

**Generating an Oasis: Architecture of Climatic Engagement for a  
Northern City**

by

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Submitted in partial fulfilment of the requirements  
for the degree of Master of Architecture

at

Dalhousie University  
Halifax, Nova Scotia  
March 2014

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## **ABSTRACT**

Edmonton, Alberta, like many other northern cities, has a history of overprotecting its citizens from the climatic elements. Through constructs of climate-control, like pedways and shopping malls, we have severed ourselves from outdoor life and fallen out of love with a season whose inherent beauty and unique attributes have the potential to play a pivotal role in the identity of the city.

This thesis studies ways of using architecture and urban design to engage the city dweller across all four seasons. Through the adaptive reuse of the Rosedale power plant and its adjacent lands, the project aims to provide the city of Edmonton with a destination of climatic comfort that begins to thread the disconnect between its citizens and their northern surroundings.

## **ACKNOWLEDGEMENTS**

To my committee, Niall Savage, Jonathan Mandeville, Steve Parcell, and Diogo Burnay, thank you for allowing me the freedom to create a project that I am proud to call my own and providing me with valuable insight along the way.

Thank you to Heather Gibbons, Phil Wilson and all of my Dalhousie peers for joining me on this thesis ride, it's been a blast!

Thank you as well to those who all provided me with the financial resources and documentation necessary to complete this thesis. In particular, thank you to Stephen Boyd and the Edmonton studio of Dialog Design for their belief in me as a designer. And to Terry Bourque and Michael Dub, whose photographs served as inspiring canvases for my site investigation, thank you for helping me bring this project to life.

Finally, thank you to the amazing people whose love, faith and encouragement over the past couple years has made the completion of this thesis a possibility. Thank you to Andrew Hill, David Tyl, Emily Campbell and the rest of my talented friends who kicked ass while I was down and motivated me to do the same. And to my family, words cannot begin to describe the gratitude I owe you for being there for me when I needed you the most.

## CHAPTER 1: INTRODUCTION

### Edmonton: A Cold City in Search of a Winter Identity

Edmonton is a city of just over a million inhabitants located in central Alberta with a latitude of 54 degrees north. According to urbanist Norman Pressman, this location, in addition to the fulfillment of a number of other climatic criteria, makes Edmonton a “winter city”.<sup>1</sup> There is no denying that Edmonton is bloody cold during the winter. It is not uncommon for temperatures to plummet far below -30 degrees Celcius and the chore of shovelling the sidewalk on more than one occasion during a single morning is not a rare one. Because of this, and other factors, the city of Edmonton, not unlike many other northern cities, has developed a rejection mentality to the season. Winter has become a season we “try to vehemently resist”, greeted not with embrace and celebration but rather with despair and defeat.<sup>2</sup>

This rejection mentality has had serious implications on the nature of Edmonton’s built environment. Beginning in the early 1970s there was a significant push in the design and construction of indoor, climate controlled spaces. The result? An internalization of much of central Edmonton’s public and circulation spaces. Today, the city’s downtown is full of stacked pedways bridging over downtown streets and an intricate network of tunnels deep below them. In the words of city councilor Ben Henderson, “planners aimed to beat winter; triumphing over what we increasingly saw as harsh

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1 Norman Pressman, *Shaping Cities for Winter, Climatic Comfort and Sustainable Design* (Ottawa: Winter Cities Association, 2004), 22.

2 *Ibid.*, 7.



One can travel throughout much of the downtown core and without having to step outdoors (disclaimer: all non-sourced collages have been created by the author)

effects, creating a world of never ending climate control. In doing so we severed ourselves from daily life outside and all the joy it brings.”<sup>3</sup>

It is in part because of these measures that we have fallen out of love with winter. According to Pressman, “our perpetual summer state of mind has been a serious impediment to the development of meaningful solutions for comfortable winter living.”<sup>4</sup> By better celebrating the winter and its north-

<sup>3</sup> City of Edmonton. *For the Love of Winter: Strategy for Transforming Edmonton into a World-Leading City* (Edmonton: Winter City Strategy, 2012), 8.

<sup>4</sup> Jorma Manty and Norman Pressman. *Cities Designed for Winter* (Helsinki: Building Book Ltd., 1988), 6.

ern identity, Edmonton has the potential to become far more liveable year-round. Even the city's former mayor, Stephen Mandel, states that "it only makes sense that Edmonton becomes a world renowned winter city."<sup>5</sup>

To become this kind of city, the people of Edmonton require a shift in how they think and talk about winter. "It is apparent" says Simon O'Byrne, President of Edmonton's Winter City Strategy, "that Edmontonians are ready to make a cultural shift, no longer viewing winter as something to escape from, but instead as a unique and magical season."<sup>6</sup> Currently, the conditions for change could not be better. An interest in urbanism and a prevailing dialogue of the pedway and climate control illustrate an appetite for change. To make this shift it is necessary to develop creative solutions for dealing with the cold; solutions that encourage us to take note of the beauty of the season and plunge in. This thesis questions whether it is possible to design public, social architecture in a city like Edmonton that makes the most of the perceived 'negative' attributes of winter instead of opposing them. It explores ways of making the act of hibernation transparent and proposes methods of 'dealing' with our most harsh season as a city.

## **Architectures of Climatic Comfort and the Winter City**

An exploration of the rich tradition of thermal design serves as a starting point for this thesis. Thermal architecture has been practiced in northern climates for the design of places for recreation, wellness and social gathering for thousands

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5 City of Edmonton, *For the Love of Winter: Strategy for Transforming Edmonton into a World-Leading City*, 4.

6 Ibid.

of years.<sup>7</sup> From prehistoric cave dwellings to the elaborate public baths of Rome, heat has been used in a many ways throughout history as a mediator between comfort and discomfort. Climatic adaptation is about balance and juxtaposition. By injecting moments of thermal stimulation that contrast the seasonal elements, the negative stigma attached to these elements is reduced. If people are provided with visual cues of comfort, the northern man is far more apt to venture into the landscape, play in the snow and take in the beauty

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7 Lisa Heschong, *Thermal Delight in Architecture* (Cambridge: The MIT Press, 1979), 21.



Moments of climatic comfort take many forms throughout the northern city





The successful winter city takes advantage of the cold and makes it a part of its sense of place

a winter city possesses. This point is demonstrated by the steam of a Japanese bath or the cedar-tinted glow from a Finnish sauna.

The Finnish sauna is of an example of a type of thermal architecture that has become ingrained in a nation's culture and now serves as a critical tenant of their sense of place. It was initially developed for the purpose providing a therapeutic countermeasure to the country's northern climate but has since grown to serve as a place of delight and social engagement. For centuries, Finns have been drawn together

by the sauna to share in the hospitable experience that it offers.<sup>8</sup>

This idea of communal comfort has evolved into a way of designing urban environment in Finland. Helsinki, for example is a city built with winter in mind. Moments of warmth are commonplace in this city. Heated bus stops and warmed patios complete with wool blankets provide locals with transparent refuge from the depths of the winter. Thanks to this thermal balance, Finns are able to live with the winter instead of against it .

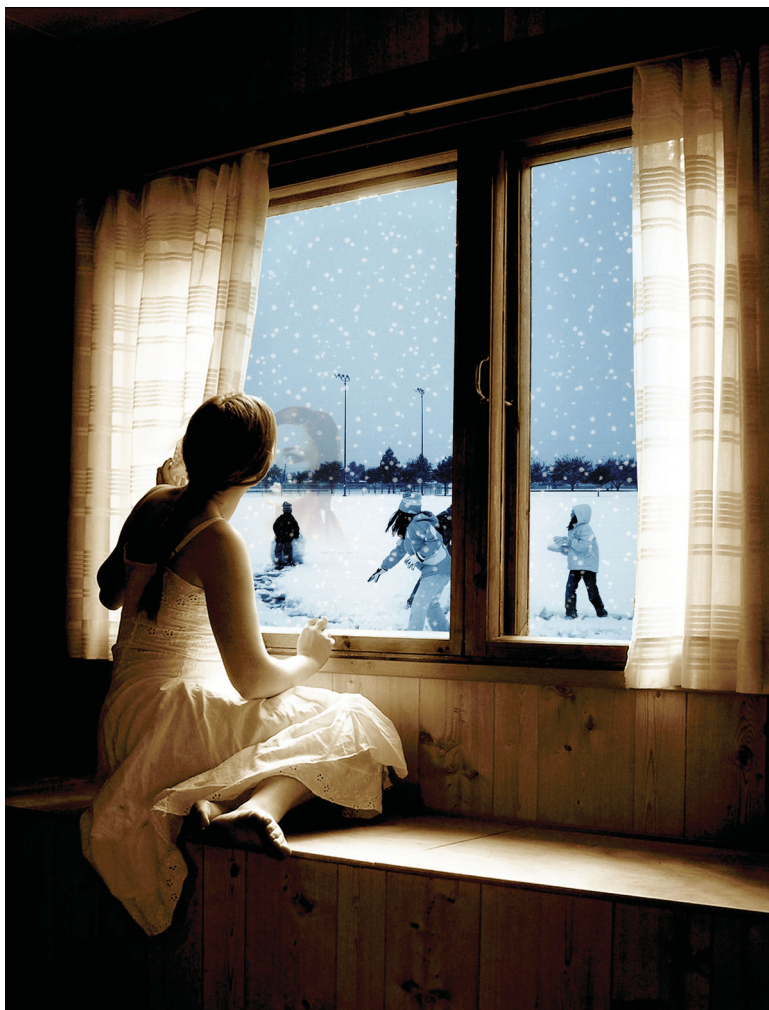
Cities like Helsinki are not rare. Copenhagen, Reykjavik, and Sapporo are but a few of the winter cities that can be used as inspiration for how to embrace a place's climatic identify.

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8 Manty and Pressman, *Cities Designed for Winter*, 54.



We have much to learn from our northern neighbors about co-existing with the cold



Reclaiming our childhood joy in the season will help Edmonton develop an identity as a winter city: a city that is liveable across all seasons.

These cities all have a strong “sense of place with climate being one of the primary sources of inspiration in the decision making process.”<sup>9</sup> They do not ignore the winter but instead make it part of the city through architecture, urban design and social initiatives. The successful winter city uses warmth to contrast the cold but does not erase it. Darkness and cold become characteristics with which to juxtapose and accentuate. It is a city that provides opportunities for social enjoyment, comfort, and contact with nature and sensory pleasure in the coldest months of the year.<sup>10</sup>

9 Pressman, *Shaping Cities for Winter, Climatic Comfort and Sustainable Design*, 4.

10 Manty and Pressman, *Cities Designed for Winter*, 105.

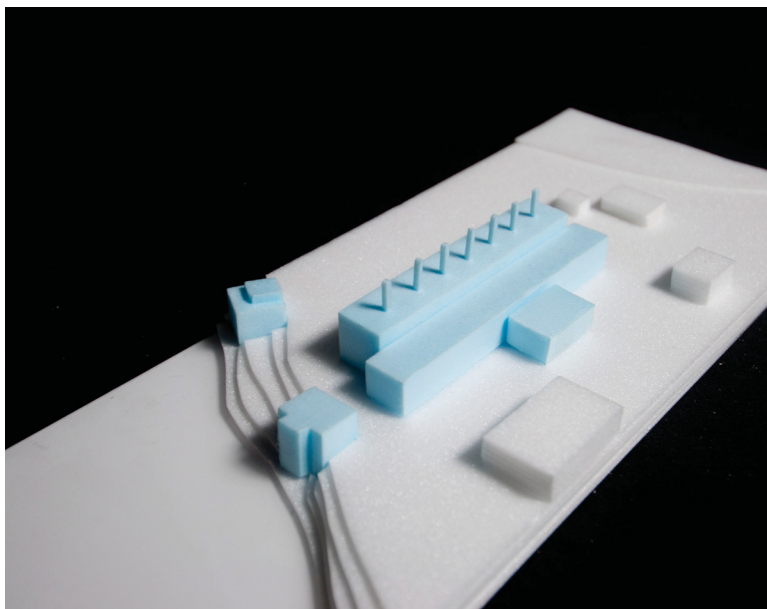
## CHAPTER 2: SITE

### Site Description

As a testing ground for solutions to the thesis question, I have decided to use the decommissioned Rosssdale power plant and the riverfront land on which it sits. Situated just below downtown Edmonton on the banks of the North Saskatchewan River, this site is one of the most recognizable and historically rich plots of land in the city, yet as it sits, is one of the most inaccessible.



The North Saskatchewan River Valley seen at the city scale



The Rossdale Flats and its iconic power plant sit proudly on the banks of the North Saskatchewan River

The Rossdale Flats lie on a flood plain on the north bank of the river, 60 meters below the mean city level and 10 meters above the riverbed. It is estimated that these lands were formed approximately 10,000 years ago following the recession of the Wisconsin Ice Age.<sup>11</sup> Human occupation on the site dates back to the prehistoric age. The earliest aboriginal inhabitants to visit the site were attracted to the area's "flat, well-drained sites for camping" and in the centuries since, the area has been the site of gathering, agriculture, fur trading, recreation, civic amenity and industry.<sup>12</sup> As the site of the first physical manifestation of Fort Edmonton it can even be argued that it is on these lands that the city was founded.

Despite its central location, immediacy to the river's edge and rich natural and human history, the site remains completely disconnected from the city in which its resides.

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11 City of Edmonton, *Rossdale Historical Land Use Study* (Edmonton: Commonwealth Historic Resource Management Ltd., 2004), 28.

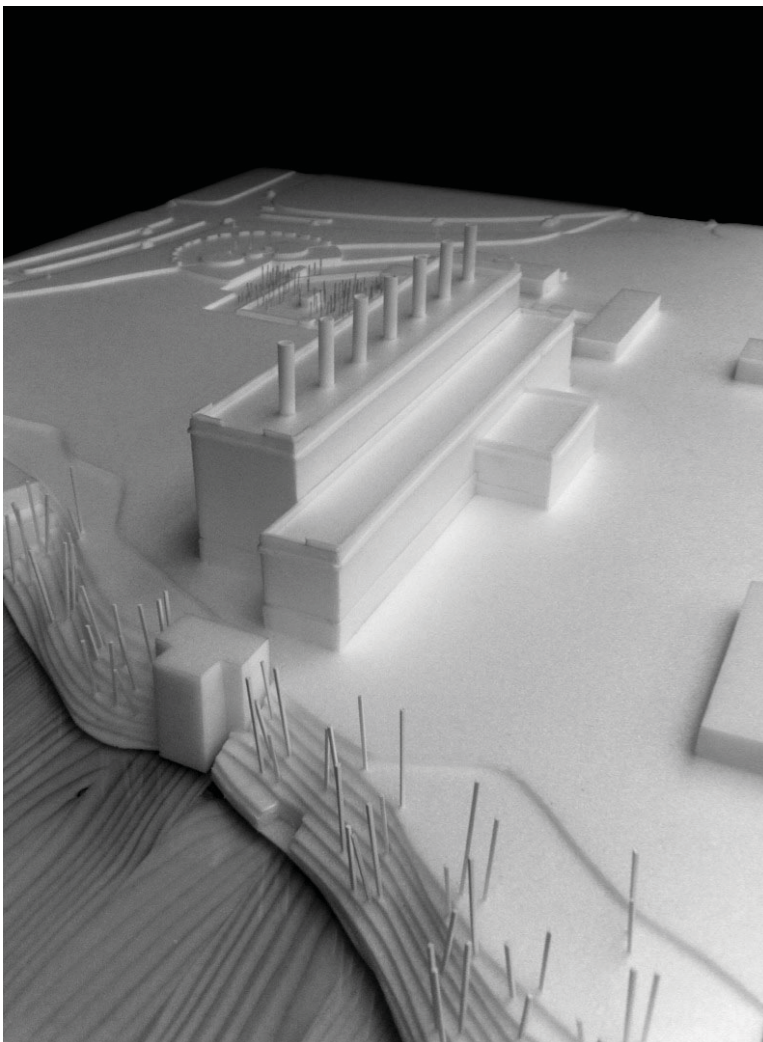
12 Ibid., 21.



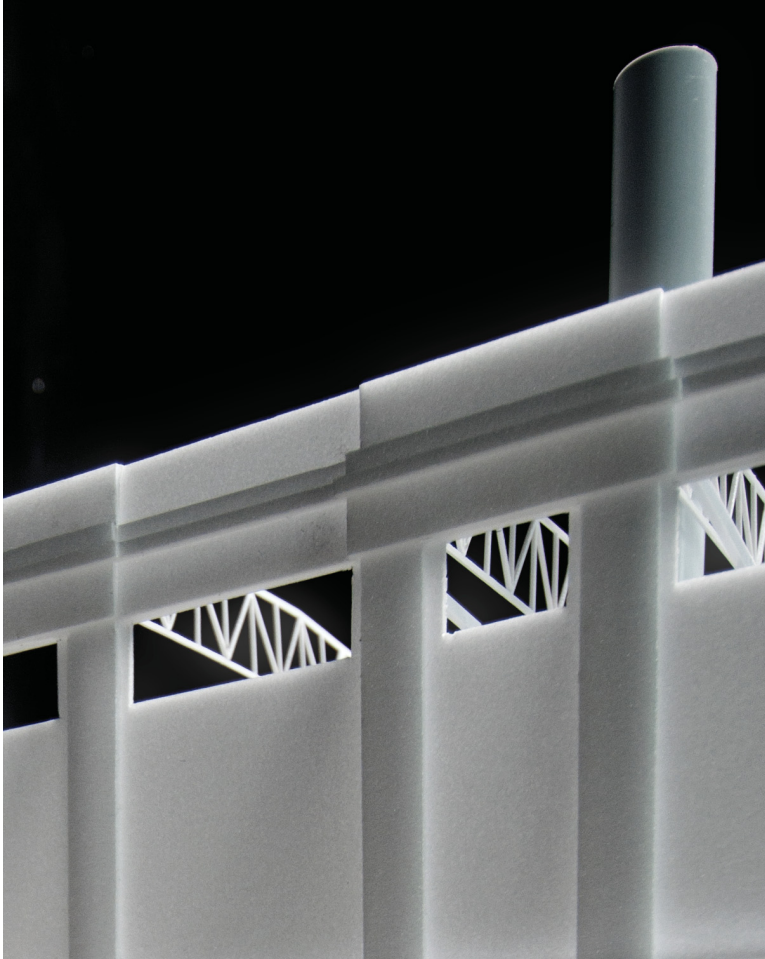
Rossdale sits at a pivotal interface between city and valley

## Rossdale Power Plant

Like the site on which it resides, the power plant structure stands as a meaningful symbol for the city of Edmonton. For 70 years the energy generated within this low pressure coal plant served to illuminate and warm the city and its residents. Over 130 meters long and 35 meters in height, this cathedral of industry has an iconic presence over the Edmonton landscape and provides endless opportunity as a pivotal center-piece for both urban and river valley renewal. It sits overlooking the North Saskatchewan river as a container waiting to be given a new purpose, a new identity.



Model of the existing conditions at Rossdale. Right to left are the plant's former switch house, turbine hall, and boiler hall



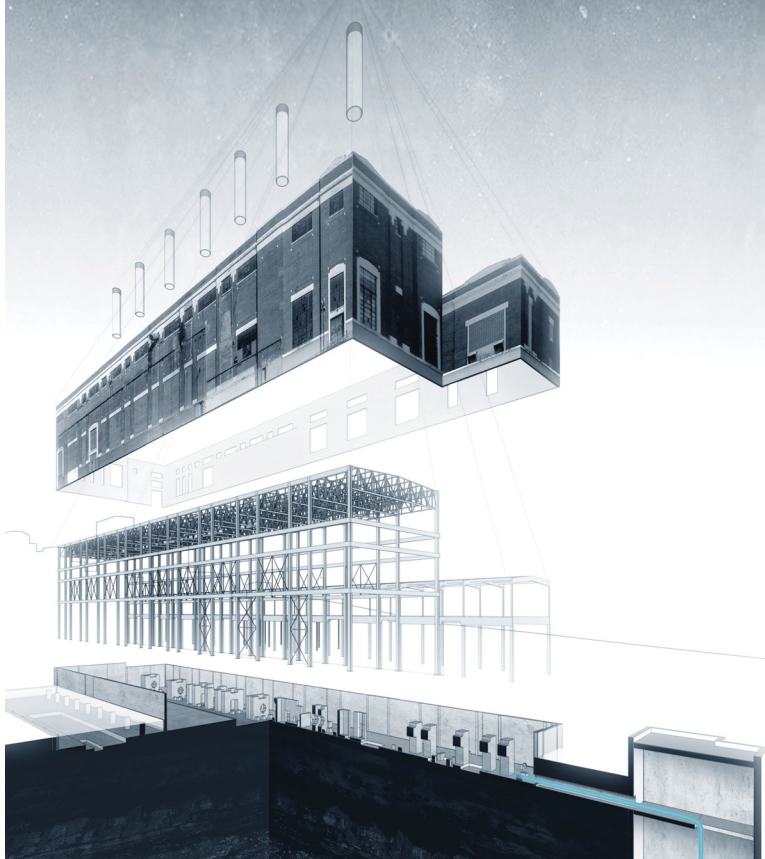
Brick facades and aluminum smokestacks characterize the exterior of the power plant

Built in a series of expansions, the structure is characterized architecturally by non-load bearing masonry walls detailed in the art deco style. The plant is composed of three long volumes, arranged side by side in a north-south orientation. The switch house is the smallest of these volumes and formerly housed the control centre for the plant's operation. The turbine hall is the longest volume with portal frames providing unimpeded views down the entire length of the hall. The boiler hall is the most prominent of the three. Its scale dwarfs everything within blocks of Rosedale. Perhaps the most striking feature of the boiler hall, however, is the series of seven smokestacks that run in single file along its roof.



One way of understanding this iconic structure is as a sum of its smallest of parts. The Rosssdale power plant, although an imposing object on the landscape, is in actuality nothing more than a kit of parts in built form. Its masonry walls give an illusion of heaviness and permanence but in reality are simply a veil of brick over the actual structural system of steel that exists behind them.

Beneath the facades and structure lives an underworld of thick board-formed concrete walls and artifacts that once housed the plant's energy-generating machinery. This manufactured topography presents a number of interesting sectional conditions throughout the plant's lower levels. These tectonic elements, in addition to the seven aluminum smokestacks, are the building blocks upon which the adaptive reuse strategy for Rosssdale will be based.



Elemental breakdown of Edmonton's cathedral of industry



Vignette model illustrating the concrete landscape below ground and the steel and brick above



The boardformed walls and artifacts of the turbine hall's lower floor offer great potential for inhabitation



The city was born on the banks of the Rossdale Flats. It is a site that reflects what Edmonton is and what it can be in the future

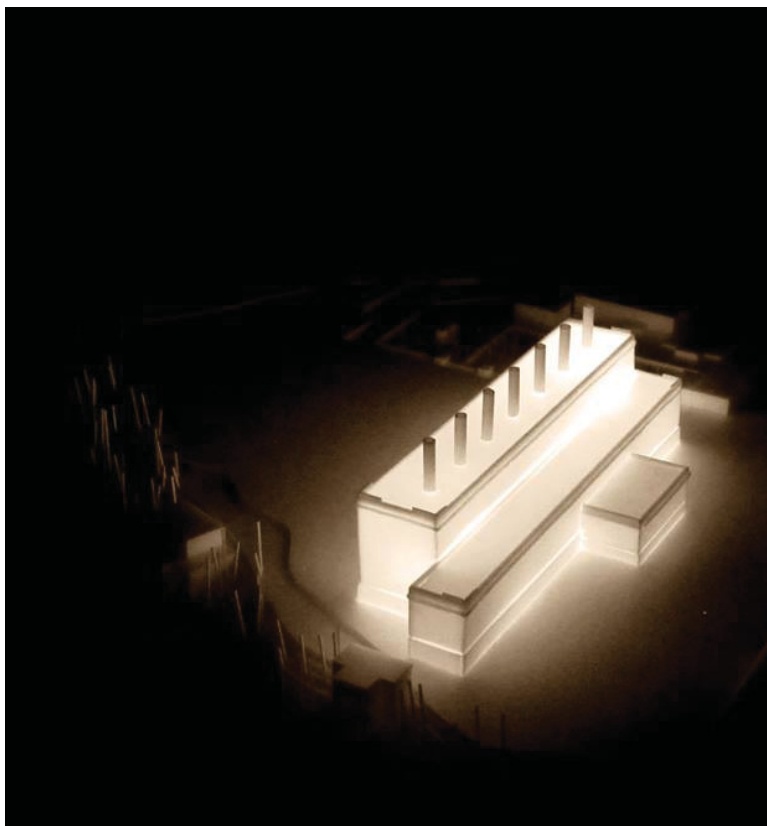
## **CHAPTER 3: PROGRAM**

This thesis will look at two programmatic ingredients that will be used as framework on which to initiate the transformation of Rosssdale into the centerpiece of a city rich in climatic identity. These programmatic elements are based on the idea of thermal generation and climatic destination. Thermal generation deals with the reactivation of the power plant as a source of heat and energy and reinstating it as the infrastructural heart of the city. Climatic destination involves utilizing this heat in a social way that excites and draws users to it and to winter's edge.

### **Thermal Generation - Recommissioning Rosssdale**

A common thread underlining thermal architecture throughout history has been a heat source that becomes the centerpiece of the experience. Like the hot stones that warm the Finnish sauna or the steam-filled hypocausts of the Turkish Hammam, it is an explicit and identifiable source of heat generation on which a thesis about warming must be built upon. Given the existing infrastructure located within and around the power plant, this thesis proposes recommissioning the building the production of renewable, geothermal energy for the planned high-density community of West Rosssdale. This resource and the residual, ambient warmth created from its production are then utilized for communal, social warming. Doing so will ensure that the power plant maintains its place as the 'heart' of the city as it has for nearly a century.

The idea of geothermal makes sense as the heart of a destination of warmth because it is a system that is fundamentally tied to the idea of place and heat. Its very name derives from the greek words geo, meaning "earth," and therm,



Recommissioning Rosedale as a source of geothermal heat and power ensures that the power plant maintains its place as the 'heart' of the city as it has for nearly a century

meaning "heat."<sup>13</sup> As a geothermal power plant, the project will tap into its geology, deep below the snow covered surface river valley, and draw up comfort. It is this immediate tie to the earth and to nature that make it a logical fit for fueling a project with aspirations to reconnect a population with their natural setting.

While Edmonton does not lie over what is thought to be a traditionally thermally rich part of the earth like Iceland, recent technological innovations have made geothermal heat far more accessible. The process of enhanced geothermal production, for example, uses drilled shafts called geothermal gradients and active water injection to facilitate the extraction of heat from below the earth's surface in places that lack tremendous geothermal potential. With deep enough

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<sup>13</sup> Peter Gevorkian, *Alternative Energy Systems in Building Design* (New York: McGraw Hill, 2010), 333.

gradients it is now possible to extract heat as a resource in a variety of geographical locations across the globe and given the long history of resource drilling in the Edmonton region, this should not be an issue. As a rule of thumb one can expect a 30 degree Celsius rise in temperature for every kilometre of drilled depth.<sup>14</sup>

In the case of Rossdale, the site's immediate proximity to both a water treatment facility (for water injection) and an electrical switch yard (to power these injection pumps) provides an excellent opportunity to tap into the supplementary resources that this process requires.

<sup>14</sup> Ibid, 333.

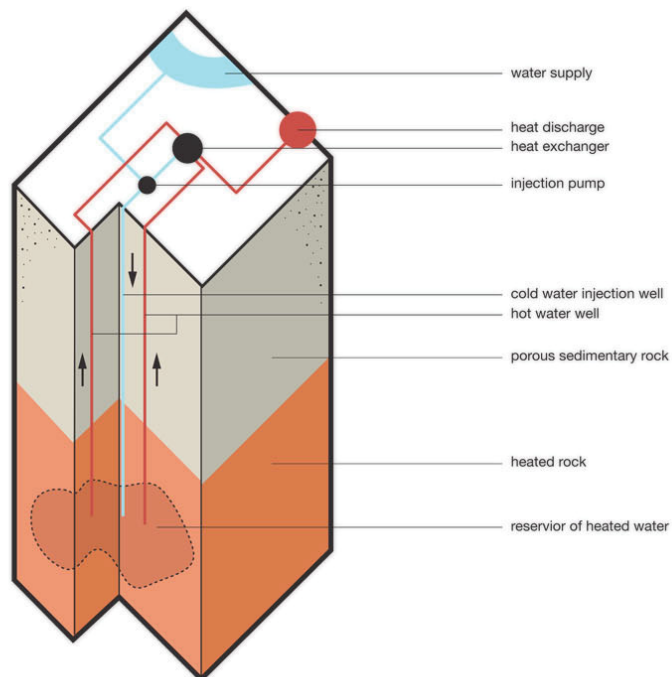


Diagram of enhanced geothermal heat production

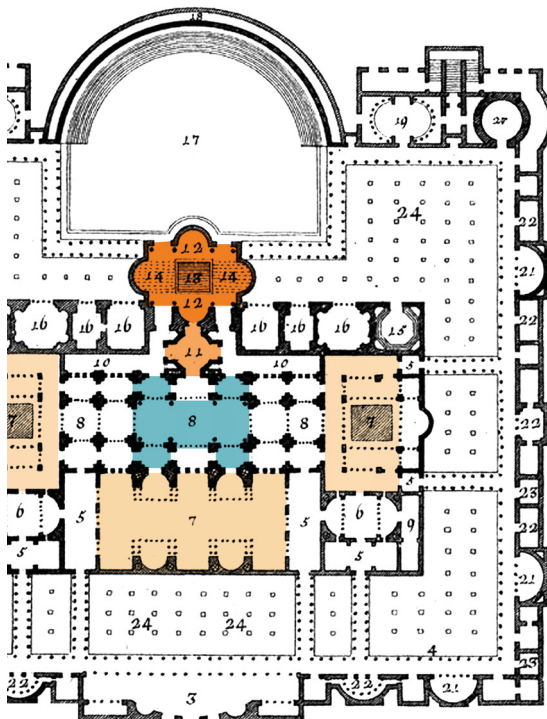
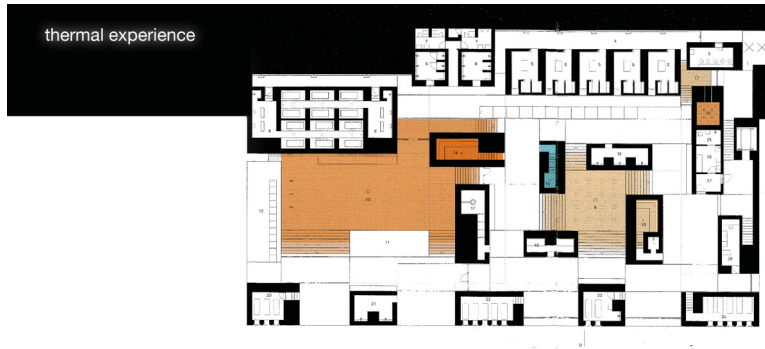
## Thermal Destination - The Thermal Bath

As previously discussed, the most successful winter cities are the ones that utilize the juxtaposition inherent between hot and cold to their advantage. In these cities, the presence of cold makes the experience of thermal contact more enjoyable. This experience is made even stronger when shared as a city. It is under this premise that the social program of Rosssdale has been developed.

The thermal bath will be the experiential climax of the project heated evocatively by the geothermal production facilities with which it co-exists. The visual of steam off the



Man has always had an affinity for the water. The history of the public bath as a place for social enjoyment is one that spans millennia, continents and cultures. How would the experience of a Roman bather circa 300AD compare to that of a user of Peter Zumthor's Therme Vals 1700 years later?

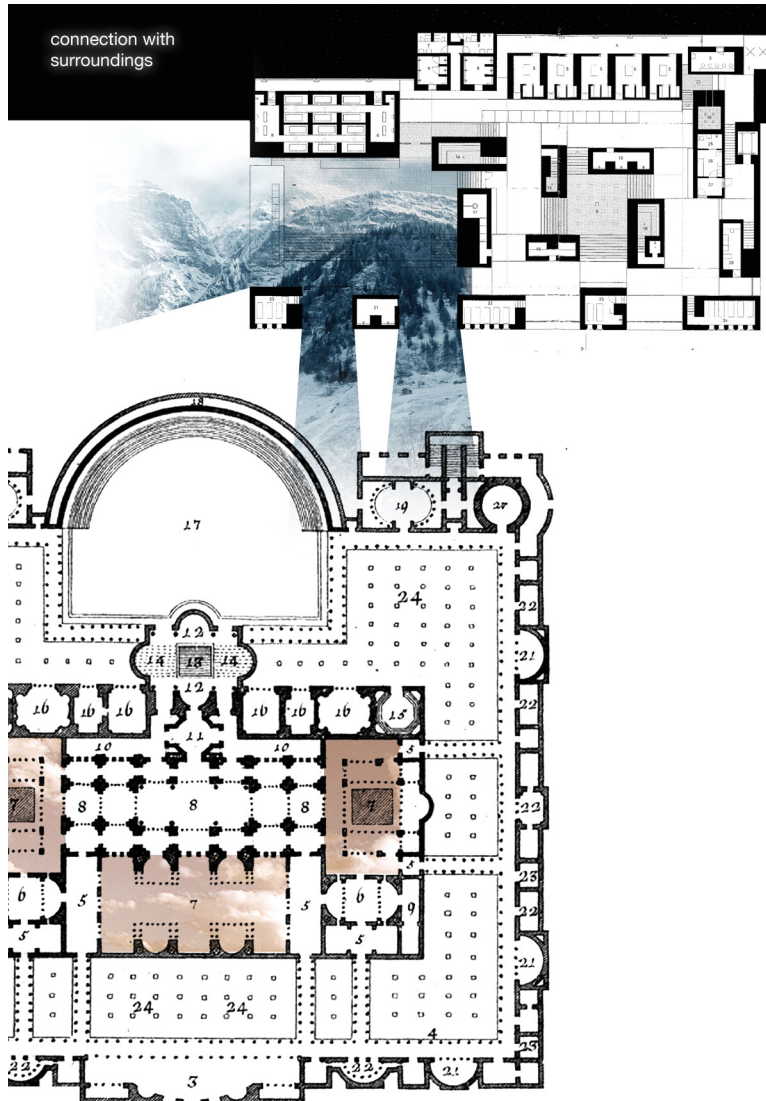


Collage study the thermal experience of the Roman Baths of Diocletian and Therme Vals

water, the reflection of the surrounding environment on its surface, contrasts between thermal extremes, and the social enjoyment that result are but a few of the qualities of thermal baths that will equip Rossdale with the destination atmosphere that Edmonton needs. The thermal bath will not only act to draw people down to the site, but by virtue of its comforting qualities and sensuous nature, keep them there.

“With their desirable thermal qualities [thermal baths] naturally tend to become social spaces as people gather to take





Collage study of the interior-exterior connection of the two thermal baths

advantage of the comfort found there.”<sup>15</sup> The Diocletian Baths in Rome are a perfect illustration of this point. This was bath complex in the Roman Empire and with their gardens, commerce, and libraries, acted as the social heart of the city.<sup>16</sup> A similar example of thermal bathing in terms of scale and grandeur but far more contemporary and ‘northern’ was the Moskva pool. Throughout the Soviet era, the facility’s artificially heated pools served as the meeting point

<sup>15</sup> Hescong, *Thermal Delight in Architecture*, 44.

<sup>16</sup> Dirk Meyhofer, ed., *Water Enjoyment* (Dusseldorf: GROHE, 2011), 17.

for over 10,000 chilled Moscow residents and “its steaming surface and lifeguards stomping about the icy banks in fur coats and hats” served as an illustration of the city’s commitment to being a winter city.<sup>17</sup>

Associating water with social engagement is not a foreign concept to the city of Edmonton. Both city hall and the Alberta Legislature buildings, iconic symbols of the city, serve as the backdrop for civic pools. Throughout the summer months these places become hubs of activity attracting citizens from across the entire city to their refreshing pools. There are also a number of outdoor pools scattered throughout the city, the most popular of which being located in the river valley. The program proposed in this thesis would simply be a year-round extension of a historically summer-exclusive activity.

In addition to the social benefits of the thermal bath, warm water is an asset in the carrying out of this thesis because of its ability to act as the mediator between inside and out. By

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<sup>17</sup> Thomas Van Leeuwen, *The Springboard in the Pond*, (Cambridge: The MIT Press, 1998), 152.



The baths of Rossdale expand Edmonton’s culture of civic swimming to the winter season



A destination of climatic comfort in the heart of the city. Getting people excited about the prospect of warming up is the first step in promoting excitement of the winter season

bathing in thermal waters that extend out into the landscape occupants are able to take in the beauty of the river valley for extended periods of time without having to retreat to the indoors to warm up. Places like Banff springs or Therme Vals that open themselves up to their natural settings immerse their users in the landscape. It is this combination of warmth and surroundings that make these places destinations throughout all four seasons.

## CHAPTER 4: DESIGN

There are two scales of adaptive reuse that will be addressed as a part of the thesis; the local, or building scale and the city scale. The former speaks to change in terms of the power plant itself and deals with attracting people, drawing them in, and providing a comforting thermal experience. The latter involves expanding the reach of the project through connections and associations between it and the urban condition.

These two scales are equally necessary in achieving a shift in Edmonton's back-against-winter mentality. Using Rossdale as a testing ground for how to make an architectural climatic device in a cold climate, what lessons can be adopted to make a northern city more liveable year round? A city that resonates with its climatic situation instead of fighting against it.



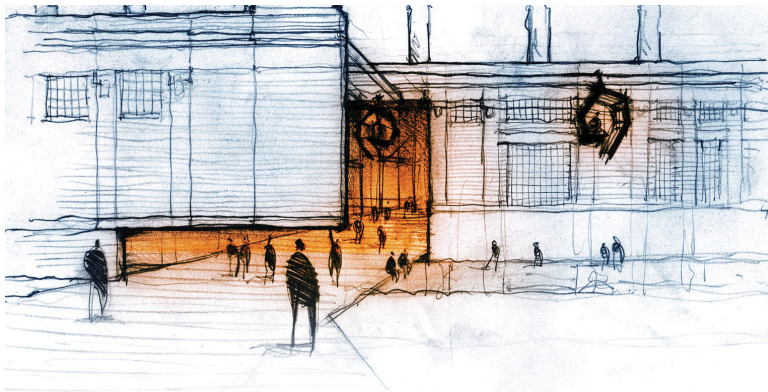
Like being wrapped in a cozy blanket around a campfire, Rossdale should be a place that allows one to engage with our most inhospitable season while still being comforted by its warmth

## Building Scale - Extraction and Insertion

The architectural strategy proposed in this thesis is to alter existing conditions in ways that highlight Rosedale's presence, draw people to it, and reveal its story. The goal of this thesis is to transform the power plant, currently a distant relic of the past, into a thriving place of civic enjoyment; one that brings them in contact with their winter surroundings.

### Completion by Removal

Not unlike the backyard campfire or hot tub, the power plant should be an architecture of engagement that reaches out in the whitest of months as a space of thermal and climatic enjoyment. Thinking about what this means architecturally leads one to consider if the words 'reaching out', so often used as metaphor in architecture, could be dealt with in more literal terms. In an act of opposition against the internalization of the city mentioned earlier, could the building not literally be cracked open calling attention to the warmth within and allowing it and its users to engage with the landscape?



Sketches illustrating the concept of facade extraction

As it sits, the power plant is like a brick on the landscape. Its walls keep its internal processes concealed and cut itself off from its stunning natural setting. Through the designer's lens its walls can be looked at as surfaces to cut into and remove. Through these cuts, the building's identity as a generator of warmth along with its programmatic contents of comfort will be revealed to the city and at the same time, draw its residents in.



By physically opening up Rossdale, it and its embodied symbolism of warmth become part of the city

Gordon Matta-Clark is a sculptor who is famous for experimenting with structures in this way. His excision of abandoned buildings redefined their place in their respected locales. His career was formed on the idea of “completion through removal” in which the building’s making and internal structures were emphasized.<sup>18</sup> His work also spoke about the idea of containment. A building, in this respect, is something “that can be cut into pieces, that no longer allows a concept of...interior and exterior, of container and contained.”<sup>19</sup> In architectural terms, the work of Matta-Clark inspires the questioning of program containment and the traditional rules about what should be inside and what should be kept out. From a climatic point of view, it inspires a way of designing that questions the relationship between inside and outside, between sheltered and exposed.

18 Corrinne Diserens, ed., *Gordon Matta-Clark* (London: Phaidon, 2003), 32.

19 Ibid., 162.

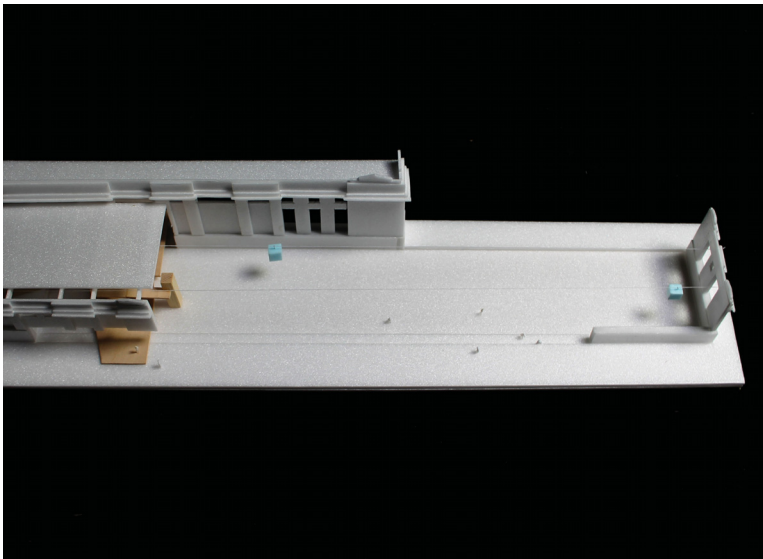


Extractions reveal Rossdale's thermal contents and produce fragments in the landscape

Adhering to this logic, a number of facade extractions have been carried out at Rossdale. The principle motivations for these extractions can be broken down into gateway, visibility, and threshold.

### **Gateway**

Gateway is best exemplified by the relocation of the north facade of the switch house to open it up for arrival. The fenestrated openings of this fragment function as portals through which the cars enter the project. A portion of the switch house's foundation wall is then carved away to allow for pedestrian entry under its west facade.



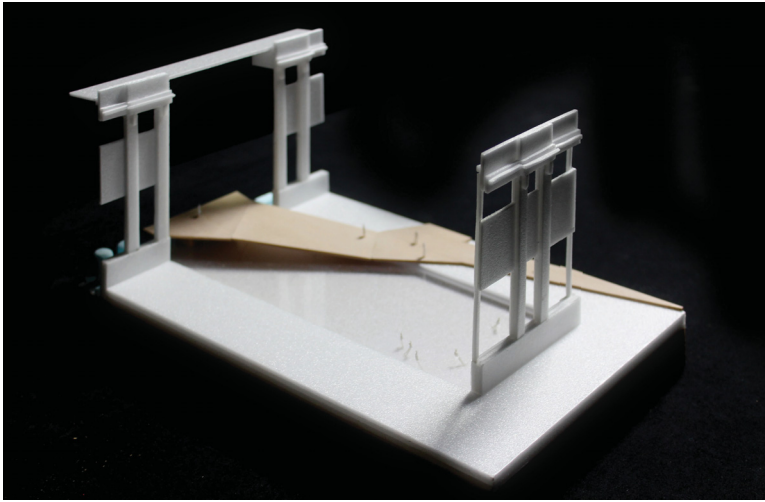
Vignette model depicting Gondola and pedestrian arrival at the Switch House

### **Visibility**

Visibility is established by dragging a 35 meter tall section of the boiler hall's west facade out into the plaza. This move brings bathers out into the plaza in its track and exposes Rossdale's geothermal contents to the city. Like the glass light beam of the Tate Modern, or the corten steel mass atop the Caixa Forum, this fragment acts as a sign piece saying



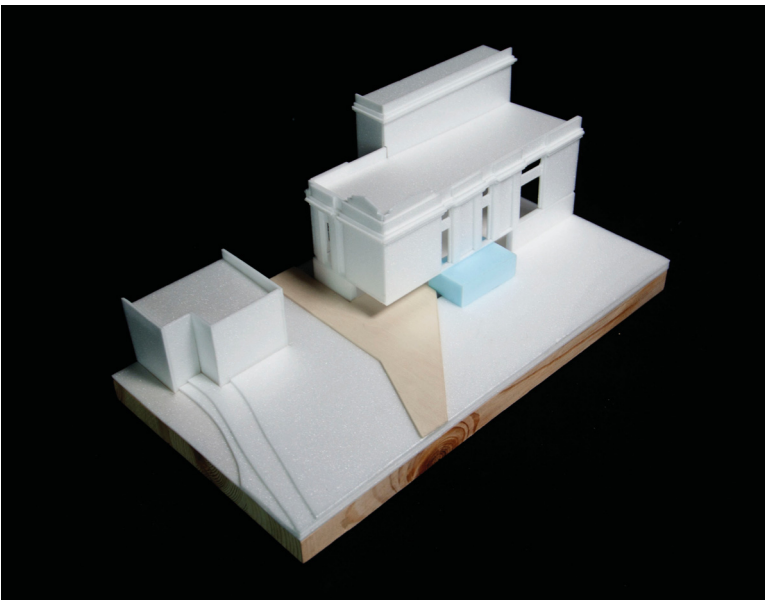
“this is the new Rosedale” but unlike these precedents, employs the building’s own architecture to do so.



The Boiler Hall and its baths emerge into the plaza

### ***Threshold***

The final removal of major facade elements occurs at the corner of the turbine hall. Here, a porch-like condition provides a place of transparent refuge along the river. This place is open to the elements but sheltered and warmed ambiently from the baths below. Spaces like this extend patio culture well into the fringe seasons.



A porch is created by removing the southeast corner of the Turbine Hall



The extracted north facade of the Switch House now serves as a gateway through which the gondolas enter the project



The extraction of a section of the Boiler Hall and the baths that spill out through its void make the west face of the building its most social address



The steam visible through the missing corner and the aroma from the bistro insertion draw Edmontonians in

## Inserting into the Found

Inserting into the found conditions of an adaptive reuse project is about far more than adding architectural elements; it is about inserting present into past and establishing a dialogue between them. Insertion is about attracting users in radically different ways than in the past, and allowing them to discover the found from a new perspective. Insertions also redefine the found in terms of spatial arrangement and highlight its various elements. In doing all these things, inserting is about giving the project a new identity and reason to exist.

### *Inserting the Path*

The path physically brings the city into the power plant. It is on the surfaces of this insertion that people enter and occupy the space. Through the extractions in the building's facade, the path introduces a new language into the regimented, rectilinear form. Its materiality, construction, and formal nature are influenced by the trail system that runs through the river valley.



The wooden circulation walkways and stairs that connect the city to the river valley serve as inspiration for the path



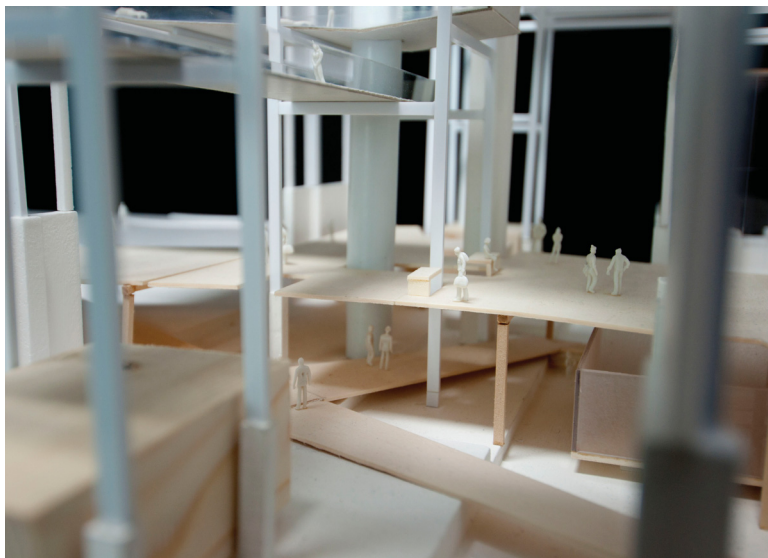
Traversing the path, River Valley users can simply gather a dose of warmth from the baths below before continuing on their way

The path contrasts the found but connects it with its environment. The river valley dweller has the option to deviate from their route of travel along the river for a moment of ambient warmth as the path meanders through the power plant. The path takes the occupant through the three distinct volumes of the existing structure as if it were an exhibit on display.

While many will use it solely as a place of circulation, the insertion also functions as a place of gathering and repose. It is a living room for the community across all four sea-



Entry from the east through the excised switch house



Layered levels of the path

sons. On cold winter days, it acts as a place of refuge. The passerby can peer over the edge and take in the warmth of the thermal baths below or gather with friends in one of the lounge-like spaces overlooking the adjacent geothermal production facilities. In the summer, the path serves as a shady retreat for the vendors and customers of the Rosedale Farmers Market.



On warm days the power-plant's shell provides a shady setting for Rosedale Farmers Market





The Boiler Hall and its geothermal processes are put on display



The lofty perch of the warming lounge on the mezzanine level give it a destination-like presence within the plant



The path radiates into the plaza from the void on the west facade of the Boiler Hall

### *Inserting the Baths*

The thermal baths are the most engaging of the insertions into the found conditions of Rosssdale. The water creates new surfaces, space, light, temperature and atmosphere within the plant's lower levels. Swimming through these spaces can take occupants to perspectives from which it has never been observed and encourages prolonged and intimate contact with its surfaces. It contrasts the surfaces of the found but becomes one with it as it flows over, under and through its concrete relics.



The baths provide a medium through which users can engage with the building's defining elements



A moment of cold is experienced between the heated change rooms and the baths

### ***Turbine Bath***

Coming in from the cold, the path's surface branches down taking the bather into the subterranean bowels of the turbine hall. The unheated path along which the bather travels from the change rooms to the first bath is the first of many temperature shifts they will be exposed to.

Stepping down from path into the baths, relics of the building's industrial past are reborn as surfaces on which to rest and swim through. Along the length of the hall, the water

temperature shifts from warm to hot to cold and vast social spaces are contrasted by the intimate, steamy confines of thermal pavilions, both adapted and inserted.



The intimate, steamy conditions of an adapted volume



The water of the baths affords exploration of the building in drastically new ways



The inserted path winds through and redefines the found condition of turbine hall



Flumes make the depositing of water into the baths a dramatic event



Water adds a facility and engaging quality to the found conditions of Rosedale

After swimming through a dark tunnel at the southern tip of the turbine hall, the bather finds themselves outside. Projecting from the pumphouse, the bather hovers over the river, emersed in the wintery landscape but comforted by the thermal waters and steam rising from its surface. This is a place to stop and take in the beauty of the winter city they call home.



Bather meets nature at the pumphouse pool





Vignette model of the south end of the Turbine Baths

### ***Boiler Bath***

The boiler hall offers a very different type of bathing experience than the turbine hall. While the latter is home to contained, intimate, atmospheric experiences, the boiler bath is the place where bathers come to gather and socialize. Rather than taking the bather on an intimate journey down the length of the building and into nature, these baths transect the building and deliver the bather back into urbanity. Upon entering the boiler hall, the bather is exposed to the source of the thermal waters they are suspended in. It is at this point that the social act of bathing comes into contact with the industrial process with which it coexists.



Social enjoyment and industrial process meet face to face in the Boiler Hall

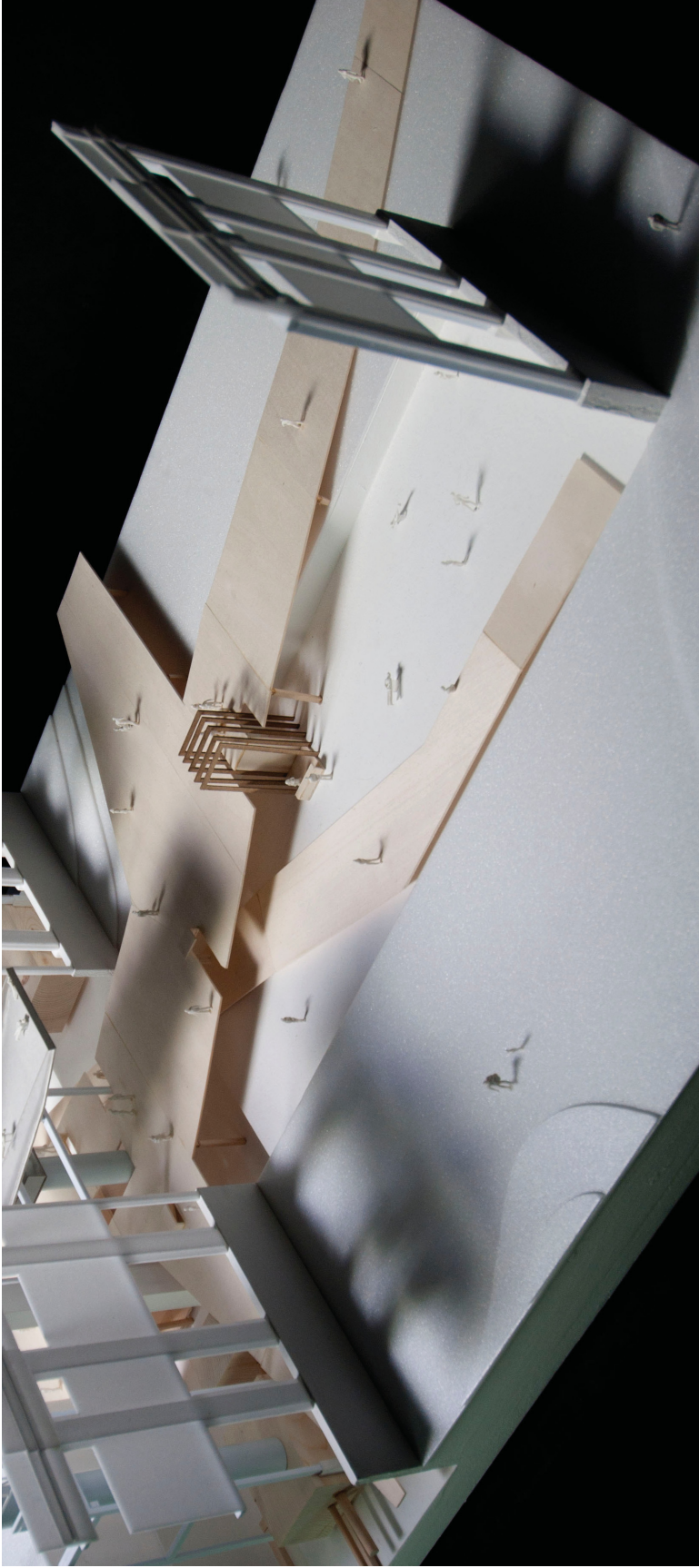


View down the Boiler Hall and its adapted infrastructure

Unlike the darkened tunnel connecting the the turbine hall to the outdoors, the transition into the elements from the boiler hall takes place through an enormous void in the building's facade out and into the heart of Rossdale's bustling plaza. Here, one can throw a ball, play water chess, or swim up and grab a refreshing drink while chilled winter-wanderers enjoy hot toddys across the bar.



Toasty swimmers grab an icy refreshment while those on the bar's land address land dwellers enjoy a hot one



The Boiler Baths spill out into the heart of Rosedale Plaza

### ***Suspended Baths***

Back under the roof of the boiler hall, one can ascend vertically through a smokestack to the suspended baths. Perched within the plant's existing structure, this set of inserted steel-plate baths offer an aerial view of the project as a whole. The first bath runs southward from the stack and takes the bather on an elevated journey down the Boiler Hall's volume. Suspended above 4 storeys above Rossdale Plaza, a second bath presents itself through the void in the facade. From this vantage, one observes the path radiate into a web of public space dotted with moments of climatic comfort. Climatic mounds, sunken paths, and warming flumes are but a few of these moments. The web appears to descend to the very edge of North Saskatchewan River enabling Edmontonians to engage with it like nowhere else in the valley.

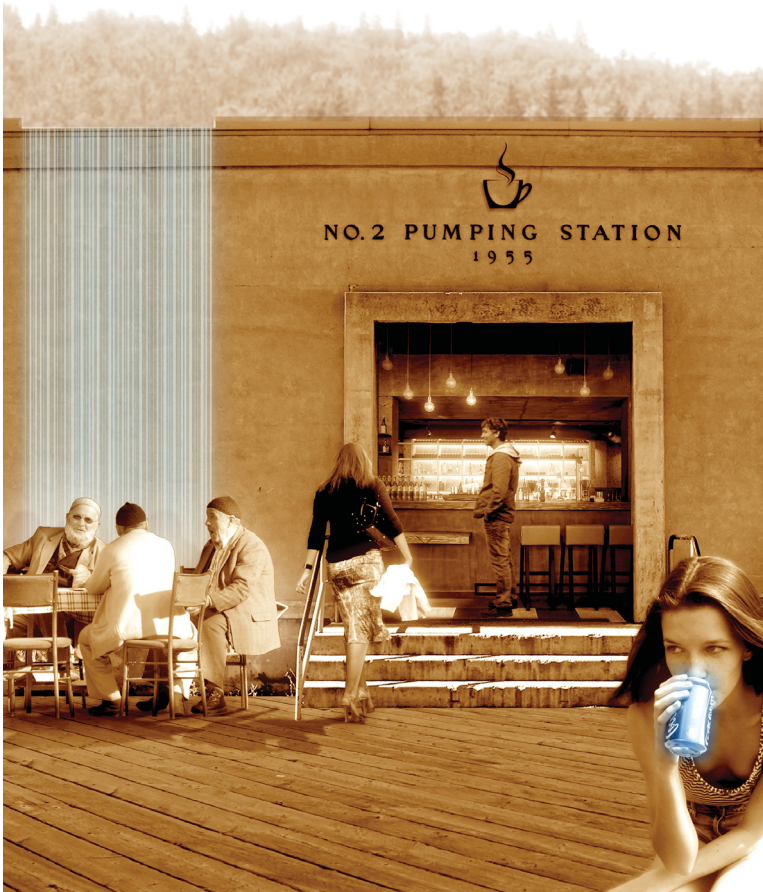


The steel and glass suspended baths make themselves present as they emerge through the wall of the Boiler Hall

In the winter, skaters glide across its frozen surface and in the summer, the stairs leading down to the river are a popular spot to enjoy a bite to eat from the pumphouse cafe or to wait for the next water taxi.



Warming huts and skating in front of Rossdale (hut designs by Patkau Architects and Gehry Partners)



Pumphouse #2 is repurposed as a water-side coffee shop



Edmontonians and visitors anticipate the arrival of the next water taxi

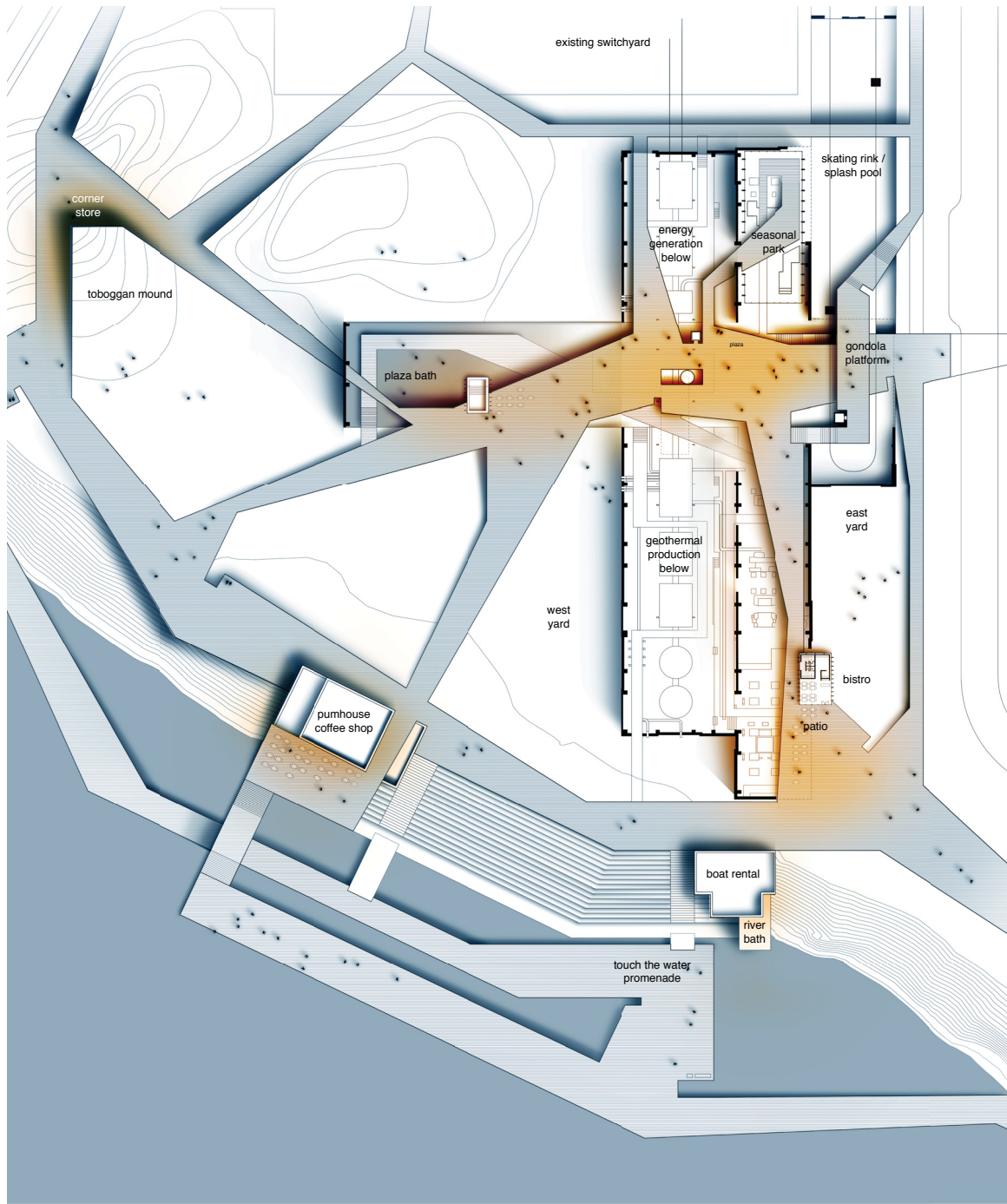




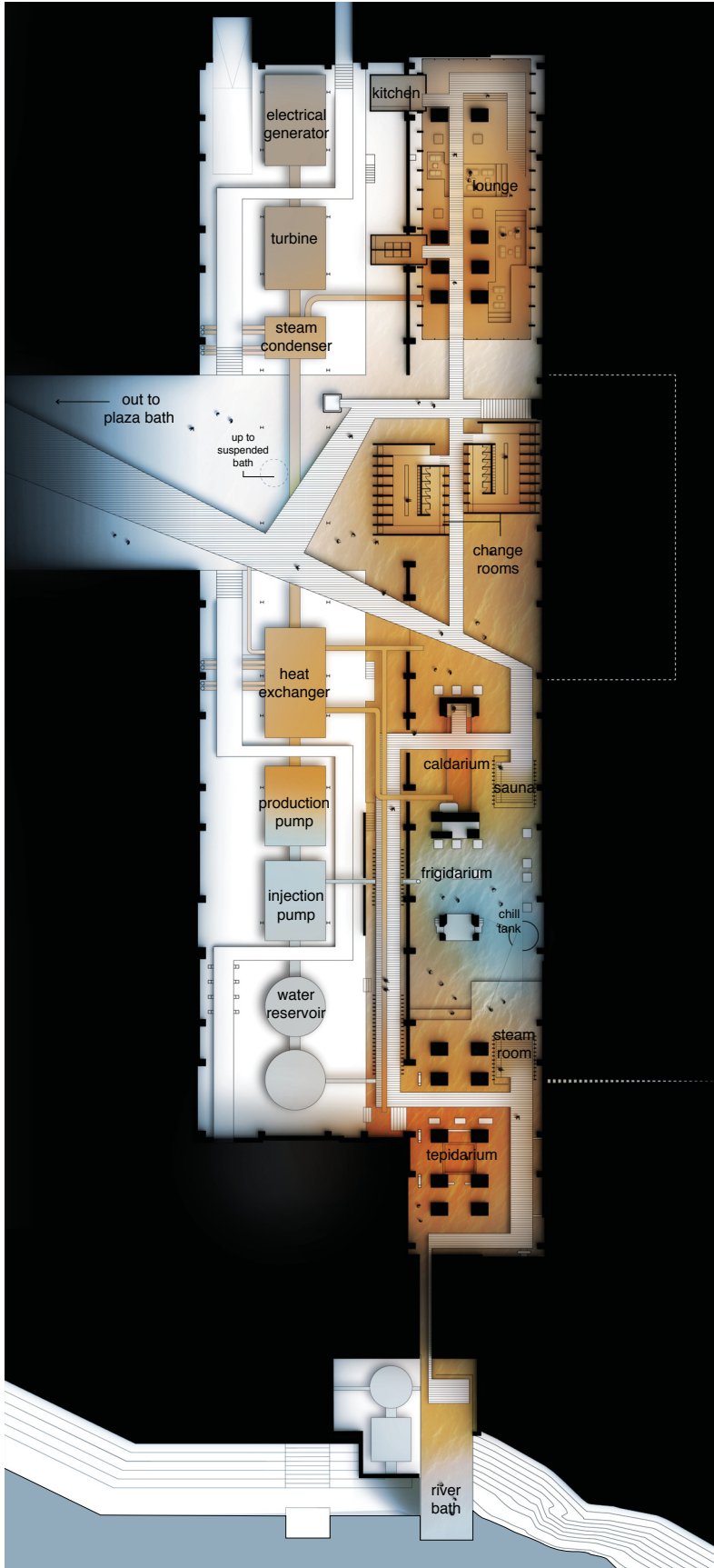
A water taxi pulls in to pick up a load of passengers at the river's edge



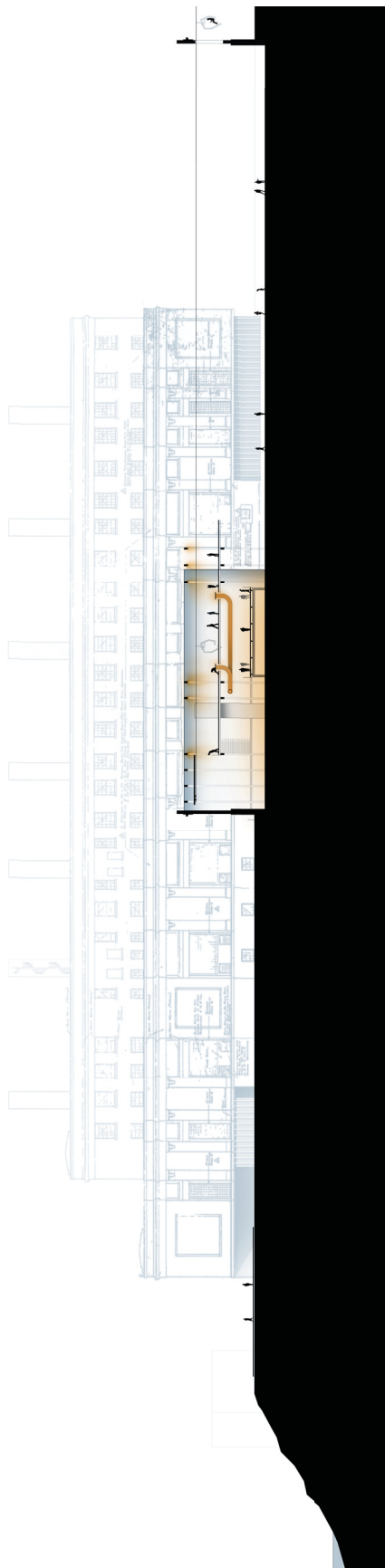
Site model



Site plan



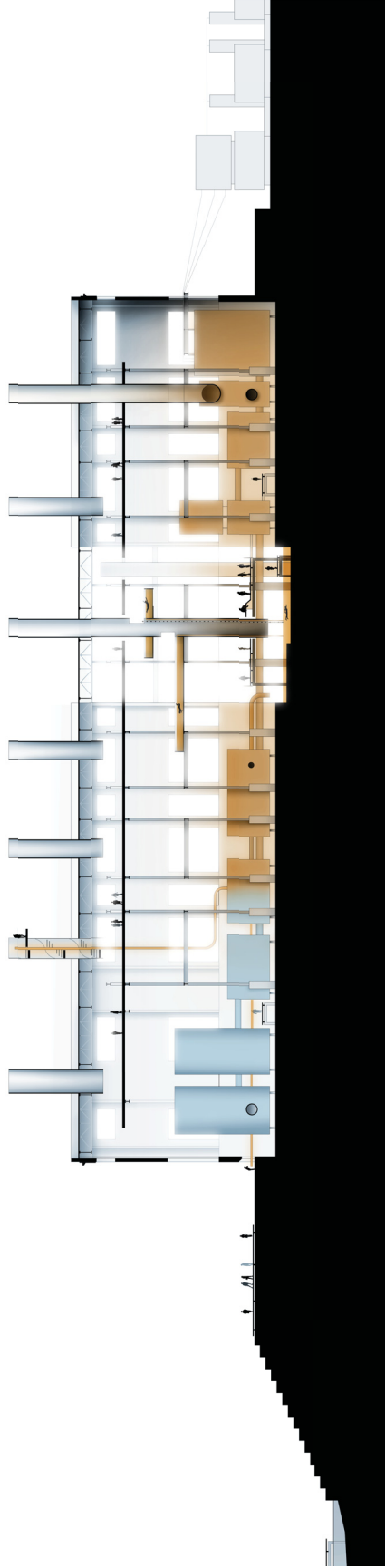
Lower floor plan illustrating the temperature gradients of the turbine baths



Section through the switch house illustrating gondola and pedestrian arrival



Section through the turbine hall illustrating the procession of bathing experiences culminating in the river bath

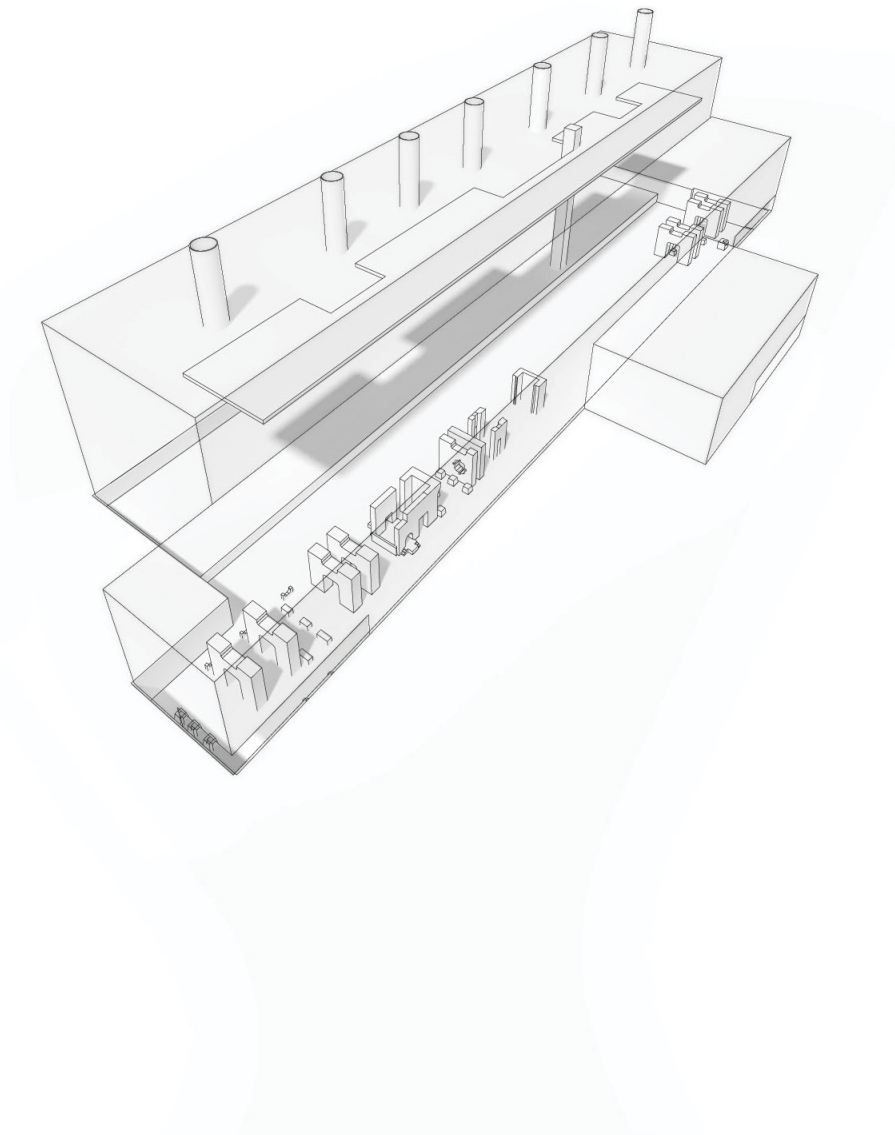


Section through the boiler hall, illustrating mixing of infra-structural and social activities

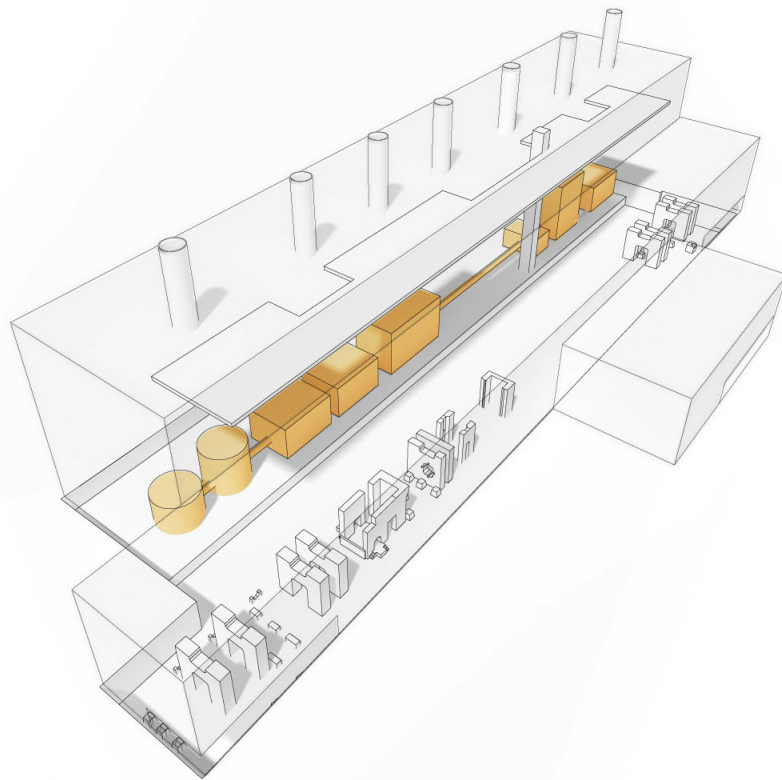


Section through the void in the boiler hall's facade and the suspended bath that emerges from within

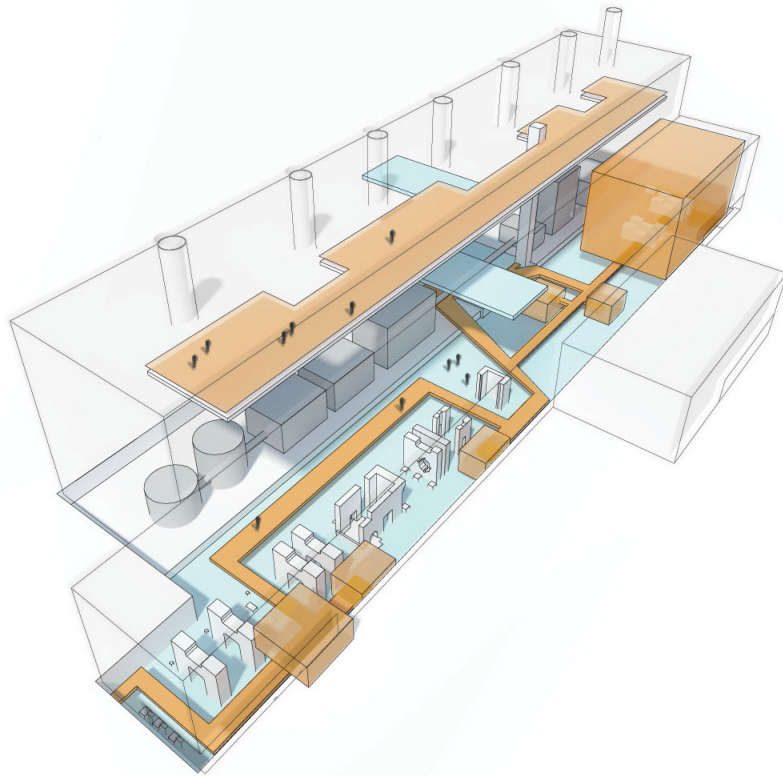




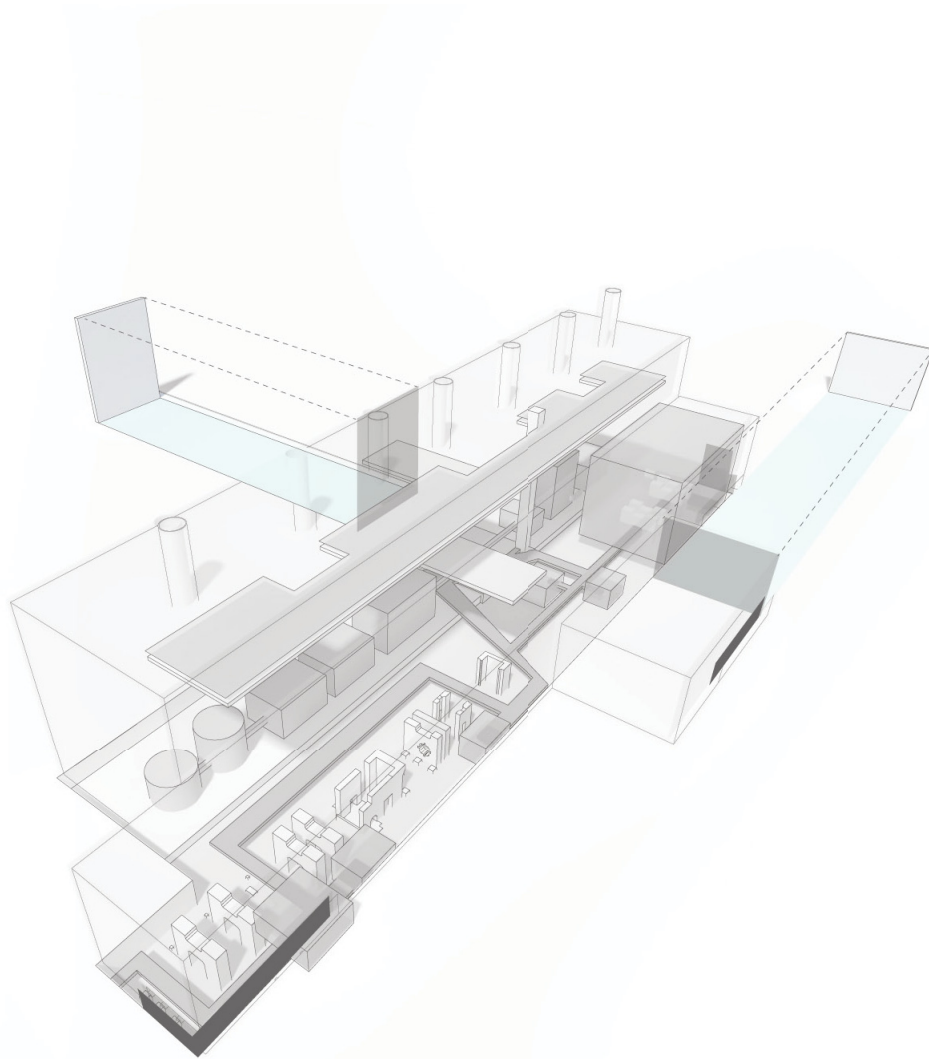
Strategy diagram for the adaptive reuse of Rossdale: Existing Conditions

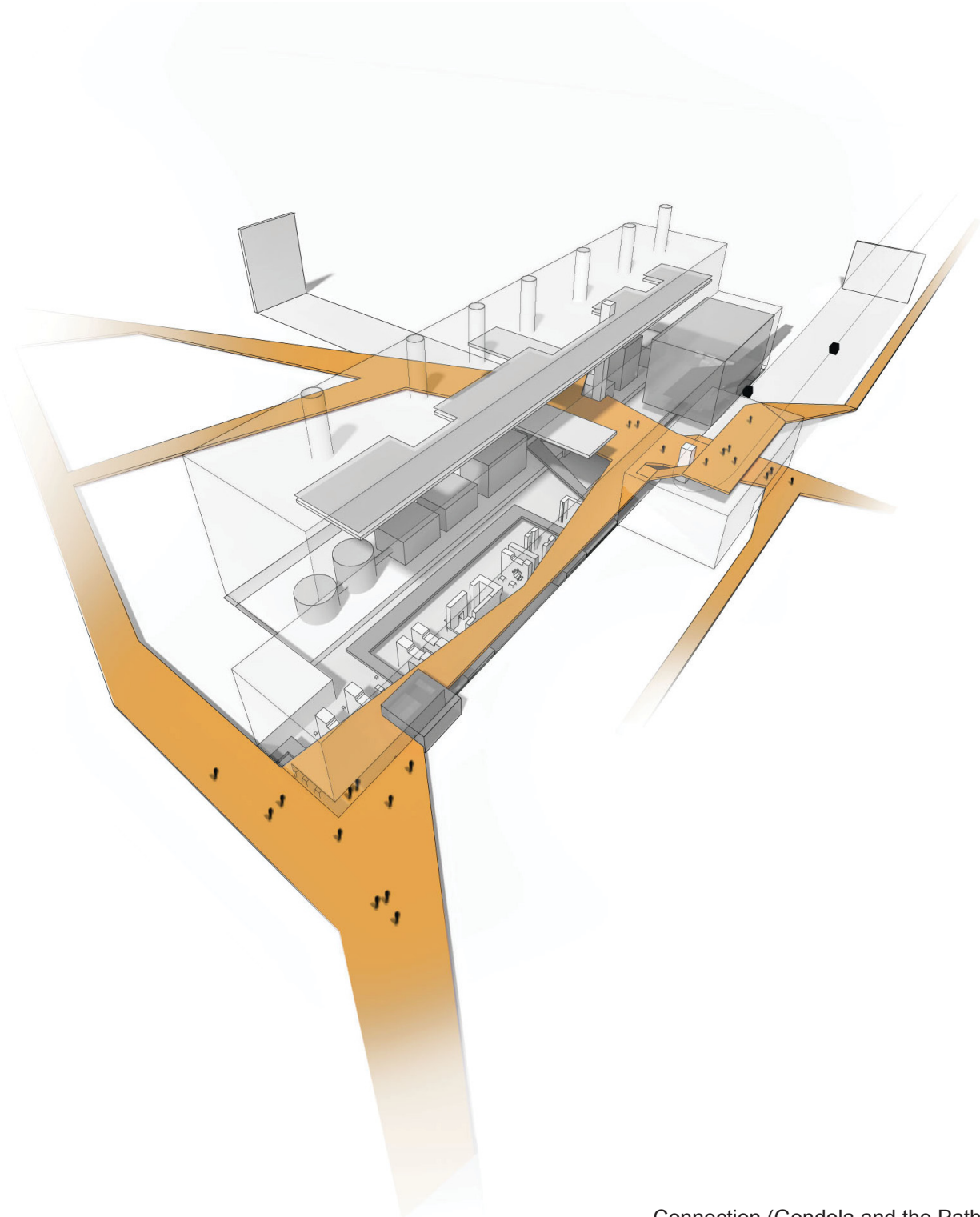


Plant Recomision (Geothermal)

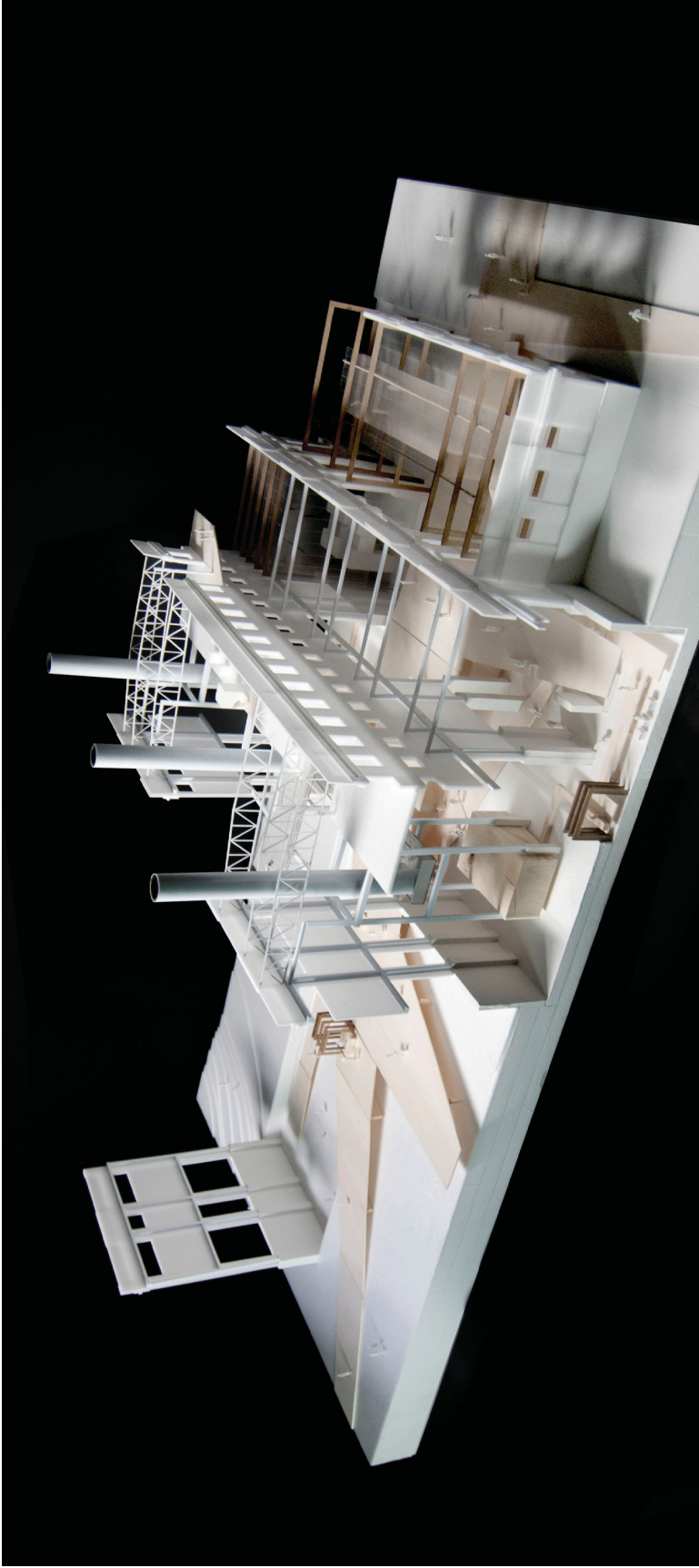


# Facade Extraction





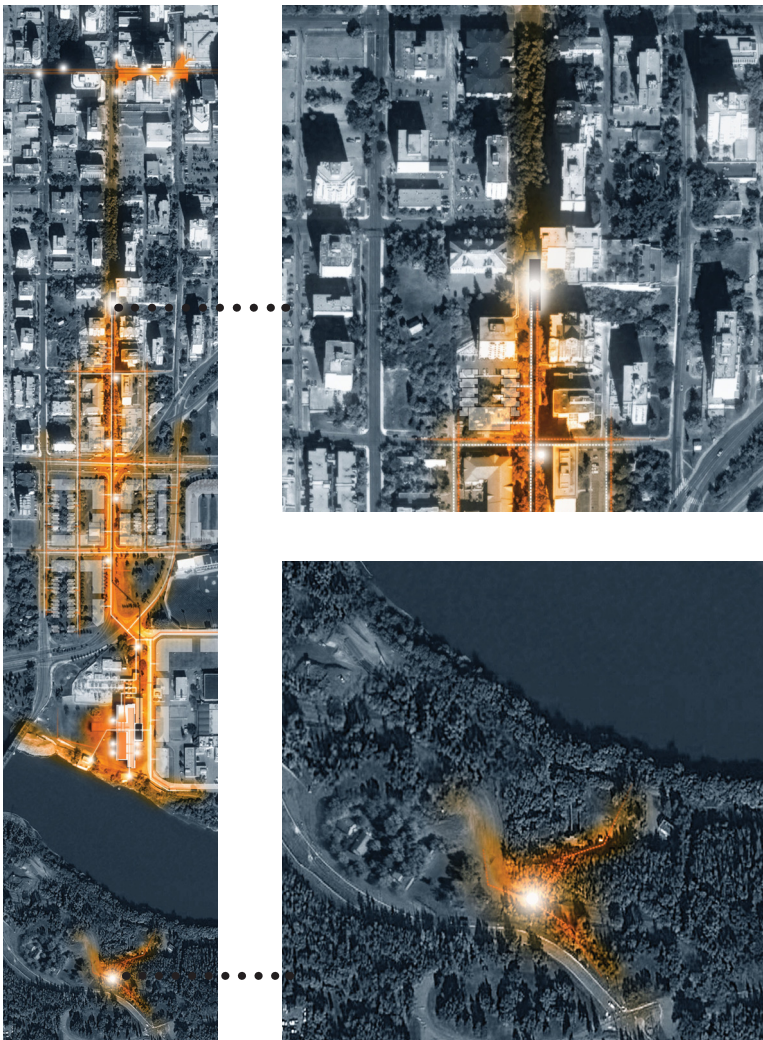
Connection (Gondola and the Path)



Sectional model of the adapted power plant

## City Scale - Network Design

The strategy behind integrating Rossdale into the urban condition and testing how its climatic influences can permeate into everyday life is based on two key tenants: connection and distribution. Connection deals with the physical linkages that tie the power plant to the city. It deals with how the heat generated at Rossdale is shared with the city and how users are physically connected to the project. Second, distribution takes the idea of extraction and fragments to the city scale. It explores ways of utilizing physical elements from Rossdale to create a network of symbolically loaded climatic interventions.



The network of thermal engagement

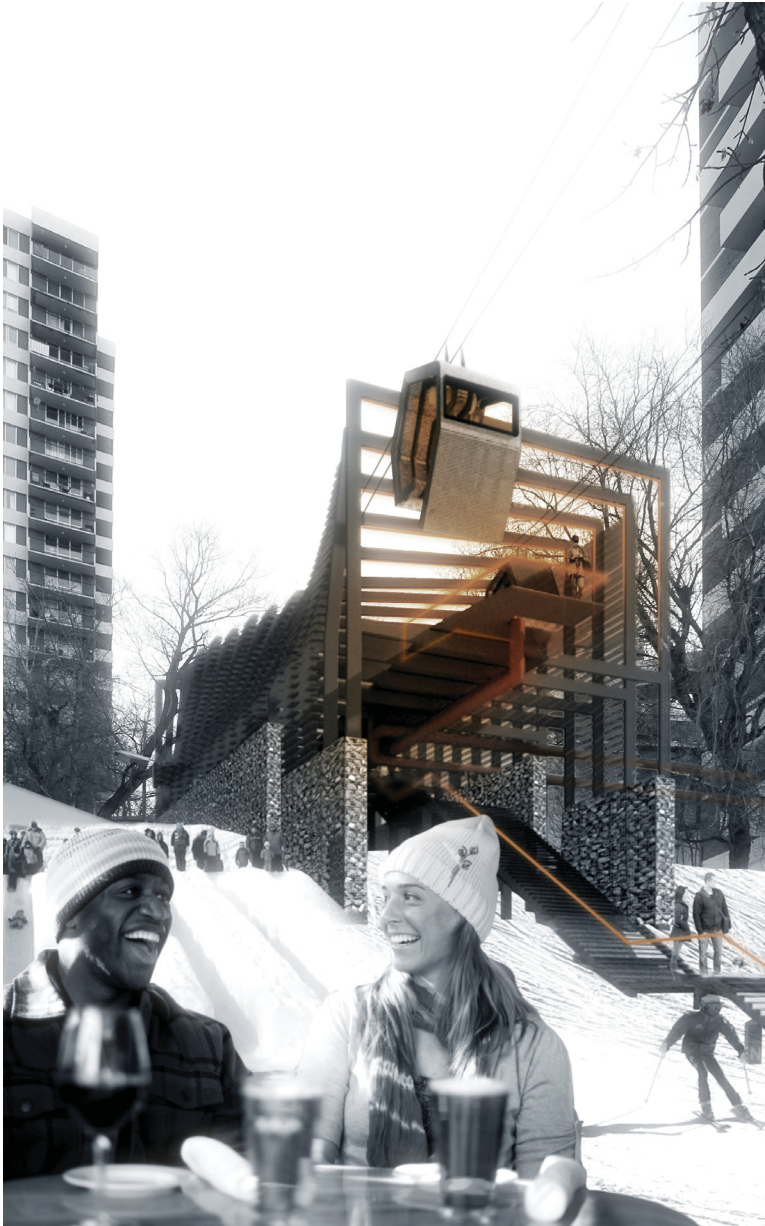
## Connection - The Gondola Axis

While the smokestack retreats represent a symbolic connection between Rosedale and its surroundings, the axis provides a physical one. It represents the physical linkage of people and resources between the power plant and the city. Above 4th street, the gondola transports users to and from the destination. Below this, an infrastructural web circulates the heat and energy produced at Rosedale. Year-round, the two processes cycle in harmony and make the project hum.



A winter light intervention casts a warm glow over the gondola axis

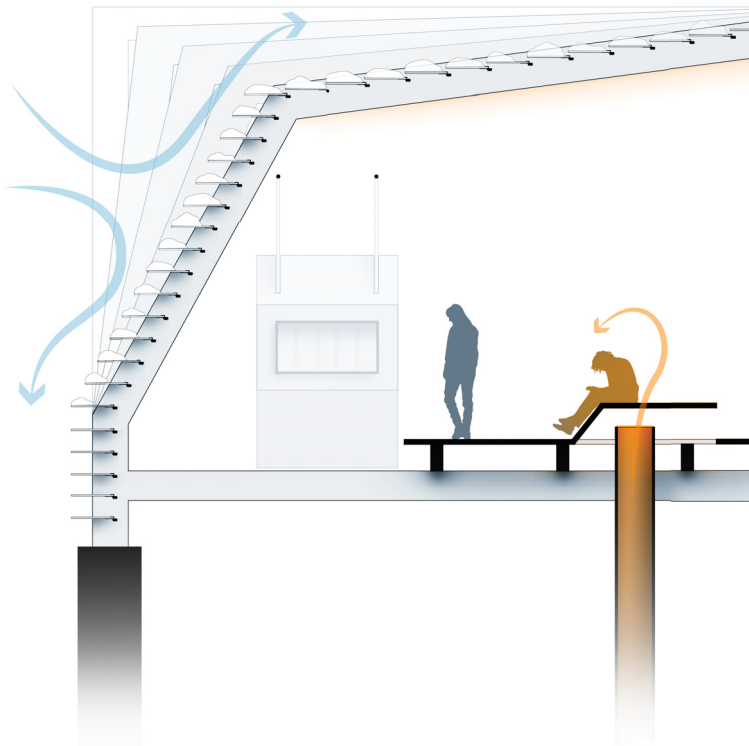




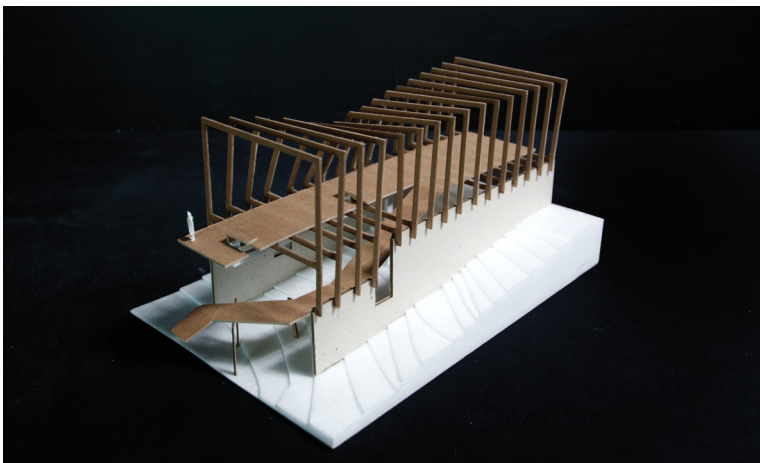
The gondola terminal marks a formal gateway to the destination below

The axis is emphasized by the gondola terminal perched at its northern terminus. At the south end of 4th street the cobblestones give way to a spruce insertion not unlike the path that snakes through the power plant at the bottom of the hill. The insertion gently ascends through a series of portal frames that have been 'pushed over' along the terminal's western elevation. This provides a sloped facade on which snow can accumulate like a blanket of protection from

prevailing winds. Below, an organ of pipes emerges from the ground and thermally activate the platform. At the end of the platform, perched over the valley in a position of prospect, the rider is exposed to the climatic elements once again but is offered the comforting warmth of a copper handrail filled with heated water originating from the destination at which they will soon arrive.



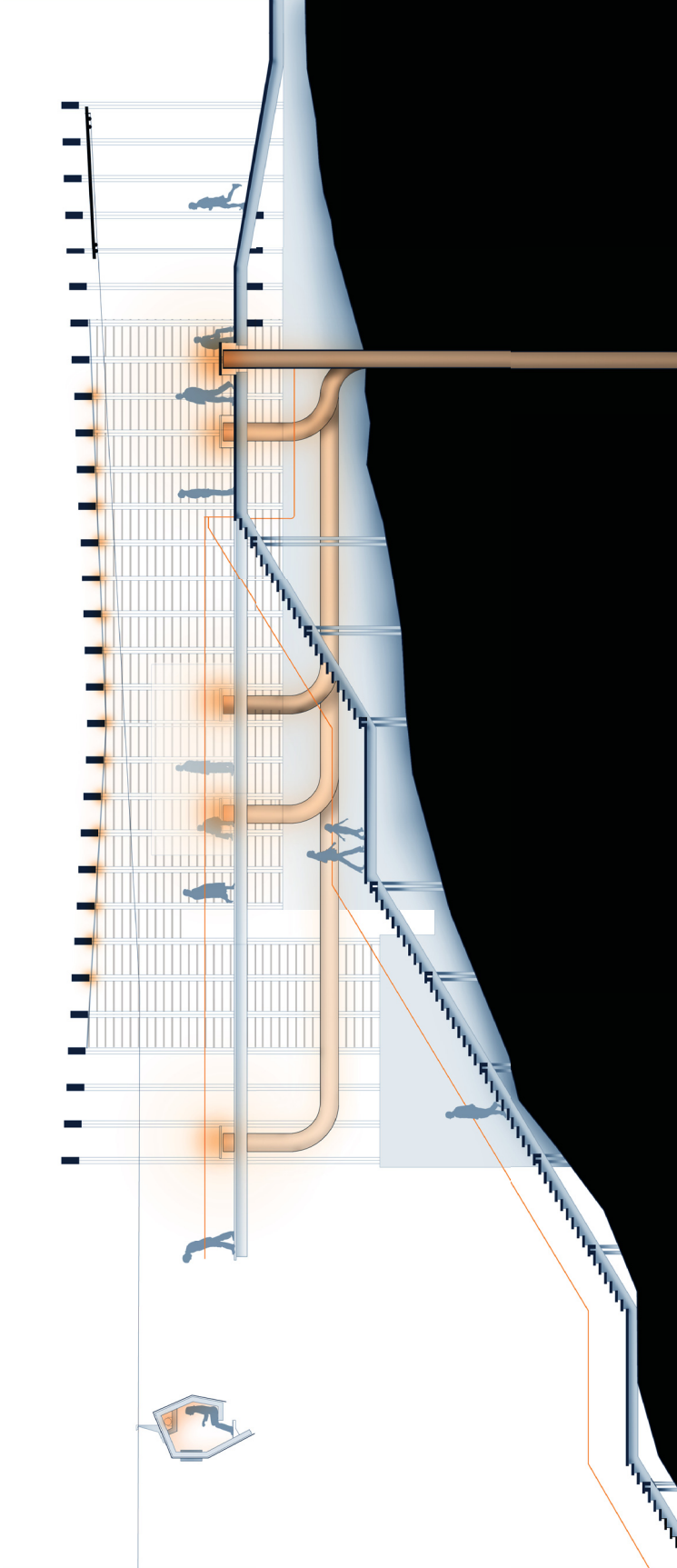
Climatic section of the gondola terminal



Formal study model of the gondola terminal



Detail model of the snow-accepting terminal facade



Section of the gondola terminal and the thermal experiences it offers

The gondola car takes the wooden portal frames of the terminal structure to a personal scale. The frames are folded around a seated passenger, framing both the views to the destination ahead and the ground below. Due to the fact that the gondola car is in constant motion and cannot be physically linked to the rest of the project infrastructurally, it is designed to work as a small scale analog to the larger system. Its skin is made up of solar tubes that passively heat and circulate water to warm the car.



Formal study model of the gondola car



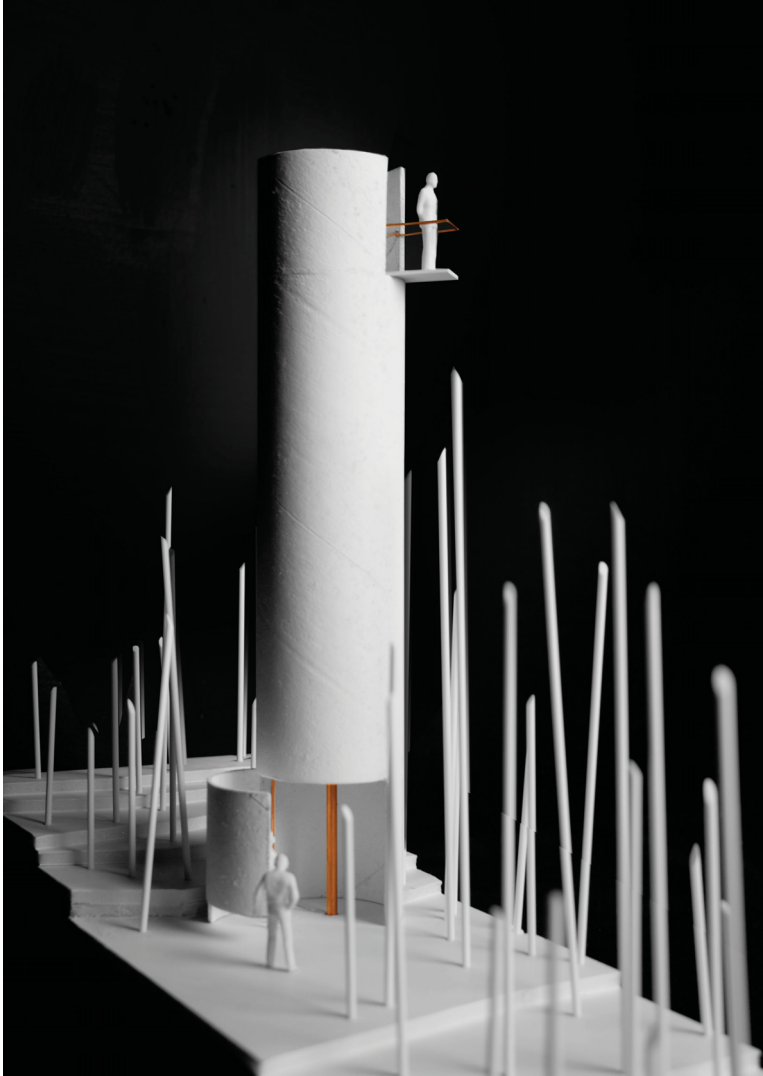
The gondola car provides a climatically exposed yet comfortable trip

## Distribution - Smokestack Retreats

By creating a network of its fragments, Rossdale's reach can be extended into the river valley. The river valley is a natural asset that not many cities are fortunate enough to possess but remains highly underutilized in the winter months. The Smokestack Retreats act as beacons of comfort to draw people into the valley and experience its ephemeral winter beauty. They offer the valley user the comfort of knowing a moment of warmth may be just around the corner.



Transparent hibernation at the base of the retreat



Study model of the retreat in the landscape

These retreats are a continuation of the extraction strategy described earlier and involve the removal of a number of the structure's smokestacks, relocating them throughout the river valley and then, not unlike the plant itself, opening them up and inserting a thermal source to draw people in. In doing so, the stacks become a refuge in which to rest, warm up and view. Architecturally, the smokestack is altered to provide entry, hearth and prospect. A piece of the aluminum cladding at its base is cut and pivoted creating a door and bench on which to rest enjoy the most primitive of warming strategies, the campfire. Within the stack, a spiral staircase





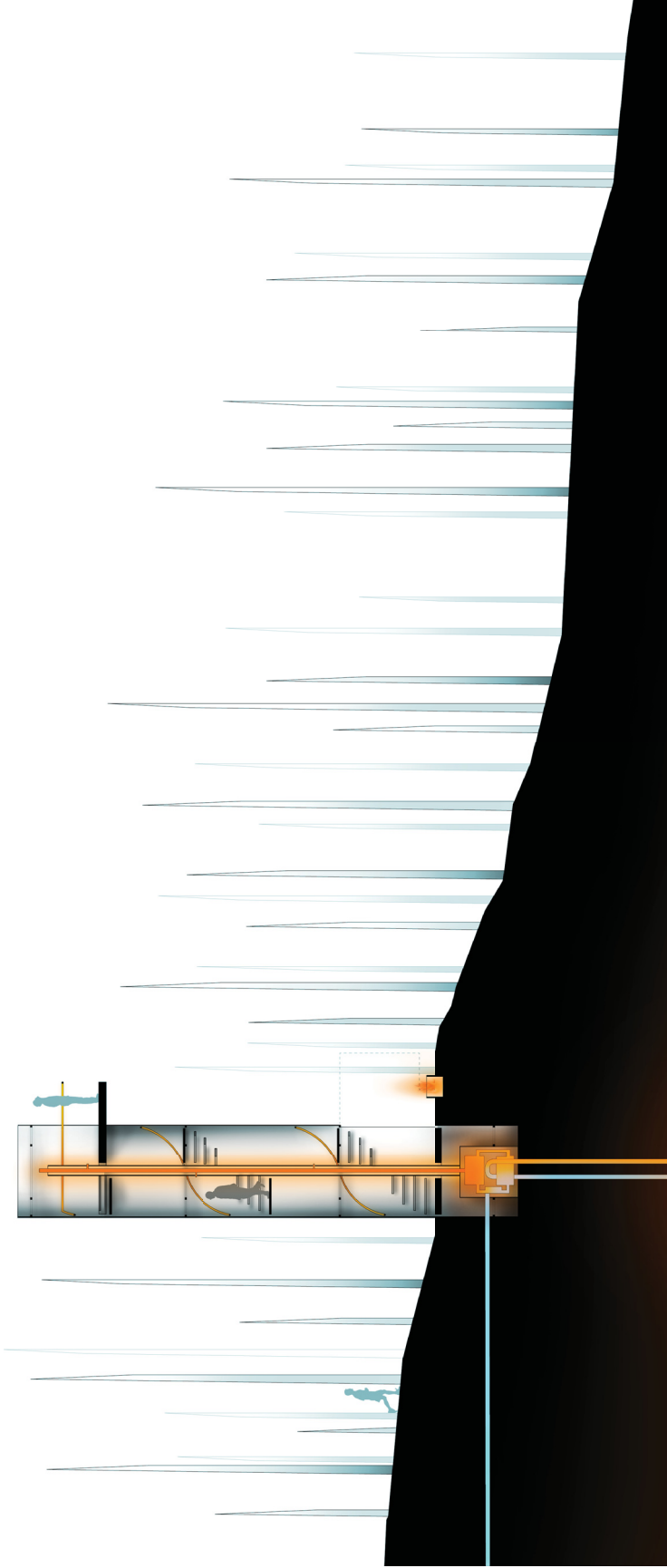
The retreat peeks above the treeline of Queen Elizabeth Park



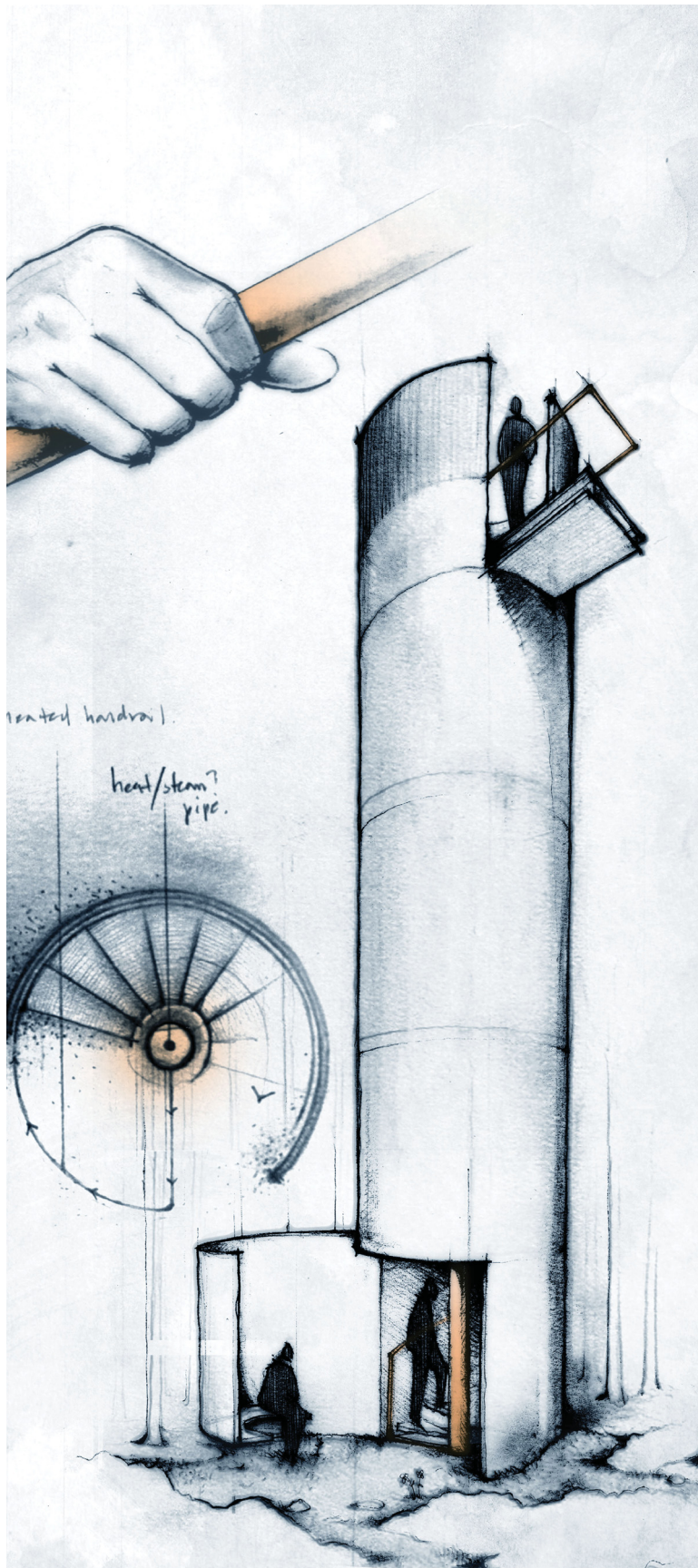
An example of the tower's thermal reach

is inserted. At the top, a slit has been excised through which the insertion is cantilevered over the treeline providing a platform for viewing.

The thermal generator of the retreat is ground source heating, tapping into both city and nature in the same way as the geothermal system at the power plant. Water from the municipal grid is circulated through the warmth deep under the frozen surface is pumped through a copper handrail that spirals up along the staircase. This handrail, not unlike the thermal water of the baths at Rosedale, provide the comfort necessary for the occupant to linger in their wintery surroundings.



Section of smokestack retreat and its ground sourced heating infrastructure



Montage of development sketches for the smokestack retreat



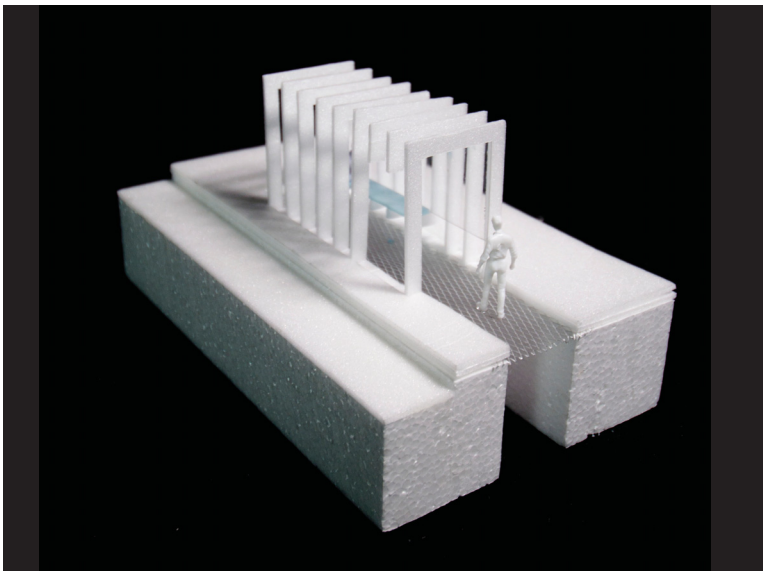
Aerial view of Edmonton's network of thermal engagement

## CHAPTER 5: CONCLUSION

This thesis, while focused primarily on Rossdale power plant, was undertaken as a means of questioning how cities like Edmonton function during the winter. Its architectural strategies have been selected as a means of generating discussion about thermal experience in the city and inspiring creative utilization of our thermal resources. My hope is that creative solutions arise as implications of this questioning and discussion. The following is a hypothetical example of how such implications might present themselves in the urban condition.

### Generating Potentials

Along several blocks of Jasper Avenue, subway grates release doses of subterranean heat through grates in the sidewalk. This heat, looked at through the lense of this thesis, is a thermal source waiting to be taken advantage of. Atop these grates, collecting the heat from below, transit shelters might provide a cozy seat for transit riders and soften the harsh conditions along Edmonton's main street.



Study model of a subway-grate heated bus shelter



Transit infrastructures are united in this thermal intervention

Just off Jasper, aromatic warm air is released into the alley from a bakery's exhaust vent. This is another example of a potentially stimulating heat source. What if this warmth was harnessed by fastening an inflatable canopy to the vent and in doing so, share the warmth from the ovens with the sidewalk? With the aid of an innovative thermal solution, this bakery has the potential to become a destination on its block.



An exhaust-inflated canopy is a welcome sensory installation outside a local bakery

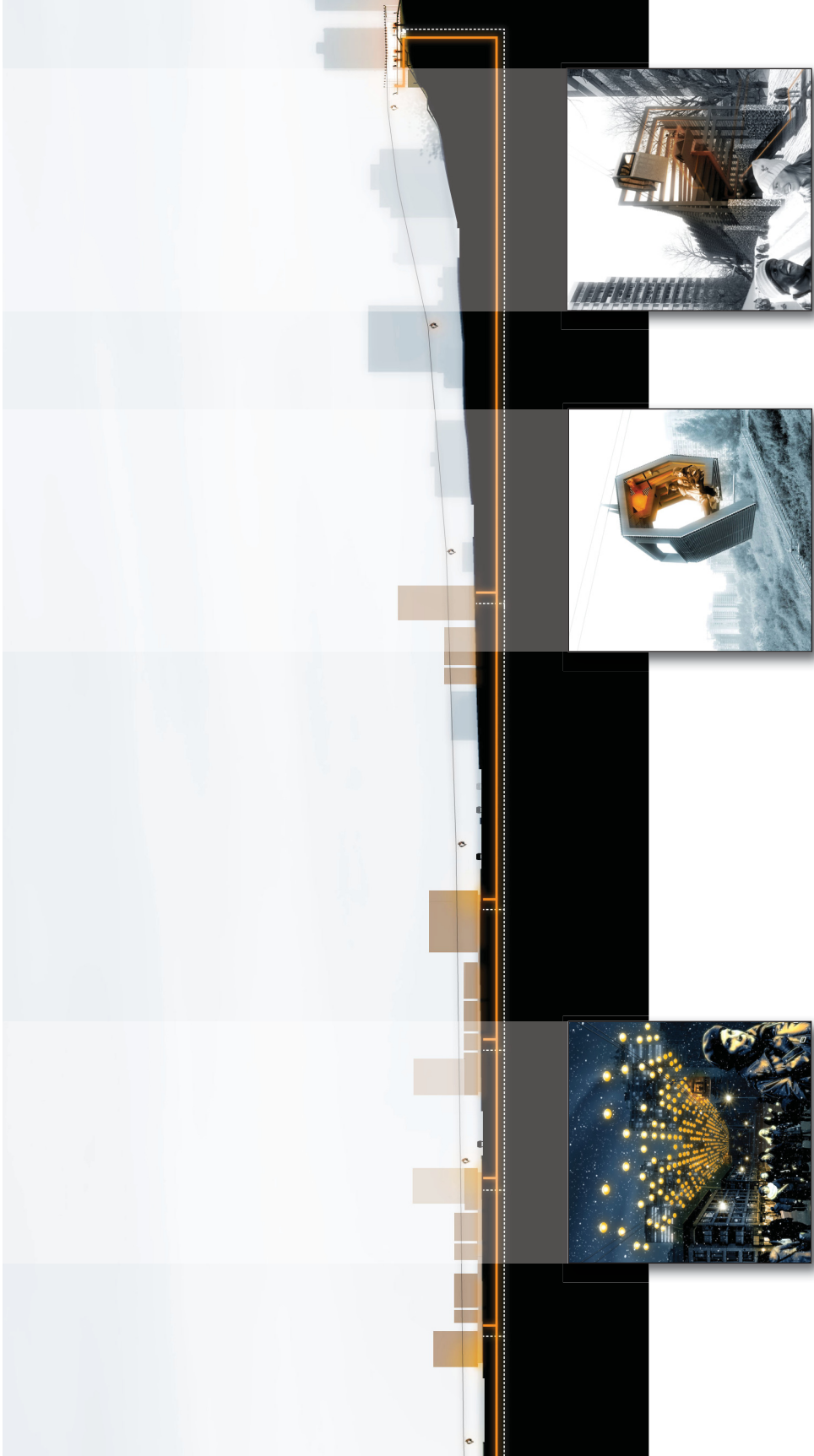


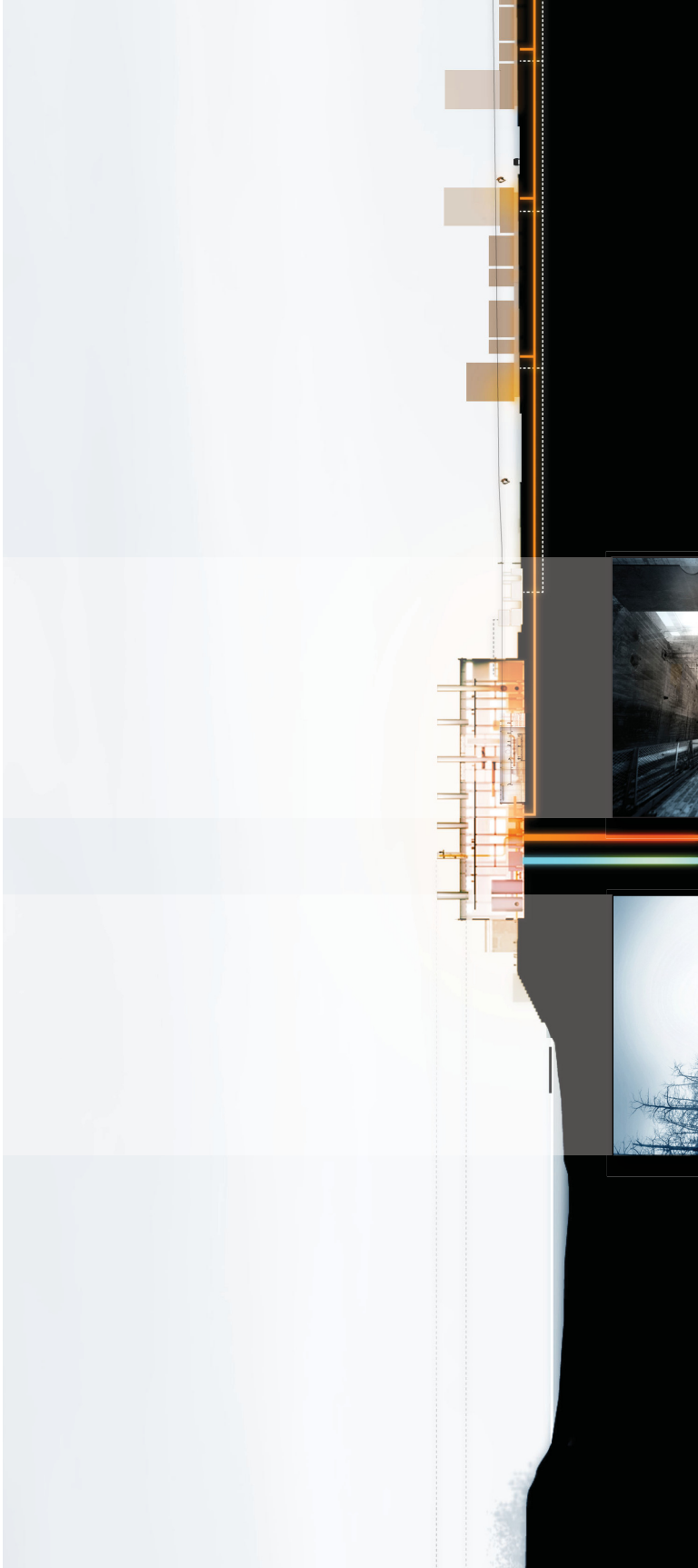
Harvesting our resources in ways like this can help us re-discover the underutilized thermal gradients present in the urban fabric.

Climatic adaptation is about balance. By offering moments of evocative warmth to counter the cold, people are far more likely to plunge in and engage with the winter season that makes the northern city unique. Through thoughtful and creative design, northern cities, even those with the most inhospitable climatic conditions, have the potential to be exciting places to live and visit year round. By harmoniously integrating comfort into the winter season instead of trying to conquer it through internalized design, the urban realm is re-opened to the city dweller across all four seasons. Minneapolis, Winnipeg, Toronto and Halifax are all cities that could use a dose of climatic embrace and it is our duty as architects and city builders to make that happen.



Section at the city scale illustrating the relative locations of the design interventions









From the thermal baths of Rosedale, to comforting installations of light, sensory engagement in the northern city can help it reclaim its climatic identity

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