Collective Form

Infill typologies for residential neighbourhoods

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Introduction

The Edmonton Infill Design Ideas Competition is a competition initiated by the City of Edmonton for new perspectives and inventive solutions to the problem of intensification and increasing density in established residential areas. As a city that has experienced rapid and frequently low density, sprawling development in the last 30 years, it has more recently moved towards embracing more progressive urban design principles. There is also a recent city wide emphasis placed on the importance of the built environment, evidenced through the recent competition based public projects including Libraries, community centres, and a series of park pavilions. Within this context however, the vast majority of the city is still comprised of neighbourhoods of relatively low density, single family homes in which residents have largely resisted attempts at densification and infill development. In light of these evolving attitudes towards the built environment, and increasing demographic pressures, there is a need to rethink the way in which people live together and interact in the urban environment in order to make it more sustainable and inclusive; housing and its provision is essential to this. Innovation in the design of housing and its relation to context is inherently a question of type. How can the design process manipulate the idea of typology in a productive way to address pressing ecological, social, and urban issues? The context of the project, a mid sized city experiencing rapid population growth and contending with a legacy of sprawl, offers an opportunity to project and explore larger contemporary social questions. Collective Form imagines infill in a manner that is both radical and contextually responsive, an alternative vision of collective living.
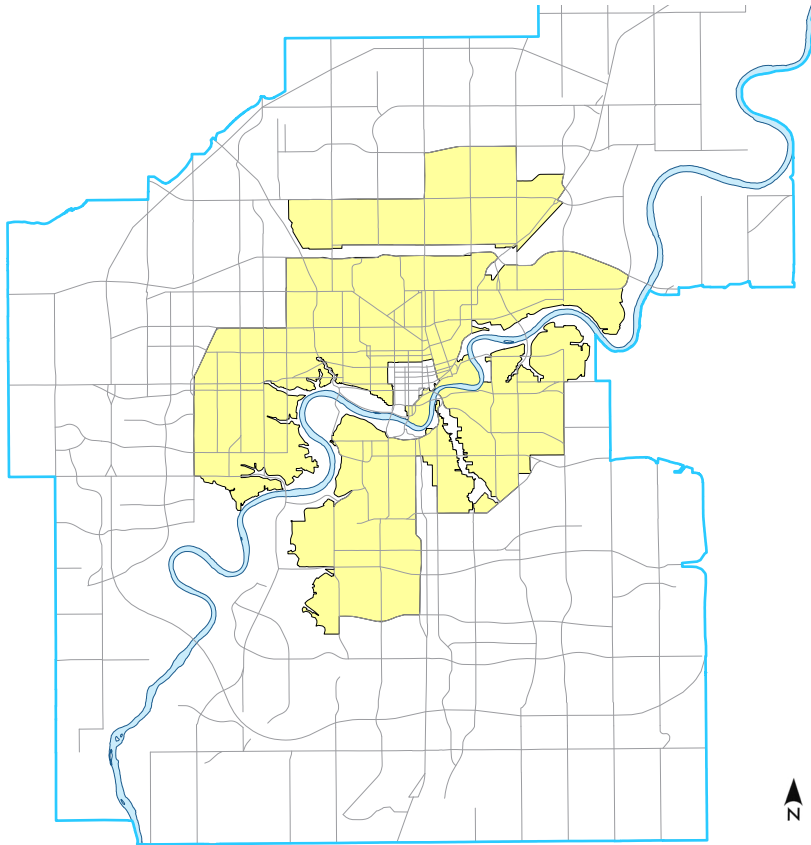
Figure 1 City of Edmonton indicating 'Mature Neighbourhoods' in shaded area

Figure 2 Character of Mature Neighbourhoods

Context and Site

Edmonton has historically grown through cycles of intensive development, in the Post-War period establishing itself as the gateway to increasing settlement and development in Canada's north. This brought new residents and economic prosperity, and a corresponding rapid expansion of the city. These areas of the city are distinct from previous, more contiguous urban fabric. More contemporary development in Edmonton has migrated towards the urban periphery, becoming ever more automobile reliant and lower density as the distance from the notional 'centre' and downtown area increases. Fuelled by a growing oil industry based on the tar sands of Northern Alberta, the city has grown rapidly in the last 30 years. The structure of the city is such that housing is broadly divided into either suburban single family homes, or high rise apartments, with a 'Downtown' district largely devoid of residential buildings of any type. There are few streets outside a few select areas that resemble pedestrian friendly 'Main Streets' that incorporate a street level mixed use with mid density low rise residential. The 'Downtown' is rather, a central business district familiar from the example of American cities such as Atlanta, Houston, and Los Angeles that experienced aggressive programs of both suburbanization and urban renewal since 1945 [1]. While this produces downtown areas that lack vitality and essential urban character of mixed use buildings, it also produces exclusively low rise residential areas such as those described above. While high density mid rise infill projects are proceeding and having a positive effect on many of these central areas, there is an urgent need for contextually sensitive, higher density housing to urbanize these residential neighbourhoods. The Mature Neighbourhoods fall somewhere in between these binary types; they are neither neither dense enough or incorporate mixed use programs in the proper sense, yet they are navigable by pedestrians and feature smaller lots and a laneway structure that distinguishes them from more contemporary suburban development.

Figure 3 'Downtown' Edmonton

Figure 4 Suburban Edmonton

At the same time as Edmonton's population continues to grow at a rapid rate, the population of these mature neighbourhoods has decreased in real terms from the numbers of the 1960's; 73,000 fewer people live in the census area and the average 'family unit' is now 2.5 persons [2]. These changes have occurred alongside rising housing prices, particularly in urban areas and particularly for grade related dwellings. They incorporate extensive automobile infrastructure, alongside some elements that are conducive to pedestrians. A laneway structure is commonly present, with a mixture of parking pads, garages, and large sheds forming a continuous occupation of the rear yards of these houses. Continuous sidewalks and mature boulevard trees typically line both sides of residential streets. Lot sizes are generous, with a typical frontage of 15 metres and a depth of 42 metres. Setbacks are 6 metres from the front lot line, itself set back from the sidewalk and street. The dwellings themselves are a mixture of one and two storey detached homes, with a low density both in terms of FAR as well as units per HA. [3] Much of the housing stock constructed in this period forming the areas now designated as 'Mature Residential Neighbourhoods'. This typology is prevalent across a broad geographic area of the city of Edmonton, and forms the context for the competition brief.
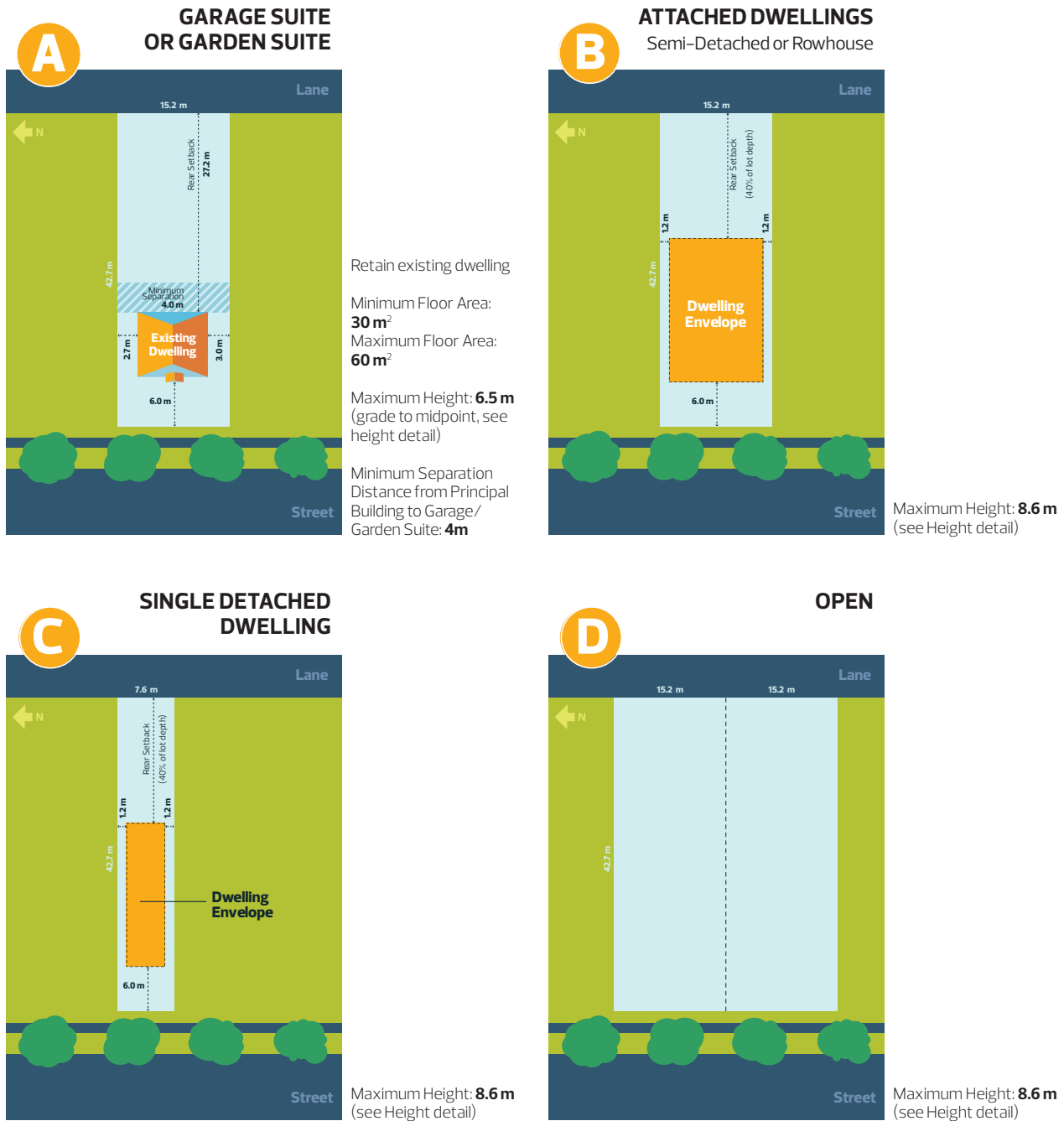
A — GARAGE SUITE OR GARDEN SUITE

Lane

15.2 m

Rear Setback 27.2 m

42.7 m

Minimum Separation 4.0 m

Existing Dwelling

2.7 m   3.0 m

6.0 m

Street

Retain existing dwelling

Minimum Floor Area: **30 m**²
Maximum Floor Area: **60 m**²

Maximum Height: **6.5 m** (grade to midpoint, see height detail)

Minimum Separation Distance from Principal Building to Garage/ Garden Suite: **4m**

B — ATTACHED DWELLINGS
Semi–Detached or Rowhouse

Lane

15.2 m

Rear Setback (40% of lot depth)

1.2 m   1.2 m

42.7 m

Dwelling Envelope

6.0 m

Street

Maximum Height: **8.6 m** (see Height detail)

C — SINGLE DETACHED DWELLING

Lane

7.6 m

Rear Setback (40% of lot depth)

1.2 m   1.2 m

42.7 m

Dwelling Envelope

6.0 m

Street

Maximum Height: **8.6 m** (see Height detail)

D — OPEN

Lane

15.2 m   15.2 m

42.7 m

Street

Maximum Height: **8.6 m** (see Height detail)

Figure 5 Potential configurations

Theoretical Proposition

"The works of the past always influence us, whether or not we care to admit it, or to structure an understanding of how that influence occurs. The past is not just that which we know, it is that which we use, in a variety of ways, in the making of new work…. The typology argument today asserts that despite the diversity of our culture there are still roots of this kind which allow us to speak of the idea of a library, a museum, a city hall or a house. The continuity of these ideas of type, such as they are, and the esteemed examples which have established their identity and assured their continued cultural resonance, constitute an established line of inquiry in which new work may be effectively grounded." [4]

The idea of type in architecture, and its potential as an instrument in the design process, is perhaps best understood through the writing of Aldo Rossi. It is important to differentiate this from the reductive and more common use of 'Typology' as simply describing the function of a building, particularly given the context of its use over time (ie, a bank building may be repurposed as a library, or a warehouse to residential uses). Rossi proposes that the idea of typology is in fact a combination of collective memory and cultural determinants present in the larger urban and social environment, made legible through a rigorous analytical study of formal and functional elements as well as a more holistic understanding. [5] It only becomes possible to understand a type through working in series through an analysis of existing buildings, so that an abstracted set of common qualities can be determined. It is this abstract and conceptual nature that makes typology a powerful design tool, in that it allows for a dialectical relationship between its constituent elements; of building form and mechanics, and cultural context . It follows that housing, as the space of social reproduction and everyday life, becomes an artifact through which these larger social, cultural and economic forces in the city become legible. [6]

The issue of typology (specifically housing) and its nature as a cultural artifact is particularly relevant given the project context of detached single family homes. The construction of the contemporary typology of the single family house is closely tied to the emergent social construct of the nuclear family, emerging alongside profound shifts in society and the nature of labour during the industrial revolution. Far from being the natural and obvious living arrangement it is presented as, both the apartment and single family home are relatively new typological inventions derived from the need to house a rapidly growing urban population. While massive changes to underlying economic systems and the relationship of labour and capital were the defining features of Industrial capitalism, it also saw the rise of what Michel Foucault terms 'Biopolitics', the governance of life as-such in order to create a population whose labour can most easily be exploited.

Figure 6 Illustration of proposal in context
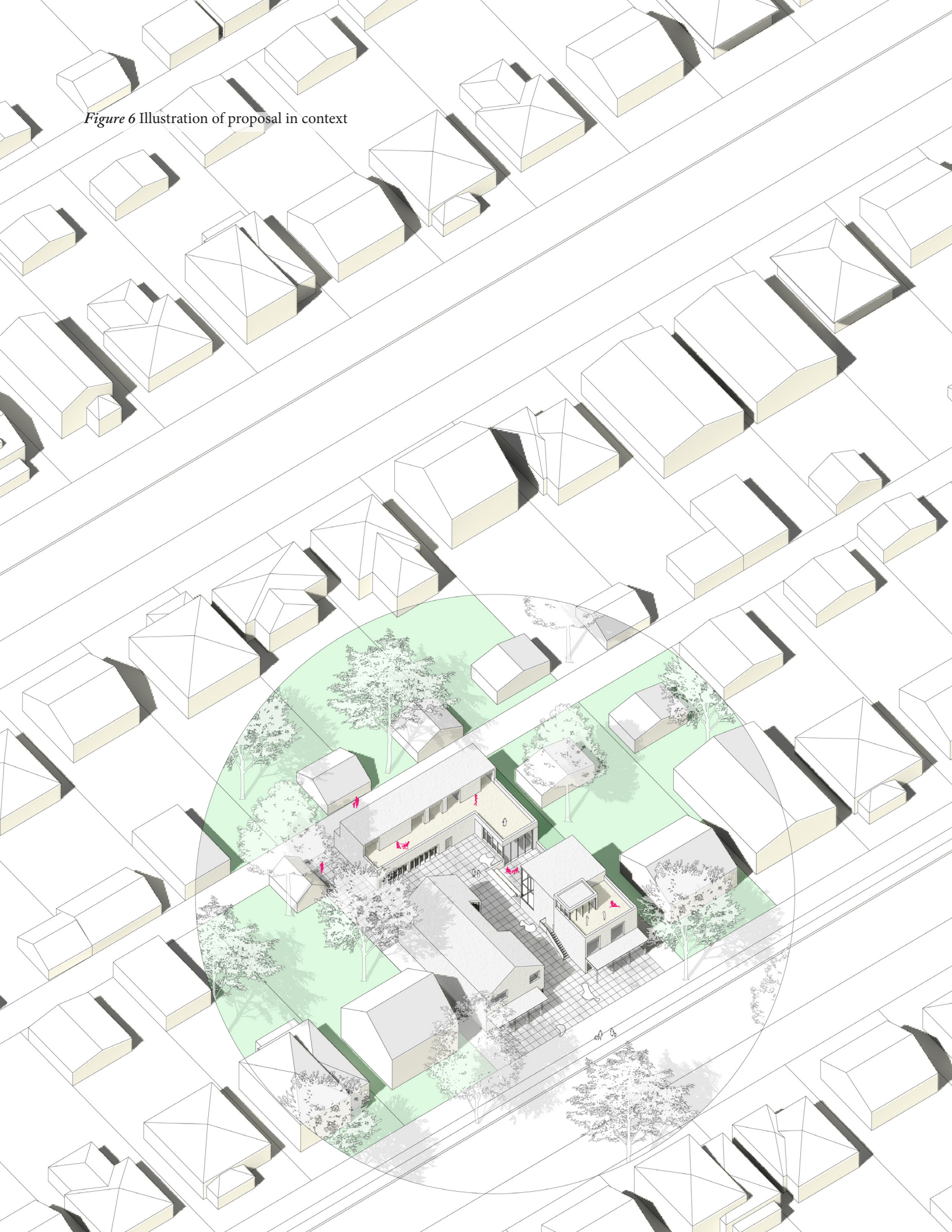
While the vast majority of housing today is designed with these narrow typological constraints, many of the socio-economic determinants of this form have changed. Increasingly, familial and living arrangements outside the nuclear family are becoming normalised, and inherently have different spatial and indeed functional needs. A domestic arrangement of 3 unrelated adults will appropriate spaces very differently than a two parents and a young child, with radically different ideas of privacy, shared space, and a non hierarchical distribution of spaces. [7]

Alongside these social changes, labour has shifted from industrialized, regular work based on to immaterial labour, often precarious or temporary in nature. The emergence of information technology and the ubiquity of entrepreneurial or 'gig' based work has rendered the separation of the home as retreat from the place of labour irrelevant. Those same trends towards precarity and temporary employment have at the same time made incomes more variable, and placed large mortgage payments outside the realm of possibility for many. These changes have been concurrent with an evolving concept of the nature of public and private space. As post-Fordist labour has continued to move beyond the traditional constraints of 9-5 corporate employment, we have come to see the both the house as a potential space of production, as well as office space that is increasingly 'domesticized'. [8]

Writing on this contemporary focus on the individual as the primary subject, Niklas Maak criticizes "'the characteristic modern liberal conception' of privacy where 'the individual self-evidently comes first as the autonomous starting point for theorizing and valuation' and the community is left to find its role in promoting and defending the security and well-being of the individual." Individuality as the preeminent mode of existence in late capitalist society; that the collective exists solely to empower and validate the individual, and has no inherent value. The cellularization both of the single family home and the bachelor apartment as the dominant types of housing serve to reinforce this conception of the individual and their relationship to the collective. [9]

The proposal seeks to address these paradigms at a number of levels. At the scale of the site, it acknowledges that while nuclear families are no longer the default domestic structure, they still represent a large segment of the population. Therefore, a mix of units designed for multi person families, as well as individuals and collective

Figure 7 The idealized nuclear family as the default domestic condition

Figure 8 Kommune 1, a collective living arrangement active during the May 68 unrest, popularized the notion that "the personal is political"

non family arrangements are incorporated. The needs of a single indvidual who is self employed vary from those of retirees, or indeed single parents; a typical 'bachelor' apartment is not necessarily appropriate for either. The typically proposed alternative for these living arrangements in contemporary discussions is the 'Micro Unit'; yet this typology does nothing to address [10]
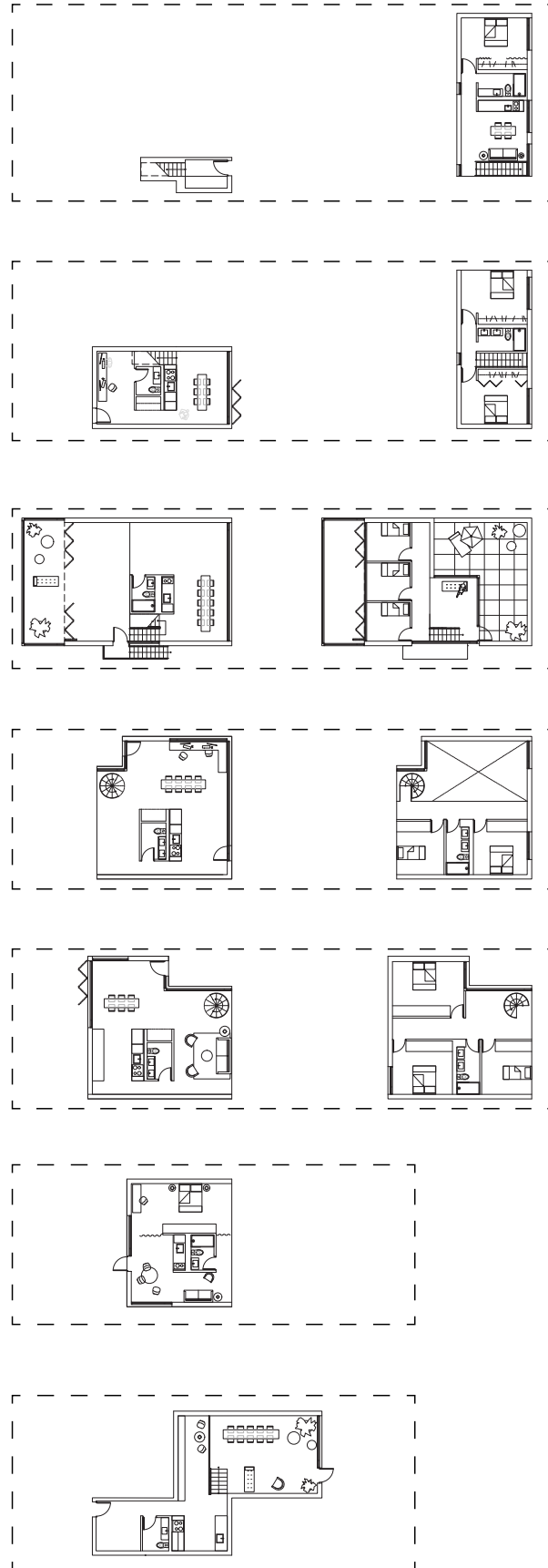
Figure 9 Illustration of different unit configurations responding to contemporary subjectivity

Design Proposal and Precedent

The competition outlines several major objectives, with the following interpretations made based on the parameters of the proposal;

Contextual design for mature neighbourhoods; that the scale and presence at the street should not be overly disruptive of established rhythms and patterns. Rather than imitating clapboard siding or a contrived facade treatment, typological elements such as porches, building frontage and scale should be prioritised in order to relate to their surroundings.

Design for a diverse range of occupants; that a diverse range of occupants can reflect their individual subjectivity spatially through the design process. Freed from the typological constraints of the single family detached home, and its inherent ideological relationship to the nuclear family, dwellings can be tailored to the needs of individual residents. Spatial arrangements that can benefit the collective as well as the individual; units for individuals, and family units (whether traditional or not) can exist alongside and support each other through their interaction in these common spaces.

Social and economic sustainability; that a far wider socio-economic group would be afforded access to quality housing under this proposal. The project proposes resident initiated construction; both as an economic enabler for development but also in order to realise housing that more closely reflects the needs and desires of its residents. A limited equity cooperative, with By removing the speculative nature of a traditional developer driven model, and instead proposing a resident initiated project, the costs can be reduced by anywhere from 15-30%. A diversity of occupants can encourage healthier neighbourhoods, and ultimately contribute to the success of the project at a macro and micro scale.

Climate and environmentally sensitive design; that through the investment of residents in initiating the development of the project, and through their interest in the long term maintenance and durability of the building, environmental performance can be addressed. There is an evident economic interest on the residents part in the energy performance of the building, as they will be responsible collectively for

Figure 10 Illustration of proposal in context

the operating costs. Similarly, the durability of the major building elements (the envelope, major utilities, etc.) is both an issue of minimizing ongoing maintenance costs, but also of avoiding ongoing replacement and thus minimizing waste and ecological footprint. Additionally, in recognition of the realities of winter weather in a cold climate site, spaces that are passively warmed and partially conditioned are provided as a means of providing 'outdoor', or simply more flexible space that can be used year round.

Innovation and creativity in design; that the deployment of shared collective spaces and program within the proposal offers a radical re-imagining of what it means to live together in the city, a new typology. Collective living forms a basis for the organisation of spaces and different typologies to be articulated.

Current development guidelines for infill projects in Edmonton are conservative; essentially dictating a continuity of form to the existing fabric, but also geared towards ensuring that areas of single family, detached homes largely remain that way. The City of Edmonton reports 8,475 new homes constructed in the Mature Neighbourhoods since 2011; however this includes the replacement of single family homes with equivalent dwellings, resulting in no net increase in the provision of housing or density. [11] Four potential scenarios are outlined in the competition brief; to modify the existing dwelling unit and provide an accessory dwelling unit, to sever the lot into two and propose a dwelling on the new lot, to propose a semi detached dwelling on the existing lot, or to combine two adjacent lots and propose an entirely new typology. The differences in possible densities are immediately apparent from the illustrations in figure X, such that the only truly radical or innovative possibilities lie in the exploration of the merged lots.

The proposal addresses two of the designated 15x40m sites to be joined, and proposes a series of buildings as prototypical developments. Respecting the zoning restrictions outlined in the design brief, it proposes two and three storey developments at a density several times that of the existing built form. It would enable existing residents wishing to downsize and capitalize on their existing homes, as well as groups of like minded individuals to become engaged in the development of housing more responsive to their needs through cooperative and resident led management structures, eschewing freehold ownership and speculation for collaborative development and greater affordability. While the previous section has
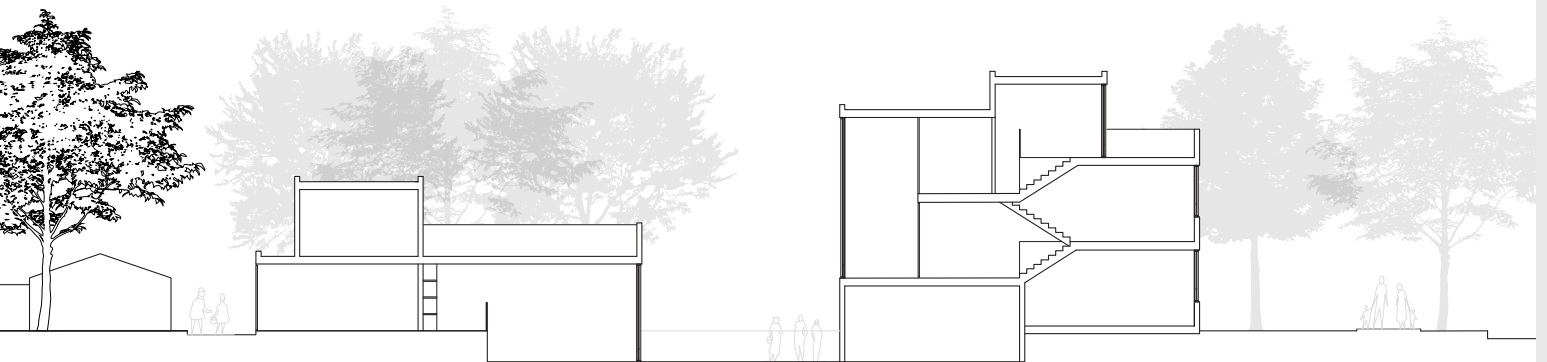
Figure 11 Perspective from Laneway

Figure 12 Longitudtinal section of project through Laneway

sought to explicate the typology of the contemporary context, the below precedents each seek to identify a typological element that will be applied to the design.

Union Street Eco Heritage

This project is located in a Vancouver neighbourhood that has experienced significant pressure for increased density. The neighbourhood houses far fewer individuals than it did prior to the post-war suburban boom; increasing the density on the site to this level as a minimum was a basic parameter for the project. This mirrors the condition of the subject areas of the project in Edmonton, in which a decreasing urban population in real terms is in conflict with a shortage of available units and increasing unaffordability. Combining two existing single family lots, the project inserts 7 new units as well as an additional building that addresses the Laneway, a more established and codified tradition in Vancouver. It retains the existing buildings and their language as a counterpoint to the increased density and reconfigured domestic and shared space of the project. The semi public outdoor space between the buildings is treated as an amenity rather than leftover, linking the alleyway to the street and forming a central space that all units address.

Yokohama Apartment

Yokohama Apartment by ON Design partners is a four unit residential complex. While an entirely different cultural and urban context, the project posits interesting potential for alternative distribution of program and spaces within a residential project, and the ability for the spaces they create to foster an exchange both amongst residents and within the broader community. The primary architectural parti of the project is the creation of a common space at grade by elevating the individual dwelling units two storeys. This space contains a kitchen, shared equally by all units and at the same time creating a courtyard space with permeability to the street depending on the deployment of privacy screens. This references the historic type of the japanese courtyard house, with spaces of varying permeability and openness to both the outdoors and the public realm, while adapting it to contemporary domestic structures; the four apartments minimize the amount of truly private space in favour of this more generous shared space. It also facilitates exchanges between residents and the community; residents run yoga classes, host extended dinners and art installations in the space.

Figure 13 Union Street Eco Heritage, high density within a conventional and contextual mass and ornamentation

Figure 14 Yokohama Apartment, ground floor collective space shared by units and with a relationship to the public realm

548 Stradbrook by 5468796 is an infill project in a residential neighbourhood in Winnipeg; a context very similar in built form and demographics to Edmonton. The built project inserts a far greater density into a building envelope that is similar in scale to its context. It presents three storeys at the street front with an additional storey at the rear facing lane. This effectively minimizes the presence of the building and maintains the rhythm of the street. Typologically, it is an apartment building with two egress stairs, however with a minimized circulation at each level. A combination of double height units and open spaces within them effectively reconfigure the domestic spaces and maximize internal area to the units.

The purpose of these explorations in infill typology are to provide an alternative to 'known' types in providing insufficient density, as well as mid rise and apartment typologies that are inconsistent with the street presence and scale of low rise neighbourhoods. The articulation of a medium density, low rise typology that takes as a starting point both these more radical . The detached and semi detached home, the rowhouse, the corridor access apartment, all contain elements of unit design that respond to certain specific conditions of contemporary society have lead to their proliferation. This does not inherently make them 'good' design, but it does mean that they are suited to the combination of socio-economic factors that dictate free market residential development. What elements are essential and respond to contemporary domesticity, and which can be eschewed elements that are regressive, overly conservative, or simply expedient in rendering units recognisable as a commodity suitable for exchange and speculation. [12]

In order to appropriately address this scale and density proposed, and to address the changing social conditions of contemporary domestic life it is necessary to also propose new spatial and organizational relationships amongst residents and with the larger urban fabric. It introduces the opportunity to incorporate the addition of new types of collective and shared program, alongside the purposeful removal of private or personal space from within the unit itself. At the same time as programs and spaces are removed from the private realm, new relationships between residents are both necessitated and made possible through the collective nature of the introduced shared spaces. These take the form both of shared semi-public spaces; the courtyard like arrangement of circulation and outdoor space within the site that provides a

Figure 15 548 Stradbrook, illustrating the continuity of the built form at the street despite the differential typology and aesthetic treatment.

common address for each unit, as well as specifically programmed uses. In this case, a communal kitchen and flexible sunken space addresses a secondary coutyard, as well as shared laundry facilities. In accommodating live-work programming, the character of the neighbourhood is changed, providing services and interactions within the community at a walkable scale as well as more directly responding to changing domestic realities and contemporary conditions of labour. The combination of these additional shared programs and the semi-public courtyard connecting the street to the lane are intended to create an animated space, what Stavros Stavrides terms 'common space'; "Common space is in-between space. Common space can be considered as threshold space. Whereas public space necessarily has the mark of an identity, meaning it belongs to an authority, common space tends to be constantly redefined: common space 'happens'" [13]

The assemblage of units within the project is intended to be adaptable and flexible; such that the massing and form is dictated by the envelope of zoning constraints and the needs of residents proposed. The units themselves are intended to be able to respond to changing needs of residents over time with flexible spaces, designed with a gradation of public to private functions within the dwelling that could support multiple functions. This gradation of space addresses central, shared spaces; semi-public exterior courtyard that shared interior elements of the units themselves can open to and appropriate. Unit scale infrastructure and services are used to demarcate a boundary to private, individual rooms and spaces.

These principles of design and type are intended to be broadly replicable, and the approach to space planning and typology are more essential to the proposal than any aesthetic or formal qualities. As these developments propagate across the estab lished fabric, the inherent variation in appearance and form is intended to foster diverse and emergent communities.
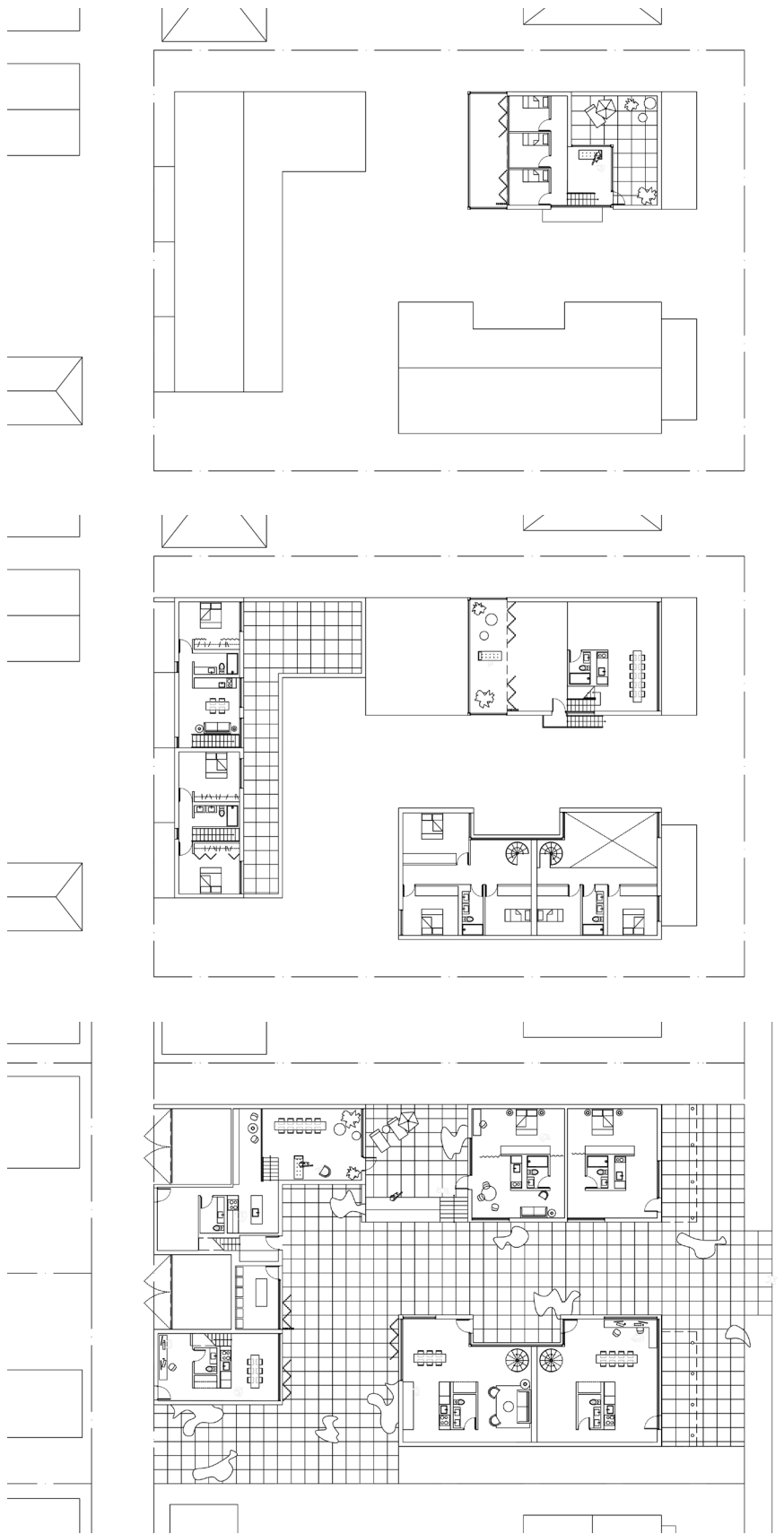
Figure 16 Plans of the proposed ground, second, and third floors

Conclusion

Infill housing is a particularly relevant contemporary topic, driven simultaneously by increasing inequality and unaffordability of housing in cities, as well as the recognition that densification of existing fabrics can also contribute positively to the urban realm. The changing urban fabric of the city of Edmonton, alongside these socio-economic conditions and the evolving nature of domestic subjectivity require a reinterpretation of domestic space and its relationship to the city. Questioning the dominance of both the single family home and the bachelor apartment as the dominant contemporary typologies, Articulating Infill seeks to redistribute program from within the single family home, and the superposition of a gradient of spaces from public, shared, to private across the site. The form is an appropriation of architectural scales and elements from the surrounding fabric, in some ways disguising the radical nature of the architectural proposition in the language of the suburban freehold home. Rejecting the common replication of spaces and programs within each unit, the collectivization of some functions allows for more generous shared spaces and a reorientation of the project from a cellular, individual focus to the possibilities of collective interaction and collaboration, while also simply allowing for the spaces themselves to be more generous. It seeks to give spatial form to new and diverse ways of living and working, not to the exclusion of but alongside and in dialogue with the nuclear family. The distribution of these spaces and structure of units as non-hierarchical reflects the proposed horizontal organization self management of the residents. It engenders productive opportunities for residents through domestic labour, in a framework that simultaneously removes the speculative nature of housing and allows for greater agency in its realisation and promoting a flexibility within the project. The issue of resident agency in the production of housing is essential to the proposal on several levels; that organizationally, it removes speculation and the need to realise a profit on the project, reducing costs relative to the free market, that it creates spaces and dwellings that more accurately reflect contemporary , and that it engenders a greater personal investment in the project as a collective undertaking both during construction and after. The interrogation and development
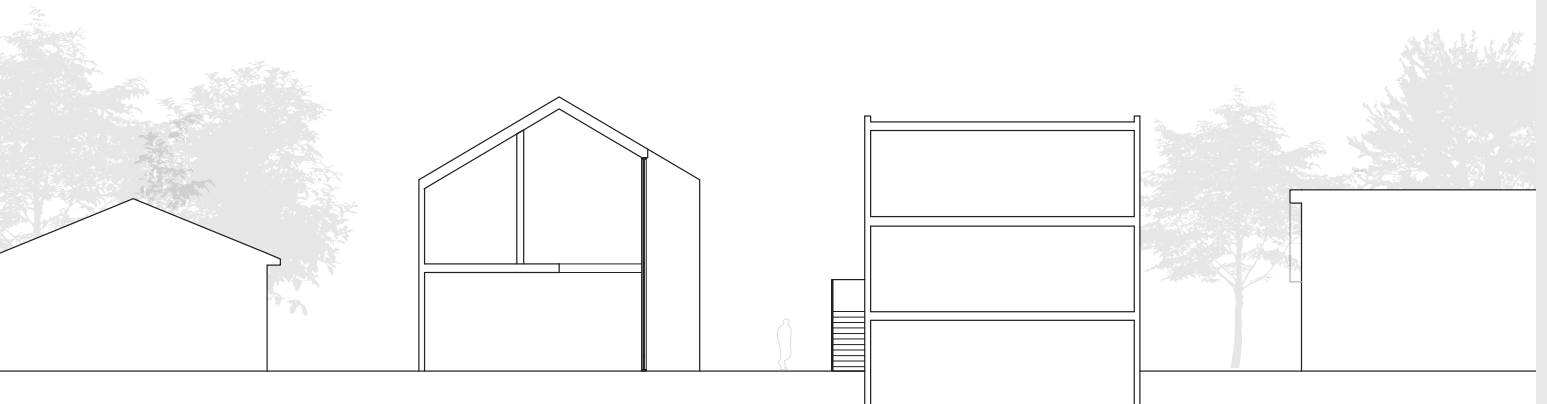
Figure 17 Perspective from street

Figure 18 Plans of the proposed ground, second, and third floors

Figures

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