REAR ACCESS LOTS – FUNCTION AND AMENITY

Appendix 4

from:

Urban Design Report, Hikurangi

commonground studio

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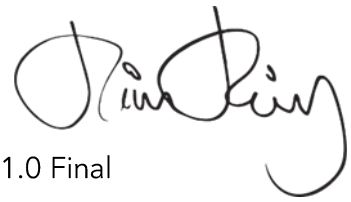
Signature	
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1. INTRODUCTION

This document is a technical record of a study undertaken in 2024 to calculate the difference in performance between rear access (mews) lots versus traditional lots where vehicles access the site from the front. It was attached as Appendix 4 to the Urban Design Report for a proposed development in Hikurangi, Northland. Its function in the report was to provide support for the extensive use of mews lanes as a means for generating higher urban quality outcomes in this situation.

Despite extensive variance with District Plan rules, the council were fully supportive of the (Restricted Discretionary) Resource Consent application. As a favour they asked if a fully worked up scheme for five or six houses could be included for them to be able to fully understand how the 'new' elements introduced by the subdivision design would work together. The scheme was to include real house designs together with landscape concepts for each lot. The most difficult and least 'usual' cluster of lots was chosen for the trial.

This developed scheme satisfied their brief admirably and helped inform the alternative consent processing and guidance that was developed with council to be part of the application. In the process, the scheme also produced a lot of design and performance data. As a 'real life' case and only including mews lots, the scheme was therefore repurposed to provide a more definitive comparison between front and rear entry lots than had existed up to that point.

Data for the front-entry comparator was drawn from a tissue study of existing (and typical) suburbia in Waiuku. Lots were classed in the same way as the Hikurangi scheme, and the same data record attached to the geometry.

2. APPENDIX 4

2.1. SMALL LOTS – INTERNAL LOT FUNCTION AND AMENITY

This application proposes much smaller lot sizes than allowed under the District Plan. While public realm function and amenity are detailed elsewhere, this section considers just the function and amenity of small individual lots.

A comparison between *theoretical* front and rear access configurations usually shows a near 2:1 relationship for equivalent criteria ie to fit the same amount of house, living court and on-site parking requires about half the section size for mews-accessed properties. In other words, what would normally require a 500m^2 section can fit on a 250m^2 section give or take when mews access is employed. A schematic illustrating this has been prepared using criteria put forward by the Waiuku community – see opposite. This particular example was used to help explain in principle the efficiency gains of rear-access for a plan change in Waiuku.

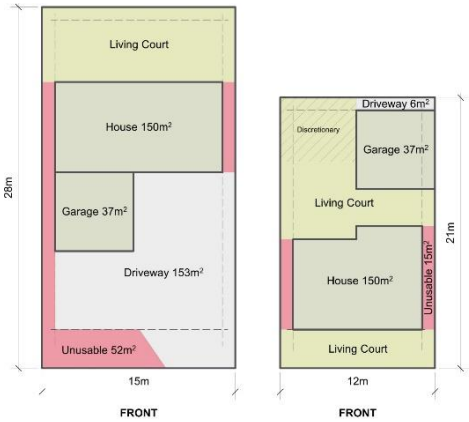

Figure 1: Front/rear entry comparison – Waiuku criteria

Measuring lot qualities and performance is meaningless unless there is a valid baseline for comparison. Comparisons also operate at different scales. Although the towns are different in size, Hikurangi and Waiuku share the same function and traditional development pattern and grain. For the plan change cited above, a great deal of data relevant to Hikurangi was derived from an in-depth tissue analysis of the existing Waiuku suburban area. That data is used here to provide a proxy benchmark to assess potential character change that could be anticipated from the proposed subdivision design.

2.1.1. Traditional Subdivision Sample Area

A small (but typical) sample from the Waiuku study area covering two streets has been selected to provide baseline data for grain, scale, amenity and character. A summary of averaged per lot measures provides block-scale data:

- Size 683m^2 (range 310—977m^2)
- Coverage 208m^2 (30%)
- Usable Living 109m^2 (16%)
- Vehicles 147m^2 (22%)
- >Waste 220m^2 (32%)

In addition, the smallest five lots from that study have been used here for an apples-for-apples comparison showing how differences might manifest at the level of individual lots. The reason the smallest lots were chosen was to match as closely as possible the lot sizes of the Hikurangi development. Data summary for the five smallest lots is:

- Size 421m^2 (range 310—504m^2)
- Coverage 168m^2 (40%)
- Usable Living 64m^2 (15%)
- Vehicles 98m^2 (23%)
- >Waste 91m^2 (22%)

2.1.2. Hikurangi Sample Area

The proposed subdivision design of the application creates a great deal of certainty regarding how individual lots can be configured, especially as lot sizes decrease. As well as a function of small lot size, this is the result of frontage conditions driven by the Greenway and Living Streets, and the use of mews lanes for vehicle access.

Since building and landscape design will both occur after subdivision, to better understand likely outcomes and how lots interact with the new road types Council has requested a test design of a small number of lots.

A subset of five lots has been chosen for lot-scale comparisons, selected because they:

- Contain the smallest lots in the proposed scheme
- Face onto the two new road types (Greenway and Living Street)
- Involve the *least* straightforward mews configuration

Figure 2: Hikurangi sample area

A full design was prepared for each lot to include:

- House/garage design and placement
- Landscape design
- Pedestrian and vehicle site access

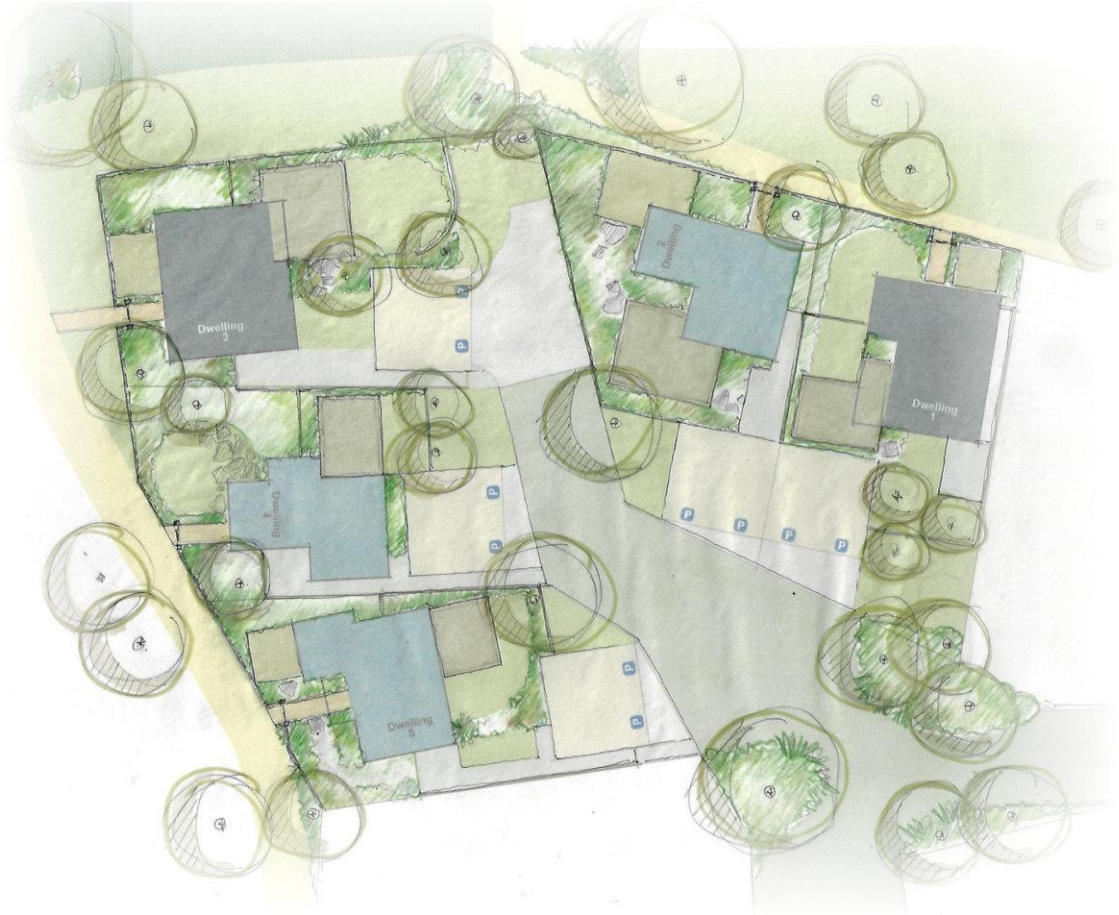

Figure 3: Sample lots – sketch layout and landscape design

This was reverse engineered to produce a space map (see below). Data records were attached to each of the resulting shapes so that meaningful land-use data could be extracted to quantify lot function.

Figure 4: Sample lots – Lot function

House designs and double garages illustrated are plausible and feasible outcomes. All houses are different. Used are 3-, 4- and 5-bedroom dwellings to represent the upper end (most intense) of what is likely to be built. Targeting affordable housing, two-bedroom dwellings are likely to be a considerable proportion of those built in the development, and it is reasonable to assume that they would most likely appear on the smaller lots. Therefore using only larger house sizes in the sample can be considered to produce a 'worst-case' statistical outcome.

All houses used have been drawn from our large library of real house designs. They are parametric models, meaning that within a modification framework, they can be enlarged, pushed-pulled etc in a way that maintains their internal (functional) integrity. In their primary form all designs are highly efficient and conform to minimum Kāinga Ora room dimensions. Four of the houses have been enlarged from their base models to reflect what might happen if budget is not an absolute

constraint or if other house designers can't achieve the same spatial efficiency. GFA for each dwelling is as follows:

1	138m^2	4+1 bedrooms
2	123m^2	3+1 bedrooms
3	147m^2	5 bedrooms
4	114m^2	3 bedrooms
5	130m^2	3 bedrooms

Garages used are all 40m^2 doubles. Garages on lots 1 and 2 are both suitable for adding studios or a home office (+1 bedrooms in the table above).

2.1.3. Measures

The primary determinants of lot function and amenity are:

- Coverage
- Non-active green space
- Active living space
- Utility space
- Vehicle access requirement (less is better)

SAMPLE BASE DATA

	Hikurangi		***Waiuku***	
	Size (m2)	*Bedrooms*	*Size (m2)*	*Bedrooms*
Area (lot*)	1,666		2,107	
Area (block*)	2,050		2,107	
Lot Size:				
1	327	4	469	4
2	309	3	310	3
3	426	5	504	3
4	303	3	395	4
5	301	3	429	3
Av. Lot Size (lot*)	333		421	
Av. Lot Size (block*)	**410**	**18**	**421**	**17**

** scale*

Table 1: Base data

For lot-level comparison, the total Hikurangi:Waiuku sample areas (m^2) are 1666:2107. Although the individual lots are smaller in the Hikurangi scheme, when their share of the mews lane is added the ratio is 2050:2107, which, for these purposes can be considered equal for block scale

calculations. This is confirmed when looking at the average lot size (410:421) and total number of bedrooms achieved (18:17).

2.1.4. Coverage

The built-character of an area is not a function of lot size ie actual density, but rather of perceived density, or intensity – the visual extent of buildings and constructed hard surfaces. In this respect coverage rather than lot density is the correct measure. Both the amount of building and the amount of openness around them have been measured as the indicators of perceived density. The 'absence of buildings' measure includes living courts and open landscaped areas (trees, planting, grassed) that otherwise have no 'useful' function because these spaces contribute to the openness or grain of development and support a sense of 'naturalness'. 'Waste' space eg narrow side yards and hard useful spaces eg service courts are not counted.

Because the sample size is so small for this exercise (5 lots), Coverage results are also reported per block to give an indication of the effect of the Hikurangi scheme on overall neighbourhood character. The Waiuku data for this measure is taken from the full tissue area clipped of both the largest lots (1,000m^2) and the smallest (included in the other lot-level comparisons here) to reflect more truthfully the visual character of typical suburbia.

In the case of traditional subdivision the increase/decrease for block measures is smaller because lots comprise almost all of the block area. For Hikurangi, the larger percentage increase/decrease is due to the inclusion of the mews lane, and the different visual character created by the mews compared to a normal driveway.

COVERAGE

	Building (Lot)	*Building (Block)*	*Open Green (Lot)*	*Open Green (Block)*
Hikurangi	31%	26%	51%	61%
Trad Subdivision	40%	30%	32%	35%

Table 2: Coverage data

2.1.5. Active Living Space

Active living space is the primary indicator of on-site amenity. It measures the area that can/will be logically used as outdoor courts and activity spaces. It excludes, for instance, large areas of

open lawn in front of a house that are never used because of their exposure. These spaces still have a value though, as 'greening' and for trees. This is picked up in the previous Open Green Coverage measure.

ACTIVE LIVING SPACE

	Area m2/Lot	*Coverage*	*Area m2/Lot (Block)*	*Coverage*
Hikurangi	120	35%	120	29%
Trad Subdivision	64	15%	109	16%

Table 3: Living Space data

One of the great benefits of having mews access to the lot is that it removes vehicle crossings from the street, thereby creating an active public realm environment. It enables each house to have two living yards – a 'private' (rear) court and a 'public' (front) court. Groundfloor living spaces of the house (living and dining rooms, usually) are then configured to open directly into each of these courts. This results in residents always having access to at least one living yard in the sun. But the most important effect of the public yard is that it provides a strong and active social face for the lot, encouraging social interaction over the boundary and spilling people and activity directly into the public realm.

2.1.6. Utility Space

Utility space refers to service courts, bin storage, washing down, clothesline etc. It was too difficult to determine the area of these spaces from the aerials of the existing Waiuku subdivision, so the standard common in District Plans for new subdivisions (typically a minimum requirement circa 9m^2) has been used instead.

UTILITY SPACE

	Service Courts m2/lot	*Service Courts*	*Driveway (m2)*	*Driveway*	*On-site Parking*
Hikurangi	30	9%	21	6%	10 - 16
Trad Subdivision	(min) 9		98	23%	8

Table 4: Utility Space data

2.1.7. Summary

Externalising vehicle activity is the main driver of spatial efficiency within the lot, leading to an increase in lot amenity even while the lot size decreases.

Small lot size can't absorb large footprint buildings, and therefore results in predominantly 1.5—2 storey houses. At medium density levels (<200m^2 lots) this produces a different type of living altogether and a dependence on attached houses as the principle built-form. However, within the range of c.250—350m^2 lots, using mews access produces a large increase in on-site resident amenity compared to traditional development scenarios, while still accommodating free-standing houses.

The capacity to absorb vehicles, boats, trailers etc in the lot is mostly a function of the rear boundary width (if stacked parking is not to be utilised) with no increase in manoeuvring area required as extra vehicles are added. A 10m minimum width (3 vehicles minimum) has been set for the proposed subdivision.

If calculations are made at the block scale incorporating the mews there is less difference in lot size between the Hikurangi scheme and traditional development. However, each lot can be configured for amenity much more easily and efficiently with almost no waste. This is revealed in the real measures from Waiuku where overall 'waste' space *per lot* averaged 220m^2 compared to 2.6m^2 for the Hikurangi sample lots.

This measure alone suggests that a 300m^2 lot in the Hikurangi scheme is the equivalent (or better) than a 500m^2 traditional lot elsewhere. In fact, if the overall Waiuku tissue data are used, they reveal that a 300m^2 Hikurangi lot contains as much or more amenity than a traditional 600m^2 property (or 700m^2 when the unclipped data are used).

Considering neighbourhood character and the amount of on-site amenity, compared to traditional suburban development the Hikurangi scheme has:

- **25% LESS** building coverage
- Nearly **2x MORE** green open-space within the block
- **2x MORE** living space /lot
- **Same** number of bedrooms
- **2—3x MORE** utility space /lot
- **75% LESS** driveway
- **<2x MORE** on-site parking
- **80x LESS** waste space within the lot