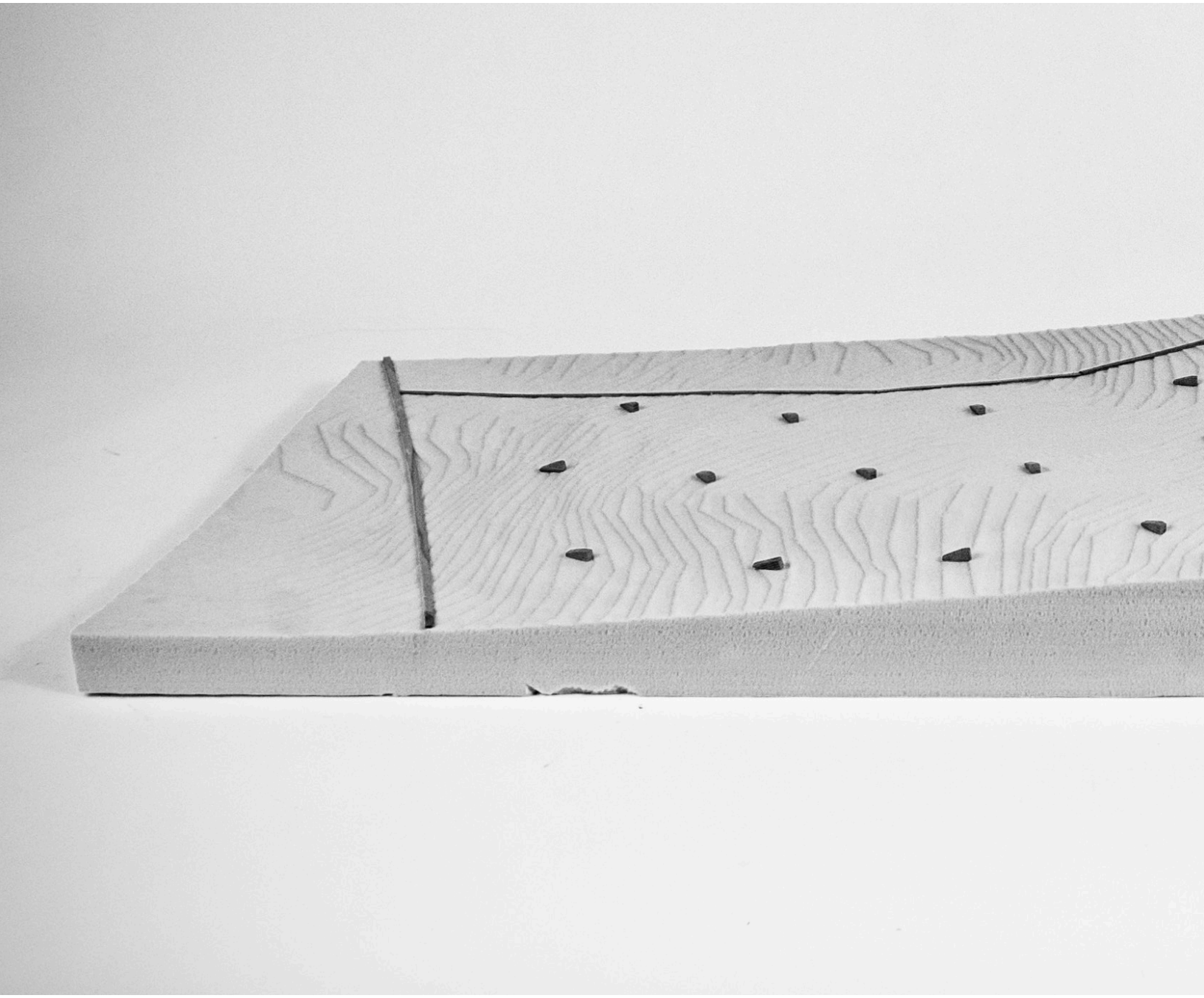




Fig.53: Apiary Farm Study Models

Farm Study Model

This 1:400 model was used to better understand the topography, the farm layout, and the spacing of hive housing - 10 hives can be placed in each housing in the winter and be spread out around the housing in the spring, summer, and fall.



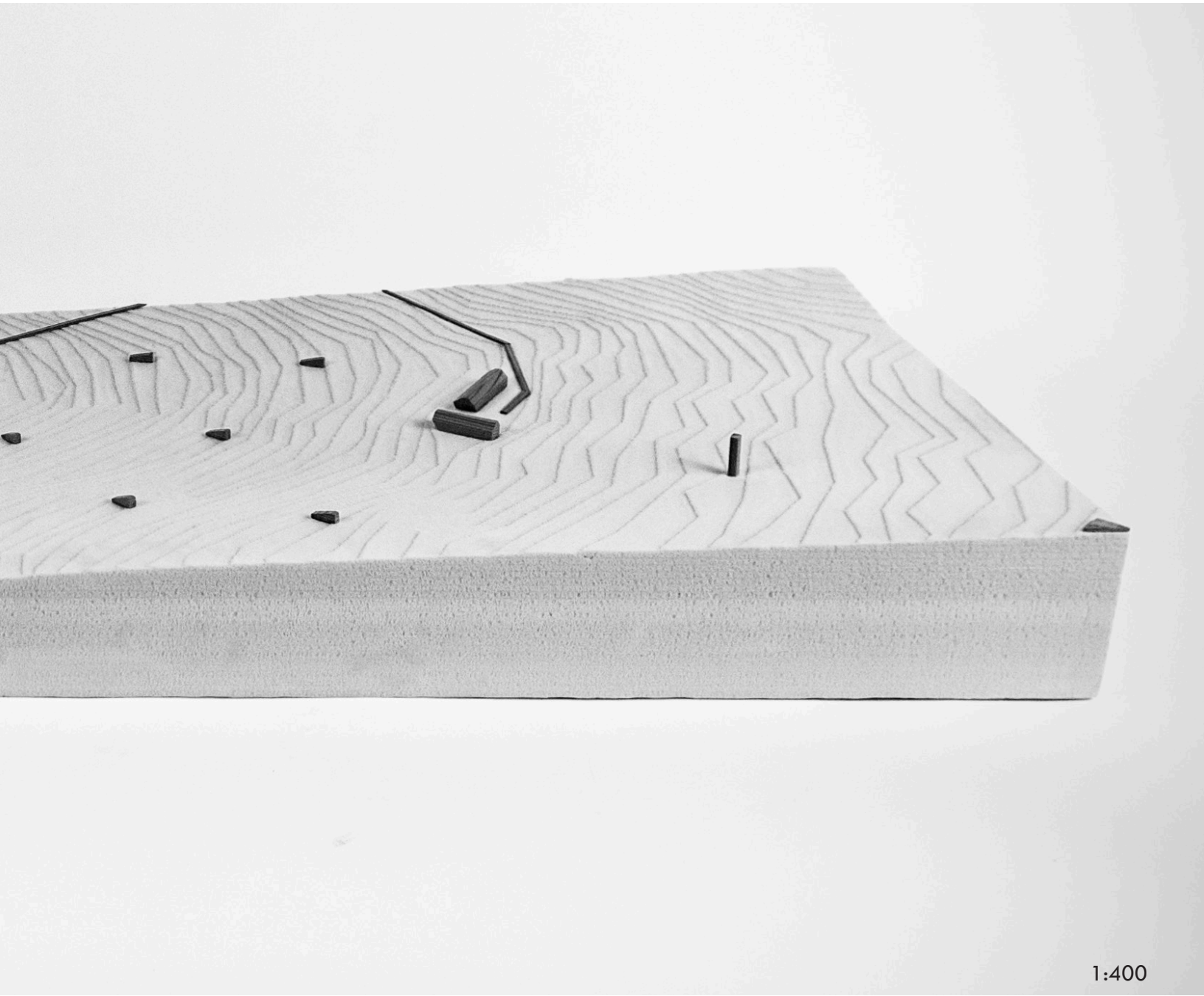
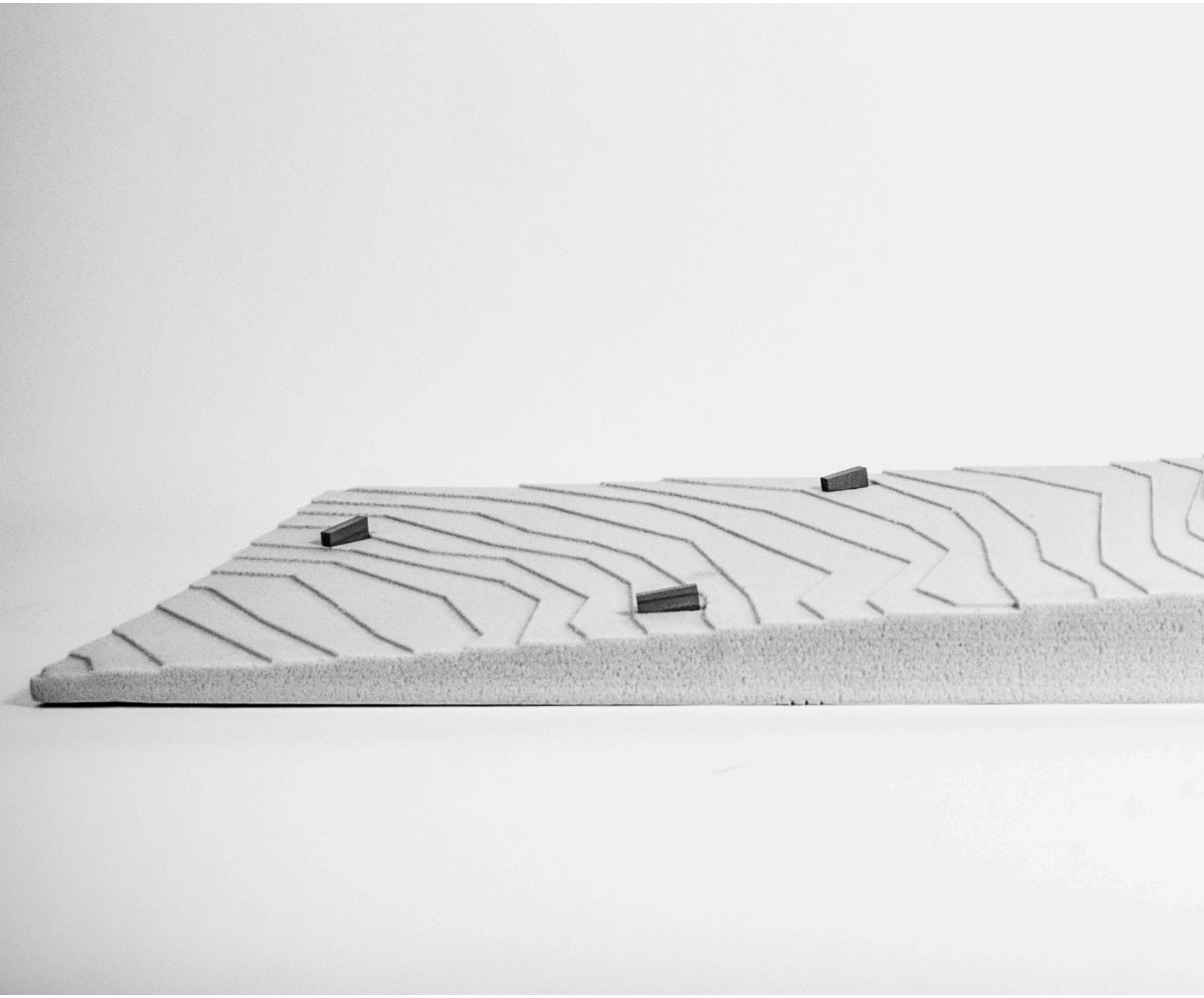


Fig.54: 1:400 Apiary Farm Study Model

Farm Study Model

This 1:200 model provided further refinement of the farm layout with the house upwind of the barn considering the prevailing wind direction. The roof tilt and orientation of each hive house is meant to shed water downhill. The lookout tower sits uphill and in line with the centerline of the farm.



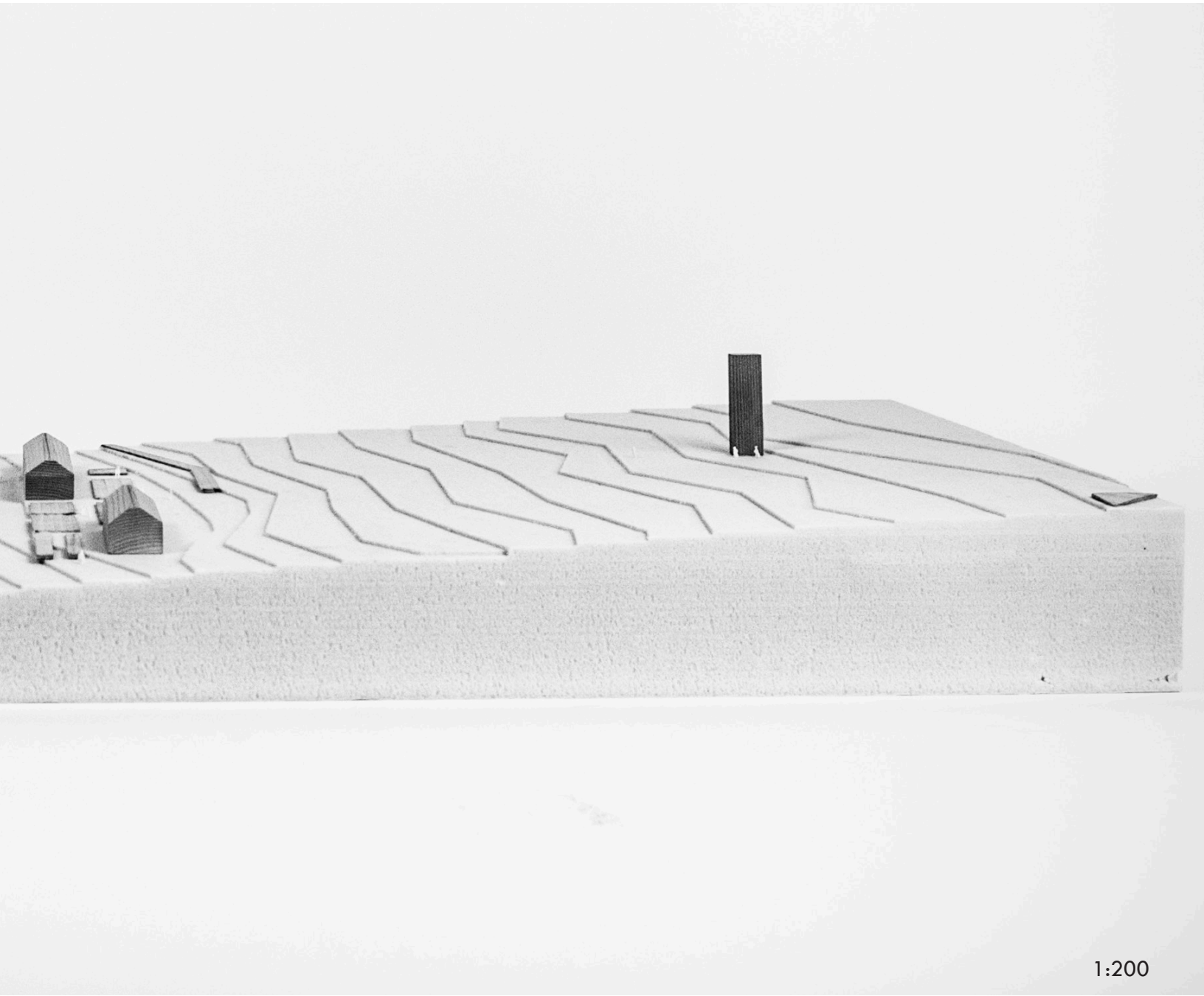


Fig.55: 1:200 Apiary Farm Study Model



1:50

Barn Bay Study Model

Exploring the possibilities for a repeatable barn bay system, this model is meant to be a stepping off point for barn volume exploration. Containing early ideas for the architectural elements in the bay construction, improvements were made from this model by creating a leaner structure and moving away from the truss to the rafter and ridge beam creating open upper spaces that could be used.



1:50

Fig.56: Barn Bay Study Model 1:50

. . . . .

The scope of the design proposal is one with three phases. A masterplan has the benefit of planning ahead for greater use of the land and is ultimately malleable to the owner's precise requirements. The first phase is the dwelling that establishes the off-grid occupation of the site. The second phase is the barn that allows for production and cultivation on the property. This phase is flexible as the product of the farm could vary: livestock, horse ranching, orchard, apiary, etc. The barn would be sited in the same location for all of these purposes, however the envelope design strategy would change according to the buildings use. Along with this phase is the establishment of planter boxes. These are meant for the occupants to create a harvest for themselves, a mix of vegetables, fruit trees and bushes, and flowers would be one possible arrangement. The third phase is the tower which would open the opportunity for eco-tourism, the site is uniquely set in the Rawdon Hills with an incredible view of a rural landscape reaching down to the Minas Basin where the world's highest tides can be observed. As this is a high point on the property, a secondary function of the tower would be as a weather station to collect data that can be used for farming purposes or off grid performance assessment. This phase of design is a suggestion that a functioning off the grid farm would be an attraction in the eco-tourism sector especially seeing as the area attracts tourism in a similar vain for vineyards, whale watching, and tidal attractions.

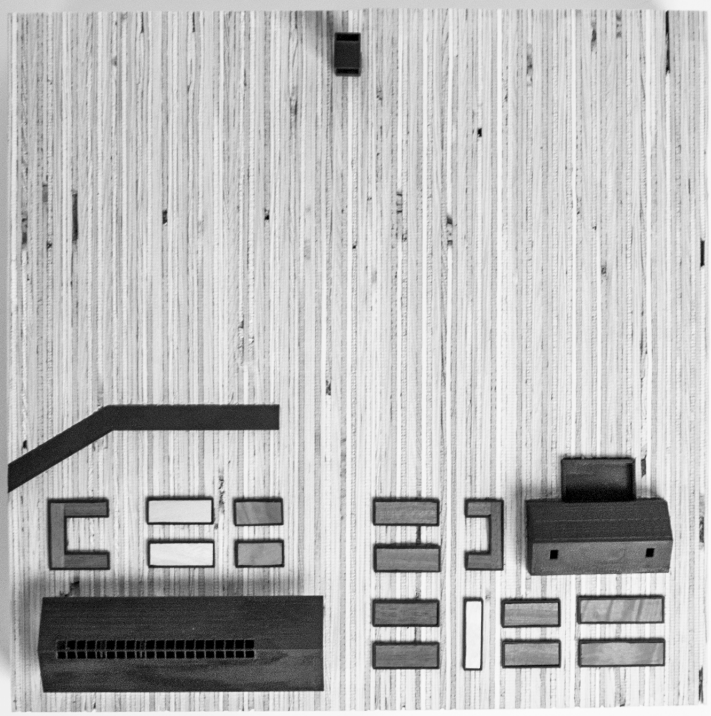


Fig.57: Building Study Model #1

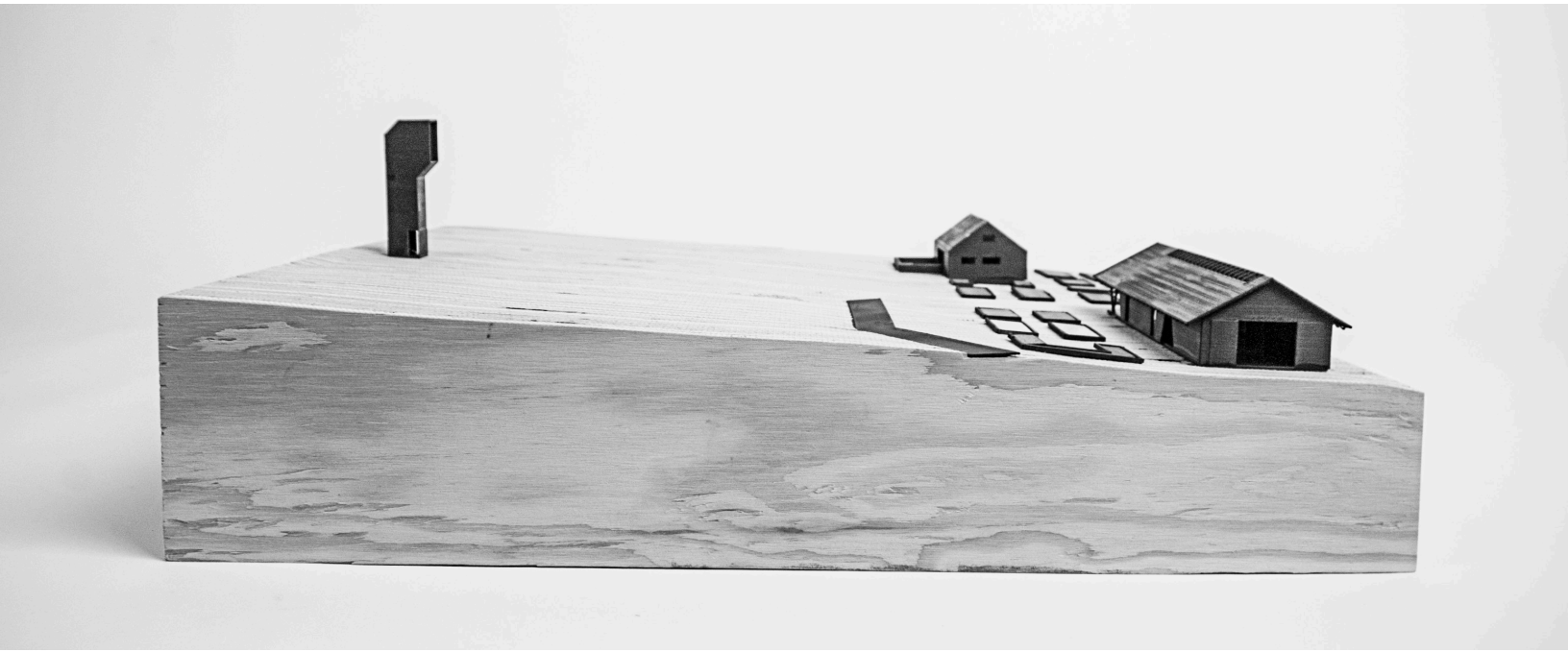


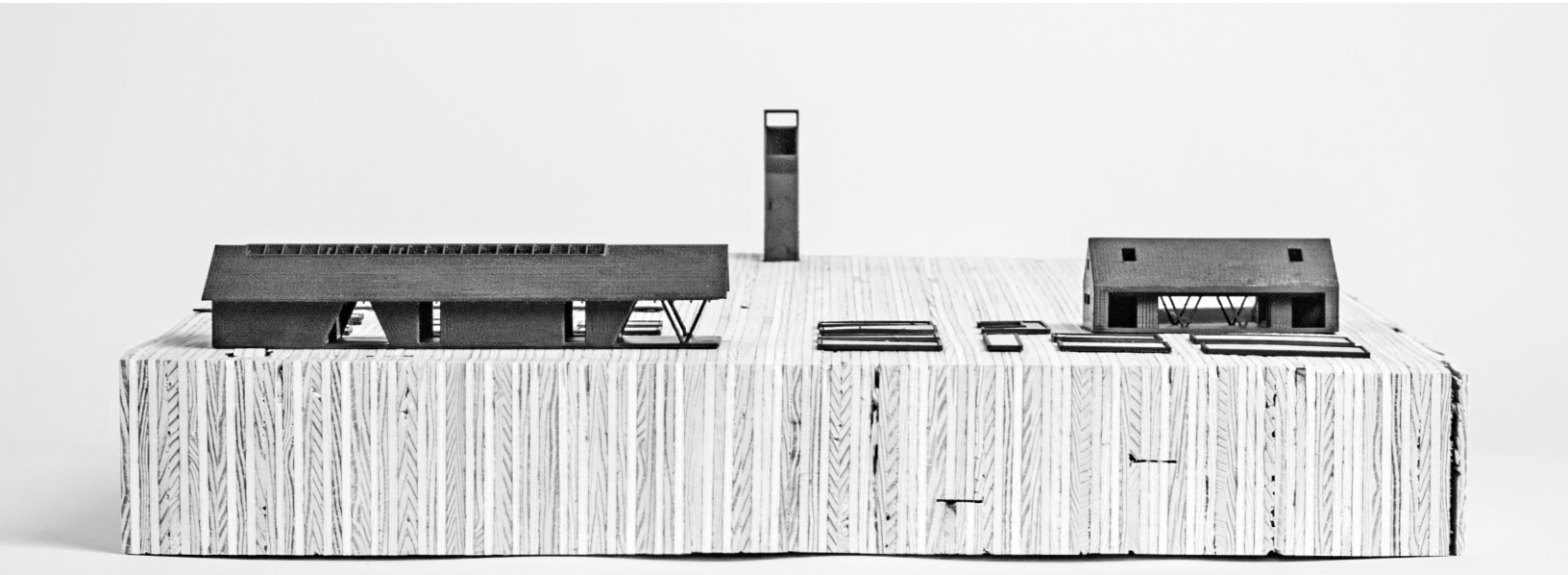
1:200

In Canada, rural areas are 99% of the land area and contain 20% of its population. In the European Union, 56% of the population is living in rural areas that encompass 91% of the land area. Rural design and urban design are similar in that both embrace quality of life. Rural design is, however, fundamentally different from urban design in seeking to understand and embody the unique characteristics of open landscapes and ecosystems where buildings and towns are components of the landscape, rather than defining infrastructure and public space – as in urban design.

Dewey Thorbeck
Rural Design: A New Design Discipline[25]

[25] Thorbeck, Dewey. *Rural Design: A New Design Discipline*. Milton Park, Abingdon, Oxon: Routledge, 2012. 3.



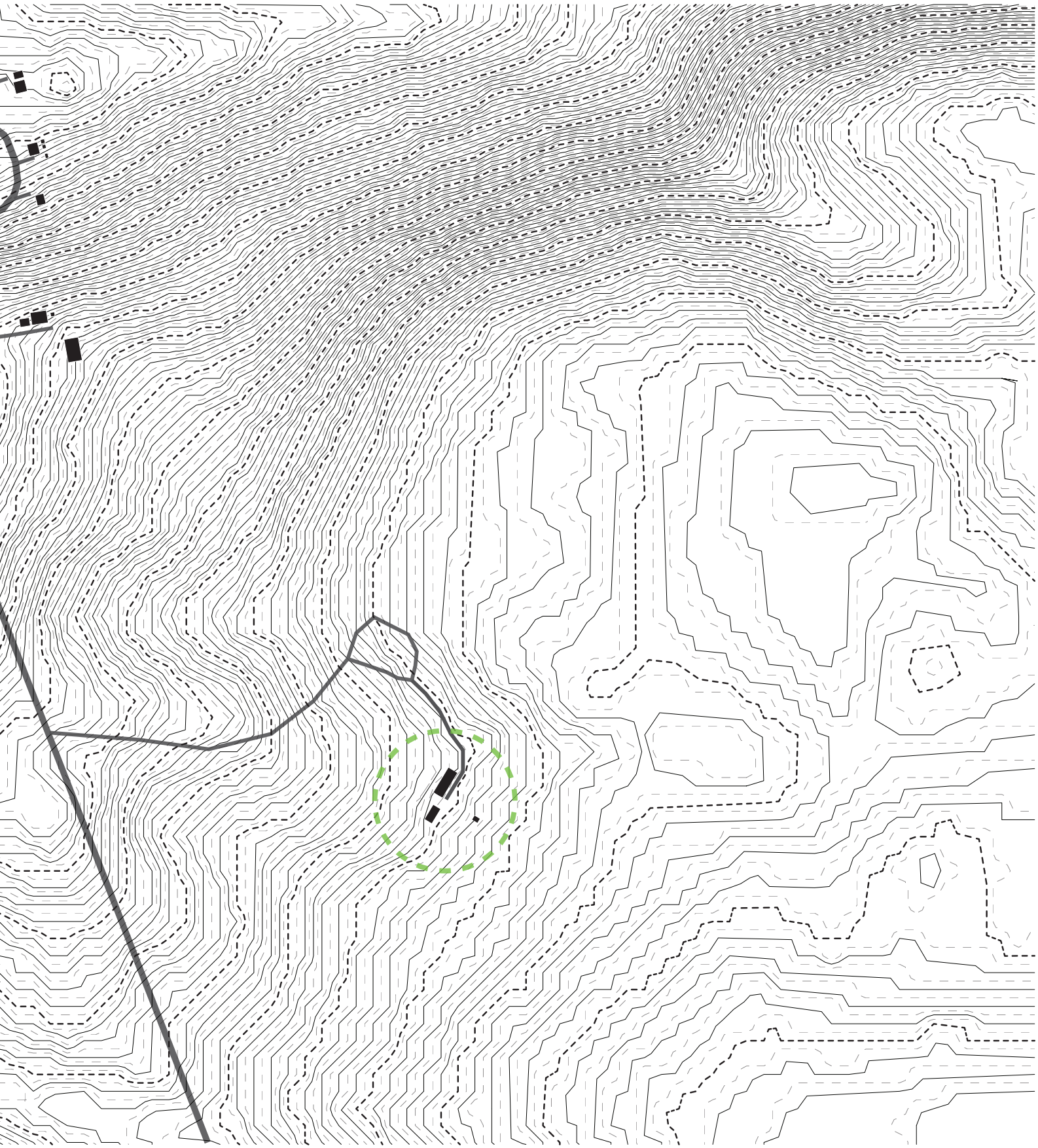


1:200

Fig.58: Building Study Model #2



Fig.59: Topographic Map of Site and Surrounding Area



N

500m 100m

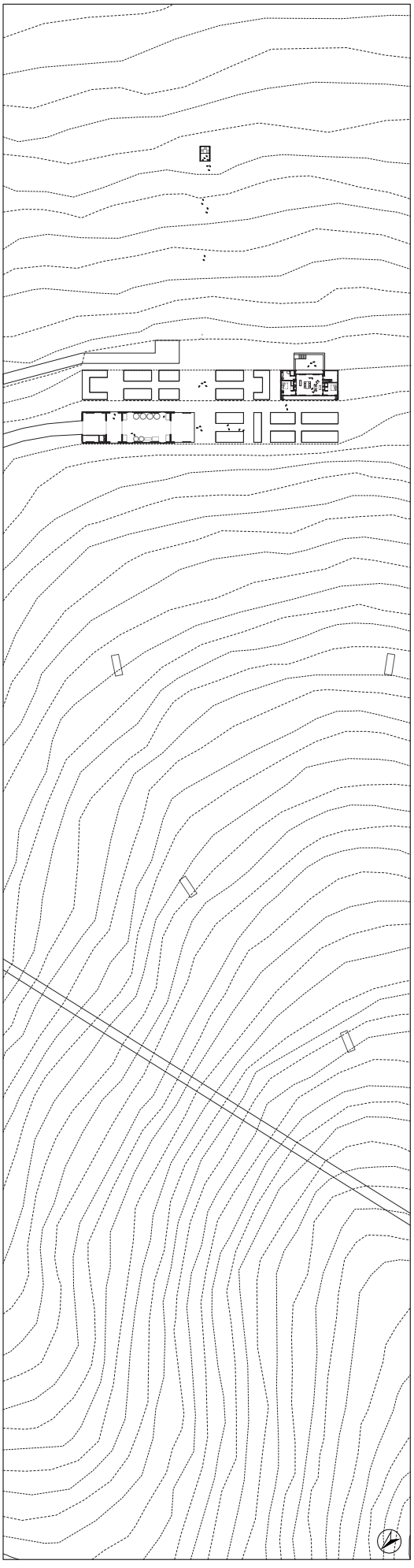


Fig.60: Farm Site Map

Vernacular construction was based on the use of available lumber, and developed in response to the extreme winds and heavy rains coming off the North Atlantic, resulting in buildings with taut skins and minimal projections. The long winters and short construction season also dictated the efficient and rapid building technique provided by platform framing.

John McMinn
41° to 66°: Regional Responses to Sustainable Architecture in Canada[26]

[26] McMinn, John. *41° to 66°: Regional Responses to Sustainable Architecture in Canada.* Cambridge, Ont.: Cambridge Galleries, Design at Riverside, 2005. 53.



Fig.61: Context #17



Fig.62: Context #18



1:200

Fig.63: House Section A

. . . . .

The design strategy for the house is multi-faceted. In an attempt to continue an architectural dialogue with the region`s culture, topography, and climate the formal strategy resonates with local gable forms. It is meant to be visually understood by local citizens and not foreign or out of place. The idea of the house is one which is contemporary and at the same time being humbly independent, untethered to the grid or existing infrastructure. Synthesizing bucolic symbolism with minimalistic modern open spaces is made possible with the simplistic gable volume. The construction is a mixture of platform framing and timber construction. Heavy timber columns and beams remain exposed adding a tactility and warmth to the structure. The more abundant stud frames and i-joist rafters remain hidden allowing for visually calm spaces.

The timber construction furthers the regional concerns of the project by sourcing materials as close to the site as possible. There is vast selection of locally harvested and milled timber for structure, sheathing, and finishes. By sourcing locally, the local economy benefits and the project remains environmentally conscientious. However, there is a balance being sought between locality of material and the ultimate lifecycle and performance of the material.



Fig.64: House Exterior #1



Fig.65: House Interior

The main concern of any generative theory of architecture is ethical. The architect needs to find an appropriate language (in the form of stories) capable of modulating a project in view of an ethics, always specified to each task at hand. The practice that emerges from such a theory can neither be an instrumental application nor a totalizing operation that might be universally applied as style or method. Rather, this praxis – the trajectory of an architect's words and deeds over time – aims at the production of harmonious, well-adjusted "fragments" that may question, inducing wonder, the hegemony of the ideological, fundamentalists, or technological beliefs embedded in the physical fabric of the global village. This praxis may be better grasped as a verb, rather than in terms of its heterogeneous products – as a process that is never neutral while the maker aims at disclosing the invisible, rather than the symbolizing preconceived image.

Alberto Perez-Gomez
"Ethics and Poetics in Architectural Education"[27]

[27] Perez-Gomez, Alberto. "Ethics and Poetics in Architectural Education." In *Architecture, Ethics, and the Personhood of Place*. Edited by Gergory Caicco. Hanover: University Press of New England, 2007. 122.

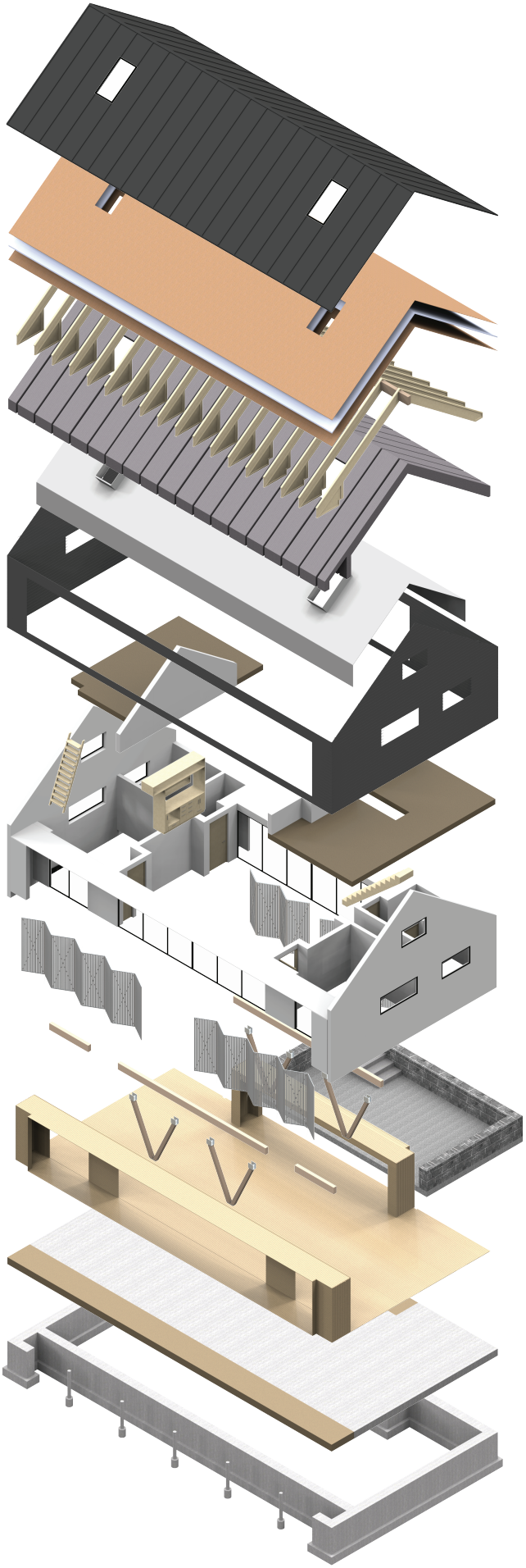


Fig.66: Exploded Isometric #1

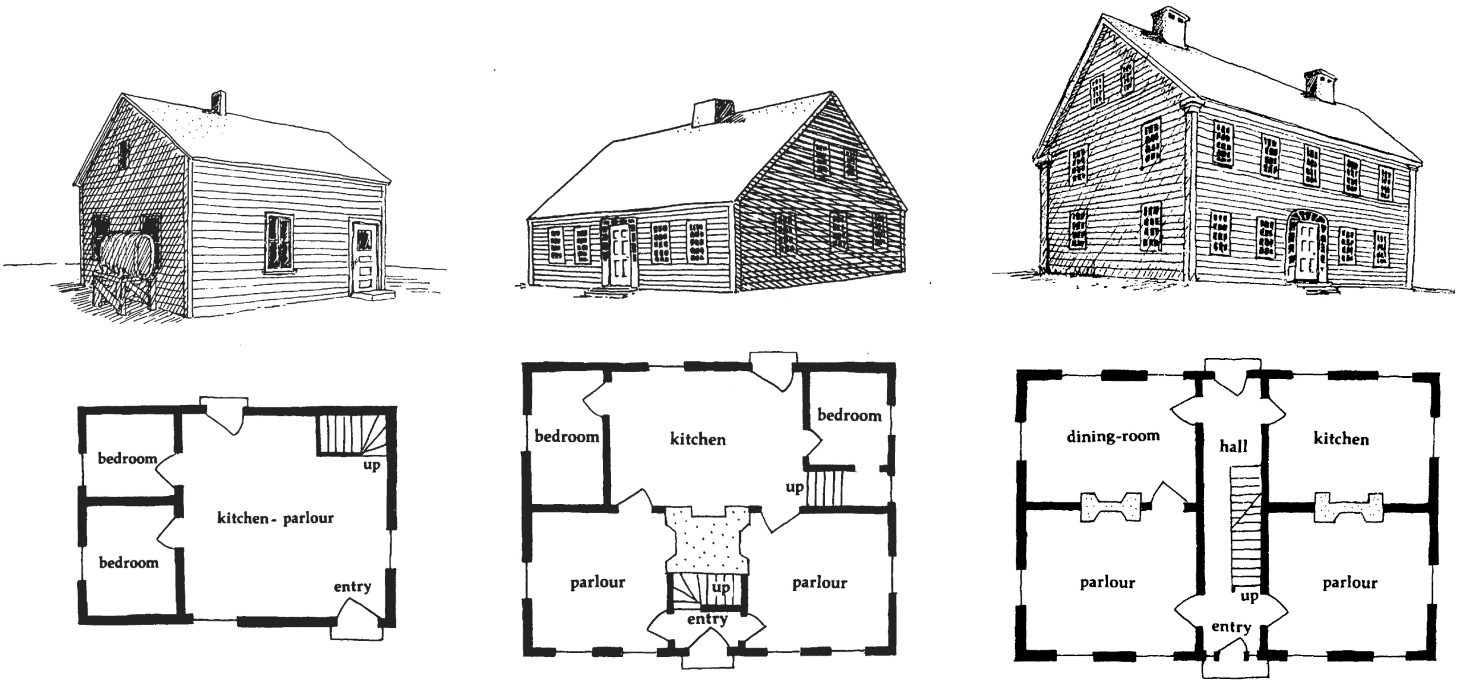
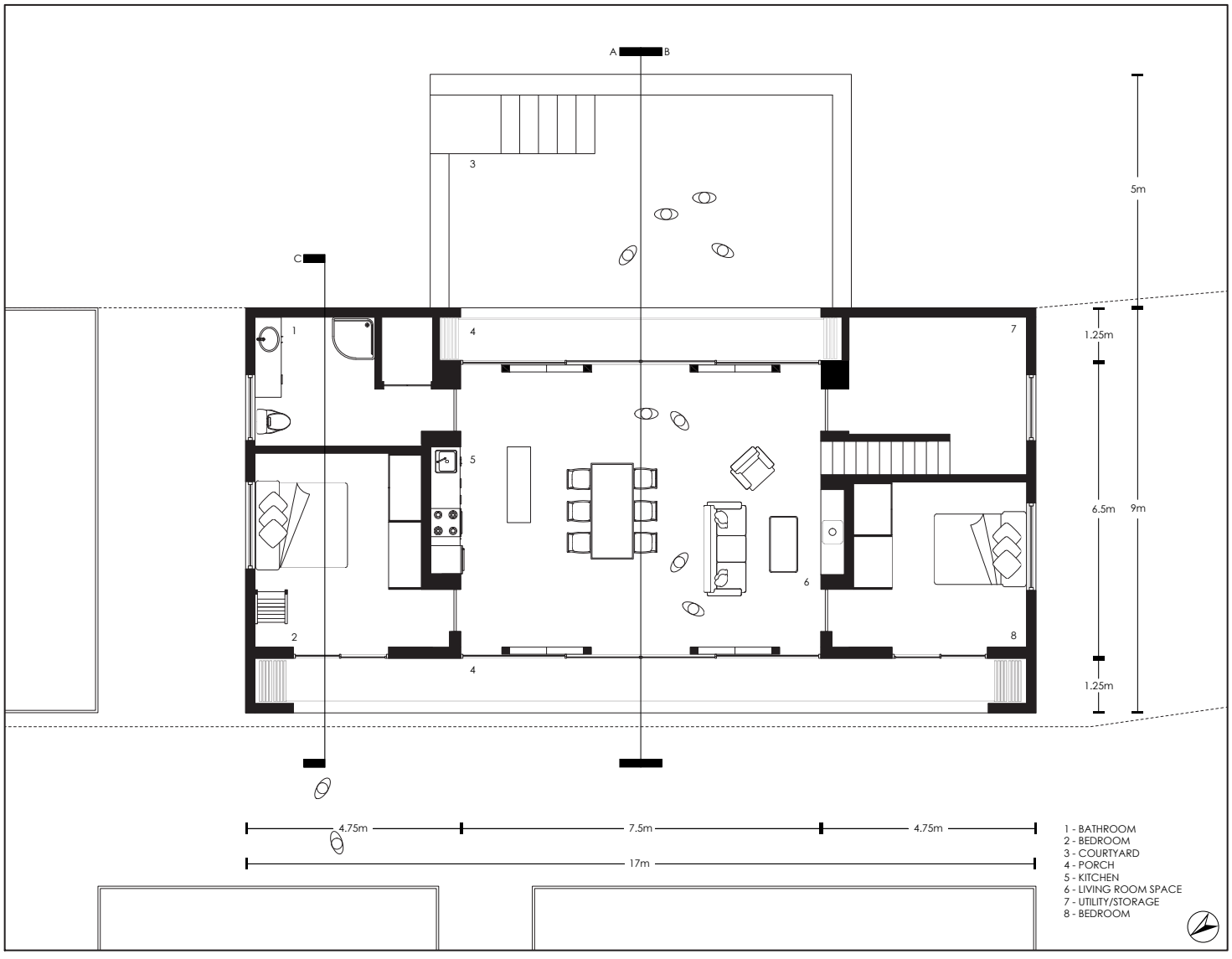


Fig.67: Maritime House Typologies #2

Fig.68: House Plan



Typologically the house is a synthesis of a hall and parlour house (1750-1950), a dormerless Cape Cod house (1770-1850), and a full two storey “Loyalist” house (1770-1850). The hall and parlour floor plan with loft is one of the simplest, if not the simplest, used throughout eastern North America. The Cape Cod is a common building type on the east coast of North America particularly Atlantic Canada. The house floor plan borrows ideas from each: the loft and large combined kitchen and living space of the hall and parlour, the extruded gable volume of the Cape Cod, and the central corridor condition and symmetry of the “Loyalist”.

The glazed envelope encloses the internal core of the dwelling but it`s threshold extends past it`s immediate boundaries to the south east courtyard or the north west porch, towards the long view. This extension of interior space can be altered in numerous ways with the use of the external folding screen. The floor plan allows for ample daytime lighting in the kitchen and living room, limiting the need for additional lighting.

The floor plan is compact and meant to provide all the spaces needed for a small family of three to four. Looking past the immediate needs, programmatic range can be improved upon if an addition was ever required. The use of the large central opening would act as a means of connecting an additional structure, most likely on the South East facing elevation.

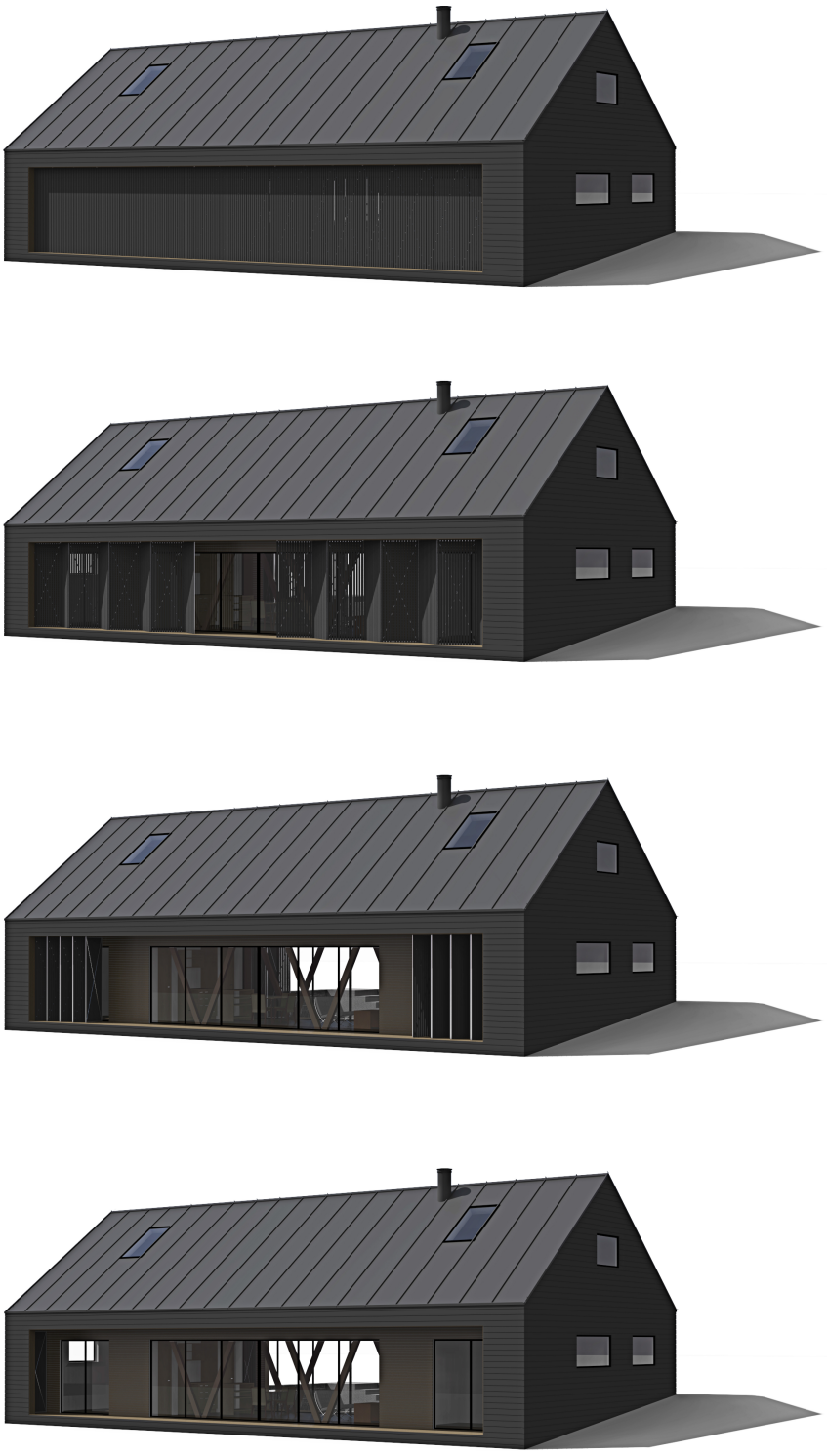


Fig.69: Shutter Sequence

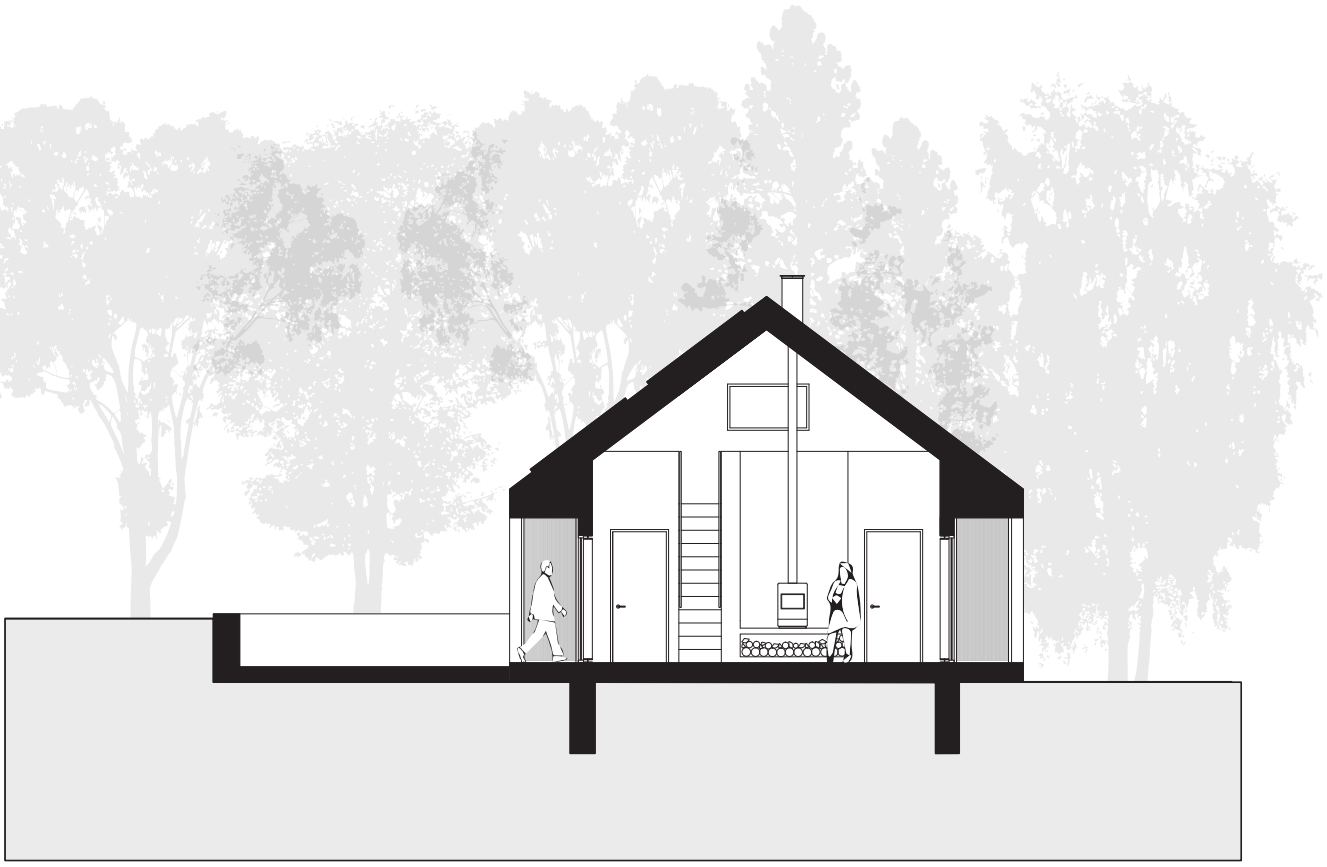
The façade of the house can be manipulated, opened and closed with a bi-folding storm shutter screen. The ability to modify the structures skin can alter its appearance and allows the simple form to step away from the existing typology. By enabling the form to morph slightly, the regional symbolism of the form is altered towards a new dynamic direction. The storm shutter screen allows the building to be made secure when left for long periods of time, protects against weather and wear, adds privacy when desired, and offers a mode of screening light into the main room.

The storm shutter is common in Nova Scotia with the harsh weather in winter months and high winds from autumn hurricanes. The screen adaptation uses the closing in and securing nature of the storm shutter. Segmentation of the screen allows for parts to be closed and others to be open. The protection of the glazing and deck space adds to the strategy of the storm shutter, protecting the weather vulnerable openings. This strategy will increase the life span of the windows, walls, and doors. In good weather the doors can be folded into the pocket space.

The house is well insulated with high r-value walls and roof (walls – R25 wood fiber batts, roof – R60 closed cell spray foam, both thermally broken with rigid foam insulation) and a thermally broken floor. This helps the overall performance of the house in winter and in summer months. The house is meant to be relatively air tight in construction with three to four air changes per hour.

The eaves over the entrances act as a climatic buffer zone to the interior space, further insulating and reducing seasonal heat gain and excess heat loss. These spaces are ventilated and would remain close to the exterior air temperature however air will move more slowly in these spaces than the exterior. The interior core of the house benefits from these buffer zones as they allow less energy to be used to maintain comfortable interior temperatures.

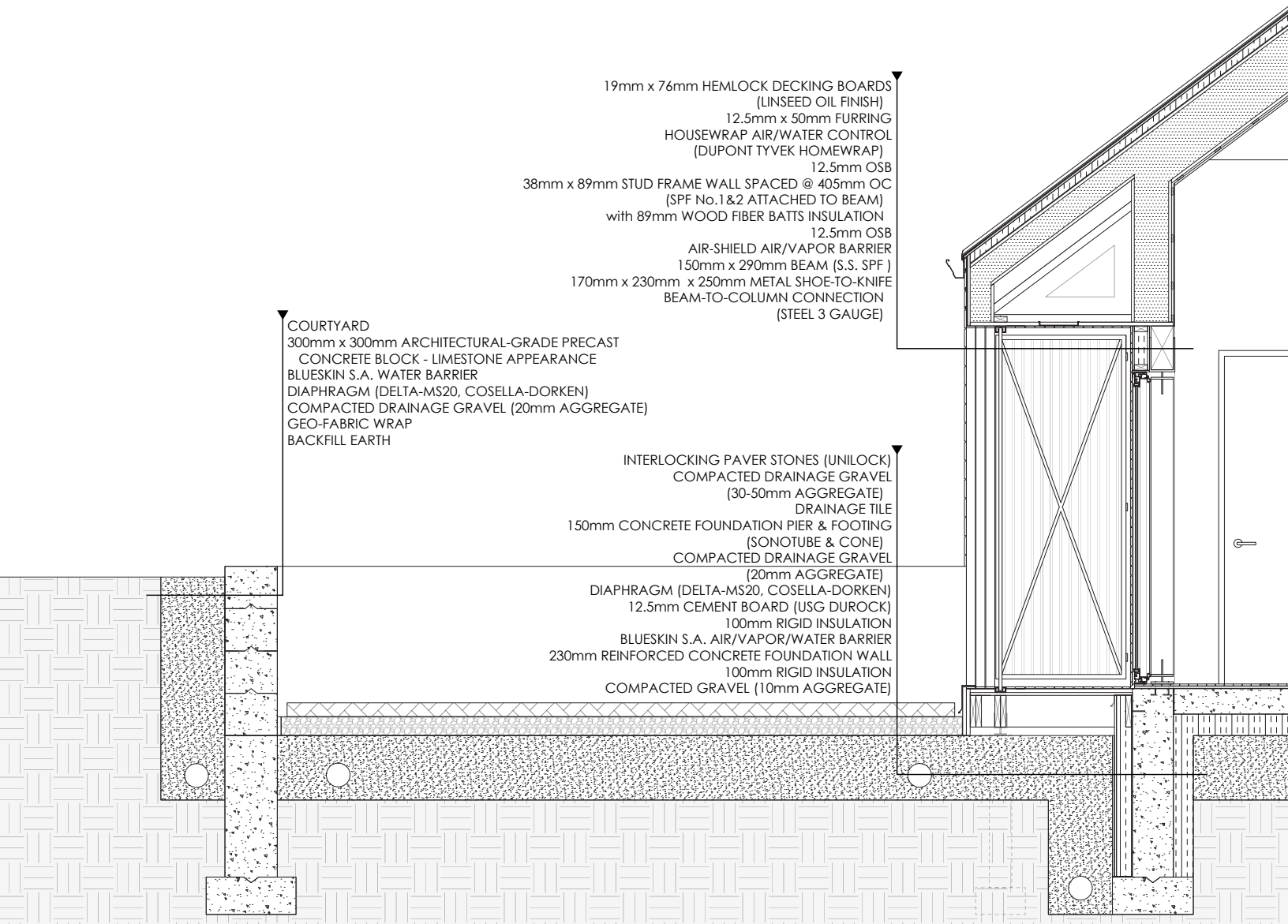
Ample fenestration allows for the dispelling of excess heat in either season. The roof structure is made of commonly sourced SPF i-joist rafters but are slightly modified. Heavy timber members can potentially be sourced from salvage facilities or from deconstruction of farm buildings, the design uses dimensions which are common for this purpose. Simple tongue and groove pine boards provides a regional and durable cladding, treating the cladding with Swedish pine tar and natural dark finish. Recycled glass acts as aggregate to the concrete floor slab and backfill is generated and used on site from the excavation process.



1:150

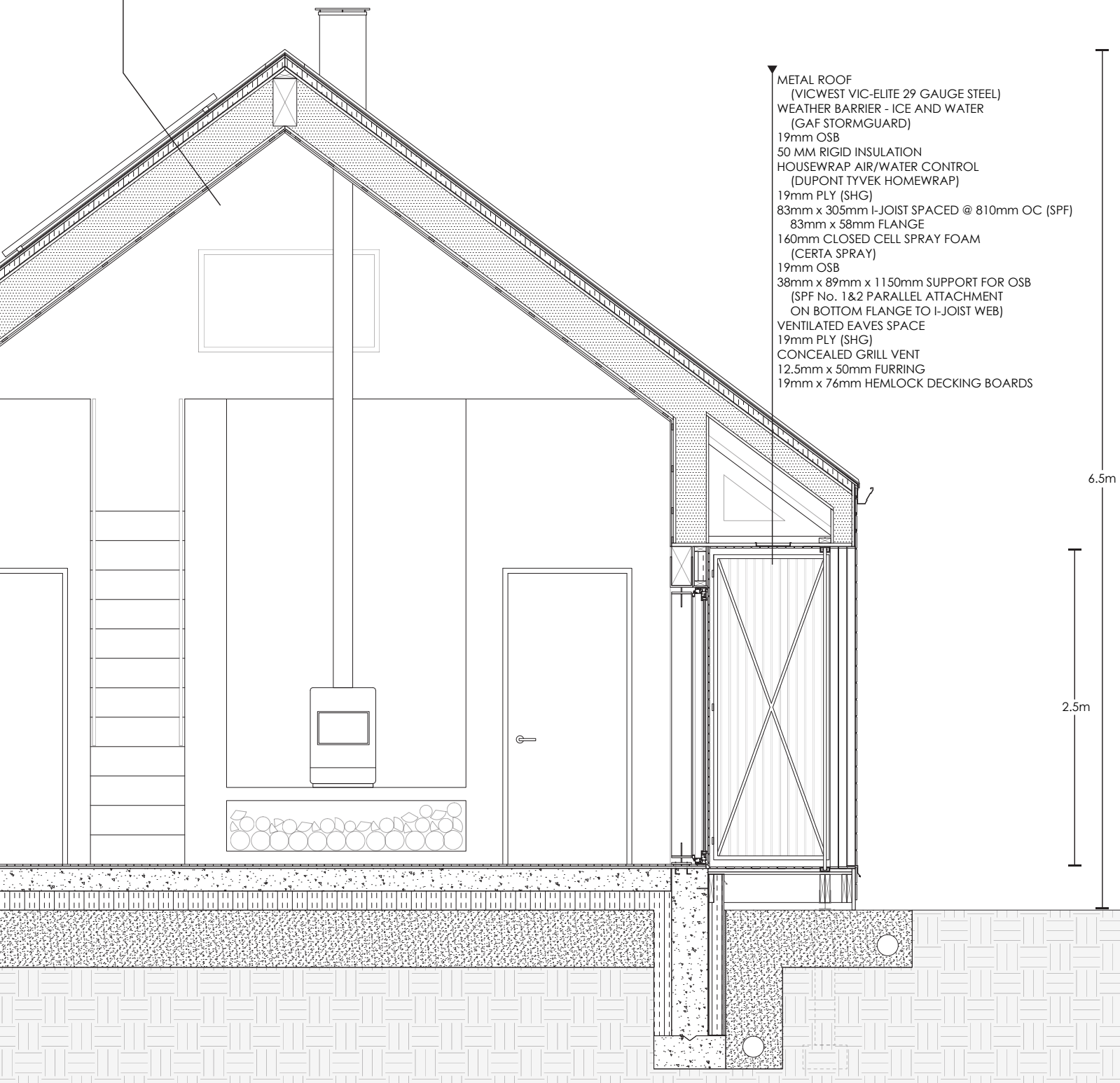
Fig.70: House Section B

Fig.71: House Section Detail #1

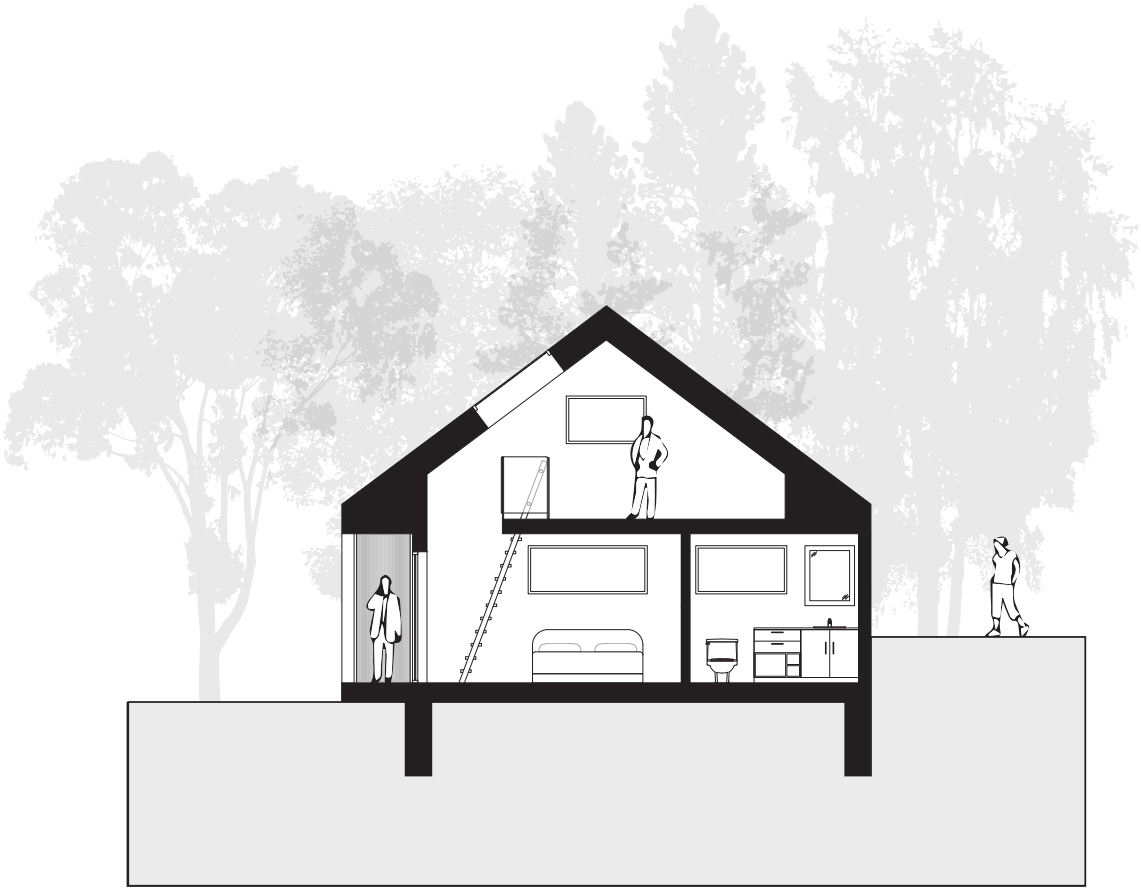


250 WATT PHOTOVOLTAIC SOLAR PANELS(x16)
WITH MOUNTING RACK
METAL ROOF
(VICWEST VIC-ELITE 29 GAUGE STEEL)
WEATHER BARRIER - ICE AND WATER
(GAF STORMGUARD)
19mm OSB
50 MM RIGID INSULATION
HOUSEWRAP AIR/WATER CONTROL
(DUPONT TYVEK HOMEWRAP)
19mm PLY (SHG)
83mm x 305mm I-JOIST SPACED @ 810mm OC (SPF)
83mm x 58mm FLANGE
305mm CLOSED CELL SPRAY FOAM
(CERTA SPRAY)
12.5mm OSB
AIR-SHIELD AIR/VAPOR BARRIER
19mm x 63mm FURRING
19mm BALTIC BIRCH PLY (WHITEWASHED)

METAL ROOF
(VICWEST VIC-ELITE 29 GAUGE STEEL)
WEATHER BARRIER - ICE AND WATER
(GAF STORMGUARD)
19mm OSB
50 MM RIGID INSULATION
HOUSEWRAP AIR/WATER CONTROL
(DUPONT TYVEK HOMEWRAP)
19mm PLY (SHG)
83mm x 305mm I-JOIST SPACED @ 810mm OC (SPF)
83mm x 58mm FLANGE
160mm CLOSED CELL SPRAY FOAM
(CERTA SPRAY)
19mm OSB
38mm x 89mm x 1150mm SUPPORT FOR OSB
(SPF No. 1&2 PARALLEL ATTACHMENT
ON BOTTOM FLANGE TO I-JOIST WEB)
VENTILATED EAVES SPACE
19mm PLY (SHG)
CONCEALED GRILL VENT
12.5mm x 50mm FURRING
19mm x 76mm HEMLOCK DECKING BOARDS



1:40



1:150

Fig.72: House Section C

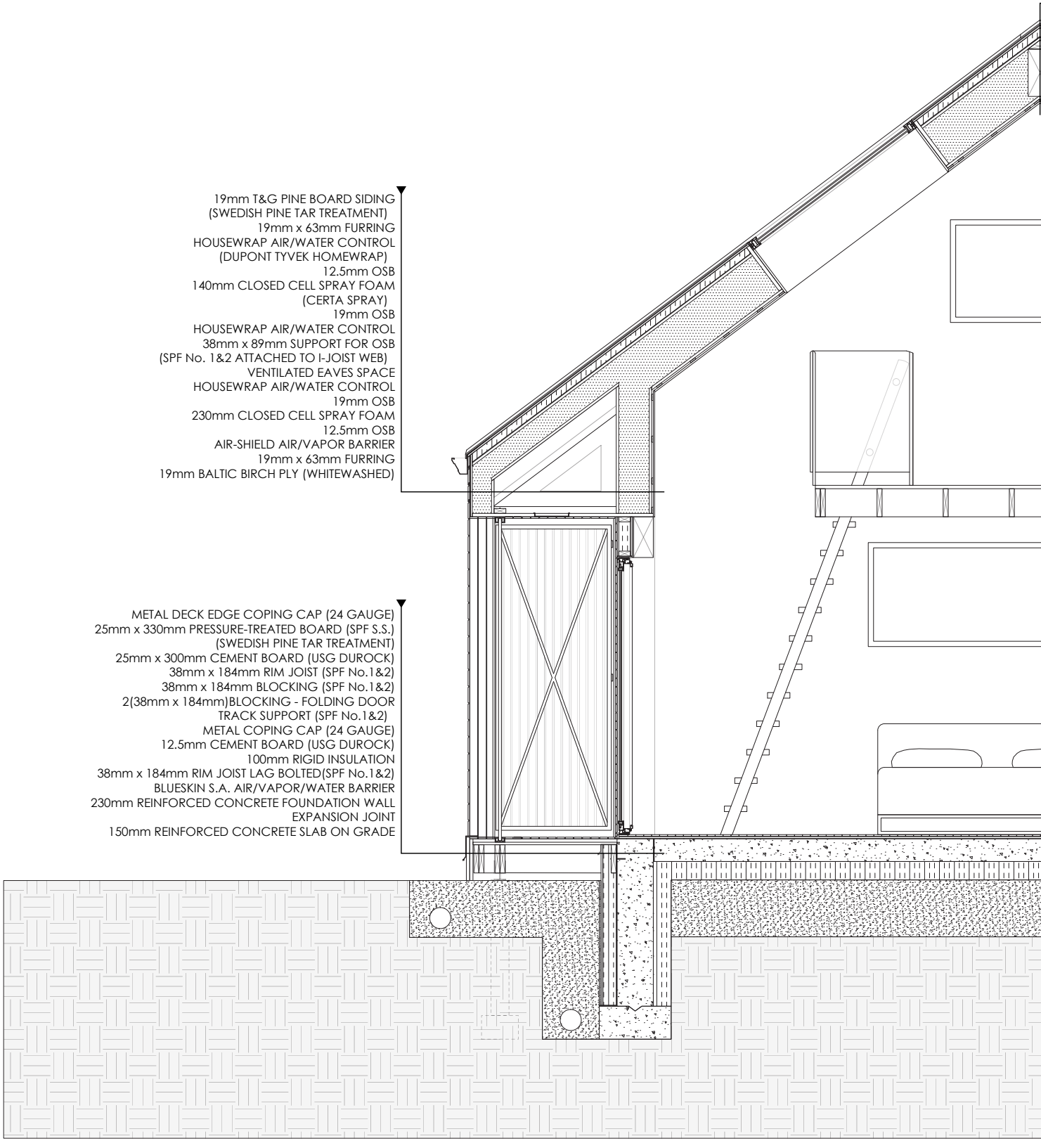
Architecture looking back, humble and enthusiastic.

Architecture as a possible category of the new, recognizing what is always the same within always new wrappings.

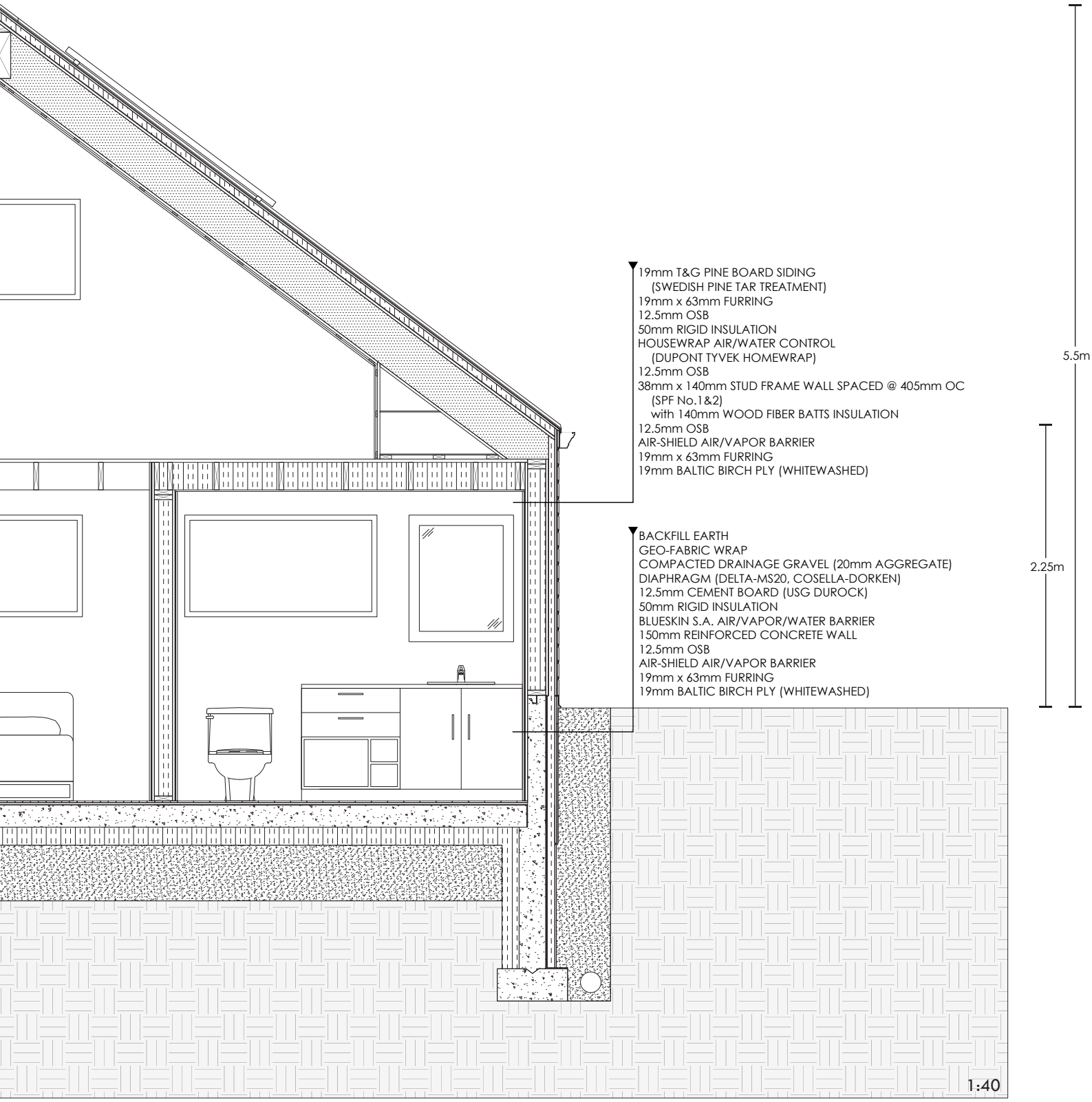
Joseph Paul Kleiheus
"Architecture is Rare"[27]

[28] Kleiheus, Joseph Paul. "Architecture Is Rare." In *Ethics and Architecture*. Vol. 10. Edited by John Capelli, Paul Naprstek, & Bruce Prescott. Philadelphia, PA: Graduate School of Fine Arts, University of Pennsylvania, 1990. 56.

Fig.73: House Section Detail #2



METAL RIDGE CAP (VICWEST RR-8)
METAL ROOF
(VICWEST VIC-ELITE 29 GAUGE STEEL)
WEATHER BARRIER - ICE AND WATER
(GAF STORMGUARD)
19mm OSB
50mm RIGID INSULATION
HOUSEWRAP AIR/WATER CONTROL
(DUPONT TYVEK HOMEWRAP)
19mm PLY (SHG)
175mm x 380mm GLULAM RIDGE BEAM (SPRUCE-PINE)
& BEAM CAP
12.5mm OSB
AIR-SHIELD AIR/VAPOR BARRIER
19mm x 63mm FURRING
19mm BALTIC BIRCH PLY (WHITEWASHED)



19mm T&G PINE BOARD SIDING
(SWEDISH PINE TAR TREATMENT)
19mm x 63mm FURRING
12.5mm OSB
50mm RIGID INSULATION
HOUSEWRAP AIR/WATER CONTROL
(DUPONT TYVEK HOMEWRAP)
12.5mm OSB
38mm x 140mm STUD FRAME WALL SPACED @ 405mm OC
(SPF No.1&2)
with 140mm WOOD FIBER BATTS INSULATION
12.5mm OSB
AIR-SHIELD AIR/VAPOR BARRIER
19mm x 63mm FURRING
19mm BALTIC BIRCH PLY (WHITEWASHED)

BACKFILL EARTH
GEO-FABRIC WRAP
COMPACTED DRAINAGE GRAVEL (20mm AGGREGATE)
DIAPHRAGM (DELTA-MS20, COSELLA-DORKEN)
12.5mm CEMENT BOARD (USG DUROCK)
50mm RIGID INSULATION
BLUESKIN S.A. AIR/VAPOR/WATER BARRIER
150mm REINFORCED CONCRETE WALL
12.5mm OSB
AIR-SHIELD AIR/VAPOR BARRIER
19mm x 63mm FURRING
19mm BALTIC BIRCH PLY (WHITEWASHED)

5.5m

2.25m

1:40

The house contains many characteristics of a Passivhaus strategy (highly insulated, draught-free construction emphasis, high performance windows) however there is no use of a heat-recovery ventilation (HRV) unit. An HRV unit could be installed in the utility storage room with minimal duct work however the expense of the unit, ducting, and modifications to the home design may outweigh the benefits of such a small HRV system. Furthermore, the quality of heat delivered through forced air ventilation is less desirable than other systems at a lesser cost. Passivhaus standards provide a narrow path to energy efficiency. Using Frampton's idea of "place-forms" which engage the particularities of the site - designing in parallel to Passivhaus standards while considering local climatic conditions, embedded vernacular and regional strategies, and the generation, storage, and consumption of energy for an off the grid dwelling provide the means to find site specific solutions to efficient habitation.



Fig.74: House Exterior #2



Fig.75: Context #19



Fig.76: Context #20

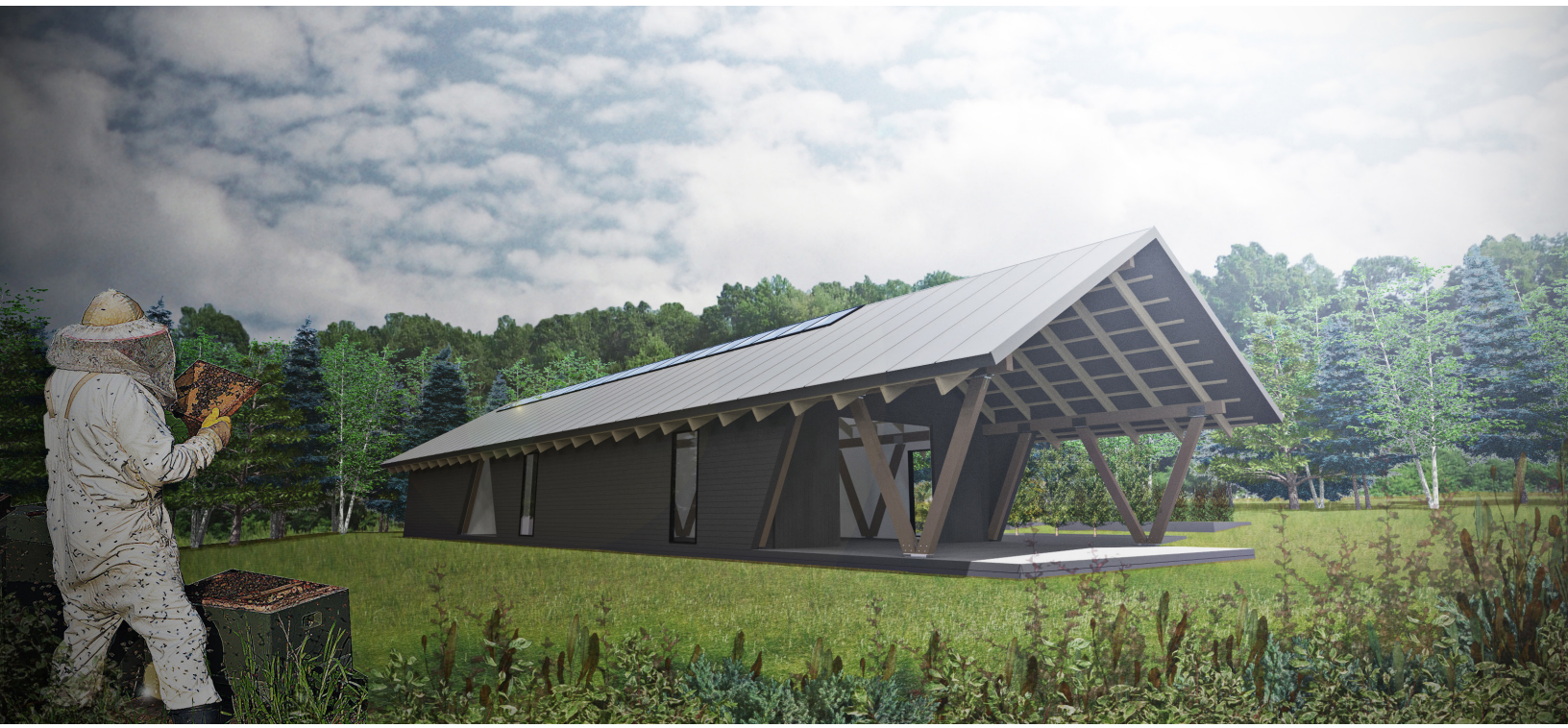


Fig.77: Barn Exterior

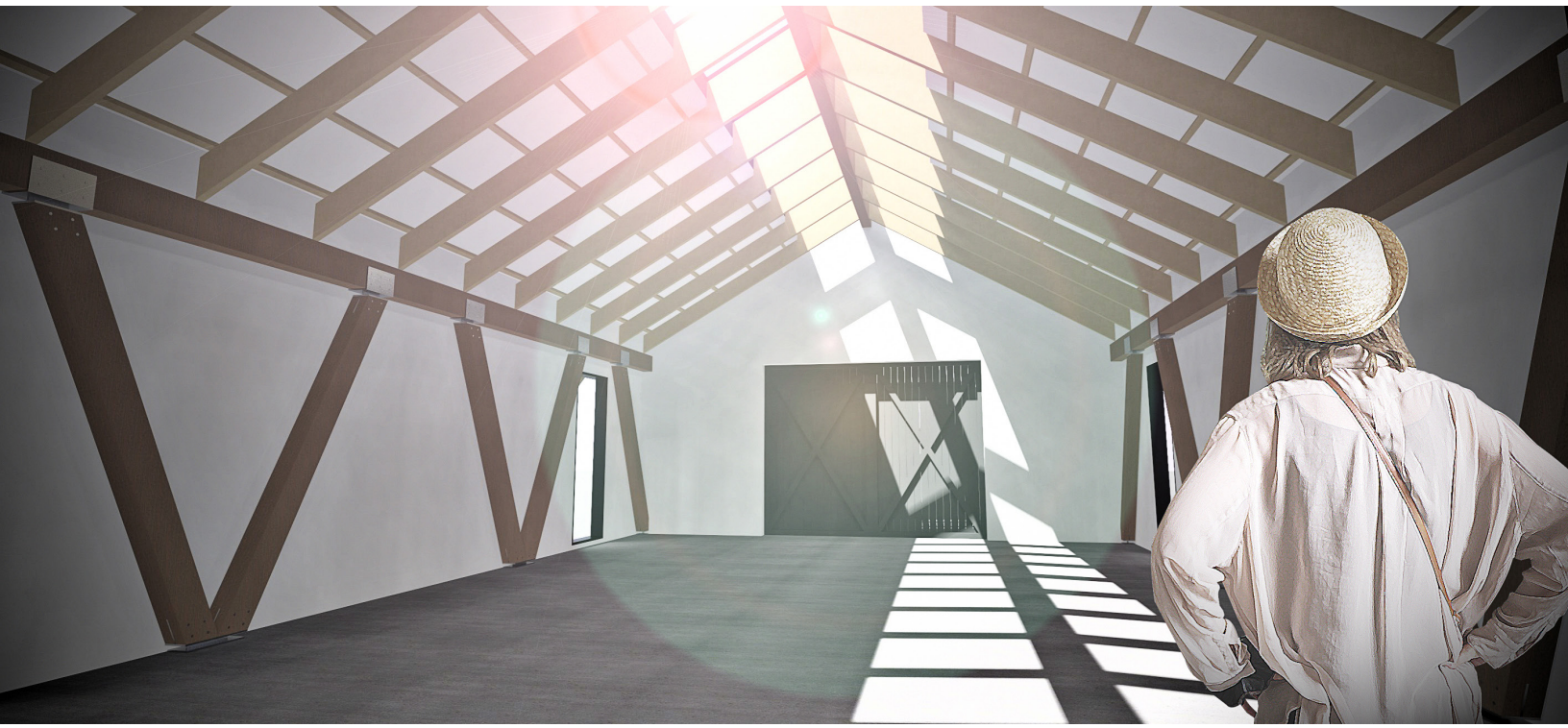
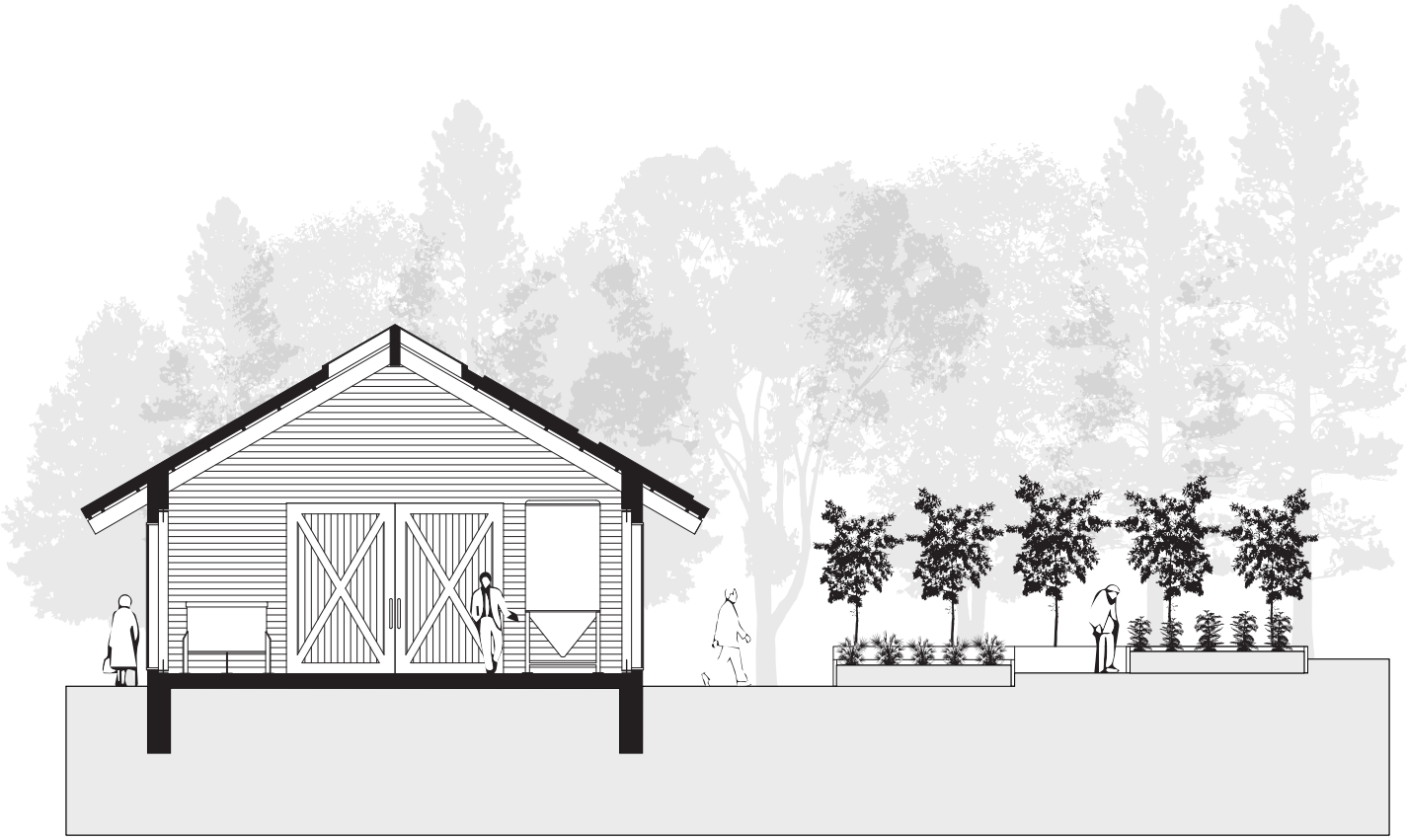


Fig.78: Barn Interior



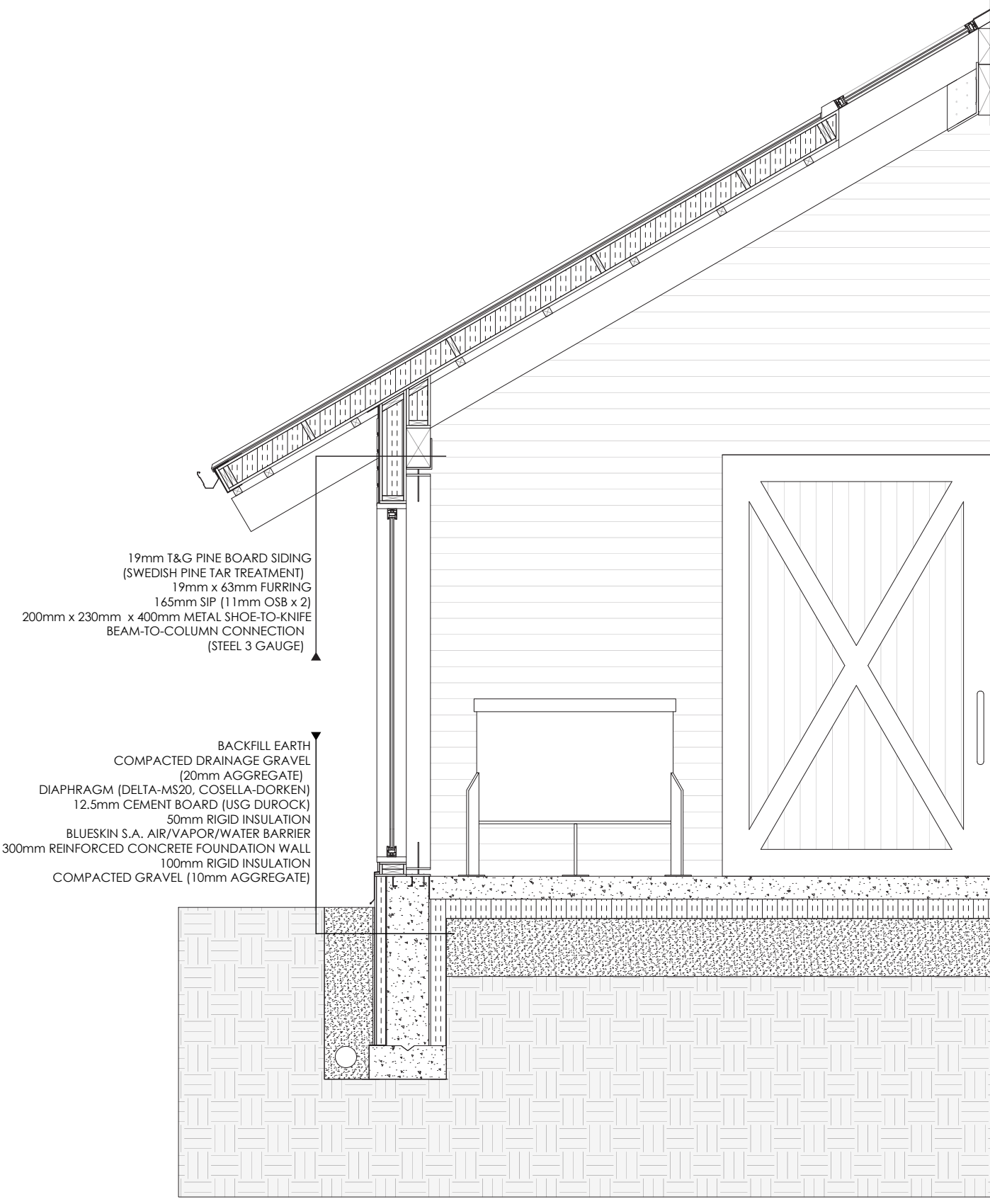
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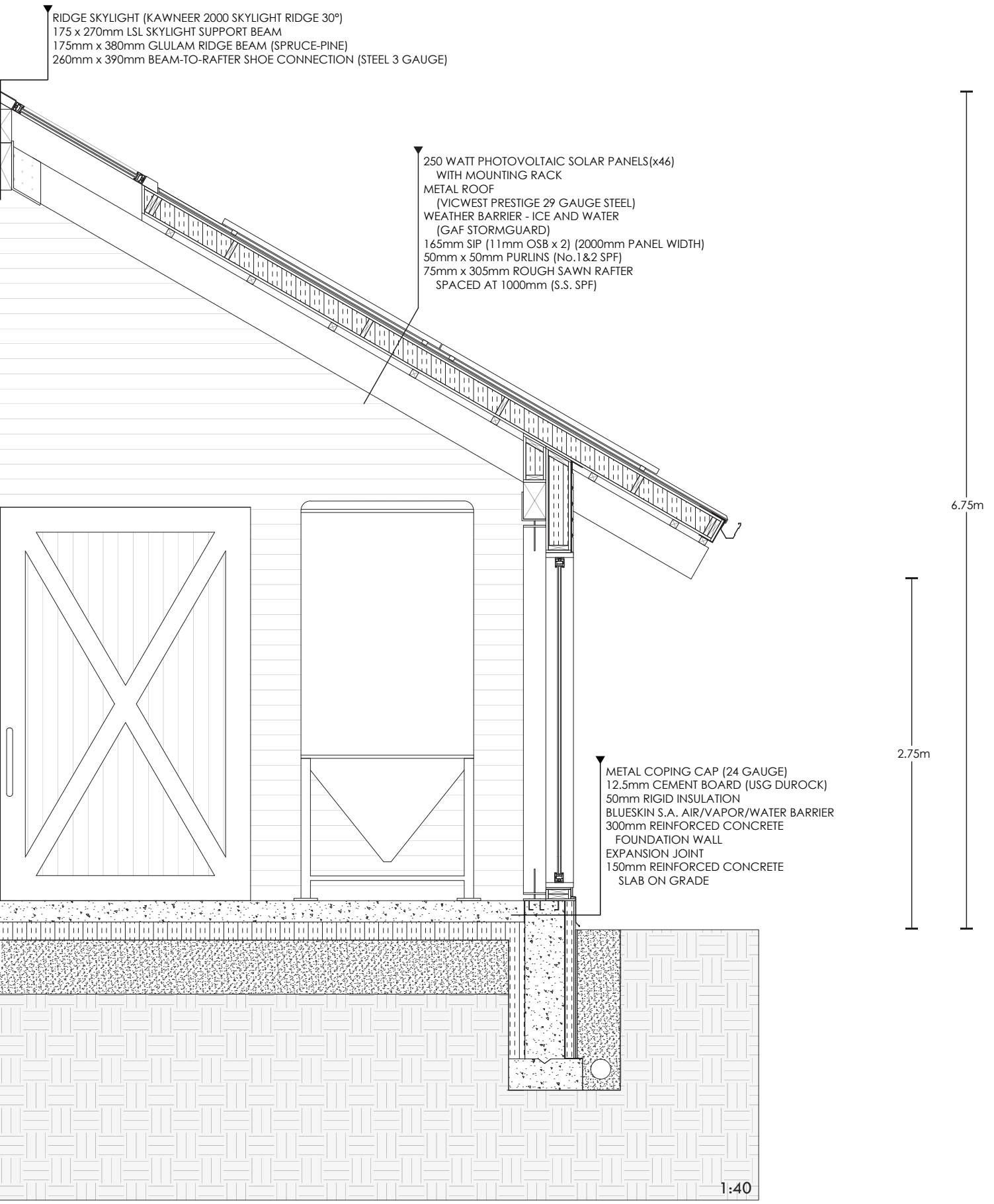
Fig.79: Barn Section A

Similar to the house, the barn typologically continues a dialogue with regional architecture. Formally familiar but structurally different by approach, external views of the barn are contrasted by the exposed structure of the brightly lit interior spaces. The volume is built of locally sourced timber and assembled with simplistic connection methods. The dimensioning of the building is meant to offer flexibility of use and accommodate various methods of farming or production.

The barn embodies a lean structural strategy which offers programmatic range. A simple exposed timber structure is used to create the volume, the use of heavy timber for columns and beams generates the wall support and landings for rafters. The rough sawn solid wood rafters join to a ridge beam which is supported by the center and end walls. The center and end walls are of laterally braced stud frame construction that laterally stabilize the structure. The envelope is made of simple structural insulated panels (SIP) which sit on the foundation wall and are connected to the beam and columns. The same SIP strategy in used for the roof panels, put in place using a boom truck or excavator.

Fig.80: Barn Section Detail




RIDGE SKYLIGHT (KAWNEER 2000 SKYLIGHT RIDGE 30°)
175 x 270mm LSL SKYLIGHT SUPPORT BEAM
175mm x 380mm GLULAM RIDGE BEAM (SPRUCE-PINE)
260mm x 390mm BEAM-TO-RAFTER SHOE CONNECTION (STEEL 3 GAUGE)
250 WATT PHOTOVOLTAIC SOLAR PANELS(x46)
WITH MOUNTING RACK
METAL ROOF
(VICWEST PRESTIGE 29 GAUGE STEEL)
WEATHER BARRIER - ICE AND WATER
(GAF STORMGUARD)
165mm SIP (11mm OSB x 2) (2000mm PANEL WIDTH)
50mm x 50mm PURLINS (No.1&2 SPF)
75mm x 305mm ROUGH SAWN RAFTER
SPACED AT 1000mm (S.S. SPF)
6.75m
2.75m
METAL COPING CAP (24 GAUGE)
12.5mm CEMENT BOARD (USG DUROCK)
50mm RIGID INSULATION
BLUESKIN S.A. AIR/VAPOR/WATER BARRIER
300mm REINFORCED CONCRETE
FOUNDATION WALL
EXPANSION JOINT
150mm REINFORCED CONCRETE
SLAB ON GRADE
1:40

So as to participate in local constellations of ideas, a regenerative architecture will participate in the tectonic history of a place. Participation in the tectonic history of a place requires that the interventions of architects be, first, intelligible to local citizens and, second, be perceived as relevant to the material conditions of everyday life.

Steven A. Moore
"Technology, Place, and Nonmodern Regionalism"[29]

[29] Moore, Steven A. "Technology, Place, and Nonmodern Regionalism." In *Architectural Regionalism Collected Writings on Place, Identity, Modernity, and Tradition*. Edited by Vincent B. Canizaro. New York: Princeton Architectural Press, 2007. 441.

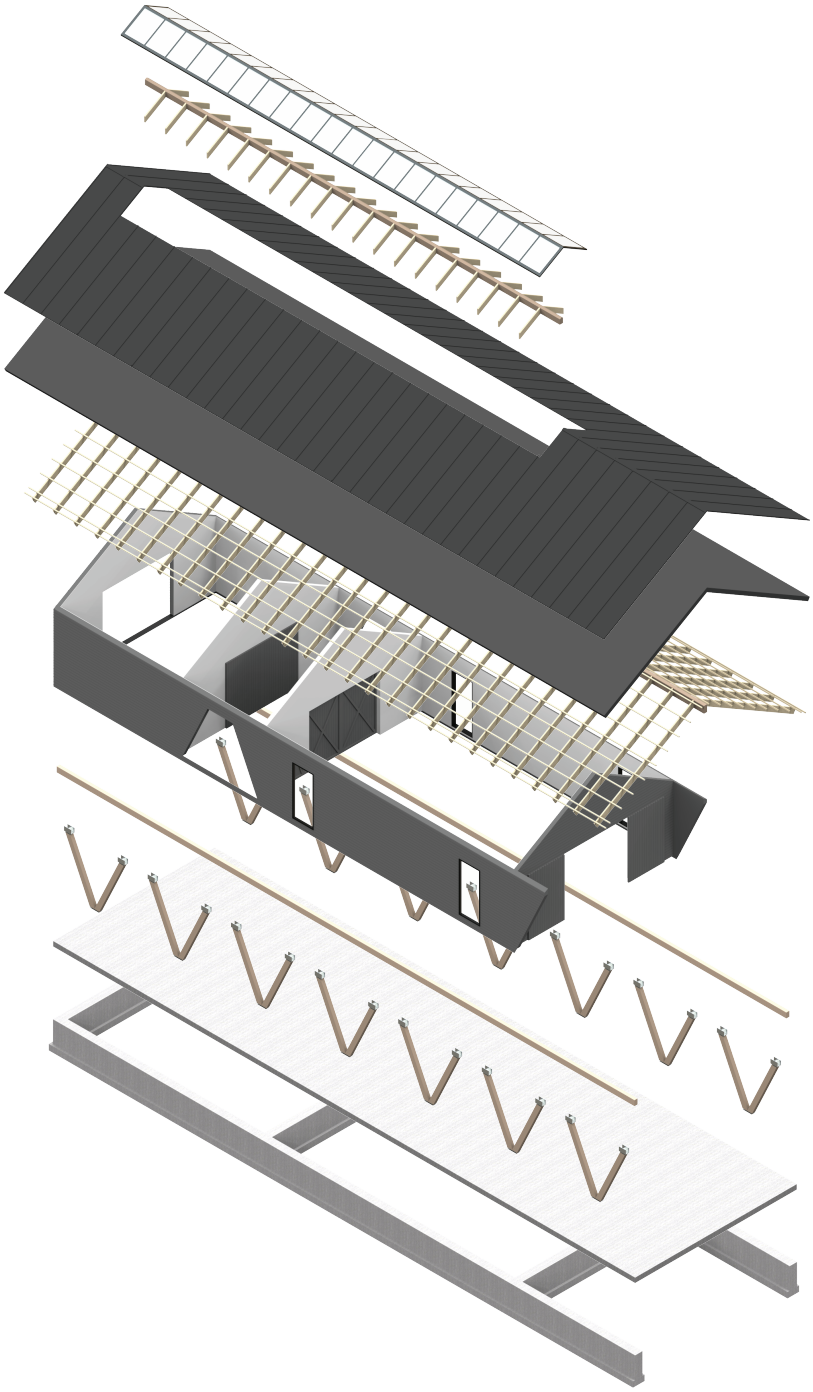


Fig.81: Exploded Isometric #2

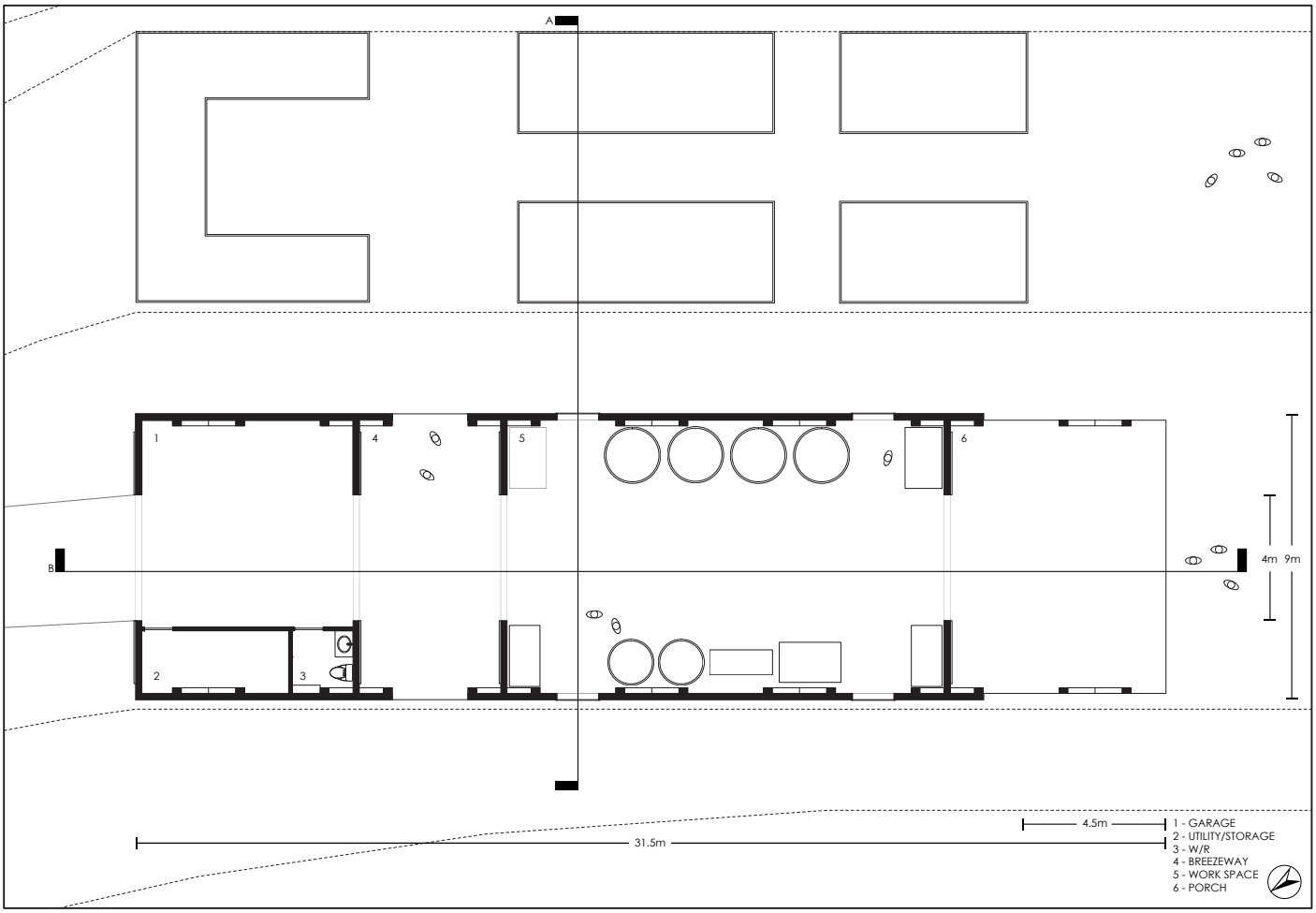
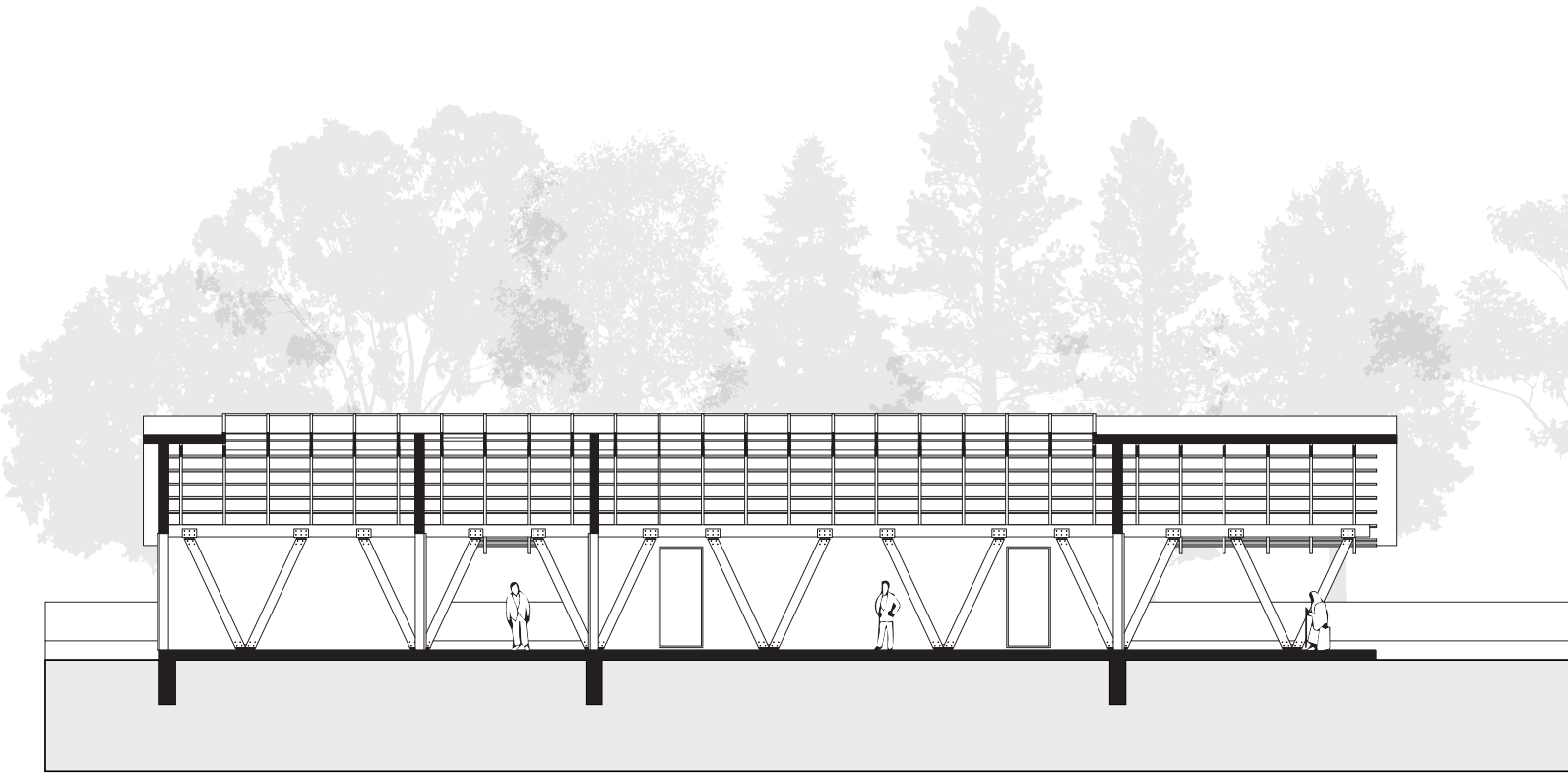


Fig.82: Barn Plan

A skylight runs the length of the closed space providing ample lighting. Solar PV panels are mounted on the south east side of the roof, providing power for the building which is stored in a battery bank in the mechanical room. A large south west facing porch offers outdoor work space and as the main entrance if used for commercial purposes. The structure of the barn is meant to be recyclable at the end of the buildings life cycle. The cladding is treated the same as the house cladding, stained darkly, and can be removed at the end of the building life cycle if they have been maintained. The SIP envelope of the structure may become unusable at the end of the buildings use, the internal structure, roof, windows, doors, and cladding would be salvageable.

Operating the farm as a wildflower apiary would allow the production of honey, wax products, and mead. The equipment needed to produce these products would include centrifuges or extractors, separator sieves, fermentation tanks, storage tanks, and refrigeration units.





1:200

Fig.83: Barn Section B

The barn is downwind of the house with prevailing winds coming from the south and south west. The simple farm building layout is meant to be the base unit of a potentially bigger operation but can be functional and productive on its own.

The barn space is designed to be highly functional and with expanded use in mind for the future of the building. The programmatic range of the barn can be increased by adding to the structure, this is quite common with barns (Fig.75 & Fig.76). Future additions allowing greater indoor working space can connect to the barn via the breezeway opening in the barn. The interior space of the existing space of the barn could be modified by removing the non-load bearing wall. The addition would use the breezeway to connect directly to a structure or futher extend a breezeway to an adjacent structure or enclosure to be built.



Fig.84: Barn Exterior #2

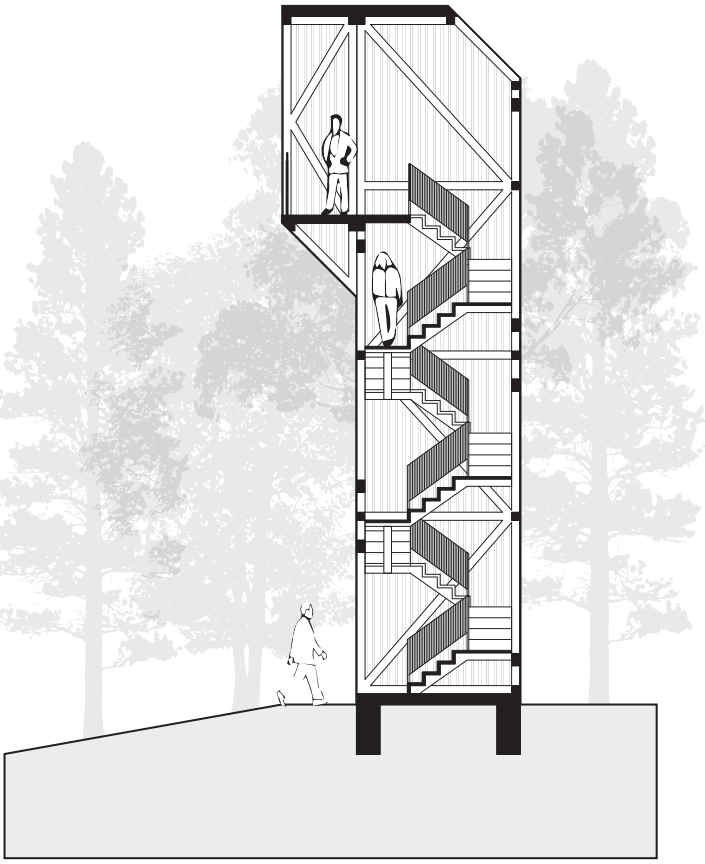
Maritime Canada is no single cultural or economic region but a complex layering of landscapes, each reflecting the specific origins of its inhabitants, economic orientations, and chronology.

Peter Ennals & Deryck Holdsworth
"Vernacular Architecture and the Cultural Landscape of the Maritime Provinces – A Reconnaissance"[30]

[30] Ennals, Peter, and Deryck Holdsworth. "Vernacular Architecture and the Cultural Landscape of the Maritime Provinces – A Reconnaissance." Edited by P.A. Buckner. Acadiensis: Journal of the History of the Atlantic Region 10, no. 2 (1981). 91.



Fig.85: Context #21



1:150

Fig.86: Tower Section

The design intent of the tower is to be simplistic in construction and modest in form however acting as a beacon to the property itself. Continuing the architectural language of the house and the barn, angled columns form trusses and are exposed to the outside and inside. The tower symbolizes the tall silos or water towers of conventional farms but offers an architectural experience. By being constructed majorly of timber, the tower has the ability to be recycled or salvaged at its end of life cycle.

The tower is 13 meters tall and constructed of locally sourced timber. The stairs, railing, internal supports, super structure, and cladding are all timber. The super structure of the tower creates a simple volume pushing straight upward, creating a wider deck space at the top. A simple staircase winds inside, upward toward the platform overlooking the Hants County topography all the way to the Minas Basin. Sheathed with a thin pine screen that is darkly stained the same as the barn and house, the light on the interior is always changing with the direction of light. Placed at the edge of a tree line, people can ascend into the canopy and gain a view of the area that is offered nowhere else in the region. The observation deck could be converted to a studio space or modified for habitation.



Fig.87: Tower Exterior

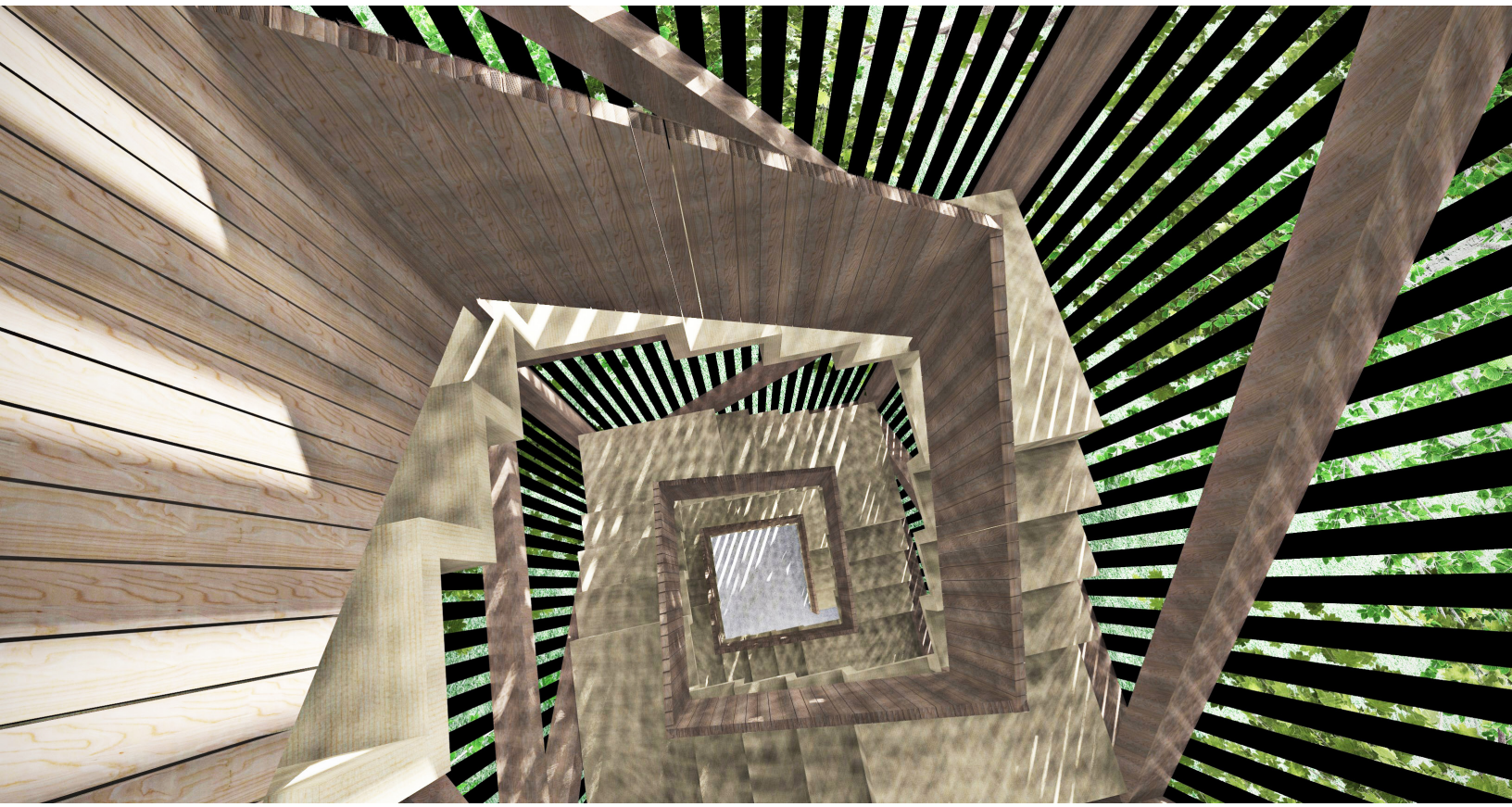


Fig.88: Tower Interior

The tectonic remains to us today as potential means for distilling play between material, craftwork and gravity, so as to yield a component which is in fact a condensation of the entire structure. We may speak here of the presentation of a structural poetic rather than the re-presentation of a façade.

Kenneth Frampton
"Towards a Critical Regionalism: Six Points for an Architecture of Resistance"[31]

[31] Frampton, Kenneth. "Towards a Critical Regionalism: Six Points for an Architecture of Resistance." In *The Anti-aesthetic: Essays on Postmodern Culture*. Edited by Hal Foster. Port Townsend, Wash.: Bay Press, 1983. 27.

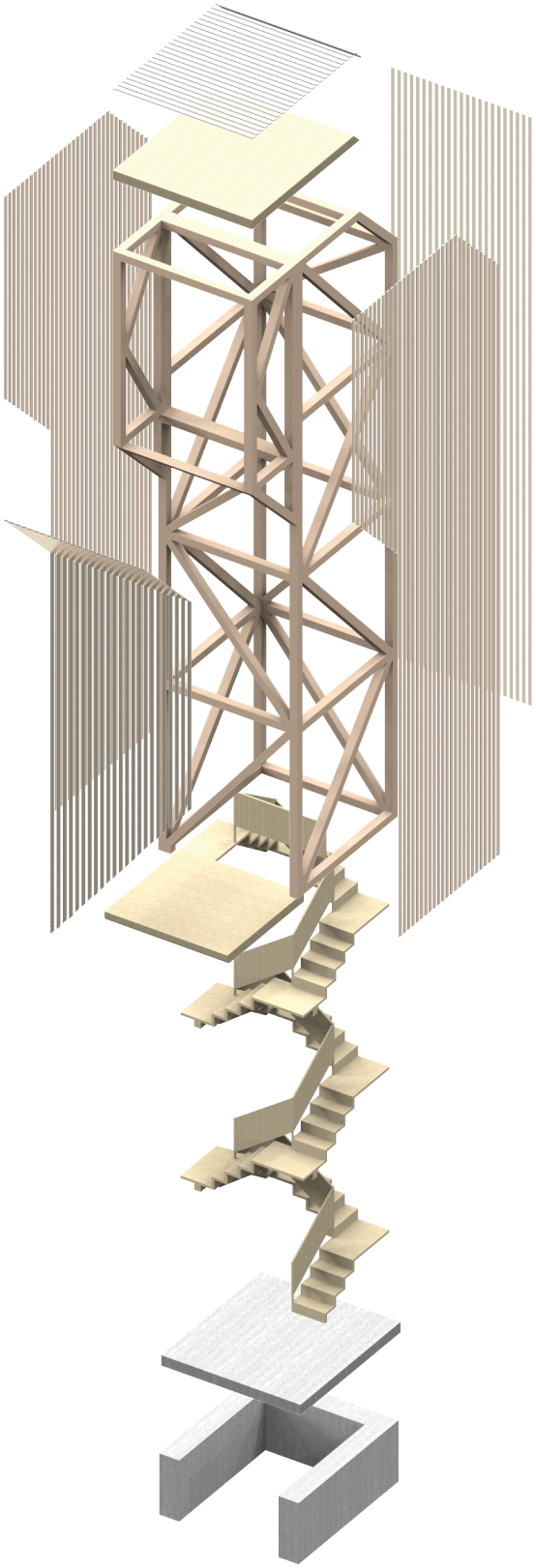


Fig.89: Exploded Isometric #3



Fig.90: Beehive Housing

The Beehive housing units are meant to centralize the hives to their own farm location on the property and offer protection throughout the year. The housing units can cover and contain 10 individual colonies at a time with 18 total housing units allowing 180 colonies to be protected if need be. The housing units can be used to cover the hives in all seasons, however in the spring, summer, and fall months the hives can be moved outside of the structures, each colony will occupy their own zone, hives can be placed as close to one foot apart or be spread out around the housing but no more than 500 feet from the housing.

The Beehive housing is a meant to mitigate hive colony loss over the winter months. Typically, Canadian apiaries lose 15% of their colonies on average and much more during severely long and cold winters. During the winter, the hives are placed under the housing unit and are insulated by having modifed straw bales placed in between them but leaving the hive face open to the weather. Bee activity varies drastically in the winter, hibernating at mild and freezing temperatures, however at very low temperatures the bees become active and huddle around the queen insulating her from the cold – during this time bees will need to vacate the hive in order to dispel waste.

This apiary farm proposal is meant to be an environmentally friendly method to enrich the local area with ample pollinator capacity and be a profitable means of farming. Honey, wax products, and mead can be produced from the raw honey and honeycomb created by the honey bees – all of which are highly marketable products. The apiary can also act as a local pollinator resource, hives can be rented out to local farms, orchards, and gardens to help pollinate during the spring, summer, and fall. At the same time, the use of nature's greatest pollinators in the expanded community could continue to raise awareness regarding CCD or colony collapse disorder which is a modern phenomenon directly linked to the use of systemic pesticides or plant seeds which have embedded chemical pesticides in their matter.

The farms cyclical nature of consuming resources and recycling them back into the site and region allows for a minimal ecological footprint. The design is meant to provide meaningful architectural experiences and useful spaces while being connected to the local building culture. Continuing the architectural dialogue with landscape while playing with the idea of vernacular and regionalism not being static but moving forward with one foot in the past. As a farm, this project would ideally set a local standard for resource use, energy generation, storage, and consumption, and overall building performance.

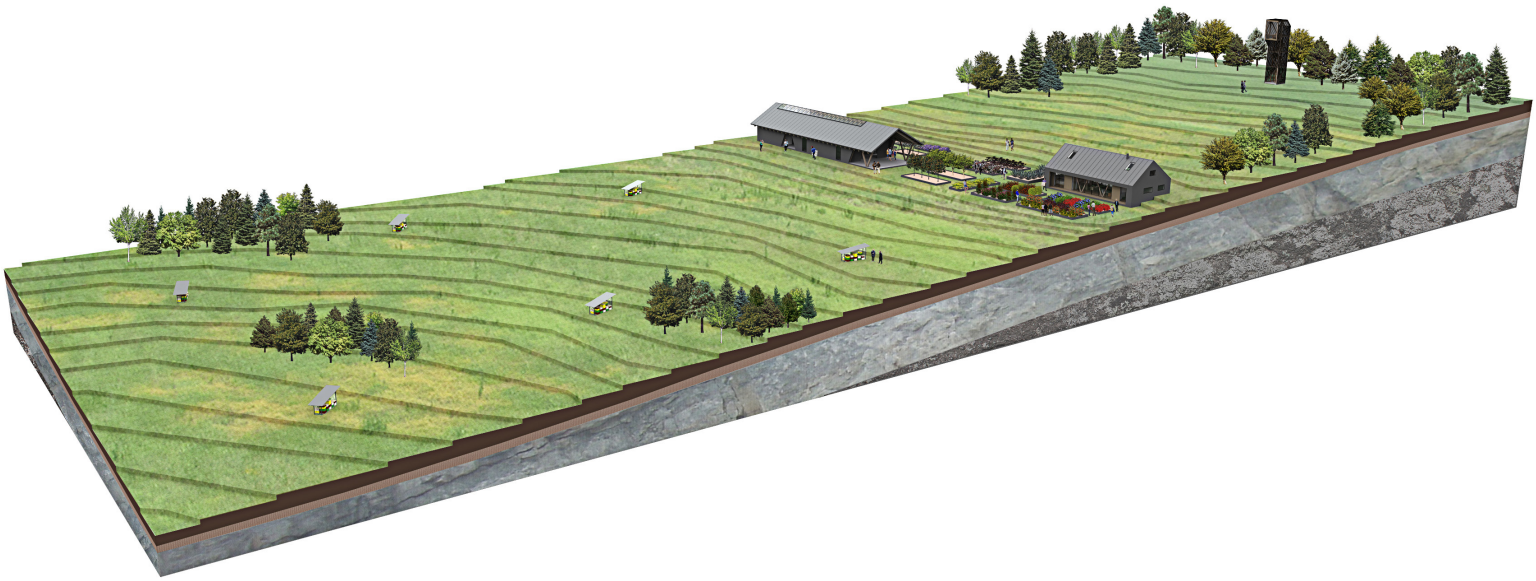


Fig.91: Farm Section



Fig.92: Minas Basin #2

CONCLUSION

Creating culturally significant architecture that is tied both regionally and globally is no doubt challenging. However, attempting to walk that thin line is a task worth pursuing as it is an ethical one. The praxis of the architect is one which can be dedicated to many directions but the most important is whether their work resonates with cultural concerns at large, durability and functionality not the least of which.

The design proposal of this thesis is meant to be a stepping off point for a continuous investigation into the value of regional tectonics in the architectural realm. While there are many subtopics within regional concerns (performance, material sourcing, vernacular, local labor economies, etc.) it will forever remain as a means of developing an understanding and respect for the context of building and climate, acting as impetus to further the dialogue between localized culture, modern habitation, and static vernacular ideals being advanced.

The photographic investigation of an area allows a library of context to be built and studied. The patterns, textures, color, and symbols of a region can be analyzed and rearranged to help synthesize new modes of thinking about regional architecture while having one foot on the ground. As opposed to observing from a distance, being there amongst the existing culture is much more vital and integral to the pursuit of an ethical regional architecture.

Designing for the future requires an understanding of the underwhelming moments from the past and present. Certainly, seeing derelict buildings fall in on themselves or remain unoccupied for extensive periods of time does no good for anyone, any community, or any place. By envisioning better programmatic range and end of life cycle projects would be able to better avoid or navigate the uncertainties of a buildings long term use.

Regional architecture is defined largely by formal similarities to the existing built culture, however this is not meant to be restrictive in a design sense. Modern regionalism should look to engage local labor economies, sourcing material locally and sustainably and use of the idea of Frampton's "place-forms" or forms which respond to the particularities of site. Using material sourcing methods which emphasize locality and by thinking of the builders as craftsman who are integral to defining and developing culturally significant regional architecture, a richer building culture would no doubt be produced and propagate over the long term.

It is the role of the architect who must define the future of what regional architecture means and it is an ethical duty to at least consider the responsibility one has to local economies when designing. This is the solid ground that the regionally conscientious architect stands on.



Fig.93: Sandstone

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