

LOW + CLOSE

INNOVATIVE LOW SCALE HIGH DENSITY ALTERNATIVE HOUSING

EXECUTIVE SUMMARY + REPORT + REFERENCE

LOW + CLOSE

INNOVATIVE LOW SCALE HIGH DENSITY ALTERNATIVE HOUSING

**a report for the
BYERA HADLEY TRAVELLING SCHOLARSHIP**

**by
TONE WHEELER FRAIA**

CONTENTS

EXECUTIVE SUMMARY

INTRODUCTION

PREMISE OF THE STUDY

THE IDEA OF 'LOW + CLOSE'

TYPES USED IN THE STUDY

METHODOLOGY

AN ANALYSIS OF 'LOW + CLOSE HOUSING

THE 5 TYPES

- PC Private Courtyards
- RH Row Housing
- LX Linear X Vent
- CC Common Courtyard
- Small Block

LESSONS LEARNT

REFERENCES

ACKNOWLEDGEMENTS

Requirements for Acknowledgment of the Byera Trust Travelling Scholarship.

EXECUTIVE SUMMARY

This report is a summary of research undertaken by Tone Wheeler as part of a Byera Hadley Travelling Scholarship into aspects low scale / high density housing, which is called 'Low + Close' for this study.

The three key factors were identified to look for projects that:

- had a "sustainable density", greater than suburbia, less than high rise apartments; at about 40 dwellings per hectare;
- addressed the needs of non-nuclear households; that is members of the community who are not well served by the preponderance of single-family housing: e.g. singles, the aged, multi-generational, unrelated households, etc.
- were delivered through alternative financial and delivery methods; including Private-Public Partnerships (PPP's), Cooperatives and Housing Societies

117 schemes were visited and 50 were documented in detail. An analysis of these housing schemes revealed a possible classification into 5 typologies:

- **CH** Courtyard-style housing.
- **RH** Row housing.
- **LX** Linear cross-ventilated.
- **CC** Common courtyard.
- **SB** Small block.

All the housing schemes visited demonstrated innovative approaches, particular in regard to the first 2 factors, high density and non-nuclear planning, which could often be found combined within one scheme. However examples that fitted all 3 of the original factors proved elusive.

Lessons learnt from an analysis of the schemes include:

- Internal dwelling planning
- The 'no plan' design
- Making private courtyard housing at higher densities
- External private outdoor space on the roof
- Alternative methods of housing supply
- More common courtyards
- Common courtyards in linear cross-ventilation projects
- Lessons from small block apartments
- Lessons from row housing projects

INTRODUCTION

This report is a summary of research undertaken by Tone Wheeler as part of a Byera Hadley Travelling Scholarship into aspects low scale / high density housing.

The original proposal for the BHTS was an investigation into 'In-Between Housing' finding housing schemes that showed new ways of combining density, occupation and ownership. The three key factors were schemes that:

- had a "sustainable density", greater than suburbia, less than high rise apartments; at about 40 dwellings per hectare;
- addressed the needs of non-nuclear households; that is members of the community who are not well served by the preponderance of single-family housing: e.g. singles, the aged, multi-generational, unrelated households, etc.
- were delivered through alternative financial and delivery methods; including Private-Public Partnerships (PPP's), Cooperatives and Housing Societies

Housing with those 3 characteristics is not well represented in Australia but it was anticipated that exemplary examples, that could be useful in developing models for Australia, could be found in Europe, Scandinavia, and the Americas.

The investigations took place over a longer time frame (2 years) and involved many more examples (117) than was originally envisaged. The housing schemes are located in three principal areas: Scandinavia, around Copenhagen and Malmo; Europe, in London, Paris and Berlin; and on the west coast of the USA in Los Angeles. Although other locations were originally considered, insufficient examples of quality were found that would make travel to these locations worthwhile, (particularly in comparison to those visited).

As the study evolved it became clear that typology was the defining issue, and the desired type could be referred to as 'Low + Close' housing, a term used in Denmark to describe the combination of scale (being low) and density (being close) that lies at the heart of the intentions of the original study. After visiting 117 schemes it became clear that some 50 were worthy of documentation. An analysis of these housing schemes revealed a possible classification into 5 typologies:

- **CH** Courtyard-style housing.
- **RH** Row housing.
- **LX** Linear cross-ventilated.
- **CC** Common courtyard.
- **SB** Small block.

All the housing schemes visited demonstrated innovative approaches, particular in regard to the first 2 factors, high density and non-nuclear planning, which could often be found combined within one scheme. However examples that fitted all 3 of the original factors proved elusive. There was little evidence of innovation in delivery methods to individual schemes; for instance cooperative ventures or 'cohousing' largely concentrate on low-density villages. However 3 developments using Public Private Partnerships (PPP) were visited. This approach is appropriate for larger developments rather than individual residential schemes. 3 development areas in Lille, Malmo and Orestad (Copenhagen) had numerous individual schemes, using conventional design and construction methods, within this alternative delivery method.

PREMISE OF THE STUDY

The premise of this study is an investigation into alternative forms and typologies for dwellings for a more sustainable future. The assumption underlying the report is that the traditional Australian home – single site (400 to 800 sqm), freestanding, box form, outward-looking, double-loaded corridor plan - is no longer sustainable. Already Sydney and Melbourne are moving towards a greater use of higher-density living. Recent schemes often take the form of much larger buildings, particularly apartment towers. There has been some public reaction against this form of housing as it is such a wrench from the traditional suburban house.

The failure sustainability of the suburban home is measured against the triple bottom line of cost, environmental impact and social appropriateness. Its cost is high, not because of construction which is often very cheap, but because the cost for the land area is high and is rising due to scarcity. Its social application is in question as it is primarily oriented towards the traditional family and yet that form of dwelling occupant has now fallen below 50% and continues to decline. This is marked by an increase in blended families, couples (who are often gay), singles and share households. It is already evident that there are insufficient housing typologies to meet these dwelling occupants at present and that it will continue to be an issue into the future. Thirdly, the environmental conditions of a single house are in question, not only because the house design and construction is 'cheap' and therefore does not take into account good environmental design such as orientation and thermal mass, but overall its energy footprint is blown out by the necessity to use fossil-fuel-based transport, particularly the private car, in order to reach employment, schools and all the social and commercial facilities that a family requires.

This report presents limited study of a 'middle way', in which much higher densities can be achieved, for a diverse range of occupants with a typology that allows for the identity and amenity of a single dwelling to be retained within a higher density of housing. The title of the report, '*low and close*', is taken from a Danish expression to describe this type of housing where individual dwellings are identifiable within a structured whole that is low in height, and close together, but still meeting all the amenity requirements for a modern occupant.

THE IDEA OF 'LOW + CLOSE'

117 housing schemes were visited in three principal areas: Scandinavia, around Copenhagen and Malmö; in Europe, in London, Paris and Berlin; and on the west coast of the USA in Los Angeles. During these investigations, we came across a Danish term called '**low + close**', for housing typologies that are **low** in scale, taken to mean up to 6 storeys overall, and that are **close**, the houses are tightly grouped together, often around some common or community outdoor space. This report concentrates on about 50 of the 117 schemes that were visited, to provide an insight into these forms of housing density - the height is restricted to mostly 6 storeys, and the density is greater than 40 dwellings per hectare. The grouping of the houses to create a close-knit arrangement, using a communal typology, is a central feature of the study.

TYOLOGIES USED IN THE STUDY

The original intention of the study was framed around the idea of 'typologies': the formal arrangement of the scheme in common 'themes'. The formal framing of common area in each project was the defining issue in the analysis of these projects.

Broadly speaking, there were five different typologies that I could identify:

- **CH** *Courtyard-style housing*. In this case, the outward-looking box is turned back in on itself in an 'L' or 'U' shape which allows for party walls to be close together and increases the overall density.
- **RH** *Row housing*. Similarly to courtyards, this is ground-based dwellings that have common walls on two sides, leading to a row of dwellings that can be placed much closer together. This is often erroneously referred to in Australia as 'terrace housing'.
- **LX** *Linear cross ventilated*. These are low apartment typologies which are 'single loaded', that is typically with entry from one side and private balconies on the other. They are dwellings where the resulting form is a linear arrangement of apartments with vertical access required at some point to long public balconies and on the other side private balconies that require setbacks. This is a common typology particularly in Sydney in Australia, however the overseas examples show how a number of linear elements can be introduced successfully within a single scheme.
- **CC** *Common courtyard*. These are schemes where apartments are arranged around some form of common open space that provides a private communal space, a form of controlled orientation to increase privacy, and a notable or readable structure to the typology. There is very little resemblance between the private courtyard type (Type 1) and the common courtyard which can take a number of different forms. A small number of schemes were identified that adopted a courtyard policy as a way of providing light and air into a tight city site. Two examples of this are given in the report which are located in Paris where a programme originally sponsored by the Parisian Post Office lead to a number of buildings being built with internal courtyards driving light deep into the solid blocks of the Parisian Arrondissements, and a third example is a seniors' living project in Paris.
- **SB** *Small block*. Unlike the linear and courtyard typologies, this is a traditional 'block of flats' that looks outward from a single block. This is a more efficient form of the 'rack, stack and pack' requirements for 'low and close' housing. The overseas examples visited show, however, an increasingly diverse arrangement of blocks that can achieve higher densities while meeting the five broad factors that we used to analyse the projects.

A further category of *Big block Apartments* was identified amongst the projects visited as part of the research for this report. These schemes showed diverse approaches in the typology of a solid block but at a larger scale than might originally have been envisaged in 'low + close' housing. These 'big blocks' are not analysed but are included in the research appendices, as they contained ideas which are useful in a consideration of 'low and close' housing, but as the overall form of the buildings exceeded the key form of 'low and close' they have been omitted from analysis in this final report.

All the other projects, on which data was collected but not analysed, are identified in the end Appendix, should future researchers want to expand or build upon this study.

METHODOLOGY IN THE STUDY

The 117 schemes have been analysed in the accompanying research documentation where a number of key attributes for each scheme has been identified. For each of the housing schemes visited, the following material has been documented at the visit and, more importantly, in research following the visit:

- Project details: name / address + location / principal architect;
- Data: design/construction date / number of units / number of storeys / site area (m²) / dwellings/hectare dw/Ha / GFA (m²) / ave. unit size (m²) / cost (local currency)
- Key image of the scheme
- Aerial view of the site taken from Google Maps or similar;
- A masterplan at 1:1250 and a plan of a typical dwelling at 1:250;
- Photographs of the exterior and, where appropriate, interior of the housing schemes taken on the visit.

AN ANALYSIS OF LOW + CLOSE HOUSING

The results of the study are in 2 parts: some general observations of the study and methodology are listed here, whilst specific lessons, and recommendations for Australia, are listed at the end of the report after an analysis of the projects within the 5 typologies.

A central theme of the research was to investigate whether the delivery and typology methods were essential in overcoming the apparent monotony and consistency that is developed in recent developments of Australian medium-density housing in Sydney and Melbourne. In particular, the study highlighted the restrictions imposed by the Residential Flat Design Code (RFDC) that has been in use in NSW for the last 10 years, leading to a certain monotony of solutions in a 'tick-the-box' approach to design.

Overall, the typology can be divided into two broad types: Townhouses and apartments.

Townhouses have the characteristic that each house has connection to the ground level and access to a ground level courtyard, no matter whether there is the number of storeys (which can reach four) or whether there is underground car parking underneath the townhouses. This form was pursued in a number of developments but the maximum density that we could find was 45 dwellings per hectare. In order for there to be more dwellings on a particular site, it is necessary to stack the dwellings on top of each other in the form of apartments where the characteristic is that the bulk of the dwellings are raised above the ground and where the private outdoor space, where provided, is in the form of balcony spaces rather than access to ground level courtyards. This study was restricted to the lower forms of apartments and, although we visited a number of schemes which were greater than 8 storeys in height, the significant lessons are in buildings which have a maximum number of 6 floors above ground level.

For both the townhouses and apartments there was a considerable range of organizing typologies that provide greater variety than is commonly found in Australia where the townhouses take the form of a row of terraces, following the 19th century British model, or apartments which take the form of a singular block oriented to a public road or space and often without an intermediary communal space as its central organizing feature. It is the use of these overall organizing concepts in each of the projects that provides the greatest interest in alternatives for housing that could be adopted within Australia.

TYPOLOGY PC: PRIVATE COURTYARD HOUSING

A key idea in creating a private family house on a smaller block of land is to turn it 'inside out'. By creating a central private courtyard with rooms around it, the external walls are potentially blank and can be stacked together to create greater privacy than is achieved by placing 'box' form housing separated across a common boundary, which leads to acoustic and visual privacy issues. This courtyard form is common in both eastern and western traditions as a means of increasing density in the city. It is found throughout the hot arid countries of the Islamic world where the courtyard, with its water fountains and ponds, provides an oasis within the hot arid climate. It is also common in eastern countries, particularly in China where its form as a 'hutong' in Shanghai, or an 'ilong' in Beijing, was the traditional way of creating greater density in the cities. Its form is less common in Europe and consequently in the developed western world of the U.S., Australia and New Zealand.

Whilst there have been many studies of these courtyard forms in the Arabic and eastern cultures, there has been little exploration of those forms in western cities. As part of this study, a couple of famous courtyard projects by Jørn Utzon in Denmark (part of the 'Western Cannon' of architecture) were visited to assess their relevance to 'low and close' possibilities. The two projects, the 'Kingo' houses in Helsingør and the retirement village in Fredensborg, provide a benchmark for private courtyard housing for this study

PC1: THE BELLEVUE BAY COURTYARD HOUSES

It is curious that one area in which the courtyard form of house has been explored extensively is in and around Copenhagen in Denmark in schemes by Arne Jacobsen and Jørn Utzon. In the 1930's, Jacobsen was designing a series of medium-density projects along the foreshore of the bay in suburban Copenhagen. These were undoubtedly intended as middle class family housing but their forms provide in insight into how the issues in a western city of car parking, community and privacy are handled.

Car parking takes the form of a series of communal garages which lead to an entry courtyard such that the car is detached from the house. The entrance courtyard leads to two parts to the courtyard house – a bedroom wing with four bedrooms and a kitchen and bathrooms, a dining link to the second part, which is a living room that encloses the courtyard. In this way, the outside walls of the entire scheme, except for a small portion of the living room that faces to a view, can be stacked against neighbouring units, doubling the potential density. One of the key design features is that these courtyard schemes are inherently single storey in order that the courtyard remains private and not be overlooked by adjacent two or three-storey dwellings. This ultimately limits the density to a maximum of approximately 20 dwellings per hectare. The other limiting design feature is that in order to create an internal courtyard, such as this, the house size needs to be in excess of 80 to 100 square metres in order to have sufficient volume to enclose a reasonable outdoor space.

PC2: KINGO HOUSES

The 'kingo' houses are private houses with a defined square plot and boundary walls inside which a family home is established which can grow within those boundaries. This form is then stacked in such a way that the houses are joined on two or three sides to increase the density. The houses are moderate in size with an average unit area of 100 square metres and, where the houses are stacked, the densities reach approximately 20 dwellings per hectare. However, the site overall has large areas of communal space of both forest and a large lake which drops the total nett density down to 10 dwellings per hectare which is the same as Australian suburban housing.

It is remarkable that the houses are still used as upper-middle class family housing and that this project from the 1950's has spawned a number of imitations which were of interest for the 'low and close' study. It was disappointing to find that this form in most western cities is almost exclusively used for family housing and is at densities which are comparable with suburbia and do not offer the kind of increased densities and social range for which the 'low and close' study was searching.

PC3: FREDENSBORG RETIREMENT VILLAGE

Jørn Utzon also designed a courtyard scheme as a retirement village outside of Copenhagen. The village was established to provide retirement options for public servants who had served in diplomatic postings overseas for the Danish Government following the Second World War. The ideas in the 'kingo' houses are repeated here but the layouts are tighter with car access along the spine road and access into the houses having both a private courtyard and then a communal green space.

Given that the occupants of the houses are upper middle class public servants with high expectations of both space and quality, the houses are largish in size being an average of 92 square metres and are well-appointed. The tight arrangement of the houses leads to an overall density of twice that of the 'kingo' houses and includes a large communal centre at the end of one of the common spines.

The key lesson here is the provision of communal open space in addition to the private courtyard that greatly increases the amenity and scenic quality of the project but also reduces the effective density overall. An indication of the higher density that is possible is shown in a small section of the development to the north-east corner where a combination of courtyard and principally row house forms provide greater density around a single car court.

Nevertheless, the lessons are similar to the 'kingo' houses that the form in western hands seems destined for the middle class family rather than offering a diverse range. In both 'kingo' and Fredensborg, the houses remain largely undeveloped even though the original intention was that further developments could be made within the courtyards.

Lastly, it is worth noting that the manager's comments at Fredensborg were that there is a very high demand for the development, not only because of the increased number of potential occupants in retired diplomats, but moreover the success of the combination of privacy and community that was achieved within the house forms and the communal space and communal areas.

PC4: SALONGEN 35 AND PC5: VILLA MALMÖ

One of the sites containing a number of typologies is the development called 'bo01' development in Malmö. Two of these, called 'Salongen 35' and 'Villa Malmö', give an indication of how the private courtyard has been developed in contemporary housing at greater densities. In both these cases, the courtyard has migrated to the roof rather than as an internal part of a single-storey plan. In both cases, the houses are multiple storeys with a series of outdoor spaces on top of the house. Both these schemes have the entire top floor as an open outdoor area, allowing for the 'courtyard' aspect of the house, that is, its outdoor private open space, to have maximum access to light and sun and to be connected to the house via a stairway from the living areas. It is worth noting that this seems to be part of a trend for inner city housing to be upside-down, that is, that the living areas occupy the upper levels of the building where there is greater access to light, air, and cross-ventilation, as well as providing greater privacy from the public zone on the lower levels. In both cases, screening from the adjacent or from adjacent houses is important to replicate the form of the fences between backyards that would occur in the lower level courtyard types.

Research undertaken into the contemporary use of courtyard housing as a way of achieving 'low and close', yielded very little in the western cities indicating any increased invention beyond that established by Jacobsen and Utzon. By way of example are the water villas in Almere designed by UNStudio. These are houses facing a man-made canal system in a suburban sector of Almere in The Netherlands. The houses are three storeys and contain a courtyard form in the middle level in order to increase privacy as the houses are located very close together above the water. The courtyard form is a solution to issues of private outdoor space with close packing of the dwellings and not an inherent response to increasing density or offering diversity. Significantly away from the waterfront, the house forms turn to row houses, which is dealt with in the next section.

Overall, this scheme can stand as a representative of the way in which courtyard housing is now predominantly seen as an improved suburban form or specialised form rather than something that is pursued in the inner city for greater density. Primarily, it is the requirement the houses suit a family rather than the alternatives that are the focus of the 'low and close' investigation.

TYPOLOGY RH: ROW HOUSING

The second of the typologies is a 'row house', a form of attached houses using a party wall running the length of the house. This form requires the house to have a front and back, typically in Australian row houses in Sydney and Melbourne called 'terraces'. The front address is the street and has a formal entry and the main rooms, and the rear, off a laneway, has the service areas of the building. In passing it is worth noting that the laneway is often a much smaller form of access as a right of way (another spelling of the word 'row'). Prior to the advent of the motor car, this was used for service access only, but with the advent of the motor car, slowly the arrangements are being reversed with the main frontage now to smaller streets for car and cycle access and the rear lanes being larger in order to provide turning circles for cars.

Traditional projects of this kind abound in European cities. However, recent examples tend to be exact copies of the earliest form from which little invention or innovation can be derived.

This study examined one historical grouping of different row houses by Arne Jacobsen and two unusual forms of terraces to highlight possible innovations.

RH1: SØHOLM ROW HOUSES

This project by Arne Jacobsen immediately after the Second World War has three different types of row houses, some in the traditional form in the first of the development, which are single-storey houses attached on either side with private courtyards and gardens to the public area. The second area is a series of two-storey houses, which again have parallel walls, and the third is experimentation for row houses combined with a courtyard form. In all of these three experimental models, Jacobsen was looking for the ability for the houses to address either views or sunlight, or both, in a way that would confine the service areas to a single driveway and car parking area behind. The subdivision in row houses is very much attendant upon the idea of separating the public address and living/formal rooms from the car access and private spaces.

This scheme is an update of the traditional row/terrace house that is found predominantly in English cities, which was copied later into Australia.

RH2: SOUND WALL HOUSES

This idea of a front and back to a series of row houses is turned on its head in a scheme in Hilversom in The Netherlands where the rear of the properties are banked up against a passing motorway in order to create a 'sound wall' to the houses which face away from the motorway directly south towards the sun. The form is of a complete row with adjacent walls on both sides, however the houses are then pulled forward in a trapezoidal shape to create a side courtyard at an upper level as an adjunct to the service area of car parking underneath. As is common in many of the European cities, the provisions for car parking aren't as dominant as they are in traditional Australian row housing and other forms, and the car area is a shaded area underneath the projecting trapezoid in the form of a very open carport. The remaining portion of the plot is landscaped into a garden with low hedges which is consistent with The Netherlands' idea of private areas being open to the public.

It is notable that the relaxed attitude that the Dutch have towards living areas, for instance, the living room windows in town houses in cities such as Amsterdam face the street and the curtains are left open at all times. A drawn curtain is thought to represent something mysterious or untoward going

on. This attitude translates in the widest sphere to all of the gardens and, what would be considered in Australia to be private outdoor space, is connected to the public. In the sound wall houses, this then creates a garden in which children can play quite safely and there is a large verge which provides for shading from the adjacent apartment block, promoting both a safe place for children to play and a sense of community in these houses.

It is worth noting that a sense of community can be created from a series of these linear homes, which in our understanding in Australia have always been about maintaining private courtyard spaces. This scheme demonstrates how the privacy of both internal, upper-level balconies and courtyard spaces can be maintained with a more communal space at the lower area which can be integrated with a car. It is interesting to note how the exigencies of designing a building with the entire rear wall closed off with an earth bank have led to an innovative and unusual response that is both private and communal, has a strong form, and works quite successfully as an open-plan house.

Finally, it is notable that the ground floor of the house has a possibly open arrangement that would allow for it to be used for other uses other than bedrooms, while the upper floor contains a living area and main bedroom. In this way, an alternative and more flexible use for the sound wall houses is possible.

Finally, by creating a two-storey form with the cars parked underneath the living area and a small garden area, the sound wall houses have 28 dwellings per hectare over the site, which provides considerable site efficiencies. The locality/situation plan shows a five to six-storey apartment block to the north of the sound wall houses which is the reason why a larger setback has been created and the houses have been pushed back hard against the motorway edge. The experience on site is one of great success with the sound wall providing ample protection to the passing noise and creating a quiet and sunny cul-de-sac.

RH3: CITY LOFTS and RH4: 1212 ABBOT KINNEY

The dense area of housing around Santa Monica and Venice in Los Angeles has long been an area of research into denser house forms dating from the 1980's when the gentrification of the area led to an increased density of buildings, such as Frank Gehry's Indiana Loft Project and schemes by Eric Owen Moss and Morphosis. More recently, the densities have increased even further and a typically efficient scheme is the city lofts at Fifth Avenue in Venice. In this scheme, there is an underground garage, which is common in the Santa Monica/Venice area, as a way of removing cars from the surface of the development. This then allows for a two-storey form with the downstairs area noted as a live, work, or study area and the upper area having the more private areas of bedrooms and bathrooms with the possibility of the living room being relocated to the middle or upper level, leaving the entire ground floor as a working area.

By removing the cars from the street frontage with a side entrance, the houses have both a public face, which can be used for the live/work area, and also a small private courtyard at the other end. The spatial arrangement includes an intriguing use of a trapezoid to provide for at least one end of the terrace to be wider than the other, creating an alternate series of outdoor living areas on either end that are at the widest point. The planning then has the bathroom and service areas at the narrower end of the scheme.

This arrangement with living areas facing both east and west (given the tight orientation of the block) is reminiscent of the approach taken by Le Corbusier at the Unité d'Habitation in providing light

where the orientation of the dwellings along an east-west access allowed for light to enter from both ends and as a compensation for having no north light.

The climate in Santa Monica/Venice is similar to that in Sydney and the form of the building shows greater consideration for shading and sun protection and the use of the roof for solar purposes than would be found in most European projects. A skylight is introduced over the centre of the project to provide light to the upper storey in an otherwise very tight scheme.

With underground car parking, the arrangement of the lofts provides 73 dwellings per hectare which I calculate to be at the very upper end of the possibilities for row housing. A similar approach is taken to a number of other buildings in the Santa Monica/Venice area such as 1212 Abbot Kinney where the car parking underground removes the vehicle spaces, the ground floor is then occupied by commercial spaces in that denser part of town, and then a two-storey series of row houses with highlighted living areas on the roof extends the form on the idea of the row house even further.

RH5 – RH10: ROW HOUSES IN MALMÖ

There are a number of interesting alternative approaches to row houses in a development called BO01 on the waterfront in Malmö, a city in southern Sweden. The area is a brown-filled site and reconstruction of a former docklands area with a marker building as a spiral-shaped apartment building designed by Santiago Calatrava. The tower is set back from the water's edge, leaving an area approximately 300 metres deep by 1 kilometre long, in which a number of schemes of both row houses and block apartments have been built (see Typology 5 for commentary on the block apartments). Within a relatively rectangular street pattern, a series of sites of a consistent size were set aside and given to a variety of architects and developers to provide variety in the form of a village townscape. The architects have developed a series of alternatives for the houses varying from a replica vernacular form to a highly-contemporary version.

RH5: FRAMTIDSHUS 1

The most traditional of the row houses is a three-storey form with two storeys in brickwork and a steeply-pitched roof, one to two-storey volume over the top, with an upper level balcony. There is very little ground level courtyard and most of the outdoor space is at level 3, adjacent to the steeply-pitched roof. The terraces are in short runs so that it is common to have an end house which has a series of windows facing out onto a communal square.

RH6: PACKHUS 1-IV

Like the previous scheme, these are a series of private houses in the row typology. However, the gable is turned at right angles so that, instead of running from front to back, it runs across the frontage of the house in the same frontage as the gable-ended terraced houses of Amsterdam. The plans are relatively modest in size and scale and use a transitional room with doors opening to a small light well through the middle of the building to create a light zone.

RH7: FRAMTIDSSTADEN II

Curiously, amongst the historic pastiche projects at Malmö is one that recalls the housing in Stuttgart. In particular, the facade of this scheme is reminiscent of the projects by Mies Van Der Rohe and

Bruno Taut at the Weissenhofseidlung. This form of minimalism, with its running band window to the street facade and the lack of identity of the individual buildings, would seem to only flourish in the aesthetic environment of a modernist revival in Scandinavia. The approach would appear to be wholly unacceptable in Australia.

RH8: VITRUVIUS

Like the previous scheme, the planning here is austere. However, the elevations are relieved by external balconies which are made in solid, colour-backed glass and a step form particularly up on to the roof areas where a series of solar panels at right angles to the house roof (that is, parallel to the party walls and facing the low-angled northern sun) provide visual relief to an otherwise fairly austere facade.

RH9: TRAHUS 2001

This is a larger row scheme where, once again, the individual houses are suppressed in the interests of making a whole and a composition which completes a townscape rather than an individual scape. This appears to be one of the tenets of the arrangement of bo01 at Malmö where a consideration of the public squares and common areas is framed as an urban design question with buildings of common heights rather than as a series of individual projects identifying individual housing. Once again, this process of permeating the community over the individual would seem to be at odds with the desire for individuality in Australia housing. Nevertheless, this gives a far more coordinated arrangement of spaces and a stronger urban quality to it, despite the number of architects that have been involved in the project.

RH10: TOWNHOUSE (ETT OVANLIGT RADHUS)

This is the most contemporary of the form making of the row houses at Malmö. Once again, the exterior facades are strongly modelled in regard to the pedestrian street. However, the upper levels are extended out over the street with cantilevered opaque-panelled balconies and rooftop areas. The materials and scaling of it are nevertheless derived from the vernacular and have a strong sense of connection to the timber traditions and the self-build arrangements of rural Scandinavia. By mixing materials, forms, window sizes, and so on, it would appear that the building has grown more organically than is the reality.

RH11: EDEN SQUARE

This scheme in Lille is a combination of a series of 45 apartments of 4 to 5 rooms each, over the top of 6 terraced houses as row houses at the base. This form of hybrid, using terrace houses at the base taking advantage of the ground level access with a separate entrance for apartments over the top, is a common typology in new developments in France. The overall pattern is achieved by placing the car parking underground, often in multi-level car parks, to ensure that deep soil arrangements are possible in the backyards and in the communal areas, hence the mature trees growing in this relatively new scheme. There is inherently a conflict between the apartments over the top, which have balconies with access down into the private courtyards of the terraced houses, and the public circulation which also has access to the charmingly-organic constructivist balconies. By recessing

the courtyard areas in the terraces and by simple delineation of fences in the private areas, the garden becomes more of a visual connection for the house rather than private outdoor space.

RH12: ELECTRIC AVENUE LOFTS AND RH13: AK LIVE WORK

These two projects in Venice in California are a series of row houses that sit above a series of garages and commercial spaces. The schemes are united by the design of a continuous facade and, in the case of Electric Avenue Lofts, it is over the top of a series of entrances and street access garages, whereas at AK Live Work, the garage is underground and a series of commercial spaces fronts Abbot Kinney Street, the main street of Venice (hence the term 'AK'). In each case, the row houses are two storeys tall and have rooftop living. The Electric Avenue Lofts are a continuous banded system and are similar in overall composition to the modernist buildings at the Weissenhofseidlung. The AK Live Work project, however, has a more contemporary 'blocky' feel with external balconies restricted to the ends of the building and most of the private outdoor space being located up on the roof.

In both cases, the buildings have been built using timber frame technology clad in 'stucco', a form of render over expanded metal mesh over plywood, which is common in this earthquake-prone area.

TYOLOGY LX: LINEAR AND CROSS-VENTILATED

The 20th century saw the development of a number of notable, modernist apartment forms that departed from the solid city block that had been built from the 17th to the 19th centuries. Prominent amongst the proponents for this typology was Le Corbusier, who larded its form for the benefits in achieving greater light and sunlight, and later for the possibilities of cross-ventilation. There were also schemes developed in the huge expansion occurring in the early 20th century, as the major European capitals expanded into suburban areas, not with individual houses but with linear apartment blocks (LX2 the Weiße Stadt Reinickendorf (white city) project).

LX1: CITY OF REFUGE

In Reyner Banham's book, *'The Architecture of the Well-Tempered Environment'*¹, there is a instructive discussion of the learning curve by Le Corbusier in regard to environmental conditions. Banham describes how the scheme of 1923 for the City of Refuge in Paris (LX1) was built to maximise northern solar orientation into the buildings and is one of the first, large scale, linear, passive solar buildings. However, Banham also describes the failure of the building in its first summer from overheating, and the response by Le Corbusier to add the 'egg crate grille' or in French 'brise-soleil', to reduce down the solar impact. Further, the severe lack of cross-ventilation in these small rooms designed for homeless men was identified.

Le Corbusier kept these lessons in mind when it came to the Unité d'Habitation in Marseille. In this case, the apartments themselves were to run from east to west allowing sunlight access at both ends but more critically for cross-ventilation to occur through each apartment, rather than relying on access through a balcony.

This concern with the combination of winter warmth through solar orientation and summer cool through cross-ventilation and nighttime ventilation has been driving 'low and close' apartment design in Australia for the last 10 years, particularly in Sydney with the work of Nick Turner of Turner Associates, and Frank Stanistic. A part of this study was to investigate similar 'low and close' developments overseas.

The first point to note is that this form of linear development to accentuate environmental concerns is fairly restricted in its use. Despite its sustainability credentials, it appears from the initial research that its use is limited to areas with a similar climatic zone to the eastern seaboard of Australia, in particular Southern California. Despite research in four possible locations for possible contemporary examples in Africa, Europe, Scandinavia or Asia, there seem to be no significant examples. The only examples that were of interest, which we were unable to visit, were in South America, in particular in Rio de Janeiro in Brazil. Nevertheless, the schemes that follow in Southern California are instructive in the more playful use of the linear typology and the greater reliance on communal stairwell areas for ventilation within the projects.

LX3: FORMOSA 1140 AND LX4: GARDNER 1050

These are two schemes by Los Angelean architect, Lorcan O'Herlihy. The architect has developed a series of cross-ventilated apartment designs that use screening on the outside of the building to provide privacy and a strong visual appeal, whilst allowing for airflow around the building. In both

¹ Reyner Banham *'The Architecture of the Well-Tempered Environment'*, 1970

cases, the building has an adjacent parkland area which provides not only some community outdoor space, but also provides setback between the scheme and adjacent dwellings to increase acoustic and visual privacy.

In both these projects, the external forms of the building use materials to de-construct the identity of the apartments behind. This is particularly evident at Formosa 1140 where the building has the same facade treatment on both the public circulation spaces and the private balcony areas, such that the structure reads as a whole, small block development, rather than having the two faces are quite common in cross-ventilated apartments within Australia. The overall painterly arrangement of the work lends itself to a more colourful air perhaps, being more indicative of the 'set-making' that is found nearby in Hollywood.

LX5: LOFTS AT CHEROKEE STUDIOS

This scheme by Brooks & Scarpa Architects is for a series of apartments built over small commercial spaces that stand on an important social-identified site of 'Cherokee Studios', one of the founding recording studios in Los Angeles. Similar to the previous two schemes, the form of the building from a distance resembles a solid block rather than a series of identifiable apartments. However, closer inspection shows a large central open stairwell providing access into the units, which then face outwards in a number of directions with a series of shutters that open to private outdoor space on balconies. This use of a public stairway, which is open to the air elements and in particular the rain, is more common in Southern California than in Australia where I suspect the concerns with rain protection are a greater factor in the design process.

As is common with these schemes in California, the density of dwellings hovers around 100 dwellings per hectare. This figure takes into account the provision of parkland in LX3 and LX4, as well as the commercial spaces in LX5. In all three cases, the density of the dwellings requires that the vehicles, so necessary in Los Angeles, are parked underground.

The next two schemes use shipping containers in order to construct a linear or cross-ventilated form of housing and are included for their attempt at low-cost construction.

LX6: QUBIC STUDENT HOUSING

This scheme is part of an area dedicated to providing student accommodation in a dockland area of Amsterdam. The project consists of a series of 12 metre containers which are stacked three high with a centrally-loaded corridor. Each container has been fitted with a small ensuite bathroom and small cooking facilities internally adjacent to the corridor, and the exterior of the building is dressed up with a series of prefabricated fibre-glass-reinforced ferrocement panelling to create a pattern of windows and to de-construct the form of the ends of the containers so that they read with a series of windows of differing shapes and proportions.

The internal arrangement of the corridors feels 'tinny' and rather like an Australian version of the 'donga' in a mining camp. However, the internal fitout of the apartments is more than sufficient for students and is considered to be high grade within the provision of student housing in Amsterdam.

Given that the apartments are in the colder climate and that student accommodation is low over the summer months, it would seem that any requirements for natural ventilation are well down the priority list in the project. Nevertheless, the scheme offers an intriguing insight into how a high density project (176 dwellings per hectare) can be built very modestly from pre-prepared containers.

LX7: CONTAINER CITY – DOCKLANDS

Another container project which offers an insight into the use of the larger, 12-metre containers is in the Docklands area of London where some entrepreneurs have used containers, commonly found in such Docklands sites in a more commercial mode, stacked up to four high to provide housing. The interplay of the containers is far more playful than it is at Qubic in Amsterdam, and the use of external walkways is closer to the notion of cross-ventilation across the project. By placing the containers in small blocks with some of them cantilevered over onto columns, and the use of balconies extended from the end of the containers, there is a greater interplay of forms as well as the greater possibility for cross-ventilation. It's notable that, given the steel framing and making of the containers, that circular windows, which are really only possible within steel structures, are the predominant source of light to the project, whilst doors opening onto balconies provide for the ventilation.

LX8 OBERKAMPF, LX9 POST OFFICE AND POST APARTMENTS, AND LX10 SENIOR LIVING APARTMENTS

Finally in the section on linear cross ventilated apartments mention should be made of 3 schemes located in Paris which adopt the idea of a hybrid between the linear cross ventilated apartments and the "common courtyard" (next section). These 3 schemes are located on small sites within the 20 Arrondissements of Paris, and were developed in the late 90s by the French post office on sites that had become available given the consolidation of postal requirements to other buildings or other sites. The opportunity was taken to provide some affordable housing for the employees of the postal service within the centre of Paris which was becoming increasingly expensive. Although the 3 schemes were designed by different architects they all contain the same approach of providing a linear courtyard to the interior of the block in order to provide greater ventilation space for the apartments. In so doing the corner apartments become true cross ventilated apartments through the diagonal, which would not be able to be achieved in a normal Parisian block and the rear apartments gain light, and some sunlight, and considerable ventilation by being opened up to this linear courtyard. This typology is a variation on the standard apartment blocks found throughout Paris, and other cities such as Barcelona, where the apartments are built to the edge of the surrounding streets and a common courtyard on the inside of the block provides common, but private, space.

It is noticeable that the traditional methodology does not allow for ventilation out the street and therefore to the wider wind movements within Paris. These 3 schemes are an attempt to redress that balance by having both an internal courtyard space, but linked by a lineal arrangement to allow for better cross ventilation of the apartments.

TYPOLOGY CC: THE COMMON COURTYARD

When one thinks of the idea of 'low and close' housing being arranged around a central courtyard, one of the images that springs to mind is the Spanish-inspired courts found in Southern California. This is no doubt because of their constant appearance within Hollywood films where they are the sites of murders, assassinations and mystery, for instance within the film *Mulholland Drive*. They have also been extensively covered in research work undertaken on this form of 'low and close' medium-density housing in both European and American journals. This form of 'low and close' housing has not been replicated in contemporary work as far as we can tell in research for this report. It would appear that the exigencies of denser cities would make the form of the houses have a higher number of storeys, further enclosing the central courtyard.

Nevertheless, the idea of a communal courtyard at the centre of a scheme which provides air, light and crucial circulation within the project has had some interesting variations in both the United States and Europe, which are explored here.

CC1 to CC6: THE ARTHUR AND NINA ZWEBELL COURTYARD APARTMENTS

The Appendix documents six schemes in Southern California, five of them designed by Arthur and Nina Zwebell in the 1920's, and the last by Jadson and Irene Reese. One area which requires further research is as to why so many of these buildings were designed by husband and wife teams as investment properties at this particular time. Turning our attention, however, to the typology and the scale, it is evident that these modest buildings, usually three to a maximum of five storeys, contain a number of units around a central circulation corridor. This courtyard was decorated in a Spanish revival of brickwork and lightweight framing covered in stucco in a rough render with a series of parapets and overhanging, heavily-tiled rooves, to give the illusion of the courtyard spaces of southern Spain. The internal courtyard has low planting and often has a water feature at its centre. Access to the apartments is through a series of pathways and steps that lead to lower and upper-level apartments in the two storeys or to a stairwell foyer for the taller buildings. It is notable that cars were not a predominant design feature and are stored either in garages at the front of the property or, in later projects, underground. The later projects in this report rise in a more conventional apartment sense at the street, being four to five storeys, but still contain a courtyard at the rear for access to the greater density across the site. Almost all of these six projects feature arches at the entrance and have a series of light and dark spaces along the circulation.

It is of some interest as to why these projects, which are so successful within Southern California and now command considerable prices within this area of gentrification, have not been the basis for a further contemporary version. This may be analogous to the way in which our 'terraced houses' of Sydney and Melbourne have not been replicated but are interpreted as townhouses where the exigencies of the car have had greater influence.

CC7: 7 FOUNTAINS

Notwithstanding the former, it is notable that a recent example of these common courtyard apartments has been built almost as a replica of the Southern Californian Spanish Mission style. This scheme is North Harper Avenue was designed by Moule and Polyzoides. Stefanos Polyzoides is a notable researcher and architect on these matters of Southern Californian courtyard housing and this would appear to be a homage to that earlier work using the same palletive materials and the same arrangements with arched openings leading to these courtyards. The front section of the

scheme includes a driveway that leads to garages underneath the rear section so that cars can be accommodated, and the water features are now extended into long channels that reach down into fountains at the front entry.

CC8: BELLAVISTA HOUSING

The European precedent for these courtyard houses can be exemplified by this scheme by Arne Jacobson from 1932 to 1937. It is a series of three-storey apartment blocks that sit around a central courtyard, open on one side for air and views. As befits the age of the building, it is rendered in the modernist trim of off-white render and vertical and horizontal banded windows and balconies. The overall form is stepped in order to create a visual interest and improve the orientation of the bulk of the apartments, and the circulation is on the outside of the square with the private balconies facing into an internal square which has the car parking. The central courtyard plays more of a role of a visual court in the building and some car access, rather than as private outdoor space, which in this Northern European project is restricted on to the balconies.

CC9: DE CITADEL

This project for apartments over the top of commercial spaces sitting around a grand central courtyard was designed by the French architect, Christian de Portzamparc in the Dutch city of Almere. The organisation of the project is underground car parking across the whole of the site with a central courtyard, identified by crossed axes walkways, with major commercial structure at one corner of the courtyard. This also has a light well which opens up in to the courtyard to provide light to the lower-ground areas.

A series of apartments is then arranged which look outwards from the internal courtyard into the streets below in a more European fashion. The internal circulation to these cross-ventilated apartments is then achieved through a series of open walkways that back onto that internal common area, which can be used as communal outdoor space.

It is of great interest to Australian eyes that the communal, public outdoor space at the centre of the project is overlooked, not by the apartments, but by the circulation space. Perhaps the obsession in Australia with the idea of 'eyes on the street', and a desire for private outdoor space, has led to most schemes using communal outdoor space as an extension of private outdoor space. Here the reverse is true, in that the houses look outwards into the streets, which is common in a European setting, and the 'eyes on the outdoor space', watching out for children and so forth, are provided by people in circulation going to the apartments.

CC10: HYTEN 4

A similar scheme with a central courtyard that is used for public circulation and space with the private apartments looking outwards into the street, can be found in the bo01 development at Malmö. In this scheme, the outside of the building is five storeys and fairly severe onto the streets, which is entirely in accordance with the urban design principles that predominate within Scandinavia. The stairwells to the building are accessed from the street and rise up through the building, giving access to apartments whose windows then crank open to provide light from the street. The circulation to the apartments is through a series of strongly-modelled, horizontal balconies

that overlook a central courtyard, which is used for storing pushbikes (as this is the most common form of transport, rather than cars within the flat Swedish cities).

Despite these modest-scaled, earlier-referenced buildings, the most prevalent form of common courtyard buildings that were discovered within the study are of a much greater scale. In order to understand this sense of large, communal courtyards in a 'mega schema' a series of earlier projects were examined as precursors and precedent for that design. Three projects in London provide an insight into thinking from the 1960's to the present day for these large courtyard schemes within the city. In essence, they are an extension of the idea of the Georgian Square into a more public space for these schemes.

CC11: LILLINGTON GARDENS ESTATE

This scheme designed by Darbourne and Darke is a series of communal outdoor spaces throughout the scheme which are surrounded by apartments creating their enclosure. The scheme covers a double block within London and with a series of stepped houses to the external, overlapping to create a variegated facade externally. Internally, the private occupied balconies face into the garden spaces where the Georgian Square is re-imagined as communal space with gardens and trees. This space appears to be primarily visual as this, and a number of other schemes visited, seem to show the hallmarks of having little use for recreation and play and is mostly a source of light and air for the apartments that surround it.

CC12: BARBICAN

An even more dramatic version of this reinterpretation of the Georgian Square can be seen at the Barbican, designed from the late 1950's to the late 1970's within inner London. Setting aside the large towers, which dominate the site, the bulk of the housing is arranged in a series of single-loaded corridors that lead to cross-ventilated apartments or two-storey apartments that surround the squares. As in the previous scheme, the circulation spaces are predominantly on the outside of the building and the private balconies overlook the internal common courtyard spaces, which have far more activities in terms of shops, recreational spaces, including sporting fields, as well as passive recreation gardens. This scheme extends the idea of a '*low and close*' series of houses all the way around a village centre that includes shops, restaurants, and a significant museum. The number of apartments is huge, likewise the total area, so that the overall density of the development at 144 dwellings per hectare is still in a mid-range of the '*low and close*', and if the towers are removed from the calculations, the dwelling density returns to approximately 100 dwellings per hectare. The main gains, however, to be found at the Barbican are to do with the public space and commercial space, and therefore the increased value given to the occupants of the building.

CC13: BRUNSWICK CENTRE

A scheme with similar aims but with a more modest nature is the Brunswick Centre in Bloomsbury in London. This scheme, with a series of six-storey apartment buildings running in two linear blocks either side of a central common courtyard, has all the car parking and services underground and a series of commercial spaces that face onto the common courtyard, rendering it into more of a commercial space, akin to a shopping mall or a shopping street, rather than a passive courtyard. The apartments are arranged in a series of stacked, stepped structures, some of which face out to

the street but slope back in order to increase light to the streets. The remaining sections, which are five to six storeys tall above the internal courtyard, also step back to increase light into the centre. The overall effect, shown in the section, is one of a pyramid at either side of a central, covered and verandahed shopping space. The apartments generated are single-loaded corridors and, on the upper levels, become naturally cross-ventilated; the lower levels are accessed and ventilated into a common corridor space.

CC14: CHARLOTTEHAVEN

It is against the backdrop of these 'mega common courtyard' schemes that two schemes from Denmark seem far more comprehensible. Charlott Haven is a scheme of low-rise terraces and mid-rise apartments that surround an internal landscaped square. The large bulk of the apartments is contained within one single side, surrounded by a series of lower townhouse types, all having access from the common square of landscaped areas and looking outwards into the street.

CC15: 8HOUSE

This scheme, by Bjarke Ingels of big architect's fame, has 476 units over a large site at a density of 232 dwellings per hectare. The scheme is remarkable, not only for its planning configuration like a figure '8', but that all apartments are single loaded and cross-ventilated from external walkways that rise continuously like a Möbius loop through the whole of the project. Some of the apartments face outwards towards the flat fields and canals, some face inwards to the highly-landscaped courtyards which cover the large underground car park. The central courtyards are stylised in landscaping and are matched by highly-patterned walkways that rise up through the building.

Upon visiting the scheme, it is apparent that the scale operates in two parts. One is aware that the building has a total rise of 10 storeys, yet it doesn't appear as such a large slab because the configuration of the broken facades and the interspersing of walkways up the elevations, breaks the overall form and creates a whole series of differently-shaped apartments within the project.

What is also significant as a lesson for Australian design within this project is that, similarly to other big projects, none of the apartments are fitted out. Each apartment is a single area with a built bathroom and a set of services for a kitchen. The fitout of the space is left up to the occupants to arrange bedrooms, living areas, and work areas in accordance with their desires. This continues a tradition that is far more common in Scandinavia and some parts of Northern Europe where long-term rental of apartments means that the tenants are expected to bring all their furniture, even some of the internal arrangements, together with their own kitchen. Hence, the rise of modular kitchen providers, the best known being IKEA, but also such providers as Bulthaup.

The sizes of the apartments, ranging from 50 to 120 square metres, are far more important than the number of bedrooms. The sales for the apartments offer the opportunity for occupants, either purchasers or renters, to create their own environments within the apartment arrangement within the building as a whole. By having large expanses of glass at both the entry side and also the visual side of the cross-ventilated apartment, and given the lack of concern for privacy previously noted in this report, there is a greater opportunity for self-management than there might be in the Australian context.

A final set of schemes of the common courtyard is an examination of several contemporary schemes with a strong circular motif at the centre. The precedent for these schemes can be found in a

scheme at Britz Hufeisensiedlung by Bruno Taut in Berlin. This scheme is a form of a 'horseshoe' (taken from the title) where a large number of apartments surround an internal central garden. The garden forms a passive space at the centre of the scheme where the distance between the apartments is sufficient that no loss of privacy occurs.

CC17: NEW CARVER APARTMENTS SUPPORTIVE HOUSING

This circular motif of a common courtyard at the centre is most dramatically developed in a scheme in downtown Los Angeles for homeless people, designed by Michael Maltzen Architecture.

Containing 97 units in a spiral series that open outwards, the scheme uses an internal walkway on the shorter side of the internal circle to access apartments whose spiral creates a series of privately-oriented windows on the outside of the building. Its location at the end of a freeway on an open block of land, would normally be considered inappropriate for housing, but is used to provide a high-density building for people with emergency requirements and supportive housing. The apartments range in size as they go around the spiral but are looking outwards, using only the internal circle for circulation.

CC18: TIETGENKOLLEGIET STUDENT HOUSING

This scheme in Copenhagen is a similar high-density scheme with outward-looking apartments sitting in a landscaped area where circulation is through either a central corridor that gives access to students facing outwards for privacy, a series of common spaces around the ring as meeting rooms, and common areas facing cantilevered inwards towards the common space. The ground floor is used for housing bicycles, meeting rooms and offices, and the internal courtyard has a series of trees growing up to provide a landscaped space on the inside similar to the outside.

CC19: BIKUBEN KOLLEGIET

Not far away in Copenhagen is a similar student scheme where a series of tightly-packed student rooms are placed around a common core, scaled down to the size of the Carver housing in Los Angeles. The outside of the building has super graphics on the columns that support the openness into the internal courtyard, which has some of the student accommodation requirements facing into it, with a centrally-loaded corridor and apartments facing outwards. The building has a series of panelised arrangements that place windows seemingly randomly on the outside, giving the overall idea of a strong spiral of windows running up through the outside of the building.

Unlike the previous student housing scheme, this facade treatment de-constructs the number of apartments and the size of the building, making it far more of an urban-scaled, singular object, rather than a collection of apartments.

TYOLOGY SB: SMALL BLOCK

The small block apartments are those which are closest in typology to what is commonly understood in Australia as "3 storey walk up red brick flats". These are the schemes which provide a variation on the "block of flats" that was commonly built from the 1950s - 1980s, which can be considered to be the most sustainable building type in Australian cities, although it is reviled for its and blocky form and course appearance. It is sustainable principally because it has a density of above 100 dwellings per Hectare, it has high thermal mass being built in brick with concrete floors, it is naturally cross ventilated, where most of the apartments occur at a corner providing diagonal ventilation without the use of supplementary air-conditioning, and the provision for car parking is either low or discretely under the building and in many cases does not impose site coverage issues. This leads to a building without lifts, without mechanical ventilation, and in many cases having some external landscape area of deep soil which unfortunately is not fully exploited in many schemes.

The investigation in this report was to find alternative variations to this typology that may indicate alternatives to revive this form of block apartment in a form that is more conducive to contemporary understanding of urban form, better planning layouts, and with a greater provision of amenity for contemporary standards.

The collection of these small block apartments were found in 5 cities and can be seen to address different issues within each city.

SB1-SB3: SMALL BLOCKS IN LONDON

Given London's dense forms the sites that are available for small block housing are usually in the form of infill, although some urban regeneration leaves aside larger blocks.

SB1: WANSEY STREET

This scheme is an infill between rows of Victorian houses. The area was heavily disrupted in the 1970s by mass demolitions for tower blocks. Notably these towers have now been vacated and are about to be demolished to reintroduce a form of courtyard and block housing that is more compatible with a Victorian streetscape. Wansey Street is an indication of what this development may look like being a series apartments vertically stacked to give a scale and size that is compatible with the large Victorian mansions and the row housing in the local area. The apartments face into a small rear access courtyard and have internal open stairs that provide ventilation and provide readily identifiable circulation and cross ventilation through the site. The apartment layouts are unremarkable with living areas facing towards the south and the internal courtyard and the bedrooms on the street side. Many of the larger sized houses are 2 storey maisonettes. Never the less the reading of the project is as a whole development broken into vertical sections rather than into horizontal pieces.

SB2: BOURBON LANE

This is an infill area created by the redevelopment of a formally derelict site, the bulk of which is taken with a new Westfield shopping centre. The remaining linear site has been broken into a series of small blocks with small courtyards in between. Similarly to Wansey Street the planning of the apartments is

unremarkable with a stair between each set of apartments allowing for cross ventilation to as many apartments as is possible. By breaking the forms into separate blocks the development does not take on the appearance of a long solid wall rather it is broken into separate sections each with their own private courtyard in between.

SB3: BRAND CLOSE, 77 URBAN HOUSING

These apartments are also infill, however have the advantage of facing onto the large area of Finsbury Park in north London. Similarly to the previous 2 schemes the planning is unremarkable with a central foyer space feeding 4 apartments in the 4 corners of the block in order to aid ventilation and to gain maximum light and ventilation. However distinguished from the previous 2, and indeed the adjacent apartments there is a strong horizontal emphasis in the building, lending a greater reading of its height which seems forced and out of keeping with the local area despite the use of brickwork which is compatible with the local colour schemes.

SB4 - SB7: SMALL BLOCKS IN LILLE

The following 4 schemes are to be found within the redevelopment of Lille in northern France. As previously noted many of these schemes take a row house solution in accordance with the master plan. However in order to increase the density of the housing across the site there are a number of schemes which use a block of apartments form in order to increase the number of smaller dwellings at a frequency in order to increase the density overall. These 4 schemes; L'Irisium, Residence Le Castanea, Residence Eclats de Vert, Residence Le Melezium are all examples of the play of solid and voids in order to deconstruct the usual solid appearance of the building. It would appear that the issue of the solidity of apartments generally has been avoided here by the use of breezeways, external timber decks often screened in timber battening and a change of materials both horizontally and vertically in order to render the apartment blocks closer in form and materials to the surrounding town houses. This variety of materials, particularly the use lighter weight and organic materials for the out door spaces is closer in accordance to Australian practice and appears to be more successful than the hard edge of some of the London schemes.

SB 8 - SB14: SMALL BLOCKS IN SWEDEN

Similarly to the redevelopment area in Lille was the redevelopment of a similar area in the Swedish city of Malmo. And similarly to the schemes in Lille the intention has been to deconstruct the solidity of the usual form of apartments by the introduction of screens, louvers, battens, and various devices to reduce down its visual scale. Never the less the climate in the area does not lend itself to large out door areas or balconies and so the broken forms are still contained a degree of solidity that renders them different to the surrounding courtyard houses and row houses.

SB 16: MOUNTAIN DWELLING IN COPENHAGEN

A scheme that breaks the norms for a discussion of this small black housing is mountain dwelling by BIG Architects. The surrounding sites are developed with a series of fairly conventional block buildings, although BIG Architects have undertaken 2 other radical schemes at VM and 8House. This scheme however is intriguing for it's rethinking of the idea of a solid block by raising it to a slope so that every "apartment" becomes more of a courtyard house with its own private courtyard. The form creates a

"false mountain" hence its title where the stepping of the dwellings provides access to light and to views and creates a trapezoidal form underneath which is taken up by a multi-layered car park. The scheme is thus a combination of apartment block forms and private courtyard forms to create an unusual typology for which no other scheme, not even within BIG's own oeuvre could be found.

SB 17: 8265 FOUNTAIN AND SB 18: COLORADO COURT

These 2 schemes found in Los Angeles are similar to the cross-ventilated apartment forms but are built on a deep plan site requiring apartment designs which are single orientation in a solid block. Never the less, in common with the cross-ventilated apartments studied earlier, the circulation is in open stairwells and open walkways reaching these single oriented apartments. The form of the building remains solid to the outside using timber screens and in the case of Colorado Court a large amount of solar panels as the defining and decorative elements up the walls and reaching over the top of the building.

LESSONS LEARNT

The following are a series of interconnected lessons that have been learnt from the study, that can directly apply to the development of 'low + close' housing projects in Australia.

INTERNAL DWELLING PLANNING

There is an implicit assumption that 'low and close' housing will have a smaller footprint than a detached house and therefore better internal planning, more efficient and flexible internal planning is required to provide the same level of amenity that is available within a large area of a detached home. This was often, but not always the case. The occupation of apartments seems to be less of a concern in most European locations than it is in Australia because the traditional diversity of family types has been understood for a longer period of time. The Australian obsession with the idea of the 'family' home has led to a distortion of the understanding of the type of dwellings that might be necessary.

THE 'NO PLAN' DESIGN

The design of 'low + close' housing is generally more flexible and is open to wider social groupings than the traditional family. An example of how this is viewed differently in European cultures can be seen in some developments designed by BIG Architects in Orestad in Denmark where the apartments have no internal subdivisions whatsoever. This is an extreme version of several schemes where the apartments had few internal subdivisions, but this one had none *at all*, with provision for only a bathroom and connections for a kitchen. This seems an extension of the tradition in Scandinavia for rental apartments being provided as 'bare bones', which allows for the occupants to create internal spaces within the apartment. It is common for long-term renters to provide their own kitchen in this arrangement. This has given rise to a number of kitchen manufacturers in Europe that provide complete knock-down kitchens in modular form at both the low level (such as IKEA), or at a high level (such as Bulthaup).

The tradition that the owner installs the furniture to make the arrangement of the apartment is now extended to the idea that the occupant can create the internal layout by deciding where walls, subdivisions, and so on are provided. An apartment in these developments may be sold on the basis of its area alone and the plan forms may allow for one, two, or more rooms to have direct access to light but for the occupant to decide on the number of bedrooms, living rooms, and so forth, within the design. Now companies like IKEA are turning their attention to the design of partitioning systems for creating subdivisions within the apartments.

In some jurisdictions, plans are limited by occupant occupation numbers, rather than by rooms. In other locations there are no limits to the number of people that can occupy the apartments, therefore it is difficult to gauge the density of people that may be accommodated through this 'undetermined plan' that is provided within the apartments.

This could be a serious challenge in Australia where the size of apartments is dictated by bedrooms, and by extension the area required and even the carparking required or allowed. If we want true flexibility, and possible greater densities, then the limits should change to be based on maximum population numbers not bedrooms.

MAKING PRIVATE COURTYARD HOUSING AT HIGHER DENSITIES

The exigencies of achieving privacy to a large internal courtyard mean that the dwelling form is ideally only single storey. A large area of indoor space (including garaging) is required to create a reasonable sized courtyard, implying a family sized house. The possibilities for the private courtyard as a typology for effective 'low + close' housing is therefore somewhat compromised. Three solutions are postulated from the study:

- Put the courtyard on the roof of a multi storey building (Malmo) (see next lesson)
- Use the courtyard form for 'low and close' for a particular demographic that needs a smaller version of the traditional 'family house' typology in say, a retirement village (e.g. Fredensborg).
- Put all the cars, and pedestrian access, under the dwellings (with small courtyards), thereby allowing them to be closer together at a higher density (Mountain Housing by BIG, in Copenhagen).

EXTERNAL PRIVATE OUTDOOR SPACE ON THE ROOF

One of the basic tenants of all forms of housing in Australia, is that there is some external area, either at ground level with access to soil or at upper levels in a balcony, that provides an additional 'room' not just a narrow external space, as private outdoor space (POS). Many of the projects visited, particularly in colder climates, do not place quite such an emphasis on these external areas, often to the detriment of the scheme. POS in many of the 'low + close' schemes had the POS on the roof areas for better access to sun and light.

ALTERNATIVE METHODS OF HOUSING SUPPLY

The idea of alternative ways of financing housing supply was difficult to ascertain within the 'low + close' typologies. Individual projects were almost all conventional funded with minor exceptions (such as Carver House LA). The only version of PPP that could be observed was where master plans were produced that stressed alternative typologies and alternative groupings which mandated by the state, and then designed and built by a variety of traditional market funders. Three projects have lessons for Australian planning.

- The first was a development area in Lille in northern France, close to the Eurolille cross border development that is a centre for international exchange. This area had 20 different sites set aside, with strong axial arrangements and a scaling of allowable volume to manage both density and solar access.
- A second was a location in Malmö in Sweden on the shores facing Denmark where an extension to the existing city has been conceived as a series of linked villages, which provided a rich variety of solutions within a restricted number of building typologies, liberated by the use of state-funded master planning.
- The third was at Orestad, the development of a new suburb in the north of Copenhagen where new housing developments at higher densities are grouped around a new transport corridor, often referred to in Australia as a transport-oriented design (TOD).

In each of these three locations, there were clear patterns of subdivision established that would allow for a number of different architects to pursue typologies based on a central theme that would lead to a mix of housing types, housing occupation that would be delivered in a coordinated way that would overcome some of the singularity that occurs in developer-oriented houses particularly in Australia.

MORE COMMON COURTYARDS

The common courtyard arrangement gave rise to very remarkable schemes, allowing individualised apartments within a common singular building. This approach, (also used in the linear apartments analysed below), provides an urban design alternative that is not commonly seen now in Australia, although it was once used in schemes such as Wyldefel Gardens in Potts Point.

COMMON COURTYARDS IN LINEAR CROSS-VENTILATION PROJECTS

The most instructive lessons for cross ventilation Australia are contained within the Southern California schemes where a critical re-evaluation of the scheme as a whole has lead architects to design them as singular objects within the landscape, quite often with adjacent high levels of open space, as well as providing individual qualities within the buildings. The tradition of common courtyards and communal space that is evident in these typologies in meanst that the desirability for individuality, which seems to drive a lot of Australian linear projects, is not so evident. This seems counter-intuitive given the idea of the USA as a land of individuals, however it would appear that their housing traditions are far more oriented towards the idea of a communal space in which people take their own apartment, rather than their apartment being one of a row of identifiable terraces or row houses.

The use of internal, bright, open, sky-lit stairwells for access into these buildings provides greater circulation space and greater air movement in this important part of the building. This is different to most Australian cross-ventilated schemes where the stairs have been contained more from the point of view of satisfying the building code rather than as an enjoyable outdoor exercise. It is also notable that this would lend itself to less reliance on the lifts, which are so prevalent within these projects, and have a small part to play in the reduction of energy use within the buildings.

LESSONS FROM SMALL BLOCK APARTMENTS

Three ideas arose from the study of small block apartments:

- break the size of the block into smaller sub blocks to the possibility for a greater number of corner apartments, even though this might raise issues of overlooking, privacy and overshadowing. In larger schemes there are ideas of deconstructing the solid block into more discreet parts which has a vital role in creating greater identity within larger schemes.
- The second lesson concerns the use of materials which are often chosen for their creation of greater depth and shadow in particular the use of batons, screens, louvers and so forth standing off the face of the building to cast shadows or changes in the overall form of the building to create cantilevers at upper levels to once again deconstruct the form and create greater shadow and light.
- The third lesson concerns the reading of the building at both a single block and individual apartment with a couple of notable exceptions greater emphasis is placed on the block as a whole rather than individual identity. This is particularly evident where similar plans may have different sized balconies or different external arrangements in order to avoid a sense of repetition within the building. This repetition is necessary in the larger blocks, such as high rise towers, but in lower buildings a greater diversity across the façade is possible giving rise to a playfulness of the composition at the single building scale, as well as providing individuality to the apartments through the variation of façade treatment.

LESSONS FROM ROW HOUSING PROJECTS

In the northern climates of both France and Sweden, the use of outdoor space is conditioned by two things that are unusual by Australian standards. Firstly, the time during the year in which living outside is far more restricted but, conversely and almost counter-intuitively, it means that that time is more highly valued and the external space is more highly used in those summer months, particularly in Scandinavia. Secondly, there would seem to be far less concern about complete privacy in the houses. This appears to be a result of the greater emphasis on community within these cultures. Taking these matters into account, it would appear that concerns for complete privacy in the private outdoor spaces within Australian terrace housing are not such a demanding factor in the arrangements of European and Scandinavia typologies, or conversely we may have to question the extreme lengths that some schemes go to provide complete privacy, at the expense of a sense of community.

END OF REPORT

REFERENCES (Website)

- World Building Directory
- Architecture Review
- Danish Architecture
- E-Architect
- Modern Architecture London
- ArchiDaily
- MIMOA (Mi Modern Architecture)
- Architects, Architecture, Architectuur
- Arcspace.com
- <http://theloftcompanyla.com/home.asp> (the loft Company)

LONDON

Barbican

http://housingprototypes.org/project?File_No=GB008

<http://modernarchitecturelondon.com/pages/barbican-estate.php>

<http://democracy.cityoflondon.gov.uk/documents/s11480/Appendix%201%20Operational%20Property%20Portfolio%20Report.pdf>

Lillington Gardens Estate

<http://www.westminster.gov.uk/services/environment/planning/conservationlistedbuildings/areaprofiles/lillingtongardens/>

Brunswick Centre

<http://www.building.co.uk/buildings/brunswick-centre-refurbishment-by-patrick-hodgkinson/3074798.article>

Drawings and Plans: <http://www.flickr.com/photos/smallritual/6258805532/>

Container City Docklands

<http://www.containercity.com/projects/container-city-l>

<http://www.shippingcontainers24.com/container-homes/examples/container-city/>

<http://www.theownerbuilder.com.au/articles/155%20Container%20housing.pdf>

http://www.zen17279.zen.co.uk/CCthe_build.htm

Bourbon Lane

<http://www.bcarchitectes.com/en/burbon-lane-london/>

"Bourbon Lane / Cartwright Pickard Architects" 13 Jun 2012. ArchDaily. Accessed 12 Jun 2013. <<http://www.archdaily.com/243155>>

<https://www.educate-sustainability.eu/kb/content/bourbon-lane-london>

Images + Plans: <http://en.urbarama.com/project/bourbon-lane#>

http://www.hdawards.org/archive/2008/complete/bourbon_lane.html

New River Village

<http://www.worldbuildingsdirectory.com/project.cfm?id=850>

Images and Plans: <http://www.worldbuildingsdirectory.com/project.cfm?id=850>

http://www.philipalexander.net/_images/content/new-river-village-1-bed-floorplan.gif

<http://www.hdawards.org/archive/2005/project/newrive.html>

Wansey Street

<http://drmm.co.uk/projects/wansey-street/>

<http://www.themodernhouse.net/sales-list/garland-court-wansey-street-london-se17/description-819/>

Image + Plans :

http://www.themodernhouse.net/resources/16786/wansey_street_london_se17.pdf

Brand Close, 77 urban housing

<http://www.sergisonbates.co.uk/Content/pdfs/2%20Catalogue%20projects/77%20Urban%20housing,%20Finsbury%20Park%20L.pdf>

COPENHAGEN

Bellevue Bay Flats and Houses

Image and Plan Reference: Book: Key Urban housing of the Twentieth Century

Bellavista housing

http://www.deplazes.arch.ethz.ch/dplz_downloads/03_Publikationen/Broschueren/Seminarwochen_DL/SS02_Daenemark.pdf

Soholm Row House

<http://danskarkitekturguide.dk/node/17221>

Book: Key Urban housing of the Twentieth Century

http://www.realdaniabyg.dk/media/49297/arne_jacobsens_eget_hus_klampenborg_uk.pdf

Image and Plan Reference: Book: Key Urban housing of the Twentieth Century

Tietgenkollegiet Student Housing

<http://en.wikipedia.org/wiki/Tietgenkollegiet>

http://www.e-architect.co.uk/copenhagen/lundgaard_tranberg_housing.htm

<http://www.itarkitekter.dk/en/projects/5>

Image and Plan : <http://i.imgur.com/WOO7Z.jpg>

<http://www.dac.dk/en/dac-life/copenhagen-x-gallery/realized-projects/tietgenkollegiet/>

VM – Husene (BIG)

<http://www.big.dk/#projects-vm>

<http://www.archdaily.com/970/vm-houses-plot-big-jds/>

<http://www.emporis.com/complex/vm-husene-copenhagen-denmark>

<http://www.dac.dk/en/dac-life/copenhagen-x-gallery/realized-projects/vm-buildings/>

<http://www.architecturenewsplus.com/projects/821>

IMAGE and PLAN: plans and section comes from the ArchDaily Website

http://2.bp.blogspot.com/-MCT9QTWJUxo/UOPOIOvpyvl/AAAAAAAAABk8/SCjUJyrTx_8/s1600/vmfloorplans-%25E2%2599%259Bmostbeautifulpages.com%25E2%2599%259B.jpg

http://1.bp.blogspot.com/_Dy8txWBQKZU/TLFDNsS_2ul/AAAAAAAAAKE/-lq9Ob3XMVg/s1600/Preceden+Research+Sang+Hoon+Lee-1.jpg

http://1.bp.blogspot.com/_Dy8txWBQKZU/TLFDNsS_2ul/AAAAAAAAAKE/-lq9Ob3XMVg/s1600/Preceden+Research+Sang+Hoon+Lee-1.jpg

Kingo Houses

http://www.stadsbyggnaed.lth.se/fileadmin/stadsbyggnaed/images/student_work/Landscape_and_gardens/Danny_Bridson_-_Courtyard_Housing_Study.pdf

http://www.e-architect.co.uk/denmark/kingo_houses.htm

Image and Plan: <http://relationalthought.files.wordpress.com/2012/02/jc3b8rn-utzon-kingo-houses-near-elsinore-denmark-1956-60.jpg>

<http://relationalthought.files.wordpress.com/2012/02/jc3b8rn-utzon-kingo-houses-near-elsinore-denmark-1956-60.jpg>

<http://stat2.architizer-cdn.com/mediadata/projects/252011/r990x990/7c7394b1.png>

<http://dibujoarquitectonicoetsaun.files.wordpress.com/2012/03/perez-iker-1.jpg>

http://www.greatbuildings.com/buildings/Kingo_Houses.html

<http://images.lib.ncsu.edu/luna/servlet/view/all/who/Utzon,%20Jorn/when/Scandinavian/Modernist?os=50&showAll=where&res=2&sort=PageSequenceNumber%2CFilename%2CTitle>

<http://proyectosalvarosl.blogspot.com.au/2012/09/kingo-houses.html>

Fredensborg House

http://www.e-architect.co.uk/denmark/fredensborg_houses.htm

<http://www.danes.dk/bolig/fredensborghusene/>

Images + Plans: <http://www.dac.dk/en/dac-life/copenhagen-x-gallery/realized-projects/fyrtaarnet/>

8House

<http://www.architecturenewsplus.com/projects/1127>

<http://www.archdaily.com/83307/8-house-big/>

Image : plans and section comes from the ArchDaily Website

http://www10.aeccafe.com/blogs/arch-showcase/files/2011/05/8H_Floor-Plan-Commercial-Level-0_01_1.jpg

http://www10.aeccafe.com/blogs/arch-showcase/files/2011/05/8H_Floor-Plan-Basement-Level-1_01_1.jpg

http://www10.aeccafe.com/blogs/arch-showcase/files/2011/05/8H_Floor-Plan-Apartment-Level-3_01_1.jpg

Bikuben Kollegiet

http://aart.dk/projects/bikuben-student-residence#_node-200

<http://www.kollegieboligselskabet.dk/afdelingerne/bikubenkollegiet>

Image and Plan: http://mortenjust.com/huse/show_house.php?id=464

The Mountain (BIG + JDS)

<http://www.archdaily.com/15022/mountain-dwellings-big/>

BOOK: Total Housing, efficient Alternatives to Sprawl

<http://www.architecturenewsplus.com/projects/825>

Image and Plans: plans and section comes from the ArchDaily Website

<http://2.bp.blogspot.com/-NPQYLVdvfU4/TpbCV6ODAZI/AAAAAAAAABF7M/K-mW8jfpUc/s1600/Mountain+Dwellings+By+BIG+-+Bjarke+Ingels+Group+%252B+JDS+Architects-site+plan.jpg>

<http://moreaedesign.files.wordpress.com/2010/09/diagram.jpg>

Fyrtårnet (The Lighthouse)

<http://www.dac.dk/en/dac-life/copenhagen-x-gallery/realized-projects/fyrtaarnet/>

Nordlyset

http://www.architizer.com/en_us/projects/view/nordlyset-northern-light/1312/#.Ub_DraWGj8s

<http://www.cfmoller.com/p/-en/nordlyset-i1906.html>

Book: New Apartments C3Topic page 076

Flintholm Senior Homes

<http://www.dac.dk/da/dac-life/copenhagen-x-galleri-1/opfoerte-projekter/flintholm-plejeboliger/>

Image and plans:

[http://m.dac.dk/Images/img/1920x1200M/\(25335\)/25335/20071211_111115_tegning_4s_al_FK.jpg](http://m.dac.dk/Images/img/1920x1200M/(25335)/25335/20071211_111115_tegning_4s_al_FK.jpg)

Charlottehaven

<http://www.dac.dk/en/dac-life/copenhagen-x-gallery/realized-projects/charlottehaven/>

Image and Plan:

<http://www.mimoo.eu/projects/Denmark/Copenhagen/Charlottehaven>

BERLIN

Hufeisen-Siedlung (Horseshoe)

<http://www.welterbesiedlungen-berlin.de/en/hufeisensiedlung-genral-information.php>

Image and Plan Reference: Book: Key Urban housing of the Twentieth Century

Siemensstadt Ringsiedlung (ring housing estate)

Image and Plan Reference: Book: Key Urban housing of the Twentieth Century

Weißer Stadt Reinickendorf (white city)

<http://architectuul.com/architecture/white-city-berlin>

http://www.stadtentwicklung.berlin.de/denkmal/denkmale_in_berlin/en/weltkulturerbe/siedlungen/weisse_stadt.shtml

Images + Plan:

http://www.stadtentwicklung.berlin.de/denkmal/denkmale_in_berlin/pix/weltkulturerbe/siedlungen/weisse_stadt_luftbild_800.jpg

<http://www.wilhelm-buening.de/Res/images/AusgefuehrtePlanung.jpg>

<http://www.wilhelm-buening.de/Res/images/P10704181.JPG>

Onkel-Tom-Siedlung

<http://architectuul.com/architecture/onkel-toms-hutte>

AMSTERDAM

Java Eiland Apartments

<http://www.neutelings-riedijk.com/index.php?id=13,51,0,0,1,0>

Book: Housing +Single Family

Wozoco

Book: MVRDV

Book: Housing +Single Family Housing

Plans and Drawings: <http://www.plataformaarquitectura.cl/2012/04/04/clasicos-de-arquitectura-wozoco-mvrdv/>

Silodam

<http://www.arcspace.com/features/mvrdv/silodam-housing-silo/>

Book: MVRDV

http://www.housingprototypes.org/project?File_No=NL012

Image and Plan Reference: Book: Key Urban housing of the Twentieth Century

Parkrand

Book: New Apartments C3Topic

De Citadel

Parkrand

Book: New Apartments C3Topic

Houses on Borneo Sporenburg, Plots 12 and 18

http://www.archiplanet.org/wiki/Houses_on_Borneo_Sporenburg,_Plots_12_and_18,_Amsterdam,_Netherlands

Apartment House KNSM, Java Eiland

<http://javaeilandapartmentbuilding.blogspot.com.au>

Whale Housing

<http://milimet.com/2011/11/the-whale-residential-complex-amsterdam-design-by-de-architekten-cie.html>

Apartments Mauritskade

Image and Plan: <http://openbuildings.com/buildings/luxury-apartments-mauritskade-profile-2909/media#>

Watervillas Almere

http://www.architectour.net/opere/opera.php?id_opera=5022&nome_opera=Water%20villa's&architetto=UNStudio

Plans and Images:

http://www.architectour.net/opere/index_singola.php?contenuto=galleria&id=5022&width=2010&height=1122&tipo=1

Claus en Kaan Architecten

<http://www.clausenkaan.nl/?mn=2&cat=6&lang=en>

Soundwall House

<http://www.nio.nl/wordpress/text-the-cyclops/>

<http://www.homesthetics.net/the-cyclops-in-netherlands-by-nio-architecten/>

Qubic (Student Housing)

<http://www.hvdn.nl/2111/projecten/0342te.htm>

Plans:

http://www.earch.cz/UserFiles/image/2010/clanky/4995/qubic_ubytovna_amsterdam_pud1.jpg

<http://www.hvdn.nl/2111/projecten/0342f4.jpg>

PARIS

Cite De Refuge

<http://www.fondationlecorbusier.fr/corbuweb/morpheus.aspx?sysId=13&IrisObjectId=4593&sysLanguage=fr-fr&itemPos=4&itemSort=fr->

[fr_sort_string1%20&itemCount=78&sysParentName=&sysParentId=64](http://www.fondationlecorbusier.fr/corbuweb/morpheus.aspx?sysId=13&IrisObjectId=4593&sysLanguage=fr-fr&itemPos=4&itemSort=fr-fr_sort_string1%20&itemCount=78&sysParentName=&sysParentId=64)

<http://www.armeedusalut.fr/armee-du-salut/notre-histoire/lieux-de-vie-et-de-memoire/cite-de-refuge-centre-espoir.html>

Plans + Drawings:

http://classconnection.s3.amazonaws.com/489/flashcards/877489/jpg/salvation_army1331253709492.jpg

Hotel Martel

<http://www6.nordnet.fr/mallet-stevens/oeuvre.htm>

Boulevard Belleville

<http://www.fredericborel.fr/projet.php>

http://housingprototypes.org/project?File_No=FRA012

149 Rue des Suisses

http://housingprototypes.org/project?File_No=FRA023

Plan + Drawings: http://housingprototypes.org/images/suisses_22.jpg

Flower tower

<http://www.edouardfrancois.com/en/all-projects/housing/details/article/145/tower-flower/#.UcKBqKWGj8s>

Oberkampf

<http://www.fredericborel.fr/projet.php>

Senior Living Apartments

http://www.architecture-studio.fr/en/projects/paori1/senior_residence.html

Pelleport

http://housingprototypes.org/project?File_No=FRA016

<http://www.fredericborel.fr/projet.php?id=40&p=0>

EURALILLE 2

<http://cargocollective.com/chiani-chappey/EURALILLE>

<http://www.blaq.fr/en>

http://www.architizer.com/en_us/projects/view/24-viviendas-intermediarias-auralille/44497/#.UcOj7qWGj8s

Residence Le Melezium

http://www.archicontemporaine.org/RMA/p-8-Ig8-Residence-le-Melezium.htm?fiche_id=423

Résidence Villas Palissandre

<http://www.ville-amenagement-durable.org/fichiers/eyWVoBo6gz8KBWrUg11A~A.html>

Residence Lille Grand Palais

<http://www.ville-amenagement-durable.org/fichiers/eyWVoBo6gz8KBWrUg11A~A.html>

Residence Le Sophora (Le Bois Habit -Lille)

<http://www.ville-amenagement-durable.org/fichiers/eyWVoBo6gz8KBWrUg11A~A.html>

Residence Le Castanea

<http://www.ville-amenagement-durable.org/fichiers/eyWVoBo6gz8KBWrUg11A~A.html>

Le City Way

<http://www.ville-amenagement-durable.org/fichiers/eyWVoBo6gz8KBWrUg11A~A.html>

Residence Eclats de Vert

<http://www.efarchi.com/indexs.html>

PDF Document: [archicontemporaine.org](http://www.archicontemporaine.org)

Residence Le Vert Bois

<http://www.ville-amenagement-durable.org/fichiers/eyWVoBo6gz8KBWrUg11A~A.html>

Hotel B&B

<http://www.buildingbutler.com/bd/J.-de-Alzua/Lille/hotel-B&B/5534>

Drawing + Plan:

http://www.darchitectures.com/images/articles/680x460/00189_000_E94C2EEA.jpg

Eden Square

<http://www.hondelatte-laporte.com/anglais/projets/euralille/index.html>

Image and Plan:

http://www.wildrabbits.fr/02wrarchitecture/habitatintermediaire/02_logement_nappe_doray_martzolf_michelson.htm

Résidence Le Vert Ebène

<http://www.ville-amenagement-durable.org/fichiers/eyWVoBo6gz8KBWrUg11A~A.html>

L'Irisium

<http://autourdelimage.com/deka-immobilier/lirisium-un-show-room-trendy-et-ecolo-a-euralille-2/>

Centre Europe Azur et Cote Grand Palais

Housing, Office and Commercial Building ZAC Euralille 2

http://www.perraultarchitecte.com/en/projects/2515-housing_office_and_commercial_building_zac_euralille_2.html

<http://www.dezain.net/en/2012/19411>

Le Polychrome

<http://www.emporis.com/building/lepolychrome-lille-france>

<http://www.y-ingenierie.com/fr/nos-references/logements/le-polychrome-lille/lille.pdf>

CALIFORNIA

Garden 1050

<http://www.archdaily.com/23336/gardner-1050-lorcan-o-herlihy-architects/>

Book: New Apartments, C3 Topic

Orange Grove

<http://www.pugh-scarpa.com/projects/orange.grove>

Book: Living Together, Multi-Family Housing Today

Plans and drawings: <http://www.archdaily.com/222860/orange-grove-brooks-scarpa-architects/mezzanine-plan-9/>

1212

<http://www01.smgov.net/planning/arb/agendas/2002/080502/02arb135.htm>

Book: Living Together, Multi-Family Housing Today

Waterloo Heights

<http://home.earthlink.net/~kclasp/waterloo/waterloo.htm>

Bergamot Artist Lofts

Book: Living Together, Multi-Family Housing Today

<http://www.pugh-scarpa.com/projects/bergamot.artist.lofts>

Harold Way

http://www.california-architects.com/en/projects/detail_thickbox/4739

<http://www.emporis.com/building/harold-way-apartments-los-angeles-ca-usa>

Book: Living Together, Multi-Family Housing Today

8th and Howard Apartments

http://www.dbarchitect.com/project_detail/5/8th%20%2B%20Howard%20SOMA%20Studios.html#project_details

Book: Living Together, Multi-Family Housing Today

Colorado Court

<http://www.archdaily.com/89665/colorado-court-brooks-scarpa/>

Book: Living Together, Multi-Family Housing Today

Bronson lofts

<http://www.lawrencescarpa.com/projects/bronson.lofts>

Fuller

<http://www.brooksscarpa.com/projects/fuller.lofts>

Plans and Images: <http://www.archdaily.com/85853/fuller-lofts-brooks-scarpa-architects/>

Cherokee

<http://architectslist.com/cities/Los-Angeles/firms/358-Brooks-Scarpa-Architects/projects/966-Lofts-at-Cherokee-Studios>

Architects/projects/966-Lofts-at-Cherokee-Studios

Plans and Image: <http://www.archdaily.com/41775/lofts-cherokee-studios-pugh-scarpa/>

The Andalusia

Plans + images: From Book, Courtyard Housing in Los Angeles

Villa Primavera

Plans + images: From Book, Courtyard Housing in Los Angeles

Patio Del Moro

<http://felixhollywood.blogspot.com.au/2010/06/patio-del-moro.html> Plans + images:

From Book, Courtyard Housing in Los Angeles

El Pasadero

<http://www.wehoville.com/2012/09/26/see-wehos-14-most-historic-places/>

Formosa 1140

<http://www.loharchitects.com>

<http://www.dezeen.com/2009/03/03/formosa-1140-by-lorcan-o'herlihy-architects/>

<http://www.archdaily.com/16194/formosa-1140-loha-architects/>

<http://www.dwell.com/house-tours/article/formosa-1140-density-la>

Habitat 825

<http://www.loharchitects.com>

<http://www.archnewsnow.com/features/Feature128.htm>

Plans and Drawings: <http://www.archdaily.com/19880/habitat-825-loha-architects/>

Willoughby 7917

<http://www.loharchitects.com>

Plans and Drawings: <http://www.archdaily.com/20089/willoughby-7917-lorcan-o'herlihy-architects/>

Green Mobile Homes

<http://www.mnn.com/your-home/remodeling-design/blogs/green-mobile-home-living-comes-to-santa-monica>

http://latimesblogs.latimes.com/home_blog/2011/03/marmol-radziner-prefab.html

[http://www.greendotawards.com/submit/upload/2007/large/3-307-](http://www.greendotawards.com/submit/upload/2007/large/3-307-11_Green_Dot_Awards_Submission_Final.pdf)

[11_Green_Dot_Awards_Submission_Final.pdf](http://www.greendotawards.com/submit/upload/2007/large/3-307-11_Green_Dot_Awards_Submission_Final.pdf)

<http://www.residentialarchitect.com/affordable-housing/marmol-radziner-designs-affordable-sustainable-mobile-homes.aspx>

New Carver Apartments

<http://www.mmaltzan.com/projects/new-carver-apartments/>
Images and Plan: http://www.architectmagazine.com/Images/tmp55CC.tmp_tcm20-372450.jpg

OPCC Homeless

http://www.surfsantamonica.com/ssm_site/the_lookout/news/News-2007/September-2007/09_07_07_OPCC_Homeless_Access_Center_Opens.htm
http://www.opcc.net/Portals/1/PDFs/OPCC_News_Dec07.pdf
Plans and drawings: [http://aia-awards.com/AIACC/gallery/projDisplay.php?RECORD_KEY\(ProjectInfo\)=id&id\(ProjectInfo\)=623&page=10](http://aia-awards.com/AIACC/gallery/projDisplay.php?RECORD_KEY(ProjectInfo)=id&id(ProjectInfo)=623&page=10)
<http://aia-awards.com/AIACC/gallery/projDisplayTxt.php?page=10>

7 Fountain

<http://www.7fountainsapartments.com/map.html>
http://www.bidkw.com/files/uploaded/auction_91_115.pdf

Isola Bella Townhome Apartments

http://www.isolabellaapartmenthomes.com/unit_details.html?unit_id=1212004

8265 Fountain

http://la.curbed.com/archives/2009/06/development_du_jour.php

1201 Cabrillo Ave

http://www.flickrriver.com/photos/michael_locke/sets/72157626272100903/

Ak Live and Work

<http://la.condodomain.com/AK-Live-Work>
<http://www.santarchitects.com>

Electric Avenue Lofts

<http://thecondoshowroom.com/la/venice/electric-avenue-lofts/>

1212 Abbot Kinney

http://www.toplacondos.com/condo/building_det.php?id=425&inc=1
http://www.equinoxarch.com/pages/abbot_kinney_lofts.html

City Lofts

Plans: http://www.wadamsarchitects.com/multifamily_citylofts.html

MALMO

General

http://www.malmo.se/download/18.d8bc6b31373089f7d980008924/greenspacefactor_greenpoints_grabs.pdf
<http://www.malmo.se/download/18.7101b483110ca54a562800010420/westernharbour06.pdf>
<http://www.malmo.se/download/18.af27481124e354c8f1800015973/Flagghus+broschyr+ENG+tryckkv.pdf>
http://www.malmo.se/download/18.4a2cec6a10d0ba37c0b800012615/kvalprog_bo01_dn_eng.pdf
<http://www.malmo.se/English/Sustainable-City-Development/Bo01---Western-Harbour.html>

http://www.malmo.se/download/18.3101c0911206abdf07380001750/GuideVastraHamnen_EngelsktOriginal_Web.pdf

<http://www.malmo.se/English/Sustainable-City-Development/PDF-archive.html>

<http://www.malmo.se/Medborgare/Stadsplanering--trafik/Stadsplanering--visioner/Utbyggnadsomraden/Vastra-Hammen-gammal/Bo01/Hus/Huskarta.html>

<http://www.malmo.se/download/18.d8bc6b31373089f7d9800023682/Current+urban+dvelopment+V+H+2012+eng.pdf>

Sodertorpsgarden

<http://www.bizzbook.com/map/sodertorpsgarden.html>

<http://www.bizzbook.com/hamnen/nyheteraugusti2003.html>

Scaniaplatsen

http://www.malmo.se/download/18.5d8108001222c393c008000142396/fb21_nccscaniaplatsen_final.pdf

Kajpromenaden

<http://www.nyrens.se/projekt/kv-salongen-bo-01-malmo>

http://www.malmo.se/download/18.5d8108001222c393c008000142405/fb30_wihlkajpromenaden_final.pdf

Friheten

http://www.malmo.se/download/18.5d8108001222c393c008000142374/fb_total_webb_final_070122.pdf

Vitruvius

http://www.malmo.se/download/18.5d8108001222c393c008000142388/fb13_jmvitruvius_final.pdf

Tegelborgen

http://www.malmo.se/download/18.5d8108001222c393c008000142395/fb20_mkbtegelborgen_final.pdf

Tomt nr 10

<http://www.bizzbook.com/hamnen/allanyheter.html>

Townhouse

http://www.malmo.se/download/18.5d8108001222c393c008000142374/fb_total_webb_final_070122.pdf

Framtidshu 1

Framtidsstaden II

Villa

Packhus I-IV

<http://www.karneback-architects.com/content/packhus-1-6>

Villa Yxhult

<http://www.byggpaket.se/>

Studeum

<http://www.arkitekt.se/s8737>

http://www.malmo.se/download/18.5d8108001222c393c008000142374/fb_total_webb_final_070122.pdf

M3

<http://www.wikeborg.se/utmarkelser/studeum-hsb/category/23>

Hytten 4

<http://www.10.aeccafe.com/blogs/arch-showcase/2012/01/05/kv-hytten-in-vastra-hammen-malmo-by-metro-architects/>

<http://www.metroarkitekter.se/projects.php?catid=98418>

<http://www.architecturenewsplus.com/projects/2567>

<http://www.world-architects.com/en/metro/en/projects-3/hytten-32163>

Trahus 2001

http://www.malmo.se/download/18.5d8108001222c393c008000142404/fb29_skanskatrahus01_final.pdf

Tango

<http://www.moorerubleyudell.com/projects/tango-bo01-exhibition-housing#>

http://www.malmo.se/download/18.5d8108001222c393c008000142374/fb_total_webb_final_070122.pdf

<http://www.archnewsnow.com/features/Feature34.htm>

<http://www.moorerubleyudell.com/publication/innovation-sustainable-housing-tango>

Havslunden

http://www.malmo.se/download/18.5d8108001222c393c008000142374/fb_total_webb_final_070122.pdf

Entrehuset

http://www.malmo.se/download/18.5d8108001222c393c008000142374/fb_total_webb_final_070122.pdf

Vintertradgard

Salongen 35

<http://www.designboom.com/architecture/kjellgren-kaminsky-architecture-salongen-35/>

http://www.malmo.se/download/18.5d8108001222c393c008000142374/fb_total_webb_final_070122.pdf

Drawings and Plans: <http://www.archdaily.com/228453/salongen-35-kka/floor-plans-165/>

<http://www.designboom.com/architecture/kjellgren-kaminsky-architecture-salongen-35-passive-houses-malmo/>

Sundsblick

http://www.malmo.se/download/18.5d8108001222c393c008000142400/fb25_riksbsundsblick_final.pdf

Kajplats 01

http://www.wingardhs.se/php/files/attachements/Kajplats_01.pdf

<http://www.wingardhs.se/php/flash.html>

Steglitsen

<http://www.damanco.se/Referenser/HallbartByggande-original-webb.pdf>

Havshuset

http://www.malmo.se/download/18.5d8108001222c393c008000142402/fb27_skanskahavshus_final.pdf