

Appendix 4

Test modelling of the L4 City Plan Provisions (Appendix A: Representative Site Modelling, Boffa Miskell, February 2008)

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Test Modelling of the L4 City Plan Provisions

Appendix A
Representative Site Modelling

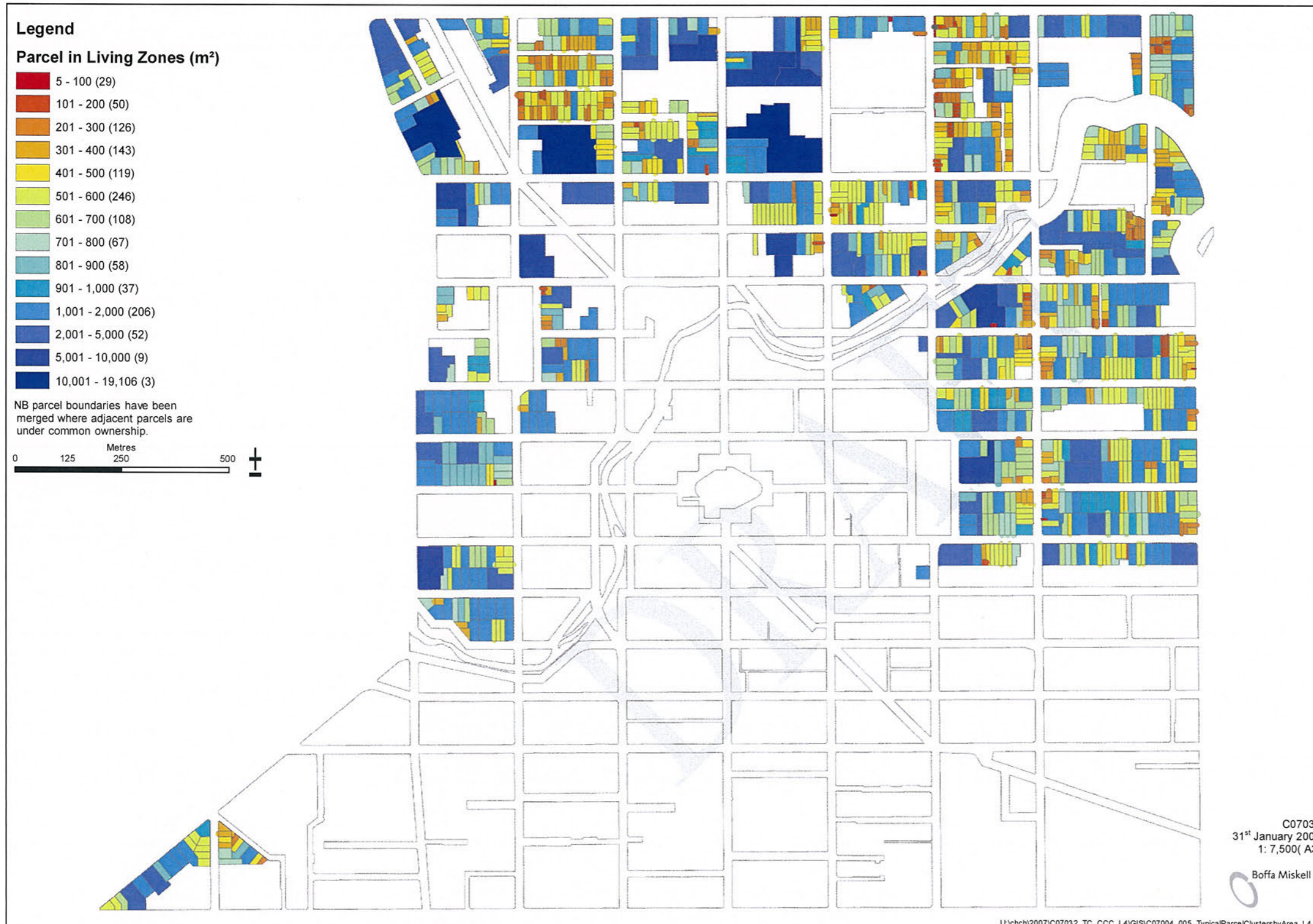
Issued 4 February 2008



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1. Deriving representative sites



1.1 Initially GIS mapping tools were used to understand the site areas existing within each of the Living 4 Zones, for the Central City area. This gave a map with the various site areas coloured according to the range of existing site sizes.

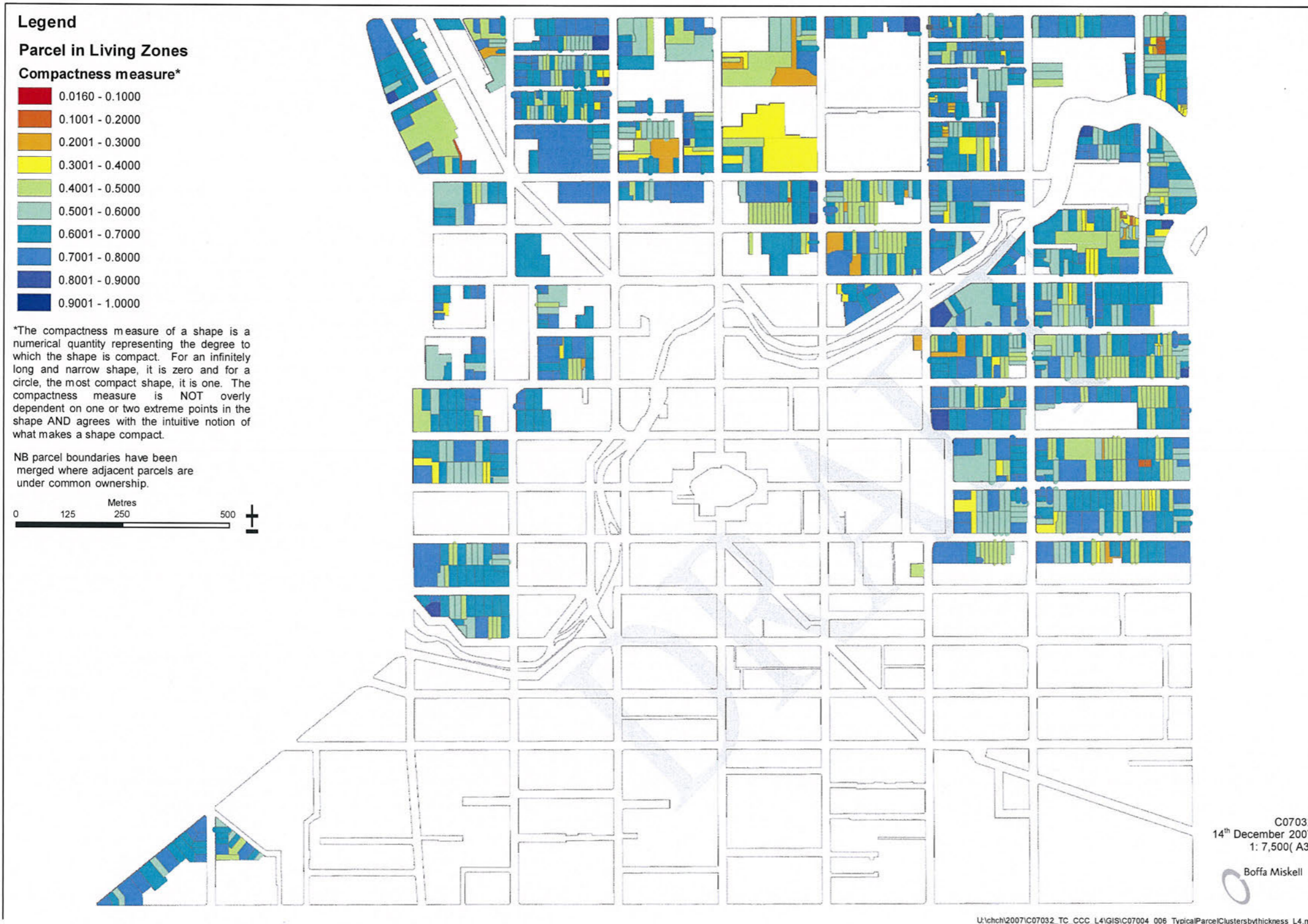
Representative site modelling methodology

test modelling the I4 City plan provisions

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1.2
Next, the GIS tools were used to understand the compactness of the various sites. A “compactness measure” was developed to show the degree to which the shape is compact – a ratio of the site width to site length.

This compactness measure was then applied to each site and was allocated into ranges to map the spread of sites across the wider area.

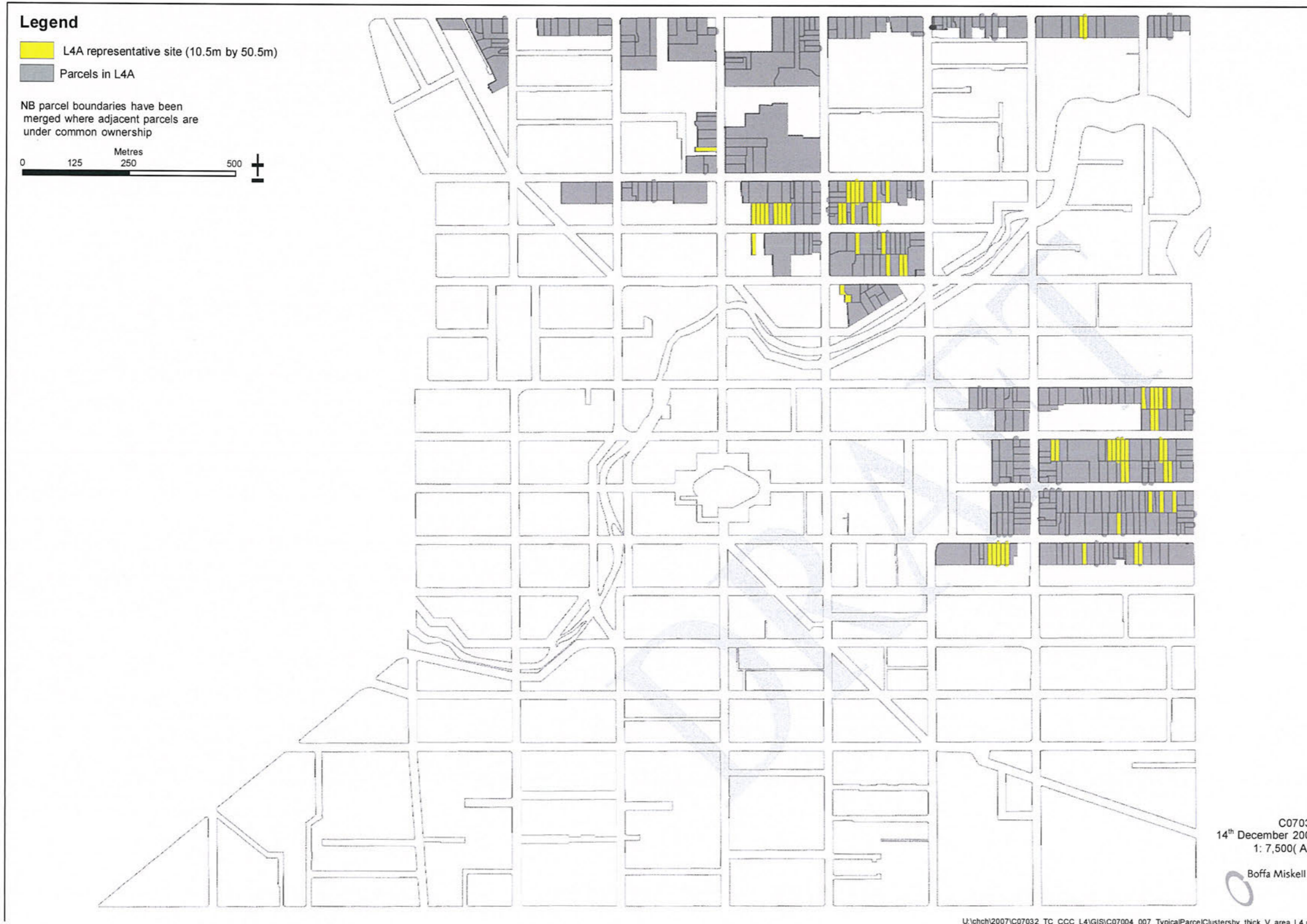
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1.3
 Once mapped for compactness, dominant clusters of sites were grouped and visually analysed for each of the Living 4 Zones. Other qualitative criteria such as section orientation were also assessed.

The sites were then reviewed to define a regular length and width to represent the appropriate representative sites. This led to sites of 250m², 550m² and 1,050m² categories (north/south orientation) being chosen as representative.

Following agreement with the Council, these three site categories were applied to each of the three Living 4 Zones, along with a corner site and an east/west orientated site examples.

The table below summarises the percentage of sites within each zone that fall within each of the representative categories:

	250m ²	550m ²	1050m ²
L4A	6%	26%	11%
L4B	7%	17%	12%
L4C	9%	19%	11%

Representative site modelling methodology

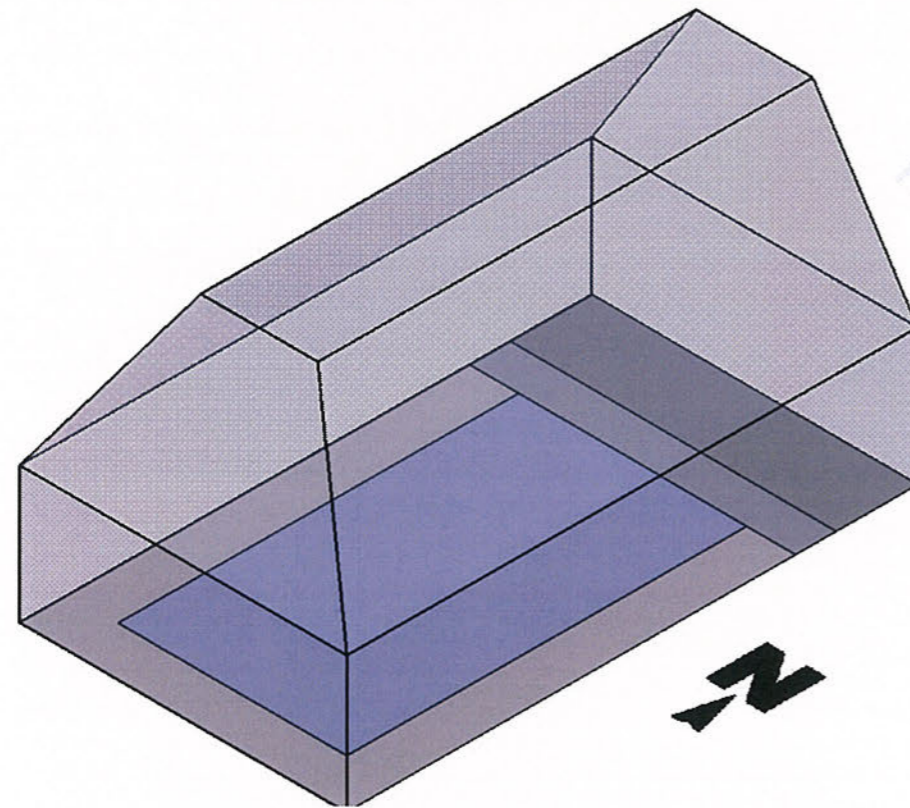
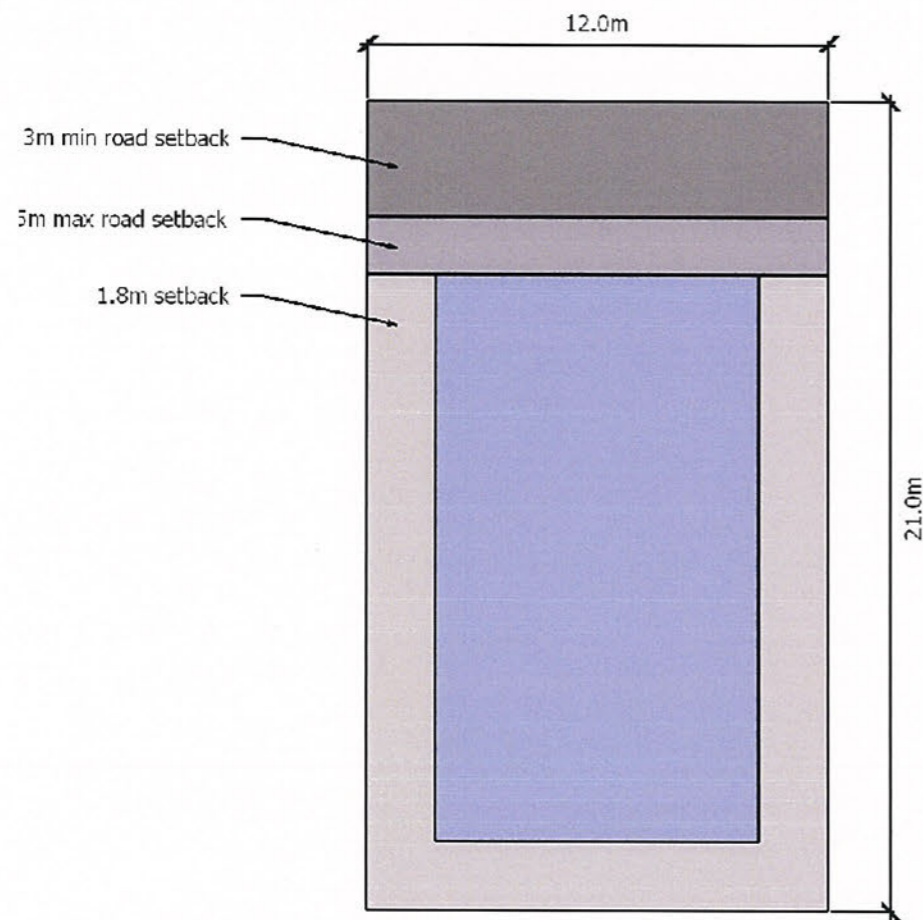
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2. Applying representative sites to modelling



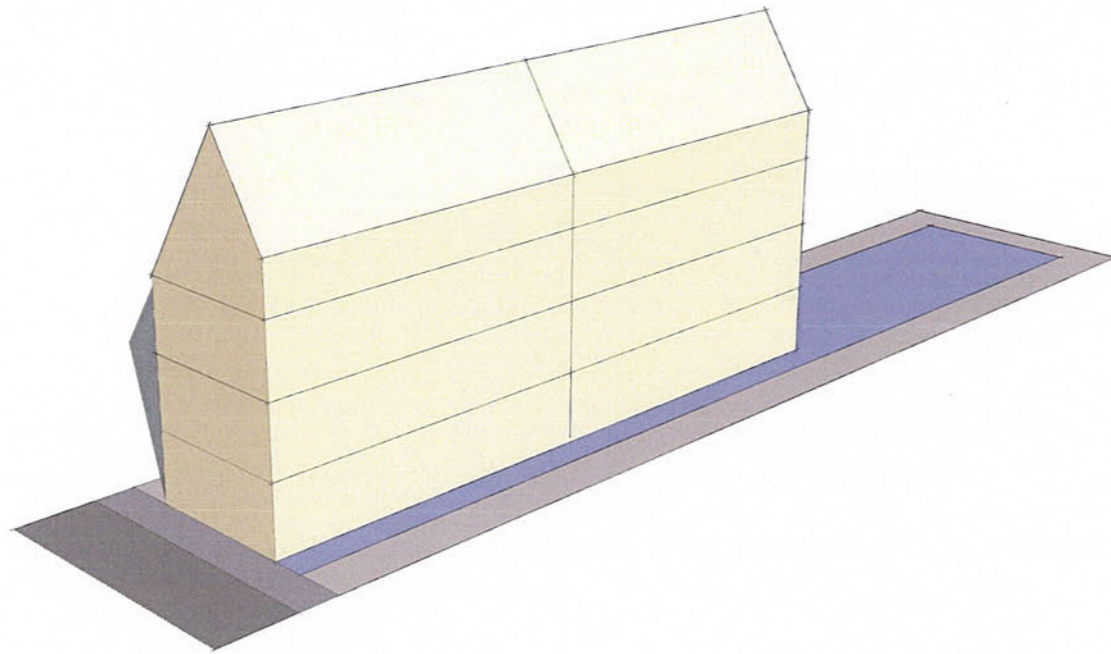
2.1

After the representative sites (areas, orientation, widths and lengths were determined, these were then modelled with SketchUp software.

Site dimensions and setbacks were applied to the two dimensional sites.

2.2

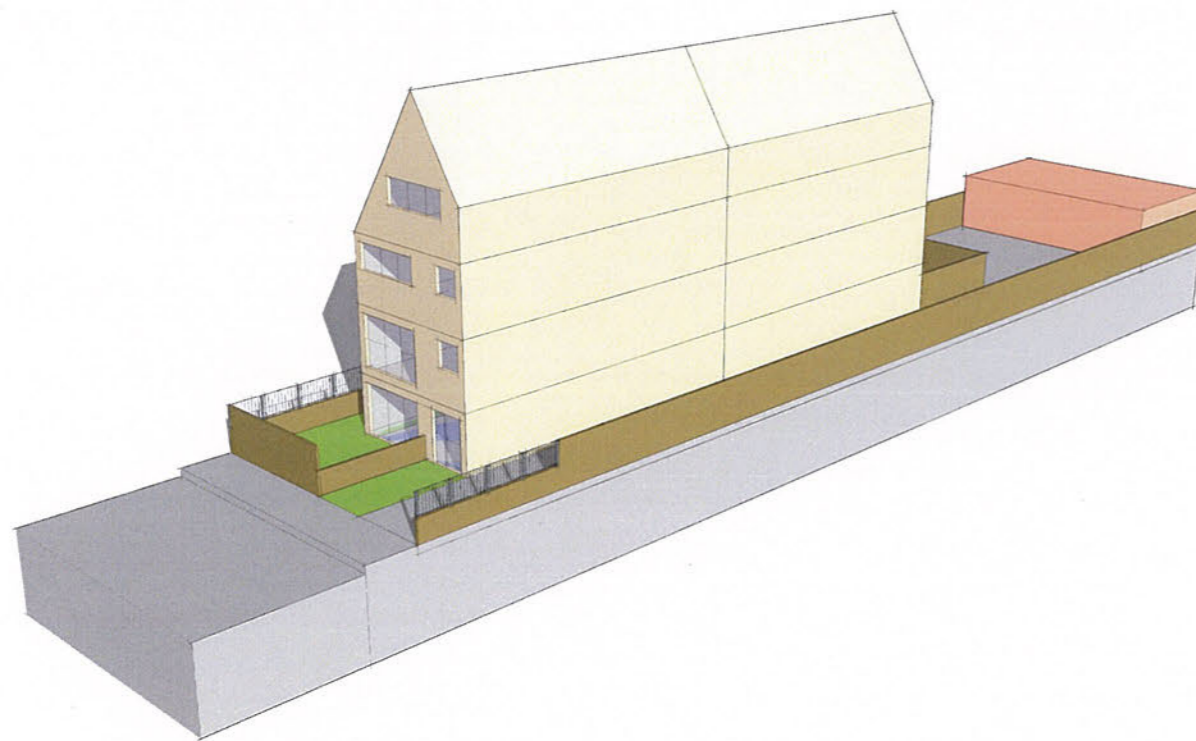
For each site and Zone, a three-dimensional building envelope was then constructed. This envelope provides the permitted volume of building area representing primarily the setbacks, recession planes and height restrictions.



2.3
Within each building envelope a building was constructed.

Building designs were provided by Wilkie + Bruce architects, representing realistic building bulk, location and layout characteristics, under the proposed rules supplied by the Council.

Shading applied to buildings is shown at 4pm equinox (22 March).



2.4
Other relevant site design constraints were then applied to each site, including access/parking, outdoor living space, fencing/screening, and glazing.

These sites and buildings were checked to confirm compliance with permitted residential floor area ratios, and compliance with all other applicable proposed standards.

Representative site modelling methodology

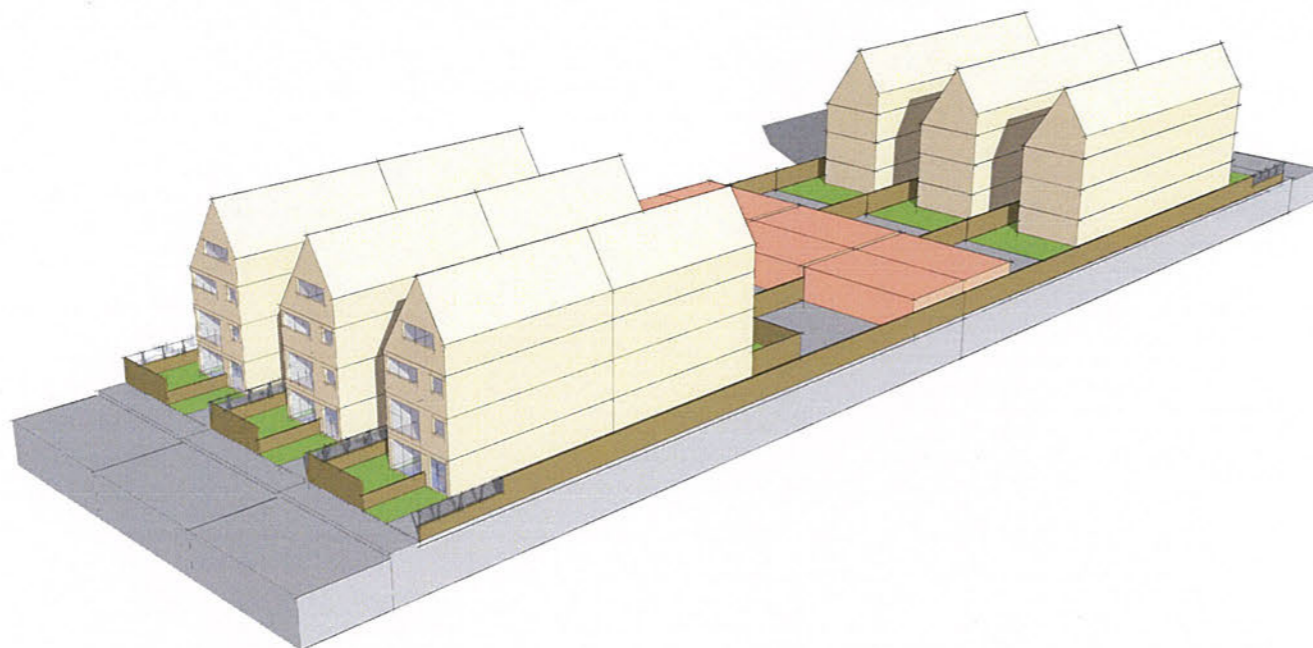
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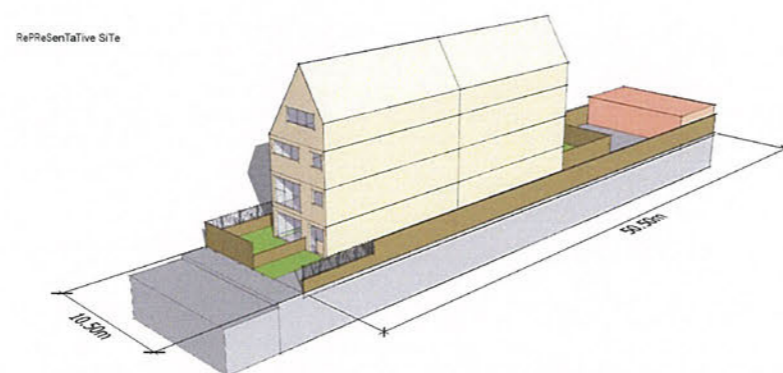
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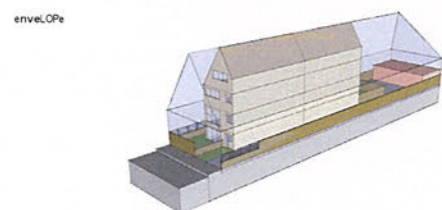
page 5



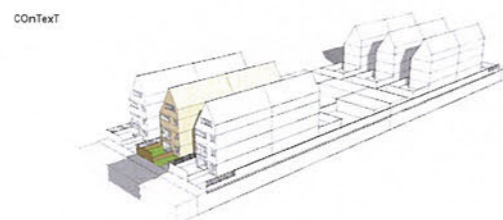
2.5
 In order to understand the relationship between each individual site modelled and the wider environment, the new buildings were multiplied and manipulated to show a context in which a number of new buildings could appear under the proposed rules.



2.6
 For each zone and representative site, a range of images were produced showing the individual site, the context, the building envelope applicable and a view from street level.



Rule info:		KEY:	
Permitted height:	14m		Access (including road reserve)
Permitted R:AR:	1:2		Representative building
Road setback:	3m - 4.5m		Boundary fencing
Outcome:			Front facade glazing
Height achieved:	13.1m		Car parking surface
Actual setback:	4.5m		Car parking garage
total floor area:	592m ²		Outdoor living space
number of units:	4 x 3 bedroom units		Recession plane envelope
car parking:	Garage		
notes:	1 unit has no garage		



Representative site modelling methodology

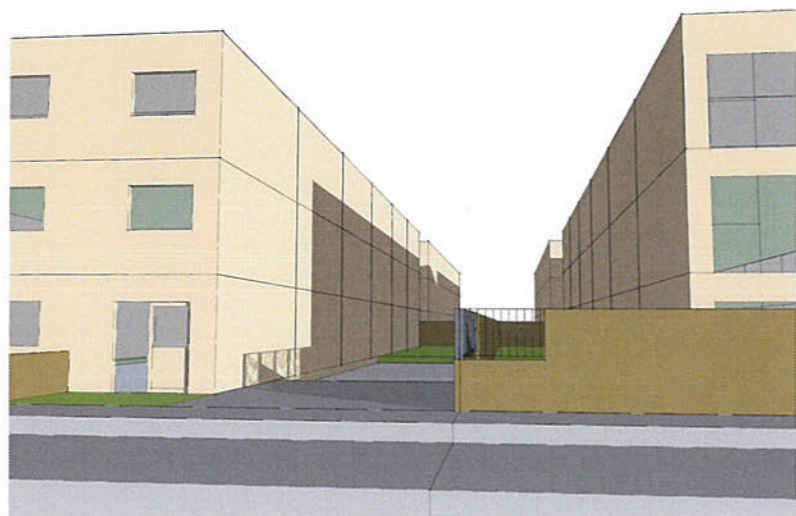
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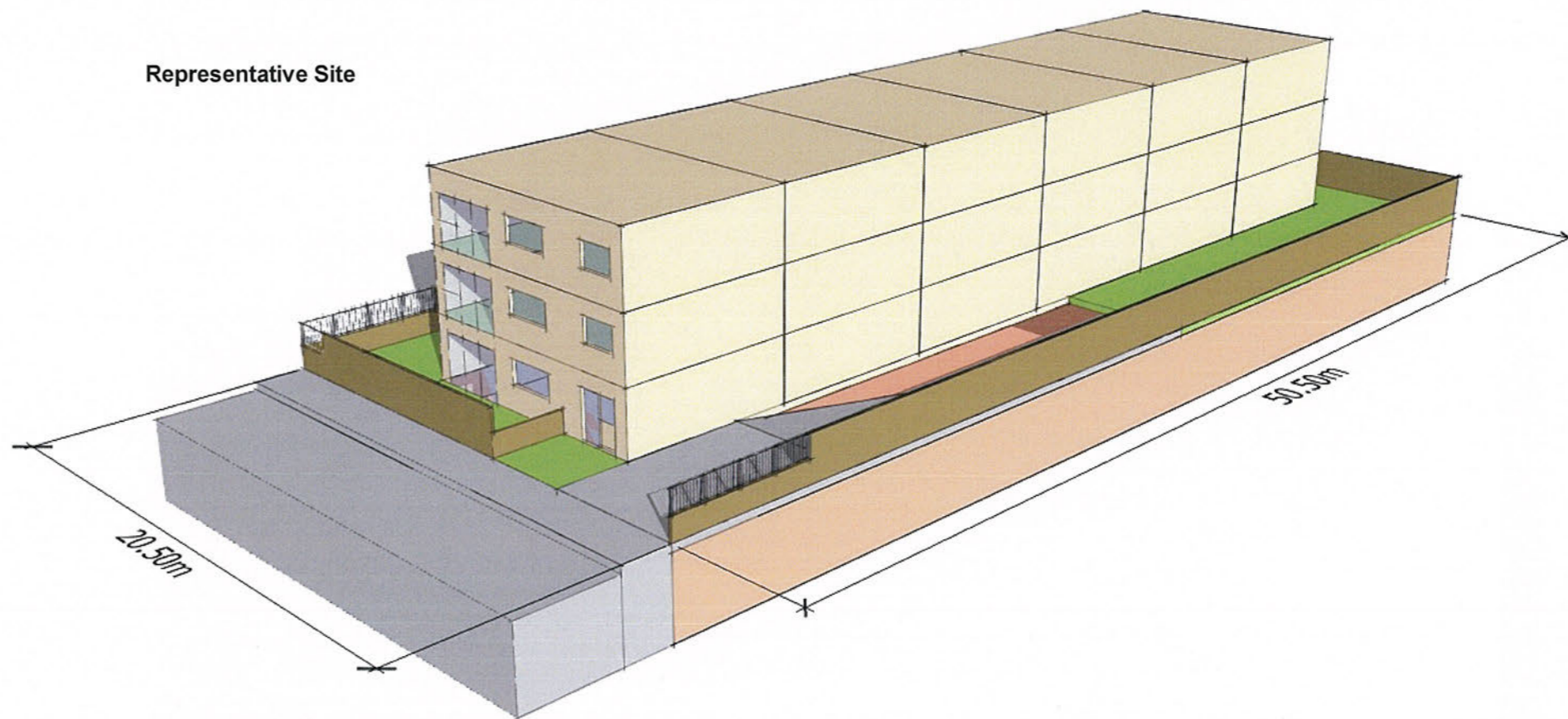
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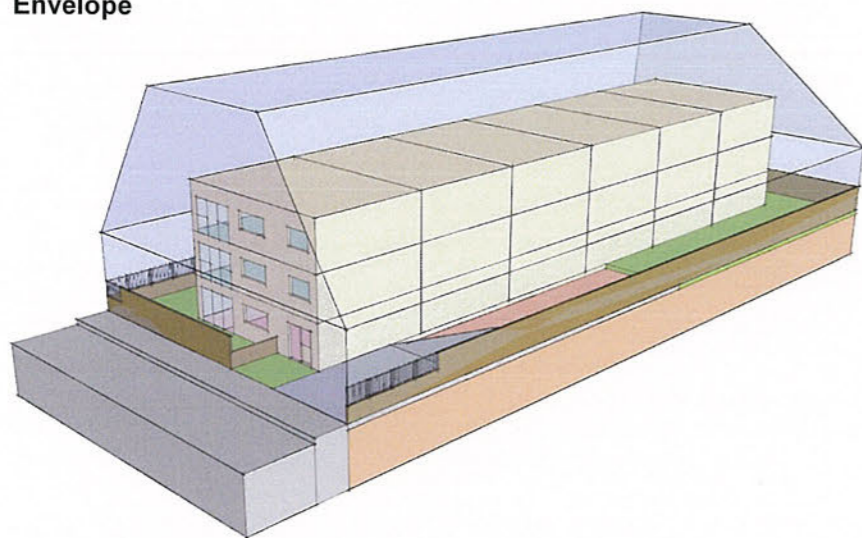
Street Level



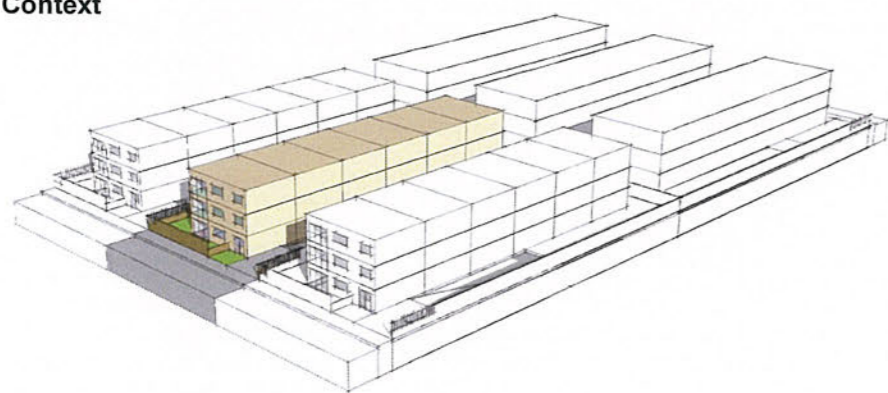
Representative Site



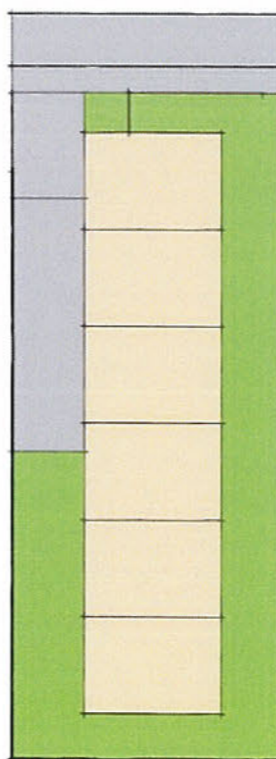
Envelope



Context



Plan View



Rule info:

Permitted height: 14m
 Permitted RfAR: 1.2
 Road setback: 3m - 4.5m

outcome:

Height achieved: 8.4m
 Actual setback: 3m
 total floor area: 1452m²
 number of units: 18 x 2 bedroom units
 carparking: basement garage
 Site area: 1035m²

-  Access (including road reserve)
-  Representative building
-  Boundary fencing
-  Windows carparking:
-  surface carparking:
-  garage outdoor living
-  space Recession plane
-  envelope

I4a site 1050m² Category (Underground parking variation)

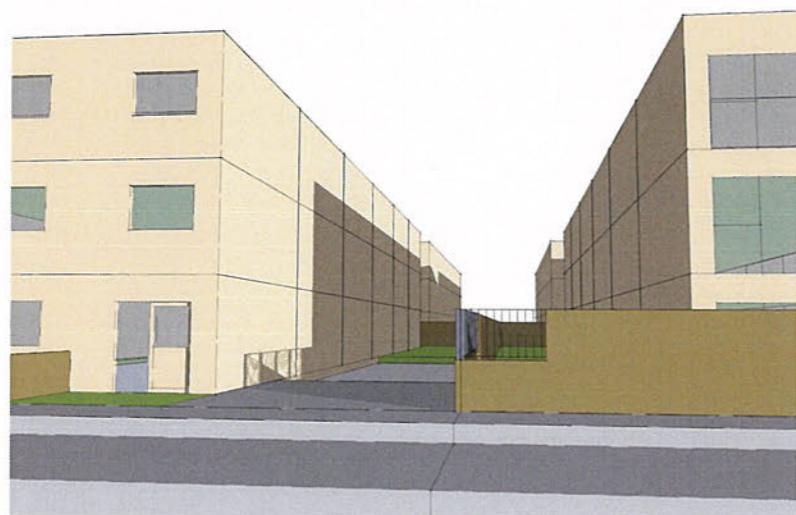
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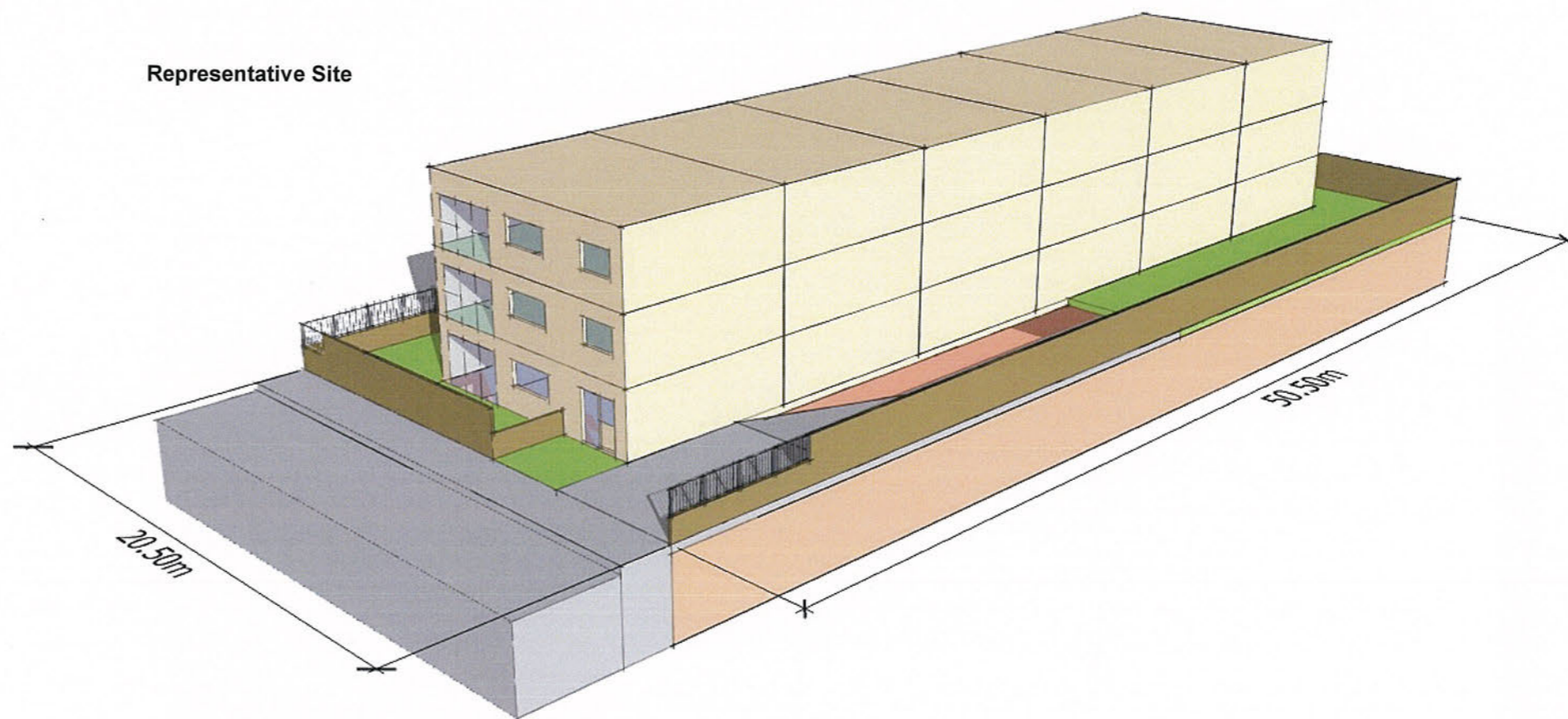
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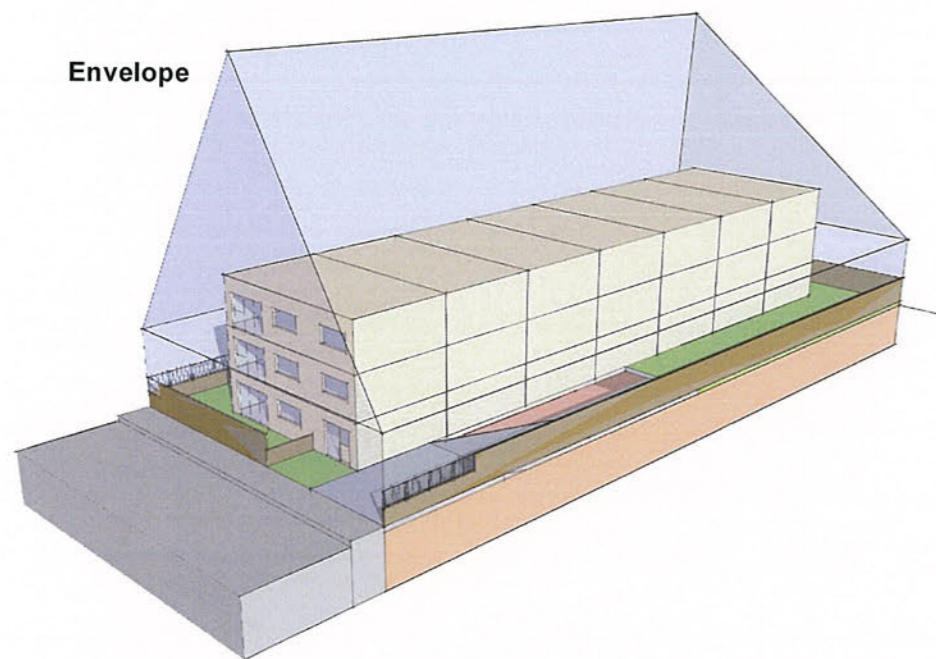
Street Level



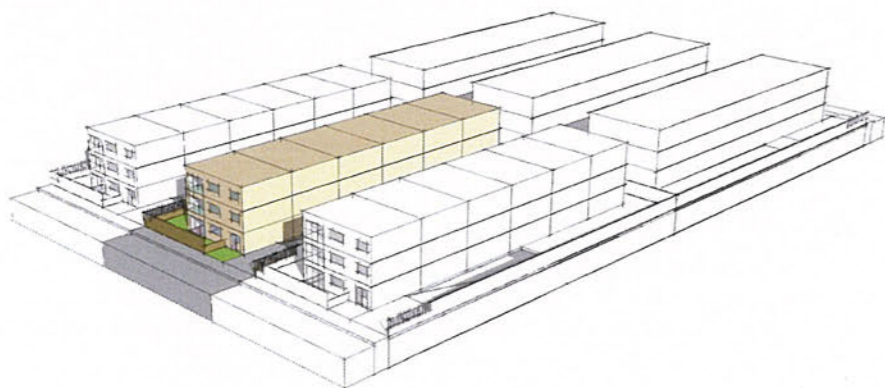
Representative Site



Envelope



Context



Plan View



Rule info:

Permitted height: 30m
 Permitted RfAR: 1.4
 Road setback: 3m

outcome:

Height achieved: 8.4m
 Actual setback: 3m
 total floor area: 1452m²
 number of units: 21 x 2 bedroom units
 carparking: basement garage
 Site area: 1035m²

-  Access (including road reserve)
-  Representative building
-  Boundary fencing
-  Windows carparking:
-  surface carparking:
-  garage outdoor living
-  space Recession plane
-  envelope

L4b site 1050m² category (Underground Parking Variation)

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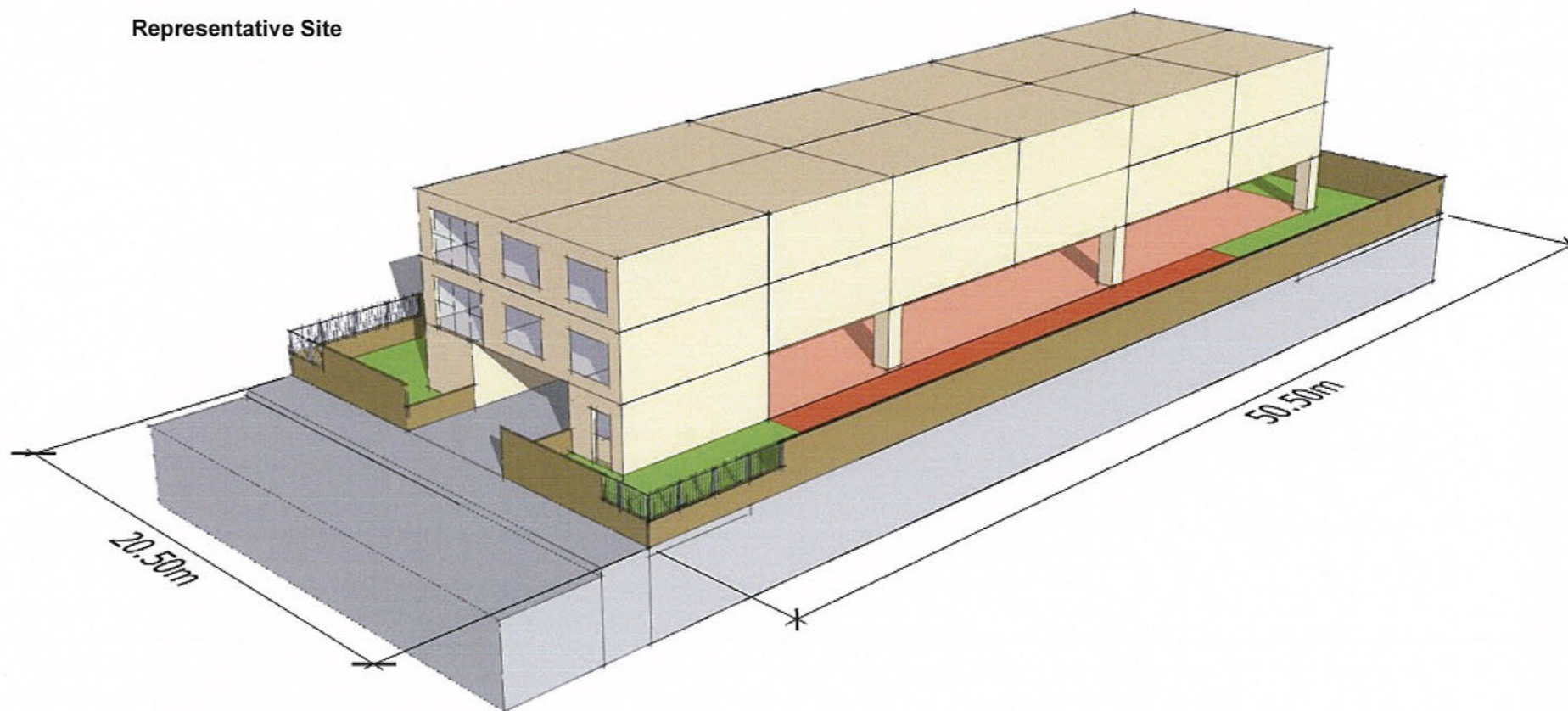
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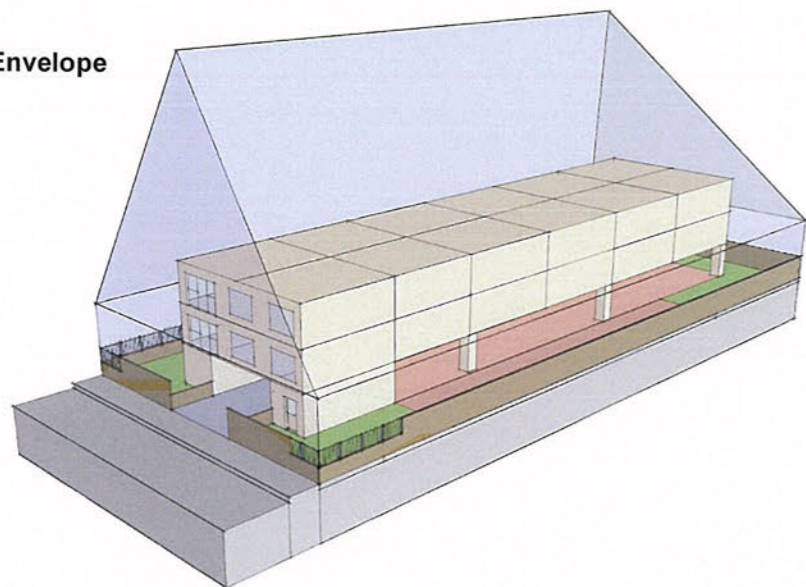
Street Level



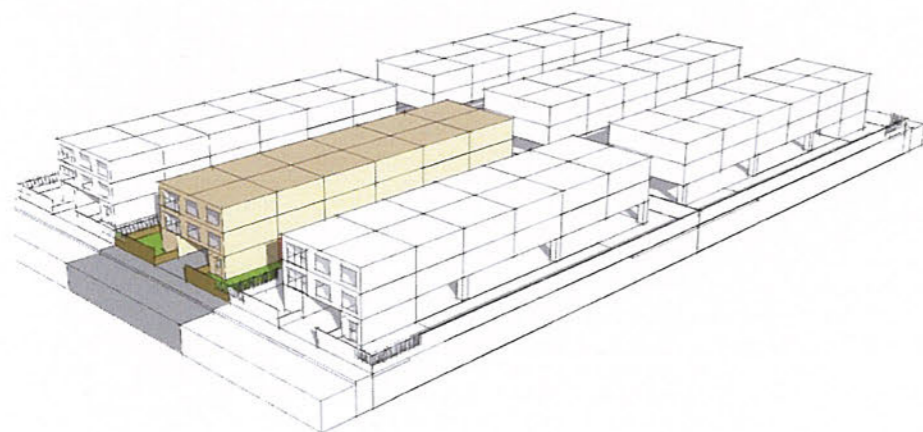
Representative Site



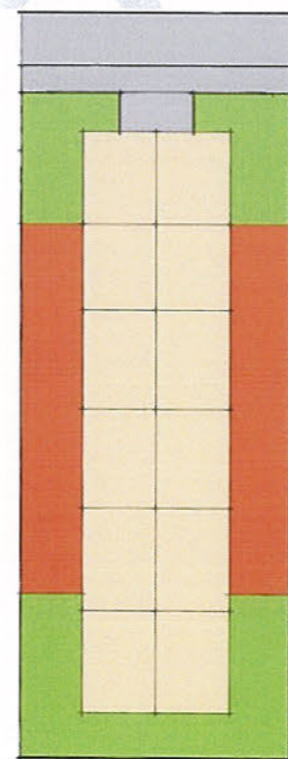
Envelope



Context



Plan View



Rule info:

Permitted height: 30m
 Permitted RfAR: 1.4
 Road setback: 3m

outcome:

Height achieved: 8.4m
 Actual setback: 3m
 total floor area: 1019m²
 number of units: 12 x 2 bedroom units
 carparking: Garage and surface
 Site area: 1035m²

-  Access (including road reserve)
-  Representative building
-  Boundary fencing
-  Windows carparking:
-  surface carparking:
-  garage outdoor living
-  space Recession plane
-  envelope

L4c site 1050m² category

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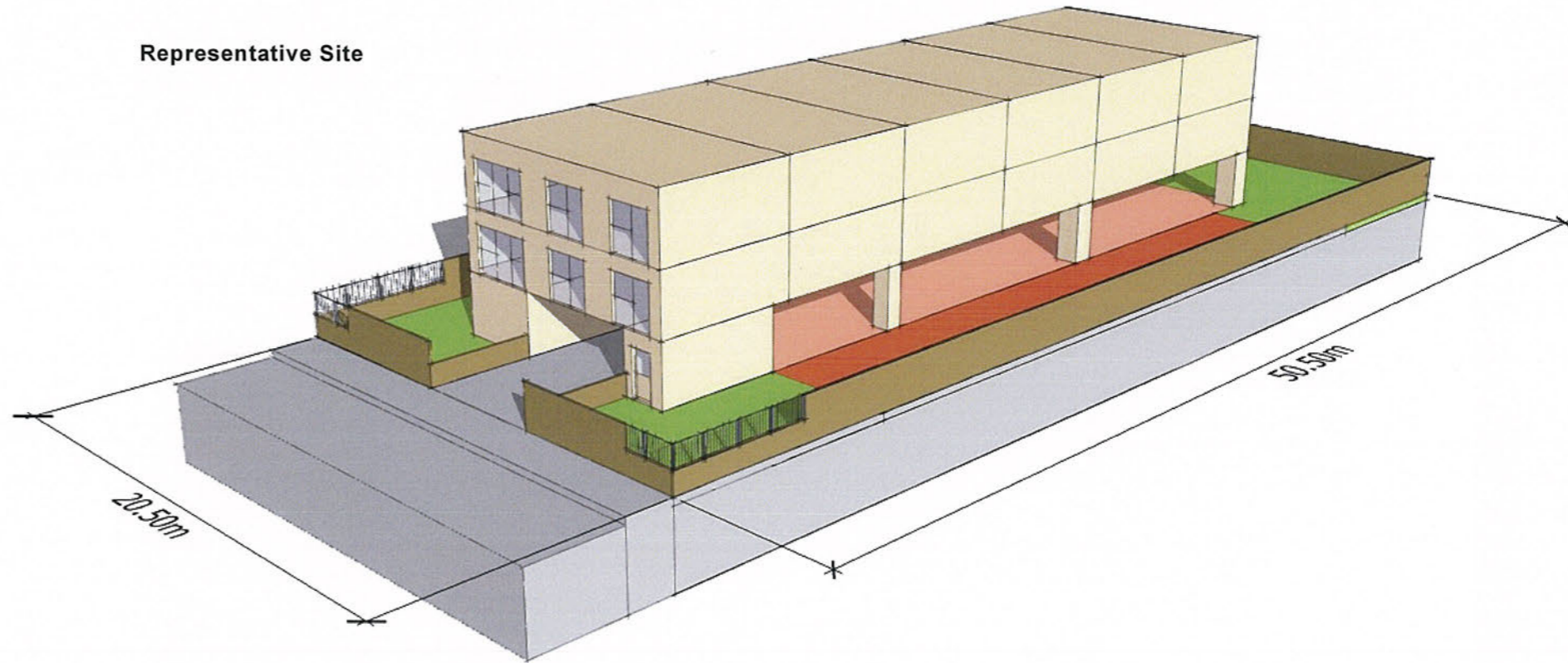
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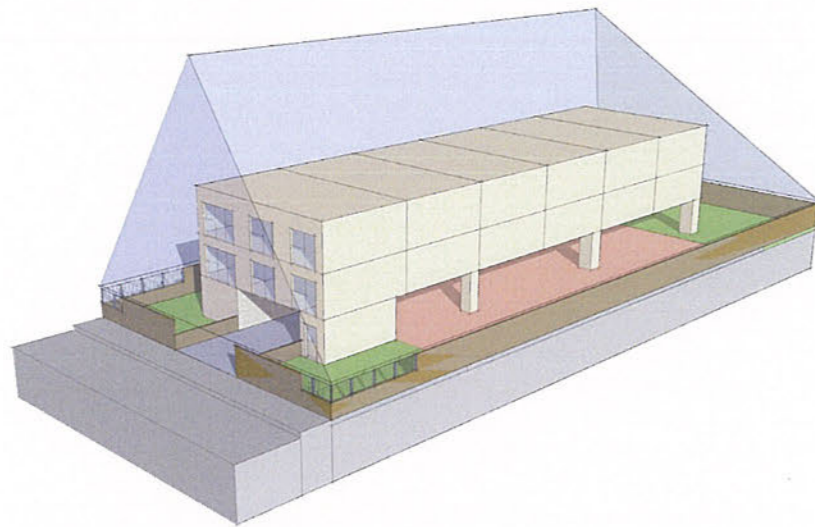
Street Level



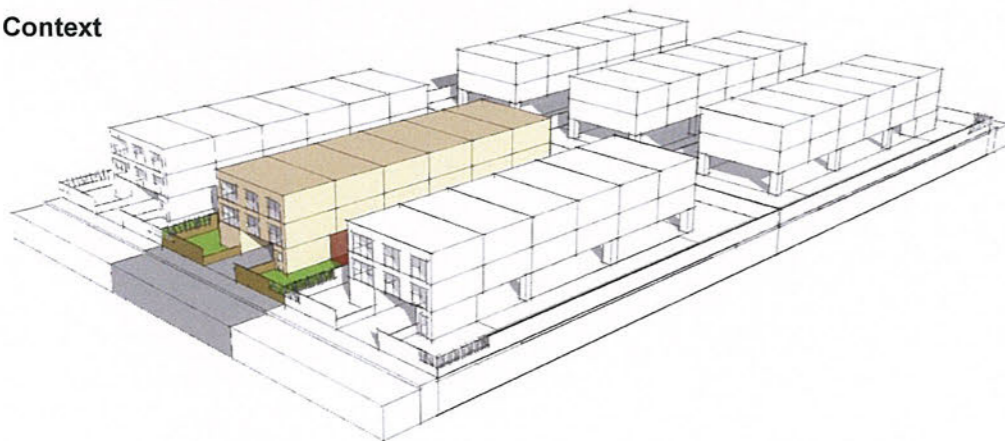
Representative Site



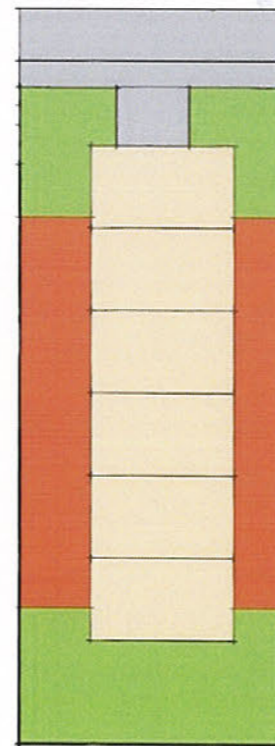
Envelope



Context



Plan View



Rule info:

Permitted height: 20m
 Permitted RfAR: 1.2
 Road setback: 4.5 - 6m

outcome:

Height achieved: 8.4m
 Actual setback: 4.5m
 total floor area: 1019m²
 number of units: 12 x 2 bedroom uit
 carparking: Garage and surface
 Site area: 1035m²

-  Access (including road reserve)
-  Representative building
-  Boundary fencing
-  Windows carparking:
-  surface carparking:
-  garage outdoor living
-  space Recession plane
-  envelope

L4c site 1050m² category

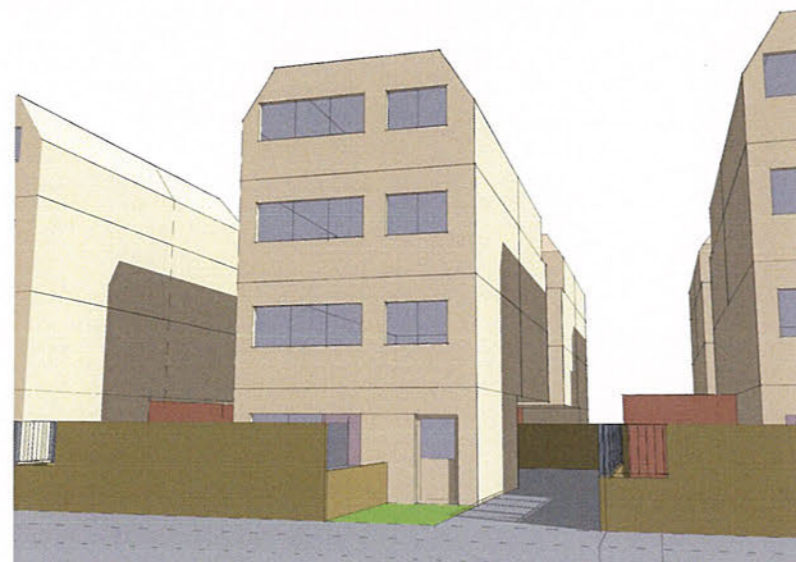
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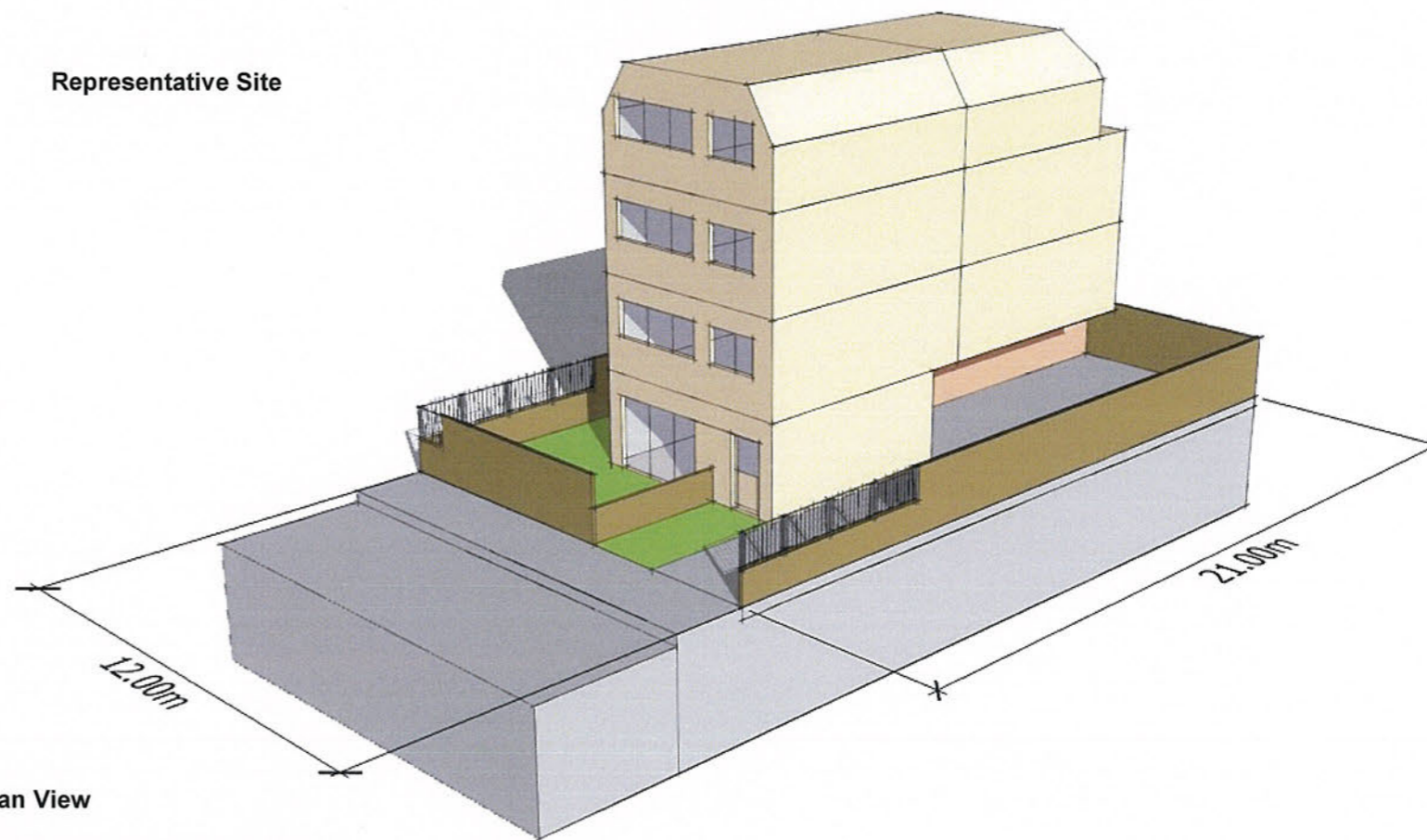
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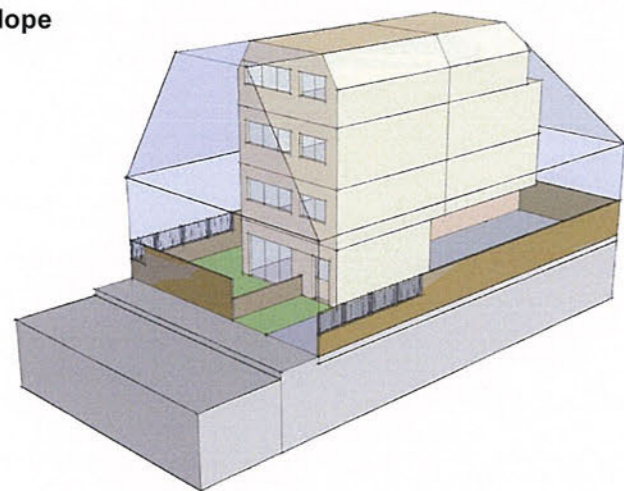
Street Level



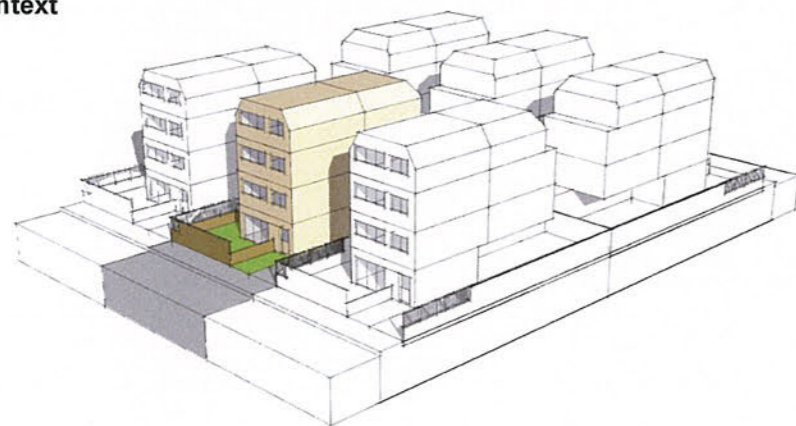
Representative Site



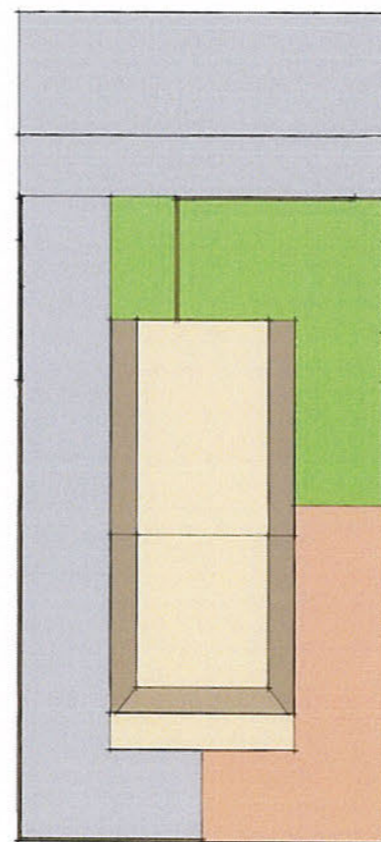
Envelope



Context



Plan View



Rule info:

Permitted height: 11m
 Permitted RfAR: 1.2
 Road setback: 3m - 4.5m

outcome:

Height achieved: 11m
 Actual setback: 4m
 total floor area: 280m²
 number of units: 2 x 2 bedroom units
 + 1 x 3 bedroom unit
 carparking: Garage
 notes: 1 unit has no garage
 Site area: 252m²

-  Access (including road reserve)
-  Representative building
-  Boundary fencing
-  Windows carparking: sur-
-  carparking: garage
-  outdoor living space
-  Recession plane envelope
- 

I4a site 250m² Category

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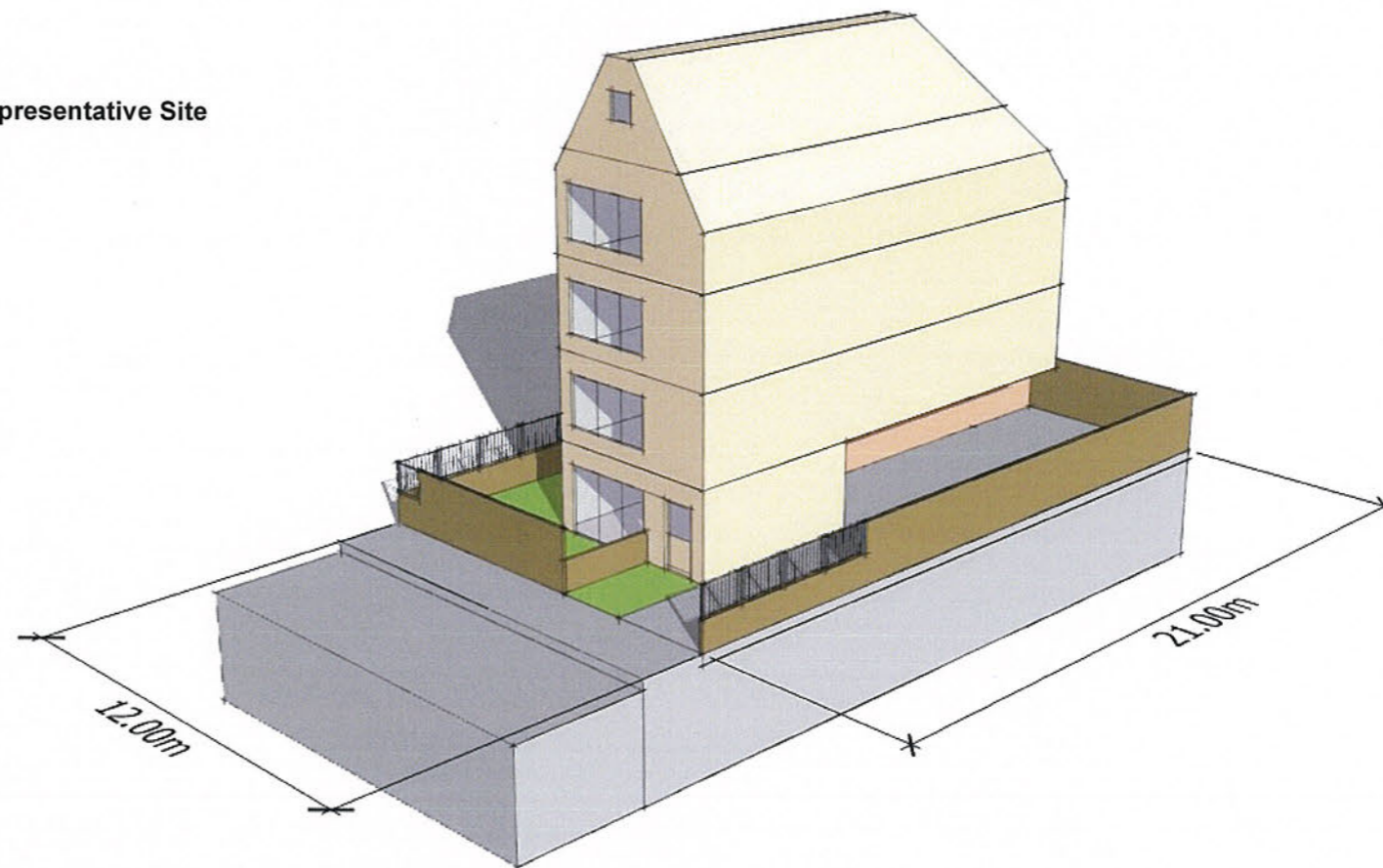
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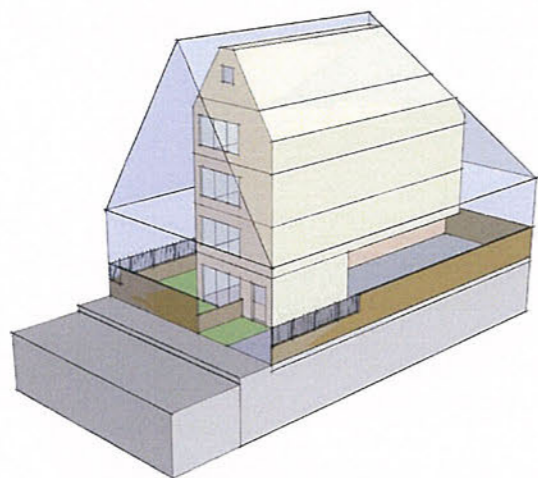
Street Level



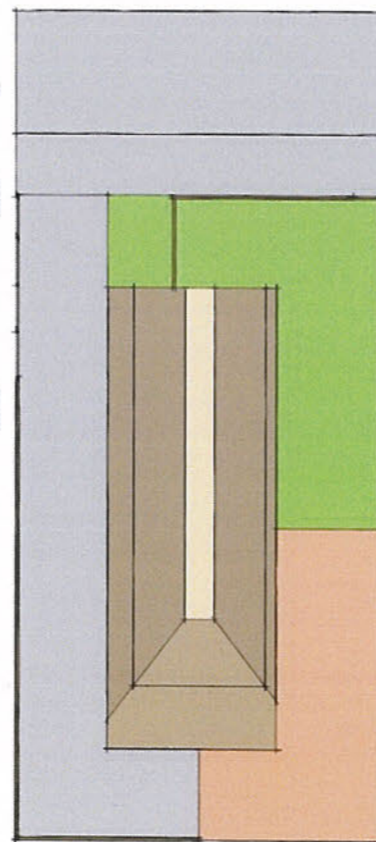
Representative Site



Envelope



Plan View



Rule info:

Permitted height: 30m
 Permitted RfAR: 1.4
 Road setback: 3m

outcome:

Height achieved: 13.6m
 Actual setback: 3m
 total floor area: 168m²
 number of units: 1 x 2 bedroom unit
 2 x 3 bedroom units
 carparking: Garage
 Site area: 252m²

-  Access (including road reserve)
-  Representative building
-  Boundary fencing
-  Windows carparking:
-  surface carparking:
-  garage outdoor living
-  space Recession plane
-  envelope

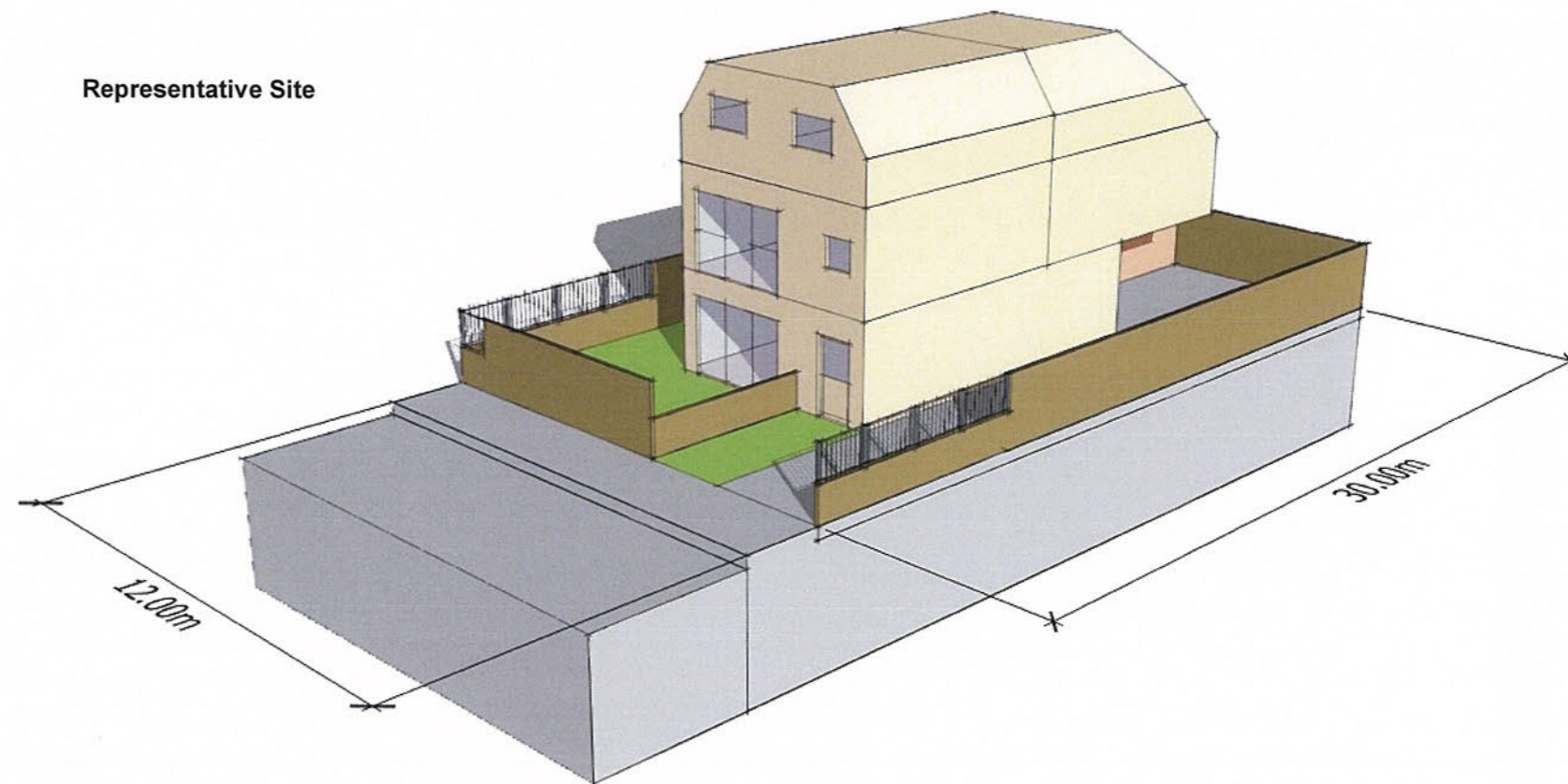
Context



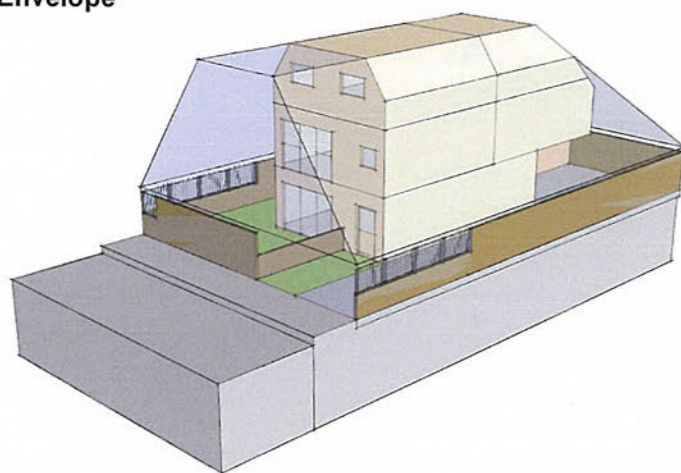
Street Level



Representative Site



Envelope



Plan View



Rule info:

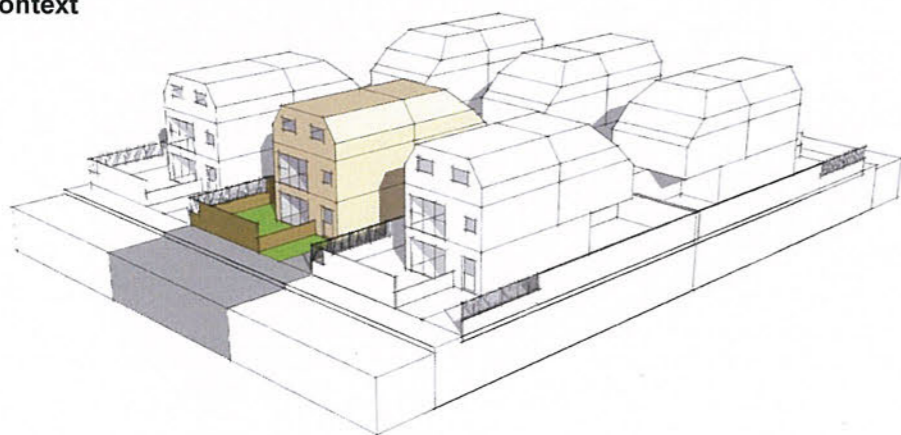
Permitted height: 8m
Permitted RfAR: 1.2

outcome:

Height achieved: 8m
Actual setback: 4.5m
total floor area: 162m²
number of units: 2 x 2 bedroom unit
carparking: Garage
Site area: 252m²

- Access (including road reserve)
- Representative building
- Boundary fencing
- Windows
- carparking: sur-
- carparking: garage-
- outdoor living space
- Recession plane envelope

Context



I4C site 250m²Category

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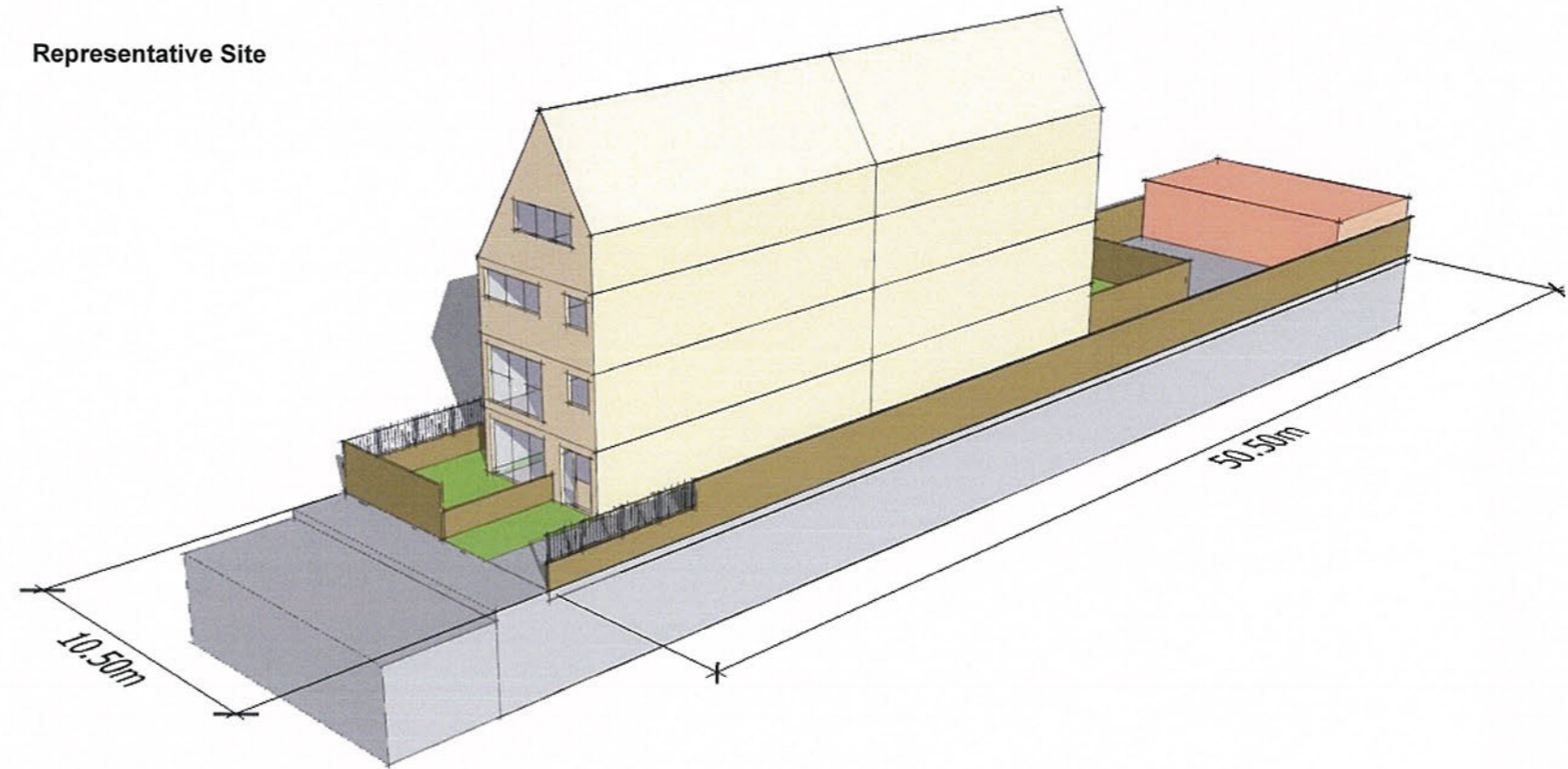
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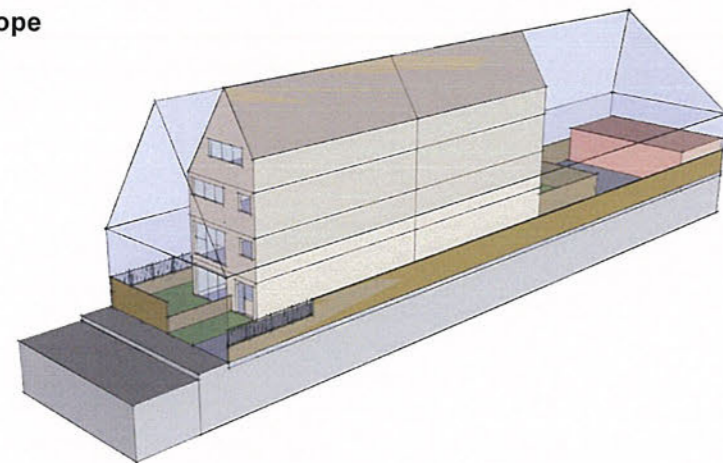
Street Level



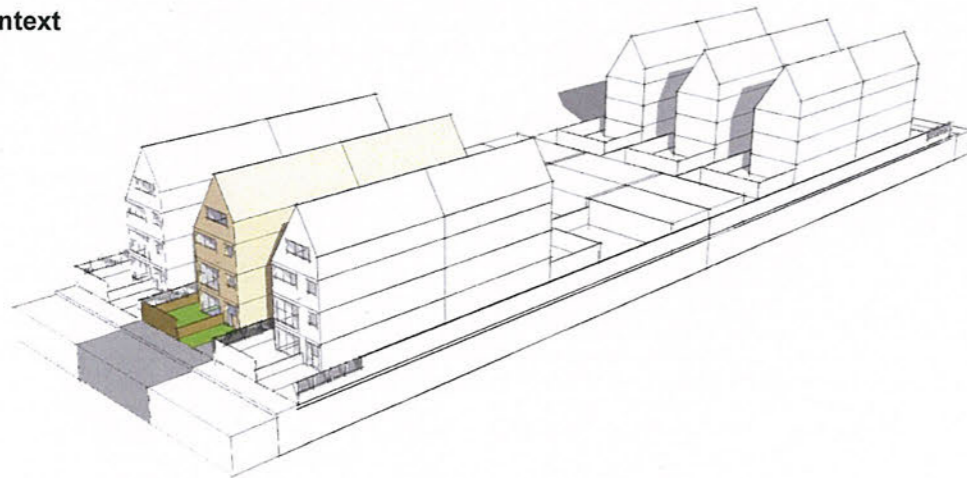
Representative Site



Envelope



Context



Plan View



Rule info:

Permitted height:	14m
Permitted RfAR:	1.2
Road setback:	3m - 4.5m

outcome:

Height achieved:	13.1m
Actual setback:	4.5m
total floor area:	592m ²
number of units:	4 x 3 bedroom units
carparking:	Garage
notes:	1 unit has no garage
Site area:	530m ²

- Access (including road reserve)
- Representative building
- Boundary fencing
- Windows carparking: sur-
- carparking: garage
- outdoor living space
- Recession plane envelope

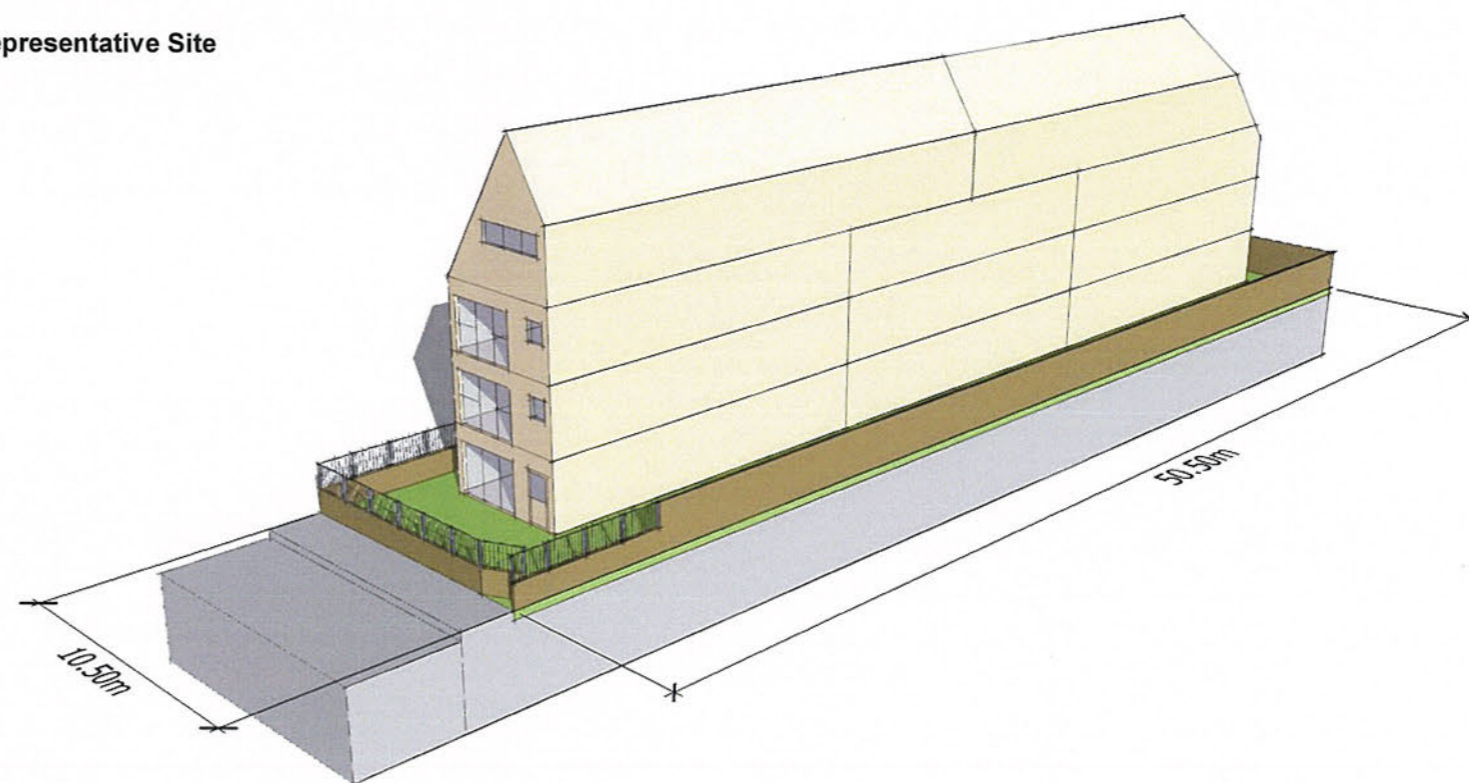
L4A Site 550m² Category

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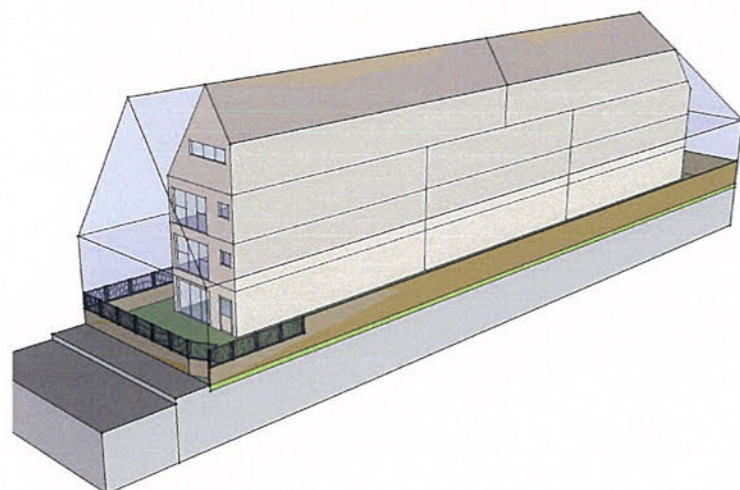
Street Level



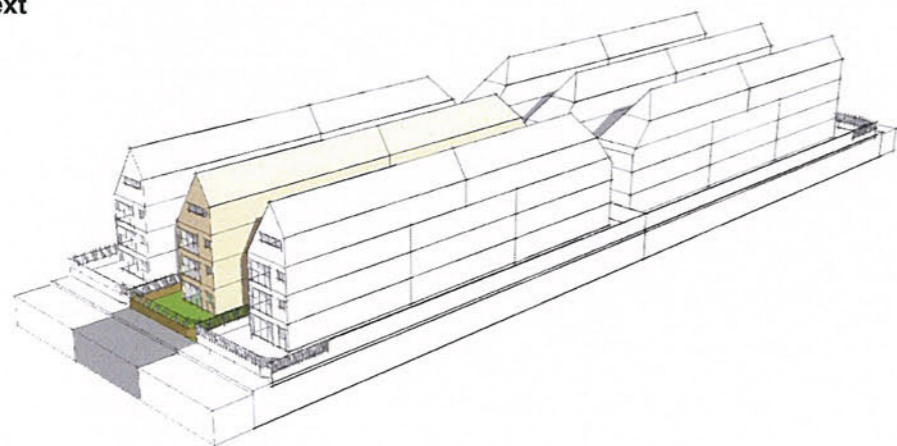
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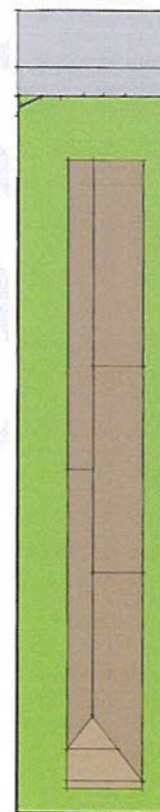
Envelope



Context



Plan View



Rule info:

Permitted height: 30m
 Permitted RfAR: 1.4
 Road setback: 3m

outcome:

Height achieved: 13.1m
 Actual setback: 3m
 total floor area: 915m²
 number of units: 11 x 2 bedroom unit
 carparking: none
 Site area: 530m²

-  Access (including road reserve)
-  Representative building
-  Boundary fencing
-  Windows carparking: sur-
-  carparking: garage
-  outdoor living space
-  Recession plane envelope
- 

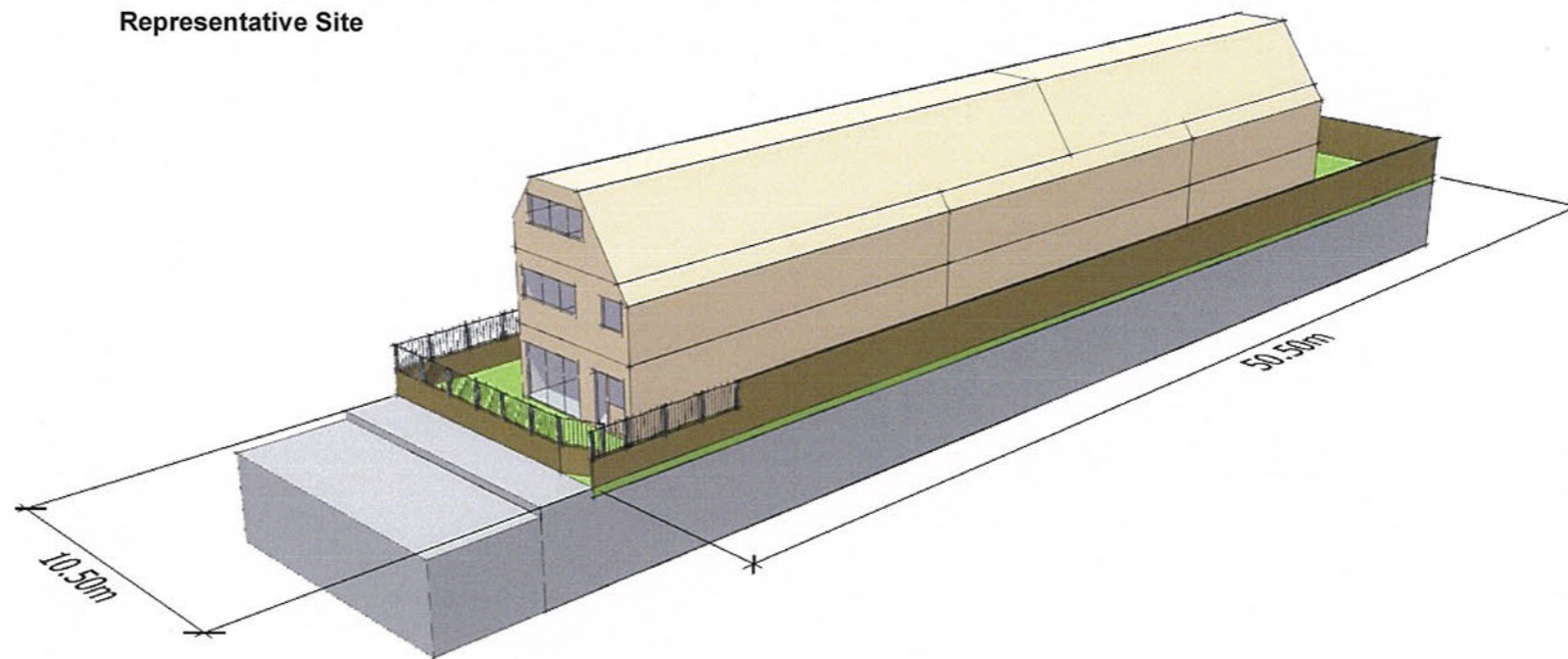
L4B Site 550m² Category

test modelling the I4 City plan provisions

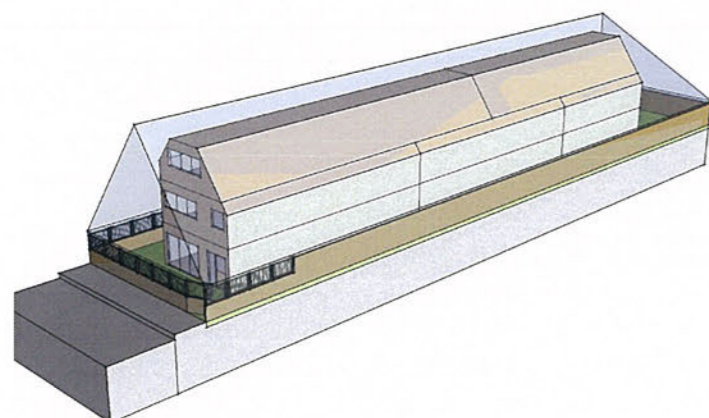
Street Level



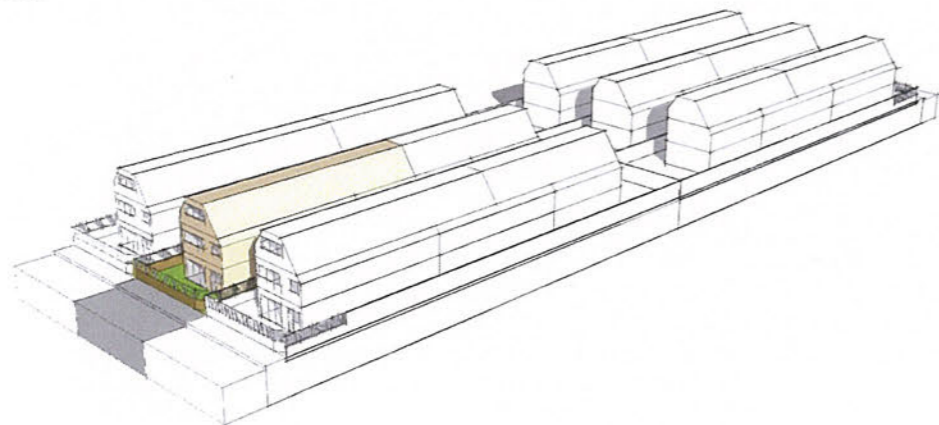
Representative Site



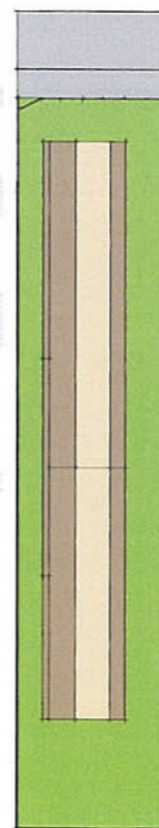
Envelope



Context



Plan View



Rule info:

Permitted height: 20m
 Permitted RfAR: 1.2
 Road setback: 4.5m - 6m

outcome:

Height achieved: 8m
 Actual setback: 4.5m
 total floor area: 1661m²
 number of units: 7 x 2 bedroom units
 1 x 3 bedroom unit
 carparking: none
 Site area: 530m²

-  Access (including road reserve)
-  Representative building
-  Boundary fencing
-  Windows carparking: sur-
-  carparking: garage
-  outdoor living space
-  Recession plane envelope
- 

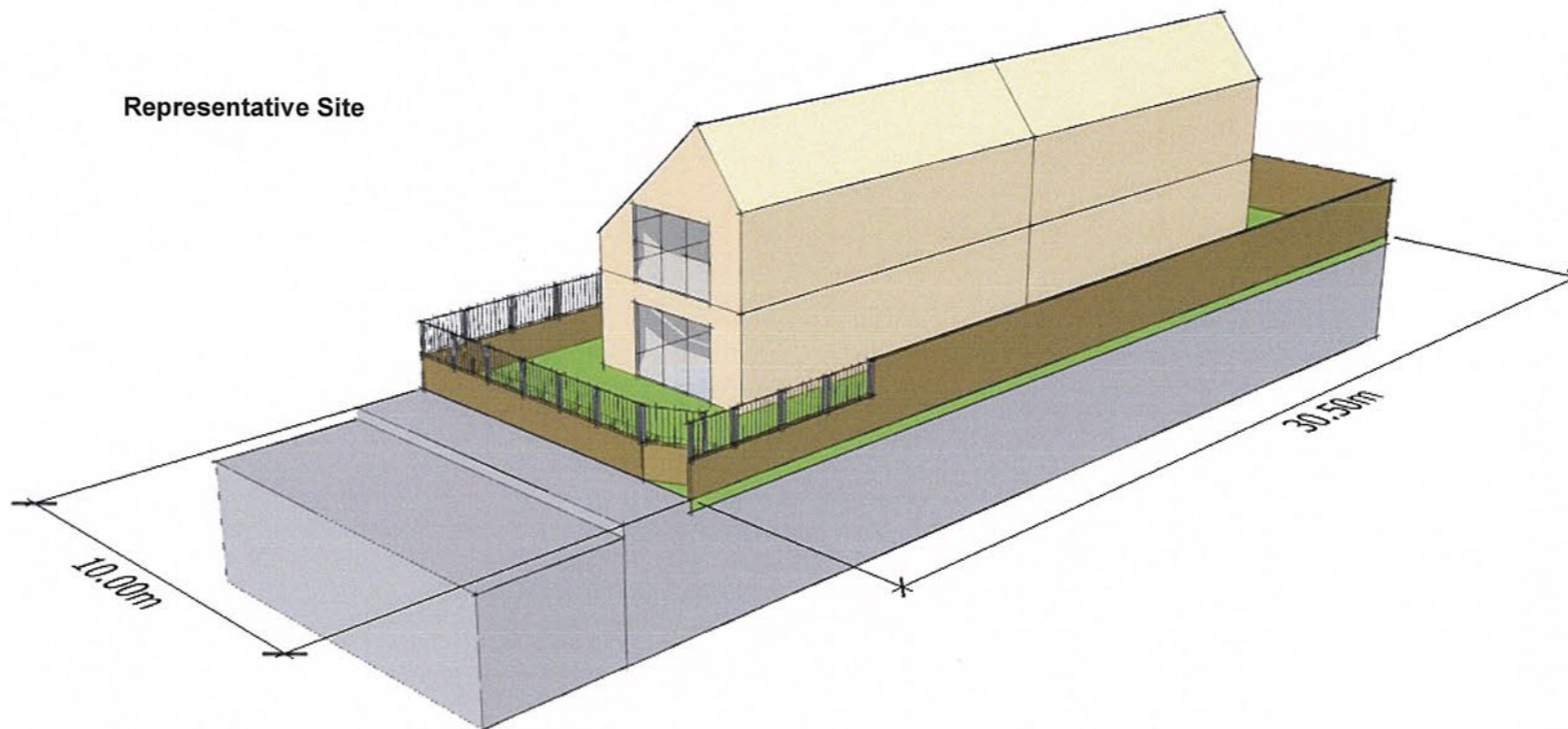
L4C site 550m² Category

test modelling the 14 City plan provisions

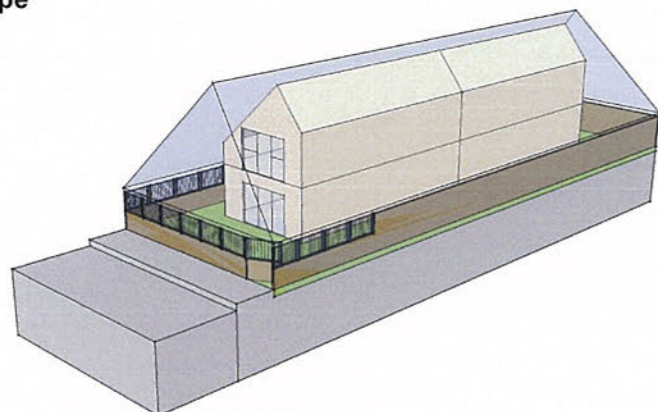
Street Level



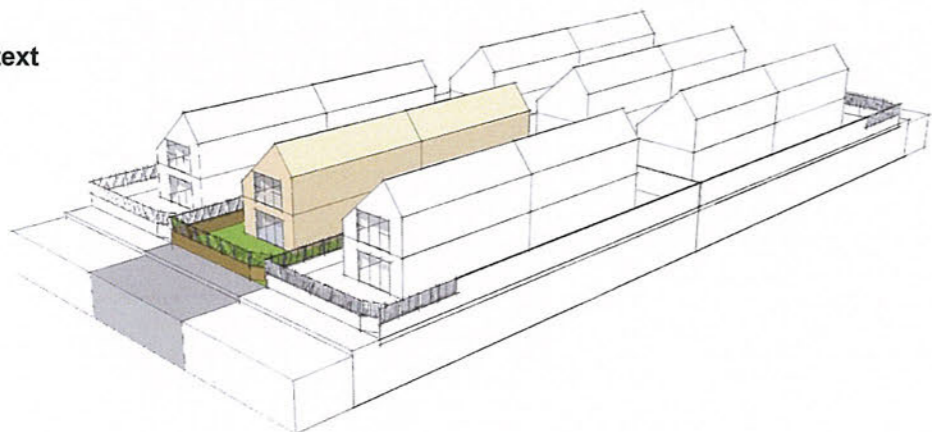
Representative Site



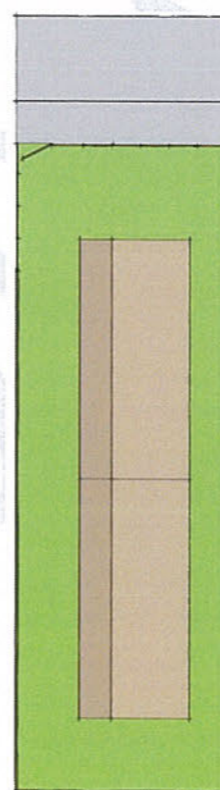
Envelope



Context



Plan View



Rule info:

Permitted height: 8m
 Permitted RfAR: 1.2
 Road setback: 4.5 - 6m

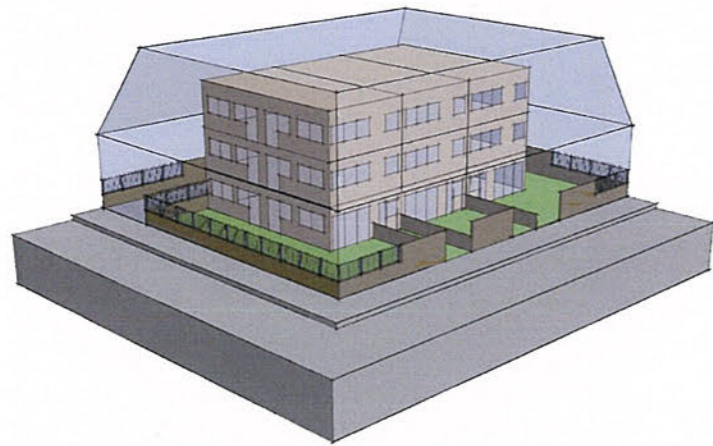
outcome:

Height achieved: 7.3m
 Actual setback: 4.5m
 total floor area: 234m²
 number of units: 3 x 2 bedroom units
 1 x 1 bedroom unit
 carparking: none
 Site area: 305m²

-  Access (including road reserve)
-  Representative building
-  Boundary fencing
-  Windows
-  carparking: sur-
-  carparking: garage
-  outdoor living space
-  Recession plane envelope

L4C site 2509m² Category (east-west orientation)

Envelope



Representative Site

DRAFT

I4a site 250m² Category (Corner)

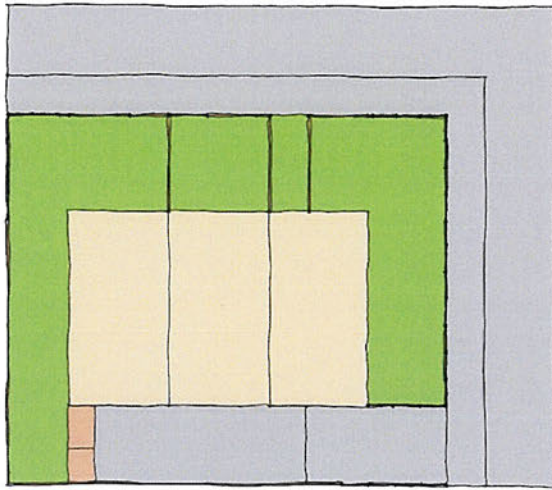
test modelling the I4 City plan provisions

Revision: B • Date: 4 February 2008 • Scale: not to scale

Contact: tim.church@boffamiskell.co.nz • © Boffa Miskell Limited 2007

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Plan View



DRAFT

Rule info:

Permitted height: 11m
Permitted RfAR: 1.2
Road setback: 3m - 4.5m

outcome:

Height achieved: 8.4m Actual setback: 4.5m total floor area: 561m²
number of units: 9 x 2 bedroom units
1 x studio unit carparking: basement garage Site area:
525m²

DRAFT

Access (including road reserve) Representative building Boundary

fencing

Windows carparking: surface carparking: garage outdoor

living space Recession plane envelope

DRAFT