BACH TO BATCH

Intensification of a housing block in Ōtaki Beach through
adaptive reuse

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ABSTRACT

Ōtaki Beach is an example of a small town by the sea romanticised by many New Zealanders, yet it suffers for not being able to grow without resorting to greenfield development and subdivision. Its coarse urban grain and wide roads prioritise cars and promote a sprawl of low-density, impermeable suburban blocks. Still, the old houses have their charm.

This thesis explores how we can grow the population of Ōtaki Beach without resorting to further greenfield development. Early design experiments centred on large multi-residential structures sited in surrounding landscapes. The final proposal though, developed in the context of *adaptive reuse*, focuses on exploring the potential of a single block that serves as an example.

The design experiments led to three main strategies. Firstly, unification of existing outdoor spaces generates shared landscape. Secondly, transverse pathways add permeability and refine block grain. Thirdly, selective preservation, unification and vertical stacking of existing structures constitute the formal strategy that increases density without consuming more land and gives rise to a specific architectural expression.

Final design achieves: 4-fold increase in density, taking it from 63 people/km² to over 252 people/km²; refined block grain and permeability, by growing the number of public pathways from zero to three; over 3000m² of shared landscape.

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INTRODUCTION

[1] ←

Kāpiti Island as seen
from Ōtaki Beach
wetland

Greenfield development continues to facilitate suburban sprawl.

How can we grow the population of our long established coastal communities without wasting more land?

The term *greenfield* relates to previously undeveloped sites for commercial development or exploitation. Greenfield sites are typically of agricultural origin and lie well outside the city limits. They are desirable for development, in particular for housing, because they are cheaper than plots within already developed areas, logistics of development are easier than in tightly built-up areas therefore making development faster and their layout is not constrained by existing forms. Greenfield sites designated for housing are often marketed as desirable for their natural beauty, healthier living environment and more affordable larger homes.

Coastal greenfield development in New Zealand has been relatively slow in the past but appears to be accelerating due to rapidly ageing population and their retirement requirements, need for more affordable housing, especially near major urban centres, and our national desire for that special bach by the sea. Since our coastline is long and mostly undeveloped it makes sense to give it a go and build more homes in those areas, especially where some decent infrastructure already exists, like along the Kāpiti Coast with its well established townships. In theory these new developments will bring in new residents who in turn will strengthen the local economy by spending their money locally. Increase in population and stronger local economy combined with the fabulous seaside setting should result in vibrant coastal towns that thrive all year round and not just during the high summer season.

Most of the 49,104 people of Kāpiti Coast District ("Population and Demographics" 2017) live in a narrow coastal belt between the State Highway and the beach in townships at Paekakariki, Raumati, Paraparaumu, Waikanae and Ōtaki. The population density of Kāpiti Coast is 70 people per kilometre square ("Community Profile | Kāpiti Coast District | Profile.id" 2017). It is very low even by the already low figures for our major urban centres (Auckland at 1,200 people/km², Wellington at 920 people/km², Christchurch at 260 people/km²) and extremely low when compared to the dense urban centres of Europe such as Bilbao at 8,688 people/km² or Barcelona at 15,926 people/km² (Wikipedia contributors 2017).

The most densely populated stretch of Kāpiti Coast is between Raumati and Waikanae Beach. It is essentially a belt of very large yet very low density suburban housing blocks that stretches along the beach for about 13km [2]. The developed portions of the belt are less than 200 metres wide in some places. By comparison, Paris, roughly shaped like a teardrop and with a population density of about 21,500 people/km² (Wikipedia contributors 2017), is about 14 km by 10 km wide along the major axes [3].

[2] ←

A narrow belt of low density beach side properties housing only a few thousand people stretches for 13km from Raumatī to Waikanae.

[3] ←

Paris metropolitan area is about 14km by 10km wide and is home to millions.

So the reality of our coastal towns is very different from our romantic dreams of vibrant beach settlements. Despite the growth of the population in Kāpiti Coast, an increase of 6.3% since 2006 ("Population and Demographics" 2017), the coastal townships never seem to transform into the dynamic places we wish them to be. Instead they transform into more of suburban sprawl filled with huge housing blocks [4], retirement villages [5] and those special, but unattainable by most, baches by the sea that use far more land than is reasonable for a single house [6].

[4] →

Large homogeneous blocks sprawl along the beach in Ōtaki Beach. Ironically, those who live beyond the foredune have no visual cues that they live on the coast. It might as well be another inland suburb.

[5] →

Charles Fleming Retirement Village - one of many such greenfield developments on Kāpiti Coast.

[6] ←

An object of desire - a holiday home in Peka Peka. It is handsome, well crafted and exclusive. Its privacy assured by the moat of land that will remain empty.

None of those developments are positively transformative and all are made possible through continued greenfield development. I suggest that greenfield development is a major factor preventing the communities of Kāpiti Coast from reaching their much greater potential.

In this thesis I propose a *what if* approach, developed through design experiments, that attempts to show *how we can grow the population of Ōtaki Beach without resorting to further greenfield development*.

I chose Ōtaki Beach because it is a node of growth along Kāpiti Coast. Situated just south of the regional boundary it marks the end of a large expanse of coastal greenfield land north of Waikanae Beach. It is small enough to be easy to explore yet representative enough of the problem I am trying to address that any knowledge gained through this research might be applicable elsewhere.

I have further restricted my design experiments to a single residential block. I selected this particular block after I analysed the results of some of my initial experiments. My analysis indicated that large block sizes, prevalent in Ōtaki Beach and nearby Kāpiti Coast townships, are problematic but also offer some great opportunities. I describe the site of this research in detail in the following section, "About the site" on page 10.

In this research through design, my design experiments led me to the formulation of three main strategies that collectively fall under the umbrella of *adaptive reuse*. Firstly, the observation that much of the land in a typical block is not built upon, in particular back yards are mostly empty space, and that there exists a potential for a collective shared outdoor space whose quality and utility is greater

Adaptive reuse creates opportunities to evolve new forms of architectural expression.

than the sum of its parts, led to the formulation of the *land unification strategy*. This strategy dictates that all fences are to be removed and adjoining back yards re-shaped into shared outdoor landscapes.

Secondly, the observation that the existing residential blocks are very large and impermeable to pedestrian traffic led to the formulation of the *transverse paths strategy*. This strategy dictates that the grain of large blocks should be reduced and made permeable with careful introduction of public pathways cutting across the blocks.

Thirdly, the observation that local structures have some intrinsic historical, emotional and community value led to the formulation of the *formal strategy* based on methods of *selective preservation, unification* and *vertical stacking* of existing structures. The formal strategy dictates that no new land should be consumed but rather existing buildings should be used as bases for new structures erected above in keeping with existing style.

Figures [7] and [9] show a preview of the outcome of applying the design strategies to an existing site [8]. I describe my final design results in detail in the section titled "For Adaptive Reuse" on page 18.

I conclude this thesis with some critical reflections on my design results and list potential further lines of enquiry.

[7] →→

Project site view from the corner of Marine Pde and Rupini St.

The whole is greater than the sum of its parts: a new community emerges from a block of independent and separated dwellings.

[8] ↓

Existing condition at the corner of Marine Pde and Rupini St. Each dwelling exists independently of and in physical separation from its neighbours.

[9] →→

Shared landscape at the centre of the cluster as seen from the balcony on level 3, 61 Moana St.

ABOUT THE SITE

[10] ←

Example of existing site
condition

Kāpiti Coast is the section of the coast just north of Wellington and opposite Kāpiti Island [11]. It is predominantly a low density residential area known locally for its many safe beaches and milder climate. It is a popular weekend destination for many Wellingtonians. Conversely, many residents of Kāpiti Coast are not employed locally and instead they commute to jobs in Wellington.

The site for this project (marked red in [12]) is a single residential block located along the beach in Ōtaki Beach. Ōtaki Beach is a mini suburb of Ōtaki, the northernmost township on Kāpiti Coast. Well established now, the block began as a greenfield development already displaying some of the disadvantages of this type of development. Even though the total population of Ōtaki township is only just over 5000 residents, the suburb of Ōtaki Beach, with roughly 1700 residents, is about 3km away from the township centre.

[11] ←←

Kāpiti Coast

[12] ↓

Ōtaki Beach - propagating the idea of a satellite suburb at micro scale. All of the amenities required for daily life, such as shops, services and schools are located in the township 3km away forcing the residents to use their cars when they run out of milk.

[13] ↑

Aerial view of the project block. Fences running along the continuous boundary line between the upper and lower segments effectively prevent any cross-site movement from Moana St to the beach.

[14] ↑

AA: typical transverse section of the site

The selected beachside block [13], average by size in the immediate area but typically large as a greenfield development, stretches for 221 meters from south to north, between Rupini St and Koromiko St, and 84 meters from east to west, between Moana St and Marine Pd, covering an area of 186,00m² (a typical Manhattan city block is about 240m by 80m). Because the block straddles a foredune there is a distinct difference in levels between the eastern and western longitudinal halves of the block [14].

Like all other blocks in the area this block is impenetrable to all traffic as each property is fully fenced and there are no public pathways across the block in any direction. The block forms an obstacle to anyone wanting to get to the beach from the streets beyond [15]. The only way to get to the beach is by following the rigid grid of local roads all which are very wide for such a low key location. For example, the stretch of Koromiko Street that defines the northern boundary of the block is only about 90 meters long but about 12 meters wide from kerb to kerb [16].

The block is itself separated from the beach by a road that appears to be much wider than necessary for the amount of local traffic [17]. Marine Pde is 15m wide at its widest, which is almost a whole lane wider than State Highway 1 which measures 12m just south of Ōtaki (standard width for a New Zealand state highway lane is 3.5 meters as defined by Transit NZ).

[15] ↑

End of the road ahead.
The only way to the beach is to circumvent the block ahead. This is a common condition in Ōtaki Beach where arterial roads terminate mid-block instead of running through to the beach.

[16] ↑

Koromiko Rd forms the northern boundary of the site. It is a typical arterial road in Ōtaki Beach. It prioritises car traffic, which does not reach the levels suggested by the width of the road.

Well fenced properties combined with mature roadside vegetation create a wall effect disconnecting the properties from the road.

[17] ↑

Even though people move there to be close to the beach none of the beach front properties are actually at the beach. Marine Pde cuts the beach off from the residential blocks. Tall fences block views.

[18] ↑

Long driveways lead from the street to rear sub-sections. Such subdivision contributes to the disconnection of dwellings from the street.

The particular topography of the site has influenced its linear subdivision. The 26 lots are arranged in a regular grid of rectangular plots of land with a single continuous and straight line of connected boundaries bisecting the block along the north-south axis into upper and lower segments [13]. Lots along the lower segment are smaller than lots in the upper segment. This could be attributed to each lot in the upper segment effectively losing a bit of useful land along the line of drop in levels. A couple of the lots have been further subdivided into front/rear sub-lots with a long and narrow right of way connecting rear blocks to the street [18]. This is a typical mode of suburban subdivision that creates further problems of access and isolation.

All the properties are sparsely populated with buildings [19]. Majority of empty space is located in the back yards. A typical property comprises a single main dwelling oriented towards the nearest street, a garage and some, if any, low-value outbuildings typically located at the rear of the lot. Majority of the 26 dwellings are set back from the street and behind a physical barrier, typically a timber fence or a thick hedge and sometimes both [20]. All back yards face into the interior of the block however all are fenced on all sides suggesting limited opportunities for interaction between neighbours. Further analysis of the lots shows that only 22% of the available land is built upon.

[19] →

Figure-ground analysis
of the site reveals that
almost 80% of the site
is empty land.

[20] →

Dwellings are
disconnected from
the street behind solid
barriers.

[21] →

Simple materials and
construction are typical
for the area.

FOR ADAPTIVE REUSE

[22] ←

One lane back from the
dunes - small, personal
and intimate, local
charm at its best.

[23] →

Corner of Marine Pde
and Rupini St. View
towards #46 Rupini St.

The iconic cruciform
roof line of 46 Rupini
St elevated two
stories up becomes
a local landmark,
serendipitously
indicating the
crossroads.

[24] ↑

Tate Modern,
London

[25] ↑

Gasometer City,
Vienna

[26] ↑

Lord Street,
Sydney

Broadly speaking the term *adaptive reuse* refers in architecture to the practice of repurposing existing structures. The strategy of adaptive reuse presents a number of appealing motivations: heritage preservation, sustainability (prolonging cradle-to-grave period), sprawl minimisation, revitalisation of old or declining neighbourhoods .

At its best adaptive reuse combines all of the above motivations to create opportunities that lead to the best architectural outcomes. These opportunities are both rational, for example where new theoretical and practical knowledge is gained about materials and construction techniques, as well as emotional, where the results lead to qualitative enrichment of the resulting structure, its site and the community of its users.

Typically, international adaptive reuse projects engage with leftover industrial buildings. The projects range from the grand and famous, such as the former Bankside Power Station in London that became the new Tate Modern [24], through unusual, such as Gasometer City, where former gas containers used to help supply Vienna with town gas were converted to a mixed use residential complex [25], down to small scale residential conversions, such as the Lord Street warehouse apartment in Sydney [26].

Closer to home, Wellington city sports some of its own examples of adaptive reuse such as Hannah's Factory apartments [27], a former shoe factory

complex, and 70 Webb Street [28], which used to be Wellington's main Eastern Orthodox church.

All these developments are very much urban and rely on the presence of a powerful artefact (presumably the more powerful the artefact the more likely it becomes as a candidate for adaptive reuse). With the exception of the Sydney precedent, none say anything about how adaptive reuse could be applied in the suburbs, and even this development relies on a special kind of building that is not typical of suburban structures.

I suggest that adaptive reuse does not need to rely on the presence of a unique and powerful artefact, such as a massive power station complex or an old church. Adaptive reuse can take place where very little of the physical fabric can be reused, perhaps due to structural issues. In this case we can still reuse and adapt the existing form and spirit of the structure. This is the approach that I have taken in my design research of the selected block in Ōtaki Beach.

The form and the spirit of a building are as valuable a source for adaptive reuse as the physical structure itself.

[27] ↑

Hannah's Factory,
Wellington

[28] ↑

70 Webb Street,
Wellington

[29] →

View from the foredune
along Marine Pde
towards #42, #44 and
#46 (left to right)

[30] →

Corner of Moana St and
Rupini St. View towards
#4 Rupini St.

At the start of this research I did not understand that the issues of density and adaptive reuse would eventually form the focus of this project. They only became apparent through design experiments followed by analysis and critical reflection of the results.

I based the initial idea on some instinctive observations: the region of the chosen site sits low on the socioeconomic scale, the simple houses and baches form the background of our romantic dreams of living on the coast. There is a lot of empty space in the back yards of most properties. Instinctive designs introduced new structures, strewn throughout existing properties, which would serve both the residents and visitors alike [31]. The structures would transcend the property boundaries necessitating in the residents coming up with some sort of collective and cooperative agreement as to the use of the land. This was the first suggestion that issues of *collectivity*, *cooperation* and *erasure of boundaries* might play a further role in this research.

Since at that point I still have not selected any particular site my next step was to explore the local landscape. I accomplished this through site visits followed by collaborative experiments conducted with Abdallah Richards, one of my colleagues in the Landscape Architecture programme. We conducted two rounds of iterative design experiments where each other's results from the first iteration became the input for the other researcher's next iteration [32], [33], [34].

[31] ↑

Initial experiment based on instinct. Structures connected with raised walkways cross property boundaries. Simple cabins bring amenity to visitors and residents alike.

[32] ↑

First architectural response to the riverside landscape of Ōtaki Beach

NEIGHBOUR SCALE

This is most likely a dead end as there seem to be no examples of this type of thing being done well.
Is the inverse of a bad idea still a bad idea?

[33] ←

Richards' first landscape architecture response to the riverside landscape.

The output of Richards' experiment becomes the input for my next iteration [34].

[34] ←

Second iteration of architectural design in response to the landscape design by Richards' [33].

[35] ↓

Early attempt to formulate architectural expression: resilient, medium density BYO bach platform.

[36] ↑

[37] ↓

[38] ←

First evidence of clustering behaviour

[39] ↓

Clusters of structures on raised platforms interconnected with walkways.

My results, which favoured large structures sited in so far undeveloped and flood-prone landscapes ([35], [37]), surfaced the issues of *population increase* and *resilience*. These findings influenced the next set of experiments whose outcomes can be described as *clusters of structures on platforms connected with raised walkways* [39], [40], [41], [42]. My results turned out to have little to do with resilience beyond the raised platforms. However the idea of *spaces consisting of clusters of somehow interconnected/interrelated structures* became the next lead in my investigation.

[40] ←

A complex of apartment buildings built over the wetland. The buildings are connected with public boardwalks.

[41] ←←

Alternative arrangement of units and pathways. This design considers pathways as internal streets.

[42] ←

Cross section of a walkable apartment building. Ground level public path meanders under the building and through the wetland.

At this point I decided to conduct a more focused investigation of clusters. I concentrated on analysing a number of spaces well known to me that exhibit some form of clustering. Through graphical analysis I created a number of cluster diagrams, such as [43], whose main role was to uncover any commonalities between the analysed spaces specifically due to clustering. In particular I was interested at this point to see what makes clustered spaces better than non-clustered spaces. Analysis of the results lead to the observation that clustered spaces have many properties in common. In particular clustering results in more complex and richer environments for people to inhabit, whereas simple spaces, which consist of stand-alone structures that do not exhibit any strong relationships, are less rich experientially for their inhabitants. Full results are presented in "Appendix A: Cluster Diagrams".

Struggling to find architectural expression for my ideas I was unable to let go of the notion that there has to be a system for generating designs that will give rise to architectural expression. I set out to develop a system of design principles that could be used to generate any number of higher density, collective housing designs that also incorporated ideas from my clustering experiments. Figure [44] illustrates a set of principles relating availability and arrangement of outdoor social spaces.

[43] ←

Typical cluster diagram. Lines with arrows represent movement. Black dots in yellow circles represent clusters of entities. Red patches represent areas of relationship or social interaction.

[44] ←

Example of graphical exploration of a design system. This set examines the importance of including a communal social space and its relationship to the outdoors.

The system turned out to be a dodge of the core problem: lack of architectural expression. Full set of results is available in “Appendix B: Design Principles”.

My next move was to narrow the field to something more specific. My attempt to find a connection between density, collectivity and clustering lead me to investigate the area of *collective living*. The investigation did not yield any design results. Instead it resulted in a written taxonomy of collective living situations, illustrated with select international developments. While some of the precedents were inspiring this experiment turned out to be another sidetrack away from the search for architectural expression. I describe this work in “Appendix C: Taxonomy Of Collective Living”.

All design outcomes up to this point exhibit some common threads: they are attempts at generalisation; they are arbitrary forms that could exist in any space; they do not evolve any sort of architectural language. In particular, the results do not demonstrate an architectural language that would help sell the idea of higher density in the context of a New Zealand coastal community.

This point marks a complete turnaround in my practice of research by design. I finally realised that in order to find a distinct form of expression, one that exists in a very particular space and preserves the richness and personality of a single object in the landscape (i.e. a bach) but in a denser and more collective environment, I actually needed to start with something very specific instead of trying to generate a generic design in the hope that it can be specialised later. This realisation led me to look closely at a specific site (see “About the site” on page 10) in order to discover some specific problems [45].

Results of the experiments indicate that land unification and introduction of transverse pathways are sensible and effective ways to deal with very large residential blocks because the paths refine the grain and significantly improve permeability.

Investigation of specific problems gives rise to specific answers that form the basis for further focused enquiry.

[46] ↑

Existing Condition

Back yards are underutilised and mostly empty. Some properties with larger houses or multiple structures leave little room for a meaningful outdoor space. Fully fenced private properties make cross-block movement impossible.

[47] ↓

Land Unification Strategy

Fences are removed and outdoor spaces reorganised to create large areas of shared landscape. Some secondary structures may be repurposed for communal facilities such as laundries, garden storage or bike sheds.

[48] ↑

Increased Permeability Strategy

New public pathways cut across the site to refine the grain of the block by dividing it into four clusters of dwellings. Pathways increase permeability and add to the character.

Following the methodology of examining something specific in order to discover a particular problem, which is then used as a starting point for further investigation, eventually led me to the discovery of the three design strategies: land unification through eradication of physical boundaries [47], increased permeability and refinement of the urban grain through introduction of transverse pathways [48] and evolution of a formal strategy based on selective preservation, structural unification and vertical stacking [50], [49].

FORMAL
OPTIONS

GROW UP

FULLY
ENCLOSED

PARTIAL
ENCLOSE

"HOUSE ON HOUSE ACTION"

INSERTION

TOP STRUCTURE
PENETRATES DOWN
INTO THE BASE
STRUCTURE
SHOWING NEW
MATERIAL
MERGING/CONTRAST
WITH THE EXISTING
INTERIOR

61 MOANA ST

MOANA ST

NEW
BUILDING
SET BACK
TO FREE UP
THE OLD
CONE

THE INTERFACE SHOULD BLEND,
MEDIATE, CONNECT, FORM A
COMMON BOUNDARY

SURFACE
TENSION

INTRICATE
CONNECTION
TOO DISTRACTING

GLASS BOX

SOLID BOUNDARY

EXISTING STRUCTURE

VERY THIN
NEGATIVE
DETAIL
INTERFACE

TAKEN TO
EXTREME

HIGHLIGHTING THE OLD

No Good.
THE OLD BECOMES

BOTTOM → UP
APPROACH

START WITH WHAT IS
ALREADY THERE AND GROW
IT INTO SOMETHING NEW

EXTERNAL SKETCHES
THE OLD CLEARLY
SEPARATED FROM THE
NEW. EXTERNAL SKETCHES
MAKES IT LOOK LIKE THE
OLD IS NOT REALLY
NEEDED FOR
ANYTHING.

[49] ← ↑

Formal Strategy

Design experiments exploring the formal strategy of selective preservation, structural unification and vertical stacking.

[50] →

Formal Strategy

Exploration of vertically stacked and structurally unified housing cluster with a central shared space.

[51] ↑

4 Rupini Street

[52] ↑

47 Moana Street

[53] ↑

61 Moana Street

[54] ↓

Modern addition atop an old industrial building becomes this mixed use complex at 192 Shoreham Street, Shoreham, England.

My next exploration ([51], [52], [53]) was influenced by examples of adaptive reuse often seen in European countries where a modern intervention is stacked atop an old structure [54].

In this experiment I attempted to apply the newly discovered design strategies to specific sites (4 Rupi St + 61 Moana St and 47 Moana St). This experiment was also influenced by aspects of the design system (Appendix B) and knowledge gained from the collective living research (Appendix C).

While I enjoyed the individual outcomes from a personal aesthetic point of view, I quickly came to the conclusion that the experiment was compromised from the start because even though I dealt with a very specific set of sites and structures I fell for the temptation to mix in some generic and rather arbitrary rules in the hope that this would somehow add validity to the experiment. The outcome sits ill at ease in its setting. Unlike the Shoreham Street precedent [54], there is a lack a meaningful relationship between the new additions and the existing bases in Moana St.

My new additions could be taken off their pedestals and placed anywhere in the country and they would look just like any other development that devolves toward the cool corporate aesthetic of the day. Further, the design fails to address the open space well enough and it doesn't provide any evidence in support of claims of increased density - the units are essentially of indeterminate size.

My next experiment was a reaction to the creep-in of the generic. I forced myself to disregard already dismissed results and continued on the path of only investigating the specific. Figures [55] and [56] illustrate the experiment into unification, stacking and extrusion (the three methods that together make up my formal strategy) of building footprints at 4 Rupini St, 61 Moana St and 59 Moana St.

[55] ←

Stacking experiment
conducted on scale
models of extruded
footprints of 4 Rupini
St, 61 Moana st and 59
Moana St.

Each footprint was
extruded into a slab
approximating a whole
storey. Storeys were
stacked and perturbed
to examine different
types of spaces that
emerged.

Some iterations fill in
the gaps between the
buildings to emulate
added volumes for
vertical circulation.

[56] ←

A more fanciful
exploration of extrusion
and stacking as
methods to achieve
formal expression.

The full spread images ([23], [29], [30]) that have accompanied the account of my experiments so far, along with the following associated illustrations constitute the results of my final experiment.

Collectively, these results are my answer to the research question of *“how we can grow the population of Ōtaki Beach without resorting to further greenfield development?”*

In this experiment I utilised my design strategies to first unify the land and then divide it up into four smaller clusters of dwellings. Next, I developed all the existing dwellings within the cluster at Rupini Street end of the block by carefully applying the formal strategies of selective preservation, structural unification and vertical stacking.

Secondary outdoor structures such as sheds and garages were removed and replaced with a central shared amenities building that houses communal laundry, storage for garden tools as well as some general storage, and serves as the hub of social activities for the cluster.

Vertical circulation along with balconies became primary means of generating useful outdoor space for units above ground level.

[57] →

View along Moana Street towards #59.

Vertical circulation becomes an integral part of inhabitable outdoor spaces provided to each unit on the upper levels of each stack.

View from the back of
46 Marine Pde towards
the central shared
landscape.

Balconies and decks add
useful outdoor spaces to
upper level apartments.
Buildings in each other's
immediate proximity are
given unified vertical
circulation, which takes
the form of breezeways
to be occupied and
customised by the
residents.

**Land
unification**
allows for
generous
outdoor spaces
that add to
the collective
abundance

[59] →

View of the shared
landscape from the
balcony on level 3 of 61
Moana St.

Residents of the upper
levels on the lower
segment of the cluster
enjoy a view of the
shared courtyard and
beyond.

**Specific
formal
strategies**

evolve a
rich form of
expression
that results in
many intimate
spaces within
the collective
environment

[60] ←

View of the semi-private
yet intimate courtyards
at the back of 2 Rupini
St.

Ground floor units
enjoy their own semi-
private outdoor space
delineated by decks
surrounded with planter
boxes and retaining
walls. Upper units enjoy
large outdoor spaces
with views over the
central courtyard.

[61] →

View of the communal laundry and gardens.

The laundry, surrounded by community gardens becomes the hub of the cluster. Here residents meet and swap gossip, work together to grow their own food or fire up the barbie for a shared later summer arvo feast.

Increased permeability

refines urban grain of large blocks and facilitates movement

[62] →

View from Marine Pde down the new public path towards Moana St.

Community gardens become a terraced extension of the natural topography of the foredune which defines the upper segment of the site.

Locating the transverse path next to the gardens is both pragmatic and conducive to more random social encounters.

[63] →

Proposed site plan.

The block is divided into four clusters of housing by three new public paths that cut across the site. The transverse paths help reduce the block grain, provide amenity and increase permeability and mobility.

Camera icons mark the figure number and location of the corresponding view within the developed cluster.

[64] ↑

View from Rupini St

[65] ↑

View from Marine Pde

[66] ↑

View from Moana St

[67] ↑

View from the new public path towards
the centre of the site

[68] ↑

View looking from the central shared
space towards the lower segment
of the site

[69] ↑

View looking from the central shared
space towards the upper segment
of the site

AGAINST GREENFIELD DEVELOPMENT

[70] ←

Greenfield development
in Tauranga. Or is it
Tawa?

This thesis is not about problems associated with greenfield development, which are well understood and described in literature (Lupis and Mc Veagh 2014; Rogers 2014; Nelson 2013). This thesis is about *how* to grow the population of Ōtaki Beach *without* resorting to more greenfield development. However, for completeness I provide a summary of main issues associated with greenfield development. I intend for this summary to serve as a backdrop for the design responses presented in the previous section ("For Adaptive Reuse" on page 18).

First let's look at some advantages of greenfield development. Greenfield development makes sense when the property being developed is of industrial nature and none of the existing sites can be reused or adapted, for example due to size requirements. In such a case the development has the potential to contribute in a positive way to the local community by generating jobs in the area and adding amenity, especially if the new site is close to an existing settlement.

However, the drawbacks of greenfield development substantially outweigh any benefits. Each negative aspect has undesirable long term effects or even irreversible impact on our society through the many intricate interactions between humans, the built environment and the natural world. The drawbacks can be roughly divided into four categories: social, economic, architectural and ecological. I am not suggesting that these groups are mutually exclusive. In fact the many effects listed here are interrelated and affect each other in multiple ways. Nevertheless, the effects lend themselves to this logical grouping, which facilitates further conversation.

SOCIAL DRAWBACKS

- Greenfield development contributes to loss of quality of life due to extended commute times.
- It relies on manipulative marketing and sales pitches to attract new residents instead of actual value to life and contribution to the greater whole.
- It leads to health problems due to more sedentary lifestyle promoted by greater reliance on private cars due to site's separation from places of employment, services and entertainment.
- Distant and separated suburbs tend to be poorer because wealth and power drop off with the distance away from the city (Nelson 2013).
- It creates socially and culturally conflict when built on or near sites of cultural or historical significance. This is especially important to consider in New Zealand with respect to Mana Whenua. The exact location, extent and significance of such sites is often misunderstood.

ECONOMICAL DRAWBACKS

- Greenfield development reduces the recreational value of the site leading to fewer visitors to the area.
- It has a negative effect upon transport and energy use as commuters use more energy to travel farther.
- Larger homes for fewer people require more energy to power and heat.
- It creates commuter dormitories lacking the critical mass to sustain local economy.
- It requires expensive new infrastructure (power, water, gas, treatment, etc).

- It is a developer driven approach that seeks to maximise financial gains for a very small group of investors.
- The loss of agricultural land results in loss of production and loss of employment. This also impacts food production for any nearby cities, as food grown farther away from the cities costs more to transport.
- It is difficult to ring-fence a greenfield development to prevent further sprawl.

ARCHITECTURAL DRAWBACKS

- Greenfield development propagates suburban sprawl by following the path of least resistance without actually offering any innovation in solving the problems associated with sprawl.
- It lacks richness of form and detail because everything is new — a single layer of development imposed upon the land, as opposed to cities that are multifaceted, and multi-layered entities generated through long term accretion of artefacts.
- It devolves towards safe architectural expression of current trends, typically represented by the clean and cool corporate aesthetic of the time. There is a tendency to rely on methods that excuse us from seeking new forms of architectural expression in favour of making money. Decisions are justified in terms of planning rules, market pressures, transient design trends, technological limitations and the logic of using tried and tested solutions.
- It generates clean slate outcomes that do not relate to anything. Any relationships suggested by the developments are tenuous and contrived, these are often exemplified by pretentious names, which often include words such as “vista”, “heights”, “royal” or “estate”,

chosen for their connotations of exclusivity (even though once every estate is royal on a height with a vista they all become the same).

ECOLOGICAL DRAWBACKS

- Greenfield development contributes to the destruction of natural habitat of some animal and plant species.
- It leads to loss of greenbelt that separates areas of difference.
- It often imposes significant change to flood management and risks associated with erosion when developing land near existing bodies of water.
- It has ongoing issues with pollution management caused by human waste products.
- Once land has been developed it is unlikely to ever be converted back to greenfield use.

REFLECTIONS

[71] ←

Ōtaki Beach wetland

In this thesis I suggested an approach to increasing residential density in a well established coastal suburb of Ōtaki Beach that does not rely on consuming any more land. Instead my approach specifies three strategies developed through design: land unification, introduction of transverse paths and the formal strategy that achieves a particular kind of architectural expression through selective preservation, unification and vertical stacking of existing structures.

This approach has a number of interesting characteristics. Firstly, my formal strategy enables retention of embedded knowledge and spirit of the place. The sense of familiarity will be retained through preservation of existing geometries and outlooks. By preserving orientation and location of existing buildings I also preserve their relationships with each other and the street. Vertical stacking generates new forms. The formal strategy also enables further adaptation of the buildings to increase their value or change their use as needs or as opportunities arise. As the community grows some of the buildings could be re-adapted to provide services such as medical centres, child care facilities or even small, community owned accommodation facilities for tourists.

Secondly, collective use of the land and any facilities developed in any one cluster helps to increase the collective abundance and overall resilience of the whole block. For example, each cluster might have their own rainwater storage tanks, community rooms which could be used to house people in times of emergency, collective produce gardens, shared bbq pits, etc.

Thirdly, reduction in block grain and increased mobility serve to create some of the romanticised qualities that we associate with bach colonies, such as spatial intimacy, ability to quickly get to the beach and vibrancy.

Lastly, I believe that my approach also enables what I call *sensitive replicability*. In contrast to greenfield development, sensitive replicability is not an all-or-nothing approach, rather it is the ability to apply the strategies selectively and with sensitivity throughout all of Ōtaki Beach. Big blocks could be divided up into smaller chunks that can be developed independently. These pocket developments could be scattered throughout the existing suburb creating a familiar yet new and exciting environment.

Finally, with the hindsight of all my design research, I would like to discuss some further work that would enhance this thesis. Firstly, given more time, I would develop the other three clusters in the site block. This would provide valuable design-based evidence of how an entire block can be transformed and reveal interesting inter-cluster relationships.

Secondly, I would like to show how a clustered block might evolve into a more mixed use setting by incorporating small commercial activities at street level relevant to the setting. For example I would like to place cafes, shops, beach equipment rentals, as well as examples of other small businesses serving the community at various places within the block to expose both intra and inter-cluster relationships. The potential locations for these ventures would be best discovered through further design work.

Lastly, I find the concept of sensitive replicability very interesting. I would like to develop a couple of other blocks in Ōtaki Beach to show that my methods are highly transferable and adaptable. This work would naturally lend itself to further exploration through design to see how well the approach would work elsewhere in New Zealand.

[72] ←

View from Moana St
up the new public path
towards the beach.

The path goes beyond
providing mere public
amenity. It creates new
opportunities for social
interaction and it adds
an interesting line of
sight with a promise of
something special just
beyond the rise.

BIBLIOGRAPHY

- Bjerregaard, Lotte Marianne. 2003. "The Golden Age of Danish Housing." *OASE Journal for Architecture*, no. 61. NAI Publishers, Rotterdam: 7–28. <http://oasejournal.nl/en/Issues/61>.
- Bradatan, Costica. 1322. "Scaling the 'Wall in the Head.'" *The New York Times*. <http://opinionator.blogs.nytimes.com/2011/11/27/scaling-the-wall-in-the-head/>.
- Bruce Mitchinson, David Simiona. 2015. "Adaptive Reuse An Introduction to Seismic Architecture." Mitchison Simiona Architects. <http://myarchitects.co.nz/wp-content/uploads/sites/31/2015/09/seismic-architecture-guille.pdf>.
- Chapman, Jonathan. 2010. "Subject Object Relationships and Emotionally Durable Design." In *Longer Lasting Solutions: Advancing Sustainable Development Through Increased Product Durability*, edited by Tim Cooper. London, UK: Ashgate (Gower). <http://eprints.brighton.ac.uk/6632/>.
- Christoph Grafe, Madeleine Maaskant. 2003. "Editorial." *OASE Journal for Architecture*, no. 61. NAI Publishers, Rotterdam: 2–6. <http://oasejournal.nl/en/Issues/61>.
- Family And Community Services. 2006. "Kapiti Coast Community Report." Ministry of Social Development. <https://www.familyservices.govt.nz/documents/working-with-us/programmes-services/connected-services/local-services-mapping/kapiti-2006.pdf>.
- Frayling, Christopher. 1993. "Research in Art and Design." Royal College of Art London. <http://www.opengrey.eu/item/display/10068/492065>.
- Friedman, Ken. 2008. "Research Into, by and for Design." *Journal of Visual Art Practice* 7 (2). Taylor & Francis, Ltd.: 153–60. doi:10.1386/jvap.7.2.153_1.
- Hildner, Claudia. 2014. *Future Living : Collective Housing in Japan / Claudia Hildner ; Translation, Steven Lindberg*. Basel : Birkhäuser. doi:<http://site.ebrary.com/lib/vuw/Doc?id=10838347>.
- Holt, Richard. 2012. "Redesigning Suburbia: Establishing a New Infill Development Model for Existing Suburban Communities." University of Massachusetts Amherst. <http://scholarworks.umass.edu/theses/876/>.
- Howard, Quintin. 2015. "The Death and Life of Small New Zealand Towns." presented at the New Zealand Planning Institute Conference 2015, Auckland. http://www.planning.org.nz/Attachment?Action=Download&Attachment_id=3160.
- Ian Milliss, Wendy Carlson. 2007. "Adaptive Reuse." *Adaptivereuse.net*. January 12. <http://adaptivereuse.net/about-adaptive-reuse/>.
- Kasperkevic, Jana. 2016. "Co-Living – the Companies Reinventing the Idea of Roommates." *The Guardian*, March 20. <http://www.theguardian.com/business/2016/mar/20/co-living-companies-reinventing-roommates-open-door-common->.
- Kronenburg, David. 2007. *Flexible: Architecture That Responds to Change*. Laurence King Publishing. <http://books.google.co.nz/books/about/Flexible.html?hl=&id=vYp2QgAACAAJ>.
- Lupis, Francelle, and Russell McVeagh. 2014. "Greenfield Development: A Field of Dreams or a Minefield?" Russell McVeagh. http://www.russellmcveagh.com/Portals/1/Documents/PDFs/Greenfield%20Developments%20paper_Francelle%20Lupis_12%20May%202014.pdf.
- Mann, William. 2003. "The Plotlands Experience: The Self-Build Settlements of Southeast England." *OASE Journal for Architecture*, no. 61. NAI Publishers, Rotterdam: 110–23. <http://oasejournal.nl/en/Issues/61>.
- Michler, Andrew. 2011. "Melbourne Fire Station Transformed into Gorgeous Modern Home." March 25. <http://inhabitat.com/melbourne-fire-station-transformed-into-gorgeous-modern-home/>.

- Miles, M. 2007. *Urban Utopias: The Built and Social Architectures of Alternative Settlements*. Taylor & Francis. <https://books.google.co.nz/books?id=v1xJHUrIGLYC>.
- Mooney, Catherine. 2015. "IMBY: Creating a Model for Density That Maintains Suburban Values." Victoria University of Wellington. <http://hdl.handle.net/10063/4669>.
- Nelson, Robert. 2013. "The Grass Isn't Greener in the Outer 'Burbs." *The Conversation*. <http://theconversation.com/the-grass-isnt-greener-in-the-outer-burbs-12532>.
- Nigel Bertram, Kim Halik. 2002. *Division and Multiplication*. RMIT University Press, Melbourne. https://issuu.com/nmbw/docs/division_and_multiplication.
- Nygaard, Erik. 2003. "Small Steps Towards a Better World." *OASE Journal for Architecture*, no. 61. NAI Publishers, Rotterdam: 96–109. <http://oasejournal.nl/en/Issues/61>.
- Penlington, Hannah. 2010. "DIRTY LAUNDRY The Adaptive Reuse of an Existing Building." Master of Architecture (Professional), Unitec Institute of Technology. [http://unitec.researchbank.ac.nz/bitstream/handle/10652/1519/Hannah%20Penlington%20March%20\(Prof\).pdf?sequence=1](http://unitec.researchbank.ac.nz/bitstream/handle/10652/1519/Hannah%20Penlington%20March%20(Prof).pdf?sequence=1).
- Per, A. F., and J. Mozas. 2013. *10 Stories of Collective Housing: Graphical Analysis of Inspiring Masterpieces*. a + t architecture publishers.
- Pinto de Freitas, Rita, and Others. 02-04 Nov 2011. "Hybrid Architecture: Object, Landscape, Infrastructure." presented at the EFLA REGIONAL CONGRESS OF LANDSCAPE ARCHITECTURE, Tallin, Estonia. <http://upcommons.upc.edu/handle/2117/17997>.
- Plevoets, Bie, and Koenraad Van Cleempoel. 2011. "Adaptive Reuse as a Strategy towards Conservation of Cultural Heritage: A Literature Review." *Structural Studies, Repairs and Maintenance of Heritage Architecture XII* 118. WIT Press Chianciano Terme: 155–63. https://books.google.co.nz/books?hl=en&lr=&id=K17a6qlguZkC&oi=fnd&pg=PA155&dq=adaptive+reuse+in+architecture&ots=Th_R2gX20D&sig=ioB5BFcOUyjkfrsXW6XBYnql.
- Rogers, Richard. 2014. "Forget about Greenfield Sites, Build in the Cities." *The Guardian*, July 15. <http://www.theguardian.com/commentisfree/2014/jul/15/greenfield-sites-cities-commuter-central-brownfield-sites>.
- Tachieva, Galina. 2010. *Sprawl Repair Manual / Galina Tachieva ; Contributors, Judith I. Bell... [et Al.]*. Washington, DC: Island Press. doi:<http://site.ebrary.com/lib/vuw/Doc?id=10437875>.
- Virginia McConnell And. 2010. "Infill Development: Perspectives and Evidence from Economics and Planning." *Resources for the Future* 10 (13). <http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-10-13.pdf>.
- Wallis, Caitlin. 2015. "High Ground, Low Ground : Explorations in Topography and Neighbourliness in Coastal Dune Settlement." Victoria University of Wellington.
- Watson, D., and M. Adams. 2010. *Design for Flooding: Architecture, Landscape, and Urban Design for Resilience to Climate Change*. Engineering Case Studies Online. Wiley. <https://books.google.co.nz/books?id=E-r9dWqWu1sC>.
- Welling, Helen G. 2003. "The Collective Aspect in Danish Housing Development." *OASE Journal for Architecture*, no. 61. NAI Publishers, Rotterdam: 29–56. <http://oasejournal.nl/en/Issues/61>.
- Wikipedia contributors. 2017. "List of Cities by Population Density." *Wikipedia, The Free Encyclopedia*. January 12. https://en.wikipedia.org/w/index.php?title=List_of_cities_by_population_density&oldid=759706782.
- "Gasometer City." 2016. *Adaptive Reuse*. August 28. <https://adaptivereuse.info/portfolio/gasometer-city/>.

"Research Through Design." 2016. Accessed March 28. <http://researchthroughdesign.org/>.

RTD 2015 Provocation by Sir Christopher Frayling Part 1: Research Through Design Evolution. 2016. Vimeo. Accessed June 27. <https://vimeo.com/129775325>.

"Tate Modern." 2016. *Adaptive Reuse*. August 29. <https://adaptivereuse.info/portfolio/tate-modern/>.

"Why Redevelop Suburbia?" 2016. Accessed September 14. <http://changingground.org/index.php/why-redevelop-suburbia>.

"The Consequence of Design: Ralph Caplan, Milton Glaser, and Beverly Willis in Conversation." 2016. *Guggenheim*. September 16. <https://www.guggenheim.org/event/the-consequence-of-design>.

"German Cooperative Housing Model Takes Root in WA." 2016. *Architecture Now*. Accessed December 1. <http://architecturenow.co.nz/articles/baugruppen-in-australia/>.

"Where Is Our Collective Imagination?" 2016. *Architecture Now*. Accessed December 1. <http://architecturenow.co.nz/articles/where-is-our-collective-imagination/>.

"Community Profile | Kāpiti Coast District | Profile. id." 2017. Accessed February 7. <http://profile.idnz.co.nz/kapiti?WebID=10>.

"The Value of Density | Ministry for the Environment." 2017. Accessed February 7. <http://www.mfe.govt.nz/publications/towns-and-cities/summary-value-urban-design-economic-environmental-and-social-benefi-10>.

"Hannah's Block - The Wellington Company." 2017. *The Wellington Company*. Accessed February 16. <http://www.thewellingtoncompany.co.nz/projects/case-studies/hannahs-block/>.

"Cooperative Housing | Housing Europe." 2016. Accessed September 19. <http://www.housing-europe.eu/event-183/cooperative-housing>.

"Population and Demographics." 2017. Accessed February 7. <http://www.kapiticoast.govt.nz/Our-District/The-Kapiti-Coast/Population-and-Demographics/>.

LIST OF FIGURES

- [2] Google Earth Pro 7.1.5.1557 [software]. 2016. "Paraparaumu Coast, New Zealand [base Image]." TerraMetrics [imagery], SIO, NOAA, U.S. Navy, NGA, GEBCO [data]. <https://www.google.com/earth/>.
- [3] ———. 2016. "Paris, France [base Image]." <https://www.google.com/earth/>.
- [4] ———. 2016. "Ōtaki Beach, New Zealand." <https://www.google.com/earth/>.
- [5] ———. 2016. "Charles Fleming Retirement Village, Parata Street, Waikanae." <https://www.google.com/earth/>.
- [6] Mann, Jason. feb 7,2017. "Peka Peka House." *Herriot Melhuish O'Neill Architects*. Accessed. <http://www.hma.net.nz/assets/Slides/slide-Peka-Peka-House-l-1.jpg>.
- [8] Google. 2015. "Cnr. Rupini St and Marine Pde. [street view]" *Google Maps*. June. <https://goo.gl/maps/yffuCDvFzJ32>.
- [11] Google Earth Pro 7.1.5.1557 [software]. 2016. "Kapiti Coast, New Zealand [base Image]." TerraMetrics [imagery], SIO, NOAA, U.S. Navy, NGA, GEBCO [data]. <https://www.google.com/earth/>.
- [12] ———. 2016. "Ōtaki, New Zealand [base Image]." TerraMetrics [imagery], SIO, NOAA, U.S. Navy, NGA, GEBCO [data]. <https://www.google.com/earth/>.
- [13] ———. 2016. "Ōtaki Beach Project Site [base Image]." <https://www.google.com/earth/>.
- [24] Baan, Iwan. 2016. "Tate Modern." *Art Fund*. https://www.artfund.org/assets/what-to-see/museums-and-galleries/tate-modern/New_2016_switch_house/Venue%20page%20update/Tate-Modern-LS.jpg.
- [25] "Gasometer City." 2001. *Coop Himmelblau*. http://www.coop-himmelblau.at/uploads/made/uploads/images/Projects/9502_Gasometer/P_9502_F48_PK_1097_730_90.jpg.
- [26] Crouch, Aimee. 2013. "Lord Street Residence." *Richard Smith Architect*. August. http://www.architectsmith.com.au/wp-content/uploads/2013/08/lord-1a-facad_hires.jpg.
- [33] Richards, Abdallah. 2016. "Site Analysis." Unpublished digital image.
- [46] Google Earth Pro 7.1.5.1557 [software]. 2016. "Ōtaki Beach Project Site [base Image]." <https://www.google.com/earth/>.
- [47] ———. 2016. "Ōtaki Beach Project Site [base Image]." <https://www.google.com/earth/>.

- [48] ———. 2016. "Ōtaki Beach Project Site [base Image]." <https://www.google.com/earth/>.
- [54] Orange, Project. 2012. "Shoreham Street." *ArchiLovers*. http://images.adsttc.com/media/images/5017/8c89/28ba/0d44/3100/023e/large_jpg/stringio.jpg?1361419860.
- [70] Google Earth Pro 7.1.5.1557 [software]. 2016. "Tauranga, New Zealand." TerraMetrics [imagery], SIO, NOAA, U.S. Navy, NGA, GEBCO [data]. <https://www.google.com/earth/>.

All figures not attributed are author's own.

APPENDIX A:

CLUSTER DIAGRAMS

Apartment Blocks

- certain kinds of spaces are more conducive to social interaction. These usually contain some defining object: tree, bench, couch, shed, news kiosk
- wide circulation paths reduce or even cut off interaction (especially vehicular routes)
- physical barriers prohibit interaction
Interaction decreases with distance from the social space
- clustering generally increases interaction
- interaction increases with duration of tenancy (long term neighbours develop deeper relationships)
- green space increases social interaction among many different groups: adults, children,

01

Camp Site

- Green space increases social activity and interaction
- Sometimes the way space is occupied is dictated by objects present in the space, eg: power posts at a camp site
- Given the opportunity people will create their own access paths leading to and from their territory and they won't change those for the duration of their (short-term) inhabitation
- In an open space without any predetermined set of rules clusters tend to self-organise
- Self-organisation is not the best use of space - a lot of space can be wasted
- "Wasted" space is not perceived as wasted because it has its particular use: privacy buffers, circulation zones, storage/parking
- Unstructured space combined with temporary mode of inhabitation leads to very informal attitudes to territoriality and very loose and temporary social interactions/relationships

02

Beachside Hotel

less interaction between floors, more interaction between residents on the same floor

spatial layout and presence of physical barriers have effect on social interaction

great levels of interaction at ground floor in the dining/gathering room

Common space facilitates social interaction

interactions structured within the building but very casual across the road at the beach

relaxed space facilitates relaxed interaction

lack of control over living environment resulted in high levels of territoriality and almost hostility, especially towards new residents

ability to customise immediate surroundings reduces levels of territorial hostility by being able to signal boundaries of private space

individual cells were intensely private and this was facilitated by the way the space was structured: walls, corridors, doors, ability to move from the bottom floor to the destination floor with minimum interaction

privacy is important and space can be structured to facilitate privacy

03

Suburban House

highly controlled natural elements: plants, lawns

interaction typically limited by physical barriers

where no commonality established physical barriers actively maintained to limit interaction

there is no common ground — social interaction becomes fleeting and superficial with clear master/visitor relationship

strong sense of individual ownership manifest through high levels of customisation of space

enforceable privacy

explicit territoriality

lack of collective ownership outside of the private boundaries

some interaction occurs despite physical barriers

04

fencing clearly made to keep
neighbours away

not protected but clearly exclusive and private means of access

no sense of collective ownership outside of section bounds

no front fence made the property feel accessible, open and welcoming to the visitor

students sit in rows separated by physical partitions which prevent eye contact when seated

- there is no sense of collective ownership of the space but strong sense of individual ownership within a very small area allocated to each student as manifest through high levels of customisation

- groups of students tend to congregat around tables or walls where large amounts of work can be displayed and discussed

- it's a highly controlled and artificial environment which has the effect of students bringing in a lot of plants and placing premium value on natural light

- 🏠 disconnection from the natural world is actively countered through introduction of natural elements

Professional Office

extreme levels of personal space ownership and control but little customisation

highly controlled and structured environment – this is in line with how the company operates

no privacy concerns in the main office, all information available to everyone. This attitude manifests itself as an open office with long shared desks

strong sense of collective ownership of shared spaces

informal social space is well used

informal space can serve as a counterbalance in a high structured environment

very little to no interest in introducing natural elements in the office environment

private meeting rooms are available for working with clients, meetings and individual work requiring isolation

need for privacy manifests through dedicated space

07

Coastal Town

places where risk of damage from natural events is great are still inhabited

high-impact but small probability risks are acceptable to human inhabitation

high risk spaces tend to be naturally beautiful

contrast between man-made and natural worlds is obvious and purposefully maintained

spaces with greatest levels of urbanisation, structure and spacial control do not feel like they are a part of the natural environment

local interactions occur in a different cluster from interactions with visitors

physical segregation of locals from visitors diminishes opportunities for social interactions

main residential area is separated from the beach by a very wide road

main residential area is highly structured on a low permeability grid (very large blocks)

main residential area does not feel like a beach community

easy, immediate connection to the natural environment is important to the feel of the place

08

Secluded Dune Subdivision

houses closest to the dunes felt most "natural" and showed most signs of deterioration

yards less manicured with more native coastal vegetation

immersion in the natural environment relaxes conventional constraints on structure, hierarchy and appearance

houses closest to the dunes had most informal access paths to the beach

proximity to natural totems encourages spontaneous interactions with the natural world

houses are clustered tighter than in the larger subdivision giving the area a more community/neighbourly feel
absence of wide straight roads makes this place feel more intimate and welcoming

narrower streets, smaller sections and more permeable blocks create a more communal atmosphere

cluster feels out of the way and takes more effort to enter but once within its borders one feels immediately emotionally rewarded for having made the effort

some kinds of physical separation of clusters create better atmosphere

09

Waterfront Public Space

there are many physical barriers in this artificial environment but they have been carefully designed to facilitate interaction

most features designed to create active edges

some edges are actively avoided
intensity of social activity diminishes with distance from active edges

purposeful design can generate highly social spaces

high degree of design and control over the space prohibits customisation

wide main circulation routes offer opportunity for path making

highly designed landscape creates a lively and fun place to be in

loose space framing gives occupants choices as to how to inhabit the space
social destination

creation of a space perceived as a great social destination can be self-fulfilling (or not: civic square)

10

APPENDIX B:

DESIGN PRINCIPLES

Locate communal and social spaces centrally.

Provide physical facilitators of social interaction. Eg: a tree, a bench, sitting steps, etc.

Ensure that social spaces are large enough for spontaneous creation of multiple smaller clusters of social interaction.

Ensure communal spaces have immediate access to the outdoors or are partially located outdoors.

Facilitate creation of active edges to encourage social interaction and to bring vibrancy.

Don't force movement.
Allow for spontaneous
creation of individual
paths.

If barriers are necessary
make them permeable
whenever possible
and provide easily
discoverable ways to
move through them.

Avoid impenetrable
barriers. Facilitate
movement and random
encounters.

Make spaces serve
multiple functions
allowing for a number of
simultaneous activities.

Signal the purpose of
space. Give the
occupants clear
guidance as to the type
of activity expected. Eg:
private, public, quiet,
social, working, playing,
etc.

Join spaces into loose cluster. Create a perceivable sense of belonging and connection without imposing a rigid structure.

Provide communal space without dictating its primary purpose. This could be a part of the multifunction space.

Provide public amenity.

Keep clusters of long-term human activity (e.g. co-habitation) at no more than 150 people.

This is based on the Dunbar Number.

Prioritise human activities over vehicular traffic.

Create subtle buffer zones between private and public spaces that enable customisation and self-expression and signal change of territory.

Guard privacy but not at the expense of total loss of permeability.

Remain open and inviting.

Don't get drowned.

Contribute to the communal resiliency platform/system.

Touch the ground lightly.

Relinquish the need to control nature and natural processes by embracing nature's flux.

Find ways to replenish that which perished due to human activities.

Reduce reliance on external infrastructure.

APPENDIX C: TAXONOMY OF COLLECTIVE LIVING

In the course of this study I have examined a number of recent collective living establishments. The very first thing that struck me was that the nomenclature used to describe these entities was inconsistent. The range of terms used is confusing because different authors use same or similar terms to describe different conditions — one man's collective is another's commune, co-operative housing becomes co-living, and then there are intentional communities.

The second observation that I made was that collective living is not a single condition but rather a term that describes a wide spectrum of modes of tenure and inhabitation. While all the modes of collective living share the idea that it is about living together as a group, it is the values shared by all the members of each group that set those groups apart. The sets of values are diverse and can be very far apart. For example, some collective living arrangements focus primarily on ecologically sustainable living practices while others are predominantly concerned with physical security and maintaining the group's status quo. Moreover, the spectrum does not appear to be made up of discrete entities, rather the boundaries between the emerging categories are slightly blurred because of the overlap of ideas and methods used to implement the particular condition.

Unfortunately general understanding of collective living is further confused and its value to the society undermined by our socio cultural conditioning, which is heavily influenced by media reportage, often sensationalist, of breakaway socialist enclaves or commune-style living practices that supposedly include free love, psychedelic experiences, erasure of individual ownership and cult-like practices.

This is my attempt at creating a taxonomy of collective living. I will present a set of terms and their definitions that I will use consistently throughout my thesis to get my point across clearly.

First the word "collective" — the Oxford Dictionary of English defines this as done by people acting as a group. In its most general sense *collective living* then refers to every living situation so long as it applies to a group. Therefore cities, towns and villages are all examples of high-level collective living. The collective can be defined in terms of geography, social status, wealth, race, beliefs, and many other grouping attributes. Typically the smaller the group the more specific and intimate become the relationships between the collective and the individuals and between the individuals themselves. I want to note here that *collective housing* is a term typically applied to a general condition where a number of people inhabit the same building or complex of buildings. Any apartment complex is an example of this general category. However, this condition is far too general to be of use in my research and so I mention it here for the sake of completeness only. I will not be referring to it in my thesis.

In my research of collective living I analysed a number of contemporary precedents. I have discovered that while the motivations behind each style of collective living can be very different there are a number of attributes that are common to all of them. These attributes are not characteristics of a collective but rather they pertain to the needs and desires of the individuals who make up the collective:

Inclusivity — the degree of acceptance of individuals from different demographic groups

Privacy — the level of ease with which an individual can achieve a state in which one is not observed or disturbed by others

Autonomy — the degree of freedom that the individual has from the collective's control or influence

Ownership — the degree of ownership an individual can exert over all of their material possessions

Tenure — the degree of ownership an individual holds over their estate

Engagement — the degree of engagement by the individual in collective activities

There is a symmetry to this set of attributes and when examined from the perspective of the collective their definitions change to the opposite of those applicable to the individual's point of view:

Inclusivity — the degree to which individuals from other demographic groups are resisted (this should really be re-labelled to exclusivity)

Privacy — the degree to which the collective is willing to allow its members to perform their activities alone and unobserved

Autonomy — the degree to which the collective is willing to allow its members to have freedom of choice and action in the affairs of the collective

Ownership — the maximum level of ownership of personal material possessions allowed by the collective

Tenure — the maximum level of ownership of estate that any member can hold

Engagement — the minimum level of engagement in collective activities expected of the members by the collective

I suggest that the difference between these definitions is what causes the general public to misunderstand and therefore distrust collective living arrangements — it is the difference between freedom of choice that we enjoy as individuals and a code of conduct prescribed by the collective arrangement. In this thesis I will use the first set of definitions, which focus on the benefits to the individuals through their collective association.

I classified the studied precedents into three major categories that form a spectrum of conditions that range from least associative/restrictive to most associative/restrictive with respect to the six common attributes presented above. I assigned each attribute a score, ranging in value from one to five, to indicate my perceived positioning of this attribute along the spectrum. The scores relate to the perceived degree of individual freedom described by the attribute — the higher the level of freedom the higher is its score. As an interesting aside, the categories at the opposite ends of the spectrum contain within themselves extreme cases of the general condition they describe. While the two identified extreme cases lie at the opposite ends of the spectrum their shared extremism brings them rather close together.

COMMON INTEREST LIVING

Inclusivity	*****	No restrictions on demographic make up
Privacy	*****	Units are highly individual
Autonomy	*****	Residents have full autonomy within their own units
Ownership	*****	Residents have full ownership of their property
Title	*****	Units are 100% individually owned
Engagement	**	Relatively low engagement levels as the need/opportunities for engagement are not primary focus

Common interest living is the least associative and binding kind of collective living arrangement. While this type of group living has a strong focus on the idea of living as a group it nevertheless still privileges the individual. The grouping is more to do with a loosely held set of beliefs than with any particular physical manifestation of these beliefs. Residents typically live in their own private apartment units with at least some private outdoor space. The shared facilities typically do not go beyond a shared laundry or common outdoor space looked after all the residents. The development may also put some financial and/or legal limits on what the residents can and cannot do, in particular with respect to the sale of their property. However, these restrictions are not out of the ordinary, and without getting into the fine print of actual agreements, they are probably no more restrictive than many body corporate constitutions.

THE COMMONS MELBOURNE (2013)

The Commons, a project designed to be environmentally sustainable, financially viable and socially responsible, is an affordable multi-residential development that rehabilitates a difficult and damaged site.

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COPPER LANE LONDON (2014)

Built and financed collectively by a small group of families, this development makes up for lack of private gardens with abundance of shared open spaces. Communal party room and laundry remove unnecessary duplication of functionality and create new opportunities for social interactions among the residents. At the same time each residence assures complete privacy for the individuals.

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HELLER PARK MELBOURNE (2012)

A former rubbish tip is remediated and turned into medium density housing adjoining onto a new public park space. Each dwelling opens up onto the common green space, blurring the public/private boundaries and thus creating a greater sense of community that benefits from the collective abundance of space.

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HANHAM HALL

BRISTOL (2009)

Built on the site of a former hospital Hanham Hall is England's first large scale zero-carbon development ("Hanham Hall, Bristol" 2017). The development incorporates many modern techniques and materials to deliver 187 energy-efficient homes. While most units have their own little private outdoor space they all benefit from the collective abundance of shared outdoor space and facilities such as a community centre, crèche, business space, glasshouse, allotments and an orchard.

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ROCK STREET

LITTLE ROCK (2013)

This unrealised project won the American Institute of Architects 2013 Honor Award for Regional and Urban Design. The project proposes affordable housing as a transformational catalyst for a struggling urban neighbourhood. A cluster of homes leverages shared outdoor space and infrastructure to provide quality in an affordable, community oriented housing setting.

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EXTREME EXAMPLE

A gated community is an extreme case of common interest living. While this type of living construct comprises a community of like-minded residents it typically, as a whole, exhibits very high degree of egotistic behaviour and very low degree of concern for the wider world and society. The residents, typically affluent and with right-wing political leanings, use their wealth and power to separate themselves from the wider society in the mistaken belief that enforced physical segregation from the surrounding world will guarantee the constancy of their way of life. In this thesis, I am not concerned with these counter-productive and anti-social constructs.

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CO-OPERATIVE LIVING

Inclusivity	*****	Generally highly inclusive but targeted at a particular group who share the co-operative mind set
Privacy	****	Generally high levels of privacy except for shared areas
Autonomy	****	Residents enjoy high levels of freedom within own units. Co-op rules may decrease autonomy
Ownership	*****	Residents have full ownership of their property
Title	****	Fair collective ownership
Engagement	***	High level of engagement in line with co-op spirit

Co-Operative living is characterised by a much greater level of cooperation between the residents than common interest living. In particular, a legal entity is typically set up, a co-operative, which is owned and run jointly by its members, who share the profits and benefits. Investment into the co-operative is usually not limited to residents only and outside investors are often sought to help with the financing of the development.

Co-operative Housing is a particular example of co-operative living, and it is defined by Housing Europe, the European Federation of Public, Cooperative & Social Housing, as "a housing business in the form of a consumer cooperative mutually owned by its members, which operates in accordance with the Cooperative Principles and Values." ("Cooperative Housing | Housing Europe" 2017)

The cooperative housing movement has a long and rich history going back to mid 19th century and is an important part of the housing infrastructure in many European countries.

R50 BAUGRUPPEN

BERLIN (2013)

This six storey high density residential project was a joint building venture initiated by the architects who are also its residents. The project is a model for living affordably and collectively in a busy metropolis.

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SPRING HILL STROUD (2003)

This project is the first new-build scheme of its kind to be completed in the UK. It comprises 34 units ranging from one bedroom flats to large individual houses. The householders are the directors and shareholders of the company that built and owns the development. Spring Hill creates a way for people to live together, enjoying each other's community and the collective abundance while ensuring privacy.

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LILAC LEEDS (2013)

Low Impact Living Affordable Community is the UK's first affordable ecological collective housing project. Based around the concepts of affordability, mutual ownership, community and low impact living, the straw and timber buildings bring together a community of 20 households. Shared kitchen and pantry, located in a common house, allow the residents to meet twice a week to eat together and socialise.

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CO-LIVING

Inclusivity	**	Typically self-restricted to a particular demographic, usually young professionals or students
Privacy	**	Low levels of privacy due to shared nature of all spaces
Autonomy	***	Medium levels of autonomy as residents bound by house rules
Ownership	****	Residents retain ownership over their property
Title	*	typically rent-based tenure
Engagement	****	high levels of engagement due to both ethos and rules

I define co-living as a particular kind of collective living arrangement where all inhabitants are not only physically located in the same dwelling but they choose to share most of the spaces activities. This typically covers all common living areas, bathrooms, kitchens, lounges and work spaces, if any exist in the dwelling. Co-living is typically not limited to physical sharing of the space but also has a strong component of sharing household tasks. Many co-living arrangements go as far as requiring the inhabitants to participate in shared meals a certain minimum number of times per week and be involved in other activities as dictated by house rules.

A current trend places co-living as a way to make money and many businesses are emerging under the guise of facilitating these intentional communities by providing physical dwellings in exchange for a fee — call it rent. Co-living is perhaps just a new, more commercial spin on the age old practice of flatting. The developments range in quality, ethos and magnitude, from small-time, commune-like and aching hip Pure House in New York to high-rise, ultra-modern corporate serviced apartment blocks such as that offered by The Collective in London.

The various co-living movements cite companionship, strong communal ties, mutual support as their strengths. However, increasingly the list of benefits focuses on the young professionals and includes "boutique interior design, beautiful shared space and luxury facilities", "community of likeminded young people, living, working and playing under one roof" and "regular events and amazing shared spaces." — all indicators of a hedonistic rather than an all-inclusive community-minded lifestyle. Where do families and older people fit into this system? Can a community based around ideas of luxury, beauty, youth and playfulness stand the test of time and grow into something deeper?

THE COLLECTIVE

LONDON (2016)

This project delivers a self-proclaimed largest co-living building in London for over 500 inhabitants. With most facilities shared and serviced micro-units rented by the week it is essentially an upmarket student-style accommodation for busy professional adults.

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THE FARM HOUSE

BERKELEY (2014)

The Farm House is one of a number of geographically dispersed existing houses turned into co-living facilities owned and managed by the OpenDoor company whose aim is to help people “live better together as a human family” (“About - Open Door” 2017). The Farm House provides shared lifestyle for 16 residents.

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PURE HOUSE NEW YORK (2012)

Pure House, one of many existing residential properties held by the parent company, creates a co-living facility for a small group of like-minded individuals who enjoy the lifestyle of an intentional community. This development is characterised by very low levels of individual privacy, low quality of living spaces and inspirational advertising [C-76].

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SHARE HOUSE

NAGOYA (2013)

A simple shared occupancy house with communal areas for cooking, eating and socialising. Unlike many other shared living facilities this is a new built project based specifically on the principles of communal living.

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EXTREME EXAMPLES

As is the case with the other end of this spectrum, co-housing also has an extreme case: commune style living. Communes exhibit many attributes similar to those of gated communities. Like a gated community a commune is formed by a group of like-minded individuals deeply concerned with securing and preserving their particular way of life, which often falls outside of the societal norms. They will often try to preserve their way of life by physically separating themselves from the rest of the society. In some cases this is achieved through physical means, such as fences built around their compounds.

BIBLIOGRAPHY

- Benfield, Kaid. 2017. "Building Affordable & Sustainable Housing That Fits In | Sustainable Cities Collective." Accessed March 6. <http://www.sustainablecitiescollective.com/kaidbenfield/111431/affordable-sustainable-housing-green-architecture-fits-in>.
- Carstens, Katrine. 2016. "Getting Closer." Accessed November 21. <http://sublimemagazine.com/issue-31-work-it-out/getting-closer>.
- Chatterton, Paul. 2013. "Towards an Agenda for Post-Carbon Cities: Lessons from Lilac, the UK's First Ecological, Affordable Cohousing Community." *International Journal of Urban and Regional Research* 37 (5): 1654–74. doi:10.1111/1468-2427.12009.
- Elledge, Jonn. 2016. "Collective Living's Fine for Students but for Everybody Else It Stinks." *The Guardian*, April 28. <http://www.theguardian.com/commentisfree/2016/apr/28/collective-living-students-london-housing-crisis>.
- Griffiths, Alyn. 2013. "Share House LT Josai in Japan by Naruse Inokuma Architects." *Dezeen*. August 29. <https://www.dezeen.com/2013/08/29/share-house-by-naruse-inokuma-architects/>.
- Hamblin, James. 2016. "Communal Living Is Curing Millennial Ennui." *The Atlantic*, July 28. <http://www.theatlantic.com/health/archive/2016/07/communes-in-the-city/492599/>.
- Moore, Rowan. 2014. "Copper Lane Review – an Appealing, Harmonious, Cost-Effective Model for Communal Living." *The Guardian*, August 30. <http://www.theguardian.com/artanddesign/2014/aug/31/copper-lane-review-cohousing-stoke-newington-henley-halebrown-orrison>.
- Segal, Rafi. 2016. "An Architecture of Collective Living." *ARPA Journal* 1 (4). <http://www.arpa-journal.net/an-architecture-of-collective-living/>.
- Shreeve, By Jimmy Lee. 2007. "Hanham Hall: Eco-Town or Eco-Spin?" *The Daily Telegraph*, August 24. <http://www.telegraph.co.uk/news/earth/3304596/Hanham-Hall-Eco-town-or-eco-spin.html>.
- The Architecture Centre. 2010. "Building Case Study: Hanham Hall Eco-Village Bristol." The Architecture Centre, UK. http://www.architecturecentre.co.uk/assets/files/case-studies/Hanham_Hall_March_2010.pdf.
- Vestbro, Dick Urban. 2000. "From Collective Housing to Cohousing—a Summary of Research." *Journal of Architectural and Planning Research*. JSTOR, 164–78. <http://www.jstor.org/stable/43030534>.
- . 2012. "Saving by Sharing - Collective Housing for Sustainable Lifestyles in the Swedish Context." In *3rd International Conference on Degrowth for Ecological Sustainability and Social Equity*. University of Venice. <http://www.diva-portal.org/smash/record.jsf?pid=diva2:578189>.
- Widdicombe, Lizzie, Nathan Heller, David Remnick, Andy Borowitz, Gary Shteyngart, and Jelani Cobb. 2016. "Dorm Life Forever!" *The New Yorker*. May 16. <http://www.newyorker.com/magazine/2016/05/16/the-rise-of-the-co-living-startup>.
- Zantal-Wiener, Amanda. 2015. "Brooklyn's Pure House: Communal Living at Its Best." *EcoSalon*. June 11. <http://ecosalon.com/brooklyns-pure-house-communal-living-and-a-social-entrepreneurs-disneyland/>.

- "Cooperative Housing | Housing Europe." 2017. Accessed March 4. <http://www.housing-europe.eu/event-183/cooperative-housing>.
- "What Cohousing Looks Like: Inside Berlin's Radical R50 Baugruppen Project." 2016a. Accessed June 29. <http://www.metropolismag.com/May-2015/Dont-Call-It-A-Commune/>.
- "Lilac - Affordable Strawbale Housing Community in Bramley, Leeds." 2017. Accessed March 6. <http://www.lilac.coop/>.
- "Heller Street Park and Residences." 2017. *ArchitectureAU*. Accessed March 6. <http://architectureau.com/articles/the-common/>.
- "R50 – Cohousing / Ifau Und Jesko Fezer + HEIDE & VON BECKERATH." 2015. *ArchDaily*. February 8. <http://www.archdaily.com/593154/r50-nil-cohousing-ifau-und-jesko-fezer-heide-and-von-beckerath>.
- "Co-Living, Co-Working in London - The Collective." 2017. *The Collective*. March 5. <https://www.thecollective.co.uk/>.
- "What Cohousing Looks Like: Inside Berlin's Radical R50 Baugruppen Project." 2017b. Accessed March 6. <http://www.metropolismag.com/May-2015/Dont-Call-It-A-Commune/>.
- "About." 2017. *Pure House*. Accessed March 6. <http://purehouse.org/>.
- "Why Nightingale?" 2017. *Nightingale Housing*. Accessed March 6. <http://nightingalehousing.org/why/>.
- "Pettaway Pocket Neighborhood." 2016. *University of Arkansas Community Design Center*. Accessed November 21. <http://uacdc.uark.edu/work/pettaway-pocket-neighborhood>.
- "About - Open Door." 2017. Accessed March 4. <http://opendoor.io/about/>.
- "Hanham Hall, Bristol." 2017. Accessed March 4. <http://www.building4change.com/article.jsp?id=2495>.
- "The Farmhouse - Open Door." 2017. Accessed March 6. <http://opendoor.io/portfolio/the-farmhouse/>.
- "Springhill Cohousing - Welcome Page." 2017. Accessed March 6. <http://www.therightplace.net/coco/public/>.

LIST OF FIGURES

- [C-1] "The Commons." 2016. *The Sydney Morning Herald*. Accessed November 22. <http://www.smh.com.au/cqstatic/12z7v7/THECOMMONS2.jpg>.
- [C-2] nightingale.melbourne. 2016. "The Commons." *Urban Melbourne*. Accessed November 21. https://urban.melbourne/sites/urban.melbourne/files/pictures/article-images/ca627_florencest_5094.21.25pm.jpg.
- [C-3] [C-4] [C-5] Wuttke, Andrew. 2016. "The Commons." *Architecture & Design*. Accessed November
[C-6] [C-7] [C-8] 21. <http://www.architectureanddesign.com.au/awards-1/2014-winners/the-commons-by-breathe-architecture-named-best-of>.
- [C-9] [C-10] [C-11] Marinescu, Ioana. 2016. "Copper Lane." *Arch Daily*.
[C-12] [C-13] [C-14] Accessed November 21. <http://www.archdaily.com/580881/1-nil-6-copper-lane-n16-9ns-henley-halebrown-orrison-architects>.
[C-15] [C-16]
- [C-17] [C-22] [C-23] Hillier, Tim. 2016. "Heller Park." *Assemble Papers*. Accessed November 22.
[C-24] <http://assemblepapers.com.au/2013/08/08/heller-street-part-i/>.
- [C-18] [C-19] [C-20] Rodriguez, Patrick. 2016. "Heller Park." *Six Degrees Architects*. Accessed
[C-21] November 21. http://www.sixdegrees.com.au/5r_heller.
- [C-25] [C-26] [C-27] "Hanham Court." 2016. *HTA*. Accessed November 22. [http://](http://www.hta.co.uk/projects/hanham-hall)
[C-28] [C-29] www.hta.co.uk/projects/hanham-hall.
- [C-30] [C-32] "Hanham Court." 2016. *Timber Cladding Solution*. Accessed November 22. [http://](http://www.timbercladdingsolutions.co.uk/hanham-hall-weathering/)
www.timbercladdingsolutions.co.uk/hanham-hall-weathering/.
- [C-31] "Hanham Court." 2016. *Building Centre*. Accessed November 22. [http://www.build-](http://www.buildingcentre.co.uk/news/round-up-how-do-we-build-on-the-green-belt)
[ingcentre.co.uk/news/round-up-how-do-we-build-on-the-green-belt](http://www.buildingcentre.co.uk/news/round-up-how-do-we-build-on-the-green-belt).
- [C-33] [C-34] [C-35] "Pettaway Pocket Neighbourhood." 2016. *University of Arkansas*
[C-36] *Community Design Center*. Accessed November 21. [http://](http://uacdc.uark.edu/work/pettaway-pocket-neighborhood)
uacdc.uark.edu/work/pettaway-pocket-neighborhood.

- [C-37] "Against Gated Communities." 2016. *Crap Cycling & Walking in Waltham Forest*. Accessed November 22. <http://crapwalthamforest.blogspot.co.nz/2010/07/against-gated-communities.html>.
- [C-41][C-44] Gehrke, Andreas. 2016. "R50." *Metropolis Mag*. Accessed November 21. <http://www.metropolismag.com/May-2015/Dont-Call-It-A-Commune>.
- [C-38][C-39][C-40]
[C-42][C-43] Alberts, Andrew. 2016. "R50." *Arch Daily*. Accessed November 21. <http://www.archdaily.com/593154/r50-nil-cohousing-ifau-und-jesko-fezer-heide-and-von-beckerath>.
- [C-45][C-46][C-48] "Spring Hill." 2016. *Archtype*. Accessed November 21. <http://www.archtype.co.uk/project/springhill-co-housing/>.
- [C-47] "Spring Hill." 2016. *Co-Housing UK*. Accessed November 22. <http://cohousing.org.uk/group/springhill-cohousing>.
- [C-49] "Spring Hill." 2016. *The Right Place*. Accessed November 21. <http://www.therightplace.net/coco/public/>.
- [C-50] "Spring Hill." 2016. *Sublime Magazine*. Accessed November 22. <http://sublimemagazine.com/issue-31-work-it-out/getting-closer>.
- [C51] "Spring Hill." 2016. *Robert Bray Associates*. Accessed November 22. <http://robertbrayassociates.co.uk/projects/springhill-cohousing/>.
- [C-52] Morton, Chris. 2016. "Spring Hill." *Beacon Project*. Accessed November 22. <http://beaconprojectcharlbury.blogspot.co.nz/2012/03/visit-to-springhill-cohousing-stroud.html>.
- [C-53][C-54][C-58]
[C-59][C-60] "LILAC." 2016. *White Design*. Accessed November 21. <http://white-design.co.uk/architecture/all-projects/lilac/>.
- [C-56][C-57] Lord, Andy. 2016. "LILAC." *LILAC CoOp*. Accessed November 21. <http://www.lilac.coop/>.
- [C-61][C-62][C-63]
[C-64] "The Collective." 2016. *Urban Land Institute*. Accessed November 22. <http://uk.uli.org/event/innovators-disrupters-series-co-living-collective-site-tour-presentation/>.
- [C-65][C-66][C-67]
[C-68] Alexandra, Amandine. 2016. "The Collective." *The Guardian*. Accessed November 21. <https://www.theguardian.com/commentisfree/2016/apr/28/collective-living-students-london-housing-crisis>.
- [C-69] The Collective. 2016. "The Collective." *Curbed*. Accessed November 22. <http://www.curbed.com/2016/4/29/11531884/millennial-cooperative-housing-coliving-london-old-oak-the-collective>.

- [C-70][C-71][C-72]
[C-73] "The Farm House." 2016. *Open Door*. Accessed November 21. <http://opendoor.io/portfolio/the-farmhouse/>.
- [C-74][C-77] "Pure House." 2016. *The Atlantic*. Accessed November 21. <http://www.theatlantic.com/health/archive/2016/07/communes-in-the-city/492599/>.
- [C-75] "Pure House." 2016. *Ecosalon*. Accessed November 21. <http://ecosalon.com/brooklyns-pure-house-communal-living-and-a-social-entrepreneurs-disneyland/>.
- [C-76] Pure House. 2016. "Pure House." *Pure House*. Accessed November 22. <http://purehouse.org/>.
- [C-78][C-79][C-80]
[C-81][C-82][C-83]
[C-84] "Share House." 2016. *Dezeen*. Accessed November 21. <https://www.dezeen.com/2013/08/29/share-house-by-naruse-inokuma-architects/>.