EVALUATING DESIGN CAPABILITIES IN MEDIUM DENSITY INFILL HOUSING IN NEW ZEALAND THROUGH ANALYSIS OF ENTRIES TO A RECENT COMPETITION

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ABSTRACT

The profile of New Zealand housing has for some time been dominated by the standalone suburban house. However, this pattern absorbs considerable land resources and leads to socially stagnant environments that are heavily dependent on private motorcars. For these reasons the largest cities in New Zealand have declared limits to peripheral growth. Such limits, coupled with changes in lifestyle, lead naturally to intensification of existing residential areas. Urban planning and design objectives that underpin residential intensification are sound – greater densities can provide for improved social opportunities, bolster economic circumstances to enable a greater range of services to be offered, and make better use of existing physical infrastructure. However, experience shows that the built outcomes are patchy, and that many infill projects fall short of meeting expectations for on-site amenity, and/or appear to be at odds with the character of the surrounding area.

In late 2005, Housing New Zealand Corporation organised an architectural design competition for comprehensive redevelopment of a large site in the Auckland region. Research was conducted on the basis of this representative cross section of designers, with the aim of evaluating achievement by New Zealand designers in terms of residential amenity and its suitability to the surrounding context.

A review of literature, including the design brief and a number of design guides for infill housing, bring forth the criteria addressing key urban design and architectural amenity issues specific to medium density housing. The criteria were used to assess the entries using a five point scale. The methodology generates data that is used to compare entries, and analyses relative strengths and weaknesses seen across all schemes. The results provide a snapshot of contemporary practice in New Zealand, suggesting where strengths and weaknesses lie with respect to planning and design of medium density housing.

Key words: *Social housing, medium density housing, design competitions, New Zealand*

1. INTRODUCTION

In future years, due to population growth and pressures on available urban land, many people will be living closer together than in the past. At the same time, the floor space of the average dwelling is expected to grow in size. Apartment and townhouse living is part of this trend…..the challenge for central and local government, together with the building industry, is to meet the shortfall with good quality medium density housing.

Throughout its history the predominant type of housing in New Zealand has been the detached, single family dwelling. A house on a quarter acre [1,012 m^2] section came to symbolise all that attracted early settlers to the country – expansive countryside, opportunities for home ownership, and opportunities for self determination. There can, however, be little doubt that New Zealanders will be living closer together in the future, with factors leading to changes in the supply and demand sides of the housing market. On the supply side, medium density housing [MDH] provides developers with economies of scale that are not possible in low density development scenarios. This is particularly relevant in the New Zealand marketplace as government takes a largely hands-off approach to development. As local governments act to curtail endless sprawl, the supply of cheap land in peripheral areas will quickly dry up. To accommodate the higher value of land closer to urban centres and yet try to keep new housing affordable, developers are driven to build more intensively. Experience shows that this often leads to tensions, as intensive infill development puts pressure on urban and on-site amenity levels as well as the ability to fit with the grain and character of the surrounding development. Demand for housing close to established urban centres is increasing despite the aforementioned attraction to the suburbs, as New Zealanders come to realise the benefits of urban living with the wide range of activities and services on offer. Until feeling the effects of the recent economic downturn, demand for inner city apartments had climbed to unprecedented levels.

Pressure to consolidate existing urban areas is also exerted at a societal level through national and local government. Although not unanimous in favouring compact cities [see Vale and Vale for a contrary view], research suggests that living more densely can lead to more sustainable outcomes. Critics of suburban lifestyles have argued for some time that higher densities enable key infrastructure, particularly public transport, to be used more effectively. Higher residential densities also enable valuable rural land to remain productive. While prevailing theories suggest that compact places offer opportunities for people to connect with each other and with key services, other theories have argued that affordability of housing diminishes and places become socially stratified when they are redeveloped to higher densities.

Bunker et al question whether consolidation can meet the needs of an increasingly socially diverse population, given that much of the housing is produced with little understanding of who will eventually occupy it. On balance though, many local authorities within New Zealand have committed to strategies and policies that will see residential uses in their jurisdictions intensify. Residential intensification is a cornerstone of the growth strategy for the Auckland region with medium density housing forming a major platform in that vision.

While central and local governments loathe becoming involved in development and construction activities, there is the expectation that transformation to higher residential densities will be led by private interests on an infill basis. Over the years, the quality of medium density infill development has been mixed and it is clear that the marketplace cannot itself determine acceptable standards of development. Two significant areas of concern are the way the infill development fits with its surroundings and amenity standards for the residents. Indications are that New Zealand society struggles to accept housing at densities over 30 dwellings per hectare, which in this context is the lower threshold for MDH. These matters are representative of the tussle that takes place in private enterprise driven by the [largely financial] interests of the developer and those of local residents as well as those who will eventually come to live there. As most such development is done for the rental market or on a speculative basis, these stakeholders are generally not represented in the process.

This presents a number of challenges to designers and developers, particularly in light of the prevailing planning requirements. Planning instruments are rarely based on aspiration alone, and are generally conceived in a manner that limits adverse effects of development on the receiving environment. To limit developer risk, infill projects tend to be designed within the limits set out in the planning framework, which generally references prevailing forms and densities of detached housing.

The visual character of the built environment derives from many sources, but those relevant in a discussion around infill residential development include the grain and scale of buildings, architectural style, and form and landscaping. Land ownership is widespread in New Zealand and this can often frustrate efforts to amalgamate residential sites in order to allow larger developments. Provision of on-site amenities such as access to ground level outdoor space, privacy and even dwelling floor space is often challenged as developers seek to optimise returns on sites that are often too small to allow for economies of scale. Private outdoor space is most often the casualty when designers are faced with accommodating the interests of developers, planning regulations, and the motorcar. A particular manifestation of this trend can be seen in fig 1, where the ground plane of a recent development is dominated by hard paving and garage doors.

As the vast majority of housing in New Zealand was created after motorcars became common, providing for them has limited the forms of housing available in the marketplace. In their study of medium density housing, Turner and his colleagues identified four different layout types, with

Figure-1: A recent five unit development in a suburban area of Wellington showing the dominance of paving to accommodate the motorcar.

classification determined by the relationship between the dwelling and car storage. Their dwelling types 1, 2 and 4 each assume garaging internal or immediately adjacent to the dwelling and therefore secure. Only type 3 in their study, associated with schemes of higher intensity, is based on car parking located remotely to the house. This form of housing develops aggregated areas of car parking that help to reduce the extent to which car parking impinges on open space within the site. In the end, the study observes that traditional forms of housing are used in compacted versions for medium density schemes, to the extent that most projects are seen as forms of 'compacted suburbia'. They argue that this limits long term viability because these approaches cannot accommodate changing demographics, environments and contemporary lifestyles in society, and go on to argue that other forms of housing, particularly those pitched at medium density levels, are needed.

2. A NATIONAL COMPETITION FOR THE DESIGN OF MEDIUM DENSITY HOUSING

Housing New Zealand Corporation [HNZC] is the largest owner of residential properties in the country and provides housing assistance to a broad range of people. The majority of the housing stock owned by HNZC is in low-density suburban settings. These houses are increasingly unsuited to the cultural and social needs, as well as the family structures, of their client base. Recognising that different housing models are needed, HNZC announced a design competition in 2005 to coincide with the centenary of the first state sponsored house to be built in the country. The competition brief sought innovative solutions to the needs of large, multigenerational families that would also be better suited to the diverse ethnic backgrounds of residents. Competitors would not only need to ensure that their designs were innovative but also demonstrate compliance with general urban design requirements, specifically those triggered by infill medium density housing.

The competition was seen by the author as an opportunity to gain understanding about the capabilities of architects and designers in this area of work. The research addresses two aims, the first of which is to determine the extent to which new MDH typologies are proposed. Secondly, the research aims to identify areas of strength and weakness in the abilities of architects to design medium density housing. The paper describes methods that were used to evaluate the schemes and discusses key findings in relation to the design qualities of the competition entries. Design proposals were evaluated in terms of overall site planning, residential amenity levels provided for within the site, and the relationship of each scheme to its surrounding context.

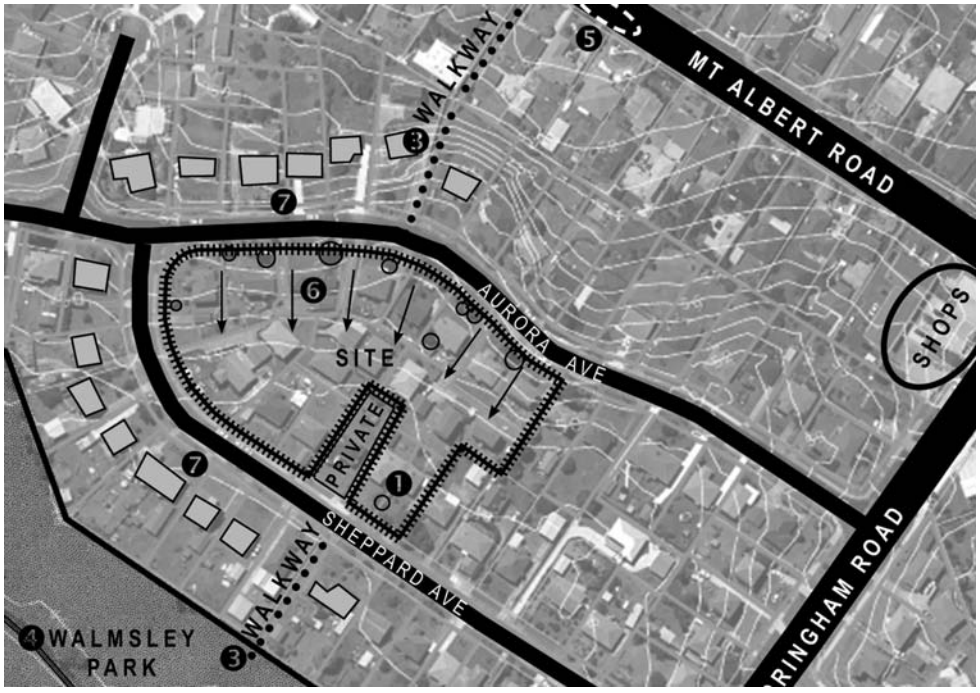

Figure-2: Site plan from the competition brief, showing its relationship with surrounding features.
Key: 1/ Large Trees 3/ Connections between Walmsley Park, the site and Mt Albert Road shops
4/ Open space 5/ Bus stop
6/ Sloping site 7/ Street edge of single storey houses at common setback

Figure 2 shows a plan of the competition site in its context, the Auckland suburb of Sandringham. Although the competition sponsor sought new ideas for social housing, because of their intentions to eventually implement the project the brief was firmly grounded in the pragmatism of local planning controls. Complying with the planning controls may have constrained the extent of 'blue sky' thinking by designers in comparison with opportunities available in more open, ideas based competitions but this has served to enhance the relevance of the proposals to the study reported here. Residential density limits, which envisage 300m^2 of land available to each dwelling unit would see the site able to support up to 30 dwellings. At such a density [33 dwellings per hectare] the project would sit at the lower threshold of medium density housing as defined for the New Zealand context while in many other places it would be seen as low. Although the site was seen as a significant opportunity to develop infill housing, it also contained 19 detached houses in good order that the brief assumed would be removed. The economic and environmental costs/benefits arising from this scenario were not discussed in the brief, nor are they discussed in this paper. The matter is however, relevant in a wider discussion around the sustainability of site redevelopment practices.

Other key design attributes required by the local planning authority included the provision of a minimum area of 35 m^2 private outdoor living space for each dwelling and accommodation on the site of at least one motor vehicle per dwelling plus visitor car parks. Competitors were provided with a document specifying urban design outcomes . This brief was written in very specific terms, discussing mainly matters internal to the site with only a cursory reference to how the project might relate to the wider setting. While this brief may have been useful to designers, its use in this research would have limited evaluation to a simple checklist process. The urban design brief was considered during the process of developing an analytical framework, outlined below.

The organisers received over 100 entries to the competition, with a number of these prepared by students as part of their coursework. 71 entries from practicing architects and designers were then passed on to the author for analysis.

3. EVALUATION FRAMEWORK

Referring back to matters that challenge uptake of medium density housing in New Zealand, the research was conceived to evaluate the effects on the area surrounding the site as well as on the common areas and spaces within the development. Notwithstanding initiatives by the competition sponsor to develop larger dwellings to suit their client profiles, the literature does not raise concerns with standards of accommodation in the dwelling units within medium density schemes. Indeed, Bentley reminds us that during development undue emphasis is placed on the building, as it is the architectural object that becomes the saleable commodity. As a consequence, he and others argue that spaces between buildings are at risk in the development process and particularly in scenarios of residential intensification. Accordingly, the framework was developed to consider factors that affect the quality of spaces between buildings, those that will be used privately as well as those in common usage.

The first of the three strands into which the framework [Table 1] is arranged is that of planning and site layout. To enable residents and visitors to comfortably, and even by chance, enter onto the site from surrounding streets and the walkways linking to schools and parks, the layout of the circulation routes should relate logically to one another. Indeed, urban designers will argue that the spatial network should be considered before all others, with the areas 'left over' being those available for building upon. Benefits that arise through appropriate planning of linkages beyond the site include changes in patterns of local car usage. The second strand in the framework is developed around the architecture. Rather than considering the merits of a design in isolation, evaluation here considers relationships between the built forms and the surrounding environment, as well as the spaces within the development. This line of inquiry is triggered by observations that medium density housing is often seen to fit poorly amongst its surroundings, particularly in areas that exhibit patterns of low residential density. Factors affecting compatibility can be perceived along a continuum of scales from overall massing and articulation of forms to materials and even colour. In addition, the architectural arrangements can influence amenity levels available to residents on site. Not only does the shape and design of buildings affect the quality of common areas, but arrangements determine opportunities for privacy between spaces, as well as opportunities to enjoy the sun or to shelter from the weather.

The final strand of the framework relates to the design of common and private areas within the development and considers mainly the levels of amenity these offer to residents. Clearly there are close links here with the design of buildings, as stated above. Some factors invite measurement, such as the quantity of private outdoor space provided, but as densities increase qualitative factors become more important.

It is also recognised that perceptions of amenity are informed by culture [including factors of age, gender, and ethnicity, among others] as well as circumstances [urban vs. suburban context, family size etc.]. Many design guides in use today can be traced back to the seminal *Housing as if People Mattered*. That text discusses in great detail most of the issues included in this framework and particularly matters relating to residential amenity. Of key importance amongst these are the matters of privacy and spatial quality of the private outdoor spaces associated with individual dwellings. People can often feel trapped within their own homes if sufficient levels of privacy are not available when using their outdoor areas, with overlooking from adjacent buildings offering the most significant compromises. However, for expediency rather than to suggest they no longer apply, many of the more detailed criteria proposed by Cooper Marcus and Sarkissian have not found their way into this assessment framework.

4. FINDINGS

Based on the analytical framework, a pro forma scoring sheet was developed for use by the research team. Each entry was scored using a five point scale for each of 67 individual criteria. The scoring method adopted the scheme developed by Reeve et al. in their analysis of contributions made by heritage projects to townscape quality. That analysis provided for scaled scoring of qualitative attributes by different people on the basis that each one has expertise and experience in the field of inquiry and that calibration of scoring takes place before the exercise commences and proceeds. The benefits of scoring by different people include reduced timeframes and robustness of the scores. In this case the author/principal investigator is an architect and urban designer experienced in assessing medium density housing development proposals. The other two members of the team were final year architecture students. After spending time discussing and agreeing the assessment standards each investigator reviewed the projects independently. The three would re-convene at regular intervals to discuss scores and agree the final mark for each competition entry. It was considered that single scores would provide clearer distinction between entries when analysing the results.

The scores were entered into the database and statistical analysis software package SPSS™. As well as facilitating analysis of scores in individual criteria, use of this tool enabled new variables to be created by aggregating combinations of individual scores. Variables aggregating several scores were considered to supplement analysis of the individual scores by providing a more comprehensive picture of performance in areas that may be affected by more than one criterion. It can also be noted that aggregation of scores was undertaken to stretch the scoring in order to provide greater distinction between projects. Conceptually, the better projects would score well in a number of individual areas so that when combined to create an aggregate variable they would stand apart. This objective was met for the most part at the top and bottom of the aggregate scores. However, there was also a tendency for the majority of projects in the middle to creep towards the median.

4.1 Site Planning

The site is currently subdivided into traditional allotments and is therefore impermeable to movement through it. The brief required a connection through the block, recognising the opportunity for this project to foster links between surrounding recreational spaces, shopping facilities and public transport services along two well established mid block walkways [refer back to fig 2]. In addition, to accommodate motorcars and provide access to dwellings not facing onto the public streets around the site, it was anticipated that a network of roads and walkways would be

Table 01: Design Assessment Criteria

PLANNING & SITE LAYOUT	BUILDING DESIGN	PRIVATE & COMMON AREA DESIGN
Connections, within and beyond site Spatial quality of movement channels Provision for motorcar Relationship to topography Perceived denstiy	Massing Street rhythm Sense of address Materials compatibility Relationship to public space - within and around site Privacy Orientation	Privacy Shelter from elements Orientation [sun and views] Accessibility - Private outdoor space Landscape treatment Availabe area Location of private car parks Robustness [materials & detail] Sigh lines - CPTED

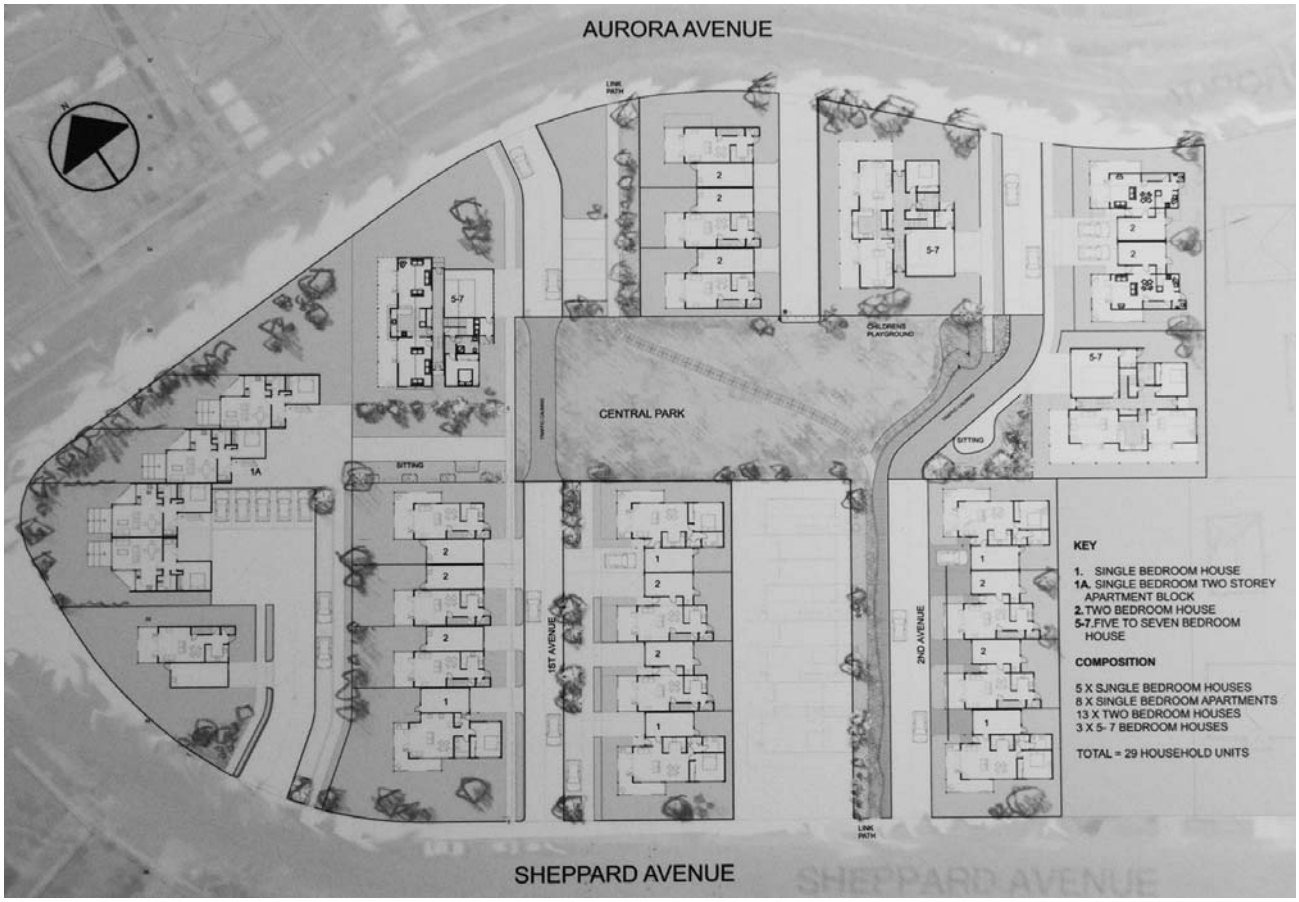

Figure-3: Entry No 70, which scored very well for connectivity through the site. The designers provide for enhanced legibility and choice in routes between Sheppard Avenue and Aurora Avenue. The western pathway is shared between vehicles and pedestrians.

needed within the site. Evaluation considered the layout and legibility of routes and relationships these develop with surrounding features.

Nearly all schemes provided a means by which pedestrians [at least] could find their way between buildings. Surprisingly, two schemes offered no such possibility. Another 13 designs provided poor connectivity through the site, with the main factor leading to this being poor legibility. In these projects there was a sense that visitors would have trouble finding their way to the houses and through the site. It was anticipated that a link across the site would not only benefit residents of the development but serve to welcome the public through. Fully 20% of the entries would make this difficult to achieve. The median score for connectivity was 3 [on a scale of 5] and the results mapped to a classic bell curve. 10% of the entries excelled in this category with the most successful schemes developing at least one shared space driveway as a highly legible connection. Although not based entirely around shared surfaces, entry no 70 [fig 3] offers choice to pedestrians and drivers, and these routes conveniently link the two endpoints of walkways along clearly delineated and unquestionably public pathways. People not familiar with the site would be drawn to the large open space in the centre.

Planning for motorcars often leads to large, paved expanses, and to mitigate poor visual outcomes many schemes adopted shared space designs and attempted to break up the paved surfaces by utilising a variety of materials. The introduction of landscaping to these areas also proved successful. Schemes that separated building entries and the more public side of buildings from driveways stood out positively. The schemes were scored in six areas to determine achievement of planning the site for cars. The criteria considered amenity for drivers and owners of vehicles [connection, parking provisions] as well as the impacts that cars would have on residential amenity generally [separation distances from main living rooms and outdoor spaces]. With 30 marks on offer, the actual scores ranged between 7 and 29. It was somewhat

Figure-4: Site plan proposal by Entry No 3. The central driveway is the only form of common open space in the scheme and is poorly developed for people.

disappointing that the mean score fell to 63% and only 11% of the schemes could be classified as excellent, achieving better that 80%. The schemes at the bottom of the scoring tended to allowed the car to dominate the site and caused immediate curtailing of the individual dwellings.

Spatial qualities of common areas were evaluated in terms of dimension, opportunities for views, orientation to receive sun, extent of landscaping, and robustness of the materials. In all, seven criteria were used to create an aggregate score for a scheme's spatial qualities. The results were generally positive and it reveals that most designers made serious attempts to go beyond simply arranging the buildings onto the site and to create meaningful outdoor spaces. In a somewhat interesting result, Scheme 3 [fig 4, which will be discussed as the eventual winner of the Judges' Award] scored near the bottom 4% of this category. This result can be attributed to poor development of the only common area within the site, a long driveway shared space extending across the site in an east/west direction. Although many of the new houses gain access from the drive, it does not include landscaping of any substance that could help limit perceptions of hard surfaces. In analysing the results, the researchers considered that in a different, more urban context, the scheme might be better suited. This typified the proposals at the bottom end of the spectrum; where driveway areas were not designed to be places for people to use, the quality was revealed to be lower.

Evaluation of overall site planning achievement took in 16 individual scores addressing matters such as the motorcar and connectivity, which have been discussed above, as well as the approach taken to a sloping site and how landscaping was used to define and enhance outdoor spaces. This aggregate variable reinforces the tendency for scores to move toward the average, with only four projects scoring above 80% of the marks available. On further analysis these scores were found to have a strong relationship with the scores achieved for the connection variable. The most successful schemes appear to provide integrated spaces that work well for pedestrians as well as for cars and which can be used informally for recreation purposes, fitting with the notion of shared movement spaces outlined in the *Manual for Streets*. Statistically stronger links were observed between scores for site planning and those for spatial quality. This may reinforce the notion that successful site planning is not simply about making appropriate connections in two dimensions but that it is critical to also develop common areas spatially, by manipulating the built form as well as the landscaping treatment and details/textures.

4.2 Building Design

Turner et al. have described how MDH development in New Zealand tends to result in compacted forms of suburbia. With a dwelling density of less than 33 units per hectare it was unlikely that this competition would explore new building typologies, and this expectation was confirmed in the analysis of schemes. Most adopted variations on suburban two storey dwellings, sometimes attached in plan but rarely in the vertical dimension. One scheme stood out for adopting the typology of the Star Flats, popular housing blocks of the 1950s-60s comprising of four dwellings on each level over three floors, but this approach also landed that entry at the bottom of the character assessment category. The character criterion, a composite of scores for building massing, rhythm and relationship of materials/forms to the surrounding context, considered the schemes in relation to a fairly nondescript, low density of suburban development. Fitting with the neighbourhood is important, as the literature suggests that lack of architectural compatibility is a major barrier to acceptance of medium density housing in the country today.

Several entries were highly placed in the character category with Entry 92 amongst the group. This scheme [fig 5] would introduce vibrant colour into the neighbourhood while the forms, rhythms and spaces between buildings help the project fit well with the neighbourhood without emulating any existing style. This epitomises theories surrounding contextual fit, which promote contemporary expression in a manner that does not grate with the surrounding grain and

texture. While this entry scored particularly well, 24 of the 71 entries scored 10 or more out of 15 points possible. A common thread in all these schemes is the compacted suburbia approach. These results, which rate compacted suburbia positively in this typically suburban context, may also suggest its validity, at least during early periods of transition from low to medium density, to help defuse resistance from neighbours.

Three entries opted to keep some of the existing buildings on the site, a strategy that saw each of these projects score near the top of the character category. One of these stood out in particular, Entry 3 [fig 4], which also won the competition's Judges' Award. This scheme was the only one out of the 71 that developed ideas around time, the fourth dimension. The presentation projected a timeline over which full redevelopment of the site could occur, and provided several snapshots during the process. The premises driving the scheme are those of *flux* and *flexibility* of implementation and use. The designers argued that smaller houses on adjacent sites would suit current demand for one and two bedroom dwellings and in the future these could be combined into larger dwellings, should demand change [as is anticipated]. A key aspect of their strategy was to retain some of the existing buildings, allowing for them to be added to. The scheme proposed intensification by way of strategic replacement, allowing for less disruption in the wider neighbourhood. Interestingly, this entry scored in the middle of a range of amenity related criteria, such as building design and those related to private open space as well as the common spaces around the site. In relation to other schemes this one has worked creatively to allow for a flexible process of implementation and use, working with many of the existing dwellings but perhaps compromising on the potential for residential amenity.

New Zealand designers are renowned for skill in developing domestic scale projects and this programme appeared to be written to foster innovation in housing design. The proposals did not appear to offer innovation in typology as competitors worked with known typologies, manipulating them to fit site constraints and enable their architectural aims. In the formal judging, Entry 13 was the winner of Housing Design Award. This research did not place this scheme above others, indeed it only achieved in the 28th percentile for *architecture* and the 30th percentile for the *building design* categories. This can be explained by the fact this research is developed around criteria for and assessment of the relationship between buildings and the spaces that surround them, these factors influencing public amenity. As such, the issues of relevance are how dwellings relate to the public street, the extent to which habitable rooms overlook public space, and the dominance of garages. Entry 13 provided one of the more stimulating interior living environments and appeared to be deserving of the award; however the layout and captivating three-dimensional configuration did not enable a high score in this research.

Figure-5: Bird's eye sketch of Entry No 92, which proposes a contemporary intervention that that also connects with the surrounding housing stock and site development.

Failure to include criteria for assessing the internal living spaces was seen initially as a shortcoming in this exercise, however on reflection it was not considered to affect the quality of the research. Indeed, design guides and other literature [see Cooper Marcus and Sarkissian for instance] spend a few pages discussing internal room arrangements, sizes or relationships between these spaces. It is the relationships forged between interior spaces and the private and public spaces around them that appear important. Accordingly, the criteria used in assessing the building design proposals have not necessarily acknowledged the matters that extend good urban and amenity planning into the realm of good architecture, and this may help explain where these results vary from other judging outcomes.

4.3 Outdoor Amenity

As residential densities increase and tensions arise in planning the site for buildings of requisite saleable amenity, the motorcar, and outdoor space, it is often the quality of outdoor space that suffers. The scores for overall design of private outdoor space range from 23 to 41 [out of a maximum of 45 points] with one student project outlier at 9. The mean score sits at 72% and all except the outlier achieved passing scores of more than 50%. Analysis of those at the bottom of the range reveals that they were done in by poor scores for *privacy* of the outdoor spaces associated with dwellings. Privacy is a two component aggregate variable that takes

into account the extent to which outdoor spaces can be overlooked from other units as well as how effectively they are screened from adjoining outdoor spaces. A wide range is revealed with the median score sitting at 60% and 30% of all entries failing with scores below 5 [on a 10 point scale]. Another 10% of the entries sat on the barely passing score of 5. Is this simply an oversight by the designers or could poor privacy design be a consequence of a lack of empathy with the way outdoor spaces might be used in denser residential arrangements? While the question cannot be answered in this research, it does suggest that further investigation is warranted.

Scores for *orientation* of the outdoor spaces, taking into account how they are arranged for solar access, outlook, and shelter from prevailing weather, are much more positive. Here, the mean score is approaching 75% and 90% of the schemes scored 10 or better on a 15 point scale. These results suggest that designers are tuned in to the need to arrange buildings and spaces to allow for comfort in relation to known physical influences but find it more difficult to anticipate how amenity may be compromised by other residents. Good design is about finding a suitable balance between a number of influences, and there appears to be a need to provide some guidance on privacy design in medium density housing.

The outdoor space qualities can also be compared to achievement in other areas, to gauge whether one design aspect suffers in relation to others. As noted earlier, the relationship between designing for the motorcar and overall site planning is very closely linked. There is also a significant, if not as strong, relationship between site planning and design of private space that reinforces the notion that good outcomes begin with a solid plan for the site. Private space amenity is not necessarily one that can be added, if the structure is not in place to provide for it. Even though outdoor spaces are not articulated in the initial layout, they should be anticipated so that ability to plan quality private spaces is not limited fundamentally. From this it also follows that good site planning practice considers a range of scales and detail before the plan is finalised.

5. CONCLUSIONS

Responding to a number of factors, there is an increasing need to implement housing more intensively in New Zealand cities than has been done in the past. This is leading into what will be a period of transition in most places, as sites are redeveloped to make better use of the land resource and infrastructure. Barriers to medium density housing in the largely low density residential neighbourhoods of New Zealand cities include difficulty in amassing large sites, onerous requirements for accommodating motorcars on sites, low neighbour tolerance to change and a planning context that appears to have more to do with limiting effects than enabling strategic change. The predominant response has so far been a form of ‘compacted suburbia’.

In 2005, Housing New Zealand Corporation invited entries to a competition to design up to 30 dwellings on a large suburban site. An analysis of the entries was undertaken to firstly identify any new typologies of medium density housing and secondly to understand the capabilities of New Zealand designers in this housing format. The competition did not generate any new housing typologies. The organisers sought innovative designs to meet contemporary needs of social housing tenants. However, the otherwise pragmatic nature of the brief may have limited the extent to which designers could generate radical solutions. By observing the maximum density limits implementation of the winning scheme would be more feasible; however it was always destined to generate only more compacted suburbia.

The entries covered a range of capabilities in site planning. It was unexpected that 15 entries would score poorly in relation to connectivity through the site when the success of any site plan is so strongly dependent on a suitable spatial structure. Designers demonstrated a positive ability to design the common areas within the site three dimensionally and more than 90% of the teams achieved passing scores. The criteria for assessing the quality of the buildings focussed on how they would affect the spaces around them and enable residents to connect with those spaces. This fact was highlighted in consideration of the scheme that won the Housing Design Award. While that project generated innovative interior spaces, the ‘public faces’ of the dwellings provided little opportunity for engagement. The research also uncovered an apparent problem with designing to enable personal privacy, within the dwelling, and, to a greater extent, outside in the private open space. Many schemes achieved low scores and this could be attributed to circumstances of overlooking. There is a clear need to make designers aware of the need for privacy and of tools that can help provide for privacy.

Amongst the entries only one proposed that the scheme be implemented over an extended period. Several potential benefits were discussed, including the ability to take stock and refine the development programme as the scheme is implemented, that by making incremental change the process would be more widely accepted and the cost of development

could be spread out. That scheme was aided by a strategy of working with the existing houses so that ultimately only three would require removal and it was one of the few that pushed at current conventions, something that will be necessary if new typologies of medium density housing are to be generated.

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