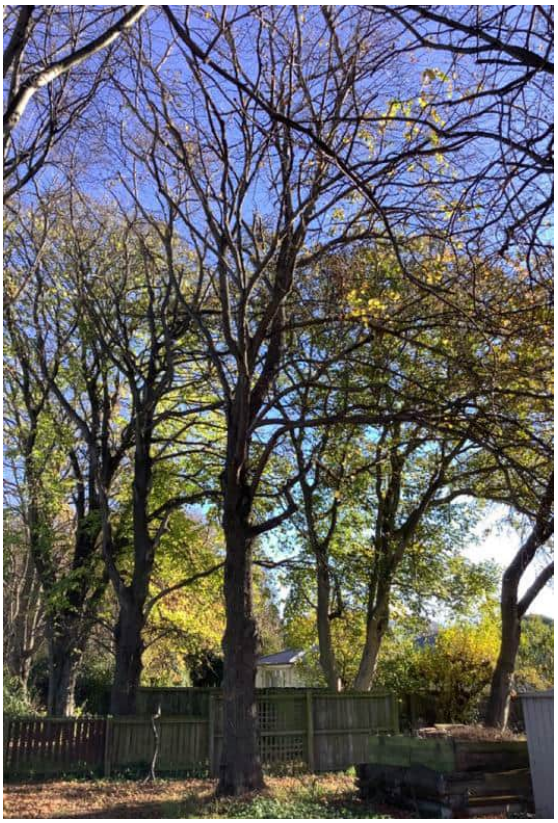
‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T915
Address:	24 Main South Road Sockburn
Tree Species:	*Tilia x europaea*, Common Lime
Native/Exotic:	Exotic
Photograph:	2022-05-23 (arborist)
Location Plan:	



Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a residential area. A Community Facility (church buildings) currently occupies the property and the properties to the east. The tree sits on the property’s southern boundary adjoining Main South Road. Private lawn, driveway and other large trees occupy the space immediately surrounding the tree. It forms part of a reasonably continuous row of Significant Trees: T919-T915, T925-T927.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 17m and a spreading canopy of 11-13m in diameter. Its canopy is lifted high and the branches spread from a single trunk. Its proximity to adjacent trees has helped to shape its narrow canopy. The tree’s significant height and association with the other trees creates a transitional landscape between the streetscape and the church buildings.		
Summary	This tree is significant in the landscape. Its positive characteristics contribute to the urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T916
Address:	24 Main South Road Sockburn
Tree Species:	*Tilia x europaea*, Common Lime
Native/Exotic:	Exotic
Photograph:	2022-06-09 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a residential area. A Community Facility (church buildings) currently occupies the property and the properties to the east. The tree sits on the property’s southern boundary adjoining Main South Road. Private lawn, driveway and other large trees occupy the space immediately surrounding the tree. It forms part of a mostly continuous row of Significant Trees: T915-T919, T925-T927.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 17m and a spreading canopy of 10-14m in diameter. Its canopy is lifted high and the branches spread from a single trunk. Its proximity to adjacent trees has helped to shape its narrow canopy. The tree’s significant height and association with the other trees creates a transition between the streetscape and the church buildings.		
Summary	This tree is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

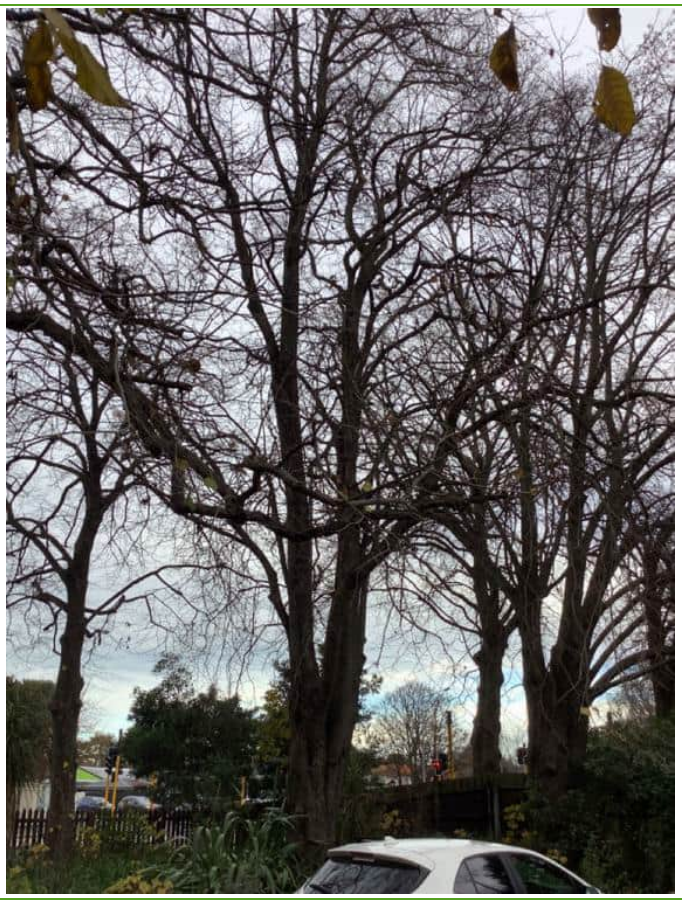
Tree ID:	T917
Address:	24 Main South Road Sockburn
Tree Species:	*Tilia x europaea*, Common Lime
Native/Exotic:	Exotic
Photograph:	2022-05-23 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a residential area. A Community Facility (church buildings) currently occupies the property and the properties to the east. The tree sits on the property’s southern boundary adjoining Main South Road. Private lawn, driveway and other large trees occupy the space immediately surrounding the tree. It forms part of a mostly continuous row of Significant Trees: T915-T919, T925-T927.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 20m and a spreading canopy of 14-20m in diameter. Its canopy is lifted high and the branches spread from a single trunk. Its proximity to adjacent trees has helped to shape its narrow canopy. The tree’s significant height and association with the other trees creates a transition between the streetscape and the church buildings.		
Summary	This tree is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T918
Address:	30 Main South Road Sockburn
Tree Species:	*Tilia x europaea*, Common Lime
Native/Exotic:	Exotic
Photograph:	2022-06-09 (arborist)
Location Plan:	



Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a residential area. A residential dwelling currently occupies the property, and the properties to the east. The tree sits on the property’s south-western boundary adjoining Main South Road and Curletts Road. Private garden and a second row of trees (to the south) occupy the space immediately surrounding the tree. It forms the western extent of a mostly continuous row of Significant Trees; T919-T915, T925-T927.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 20m and a spreading canopy of 10-16m in diameter. Its canopy is lifted high and the branches spread from a single trunk. Its proximity to adjacent trees has helped to shape its narrow canopy. The tree’s significant height and association with the other trees creates a transition between the streetscape and buildings.		
Summary	This tree is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

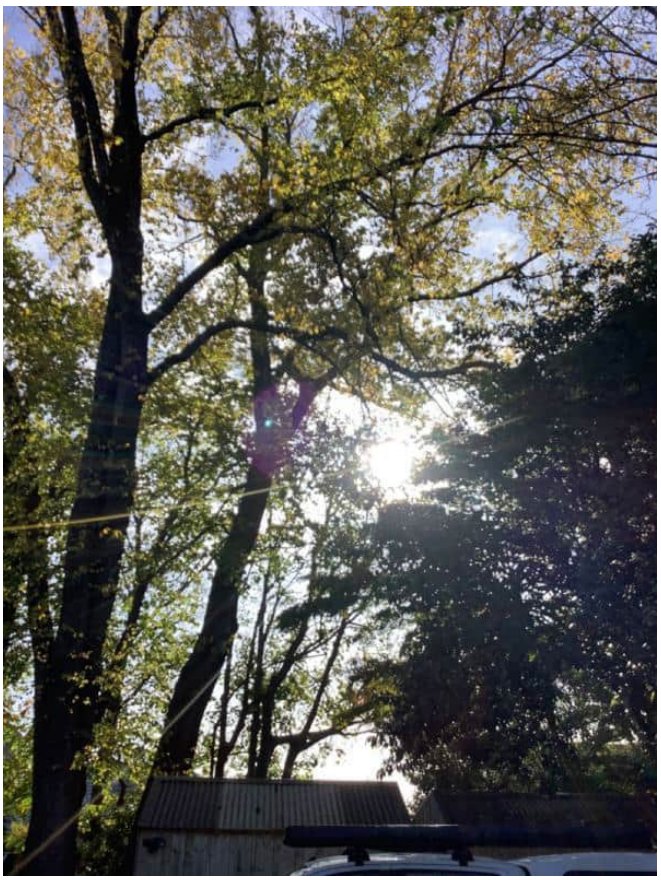
Tree ID:	T919
Address:	30 Main South Road Sockburn
Tree Species:	*Tilia x europaea*, Common Lime
Native/Exotic:	Exotic
Photograph:	2022-06-10 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a residential area. A residential dwelling currently occupies the property, and the properties to the east. The tree sits on the property’s south-western boundary adjoining Main South Road and Curletts Road. Private garden and a second row of trees (to the south) occupy the space immediately surrounding the tree. It forms the western extent of a mostly continuous row of Significant Trees; T919-T915, T925-T927.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 19m and a spreading canopy of 12-20m in diameter. Its canopy is lifted high and the branches spread from a single trunk. Its proximity to adjacent trees has helped to shape its narrow canopy. The tree’s significant height and association with the other trees creates a transition between the streetscape and buildings on the site.		
Summary	This tree is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T923
Address:	26 Main South Road Riccarton
Tree Species:	*Ulmus procera*, English Elm
Native/Exotic:	Exotic
Photograph:	2022-05-23 (arborist)
Location Plan:	

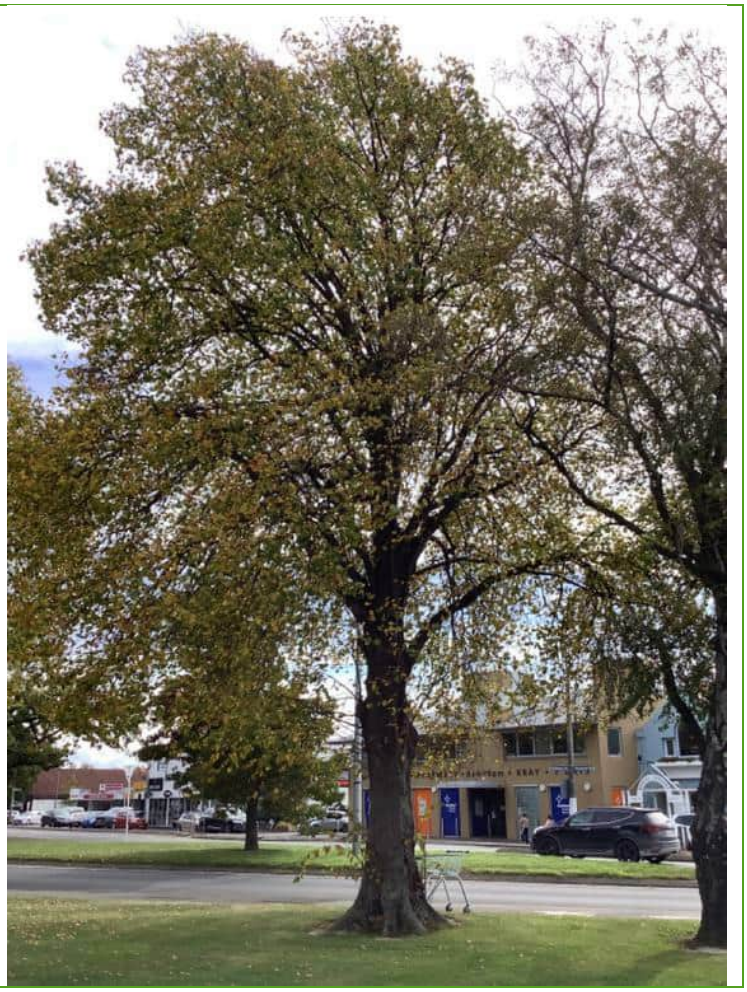


Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a residential area that adjoins Glebe Reserve to the west. The property is currently occupied by a community facility (St Allisa). The tree sits on the property’s northern boundary. The space immediately surrounding the tree is occupied by a small building, a vehicle parking area and other trees.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 26m and a spreading canopy that is 18-20m in diameter. The tree is currently interconnected with the surrounding trees lining the northern and eastern boundaries of this property and within Glebe Reserve.		
Summary	This tree is significant in the landscape. Its positive characteristics contribute to the urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T924
Address:	1 Main South Road, Upper Riccarton
Tree Species:	*Tilia x europaea*, Common Lime
Native/Exotic:	Exotic
Photograph:	2022-04-20 (arborist)
Location Plan:	

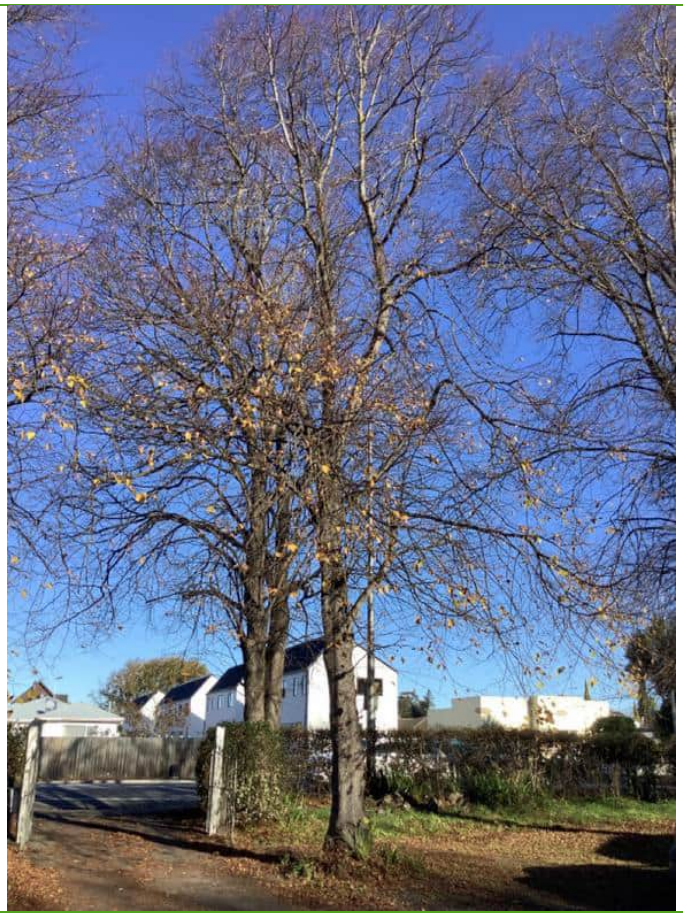


Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a residential area, with a commercial area to the north. A residential complex currently occupies the property. The tree sits on the property’s northern boundary adjoining Main South Road. The space immediately surrounding the tree is occupied by the public footpath and open private lawn area. The tree is one in a line of significant trees; T230-T232, T235-T238 and T924.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ streetscape This tree has a height of 15m and a broad spreading canopy of 13-14m in diameter. The line of eight Common Lime trees mark a transition between public and private space that is otherwise undefined. The tree contributes to the streetscape and assists in reflecting the significance of the Heritage Setting on the opposite side of Main South Road.		
Summary	This tree is significant in the landscape. Its positive characteristics contribute to the urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T925
Address:	26B Main South Road Sockburn
Tree Species:	*Tilia x europaea*, Common Lime
Native/Exotic:	Exotic
Photograph:	2022-05-23 (arborist)
Location Plan:	



Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a residential area. A Community Facility (church buildings) currently occupies the property and the properties to the east. The tree sits on the property’s southern boundary adjoining Main South Road. Private lawn, driveway and other large trees occupy the space immediately surrounding the tree. It forms part of a row of Significant Trees: T919-T915, T925-T927.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 17m and a spreading canopy of 11-12m in diameter. Its canopy is lifted and the branches spread from a single, narrow trunk. Its proximity to adjacent trees has formed an asymmetrical canopy. The trees significant height and association with the other trees creates a transitional landscape between the streetscape and the church buildings. The tree marks the driveway, however due to its location within the property and cluster of surrounding trees, it is not considered a wayfinding marker.		
Summary	This tree is significant in the landscape. Its positive characteristics contribute to the urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

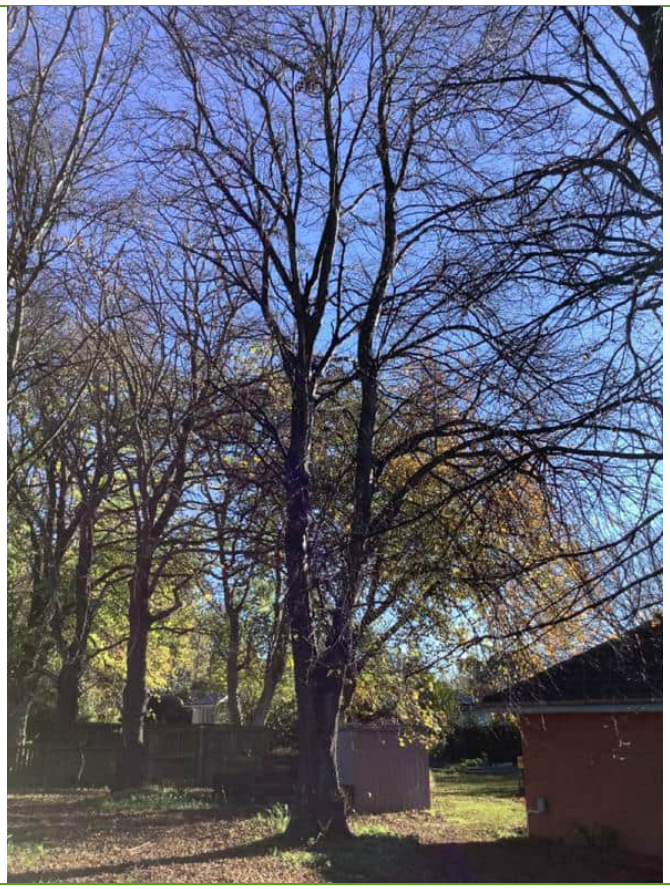
Tree ID:	T926
Address:	26B Main South Road Sockburn
Tree Species:	*Tilia x europaea*, Common Lime
Native/Exotic:	Exotic
Photograph:	2022-05-23 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a residential area. A Community Facility (church buildings) currently occupies the property and the properties to the east. The tree sits on the property’s southern boundary adjoining Main South Road. Private lawn, a single storey building and other large trees occupy the space immediately surrounding the tree. It forms part of a reasonably continuous row of Significant Trees; T919-T915, T925-T927.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 18m and a spreading canopy of 12-15m in diameter. Its canopy is lifted above the building and the branches spread from a single trunk. Its proximity to adjacent trees has formed an asymmetrical canopy. The tree’s significant height and association with the other trees creates a transitional landscape between the streetscape and the buildings on the site.		
Summary	This tree is significant in the landscape. Its positive characteristics contribute to the urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T927
Address:	26B Main South Road Sockburn
Tree Species:	*Tilia x europaea*, Common Lime
Native/Exotic:	Exotic
Photograph:	2022-05-23 (arborist)
Location Plan:	



Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a residential area. A Community Facility (church buildings) currently occupies the property and the properties to the east. The tree sits on the property’s southern boundary adjoining Main South Road. Private lawn, a single storey building and other large trees occupy the space immediately surrounding the tree. It forms part of a row of Significant Trees: T919-T915, T925-T927.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 20m and a spreading canopy of 11-14m in diameter. Its proximity to adjacent trees has formed it into an asymmetrical canopy. The trees significant height and association with the other trees creates a transitional landscape between the streetscape and the buildings on the site.		
Summary	This tree is significant in the landscape. Its positive characteristics contribute to the urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T938
Address:	250 Manchester Street Christchurch Central
Tree Species:	*Tilia x europaea*, Common Lime
Native/Exotic:	Exotic
Photograph:	2022-04-17 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a residential area in the Central City. A residential complex currently occupies the property. The tree sits on the property’s western boundary beside a private courtyard. The property’s boundary fence extends behind the tree, opening the tree to the streetscape. Public hard surfaces, private garden and a residential building occupy the space immediately surrounding the trees canopy.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ streetscape ▪ wayfinding marker This tree has a height of 17m and a spreading canopy with a diameter of 13m. Its canopy is raised to the east to enable the residential unit to sit underneath. The canopy spans out over the streetscape to the west.		
Summary	This tree is significant in the landscape. Its positive characteristics contribute to the urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

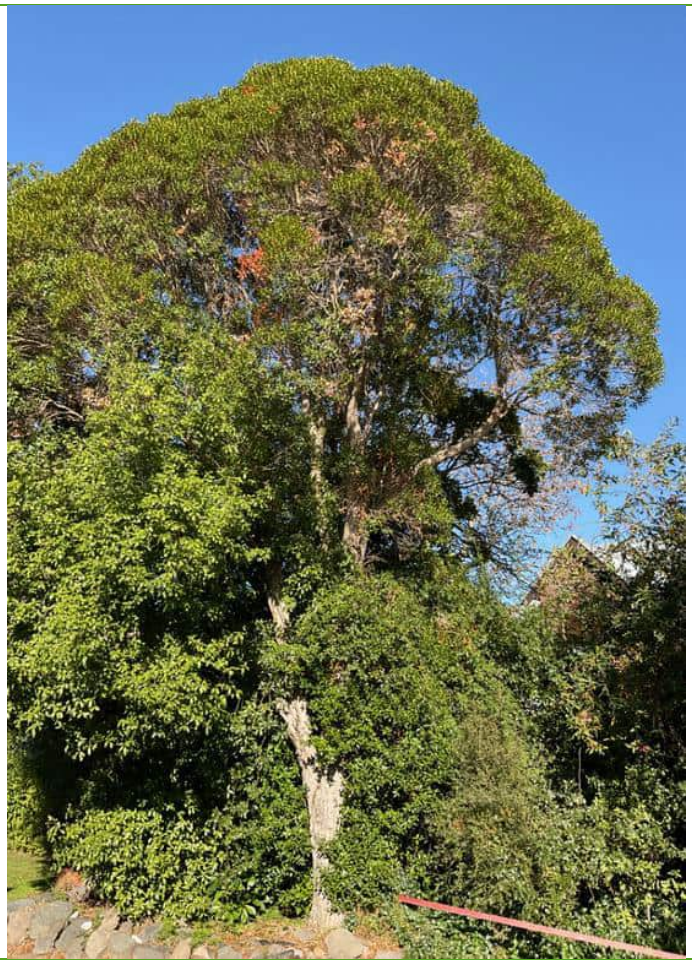
Tree ID:	T939
Address:	2 Marsden Street Heathcote Valley
Tree Species:	*Quercus robur*, English Oak
Native/Exotic:	Exotic
Photograph:	2022-04-23 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a residential area. The property is currently occupied by a residential dwelling. The tree sits on the western corner of the property adjacent to Marsden Street and Rollin Street. Public hard surfaces and private garden/lawn occupy the space immediately surrounding the tree.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ streetscape ▪ wayfinding marker This tree has a height of 14m with a broad spreading canopy with a diameter of 20-28m. The canopy’s edges have a vertical habit creating a soft texture with the lower trunks exposed. Its wide spread over the narrower streets contributes to traffic calming, particularly over Rollin Street. The tree’s location at the apex of an acute residential intersection provided for a strong visual prominence.		
Exceptional Significance	Local Feature (10). This tree is considered to be an exceptional feature within the local landscape. It is located within a quiet residential neighbourhood, and due to its visual prominence, provides an immediate impression on the viewer and the streetscape. The tree is visible prominent to the immediately adjacent dwellings and is a notable public feature to locals when approaching the site.		
Summary	This tree is visually significant in the landscape. Its positive characteristics contribute to the urban environment. It is also recommended to obtain an Exceptional Significance status for this tree.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T941
Address:	1 Martindales Road Heathcote Valley
Tree Species:	*Metrosideros umbellata*, Southern Rata
Native/Exotic:	Native
Photograph:	2022-06-09 (arborist)
Location Plan:	



Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Poor
Context	The tree is located within a residential area. The property is currently occupied by a residential dwelling. Tree Group (TG16) and a war cenotaph are located on the eastern side of the property, towards the Martindales Road, Flavell Street and Bridle Path Road intersection. The tree sits on the property’s eastern boundary adjoining a neighbouring property. The space immediately surrounding the tree is occupied by private garden space.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 11m and a spreading canopy that is 9m in diameter. Though the tree has been assessed as having an overall poor CTEM Landscape assessment, the tree provides positive contributions to the surrounding landscape due to its location on a visually prominent corner, and that fact that it is a native species that occurs infrequently within Christchurch City.		
Summary	This tree is significant in the landscape and it provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T943
Address:	42 Kilmarnock Street Riccarton
Tree Species:	*Juglans regia*, Common Walnut
Native/Exotic:	Exotic
Photograph:	2022-05-24 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a residential area. The property is currently occupied by a residential dwelling. The tree sits on the property’s northern boundary adjoining another property. Private gardens and the neighbouring building occupy the space immediately surrounding the tree.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 12m and a canopy spread of 12-14m in diameter. The tree is able to produce edible nuts.		
Summary	This tree is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T950
Address:	19 Memorial Avenue Ilam
Tree Species:	*Quercus robur*, English Oak
Native/Exotic:	Exotic
Photograph:	2022-04-15 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a residential and commercial area. The property is currently occupied by a commercial business - a supermarket. The tree sits at the north eastern boundary shared with Memorial Avenue. A small garden, lawn area and car parking occupy the space immediately surrounding the tree.		
Characteristics Contributions	▪ seasonal changes ▪ visually soften hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 12m and a spreading canopy that is 12-13m in diameter. The tree is set back from the road boundary and provides visual softening to the existing carpark area. Its canopy is currently unhindered by built structures and has a wide viewing catchment.		
Summary	This tree is significant in the landscape. Its positive characteristics contribute to the urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T953
Address:	273 Montreal Street Christchurch
Tree Species:	*Magnolia grandiflora*, Southern Magnolia
Native/Exotic:	Exotic
Photograph:	2022-05-25 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a mixed-use residential and commercial area within the Central City. The property is currently vacant. The tree sits in the south-western corner of the property. Compacted gravels and the boundary fence occupy the space immediately surrounding the tree.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 10m and a spreading canopy of 15-16m in diameter. Its canopy has been raised to 1.8m above ground level, exposing its large single trunk. The open environment has enabled this tree to remain unmodified and to mature to its natural shape and form, indicative of the species.		
Summary	This tree is significant in the landscape. Its positive characteristics contribute to the urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T960
Address:	26 Nash Road Halswell
Tree Species:	*Pseudotsuga menziesii*, Douglas Fir
Native/Exotic:	Exotic
Photograph:	2022-05-25 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a residential area, adjacent to the community facility (Nga Puna Wai) to the east, Open Space (Heathcote River) to the south and Special Purpose School Zone to the west. The property is currently occupied by a community facility (St John of God Halswell). The tree sits within the property towards the east.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective ▪ heritage setting This tree has a height of 21m and a spreading canopy that is 9-10m in diameter. The species is infrequent in Christchurch. The tree contributes to the heritage and entrance aesthetics of the property. A heritage setting surrounds the St John of God Chapel, which is a significant part of New Zealand's religious and welfare history.		
Summary	This tree is significant in the landscape. Its positive characteristics contribute to the urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T969
Address:	126 North Parade Richmond
Tree Species:	*Cunninghamia lanceolata*, China Fir
Native/Exotic:	Exotic
Photograph:	2022-05-26 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a residential area. The property is currently vacant. The tree sits on the property’s northern boundary in the eastern part of the site. The boundary fence and private lawn/garden area occupies the space immediately surrounding the tree.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective ▪ architectural form This tree has a height of 25m and a pyramidal canopy that is 11-12m in diameter. The tree shape has been allowed to remain relatively unmodified due to the open landscape it sits within. It is an infrequent species within Christchurch.		
Summary	This tree is significant in the landscape. Its positive characteristics contribute to the urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T972
Address:	82 Opawa Road Opawa
Tree Species:	*Juglans regia*, Common Walnut
Native/Exotic:	Exotic
Photograph:	2022-05-27 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a residential area. The property is currently occupied by a residential dwelling. The tree sits on the property’s southern corner. The space immediately surrounding the tree is occupied by buildings and a garden area.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 10m and a spreading canopy that is 14-15m in diameter. The tree is a dominant visual feature in the garden, and its relationship with the building enables the formation of a unique outdoor space. This tree provides edible nuts.		
Summary	This tree remains visually significant in the landscape and its characteristics contribute positively to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T977
Address:	4 Paeroa Street Riccarton
Tree Species:	*Abies pinsapo*, Spanish Fir
Native/Exotic:	Exotic
Photograph:	2022-04-21 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a residential area, with an open space park north of the property. The property is currently occupied by a residential dwelling. The tree sits on the property’s western boundary adjoining Paeroa Street.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ streetscape This tree has a height of 17m and a pyramidal canopy that is 10-11m in diameter. The tree overhangs the streetscape. The tree’s pyramidal shape provides contrast to the adjoining park trees (to the north) which are broadly spreading in shape.		
Summary	This tree is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

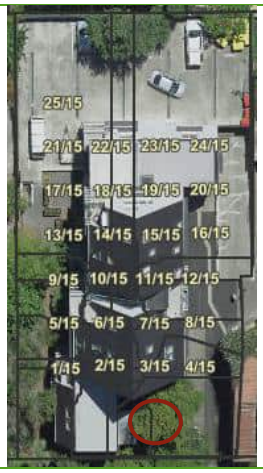
Tree ID:	T978
Address:	76 Palatine Terrace Saint Martins
Tree Species:	*Tilia x europaea*, Common Lime
Native/Exotic:	Exotic
Photograph:	2022-06-01 (arborist)
Location Plan:	

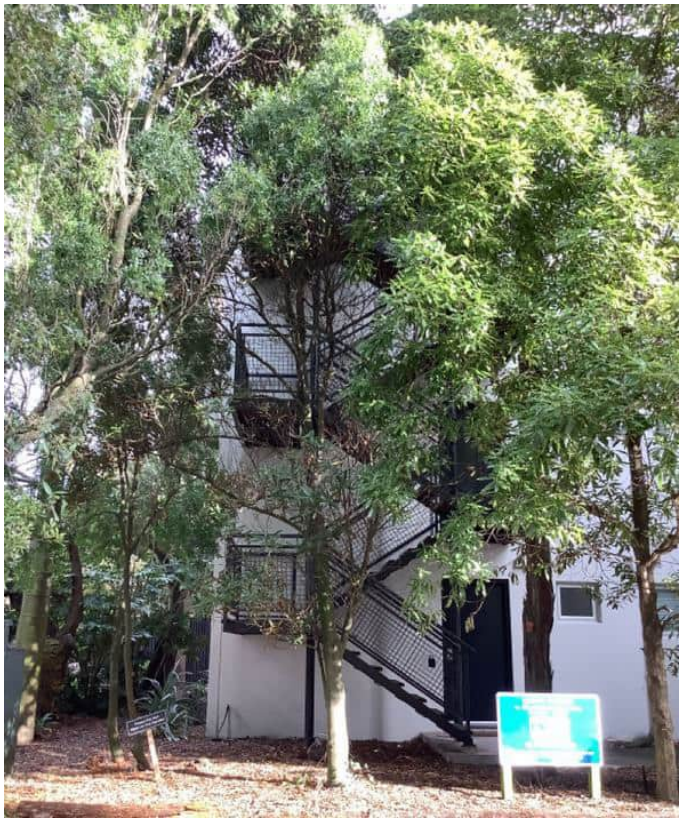
Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a residential area. The property is currently occupied by a residential dwelling. The tree sits on the properties northern boundary, adjacent to Buxton Terrace and Palatine Terrace. The space immediately surrounding the tree is occupied by private garden space, the boundary fence.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ streetscape ▪ wayfinding marker This tree has a height of 19m with a spreading canopy that is 9-10m in diameter. Its location on the intersection makes it a wayfinding marker, lending visual prominence. The tree house that was observed by the arborist demonstrates associative values that may be attached to this tree.		
Summary	This tree remains visually significant in the landscape and its characteristics contribute positively to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T1029
Address:	15 Peterborough Street Christchurch Central
Tree Species:	*Elaeocarpus hookerianus*, Pokaka
Native/Exotic:	Native
Photograph:	2022-04-23 (arborist)
Location Plan:	



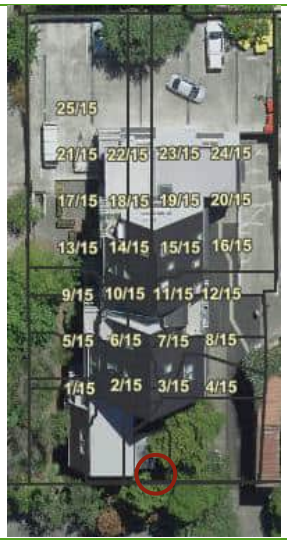


Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Poor-Fair
Context	The tree is located within a residential area within the central city. A residential dwelling complex currently occupies the property. The property currently includes three significant trees (T1029, T1030 & T1032). The tree sits within the property close to its southern boundary, adjoining Peterborough Street. Other trees, private courtyard, the building and vehicle manoeuvring space occupy the space immediately surrounding the tree.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 8m and a spreading canopy that is 4-5m in diameter. It’s a native tree species that occurs infrequently within Christchurch. It currently provides direct screening of the buildings external stairs from the private vehicle entrance. Its canopy is interconnected with neighbouring trees creating a larger grouping which provides a softening effect and is visible from the street.		
Summary	This tree is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T1030
Address:	15 Peterborough Street Christchurch Central
Tree Species:	*Agathis australis*, Kauri
Native/Exotic:	Native
Photograph:	2022-04-23 (arborist)
Location Plan:	

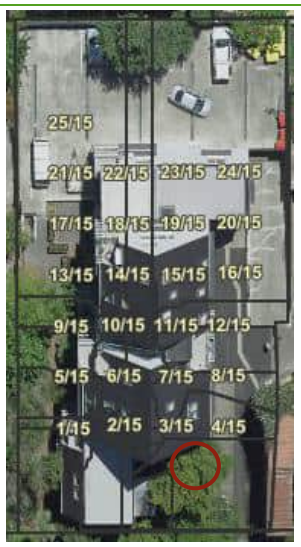


Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Poor-Fair
Context	The tree is located within a residential area within the central city. A residential dwelling complex currently occupies the property. The property includes three significant trees (T1029, T1030 & T1032). The tree sits within the property on its southern boundary, adjoining Peterborough Street. Other trees, private courtyard, and the building occupy the space immediately surrounding the tree.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 15m and a pyramidal canopy that is 8m in diameter. Its lower canopy is visually interconnected with neighbouring trees, and is partially obscured. However, the texture and colour of the top portion of the canopy is distinct from the surrounding trees.		
Summary	This tree is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T1032
Address:	15 Peterborough Street Christchurch Central
Tree Species:	*Podocarpus hallii*, Hall's Totara
Native/Exotic:	Native
Photograph:	2022-04-23 (arborist)
Location Plan:	

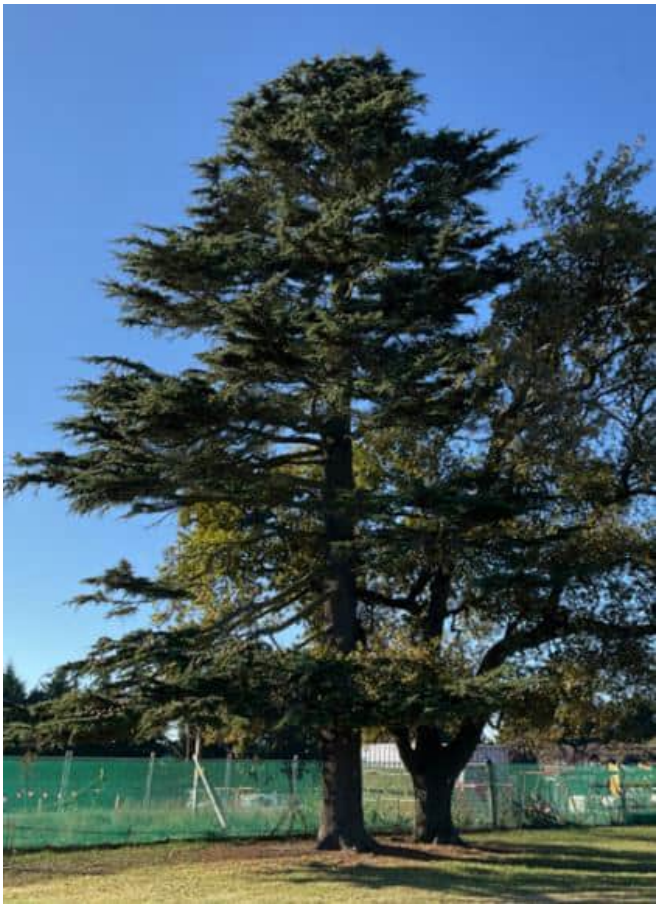


Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a residential area within the central city. A residential dwelling complex currently occupies the property. The property includes three significant trees (T1029, T1030 & T1032). The tree sits within the property close to the southern boundary. Other trees, private courtyard, the building and vehicle manoeuvring space occupy the space immediately surrounding the tree.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective ▪ architectural form This tree has a height of 14m and a spreading canopy that is 10-11m in diameter. It has single solid trunk that is visually distinct even when surrounded by other vegetation. The branches have a narrow vertical habit as they reach above the building, with the canopy spreading above the building roof line.		
Summary	This tree is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T1057
Address:	35R Steadman Road Broomfield
Tree Species:	*Cedrus deodara*, Deodar Cedar
Native/Exotic:	Exotic
Photograph:	2022-05-21 (arborist)
Location Plan:	



Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a commercial area. A commercial business (Golf Complex) currently occupies the property. The tree sits on the property’s northern boundary adjacent to the private access way. An area of lawn, the access way and boundary fencing occupy the space immediately surrounding the tree.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 18m with a broad pyramidal canopy, which is 12m in diameter. The tree is interconnected with the adjoining tree to the east. The tree aids in visually marking the boundary and the edge of the vehicle access.		
Summary	This tree is significant in the landscape. Its positive characteristics contribute to the urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T1075
Address:	17 Rata Street Riccarton
Tree Species:	*Ulmus minor Variegata*, Variegated Smooth-leaved Elm
Native/Exotic:	Exotic
Photograph:	2022-04-21 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a residential area. The property is currently occupied by a residential dwelling. The tree sits on the property’s northern boundary, adjoining Rata Street. The space immediately surrounding the tree is occupied by the vehicle entrance, private garden and the streetscape.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ streetscape This tree has a height of 18m and a spreading canopy that is 13-14m in diameter. The tree’s canopy spreads over into the street contributing to the streetscape. The light coloured foliage is distinct from surrounding vegetation.		
Summary	This tree is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T1081
Address:	38 Riccarton Road Riccarton
Tree Species:	*Thuja plicata*, *Western Red Cedar*
Native/Exotic:	Exotic
Photograph:	2022-04-22 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a commercial area. The property is currently occupied by a commercial business (motel). The tree sits towards the property’s southern boundary, adjoining Riccarton Road. The space immediately surrounding the tree is occupied by a small garden bed and hardstand surfaces.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 13m and a pyramidal canopy that is 10m in diameter. It assists with definition of the access way into the property, as does a second tree within the property to the west.		
Summary	This tree is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T1124
Address:	5 The Oval Middleton
Tree Species:	*Quercus palustris*, Pin Oak
Native/Exotic:	Exotic
Photograph:	2022-04-20 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a residential area. The property is currently occupied by a residential dwelling. The tree sits on the property’s northern boundary, adjacent to The Oval road reserve. The space immediately surrounding the tree is occupied by a garden and the vehicle entranceway.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ streetscape ▪ wayfinding marker This tree has a height of 15m and a broad spreading canopy that is 20-25m in diameter. The canopy is approximately 1.8-2m above ground level and spreads over The Oval Road reserve, contributing to the streetscape and traffic calming.		
Exceptional Significance	Local Feature (10). This tree is considered to be an exceptional feature within the local landscape, due to its visually prominent location within the streetscape, and its size and broadly spreading canopy formation. The tree is visible prominent to the immediately adjacent dwellings and is a notable public feature to locals when approaching the site.		
Summary	This tree is significant in the landscape, particularly in regard to its broad spreading canopy. Its positive characteristics contribute to the urban environment. It is recommended to obtain an Exceptional Significance status for this tree.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T1128
Address:	14 Thorrington Road Cashmere
Tree Species:	*Nothofagus solandri*, Black Beech
Native/Exotic:	Native
Photograph:	2022-04-19 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a residential area. The property is currently occupied by a residential dwelling. The tree sits on the property’s southern boundary adjoining Majestic Lane and Thorrington Road. It sits within a cluster of other Black Beech trees (T1129, T1130 and T1131) in this southern corner of the property.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ streetscape This tree has a height of 15m and a spreading canopy of 12-14m in diameter. It is a native species that is infrequently occurring to this size in Christchurch City. It overhangs the corner of the property contributing to the streetscape of both Majestic Lane and Thorrington Road. The tree’s canopy connects with the other large trees on this property’s southern corner.		
Summary	This tree remains significant in the landscape and its characteristics contribute positively to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

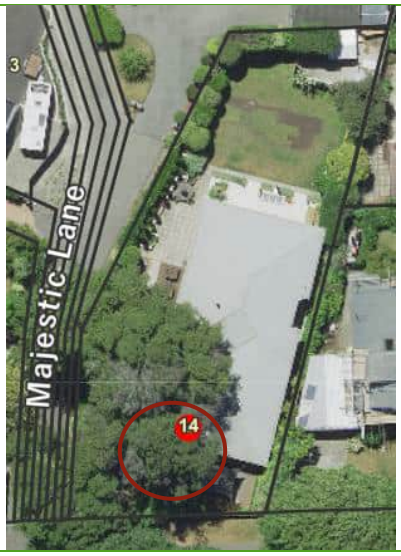
Tree ID:	T1129
Address:	14 Thorrington Road Cashmere
Tree Species:	*Nothofagus solandri*, Black Beech
Native/Exotic:	Native
Photograph:	2022-04-19 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Poor-Fair
Context	The tree is located within a residential area. The property is currently occupied by a residential dwelling. The tree sits within the property towards the eastern boundary, adjoining Majestic Lane. It sits within a cluster of other Black Beech trees (T1128, T1130 and T1131) in this southern corner of the property.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ streetscape This tree has a height of 14m and a pyramidal canopy of 9-14m in diameter. It overhangs the streetscape and carriageway of Majestic Lane, contributing to traffic calming. It is a native species that is infrequently occurring to this size in Christchurch City. The tree’s canopy connects with the other large trees on this property’s southern corner.		
Summary	This tree remains significant in the landscape and its characteristics contribute positively to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T1130
Address:	14 Thorrington Road Cashmere
Tree Species:	*Nothofagus solandri*, Black Beech
Native/Exotic:	Native
Photograph:	2022-04-19 (arborist)
Location Plan:	



Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Poor-Fair
Context	The tree is located within a residential area. The property is currently occupied by a residential dwelling. The tree sits within the property towards the southern boundary shared with Thorrington Road. It sits within a cluster of other Black Beech trees (T1128, T1129 and T1131) in this southern corner of the property.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 15m and a spreading canopy of 7-9m in diameter. It is a native species that is infrequently occurring to this size in Christchurch City. The tree’s canopy connects with the other large trees on this property’s southern corner.		
Summary	This tree remains significant in the landscape and its characteristics contribute positively to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T1131
Address:	14 Thorrington Road Cashmere
Tree Species:	*Nothofagus solandri*, Black Beech
Native/Exotic:	Native
Photograph:	2022-04-19 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The tree is located within a residential area. The property is currently occupied by a residential dwelling. The tree sits within the southern area of the property. It sits within a cluster of other Black Beech trees (T1128, T1129 and T1130) in this southern corner of the property.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 15m and a pyramidal canopy of 10m in diameter. It is a native species that is infrequently occurring to this size in Christchurch City. The tree’s canopy has been raised above the single storey dwelling, enabling the trees canopy to spread wide and connect with the other large trees on this property’s southern corner.		
Summary	This tree remains significant in the landscape and its characteristics contribute positively to an urban environment.		

‘Qualifying Matter’ Significant Tree

Landscape Contributions

Tree ID:	T1158
Address:	63 Westgrove Avenue Avonhead
Tree Species:	*Juglans regia*, Common Walnut
Native/Exotic:	Exotic
Photograph:	2022-05-21 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree is located within a residential area. The property is currently occupied by a residential dwelling. The tree sits in the north-western corner of the property. Lawn and boundary hedging occupies the space immediately surrounding the tree.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective This tree has a height of 11m and a broad spreading canopy that is 17-19m in diameter. The tree has a significant canopy spread that has been previously unhindered by built form. The tree also produces a source of food through its production of walnuts.		
Summary	This tree is significant in the landscape. Its positive characteristics contribute to the urban environment.		

Appendix 28

Attachment C Significant Tree Groups - Christchurch City Council

Significant Trees Qualifying Matters Technical Report

Christchurch City Council

Technical Report

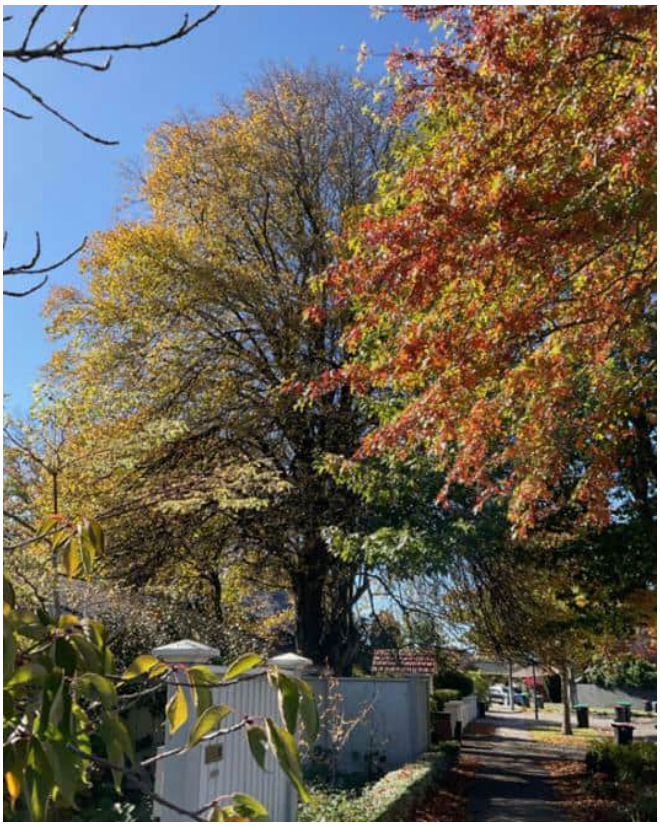
Attachment C

QM Reports 2022 - Significant Group Trees

‘Qualifying Matter’ Significant Tree Group

Landscape Contributions

Tree ID:	TG1
Address:	29 Snowdon Road Fendalton
Tree Species:	(x2) *Tilia x europaea*, Common Lime
Native/Exotic:	Exotic
Photograph:	2022-04-15 (arborist)
Location Plan:	

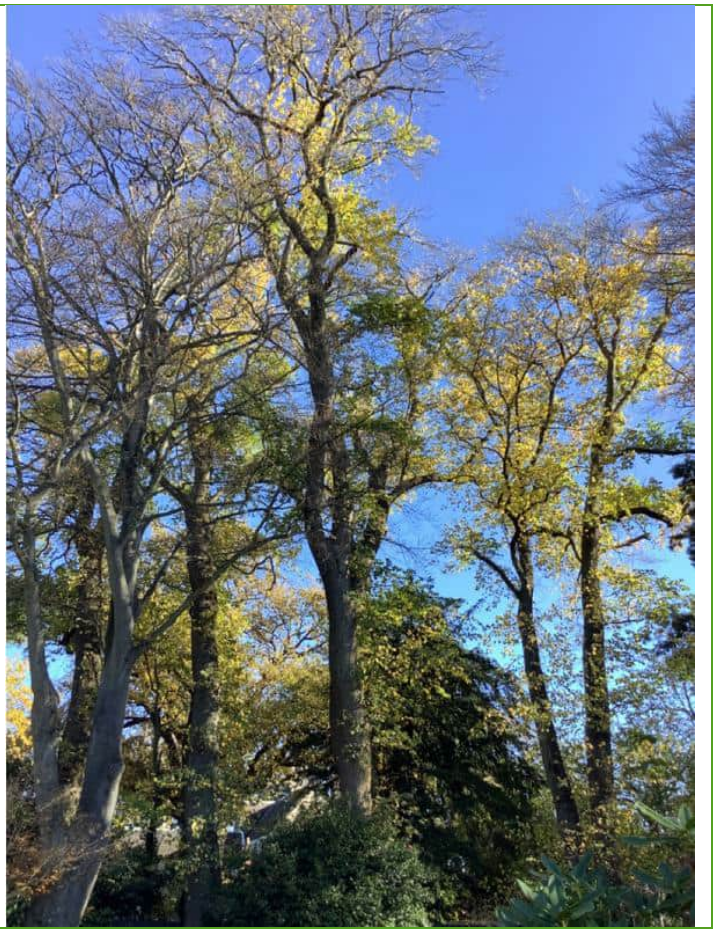


Criteria	Assessment		
CTEM	Fail	***CTEM Landscape Evaluation Points:***	Fair
Context	The trees are located within a residential area. The property is occupied by a residential dwelling. The trees mark the entrance to this property, adjoining Snowdon Road, with one on each site of the driveway. The property currently contains a long driveway to two residential properties, which comprises the only street frontage.		
Characteristics Contributions	▪ seasonal changes ▪ visually soften hard landscapes ▪ visual screening ▪ streetscape ▪ wayfinding marker The trees have a height of 20m and broad spreading canopies of 10-16m. Their substantial height contributes to their grand stature and provides visual screening and softening. The trees’ canopies are visually interconnected, creating a gateway effect at the driveway entrance.		
Exceptional Significance	Local Feature (10). This group as a symmetrical pairing of the same species and at identical heights form a notable entranceway to this property. The tree large height are predominate within the wider landscape, visible when approaching the site on Snowdon Road and from Idris Road.		
Summary	This tree group is significant in the landscape. It provides positive characteristics and contributions to an urban environment. It is recommended that this tree group obtains Exceptional Significance status.		

‘Qualifying Matter’ Significant Tree Group

Landscape Contributions

Tree ID:	TG2
Address:	2/10 Ludecke Place Sockburn
Tree Species:	(x2) *Fagus Sylvatica*, European Beech & (x3) *Ulmus procera*, English Elm
Native/Exotic:	Exotic
Photograph:	2022-05-23 (arborist)
Location Plan:	

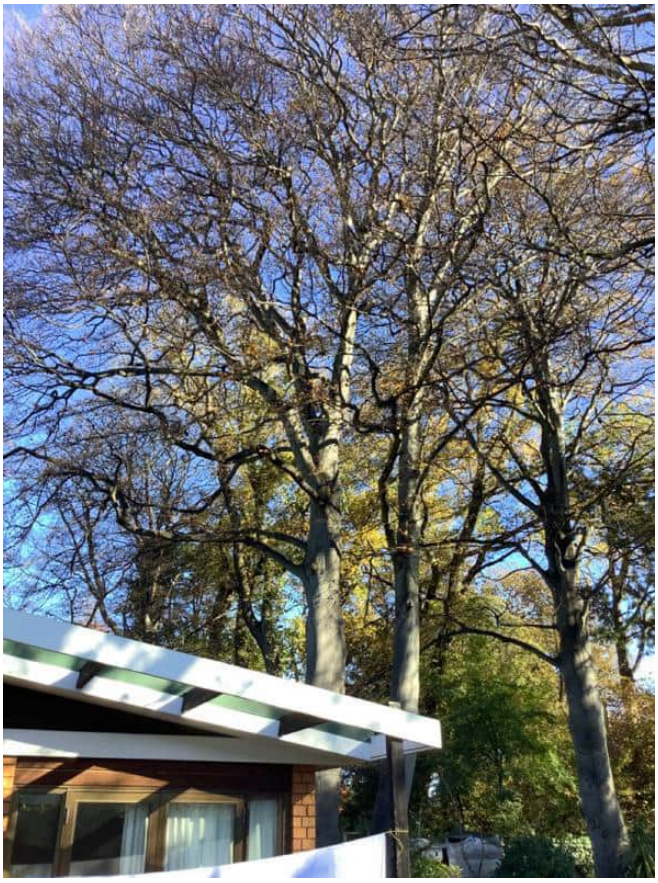


Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The trees are located within a residential area. The property is currently occupied by a residential dwelling. The trees sit on the property’s western boundary and are in close proximity to tree group TG3, located just to the north. The space immediately surrounding the trees is occupied by private garden.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective The trees have a height of 24-30m and all have broad spreading canopies that are 14-23m in diameter. Their stature ensures that the trees are visible from Cephas Close and Ludecke Place. They create a soft vegetative backdrop to the current residential housing to the east.		
Summary	This tree group is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree Group

Landscape Contributions

Tree ID:	TG3
Address:	8 Ludecke Place Sockburn
Tree Species:	(x1) *Platanus orientalis*, Oriental Plane & (x3) *Fagus Sylvatica*, European Beech
Native/Exotic:	Exotic
Photograph:	2022-05-23 (arborist)
Location Plan:	



Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The trees are located within a residential area. The property is currently occupied by a residential dwelling. The trees sit on the property’s western boundary and are in close proximity to tree group TG2 located just to the south. The space immediately surrounding the trees is occupied by private garden.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perspective The trees have a height of 15-28m and all have broad spreading canopies that are 15-20m in diameter. Their stature ensures that the group to be visible from Cephas Close and Ludecke Place. They currently create a soft vegetated backdrop to the current residential housing to the east.		
Summary	This tree group is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree Group

Landscape Contributions

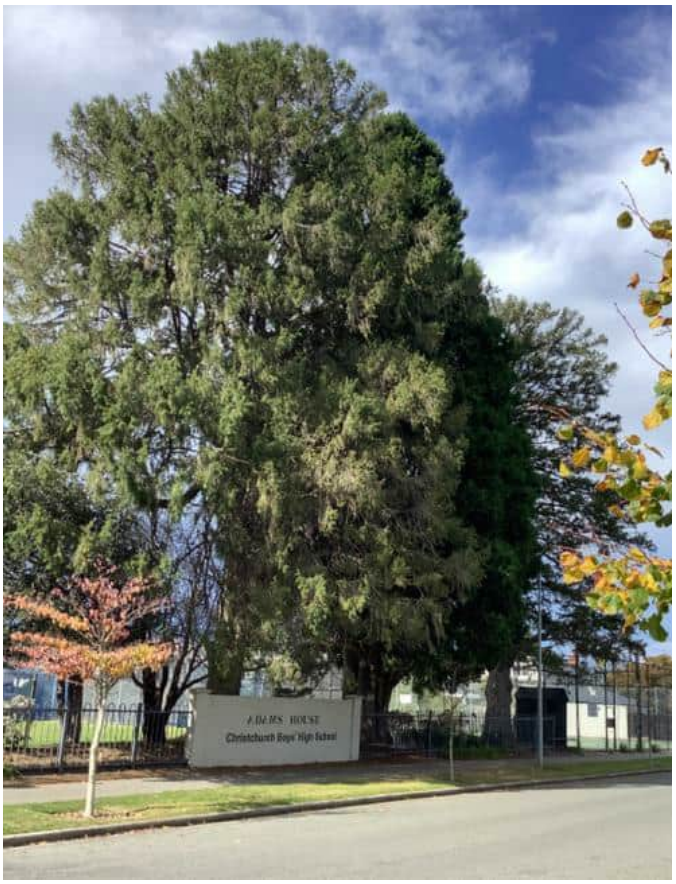
Tree ID:	TG10
Address:	189 Kilmarnock Street Riccarton
Tree Species:	(x7) *Tilia x europaea*, Common Lime
Native/Exotic:	Exotic
Photograph:	2022-04-21 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The trees are located on the edge a residential area. They sit on the southern corner of Deans Avenue and Kilmarnock Street, with Hagley Park sitting opposite. The property contains a hotel (The Chateau), with the trees being located adjacent to the associated car parking area. The property also holds tree T59, and the adjoining footpath is planted with tall shrubs and trees.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ streetscape ▪ wayfinding marker These trees have a height of 18-23m and spreading canopies of 8-13m in diameter. This group of trees are planted in a small circle, with interlaced canopies that visually create a single large canopy. This tight group reflects the large Hagley Park trees on the opposite side of Deans Avenue. This tight cluster of trees create a striking visual wayfinding marker in close proximity to the Kilmarnock Street and Deans Avenue intersection.		
Summary	This tree group is significant in the landscape and together comprises the illusion of a single large tree canopy. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree Group

Landscape Contributions

Tree ID:	TG15
Address:	46 Harakeke Street Riccarton
Tree Species:	(x2) *Picea smithiana*, Morinda Spruce & (x1) *Cupressus torulosa*, Bhutan Cypress
Native/Exotic:	Exotic
Photograph:	2022-04-21 (arborist)
Location Plan:	



Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair
Context	The trees are located within a residential area. The property currently contains private school facilities (Christchurch Boys High School). The trees are on the property’s western boundary, adjoining Harakeke Street. The Cypress sits centrally, with a Spruce on each side.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ streetscape All three trees have a pyramidal shape with the Cypress having a smooth defined form compared to the Spruces. They are unevenly spaced, and the Spruce tree to the south has had its growth limited by the closely located Cypress. The Spruce located to the north has more separation from the Cypress and it has been able to form a reasonably symmetrical canopy. Their formal pyramidal forms stand out from the wider landscape, which consist of mainly spreading tree shapes. Their visual dominance is only slightly impacted by their uneven spacing. These trees are of species that are rare within Christchurch.		
Summary	This tree group is significant in the landscape. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree Group

Landscape Contributions

Tree ID:	TG18
Address:	108 Shortland Street Wainoni
Tree Species:	(x3) *Eucalyptus viminalis*, Manna Gum
Native/Exotic:	Exotic
Photograph:	2022-04-20 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree group is located within a mixed use area containing both industrial and residential activities. The property is currently occupied by an industrial business. The trees sit on the property’s north eastern boundary adjacent to Shortland Street. This group previously consisted of four trees, one of which has since been removed. A car yard occupies the space immediately surrounding the tree.		
Characteristics Contributions	▪ all year greenery ▪ visually softens hard landscapes ▪ visual screening ▪ streetscape These trees have a height of 27-30m and spreading canopies that are 10-27m in diameter. Their height and large canopy ensures a wide viewing catchment. They provide visual softening in the surrounding landscape which otherwise has little vegetation and is comprised of hardstand areas.		
Summary	This tree group remains significant in the landscape even with the loss of one of its original group members. It provides positive characteristics and contributions to an urban environment.		

‘Qualifying Matter’ Significant Tree Group

Landscape Contributions

Tree ID:	TG21
Address:	27 Glandovey Road Fendalton
Tree Species:	(x7) Platanus x acerifolia, London Plane
Native/Exotic:	Exotic
Photograph:	2022-06-09 (arborist)
Location Plan:	

Criteria	Assessment		
CTEM	Pass	***CTEM Landscape Evaluation Points:***	Fair-Good
Context	The tree group is located within a residential area. The property is currently occupied by a residential dwelling. The tree group consists of seven London Plane trees that line the vehicle entrance way from the street to the dwelling.		
Characteristics Contributions	▪ seasonal changes ▪ visually softens hard landscapes ▪ visual screening ▪ visual perception These trees have a height of 20-21m and spreading canopies that are 10-21m in diameter. The high canopies and large trunks provide a grand entrance to this property and the residential dwelling is located centrally within the avenue of trees.		
Exceptional Significance	City Feature (30). This group provides an exceptionally grand avenue to this residential dwelling. The visual significance of this tree group can be visible from the public road when viewing down the access way. The amenity values are consistent with the Garden City ideals that have been a significant part of the history of Christchurch.		
Summary	This tree group remains significant in the landscape and it provides positive characteristics and contributions to an urban environment. It is recommended that this tree group obtains Exceptional Significance status.		

Appendix 29

Lower Height Limits – Victoria Street, and Cathedral Square - Christchurch City Council

Plan Change 14

Section 32:

Lower height Limits: Victoria Street & Cathedral Square – Qualifying Matters

Christchurch City Council

Technical Report

Date: 9th August 2022
Version:
Author: Jacqueline Chester
Peer reviewed:

DISCLAIMER:

Christchurch City Council has taken every care to ensure the correctness of all the information contained in this report. All information has been obtained by what are considered to be reliable sources, and Christchurch City Council has no reason to doubt its accuracy. It is however, the responsibility of all parties acting on information contained in this report to make their own enquiries to verify correctness.

Lower Height Limits – Victoria Street and Cathedral Square

1. Summary

1.1.1. This report identifies the issue of building height restrictions in two defined areas – Victoria Street and Cathedral Square. The report should be read alongside the broader technical Report – Issues and Options for Commercial Zones[1] that provides a technical response to Council's response to the NPS UD direction to increase development capacity in commercial zones.

1.1.2. It is considered that we are not required to justify these heights as qualifying matters but are doing so for the avoidance of all doubt and to demonstrate a higher evaluation threshold. This report therefore focuses on the matter of proposed lower height limits in the Victoria Street precinct and on some sites adjacent to Cathedral Square.

1.1.3. In Victoria Street and Cathedral Square, the specific characteristics of these locations mean that urban development enablement involving buildings up to 90m high (as per the proposed City Centre zone height limit[2]) would be inappropriate. This report identifies the characteristics of these locations such that an amended height limit is required. Urban form modelling has been undertaken that provides a justification for this approach and has helped identify an alternative, more suitable approach to height limits in these locations.

1.1.4. In summary, it is recommended that a height limit of 45m be applied in both the Victoria Street precinct and some sites adjacent to Cathedral Square. This contrasts with the 90m height limit that will be applied to be rest of the city centre zone (currently zoned Commercial Central City Business zone (CCCBZ)).

1.1.5. The addresses of the sites proposed to be subject to the lower height limits are:

Rationale: Impact on Cathedral Square's role as a key civic space	
14, 26, 28, 31, 32, 33, 50, 51 and 52	Cathedral Square
170	Oxford Terrace
763	Colombo Street
105	Worcester Street
Rationale: Victoria Street - City centre built form and legibility	
1/132,1/55,101,104,106,113,118, 122, 123, 126, 131, 133, 134, 137,138,143,145,148,149,155,159,167,169,171,177,179,183,2H-91,30,31,50,51,53,60,62,63,65,66,67,73,74,76,77,83,94,98,N/91	Victoria Street
1-388,366,376,384	Montreal Street
25,39,51,52	Peterborough Street
28	Bealey Ave
17	Dorset Street

[1] Technical Report – Issues and Options for Commercial Zones, CCC, July 2022
[2] Technical Report – Issues and Options for Commercial Zones, CCC, July 2022

2. Legal Requirements

2.1.1. We consider that Council is not required to justify these lower heights as qualifying matters but are doing so for the avoidance of all doubt and to demonstrate a higher evaluation threshold. In doing so, the following requirements should be met to reflect the approach necessary for Qualifying Matters.

2.1.2. The matter of whether lower height limits can be applied to particular locations within the City Centre City should be considered under section 77O (a), (f) and (j) of the Resource Management Act 1991 (RMA). This relates to 'Qualifying Matters in application of intensification policies to urban non-residential areas' and identifies that:

'a specified territorial authority may modify the requirements of Policy 3 in an urban non-residential zone to be less enabling of development than provided in those policies only to the extent necessary to accommodate 1 or more of the following qualifying matters that are present:

(a) A matter of national importance decision makers are required to recognise and provide for under Section 6

Namely Section 6f of the RMA - The protection of historic heritage from inappropriate subdivision, use and development. This is relevant to the case for a lower height in Cathedral Square.

(f) Open space provided for public use but only in relation to land that is open space

(j) Any other matter that makes high-density development as provided for by Policy 3, as the case requires, inappropriate in an area, but only if section 77R is satisfied.

2.1.3. Section 77P describes the evaluation – additional to that under section 32 of the RMA – required for qualifying matters. However, section 77Q specifies a different process for 'existing qualifying matters', which includes a qualifying matter referred to in section 77O(a) that is operative in the relevant district plan when this plan change. This is the case for the sites adjacent to Cathedral Square, given the need to protect the heritage setting (and other) values associated with this important location.

2.1.4. For section 77O(j) 'other matters', section 77R requires that the matter can only be considered as a qualifying matter if an evaluation report also identifies:

a) The specific characteristic that makes the level of urban development required in Policy 3 in appropriate
b) Justifies why that characteristic makes that level of urban development inappropriate given the national significance of urban development and the objectives of the NPS UD and
c) Includes site specific analysis

This report meets the requirements in section 77R.

2.1.5. As such, this evaluation highlights the rationale behind identifying lower height limits in the Victoria Street precinct and some sites adjacent to Cathedral Square in order that sections 77O(a) and (j), 77P, 77Q, and 77R are met.

3. Background to Lower Height Limits

3.1.1. There is a history of providing for lower height limits within the City for some time. Both the current District Plan (post-earthquake) and earlier City Plan provided for lower heights in selected locations of the City.

City Centre Context – Victoria Street & Cathedral Square

3.1.2. In the case of Cathedral Square, these lower heights reflected the role and importance of the square as a key civic space that has heritage setting status in the District Plan. The 2018 document Whiti-Reia Cathedral Square – Our Long Term Vision, (Regenerate Christchurch) noted that the square is 'a premium gathering place, fulfilling the descriptor of 'the city's living room, the streets leading to it the hallways'. It notes that Cathedral Square occupies and defines the physical, social and historical centre of Christchurch and remains critical to the central city and indeed Christchurch.

3.1.3. The Christchurch earthquakes were the trigger for a wholescale re-consideration of the scale and form of the City. The 2011 earthquake rendered almost 50% of the CBD's buildings unsafe and over 600 commercial buildings were demolished. The City's core infrastructure was wiped out including roads, bridges, water supply, sewerage, electricity and communications. The entire CBD was closed for over 2 years and 6,000 businesses were displaced by the cordon, affecting 50,000 Central City jobs[3]. By 2015, there was almost 70ha of vacant land in the Central City[4]. By 2020 this had reduced to 58ha and by 2021 it reached 46.5ha following reclassification of almost 8ha of land in the Avon River Corridor to public open space. Needless to say, a significant amount of land still remains vacant within the Central City and these unused/underutilised sites continue to have an impact on the form and feel of the city.

3.1.4. The Christchurch Central Recovery Plan (CCRP) noted that 'lower buildings will become a defining central city feature in the medium term (*timeframe was not defined*). A lower rise city fits in with the community's wishes and takes into account the economic realities and market demand for property in the core. It also recognises the character and sensitivity of certain areas such as New Regent Street, and reduces wind tunnels and building shade.'

3.1.5. In general, height limits across the City were reduced post-earthquake for several key reasons:

- Height economics – extra cost of building taller buildings on liquefiable soils meant that lower height buildings were more economic to build. Plot ratio rules were designed to enable shorter but wider buildings to be built (rather than tall and skinny).
- There were moves to support economic viability for developments in the CBD by reducing supply outside of the core in combination with enabling take up of sites with lower building heights than were previously provided for.

[3] Overview of the Impacts of the 2010-2011 Canterbury Earthquakes, International Journal of Disaster Risk Reduction, Dec 2015

[4] Central City defined as the area contained within the Four Avenues, CCC 2015-2021

3.1.6. Prior to the earthquakes (City Plan), there were also non-economic reasons to limit heights in certain areas. This included matters such as protecting character or heritage, view shafts and potentially other planning or social reasons. The rationale behind these matters was carried forward post-earthquake i.e. some locations had even lower heights than the general 28m limit that was introduced across the core post-earthquake.

Victoria Street

3.1.7. The height limit in the Victoria Street precinct (from Kilmore/Durham Street corner) is currently 17m, contrasting with the 28m height limit in the wider Central City core. In the earlier City Plan, the height limit in Victoria Street was part of the 'Fringe' area and had a 30m height limit as oppose to the 40/45/80m limits in the core.

3.1.8. It is also notable that the District Plan's Central City core overlay excludes the Victoria Street precinct but includes the core Central City Business zone. The Core Overlay requires high quality urban design and active frontages.

Cathedral Square

3.1.9. There is currently a 28m height limit in the buildings around Cathedral Square (District Plan). The earlier District and City Plans identified that there was a 45m height limit in this area that contrasted with the 80m in other core areas.

3.1.10. Whilst the 1995 Notified District Plan therefore enabled significantly higher heights in the Central City (than the later post-earthquake Plan) it notably also contained rules to retain sunlight admission to important pedestrian areas[5].

Rule 2.2.3 Sunlight admission to important pedestrian areas.

(a) Cathedral Square: No building shall be constructed or extended so that it casts a shadow on the ground at 12 noon (Local mean time) on 22 June beyond the lines AB, CD and EF as shown in Part 3, Appendix 1. The angle of recession should be 23 degree measured in a north/south plane. (see Appendix 1 of this report)

3.1.11. This Plan noted that Cathedral Square is a significant open space in the city and a physical focal point given its role as a very important public space. The Plan noted that the area is used intensively for pedestrian purposes.

3.1.12. The Plan noted[6] that reasons for rules relating to recession planes controlling buildings around the Square is to ensure that the area, and the activities enjoyed in the area, are able to enjoy a sufficient amount of sunlight admissions. This is necessary to ensure that the spaces function successfully and are attractive for public use. It was noted that the rules were written in such a way as to ensure that the rule is a reasonable proxy to the orientation of the public spaces with regard to the angles of the sun at critical times of year. Section 2.3

[5] Reasons for Rules – 6.1.3
[6] Reasons for Rules – 6.1.3

'Impacts on the Public Realm' provides further support for retention of access to sunlight and daylight at the street and in public spaces.[7]

4. Importance/reassessment of Lower Height Limits

4.1.1. Against that background, Council has given specific consideration to the appropriate building height limits in the Victoria Street precinct and around Cathedral Square, for the reasons summarised below in respect of each. Modelling assessments have been undertaken for both Victoria Street and Cathedral Square (Appendix 2 & 3).

Victoria Street

4.1.2. The Victoria Street precinct is distinct from the rest of the commercial core. It is a relatively narrow strip of Commercial Core zoning which projects to the north west of the core and is surrounded by residential uses. It has an established history of lower height limit provisions than the rest of the Commercial Core area and can be considered significantly separate from the main concentration of development in the City Core.

4.1.3. Given the Victoria Street precinct's ribbon form it will continue to have lower scale buildings on either side (even with higher density enablement) and therefore the visual impact of any tower developments within it needs to be considered, given their potential not to be absorbed into the City Centre cluster. In addition the shading and visual impact of any towers in this location must be considered, in terms of their effects on the adjacent residential zones.

Cathedral Square

4.1.4. Cathedral Square has historical and social significance as a central component of the Canterbury Association's original plan for Christchurch, a principal urban design feature of Christchurch City, as the site of Christchurch's Anglican Cathedral, as a focus for civic activity and as the city's transport and entertainment hub for a century.[8] Whilst the earthquakes have changed the built form in this location, the setting of the square as an important civic space for community gathering remains.

4.1.5. The 'value' of the Square as one of Christchurch's existing and historical key civic spaces was most recently outlined in Regenerate Christchurch's Long Term Vision for Whiti-Reia Cathedral Square[9]. This referred to Cathedral Square as 'central to the identity of Christchurch as it is quite literally and figuratively at the heart of the city, where people gather for significant ceremonies and events as well as less formal activities. As a prime focal point, it shapes perceptions of the city for both visitors and residents and acts as a connecting hub to other Central City precincts, attractions and facilities.'

[7] Technical Report – Issues and Options for Commercial Zones, CCC

[8] https://districtplan.ccc.govt.nz/Images/DistrictPlanImages/Statement%20of%20Significance/Central%20City/HID%20107.pdf

[9] Regenerate Christchurch's Long Term Vision for Whiti-Reia Cathedral Square, 2018

4.1.6. This strategy noted that Cathedral Square should once again (post-earthquake redevelopment) become the civic heart of central Christchurch and be actively used, day and night, be greener than before and be suitable for use in a range of weather conditions. Critical success factors identified within the strategy include:

- Creation of a great civic space which encourages socialisation and discourse
- A high quality environment to attract retain visitors and residents
- Creation of an inviting and inclusive environment that enables more citizens to participate in central city life
- A pedestrian environment that encourages dwell time

4.1.7. In addition to the Square's heritage importance as a civic space, the factors above all identify a need to uphold the significant amenity values offered within the Square.

4.1.8. Going forward and with the continued redevelopment of buildings around the square, it is therefore important to ensure that the role of the area in providing a well-functioning civic space can continue. This includes ensuring that the built form adjacent to the square does not comprise the square's ability to provide for community gathering in a well-designed quality environment. Reduced access to sunlight (because of tall buildings adjacent to the square) would severely compromise the ability to achieve these critical success factors – a cold, shaded environment with a greater likelihood of wind tunnelling would be contrary to such objectives.

4.1.9. Earlier versions of the District Plan (1995) recognised that when higher height limits are enabled in the City, it was nonetheless appropriate to ensure that sunlight was retained in Cathedral Square as one important measure to protect its role as a crucial civic space (see Appendix 1)[10]. Whilst the rules pertaining to this protection were removed post-earthquake (because they were unnecessary when height limits in general were significantly reduced), the need for such provisions has returned given the increase in height enabled now.

4.1.10. Access to sunlight is an important component of a successful civic space. Research undertaken specific to Cathedral Square[11] confirmed the following points:

- The southern area has the most potential for sunlight access and is therefore the most suited to outdoor activities. It is desirable to retain solar access to this area for as much of the year as possible.
- The Distinction / OGB plaza area is at the east of the square and has potential for good evening sun and active uses to take place.
- The Central area is in front of the Cathedral. Solar access is important here but likely more so in the summer months and surrounds (which may include some time beyond the equinox, for example in April).
- Sunlight access at the north of the square is likely to be more restricted.

4.1.11. The value (socially and economically) of Cathedral Square will be compromised by a lack of restrictions on the height of adjacent buildings. It is appropriate that some carefully considered provisions are incorporated in order to ensure that the adjacent built form does

[10] District Plan, Volume 3, 13.4 Special Purpose (Pedestrian Precincts) Zone – Noted that areas zoned as such were 'open spaces of major importance to the city and its' identity'

[11] Cathedral Square Technical Report, CCC, June 2022

not provide for unduly high levels of shading in the square such that its role as an important community gathering and socialising space is compromised.

4.1.12. Sites adjacent to the Square are at different points in their development. Some sites are cleared, others are subject to designation, some have been recently developed e.g. Turanga, and some have active consent but have not yet been developed. For sites where a height limit overlay is recommended, this would apply to any future new consented development.

4.1.13. On the sites subject to a designation (Convention Centre precinct, Central Library and the Christchurch Exchange), a height limit would apply should the designation be lifted and the site used for a purpose other than that for which it is designated. The height limit would also be used for guidance when assessing any outline plan applications for that site, albeit Council could only recommend conditions relating to the height and the requiring authority would not be bound to use them (subject to the outcome of any appeal).

4.1.14. Of those sites with active consent, Number 26 Cathedral Square gained consent for a taller building in 2016 but this has not been built yet. Number 9 to the south of the Square also has a higher height proposal but this site is not covered by the 45m limitation proposal. Number 31 is consented (low scale) and there have been some initial discussions about other sites that were also relatively low rise.

5. The level of development provided for may be inappropriate

In the City Centre Zone (Victoria Street & Cathedral Square)

5.1.1. Policy 3(a) of the NPS UD requires that, in city centre zones, District Plans should enable building heights and density of urban form to realise as much development capacity as possible to maximise the benefits of intensification (subject to providing for qualifying matters (Policy 4)).

5.1.2. To inform the plan change, the Council has therefore assessed what constitutes 'as much development capacity as possible to maximise the benefits of intensification' in the context of Christchurch's City Centre. The outcome of this process is that a 90m building height limit is to be proposed generally throughout the City Centre (refer to Commercial Options Analysis - Commercial Zone Rules and Assessment Matters, CCC).

5.1.3. Given the specific characteristics of the Victoria Street precinct and Cathedral Square (as summarised earlier) the question arises as to whether a lower height limit should be applied as a qualifying matter in those areas.

5.1.4. Modelling assessments have been undertaken for both Victoria Street and Cathedral Square (Appendix 2 & 3). The following section provides a short summary of the outcomes of this analysis, followed by details of the scenarios tested and the evaluation undertaken.

Victoria Square

5.1.5. For the detailed reasons analysed below, a lower height limit than 90m – specifically, 45m – is appropriate to reflect the longstanding fact that the Victoria Street precinct is a distinct

and separate area from the rest of the Commercial City Central Business zone. The characteristics of the street (a single linear projection from the consolidated commercial core) and its surrounding residential zoning (rather than broader commercial uses) signal that a lower height limit would be more appropriate in this location, providing better outcomes in terms of visual impact, shading and built form.

Victoria Street Precinct Scenario Testing

5.1.6. Work was undertaken to test three scenarios for Victoria Street.

1. 90m for all sites currently zoned Commercial Central City Business zone (to be 'City Centre') including the Victoria Street precinct.
2. 60m for the Victoria Street precinct, others consistent with Scenario 1.
3. 45m for the Victoria Street precinct, others consistent with Scenario 1.

5.1.7. The findings of the study[12] were, in summary, that:

Scenario 1 – When building heights in the Victoria Street precinct are enabled at 90m, it presents as an extension in built form from the remainder of the more consolidated core city centre. There is a significant contrast between the Victoria Street precinct and its immediate residential setting.

Scenario 2 – There is less of an impact on the consolidated city centre at 60m but it is still visually significant and impacts negatively upon the legibility of the city centre in terms of urban form.

Scenario 3 – 45m is a proportionate height response both in relation to the surrounding residential context and in terms of a transitional response between 90m in the consolidated central city and the surrounding lower height zones.

5.1.8. The study recommends that Scenario 3 is the most suitable approach in order to support the legibility of the city centre. It provides an appropriate transition in terms of urban form between the rest of the city centre and the surrounding uses and their respective built form provisions.

Cathedral Square

5.1.9. For the detailed reasons set out below, a lower height limit should be applied as an existing qualifying matter around Cathedral Square in view of the significant impact of shading on the square, which would otherwise be enabled. This reflects Cathedral Square's role as central open space which needs to continue to offer high quality amenity values such that it can continue to provide an inviting, high quality civic space which encourages socialisation and dwell time.

5.1.10. An assessment has reviewed the point at which the scale of development becomes inappropriate in terms of sunlight loss to the Square. At this threshold, the negative impacts of shading outweigh the benefits attributable to higher height limits for all sites adjacent to the square (factoring in all of the necessary considerations under sections 32 and 77O to

[12] Victoria Street Lower Height Modelling, CCC, July 2022

77R). Technical assessments were undertaken to assess the merits (or otherwise) of different height scenarios, as explained below.

Cathedral Square Scenario Testing

5.1.11. Given the NPS UD requirement for maximised heights, most of the built form scenarios employ lower heights only for sites directly adjacent to Cathedral Square. In some cases, adjacent buildings have been modelled, but it was mostly found that there was limited extra shading caused by taller buildings near the Square. This means that the analysis demonstrates that for the most part it is only necessary to reduce the heights of some buildings next to the Square to manage the issues of shading.

Scenarios tested were as follows:

1. 30m (next to the Square) and 60m (for other "key" sites close to the square)
2. All 90m (as per the Height Limit for the City Centre zone)
3. 45m (next to the Square) 90m (key sites close by)
4. 60m (next to the Square) 90m (key sites close by)

5.1.12. The results of the scenario modelling indicated that, in order to manage the impact on sunlight on the Square and enable the amenity values of the Square as a focal civic heart of the City to continue whilst more generally allowing for tall buildings, it is recommended that scenario 3 is implemented. This would limit some adjacent buildings to 45m and allow key sites to be developed at 90m (the height limit for the wider City Centre zone).

5.1.13. There is some potential for additional shading from some key sites if the height limit is 90m, but this is likely to be minimal and would have a small impact at certain times of the day and year.

5.1.14. Those sites considered adjacent for the purposes of the modelling are:

- 14, 26, 28, 31, 32, 33, 50, 51 and 52 Cathedral Square
- 170 Oxford Terrace
- 763 Colombo Street
- 105 Worcester Street

6. Impact of Lower Height Limits on Development Capacity

6.1.1. A summary table of the impact of the lower height limits in both Victoria Street and Cathedral Square is outlined below. The full report is attached as Appendix 4

Heights	Floor Area Ratio (FAR)	Capacity (sqm)	Increase in Capacity (%) Over BAU	'Lost' Capacity (Reduction in sqm as a consequence of not taking a 90m height limit)
Victoria Street				
Status Quo	6.5	444,866	N/A	
45m	9.122	624,305	40.3%	257,059
60m	10.588	724,637	62.9%	156,726
90m	12.878	881,363	98.1%	N/A
Cathedral Square				
Status Quo	6.5	228,039	N/A	
45m	9.122	320,026	40.3%	131,771
60m	10.588	371,458	62.9%	80,340
90m	12.878	451,797	98.1%	N/A
Rest of the City Centre Zone 90m	12.878	5,968,829	98.1%	N/A

Status Quo – interpreted as business as usual (BAU). 21m height limit plus recession plane rules.
Nb – development capacity figures have been identified as floor space rather than dwellings as the space could/is likely to be used for variety of activities e.g. commercial, retail, office, hotel.

6.1.2. An assessment of the development capacity for the Victoria Street precinct and Cathedral Square was undertaken using a generalised development model based on actual land areas in these locations. An average Floor Area Ratio (FAR) was generated for each of the heights and this was then applied to these locations based on actual site areas.

6.1.3. The assessment indicates that under the current provisions (status quo) just under 445,000sqm of floor area could be developed in Victoria Street and 228,000sqm in Cathedral Square. If the height is increased to 45m a further 40.3% of floor area is possible (over and above that possible under the current rules) and if the height limit was increased to 90m (as per the rest of the City Centre zone) an additional 98% would be possible.

6.1.4. The 'lost' development capacity resulting from taking a 45m height limit approach in both Victoria Street and Cathedral Square is a total of 388,830sqm. Whilst this is clearly a significant amount of floor area, it is useful to note that the rest of the City Centre zone is capable of providing 5,968,829sqm. As such, this 'loss of capacity' in Victoria Street and Cathedral Square is less than 7% of that which can be developed in the rest of the City Centre zone. Reducing the height limit to 60m would result in a 4% loss of development capacity.

6.1.5. For contextual purposes it is also interesting to reference some recent work undertaken in relation to the Central City in terms of business capacity assessment.[13] This study identified that there is sufficient capacity in either vacant buildings or floors of buildings to capture new demand to 2051. The same situation exists in terms of land supply and demand. This study was based on *existing* planning provisions i.e. the 'status quo' scenario. Based on this study, it is evident that all modelled scenarios are capable of providing supply greatly in excess of that demanded for at least 30 years.

6.1.6. Lincoln University has identified that there is demand for in the region of 170,000sqm of office floor space over the next 30 years. Given that 'buildings of height' will only be for offices, hotels or residential, there is therefore a limited level of demand (offices and hotels) and a lack of take up / demand for residential towers. The REINZ 2021 report[14] notes that only 1% of new builds in the City were apartments and whilst trends indicate that this figure may increase gradually, it is unlikely that demand for high tower apartments in Christchurch will be forthcoming for many years. Consequently, the impact of reduced height in Victoria Street and Cathedral Square and the corresponding impact on supply is likely to be marginal.

[13] Christchurch Central City: Land Demand Estimate and Business Capacity Assessment, April 2022, Lincoln University

[14] REINZ, Christchurch Housing Market Demand, April 2021

7. Reasonably practicable options for provisions

Victoria Street Precinct Options Evaluation

7.1.1. The following options should be considered:

Option 1: Status Quo

This would involve retaining the current provisions around the Victoria Street precinct and applying this suite of provisions in order to reflect the characteristics of the precinct that make it a qualifying matter.

Option 2: Do not apply lower height limits

This would mean removing the concept of any applicability of lower height provisions along the Victoria Street precinct. As such, the area would be subject to the same provisions as the rest of the City Centre Zone.

Option 3: Proposed change with lower height limit

This would reflect the scenario of a 45m height limit along the Victoria Street precinct (which the assessment has identified as the preferred option).

Option 4: Proposed change with alternative lower height limit

This would reflect the option to enable development up to 60m along the Victoria Street precinct. This is a lower height limit than that anticipated in the wider City Centre zone but higher than the 45m limit also assessed.

Evaluation of options for provisions – Victoria Square

Options	Efficiency	Effectiveness
Option 1 – Status Quo Retain the current provisions around the Victoria Street precinct and apply this suite of provisions as a qualifying matter.	Costs • The development capacity of buildings in the Victoria Street precinct is lower than that for buildings in the remaining city centre zone. • The economic benefits of providing for a greater development capacity within the city centre zone is compromised and may affect the wider economic growth of the city as a whole. • The current height limit is lower than that which will be enabled in adjacent high-density residential areas that will lead to an incongruous and illegible urban form.	This option is not effective in meeting the NPS UD in terms of providing for as much development capacity as possible within the city centre. It does not meet the direction of Policy 3 of the NPS UD.
	Benefits • The lower height limits reflect the fringe nature of this area of the city centre zone and would support consolidation of higher buildings in the rest of the city centre. • This approach supports Policy 15.2.4.1 (Scale and Form of development), 15.2.4.2 (Design of New Development) and 15.2.6.3 (Amenity).	
	Risk of acting/not acting This approach does not draw upon specific technical work that has been undertaken to better understand how development capacity can be increased without compromising the well-functioning nature of the environment.	
Option 2– Do not apply lower height limits Removing the concept of lower height provisions along the Victoria Street precinct. As	Costs • The shape of the Victoria Street precinct (a ribbon like projection from the rest of the city centre zone) means that very tall towers would be enabled in this location. These would be visually significant and incongruous with the rest	Implements the NPS UD in terms of providing significant development capacity in the city centre however, falls short in terms of meeting the objective about providing a well-functioning urban environment.

such, the area would be subject to the same provisions as the City Centre Zone.	of the consolidated City Centre zone (a more compact, block-like area). • The urban form resultant from this Option would not align with the strategic objective on Urban Growth, Form and Design as well as other objectives. The resultant built form would have a less consolidated, weakened cluster/mass of form around the core central city. • The impact of tall tower developments on adjacent/surrounding residential uses (which would themselves be limited to 10 or 6 storeys) would be significant. • Applying the very high height limits within the Victoria Street precinct would not fit well with the concept of a consolidated, legible city centre in terms of urban form. • Demand for taller buildings within the core City Centre (defined in various planning documents) may be compromised by the ability to attain equivalent development forms in the Victoria Street precinct. • This approach does not provide good support to Policy 15.2.4.1 (Scale and Form of development), 15.2.4.2 (Design of New Development) and 15.2.6.3 (Amenity).	
	Benefits • The development capacity of the City Centre zone – including the Victoria St precinct – is increased given the greater height limits and therefore increased opportunity for the development of additional floor space. • The Victoria Street precinct area has a slightly different appeal to that of the core city centre and therefore provides an additional offer to the development market for higher density developments within the central city.	
	Risk of acting / not acting This approach fails to build on the documented understanding (historical planning provisions) that the Victoria Street precinct is suitable for a different urban form than that in the rest of the city centre. This would fail to respect the acknowledged	

	understanding of a well-functioning urban environment and urban form in this location.	
Option 3 – Proposed change with lower height limit (45m) Reflect a 45m height limit along Victoria Street.	Costs • Restricts development capacity within the city centre zone from the proposed maximum (as Victoria Street could theoretically assume 90m). • Compromises the development rights of owners along Victoria Street land with potential for reductions in land/property values (although this could be countered by the realisation of additional values in areas of the Square where sunlight will be retained and thereon activities in those buildings are more economically viable e.g. cafes with outdoor seating). • Reduces the scope for economic growth in the Victoria Street precinct that may affect the economic growth of the city centre as a whole.	This is the most effective option in terms of meeting the NPS UD directive to provide as much development capacity as possible in the city centre but also provides for a well-functioning urban environment, while appropriately reflecting the qualifying matter. This reflects the fact that the geography of Victoria Street is inconsistent with the concept of a consolidated city centre where building heights are maximised and there is a compact but significant (in terms of heights) urban form. Lower height limits in this area more effectively address the context of other uses in this area (adjacent residential zoning) and the legibility of a core city centre area where the highest heights are enabled and there is a transition of heights as the distance from the core increases. The impact of reduced development capacity is approximately only 4.3% and, on balance, this reduction is not considered an issue given the significant provision across the rest of the City Centre zone. It is considered that, on balance, the merits of enabling a consolidated urban form for the City Centre and supporting a well-functioning urban environment in relation to the relationship of Victoria Street with the adjacent residential area, outweighs the small loss of development capacity in this area.
	Benefits • Better reflects that fact that the Victoria Street precinct is a fringe area of the core city centre. This has long been established and documented through planning documents and earlier planning provisions (reduced height enablement in this area). • The lower height limit will have an improved relationship with adjacent residential development in terms of height/scale and legibility of urban form. • The urban form outcomes better reflect the concept of a consolidated city centre core where massing of height is centralised rather than spilling out into finger like projections (as would be the case for the Victoria Street precinct). • This approach supports Policy 15.2.4.1 (Scale and Form of development), 15.2.4.2 (Design of New Development) and 15.2.6.3 (Amenity).	
	Risk of acting / not acting	

	This is the most suitable approach as concluded by the technical work undertaken. There may be other options (potentially a more bespoke mix of heights along the Victoria Street precinct) which could provide a better balance in terms of increased the development capacity in this area whilst also retaining a well-functioning urban environment.	
Option 4– Proposed change with alternative lower height limit (60m) Reflect the option to enable development up to 60m along the Victoria Street precinct. This is a lower height limit than that anticipated in the wider City Centre zone but higher than the preferred 45m limit.	Costs • Reduces the development capacity within the city centre zone (though not as much as in Option 3). • Compromises the development rights of owners of city centre zoned land (though to a lesser degree than in Option 3). • Reduces the scope for economic growth in Victoria Street that may affect the economic growth of the city centre as a whole.	This option is somewhat effective at balancing the need to provide as much development capacity as possible in the city centre but also to meet the objective of a well-functioning urban environment. The lower height limit assists in enabling identification of the city centre as the core where built form is maximised and the urban form pattern is legible in terms of the transition to the outer city centre areas. 60m is however still a very high height limit and the difference between 60m and the central city height limit (90m) is not particularly significant in terms of making a clear distinction in urban form terms. The impact of reduced development capacity (60m rather than 90m) is approximately 2.6%. This reduction is considered minimal given the significant development capacity provision across the rest of the City Centre zone. Overall however, the merits of a reduced 'loss of development capacity' (as compared to the 4.3% at 45m) does not compensate for the extra negative impacts on the urban form (prominence of 60m and impact on consolidation) and the surrounding residential area (60m tower will have a higher negative impact than 45m).
	Benefits • Better reflects that fact that the Victoria Street precinct is a fringe area of the core city centre although to a lesser degree than achievable in Option 3. This has long been established and documented through planning documents and earlier planning provisions (reduced height enablement in this area). • The slightly lower height limit will have an improved relationship with adjacent residential development in terms of height/scale and legibility of urban form. • The urban form outcomes better reflect the concept of a consolidated city centre core where massing of height is centralised rather than spilling out into finger like projections (as would be the case for the Victoria Street precinct). • This approach supports Policy 15.2.4.1 (Scale and Form of development), 15.2.4.2 (Design of New Development) and 15.2.6.3 (Amenity).	
	Risk of acting / not acting	

	This is one alternative option (as concluded by the brief technical work undertaken) however there may be other heights which should be considered. These other options (potentially a more bespoke mix of heights along the Victoria Street precinct) could provide a better balance in terms of increased development capacity and the retention of a well-functioning urban environment.	

Cathedral Square Options Evaluation

7.1.2. The following options should be considered:

Option 1: Status Quo

This would involve retaining the current provisions around Cathedral Square and applying this suite of provisions acknowledging the values of the area that make it an existing qualifying matter.

Option 2: Do not apply lower height limits

This would mean removing the concept of any applicability of lower height provisions in locations adjacent to Cathedral Square. As such, the area would be subject to the same provisions as the City Centre zone.

Options 3: Proposed change with lower height limit

This would reflect a 45m height limit for some sites adjacent to Cathedral Square and 90m for other key sites in this area (90m is the height limit for the City Centre zone in general).

Option 4: Proposed change with alternative lower height limit

This would reflect the option to enable development up to 60m adjacent to Cathedral Square. This is a lower height limit than that anticipated in the wider City Centre zone but higher than the preferred 45m limit.

Evaluation of options for provisions – Cathedral Square

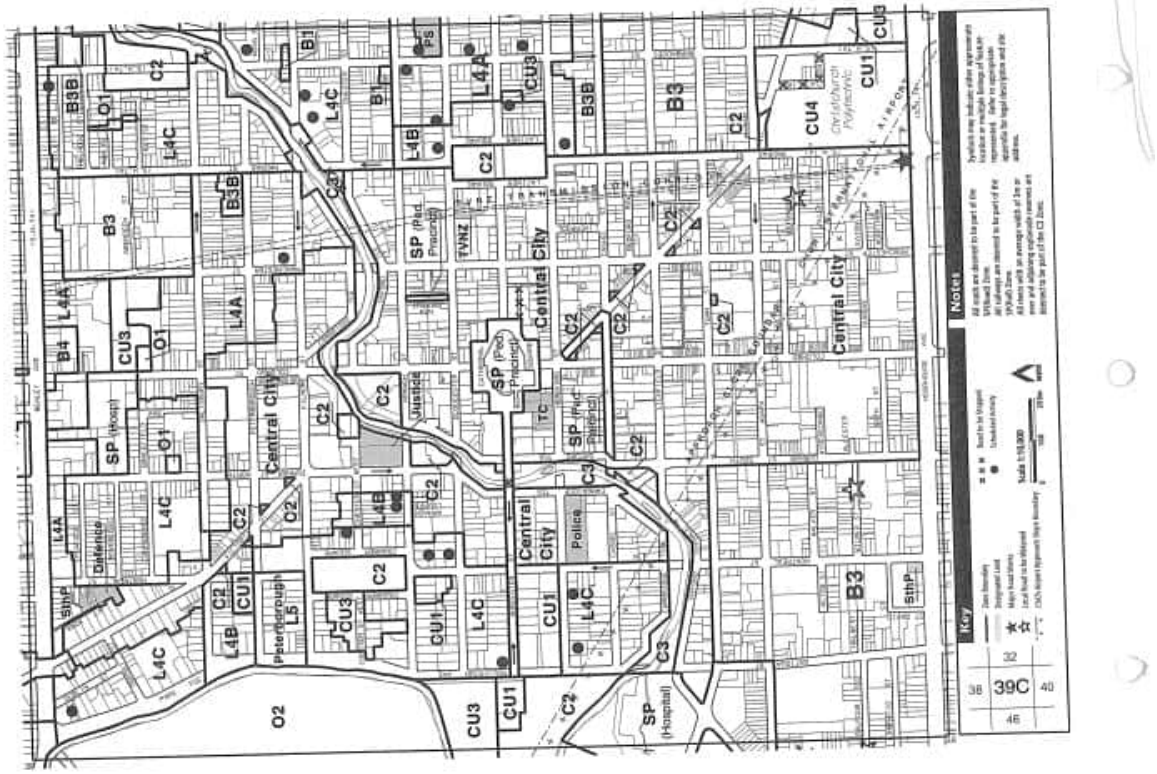
Options	Efficiency	Effectiveness
Option 1 – Status Quo Retain the current District Plan provisions around Cathedral Square.	Costs • Restricts development opportunities on sites around the Square. • Reduces the scope for economic growth because of reduced additional development capacity within the City Centre.	Does not implement the NPS UD as cannot be considered to be enabling 'as much development capacity as possible in order to maximise the benefits of intensification'.
	Benefits • Ensures the current and anticipated future use and value of the Square, as a key civic space will not be compromised by shading. • Respects the historical value of Cathedral Square as a civic heart and physical centre of the city. • Aligns well with the NPS UD objective re: well-functioning urban environment in terms of retaining a civic space that provides for social and cultural well-being. • Aligns with Recovery Plan (CCRP) assertions re: role of lower buildings in relation to community wishes and economics of the city centre. • This approach supports Policy 15.2.4.1 (Scale and Form of development), 15.2.4.2 (Design of New Development) and 15.2.6.3 (Amenity).	
	Risk of acting / not acting This approach does not take into account the overall direction of the NPS UD in terms of increasing development capacity within the city centre and is therefore not credible.	
Option 2– Do not apply lower height limits The area is subject to the same provisions as the City Centre zone.	Costs • Compromises the social and economic values attributable to retaining a high quality civic space (Cathedral Square) that receives enough sunlight to be considered welcoming, useable for gatherings year round and an attractive focal point for the city as a whole.	Implements the NPS UD in terms of providing significant development capacity in the city centre however, falls short in terms of meeting the objective about providing a well-functioning urban environment. The long established value of Cathedral Square as a significant historical, focal civic

	• Those buildings sited adjacent to Cathedral Square offer locational advantages because of the values that Cathedral Square offers (high quality civic space with important heritage context and a focal point for the City Centre as a whole). If the 'value' of the Square is reduced by virtue of becoming a less utilised space (shaded, less popular for gatherings etc.), the buildings adjacent to the Square may also have a lower economic value. • This approach does not provide good support to Policy 15.2.4.1 (Scale and Form of development), 15.2.4.2 (Design of New Development) and 15.2.6.3 (Amenity).	space for the central city will be compromised by a loss of sunlight into the square.
	Benefits • Enables a greater capacity of development on the sites adjacent to Cathedral Square thereby increasing the overall capacity of development within the City Centre. • Provides a uniform approach to sites within the City Centre.	
	Risk of acting /not acting This approach fails to build on the documented understanding (including historical planning provisions) relating to Cathedral Square and its use as a focal civic space and the importance of retaining sunlight into the square. This approach would therefore fail to respect the acknowledged understanding of a well-functioning urban environment in this location, particularly the social and cultural values currently offered by this square.	
Option 3 – Proposed change with lower height limit (45m) Reflects the preferred scenario option outlined in this report, namely a 45m height limit for some sites adjacent to Cathedral Square and 90m for other key sites in this area.	Costs • Reduces development capacity on some sites adjacent to Cathedral Square. • Potential reduction in property values for those owners subject to lower height limits (although this could be countered by the realisation of additional values in areas of the Square where sunlight will be retained and thereon activities in those buildings are more economically viable e.g. cafes with outdoor seating)	This approach is the most effective in terms of meeting the NPS objectives of providing for a well-functioning urban environment that provides for people and communities social, economic and cultural well-being. It balances the need to provide for as much development capacity as possible in the city centre by reducing the height limit only on those buildings

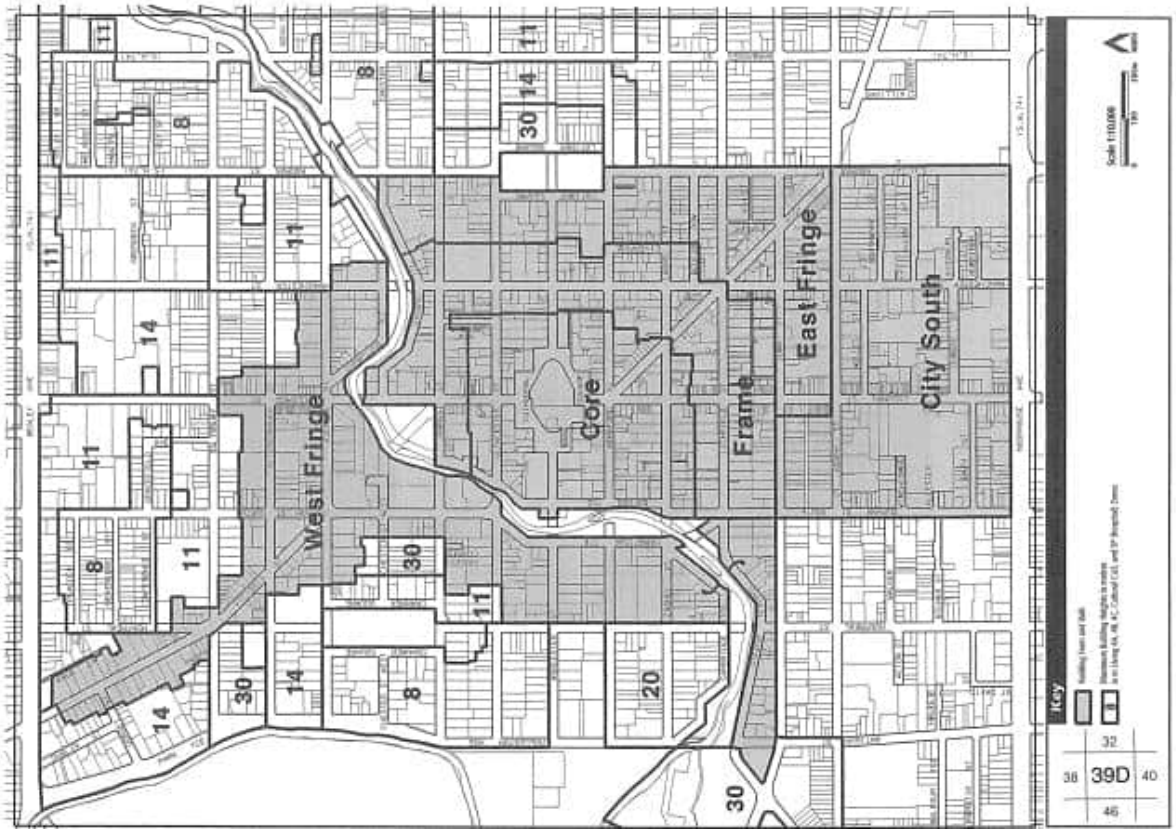
(90m is the height limit for the City Centre zone in general).	• Provides a two-tiered approach to height enablement that could be seen to provide owners of sites not adjacent to the Square with development (economic) advantages given their higher enablement. Benefits • Retains sunlight admission to the Square such that the Square's long standing key role, as an important civic space within the city, is not unduly compromised. • Respects the historical value of Cathedral Square as a civic heart and physical centre of the city. • Provides a considered bespoke approach that recognises that there are some buildings around the Square that have less impact on sunlight admission (into the Square) and therefore enables a higher level of development capacity at those sites. • This approach provides good support to Policy 15.2.4.1 (Scale and Form of development), 15.2.4.2 (Design of New Development) and 15.2.6.3 (Amenity). Risk of acting / not acting Only 45m and 60m lower height limits were modelled. Additional assessment may have determined an even more bespoke approach to height limits may have provided for the optimal balance in terms of additional development capacity: retention of sunlight admission into the Square.	that impact upon sunlight admission into Cathedral Square. As such, the balance between retaining the Square's value as an important civic space (meeting social and cultural wellbeing objectives) and the need to enable increased development capacity is met. The development capacity loss is minimal (2.2% of the overall capacity enabled in the City Centre zone) and the merits of maintaining a highly useable, valued civic space are considered greater than the loss of a small amount of development capacity.
Option 4– Proposed change with alternative lower height limit (60m) Enable development up to 60m adjacent to Cathedral Square. This is a lower height limit than that anticipated in the wider City Centre zone but	Costs • Reduced development capacity on some sites adjacent to Cathedral Square (but less reduction than at 45m) • Potential reduction in property values for those owners of sites subject the height limits (though again, this could be countered by the realisation of additional values in areas of the Square where sunlight will be retained and thereon activities in those buildings are more economically viable e.g. cafes with outdoor seating).	The approach is not particularly effective in terms of the objective of retaining sunlight admission into Cathedral Square. It will enable more sunlight into the Square as compared to enabling 90m buildings but there will still be some loss (of sunlight) and as such the value of Cathedral Square as an important and desirable civic space in which the community want to gather, will be compromised.

higher than the preferred 45m limit.	• Provides a two-tiered approach to height enablement that could be seen to provide owners of sites not adjacent to the Square with development (economic) advantages given their higher enablement.	The development capacity loss is minimal under this option (1.3% of the overall capacity enabled in the City Centre zone) and obviously lower than that when height is reduced to 45m. The negative impacts upon the shading in the Square (the greater impacts at 60m as compared to 45m) are however considered of more weighting than the benefits of a reduced impact on the overall development capacity. In summary therefore, this approach is therefore not well aligned to the NPS UD objective of creating a well-functioning urban environment.
	Benefits • Retains some sunlight admission to the Square such that the Square's long standing key role as an important civic space within the city is not compromised as much as it would be as a result of shading from 90m high buildings. • Provides a bespoke approach that recognises that there are some buildings around the Square which have less impact on sunlight admission (into the Square) and therefore enables a higher level of development capacity at those sites though the approach has less benefit than that applied in Option 3. • This approach provides some support to Policy 15.2.4.1 (Scale and Form of development), 15.2.4.2 (Design of New Development) and 15.2.6.3 (Amenity).	
	Risk of acting/not acting Only 45m and 60m lower height limits were modelled. Additional assessment may have determined a more bespoke approach to height limits may have provided for the optimal balance in terms of additional development capacity: retention of sunlight admission into the Square. This option fails to fully recognise the values currently offered by the square (socially and culturally) given the additional sunlight loss (and thereon negative effects on the use of the square) that this option would enable.	

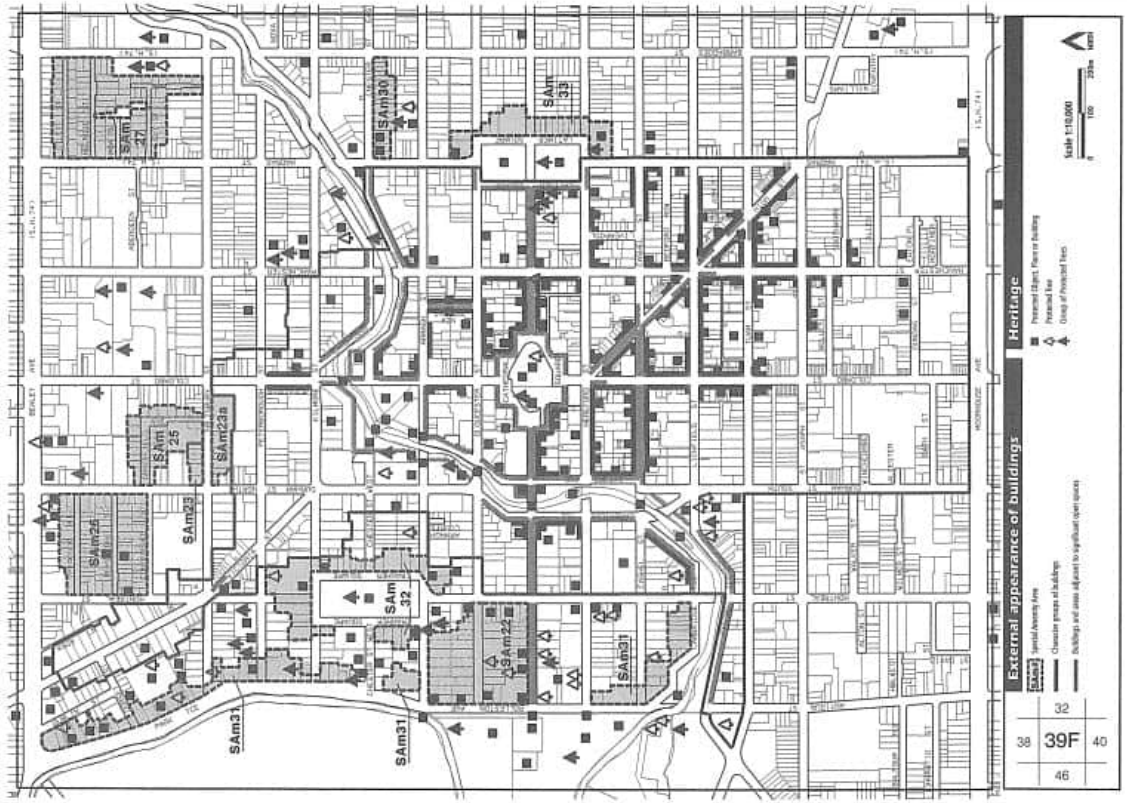
Appendix 1: City Plan & Notified District Plan 1995 – Map extracts and rules



Lower Height Limits: Victoria Street & Cathedral Square – Qualifying Matters



Lower Height Limits: Victoria Street & Cathedral Square – Qualifying Matters



2.2.3 Sunlight admission to important pedestrian areas

(a) Cathedral Square: No building shall be constructed or extended so that it casts a shadow on the ground at 12 noon (Local mean time) on 22 June beyond the lines AB, CD and EF as shown in Part 3, Appendix 1. The angle of recession shall be 23° measured in a north/ south plane.

6. Reasons for rules

6.1 Central City Zone

6.1.1 Street scene and containment

These interrelated rules have four main elements, including the setback of buildings from the street, minimum facade height, setback of buildings adjoining special character areas, and outdoor storage.

It is intended that the street setback reflect the dominance of building scale in the central city with the requirement that buildings within the Core and Frame be erected up to the street frontage along the full length of sites. An exception is made for Colombo Street, where because of the volume of pedestrian movement as Christchurch's main pedestrian thoroughfare, a provision of a setback of 2.1m has been made to allow for paving and greater capacity for pedestrian movement.

Provision for building up to the street frontage highlights the city's grid pattern and also reflects the existing character of the central city as the urban focus for Christchurch and this is also required on a number of other streets, although there are some exceptions to these as indicated below.

The requirement for buildings to be built up to the street along part of Colombo Street reflects the existing character of buildings in this area, recognising that a number are listed buildings of heritage value.

On sites in the City South area fronting Durham, Manchester, Madras, St Asaph, Tuam Streets, and Moorhouse Avenue, a 6 metre setback is provided to allow development of a boulevard atmosphere in these streets, reflecting their major traffic functions. This will also enable greater opportunity to provide for street landscaping, thus softening the impacts of buildings in these outlying areas of the central city.

Provision is made for a 3 metre setback on the eastern side of Manchester Street to enhance the quality of this street as a major city shopping street, allowing provision for additional street trees and a greater width for pedestrian passage on the eastern side of the street which is more exposed to sunlight.

The West Fringe has a 4.5 metre setback specified in order to maintain a more open and landscaped environment between the central city and the residential/cultural zones in the west, and because retailing is not a significant activity.

The minimum facade heights reinforce other rules such as those relating to building height. The reason for these rules is to ensure that in key streets relating to the Core area of the central city, in City Mall, and the Frame, in the East Fringe including Manchester, High and Lichfield Streets, and Colombo Street in the Fringe, have minimum heights which maintain the dominant building character in these streets and with the setback requirements provides visual containment of the streetscape. These facade rules are expected to maintain urban scale in these streets and the maintenance of a strong emphasis on a vibrant built environment. The facade height limit in the City Mall is formulated to ensure consistency with the sunlight admission rule.

Complementing these rules however, is a requirement that high rise buildings adjoining special character areas take account of a need for a setback in the height of the building where they rise above the height of the street facade of significant heritage buildings. This setback has been incorporated as a rule to ensure that significant heritage buildings, or groups of buildings, are not unreasonably dominated by large adjoining buildings which may be of an incompatible or unsympathetic design in terms of their scale, materials and facade treatment.

Where outdoor storage areas in the central city are likely to be physically visible from the street, provision is made for screening by landscaping or fencing in order to remove any visual detraction.

The incorporation of a recession plane angle in the Plan is intended to ensure that a sense of openness and a reasonable degree of sunlight admission to streets is maintained, whilst still allowing for large scale inner city buildings. On Armagh Street, in the area between Oxford Terrace and Colombo Street, the recession plane allows for taller buildings on the street frontage due to the open space of Victoria Square immediately to the north and reinforces the grid pattern along this boundary.

Where sites or parts of sites are used in a way that creates large open areas, such as carparking, tree planting will soften the visual impact of such areas.

6.1.2 Sunlight and outlook for neighbours

A rule has been incorporated in the Plan to protect living zone properties on the boundary of the Central City Zone from overshadowing by tall buildings. This could result in the adjoining living zone environment becoming an unattractive place to live, risking erosion of remaining housing areas in the central city.

Complementing this is a setback requirement from the living zone boundary for such buildings.

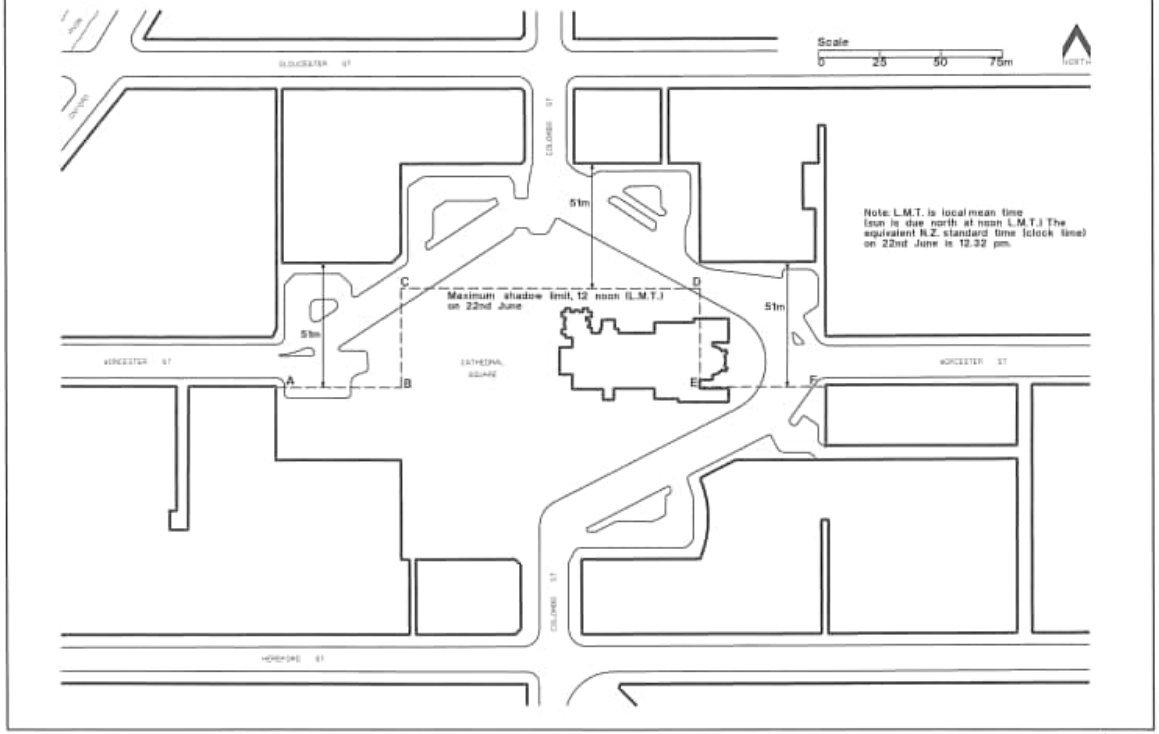
6.1.3 Sunlight admission to important pedestrian areas

The Plan has identified Cathedral Square and City Mall as significant open spaces in the city. Cathedral Square is the physical focal point of the city and such is a very important public space to the entire city. Similarly, City Mall is the major pedestrian thoroughfare in the central city. Both of these areas are intensively used for pedestrian purposes.

The reason for rules relating to recession planes controlling buildings in these areas, is to ensure that these areas, and the activities within them, are able to enjoy a sufficient amount of sunlight admission. This is necessary to ensure that the spaces function successfully and are attractive for public use. The rules have been written in such a way as to ensure that the rule is a reasonable proxy to the orientation of the public spaces with regard to the angles of the sun at critical times of the year.

Lower Height Limits: Victoria Street & Cathedral Square – Qualifying Matters

Appendix 1. Central City - Cathedral Square sunlight admission to important pedestrian areas



24 June 1995 3/33

Lower Height Limits: Victoria Street & Cathedral Square – Qualifying Matters

Amend Clause 13.4 in Volume 3 Part 8 as follows:

13.4 Special Purpose (Pedestrian Precincts) Zone

This zone has been specifically identified as distinct from the road zone for two specific reasons:

- it contains **an** open space~~s~~ of major importance to ~~**the city**~~ **New Brighton** and its identity;
- it contains land which although "legal road" is dominated by pedestrian movements, rather than vehicular traffic.

~~**The zone also includes Christchurch Cathedral and its surrounds which is private land.**~~

(...)

Land in the zone may be subject to occasional pressures for buildings, and accordingly a rule has been incorporated to enable any buildings (except small structures) to be subject to public scrutiny through a resource consent process. ~~**This also complements rules in the plan relating to special amenity areas, which have rules which specifically relate to building design and siting adjoining parts of the Special Purpose (Pedestrian Precincts) Zone**~~. While the Council exercises "ownership" control over ~~**most**~~ **the** land in the zone, it is important that any buildings, albeit for specific public use, be carefully designed and located to enhance **the zone**. ~~**the amenities of these vitally important city spaces and public access to them.**~~

Appendix 2: Victoria Street Urban Form – Building Height Study

This paper considers the overall built form of Victoria Street and its surrounds, and related visual and physical impacts of building height scenarios, in the context of the central city, and more specifically the City Centre Zone.

The National Policy Statement on Urban Development (NPS-UD) requires Council to enable development capacity via increased height to maximise intensification benefits within the Central City, which in the Ōtautahi Christchurch context is interpreted as the City Centre Zone. In order to maximise intensification benefits the Council's preferred height limit for the Central City Business District is 90m. As noted, Victoria Street is also zoned City Centre Zone, but sits outside the existing Central City Core, as identified in planning map (Figure 1).

Victoria Street provides the key bus, cycle and pedestrian link from the central city to the north-west. Properties adjacent to Victoria Street are predominantly zoned City Centre, with a focus on retail and commercial activity, particularly at the ground floor, but with the opportunity for a mix of uses including residential activity above. The City Centre Zone in this location is in essence a ribbon of commercial zoning within a wider residential context, with 20m and 32m height limits proposed through Plan Change 14. Hagley Park, the premier park for the city is located to the west of Victoria Street.

In respect to Victoria Street City Centre zoning, a key issue is the extent to which a higher height limit will affect both the city form, and adjacent residential development with regard to visual dominance effects.

For this reason, the modelling scenarios employ lower heights only for buildings along Victoria Street with the rest of the City Centre Zone modelled to a maximum height of 90m. The analysis focuses resultant form of Victoria Street from the extent of which is noted in the map below (Figure1). The adjacent High Density Residential and Central City Mixed Use Zones are shown indicated at the 32m maximum height across the scenarios in this study.

Assumptions and scenarios:

The focus of the study was to assess urban form and the impacts of these on the wider central city context, and on the adjacent residential environment, in respect to policy direction and including:

- Consolidated and legible urban form
- Increased commercial and residential density
- Primacy of the central city business district to the city, including concentration of activity.

In addition, the following matters were also considered given the extent of rebuild and recovery already undertaken along Victoria Street:

- The effect of Victoria Street buildings on the surrounding residential areas
- Extent and speed of redevelopment to higher height buildings given the limited number of redevelopment sites available
- Impact of a limited number of tall buildings on Victoria Street in the short and medium term.

Other amenity effects such as the pedestrian experience at street level were discounted as these matters were addressed in association with central city built form standards, including street wall height, and are equally applicable to Victoria Street.

The scenarios tested were to test a graduation in heights, while providing for increased capacity above the current baseline of 17m for the Central City Business Zone in this location. In addition, they provided a step up from adjacent proposed residential heights to contribute to central city legibility.

It is noted that it is likely that should greater building heights be established within Victoria Street, then it is likely that this would draw or extent activity outside of the Central City. However, it is noted that this is not within the scope of this study but is discussed in more detail within the Section 32 Economics report, Property Economics.

Scenarios tested

Scenarios tested were as follows:

4. 90m for the City Centre zone and, 32m for the surrounding Residential and Mixed Use Zones.
5. 60m for Victoria Street precinct, others consistent with Scenario 1.
6. 45m for Victoria Street precinct, others consistent with Scenario 1.

Several viewpoints are taken to inform the following discussion and recommendations.

The study considered the impact that the different scenarios have from an urban form perspective:

1. The impact of Victoria Street's built form on the consolidation of central city form and activities.
2. The effect of Victoria Street buildings on the surrounding residential areas.
3. That the progress of development may be quite slow and that tall buildings on Victoria Street may be isolated in the short and medium term
4. Built form impact on legibility and image of the central city.

Development capacity

The study considered two-development capacity in each height scenario:

1. Realistic capacity – identified sites more likely to be redeveloped within the next ten years on the basis of the following exclusions:
    - Buildings consented or built after 2011, three or more storeys in height
    - Buildings built prior 2011, with four or more storeys height, that are in good condition.
    - Buildings with specific purpose (other than office and retail activity) and status are kept include Christchurch Casino and scheduled historic heritage.
    - Amalgamated sites under the same ownership to reflect the realistic redevelopment opportunities.
2. High capacity – all sites available are redeveloped, other than scheduled historic heritage.

Built form standards applied

The proposed City Centre built form standards were applied to Victoria Street, as summarised below:

- Street wall height up to 21m,
- Front boundary setback of 45-degree for buildings over 21m, up to 28m.
- Tower above podium has a minimum dimension of 10m and a maximum dimension of 20m, with a minimum tower separation of 12m on one site.
- Internal boundary setback of 5m for towers.
- For a realistic outcome, the modelling has not explored the 'maximum' outcome where the rule sets are tested to the highest extend.

For the purpose of differentiating Victoria Street form the City Centre Zone for the purposes of this study, the term Central City refers to the area noted below and the Victoria Street area is referred as Victoria Street Precinct.

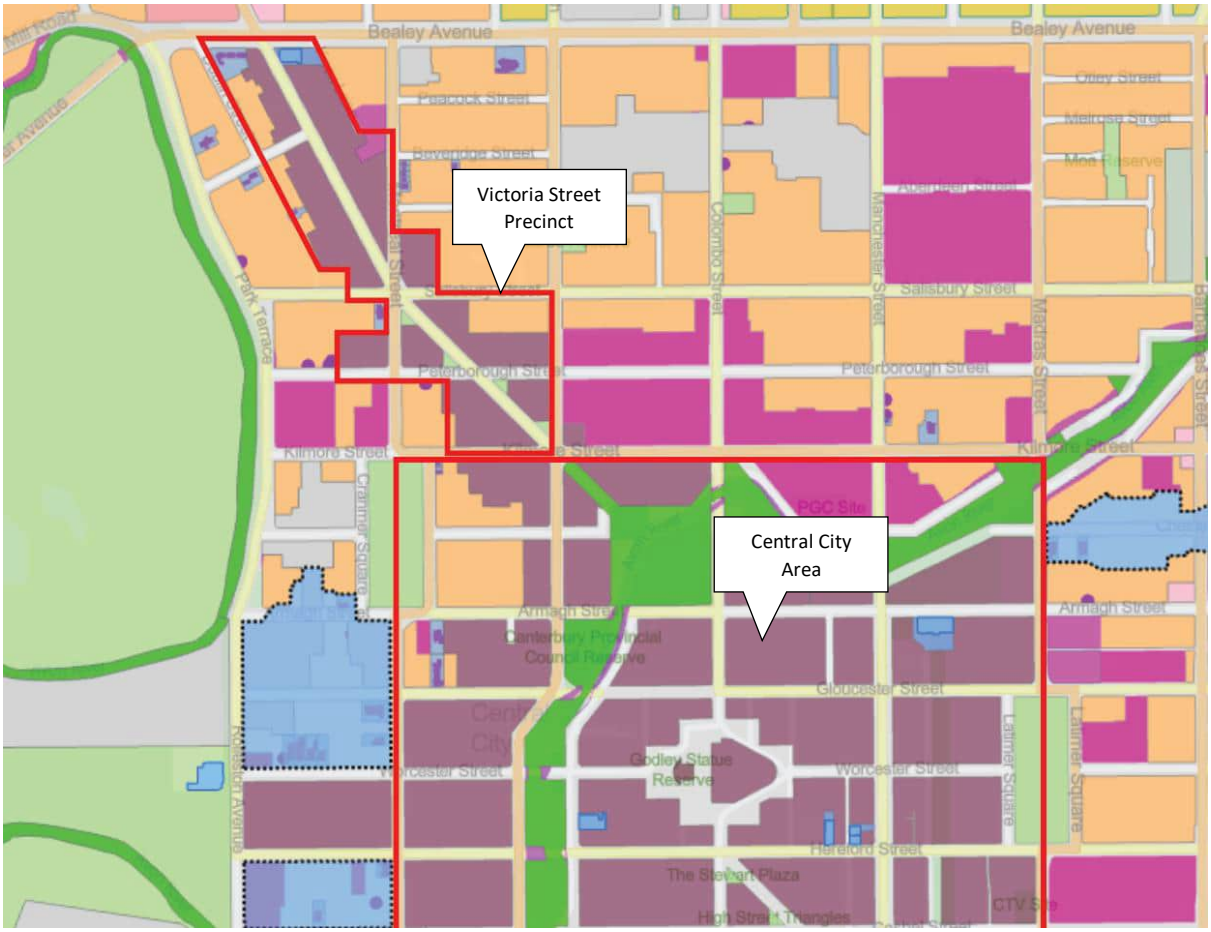


Figure 1: Indicative catchments for the purpose of this study.

Summary of Study Findings:

Scenario 1 – The Central City form becomes stretched towards the north-western direction, the central core loses legibility. Buildings on Victoria Street at 90m shows strong contrast with the surroundings, a strong level of dominance over the adjacent residential setting.

Scenario 2 –Victoria Street at 60m height shows differentiation with the central city core that supports the consolidation and benefits legibility of the city centre. A considerable amount of contrast with the adjacent residential areas.

Scenario 3 – Victoria Street at 45m height is at an appropriate proportion to its surrounding residential areas. It further supports the consolidation of the central core area and legibility within the city centre.

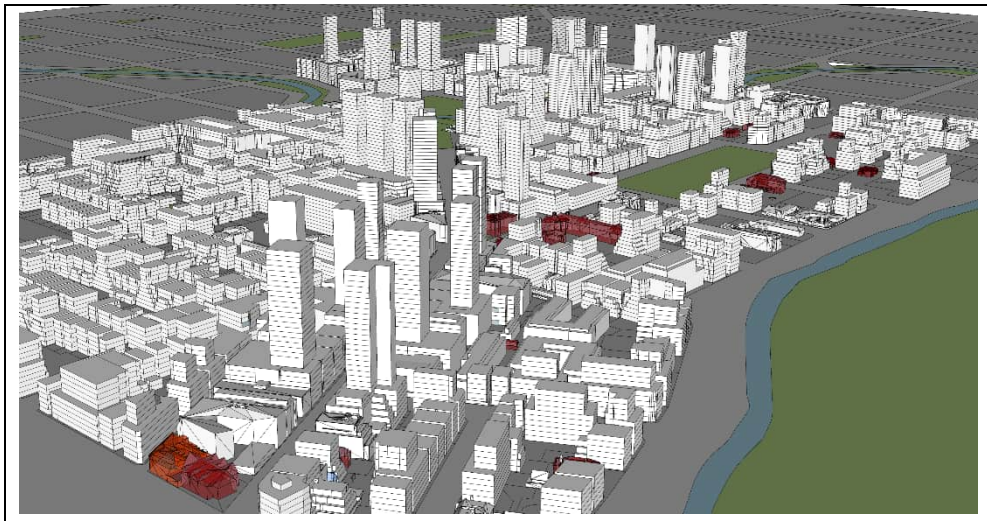
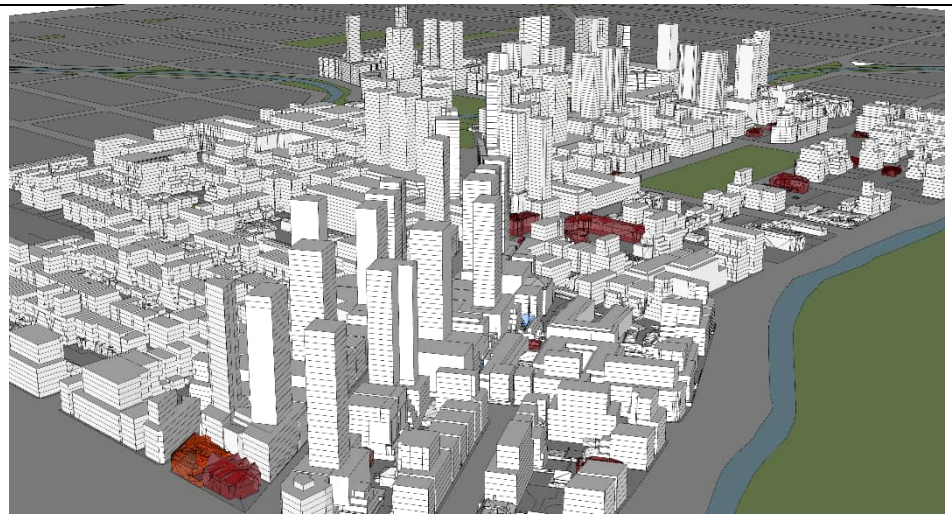
Recommendations

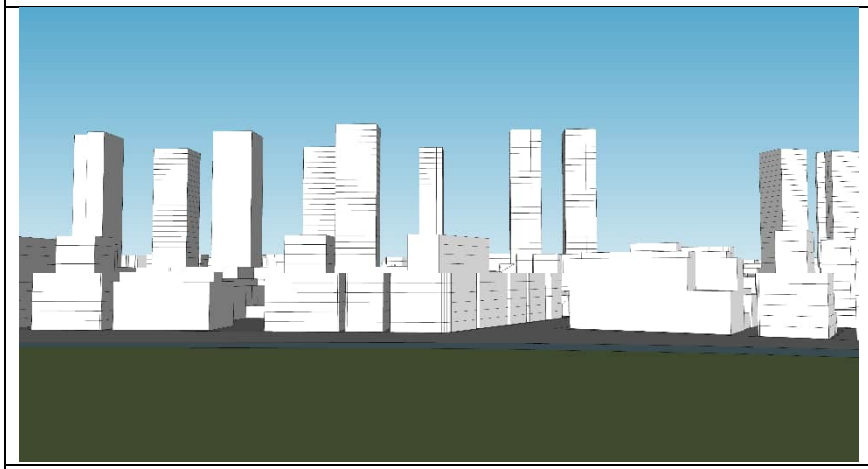
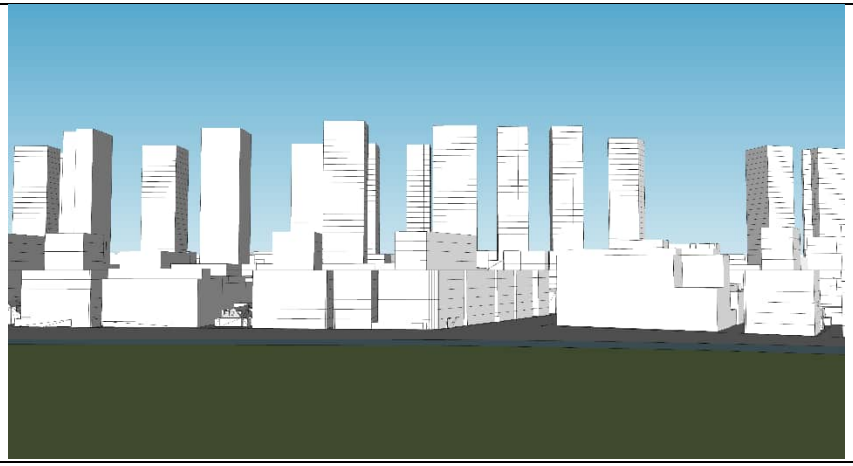
In order to support the image and legibility of the central city, and an appropriate transition in urban form, whilst generally allowing for an increase in building height, it is recommended that Scenario 3 is implemented i.e. 45m in height. This provides for increased development capacity, while meeting the policy direction about city form, and limiting dominance effects in respect to adjacent residential development.

Scenario 1: 90m Victoria Street height

This scenario includes 90m high Victoria Street buildings. This means consistency between the Central City and Victoria Street, with a consistent City Centre Zone height limit, except where Qualifying Matters apply i.e. Cathedral Square. A continuous built form will therefore be developed towards Bealey Avenue.

- In this scenario, there is no distinction between Victoria Street and the Central City. It reduces the consolidation of tall buildings in the core of the Central City and reduces the legibility of the city with activity concentrated into a compact area.
- There is a risk of isolated tall buildings being constructed, which may appear out of place. The building height of 90m is considerably higher than other parts of the built environment of Victoria Street and its environs. Some newly developed buildings are up to six storeys at present but no building in this area is exceptionally higher than others and there are likely to be few sites that will develop at height. The ribbon nature of the street reduces the opportunity for a consolidated form or cluster of buildings to establish.
- Buildings at this height appear out of proportion when compared to the surrounding residential buildings that are up to 32m height. In relation to the wider image, this transition may appear too 'sudden'. In this case, Victoria Street cannot offer any buffering or transitioning value when taking into account the High Density Residential Zone (32m and 20m) and City Centre Zone (90m). There is a risk that a limited number of very prominent, tall buildings establish which visually dominate the surroundings.

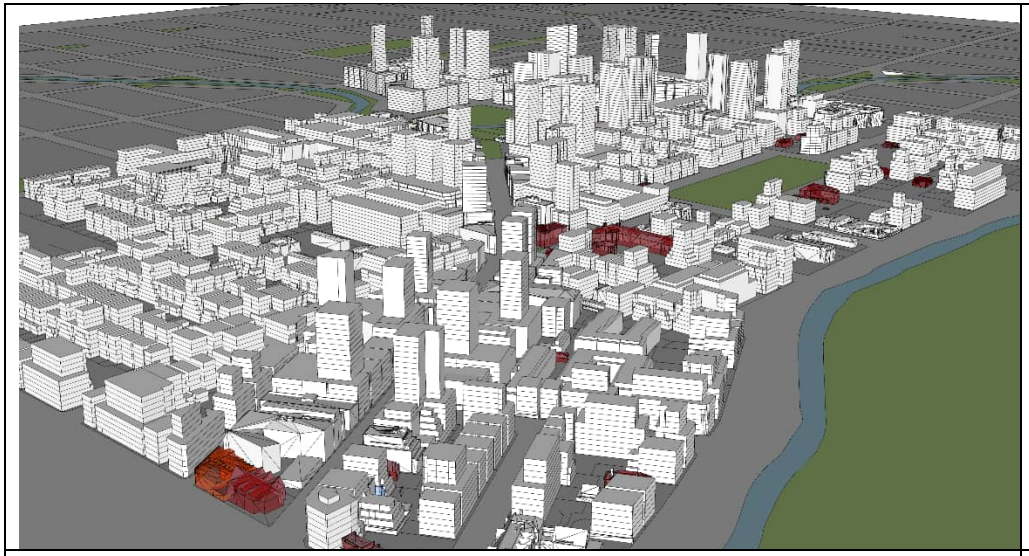
	
Realistic-capacity scenario 1: An extension of central city in form. Strong contrast in built form with the surrounding existing and future context.	**High capacity scenario 1:** Further detracts from the central city form.

	
Realistic capacity scenario 1: An extension of central city in form. Strong contrast in built form with the surrounding existing and future context.	**High capacity scenario 1:** Further detracts from the central city form. The upper Victoria Street can appear clustered.
	
Realistic capacity scenario 1: View from Hagley Park, 90m can appear out of proportion and significantly contrasts to the lower residential up to 10 storeys, such that it creates a disconnected in form.	**High capacity scenario 1:** High capacity viewed from Hagley Park, Victoria Street further detracts from the prominence and primacy of the Central City.

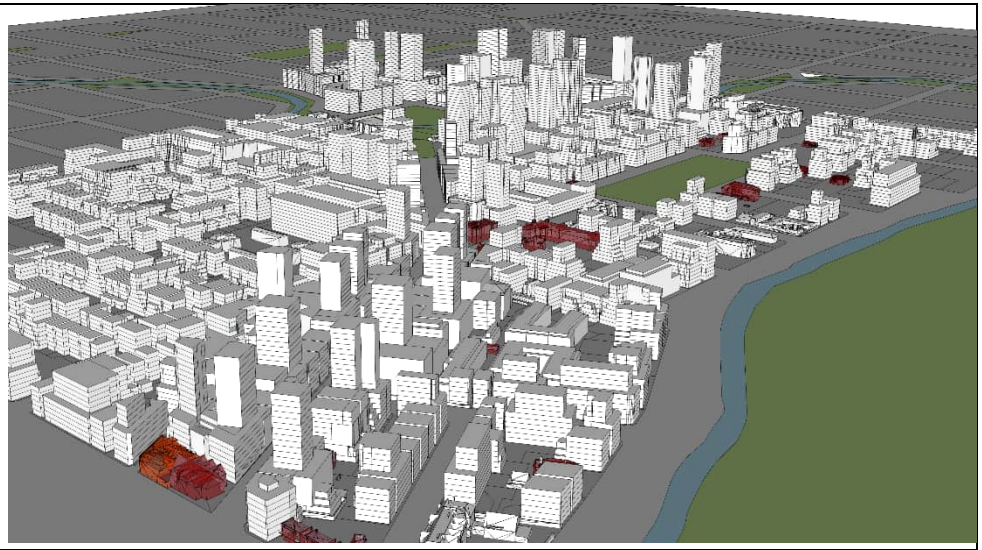
Scenario 2: 60m Victoria Street height

This scenario includes 60m high buildings along Victoria Street. This scenario illustrates a similar proportion of building height difference as is currently identified in District Plan provisions. The current Victoria Street height overlay is 61% of central city building height (17m compared to 28m), whereas a 60m Victoria Street building height will be at 67% of 90m.

- In this scenario, the Central City is more defined in terms of city image, increasing the legibility of the City Centre.
- If the 60m height building was to be built earlier than the development of the Central City, the building can appear isolated from the existing immediate surroundings and be excluded from the Central City, as this height is higher than the majority of existing buildings in the Central City.
- In relation to the proposed height for the surrounding residential and mixed-use sites, a height of 60m is near doubling the 32m residential height limit. When compared to the District Plan operative residential heights provisions (11m and 14m for surrounding residential area and 17m for Victoria Street commercial), 60m can appear out of proportion while reflecting a level of height increase for business activity.
- In relation to the transition in built form, 60m building height is near a medium height for the transition from the 32m residential to the 90m Central City building height.



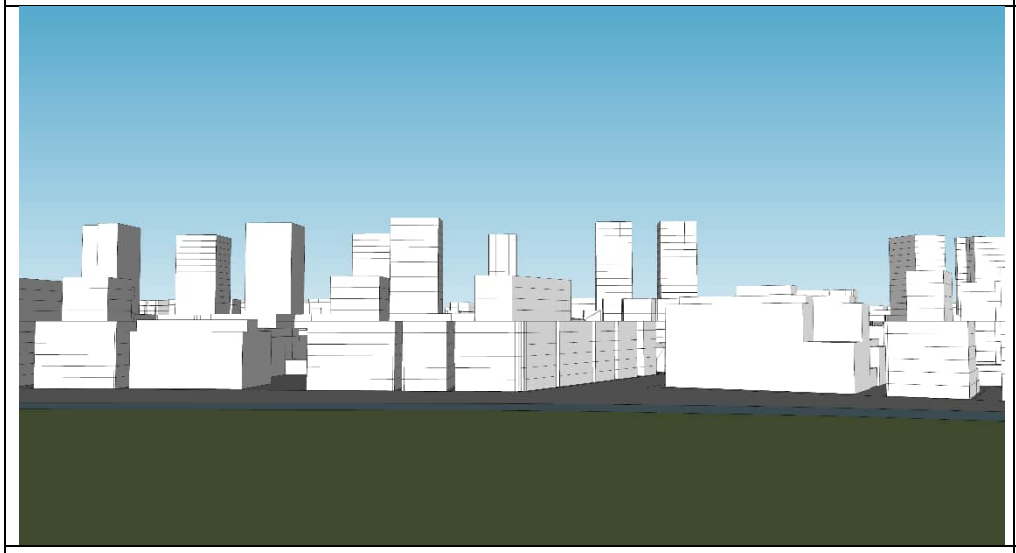
Realistic-capacity scenario 2:
60m height makes central city appear more distinctive and dense, benefiting the legibility of the Central City.



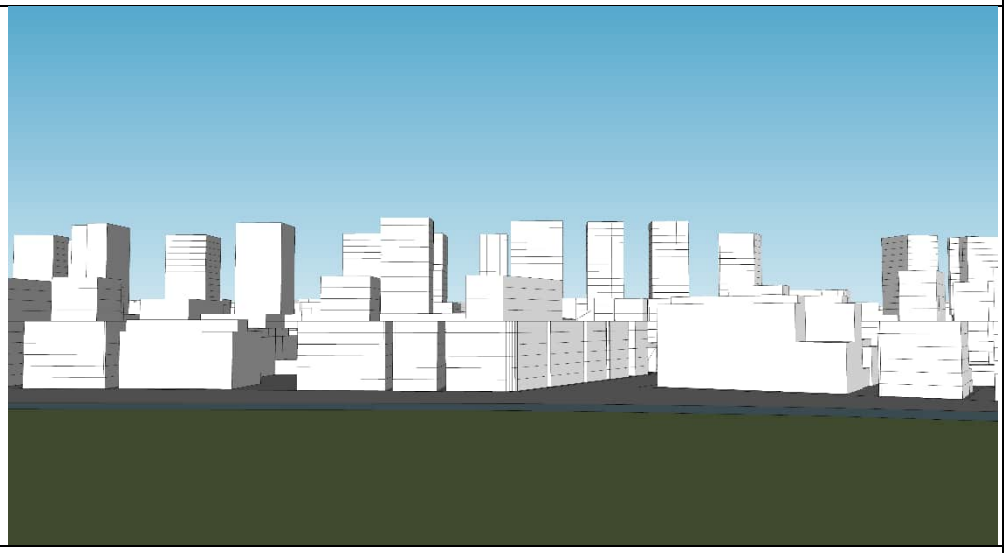
High capacity scenario 2:
High capacity scenario at 60m can over-emphasis Victoria Street.

Realistic capacity scenario 2:
Victoria Street has some distinction from the Central City, and a good level of height transition between the surrounding residential and the Central City 90m form.

High capacity scenario 2:
A high cluster of activity appear in the upper Victoria Street.



Realistic capacity scenario 2: The 60m towers create greater legibility of the commercial area of Victoria Street in comparison to the adjacent residential area. The height difference appear appropriate in relation to the change in activity.

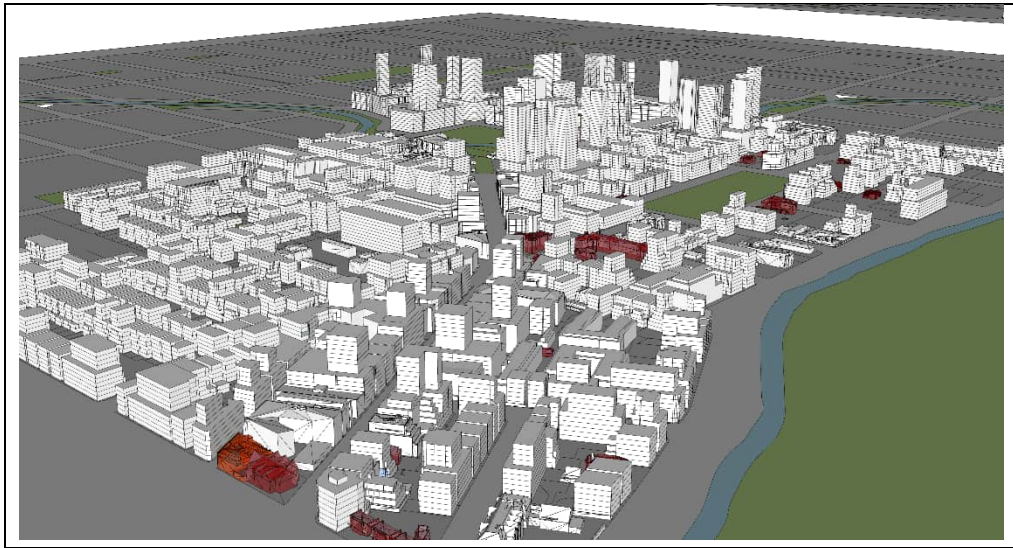
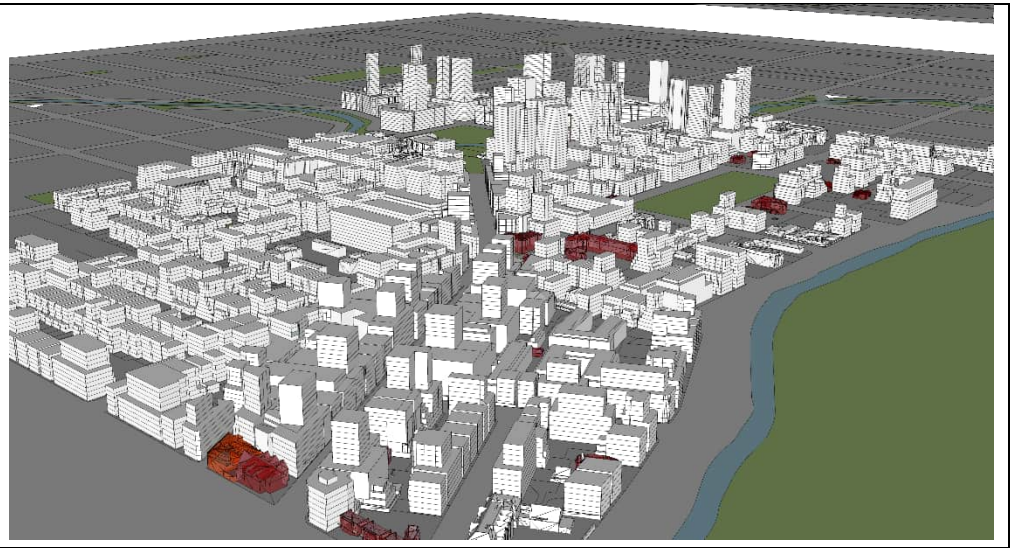


High capacity scenario 2:
At high capacity, the Victoria Street feels a little separated from the surrounding area but appears business-centred.

Scenario 3: 45m Victoria Street height

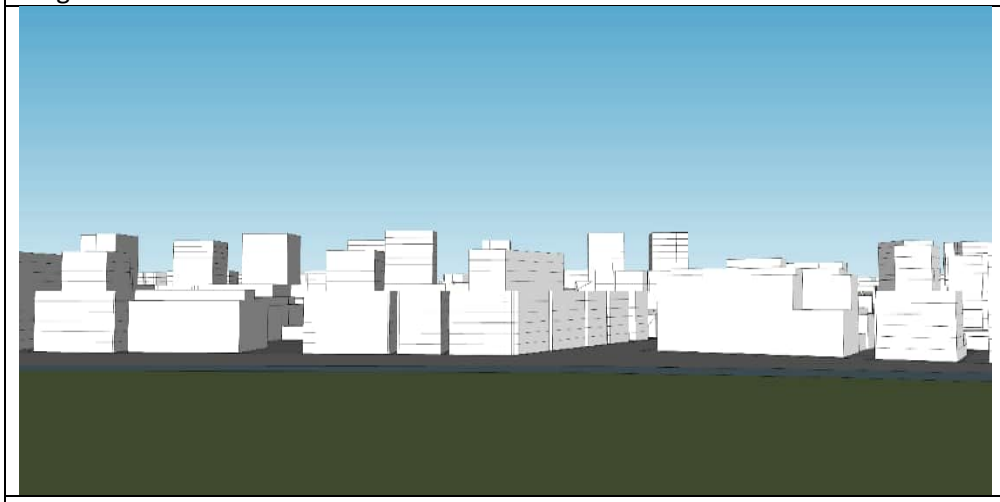
This scenario includes 45m high Victoria Street buildings.

- In this scenario, the Victoria Street precinct height is half the Central City height. This supports the high importance placed on the central city area and helps to visually define the boundary of the central city providing a strong level of legibility.
- 45m is lower than many taller buildings currently in Central City, providing an appropriate level of height increase to Victoria Street that will not detract from the existing Central City form. It provides for an approximate increase by doubling the height of existing buildings on Victoria Street that means that new buildings at this height limit will relate better to surrounding buildings as compared to other options (higher height limits).
- A 45m height limit is around 50% more than the surrounding residential area height limit, meaning that buildings will not be visually dominant.
- The form of transition between the 45m Victoria Street height and 90m Central City, may be quite evident as the central city doubles the 45m building height. This however reinforces the primacy of the Central City.

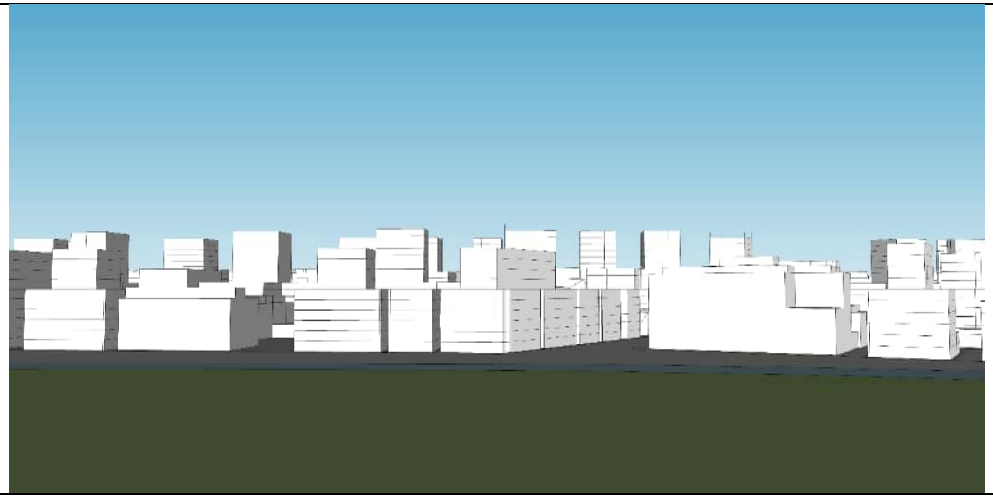
	
Realistic-capacity scenario 3: In this scenario the Central City will appear further consolidated, strengthening the idea of activity cluster in the central catchment.	**High capacity scenario 3:** High capacity model shows a similar idea where Central City is clustered within the catchment and Victoria Street form does not detract the primacy.

Realistic capacity scenario 3:
45m height is the most appropriate to the surrounding residential areas but a contrast when transitioning into the Central City where doubles the building height.

High capacity scenario 3:
Appears appropriate, shows different activity to the surrounding residential areas and illustrates business status at a low intensity compared to the Central City.



Realistic capacity scenario 2:
The 45m towers create greater legibility of the commercial area of Victoria Street in comparison to the adjacent residential area while not overly dominate the adjacent form. The height difference appear appropriate in relation to the change



High capacity scenario 2:
At high capacity, the 45m Victoria Street buildings feels integrated and not too distinctive from the surrounding area but appears business-centred.

Appendix 3: Cathedral Square Sunlight Study

This paper considers the amount of shading that will occur on Cathedral Square under various building height scenarios.

The NPS-UD requires increases in height to be implemented in the central city. An assumption has been made for the purposes of this exercise that the maximum height will be 90m. This may be a height limit implemented in the District Plan, but it is in any case considered to represent a realistic maximum height for buildings in the city at present.

The NPS requires height limits to be maximised. For this reason, most of the scenarios employ lower heights only for sites directly adjacent to Cathedral Square. In some cases, adjacent buildings have been modelled, but it was mostly found that there was limited extra shading caused by taller buildings near the square. This means that the analysis demonstrates that for the most part it is only necessary to reduce the heights of buildings next to the square to manage the issues of shading.

Scenarios tested were as follows:

5. 30m (adjacent to the square) and 60m (for other "key" sites close to the square)
6. All 90m (No Height Limit)
7. 45m (adjacent) 90m (key)
8. 60m (adjacent) 90m (key)

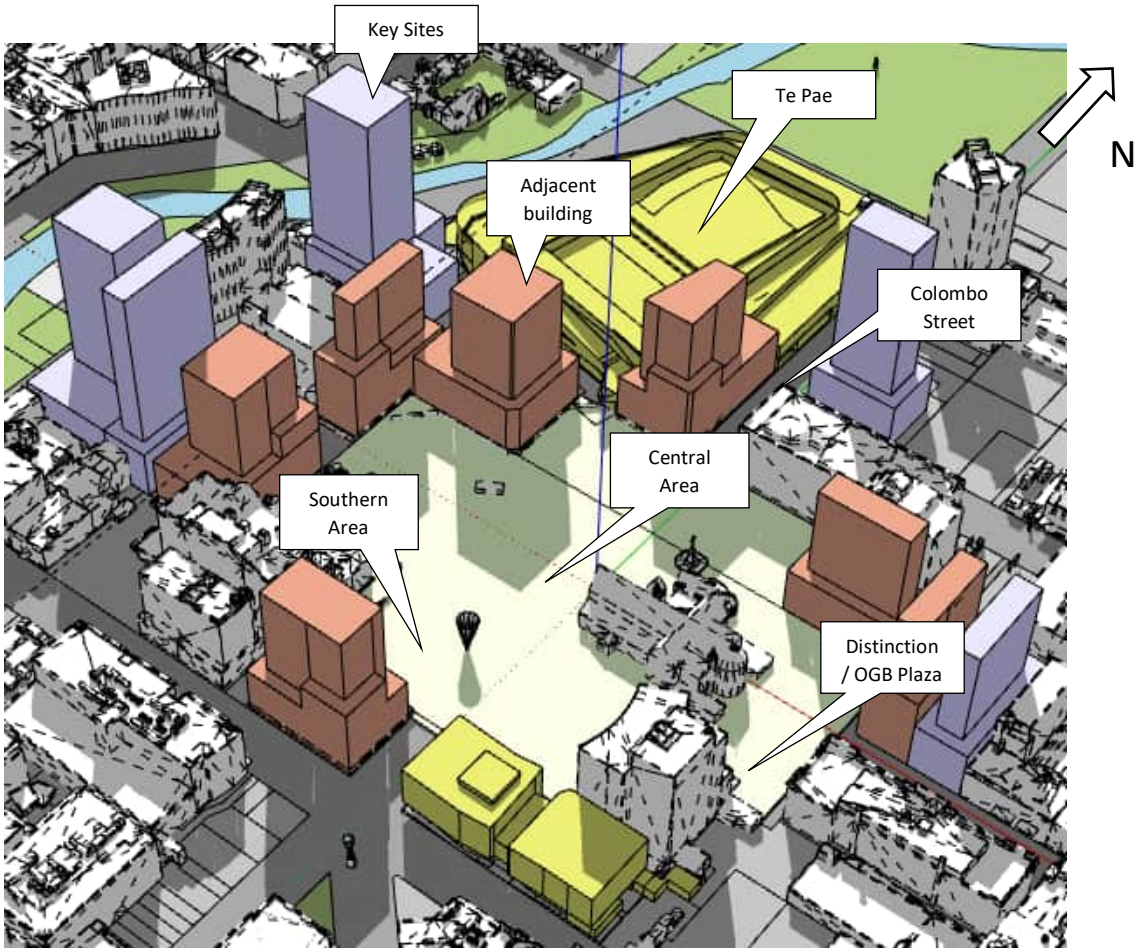
The study considered the impact of shading on various areas of the square:

- The southern area has the most potential for sunlight access and is therefore the most suited to outdoor activities. It is desirable to retain solar access to this area for as much of the year as possible.
- The Distinction / OGB plaza area is at the east of the square and has potential for good evening sun and active uses to take place.
- The Central area is in front of the Cathedral. Solar access is important here but likely more so in the summer months and surrounds (which may include some time beyond the equinox, for example in April).
- Sunlight access at the north of the square is likely to be more restricted

The study considered the impact of two categories of building:

- Adjacent sites were those directly adjacent to the square
- Key sites are those near the square (which could potentially cast a shadow over it) but not directly adjacent. Buildings on these sites could be higher, but potentially not the same limit as other buildings in the city.

These buildings and areas are shown on the diagram below:



Findings of the study are summarised as follows:

Scenario 1 provided for good sunlight access throughout the year, for the majority of the square, although parts of the square are shaded for much of the time in winter. Most of the shading was from the 30m high buildings, although there was some additional shading from the 60m buildings, notably from 184 Oxford Terrace (to the northwest).

Scenario 2 shaded the square for much of the day, on both the equinox and the solstice, included the southern boundary where good climactic conditions would be expected.

Scenario 3 led to an increase in shading in midwinter compared to scenario 1 that was especially apparent in mid-day. However, there was good access to sunlight at the south of the square and there was good sunlight access at the equinox.

Scenario 4 led to reduced sunlight access compared to scenario 3, with quite significant shading at the equinox. In the winter, there would be no sunlight at the eastern part of the square and limited sunlight at the south.

One thing the study showed was the impact of gaps in the buildings and the significant amount of sunlight access provided by these.

Buildings to the south of the square do not contribute to shading.

Recommendations

In order to manage the impact on sunlight on the square, whilst generally allowing for tall buildings, it is recommended that scenario 3 be implemented. This would limit adjacent buildings to 45m and

allow key sites to be developed at 90m (which is the height suggested for the city in general). No. 9 Cathedral Square (south of the site) could be developed at 90m because it does not cast shade on the square.

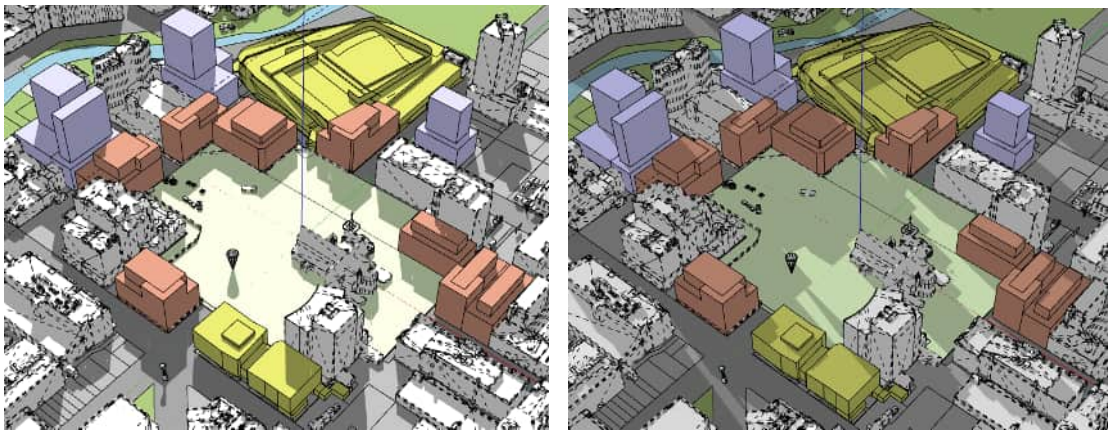
There is some potential for additional shading from some key sites if the height limit is 90m, but this is likely to be minimal and would have a small impact at certain times of the day and year.

Scenario 1: 30m Adjacent Buildings, 60m key sites

This scenario most closely resembles the current zoning. It ensures large proportions of the square are free from shading through most of the shortest day. This scenario ensures that there is good sun access throughout the day on most days of the year and that there is always some sun access at the south of the square.

Equinox:

- There is generally little shading of the central area throughout the day, with only shading on the north and east or west side, depending on the time of day. This height limits does ensure that most of the square has good sun access.
- There would be full sun onto southern boundary throughout the day. In the late afternoon, the west side of this area would be shaded, but there would still be sun onto the Distinction / OGB plaza.
- At 5pm, there is still some sun at the southeast corner. Most of the shading is from the directly adjacent buildings (not the key site buildings). There is some additional shading from 184 Oxford Street (North West) but this is a small proportion of the shaded area.



Left (Equinox): Most of the square is free of shading at 2.30pm
Right (Equinox): There is still some sunlight access to the south-east corner at 4.30pm

Solstice

- There is some shading of the square during the day, but there are also large areas that are free from shading. In particular, the centre of the square is mostly not shaded during the middle of the day.
- There is good sunlight access into the southern area even on the shortest day.
- There is some (limited) sunlight access into the Distinction / OGB Plaza at this point of the year.

Left: Solstice shading at 2.30pm – Much of the square is free from shading on the shortest day.

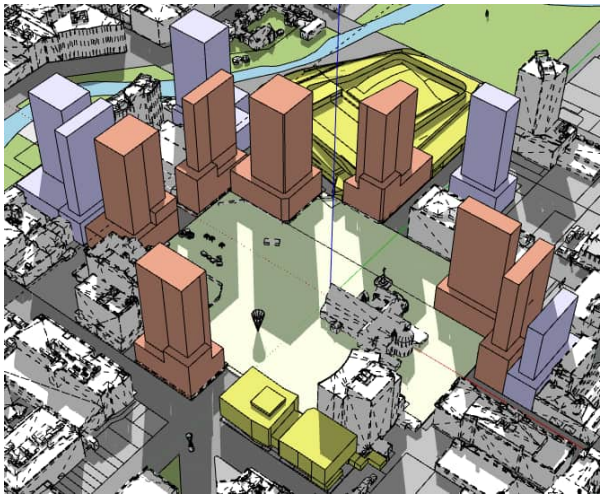
Scenario 2: All buildings at 90m (No Limit)

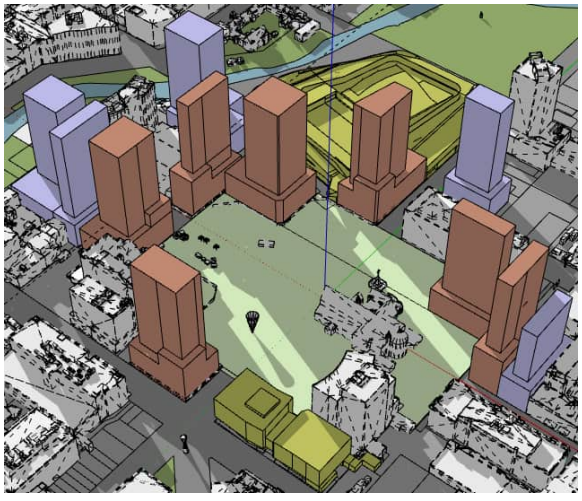
This is the most extreme scenario, assuming no height limit and that all sites are developed with tall buildings. This would have significant impacts on the amount of sunlight received on the square throughout the year.

Equinox:

- There is significant shading of the eastern half of the square in the morning
- There is shading of much of the central area throughout the day, as shadows move across the square. Some areas would get brief interludes of sun as the shadows of different buildings moved across the square. Overall, there would be shading of central areas for most of the day.
- There would be limited sun onto southern areas in the evening, as shadows from various buildings fell across the square.
- There would be little sun onto the Distinction / OGB plaza area at any time.

Left: Equinox shade on the square at 9.30 (90m buildings)
Right: Some parts of the square are shaded at midday, including East side outside OGB (12.30, equinox).



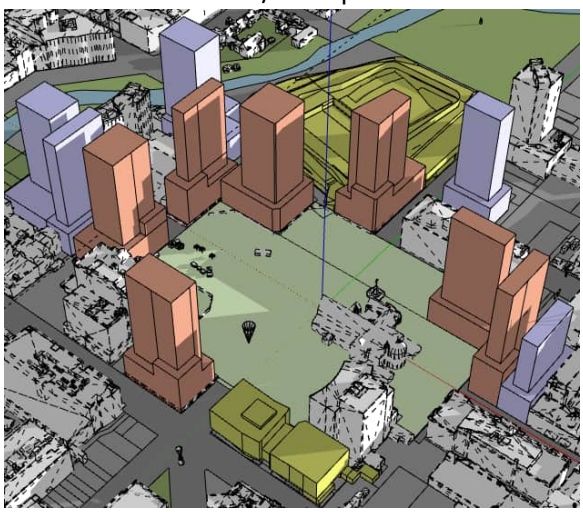


Equinox: Around half the square is shaded at 2.30pm
Late afternoon (4.30pm) – most of the square is shaded

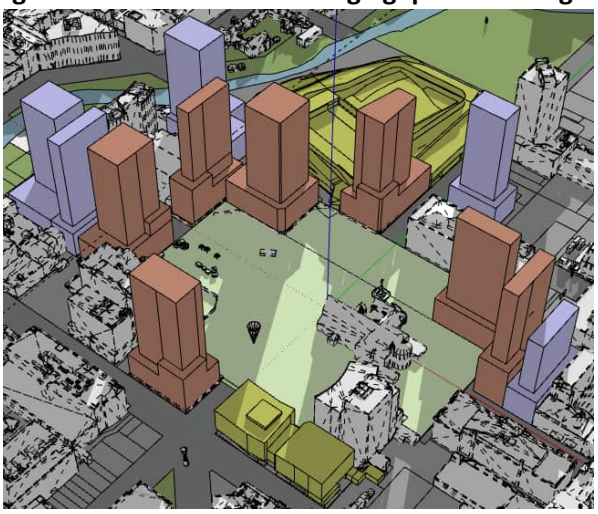
Winter Solstice

- Almost all the square would be shaded in the morning and late afternoon.

- Shadows would cross the square at midday meaning the only sun access to the southern area and centre would be via gaps in the buildings.
- Shadows would continue to fall on the square in the afternoon. Some areas would receive sunlight for limited periods as the sunlight slivers move across the square.
- The Distinction / OGB plaza would receive very little sunlight.



Left 22 June: 9.30am – Most of the square is shaded
Right 12.30 – Some sun through gaps in buildings.



2.30 – Some slivers of sunlight

Scenario 3: 45m Adjacent, 90m key sites

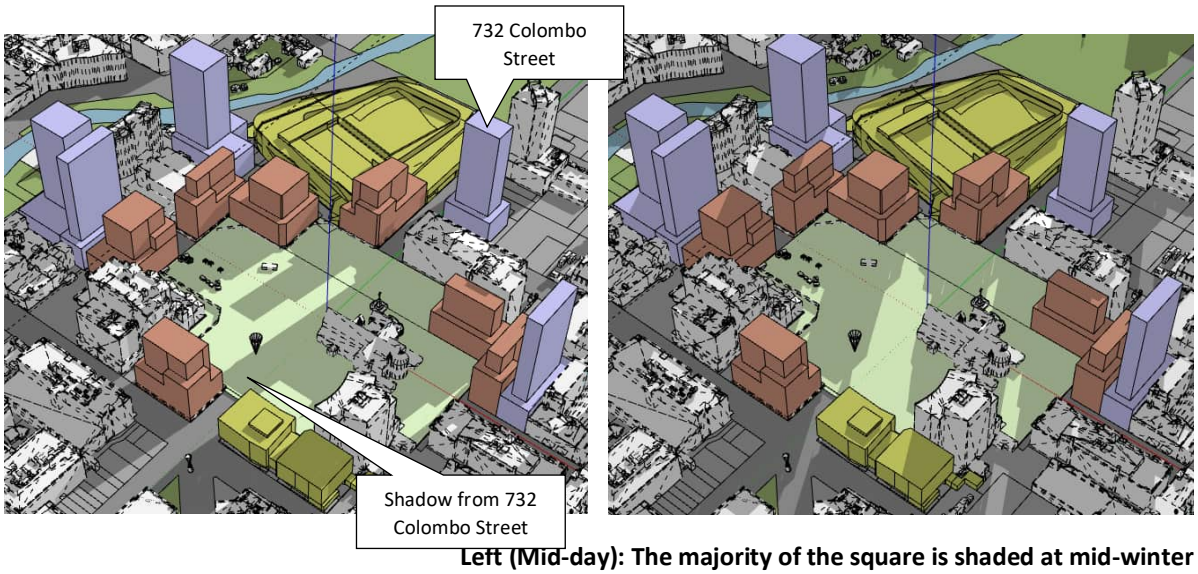
This is an intermediate scenario, which uses the 45m heights from the previous city plan as a basis, applying these only to the sites directly adjacent to the square.

In mid-winter, there would be sun at the boundary of the square, but the centre would be largely shaded, with the only sun access being from the gaps between buildings. This scenario may indicate the maximum heights if some solar access is to be achieved at the southern boundary all year.

Most of the shading was from the 45m buildings, but the length of the shadow-line was extended by 90m buildings – for instance 732 Colombo Street. This indicates that the 90m limit may be too high to fit with the 45m limit.

Winter Solstice

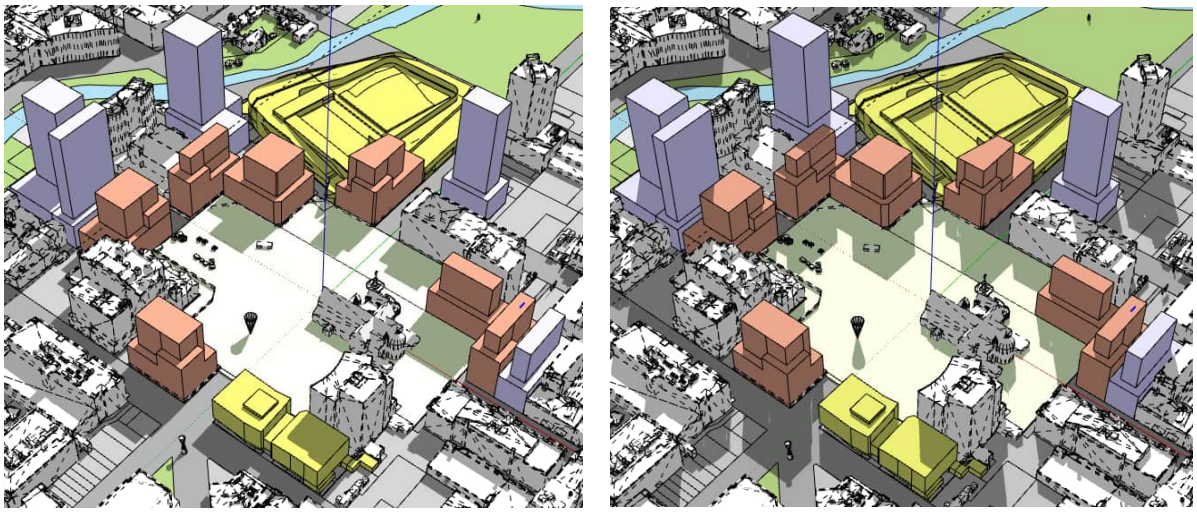
- The majority of the square is shaded at mid-winter, from the 45m high buildings. However, the southern plaza area is free of shade from mid-day except for an area (near the chalice) shaded by the 90m building at 732 Colombo Street.
- The south area would be largely free of shading if this limit was lower (80m).
- Both mid-day and in the early afternoon, some of the central area is unshaded, but this is mostly due to the gaps in the buildings and due to the lower height of Te Pae.



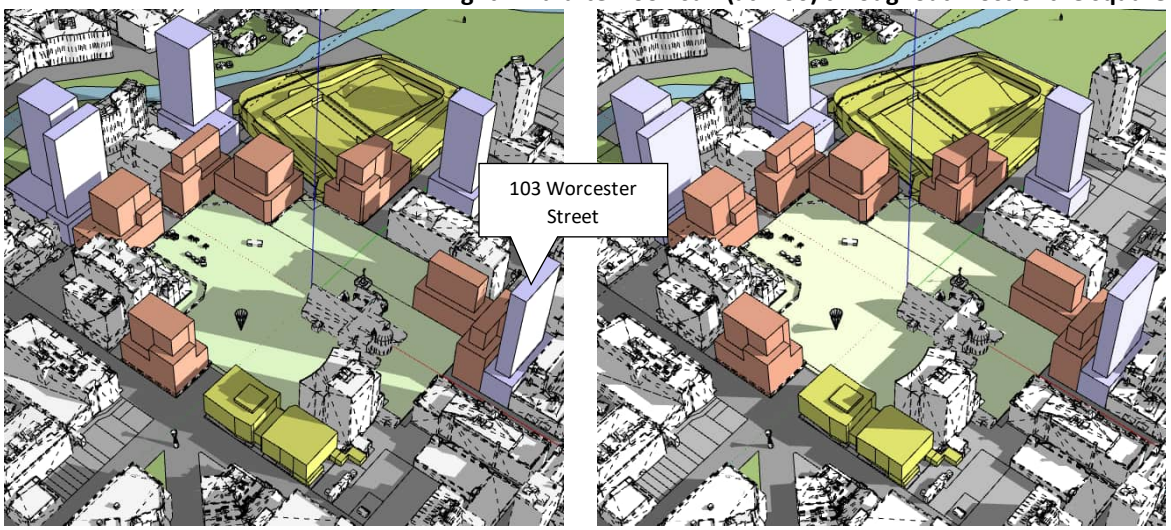
Left (Mid-day): The majority of the square is shaded at mid-winter
Right (2.30pm): Some of the square is unshaded and the impact of gaps in the buildings is evident

Equinox

- There is generally good solar access at the equinox for most of the day.
- Both the south area and the Distinction / OGB plaza receive good sun access.
- The impact of one key site close to the square is shown to be very signicant. As a result it is recommended that that site (103 Worcester Street) should be an adjacant site with a lower height limit if appropriate.
- Other than for 103 Worcester Street, at this time of year there was no additional shading from the 90m buildings (all shadow on the square would be cast by the 45m buildings).

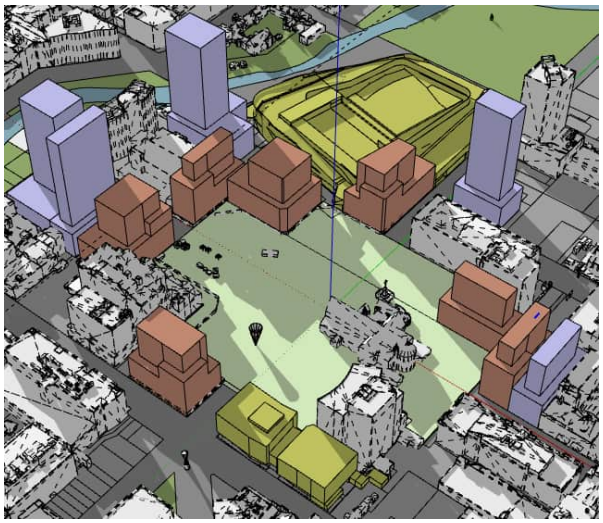


Left: There is good access to midday sun at the equinox
Right: Mid-afternoon sun (at 2.30) throughout most of the square



Left: At 8.30am there is significant shading of the south west corner from 103 Worcester Street;
Right: by 9.30 it has moved on to the south east corner

There is considerably less shadow if the building at 103 Worcester Street is reduced in height (8.30, left and 9.30, right).



September 22: Some late afternoon sun in the south east corner (at 4.30pm). Note that the shading is from the 45m buildings and there is no additional shading on the square from the 90m buildings.

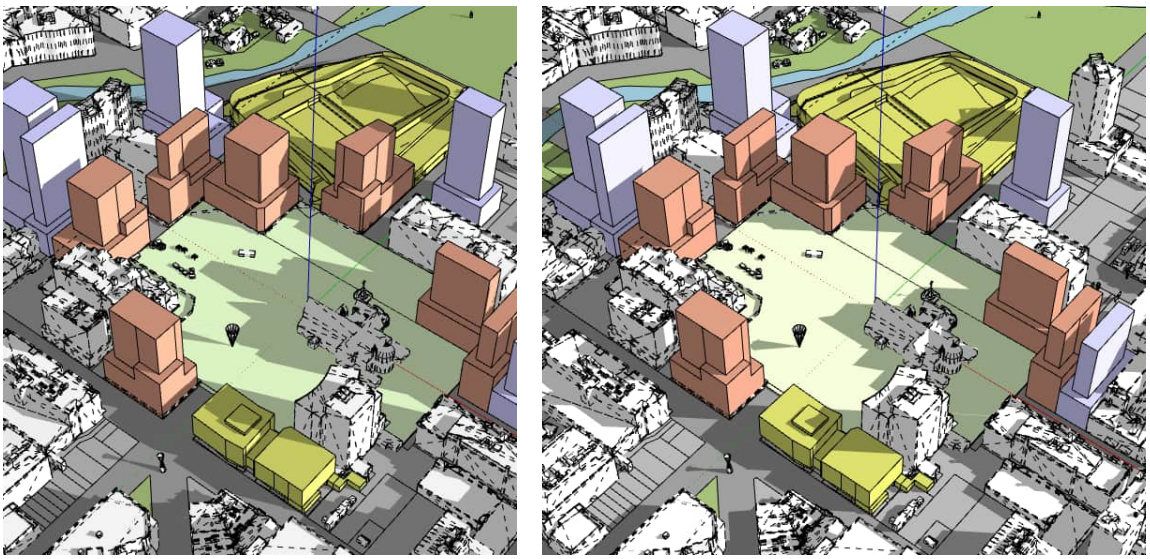
Scenario 4: 60m (Adjacent) and 90m (Key Sites)

This scenario creates shading that is more extensive over the square than scenario 3.

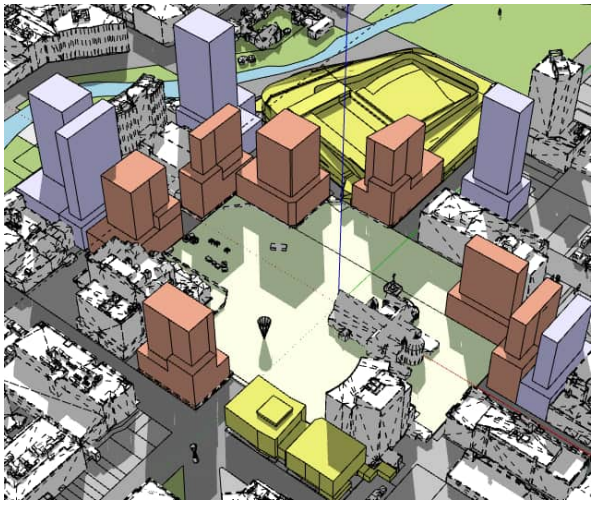
Equinox

- In this scenario, buildings would shade central areas of the square before 9am
- There is generally good sun access in the middle of the day (although some parts of the northern areas are shaded).
- The north side is mostly shaded by 2.30, except for small areas under gaps in the buildings (at Colombo Street and Te Pae). These Stripes of sunlight will migrate across the northern portion of square through the day.
- In the late afternoon, shadows are more extensive and the whole square is shaded by 4.30, with the exception of slivers light through the gaps in the building.
- There is therefore quite extensive shading at the equinox under this scenario, compared to scenario 3.

Equinox

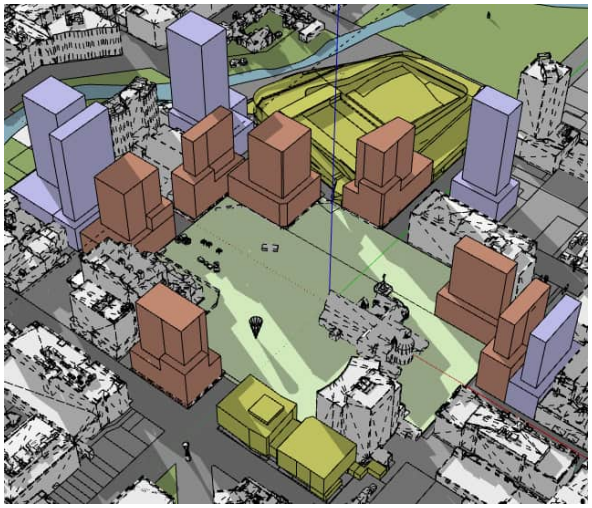


Above: Early morning shading is more extensive at the equinox (8.30am and 9.30am)



Left: Some additional shade over the central areas at midday

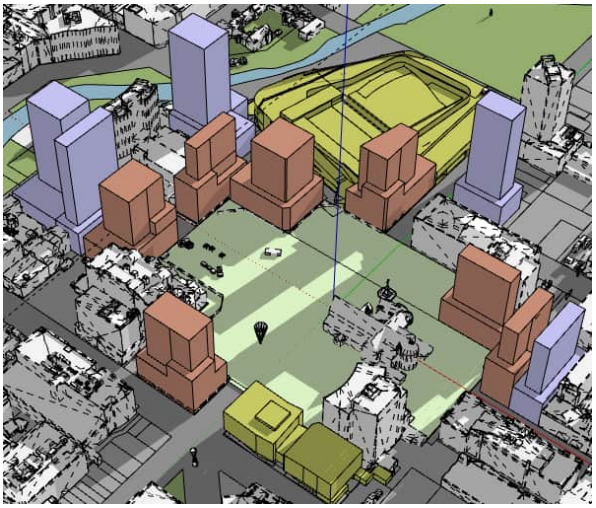
Right: Some additional shading over eastern and central parts of the square at 2.30, but good sun access to the southern areas of the square.

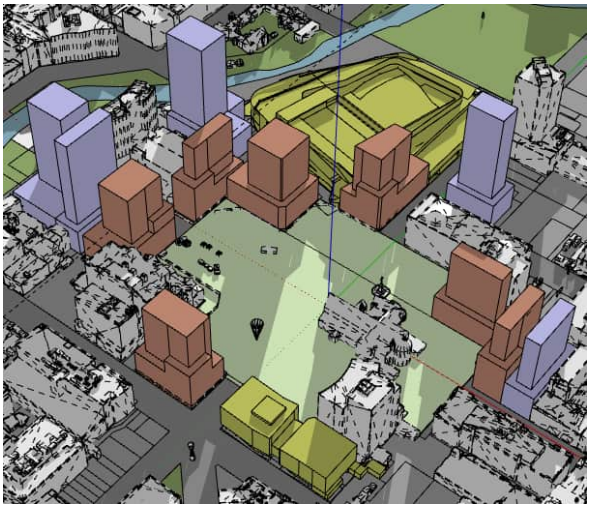


22 September 4.30: Reduced sun access to south area.

Winter Solstice

- During the shorter days, there is very little sun at all during the day for the Distinction / OGB corner.
- On June 22, shadows extend across the whole of the square in the afternoon, with a sliver of sunlight through the gap between the buildings. The square is mostly shaded during winter. Other than at mid-day, this shading is largely caused by the 60m buildings.





Left - midday: Most of the square is shaded; with some sun through gaps in buildings.

Right - 2.30: Shadows extend across the width of the square

Appendix 4: City Centre Zone capacity study

- Following the identification of Central City Zone, the area is calculated to be 566,776.07 sqm, including Victoria Street and Cathedral Square.
- When excluding Victoria Street height variation and Cathedral Square height variation areas, the total land area is 463,490.36 sqm.
- The area excluded (also the area applied height variation), is the difference between the two, 103,522.33 sqm, including Victoria Street precinct that is 68,439.45 sqm, and Cathedral Square area that is 35,082.88 sqm (including the cathedral land itself).
- Following a Victoria Street and Cathedral Square capacity study, an average in Floor Area Ratio (FAR) is generated for the three height limit scenarios – 45m, 60m and 90m, they are as follows.
    - 45m – FAR 9.122
    - 60m – FAR 10.588
    - 90m – FAR 12.878
- It is assumed that under the current District Plan rules, a FAR 6.5 is applied to the Central City Zone. This is concluded because of the 21m height limit (likely 7 storeys maximum), and recession planes that will likely reduce the upper floor capacity.
- Under these scenarios, the comparison between the existing rules and the proposed rules with different height limits for the Central City Zone capacities is listed as follows.

Scenario	FAR	Capacity	Increase over BAU capacity
BAU	6.500	3,683,979.5 sqm	N/A
45m	9.122	5,170,040.1 sqm	40.3%
60m	10.588	6,000,919.1 sqm	62.9%
90m	12.878	7,298,813.4 sqm	98.1%
Rest of Central City Zone (excl. Victoria St, Cathedral Sq 463,490.36 sqm	6.5 (at BAU) 12.878 (at 90m)	3,012,687.3 sqm (at BAU) 5,968,828.9 sqm (at 90m) The rest of Central City Zone will have a total capacity of 5,968,828.9 sqm, at 90m. This is 98.1% of increase over the BAU scenario for the 'Rest of Central City Zone'.	98.1%
Cathedral Square 35,082.88 sqm	12.878 (at 90m) 10.588 (at 60m) 9.122 (at 45m)	- 451,797.3 sqm (at 90m) - 371.457.5 sqm (at 60m) - 320,026.0 sqm (at 45m). Difference is 131,771.3 sqm (when applying a 45m height limit vs 90m height limit).	BAU – at 6.5 FAR = 228,038.7 sqm.
Victoria Street 68,439.45 sqm.	12.878 (at 90m) 10.588 (at 60m) 9.122 (at 45m)	- 881,363.2 sqm (at 90m) - 724,636.9 sqm (at 60m) - 624,304.7 sqm (at 45m)	BAU – at 6.5 FAR = 444,856.4 sqm.

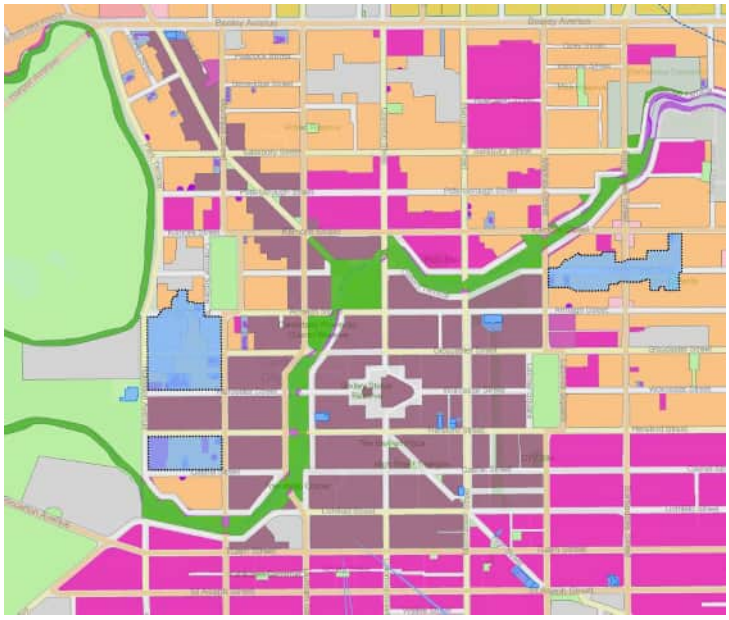
		Difference is 257,058.5 sqm (when applying a 45m height limit vs 90m height limit).	

Note: Some of the Central City Zone would include existing open space/play area, for example, Cathedral Square, Margaret Mahy Family playground, the east frame open space, and other key existing buildings, e.g. Te Pae. However, for the purpose of this study, they will be included in the development capacity calculations.

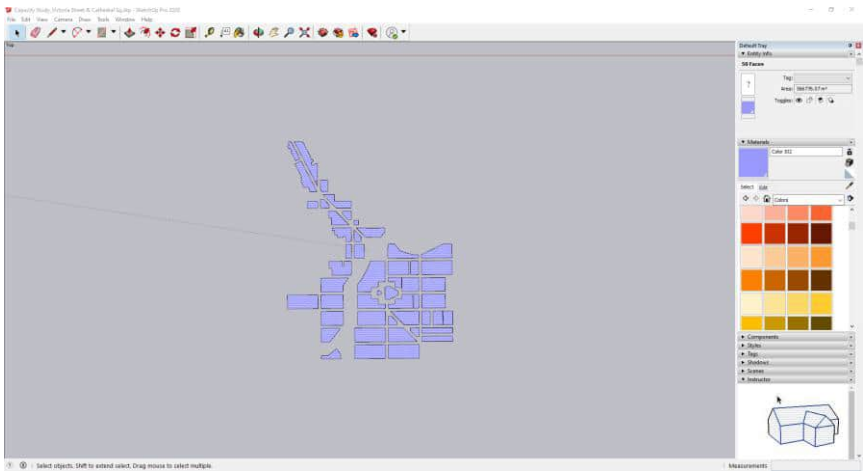
This would mean that the development capacity outcome is likely higher than reality.

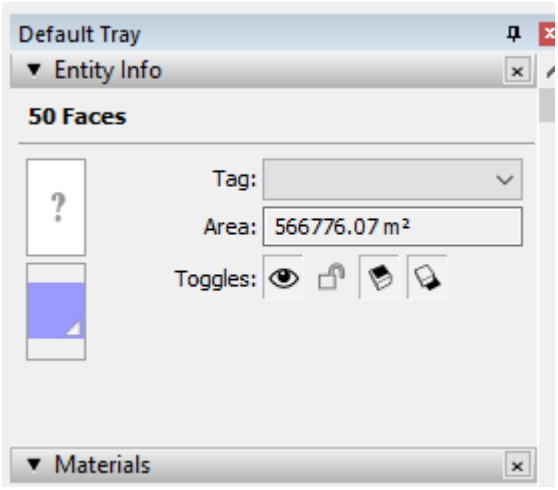
The following are steps taken in calculating the land area.

Proposed zoning map of central city.

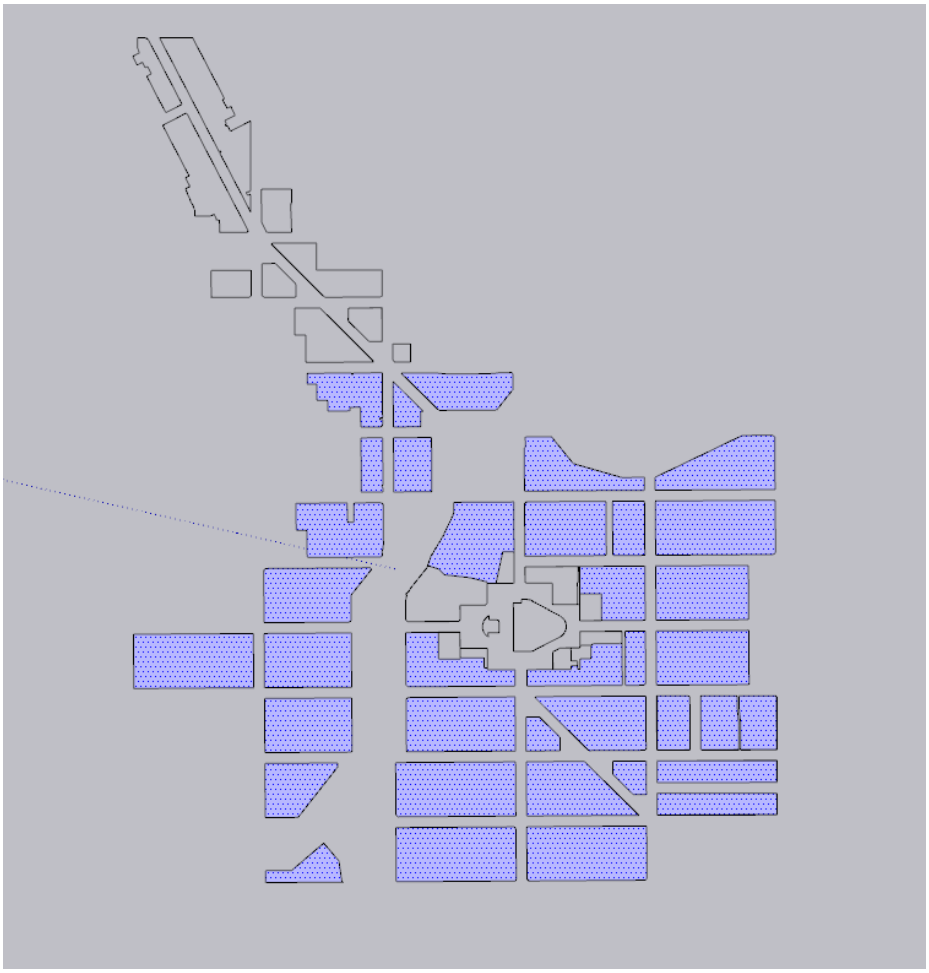


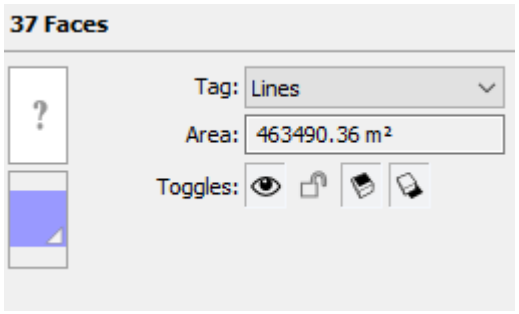
Identified land area of the central city zone.





Excluding Victoria Street precinct and Cathedral Square precinct (Height variations). The rest of the central city zone is shown in purple, which is 463,490.36 sqm.




37 Faces
?
Tag:
Lines
Area:
463490.36 m²
Toggles:

Appendix 30

Lower Height Limits – Lyttelton Commercial Banks Peninsula Zone - Christchurch City Council

Plan Change 14

Qualifying Matter: Lyttelton Commercial Centre - Lower Height Limit

Christchurch City Council

Technical Report

Date: 1 August 2022
Version: V03
Author: Josie Schröder
Peer reviewed: Ceciel DelaRue

1. Introduction

1.1 Summary

The Lyttelton town centre (see ***Appendix 1*** for extent) is proposed in the commercial centres hierarchy as a Local Centre (Medium) Zone, with an associated 14m height limit. However, the special characteristics of the Lyttelton town centre warrant a lower height limit than this, with retention of the current 12m height limit proposed as a Qualifying Matter through Plan Change 14.

There are less than 80 commercial sites located within the Commercial Banks Peninsula Zone in Lyttelton. Activities within this zone include, but are not limited to, retail, offices, hospitality and public uses such as the library and local government services. They are within two largely distinct areas - Norwich Quay, which more strongly relates to the port-side context, and London Street, which is the main retail street, and the area to which the height limit is most pertinent for the reasons discussed below.

The combination of the extent of heritage listed buildings and adjacent proposed Residential Heritage Area (and adjacent existing/proposed Character Area), distinct and recognised built character, and topography impacting on sunlight access, all contribute to the rationale for a lower height limit for the Lyttelton town centre.

1.2 Legal Requirements

The matter of whether lower height limits can be applied to particular locations within Ōtautahi Christchurch should be considered under section 77O of the Resource Management Act 1991 (RMA). This relates to 'Qualifying Matters in application of intensification policies to urban non-residential areas' and identifies that:

'a specified territorial authority may modify the requirements of policy 3 in an urban non-residential zone to be less enabling of development than provided in those policies only to the extent necessary to accommodate 1 or more of the following qualifying matters that are present:

(a) A matter of national importance that decision makers are required to recognise and provide for under section 6. Section 6(f) identifies and enables the protection of historic heritage from inappropriate subdivision, use and development. Almost the entirety of the Lyttelton township is identified as a Historic Area by Heritage New Zealand Pouhere Taonga. In addition, individual scheduled items are located within the commercial centre. A Residential Heritage Area is also proposed immediately to the north of the commercial centre, and covers most of the Lyttelton residential area, with connection to the harbour being a contributory matter.

(j) Any other matter that makes high-density development as provided for by policy 3, as the case requires, inappropriate in an area, but only if section 77R is satisfied. The town centre is recognised as having a distinct character and strong sense of place as a result of the built form (with noted associated heritage values), including scale. In addition, Lyttelton's location on the steep, southern slopes of the Port Hills, access to sunlight is a matter that has been identified as a matter of importance to (and by) the community.

Section 77P describes the evaluation – additional to that under section 32 of the RMA – required for qualifying matters. However, section 77Q specifies a different process for 'existing qualifying matters', which includes a qualifying matter referred to in section 77O(a) that is operative in the relevant district plan when this plan change. Lyttelton, including its town centre, contains numerous buildings and settings listed within the Schedule of Significant Historic Heritage and/or Schedule of

Heritage Areas, and as noted earlier, is identified for almost its entirety as a Historic Area (see ***Appendix 2***).

For section 77O(j) 'other matters', section 77R requires that the matter can only be considered as a qualifying matter if an evaluation report also identifies:

a) The specific characteristic that makes the level of urban development required in Policy 3 in appropriate;

b) Justifies why that characteristic makes that level of urban development inappropriate given the national significance of urban development and the objectives of the NPS UD; and

c) Includes site specific analysis.

This report meets the requirements in section 77R in respect to the distinct character of Lyttelton's town centre, and with reference to sunlight access provided.

As such, this evaluation highlights the rationale behind identifying 'a lower height limit on sites currently located in Lyttelton's Commercial Banks Peninsula Zone' as a qualifying matter in order that sections 77O(a) and (j), 77P, 77Q, and 77R are met.

2. Background

In respect to Plan Change 14, Lyttelton is proposed as a Local Centre (Medium) within the city's hierarchy of centres. The Lyttelton commercial centre serves not just Lyttelton but the entire Lyttelton Harbour basin area. As such it offers a range of services and retail activity to the local area, as well as accommodating a significant place of employment to the city via the Lyttelton Port Company.

For these reasons amongst others, Lyttelton has been included within the Ōtautahi Christchurch urban area. As such Medium Density Residential Standards (MDRS) will apply to most of the residential area of the township. However, most of this area is also proposed as Qualifying Matters for the reasons of heritage and character values. This includes areas surrounding the commercial centre, where height limits are proposed to be restricted to 7m, as existing[1].

Lyttelton has a character quite distinct from other urban areas within Ōtautahi Christchurch due to its steep, sloping topography, colonial and Ngāi Tahu cultural heritage, portside location, street and lot layout and eclectic mix of buildings, many of which are denoted as historic heritage.

Lyttelton is located on the southern slopes of the Port Hills. The sunny aspect is to the north, compromising the extent of access to sun, in particular during the winter months. Public space within the commercial town centre, and township more widely, is limited with the focus of much of the community activity in public space on London Street and Albion Square (located on the corner of London Street and Canterbury Street). As such ensuring a good level of comfort for the users of these spaces and access to sunlight for adjacent uses/buildings has and is considered to be of high importance to the community[2].

[1] See Plan Change 13 and 14 for detailed provisions - Lyttelton's Residential Heritage and Character Areas.
[2] Lyttelton Master Plan 2012 and recent submissions on RMA/2020/1555 and RMA/2019/1330

3. Issues in Respect to Height Limits

4. Lyttelton Heritage and Character

Heritage

Lyttelton is an excellent surviving example of a planned colonial settlement dating from 1849, with aesthetic, architectural, historical, social and archaeological significance. Heritage New Zealand Pouhere Taonga listed Lyttelton as a Historic Area (List Number 7784)[3] on 13 August 2009, effective from that date. The Lyttelton Township Historic Area includes almost all of the township of Lyttelton, including the town centre. This listing remains post-earthquakes.

Much of the Historic Area is also proposed as a Residential Heritage Area through Plan Change 13, and to a lesser extent is covered by an existing Character Area Overlay, which is proposed to be retained and extended through Plan Change 14. The Residential Heritage Area includes the properties immediately to the north of the Lyttelton town centre. These properties are in an elevated position above the commercial and mixed use buildings of the commercial centre framing London Street.

In addition to a range of heritage values, the significance of the area also lies in the contextual values. "The contextual value of the Heritage Area arises from the development pattern created by the relationship between the colonial grid pattern of the principal streets and the topography of the locale on the southern flank of the Port Hills. The steeply sloping terrain of the town creates a high level of visual connectivity between the properties within the town and to their port and harbour setting."

Pre-earthquakes, Lyttelton had a wide variety of buildings of different ages and styles which collectively created an eclectic, vibrant townscape much valued by the community. The Harbourlight Theatre, built in 1917 in a Moorish style, was the largest scale building on London Street at an approximate equivalent of 3 storeys (approximately 12 metres), excluding the two decorative tower features. However, most of the buildings along London Street were 1 to 2 storeys at street level.

Figure 1: Heritage items in and around the Lyttelton town centre scheduled in the Christchurch District Plan (excerpt).

[3] https://www.heritage.org.nz/the-list/details/7784

Post-earthquake eight scheduled buildings remain along London Street, with four of these located within the commercial area.

Character

Although diminished by the earthquakes, the variety in building types and styles remains. While a mix of old and new development, overall the combination of buildings and topography create a sense of place, unified by their similarity in height, scale, grain and relationship to public space.

The Lyttelton commercial centre design guidelines currently exist within the Christchurch District Plan (2017) in the form of *Appendix 15.15.6 Design guidelines – Lyttelton Commercial Banks Peninsula Zone*. They identify the physical framework and explain the building design principles to uphold and strengthen, rather than diminish, the enduring character and identity of the Lyttelton town centre. The design of all new developments and external alternations to existing buildings within that zone in the Lyttelton town centre is assessed through the Resource Consent process against these guidelines. In respect of the key matters discussed above, the design principles include:

- *Principle 1: Reflect the context*, which acknowledges and suggests means to reflect Lyttelton's special character.
- *Principle 2: Addressing the slope, views and existing building form*, which emphasises the need to keep in scale, so as not to dominate or diminish the streetscape as a whole.
- *Principle 5: Incorporate variety and pay attention to detail*, which advises against buildings being exactly the same height as their neighbours.
- *Principle 6: Promote sustainable building initiatives*, which encourages building design to achieve a high level of natural light penetration, thermal comfort and sunny spaces outdoors.

Figure 2: London Street, viewed east to west, with adjacent residential (heritage and character) areas to the west

Figure 3: London Street viewed east to west at eye level illustrating the built character

Figure 4: London Street viewed from the south east (cnr of London and Oxford Street, including heritage buildings

5. Lyttelton Master Plan

The Lyttelton Master Plan[4] was prepared in 2011 (and endorsed by Council in 2012) in collaboration with the local community and other stakeholders, to provide an agreed vision to guide severely earthquake-damaged Lyttelton's recovery and rebuild. Key aspects of the Master Plan actions focused on building height, recognising the importance of public space amenity to the community, including:

- *Action (B1) Rebuild and recovery-supportive amendments to the Proposed Banks Peninsula District Plan* (page 94) noted that:
    - The *"12m maximum height is appropriate and ensures new buildings keep within the height ranges of existing building around them. Consideration could be given to ways to encourage a set back third level to avoid overshadowing the main street."* It is noted that while a 12m height was instituted in the Christchurch District Plan, no provision was made for a third level setback. However, with a Restricted Discretionary activity

[4] Lyttelton Master Plan, Christchurch City Council (June 2012)

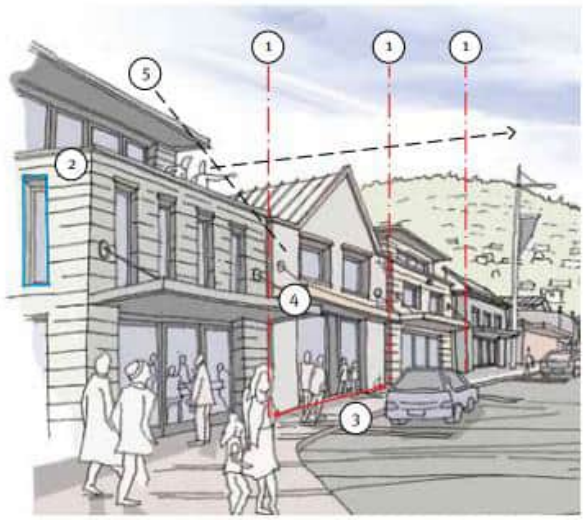
status for new buildings or alterations to existing buildings, this provides opportunity to manage any potential impacts.

- The aim is *"for a successful blend of old and new (not replication) where there is variety and interest but a similarity of scale."* This has largely been achieved through the use of statutory design guidance[5], which were made operative in 2017 as part of the District Plan Review.

- *Action (B2) Design and character guidance* (page 99) -an evaluation of the commercial buildings in Lyttelton's town centre , which have largely been incorporated into the consequent statutory design guidance that was subject to public consultation, that included:
  - Architectural character attributes: *"Double and single level buildings with high parapets."*
  - Core design principles*: "Maintain the generally low built form (one to three stories) based on the height, scale and form of buildings which are still standing and those which have been lost."*
  - An elevation illustrating some of the character elements and core design principles, including *"Buildings similar heights and proportions to their neighbours"* and *"Building set backs on the third level minimise shadows at street level while achieving views out to the harbour."*

There is strong support for retaining the 'vertical' building proportions and fine grain (a series of separate building facades and architectural expression) as per the pre-earthquake condition. This elevation illustrates some of these character elements and core design principles:

1. Buildings similar heights and proportions to their neighbours. Character is maintained by emphasising each individual building with architectural variety, colour and materials.
2. Secondary design elements such as windows and trimmings reinforce the street's vertical proportions.
3. Buildings are sited to define the edge of the street and are active at the ground floor level.
4. Verandas are included for weather protection and maintain a consistent line to their neighbours.
5. Building set backs on the third level minimise shadows at street level while achieving views out to the harbour.



▲ *Artist's impression only, demonstrating character and design elements along London Street.*

Figure 5: Capturing the scale and design elements anticipated through redevelopment of London Street commercial property. Lyttelton Master Plan pg. 100, Christchurch City Council

[5] Appendix 15.15.6 Design Guidelines – Lyttelton Commercial Banks Peninsula Zone, Christchurch District Plan

6. Height in Respect to Public Space

London Street is the focal point of Lyttelton town centre. The street runs 20^0 from north south, has an enclosed, intimate scale and includes eight listed heritage settings and/or items in in the two main blocks between Dublin and Oxford Streets. It is an important civic space, being the location of Albion Square (on which the Lyttelton War Memorial Cenotaph and numerous community events are located) and the weekly Lyttelton Farmers' Market (which supports local producers of food, drinks, plants, craft and entertainment and attracts hundreds of people to the centre).

Figure 6: Albion Square, in the context of London Street to the south

Elsewhere within Lyttelton there are limited spaces to sit, or to congregate, and the comfort of people utilising these spaces is an important element of this. Further, businesses provide outdoor dining and seating at both sides on London Street, and onto Albion Square, adding to the community activity and interest within these public spaces.

Human scale, a unique character and access to sunlight are important components of successful public space. The value (environmentally, socially and economically) of London Street will be compromised by a higher height of adjacent buildings, restricting sunlight access and compromising the character of the commercial town centre.

In addition to the 12m height limit, a recession plane angle applies to a street block bounded by London Street, Norwich Quay, Canterbury and Oxford Streets. As an NZTA-controlled state highway, Norwich Quay is a wider street accommodating a significant and growing volume of port-generated heavy traffic, single-sided for the majority of its length, with an open outlook to the port and beyond. While the lower ground level than that of London Street suggests taller buildings would be more appropriate within this block, the resulting loss of sunlight to both London Street and Norwich Street result in further compromised public space and less vibrant commercial activity as a result.

It's for these reasons – protecting heritage, character and access to sunlight - that building height was and is currently limited to 12m in the Lyttelton town centre.

Buildings within the commercial centre are predominantly 1 and 2 storey, with recently consented developments proposed up to 3 storeys in height (at the time of writing), with one development

proposal consented at 4 storeys plus roof top terrace, adjacent to London Street. Proposals to date, both pre–application (provided to Council in confidence) and those that have been lodged for resource consent, over two storeys have provided for mixed use, with the upper floor(s) for residential, rather than commercial, activity[6]. (see ***Appendix 3*** for detail)

Where of a higher height, the upper floor levels have been designed to limit visual dominance and overshadowing effects on public space, including by providing light weight or setback upper floors, or visual breaks in the streetscene to the north of London Street. This variety has allowed sunlight to penetrate from the north, and sightlines to the harbour to be retained from the residential (heritage) dwellings located above London Street.

Figure 7: Side elevation (east elevation) RMA/2021/3095 illustrating the relationship of development to the north of London Street and the proposed Residential Heritage Area located above (right). The full height of the proposal is 10.6m from street level but both gable roofs and a 1.5 storey section provide for sunlight access from the north (hills) and sightlines from above to the south (harbour).

Figure 8: RMA/2021/3095 London Street elevation (south)

[6] The most significant in scale to date being "Colletts Corner", located on the corner of Oxford and London Streets, containing 4 storeys (one below street level) of mixed activities, predominantly to a height of 12m.

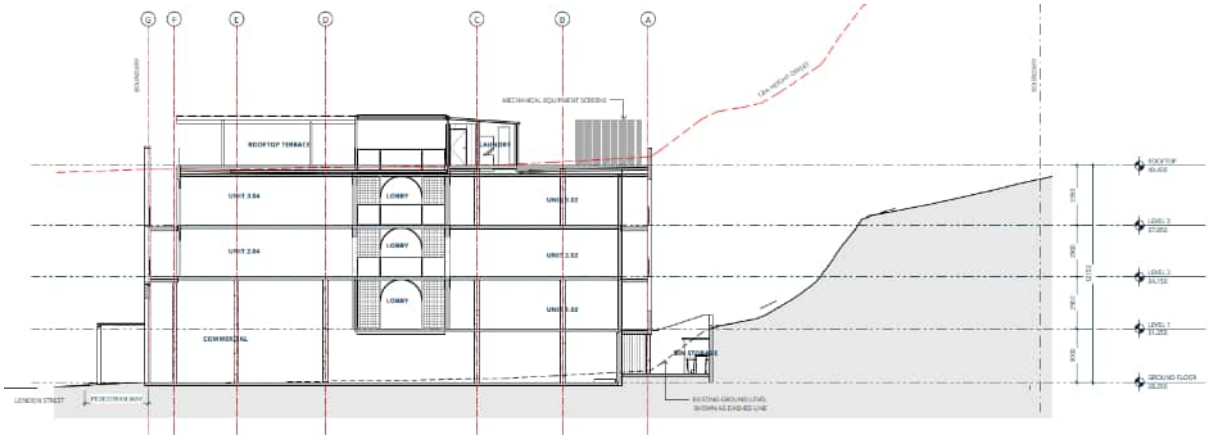


*Figure 9: RMA/2022/801 – Side elevation (east) - a consented 4 storey development with lightweight roof terrace. Equivalent in height to the former Harbourlight Theatre, located on the subject site at 24 London Street. (See **Appendix3** for more detail), with artists impression of the proposed building within the adjacent built context.*

Figure 10: RMA/2022/801 - London Street elevation (south)

Figure 12: RMA/2022/801 – Proposal illustrated within the context

7. District Plan Provisions – Options

To inform Plan Change 14, the Council has therefore assessed what constitutes 'building heights and density of urban form commensurate with the level of commercial activities and community services' in the context of Lyttelton town centre.

Below is a short summary of the options considered, with the key difference being a height difference of 2m, with a maximum height scenario of 12m or 14m. To be at least consistent with the Local Centre (Medium) Zone across Ōtautahi Christchurch, a height limit above 14m has not been proposed as an option.

It is proposed to retain the status quo in respect to the Restricted Discretionary Activity status, in association with the statutory design guidance, to ensure ongoing management of the heritage and character values discussed. The evaluation of the options is discussed in more detail in ***Appendix 4***.

Impact of Lower Height Limit in the Lyttelton town centre on development capacity

Heights	**Total Developable Floor Area**
12m (4 storey)	86,400m2
14m (5 storey)	108,000m2
Difference	21,600m2
Note: 21,600m2 equates to 288 x 1 bed or 144 x 2 bed (including circulation and excluding outdoor living space, bike storage and service space).	

Assumptions:

- 36,000m^2 in Commercial Banks Peninsula Zone (75 sites total)
- 36,0000m^2 @ 60% (site coverage standard) = 21,600m2 ground level area available for development
- 2m height difference equates at most to one storey
- Likely upper floor use – residential
- 300m^2 - 4 x 1 bed or 2 x 2 bed
- Note – floor space could also be office, hotel space etc.
- No current impact from recession planes (no public space in block contained by Oxford, Canterbury, London Streets and Norwich Quay) and therefore not equated into the floor area.

The following options in respect to the management of height were considered:

Option 1: Status Quo

Retain the current maximum building height of 12m and associated provisions in Lyttelton's Commercial Banks Peninsula Zone.

Option 2: Increase maximum building height

Increase the maximum building height to 14m to align with the Local Centre (Medium) Zone.

Option 3: Use an alternative control to maximum building height

Increase the building height to 14m in line with the Local Centre (Medium) Zone in association with a recession plane to limit the impact of height on London Street and Albion Square.

8. Conclusion

It is noted that in itself 2m of apparent additional height does not appear of significance and may provide an increase in flexibility in respect to the floor to ceiling heights of a 4 storey building. However, all of the existing buildings, both pre and post-earthquake (including those consented at the time of writing), are less 12m or less (equivalent to 4 storey) with the majority of buildings being two storey or less.

The Restricted Discretionary Activity status, as is proposed to be retained, provides for the opportunity to evaluate any proposed increase in height in association with the management of character values. Given the special characteristics of Lyttelton and its town centre summarised above, the outcome of this process is that a 12m building height limit is to be proposed within Lyttelton's Local Centre (Medium) Zone.

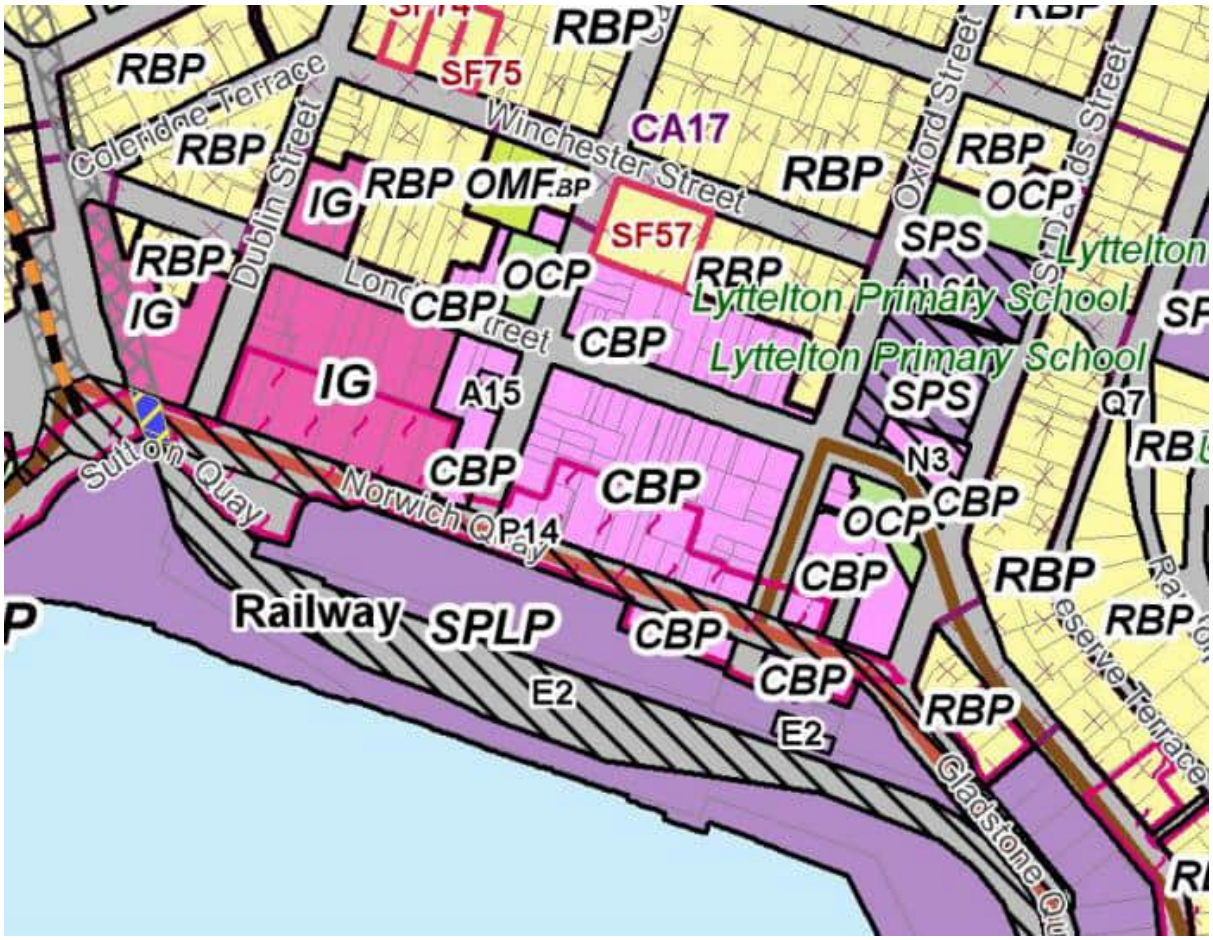
There are less than 80 commercial sites located within the Commercial Banks Peninsula Zone in Lyttelton. Activities within this zone include but are not limited to retail, office, hospitality and public uses. In effect the difference in height limit of 2m may equate to 1 storey in real terms i.e. from the ability to build 4 versus 5 storeys, subject to design control if retained. This is illustrated

A 14m height limit for development in the Local Centre (Medium Zone) is considered inappropriate for the Lyttelton town centre. Policy 3(d) of the NPS-UD requires that, within neighbourhood centre zones, District Plans should enable building heights and density of urban form commensurate with the level of commercial activities and community services (subject to providing for qualifying matters (Policy 4)).

As such, the existing provisions, Option 1 – Status Quo, including the 12m height limited and restricted discretionary activity assessment remains appropriate. This provides the option to assess any increase in height on its merits to provide for a scale of building that does not unduly result in visual dominance effects, and sightlines, in regard to the character and heritage, and manage levels of shading such that its role as an important community gathering and socialising space, and commercial heart, is not overly compromised.

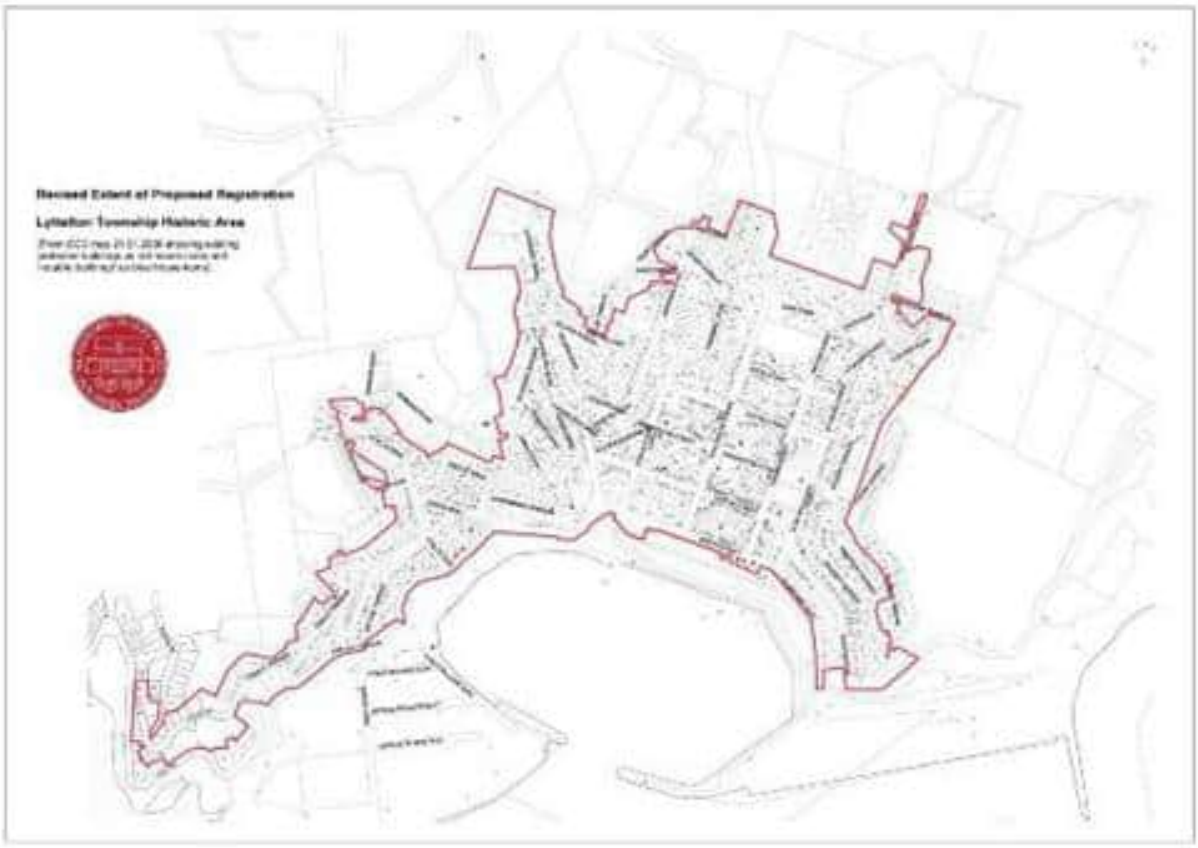
Appendix 1: Lyttelton Local Centre Zone Extent

The existing Commercial Banks Peninsula Zone (CBP) extent is proposed to be retained (identified in light pink below) and identified as a Local (Medium) Centre in the hierarchy of commercial centres. The Residential Banks Peninsula Zone (RBP) identified as yellow will be rezone Medium Density Residential (MRZ). However, proposed the Residential Heritage Area, and existing Character Areas proposed to be retained and expanded (denoted by CA17) would cover the entirety of the MRZ shown below.



Appendix 2: Lyttelton Township Historic Area

Reference: https://www.heritage.org.nz/the-list/details/7784

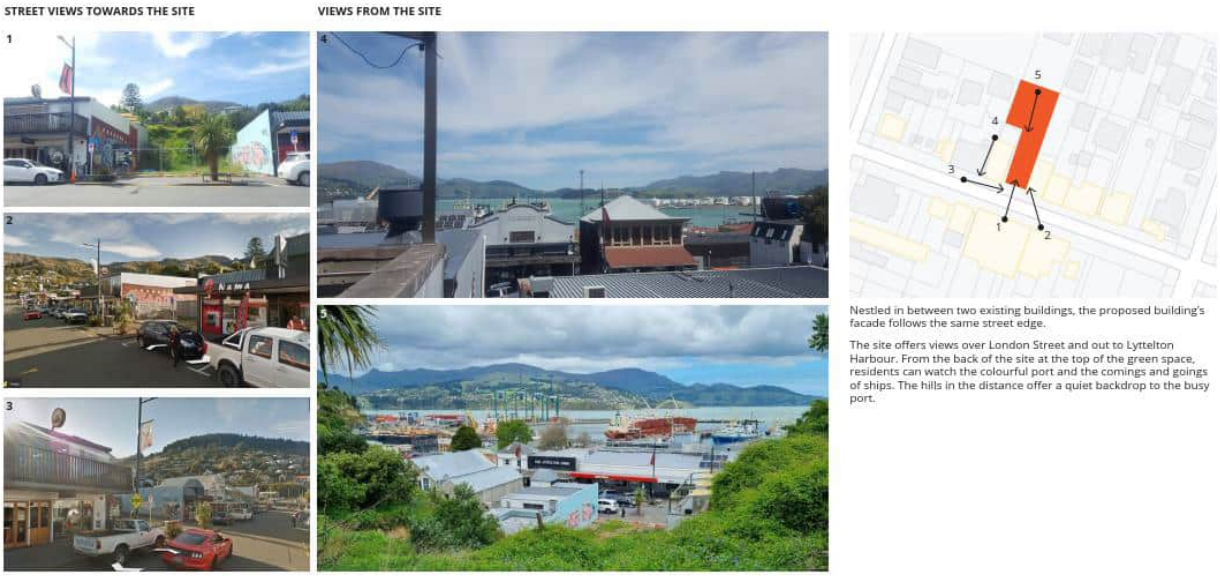


Lyttelton Township Historic Area. Extent of Registration map.
Copyright: NZ Historic Places Trust. Date: 1/08/2009.

Appendix 3: Example - Consented Proposal RMA/2022/801

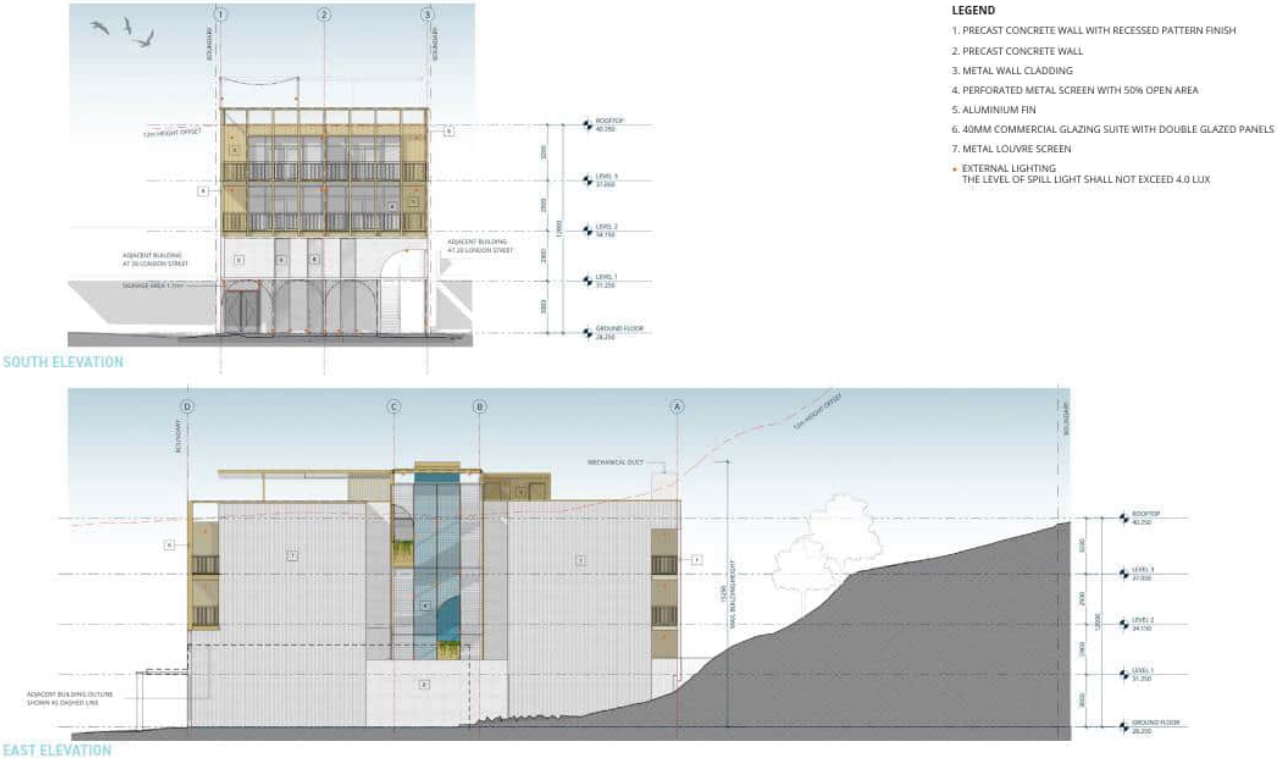
Noting that all information following is drawn from the resource consent application for the development proposal.

Site Context: Illustrating the fine grain of the subdivision pattern adjacent to London Street. Noting the subject site has a significant change in topography and extends such that it is adjacent to the proposed Residential Heritage Area.



Site context including London Street streetscene, and sightlines to the harbour from the upper part of the site, adjacent to the Proposed Residential Heritage Area.

Comparison with the former Harbourlight Theatre (demolished) and current 12m height limit, noting consideration of the architectural character, form and scale.



Street and side elevations of the proposed development including an illustration in the change in topography from south (left) to north (right) of the site.

Level & Use	Unit number	Number of bedrooms	Floor Area (NFA)	Terrace Area per unit	Outdoor area
Ground Floor (Commercial)	-	-	222m²	-	-
1 (Residential)	Unit 1.01	1 bedroom	51m²	8.0m²	-
	Unit 1.02	1 bedroom	45m²	8.0m²	-
2 (Residential)	Unit 2.01	1 bedroom	51m²	8.0m²	-
	Unit 2.02	1 bedroom	45m²	8.0m²	-
	Unit 2.03	1 bedroom	52m²	9.0m²	-
	Unit 2.04	1 bedroom	47m²	9.0m²	-
3 (Residential)	Unit 3.01	1 bedroom	51m²	8.0m²	-
	Unit 3.02	1 bedroom	45m²	8.0m²	-
	Unit 3.03	1 bedroom	52m²	9.0m²	-
	Unit 3.04	1 bedroom	47m²	9.0m²	-
Rooftop (Residential Communal Space)	-	-	-	-	128m²
Landscaped/undeveloped hillside					425m²

Artist's impression of the proposal within the context of London Street.

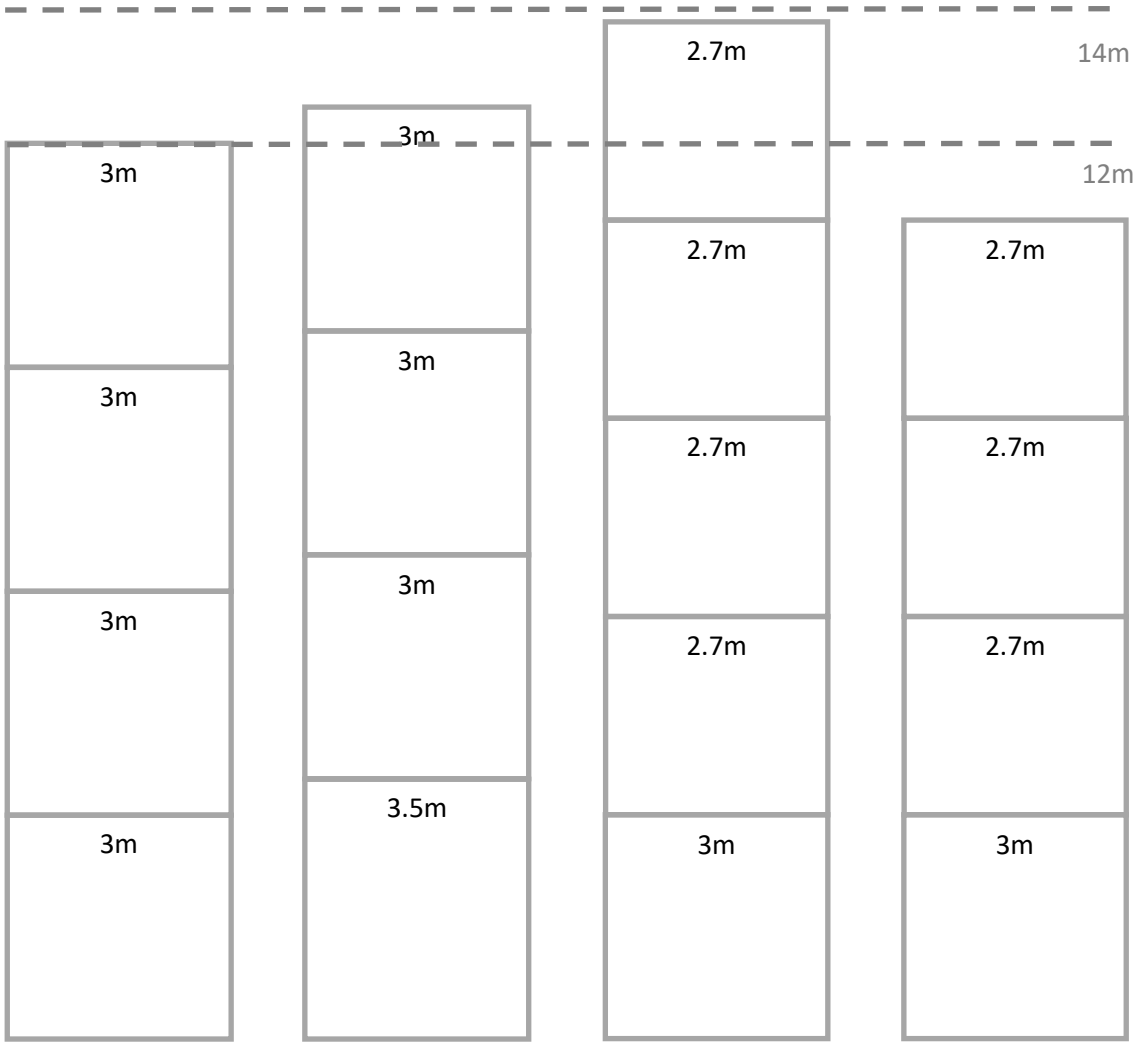
Appendix 4: Evaluation of Options

Options	Efficiency	Effectiveness
Option 1 – Apply Policy 3 of the NPS UD without a qualifying matter Retain the current maximum building height of 12m and associated provisions.	**Costs** • Development capacity is potentially reduced (dependent upon design approach and site limitations, and inconsistent with Local (Medium) Centre Zones elsewhere in the city (by 2m, or potentially 1 storey see ***Appendix 5***). • Reduction in potential development capacity potentially compromises economic benefits of additional floor area, likely associated residential population and vibrancy. • May have a limited effect on the wider economic growth of the city as a whole as a consequence. **Benefits** Environmental: The lower height limit better reflects the community's expectations for the area as expressed through the Lyttelton Master Plan and the District Plan Review of 2017, including in respect to: - Location on the steep, southern slopes of the Port Hills and will better provide access to sunlight to mitigate its effect on overshadowing; and - Unique and nationally recognised (by Heritage New Zealand Heritage Pouhere Taonga) character arising from its colonial and Ngāi Tahu cultural heritage, portside location, street and lot layout and eclectic mix of buildings. The lower height limit • Reflects the community's expectations for the area as expressed through the Lyttelton Master Plan and the District Plan Review of 2017. • Allows for better management of building height and scale via the Restricted Discretionary Activity pathway (which is already in play see ***Appendix 6***). • Provides for outlook to the harbour from sites for proposed Residential Heritage Areas above and to the north of London Street, for which one of the heritage attributes is connection with the harbour, and prominence of dwellings in respect to views from elsewhere. • The Restricted Discretionary Activity Status is enabling and allows for consideration of higher heights than those permitted in association with the retention of character and/or heritage values.	Finely balanced to provide opportunity for additional height where appropriate, but likely some economic cost of the potential for reduction in floor area. Effective to s6 matters and the retention of character values, but less so in meeting the NPS UD in provision of additional floor area. However, the Restricted Discretionary Activity status enables opportunity for additional height (as illustrated in Appendix 3). The option is not effective at meeting the direction of Policy 3d of the NPS UD in terms of providing, within and adjacent to local zones, building heights and density of urban form that are commensurate with the level of commercial activities and community services. It does however meet the direction of Policy 4 of the NPS UD (modification of building height and density requirements) in order to accommodate a qualifying matter (heritage impacts in this case).

	Risk of acting/not acting A site by site analysis has not been undertaken in respect to the character values given the public process undertaken as part of the District Plan Review including associated design guidance informed by a parallel public submissions process. There has been minimal change within the town centre since this time. Shading analysis has not been undertaken due to the significant variance in topography, requiring substantive modelling. At this stage it is considered that the benefits of undertaking this extensive work are not justifiable, when other considerations can be applied.	
Option 2: Increase maximum building height Increase the maximum building height to 14m to align with the Local Centre (Medium) Zone, while retaining (with some alteration) the Lyttelton Town Centre statutory design guidelines to manage character.	**Costs** • Impacts on use and enjoyment of public space (overshadowing, visual impact, impacts on heritage and character values), and to a degree private space. **Benefits** • Increased development capacity. • Additional floor area may assist development feasibility issues unique to Lyttelton, such as the incidence of long, narrow sites and requirement for archaeological surveys where necessary. **Risk of acting / not acting** As above	Implements the NPS UD in regard to consistency and commensurate height with other Local Centre (Medium) Zones and breadth of activities. Falls short in meeting the objective of a well-functioning urban environment.
Option 3: Use an alternative control to maximum building height Increase the building height to 14m in line with the Local Centre (Medium) Zone in association with a	**Costs** • Development capacity is potentially reduced (dependent upon design approach and site limitations, and inconsistent with Local (Medium) Centre Zones elsewhere in the city (by 2m, or potentially 1 storey see ***Appendix 5***). • Reduction in potential development capacity potentially compromises economic benefits of additional floor area, likely associated residential population and vibrancy. • May have a limited effect on the wider economic growth of the city as a whole as a consequence. • Controlling height via the recession plane is:	Implements the NPS UD in regard to consistency and commensurate height with other Local Centre (Medium) Zones and breadth of activities. Falls short in meeting the objective of a well-functioning urban environment.

recession plane to limit the impact of height on London Street and Albion Square, while retaining (with some alteration) the Lyttelton Town Centre statutory design guidelines to manage character.	○ Potentially more complex (and expensive) means (for both developers and Council's Resource Consents staff) of doing so. ○ Does not provide a height limit per se, other than the intersection of the upper ends of the recession planes, which could potentially be higher than both 12m or 14m depending on the size of the site (larger sites, including any resulting from the amalgamation of yet to be redeveloped sites on Norwich Quay, could potentially build higher than 12m or 14m). ○ Could result in development contrary to the core design principles identified with respect to the Lyttelton Master Plan and with an adverse effect on building form relative to that of existing development.	
	Benefits • Controlling height via the recession plane better reflects and is more appropriate to Lyttelton's: ○ Location on the steep, southern slopes of the Port Hills and will better provide access to sunlight to mitigate its effect on overshadowing. ○ Core design principle within the town centre regarding designing for the microclimate by using setbacks (i.e. on the third level to minimise shadows at street level while providing for outlook to the harbour from residential sites above and to the north of London Street).	
	Risk of acting/not acting As above	

Appendix 5: Height and Storey Scenarios



- 4 Storey
- Total Height: 12m
- Good floor to ceiling height (2.7m)
- Roof form within upper level or reduced floor level heights
- Additional opportunity via RDA

- 4 Storey
- Total Height: 12.5m
- Good floor to ceiling height (2.7m) including generous ground floor
- If 14m height limit - ample opportunity for roof form, or RDA with roof form within upper level, or height dispersed through levels

- 5 Storey
- Total Height: 13.8m
- Minimal floor to ceiling height (2.4m) for quality living space, or versatility for other uses
- Minimal roof form and limited opportunity to disperse through levels, likely request for additional height

- 4 Storey
- Total Height: 11.1m
- Minimal floor to ceiling height (2.4m) for quality living space or versatility for other uses
- Provision for roof form through levels

Appendix 6: Christchurch District Plan Provisions (2017)

In relation to character/design, height and sunlight.

Commercial Banks Peninsula Zone	Christchurch District Plan (2017)
Design rule	**15.6.1.3 Restricted discretionary activities:** RD3(a) Activities listed in Rule 15.6.1.1 P3 to P22 in Lyttelton or Akaroa which involve the erection of a building, relocatable building or relocation of a building, external additions or alterations to a building, which meet the activity specific standards in Rule 15.6.1.1 and built form standards in Rule 15.6.2. The Council's discretion shall be limited to (b) Lyttelton Design Guidelines (Appendix 15.15.6).
Reason for rule	**15.13.1 Urban design:** (a) The extent to which the development: (i) Recognises and reinforces the centre's role, context, and character, including any natural, heritage or cultural assets. (ii) Promotes active engagement with, and contributes to the vibrancy and attractiveness of, any adjacent streets, lanes or public spaces. (iii) Takes account of the nearest buildings in respect to the exterior design, architectural form, scale and detailing of the building. (iv) Provides a human scale and minimises building bulk while having regard to the functional requirements of the activity.
Height rule	**15.6.2.1 Maximum building height:** (a)(i) Maximum height of any building shall be 12m.
Reason for rule	**15.13.3.1 Maximum building height:** (a) The extent to which an increase in height of the development: (v) Contributes to variety I the scale of buildings in a centre, and creates landmarks on corner sites. (vii) Results in adverse on adjoining residential zones or on the character, quality and use of public open space. (viii) Contributes to the visual dominance of the building when viewed from the surrounding area, having regard to the anticipated scale and form of buildings in the surrounding environment.
Access to sunlight rule	**15.6.2.5 Sunlight and outlook at boundary with a residential zone or any public space:** (a) Where a site boundary adjoins a residential zone, or public space (other than a road) in the block between London Street, Norwich Quay, Oxford Street and Canterbury Street, no part of any building shall project beyond a building envelope contained by a 45 degree recession plane measured at any point 2 metres above the site boundary, unless specified below. (b) Where sites are located within a Flood Management Area, recession plane breaches created by the need to raise floor levels shall not be limited or publicly notified.
Reason for rule	**15.13.3.4 Sunlight and outlook at boundary with a residential zone:** (a) The extent to which building intrusion into a recession plane: (ii) Overshadows and impacts on the outdoor living spaces and main living areas of residential buildings, and/or activities undertaken within the space affected, while having regard to the time of year that over shadowing is expected to occur. (b) The extent to which shading by buildings impacts on the use and amenity values of London Street in Lyttelton or other public space.

Appendix 31

Central City Heritage Height Limits evidence - Christchurch City Council

Heritage Advice - PC 13 - Height Limits for Specified Scheduled Heritage Places in the Central City

1. There are some groups of scheduled heritage items and settings in the Central City that have specific heritage values and physical characteristics that could be impacted by inappropriate heights of adjacent urban development. These parts of the central city are iconic landmarks for the district, and are sensitive to impacts of intensification. In recognition of this, height limits are currently in place in the operative Christchurch District Plan within and/or adjacent to three groups of heritage items – in New Regent Street, the Arts Centre and Lower High Street.
2. It is not proposed to continue the 13m height limit in Lower High Street as the remaining intact group of heritage items on one side of the street between Tuam and St Asaph Streets is within a proposed 32m height limit area (lower than the proposed City Centre zone height limit of 90m). This, together with the heritage provisions for scheduled Heritage Items and settings is considered to provide sufficient protection of Historic Heritage from inappropriate development. It is proposed to continue the existing height limits for two areas of the central city which are important heritage sites for the city – New Regent Street and Montreal Street opposite the Arts Centre. The heritage values and significance of these places are set out in the Statements of Significance attached to the Schedule of Significant Historic Heritage Items.
3. There are nineteen scheduled Highly Significant Heritage Items on the Arts Centre site. The whole Arts Centre block is a Heritage Setting. The operative District Plan provides for a height limit of 16 metres within the Arts Centre setting; a height limit of 11m in the city block to the north; a 14m height limit in the block to the south and 28m to the east. It is proposed to retain the 16m height limit on the setting of the Arts Centre. This will provide for the protection of the complex of buildings from development of an inappropriate height which could impact on shading, views, and contextual heritage values of the Arts Centre complex.
4. A Residential Heritage Area (Inner City West RHA) is proposed which takes in the city blocks to the north and south of the Arts Centre block. The provisions limit height of new development in the RHA to 11 metres. This will help protect the heritage values of the RHA, and also provides for an appropriate scale of development adjacent to the Arts Centre. In the current Plan the height limit

to the east of the Arts Centre is 28 metres. It is proposed to retain this height limit for the sites with boundaries on the east side of Montreal Street (sites in the Worcester Boulevard/Hereford Street block only, which are located directly opposite the Arts Centre). This is because of the visual dominance effects that modelling has shown would result from developments built to the proposed permitted zone heights - 21 metres road wall height, but rising at graduated podium heights beyond 28 metres up to a potential 90 metres in the centre of the sites.

5. This is lower than the height limit of 45 metres proposed for Cathedral Square (which is a scheduled heritage item in the Plan), and Victoria Street, which is based on a transition of urban form between the consolidated central city 90 metre height limit zone and the surrounding lower height zones, and, in the case of Cathedral Square, on limiting shading effects which has shown to be effective at a height of 45 metres in that location (see evaluation in PC14 s32 evaluation for chapter 15 Commercial).
6. The modelling for the Arts Centre shows a significantly greater visual dominance effect on the Arts Centre for buildings 45 metres high on the east side of Montreal Street than occurs for a building height of 28 metres. The proposed height of 28 metres will also be more in keeping with the proposed permitted scale of the buildings in the RHA in the adjoining blocks to the north and south of the Arts Centre than a height of 45 metres. The sun studies show that a height reduction from 45 metres to 28 metres has little observable impact on shading of the Arts Centre site, so the argument for the proposed height is based on visual dominance effects on a key precinct of Highly Significant heritage buildings, rather than shading effects, and is in line with the proposal for New Regent Street (see below).Sites in the blocks to the northeast and southeast of the Arts Centre have not been included, due to the greater overall separation distance of potential development on those sites, as these sites lie diagonally opposite the Arts Centre and only the corner of these sites is adjoining.
7. New Regent Street, a street of continuous Spanish Mission style shops, is scheduled as a Highly Significant Heritage Item, along with a heritage setting which consists of all properties contained within the street. Two buildings at the northern end of the street are more recent and not in the

same style as the rest of the street. These are located within the heritage setting. It is proposed that the current height limit in the operative Plan of 8 metres for buildings within the setting of New Regent Street be retained. The specific characteristics of this heritage item and setting mean that urban development enablement involving buildings up to 90m high (as per the proposed City Centre zone height limit) in and adjacent to New Regent Street would be inappropriate. Continuation of the operative 28m height limit for sites to the east, west, north and south of New Regent Street will provide sufficient protection of this Heritage item from development of an inappropriate height, which could cause inappropriate contrasts of scale, and downdraughts, as well as impacting the architectural and contextual heritage values. Sun studies have shown that while there is some reduction in shading effects from continuing to reduce permitted height to 28 metres on sites surrounding New Regent Street, modelling demonstrates that the greater benefit from the lower 28 metre height limit is a reduction in visual dominance effects from those anticipated by permitted zone heights of 45 to 90 metres on these sites.

Amanda Ohs and Suzanne Richmond

18 August 2022

Appendix 32

Arts Centre and New Regent Street Modelling and Sun Studies - Christchurch City Council

PC 13 – Section 32 Report - Appendix 17

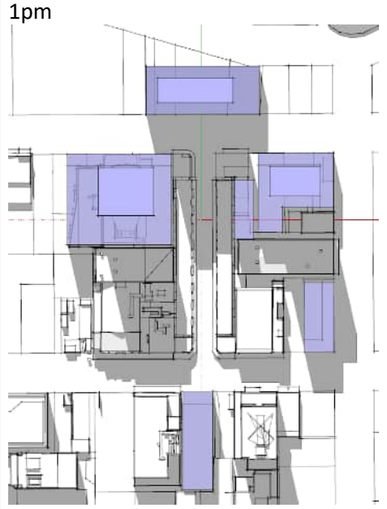
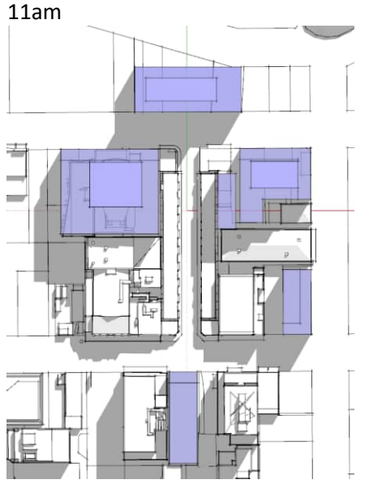
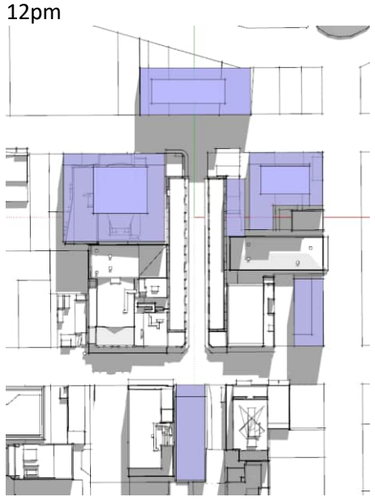
Qualifying Matter Central City Heritage Interface – New Regent Street and Arts Centre Heights Modelling and Sun Studies

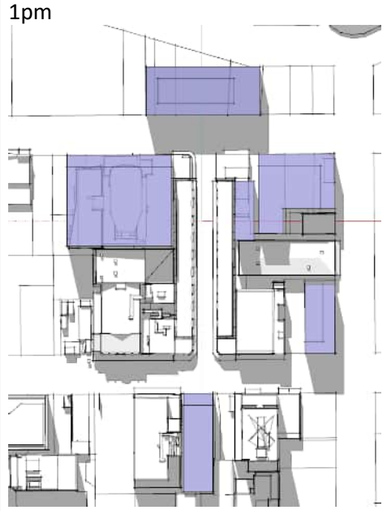
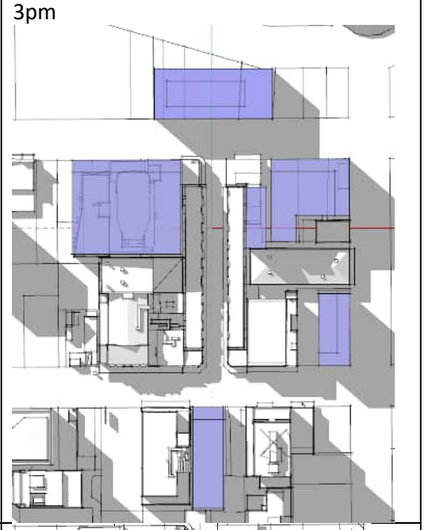
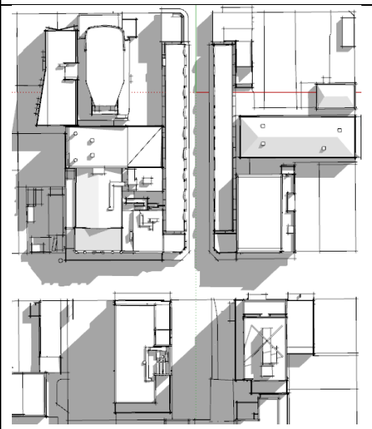
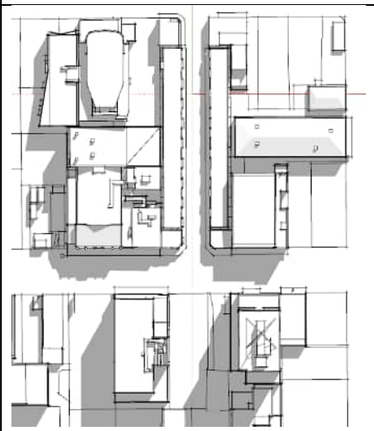
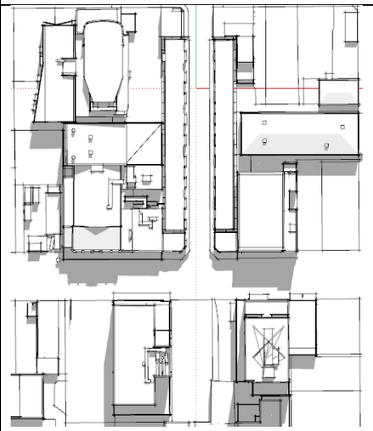
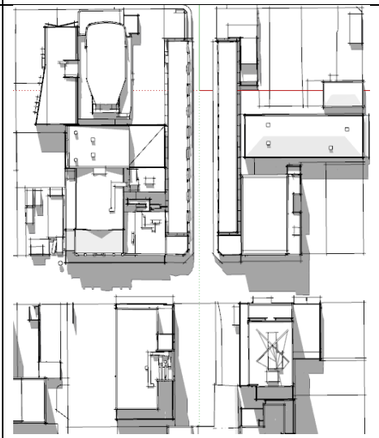
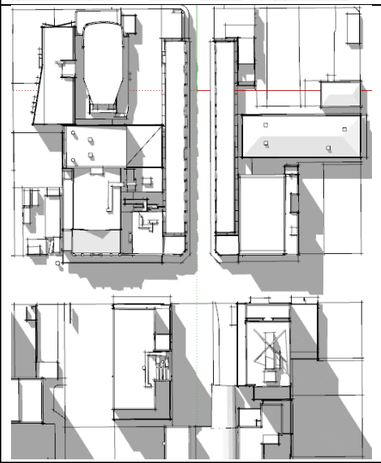
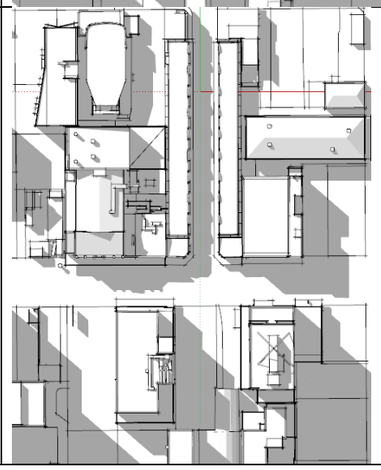
New Regent Street

Modelling notes – New Regent Street:

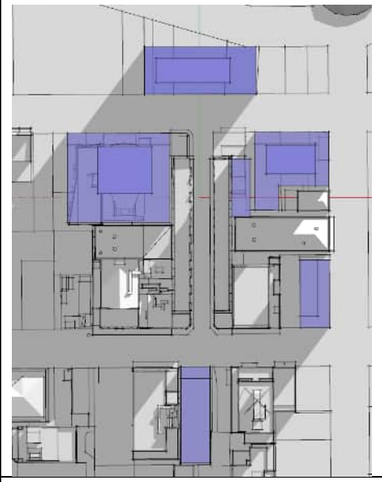
- The shading analysis illustrates the sunlight access during 10am to 3pm on both the spring equinox and the winter solstice.
- Narrow sites will have difficulty in developing tower over the 28m podium.
- Modelling include a few sites amalgamated to develop tower over podium.
- Some sites are unlikely to be redeveloped again in the medium term as they have been redeveloped since the Canterbury Earthquakes of 2010-11. For the purpose of this study, it assumes a scenario where these sites can be developed.
- South of New Regent Street – only an existing vacant car park is modelled at 28m height, limited opportunity to establish a tower over the podium. In addition, other existing buildings are unlikely to be redeveloped.

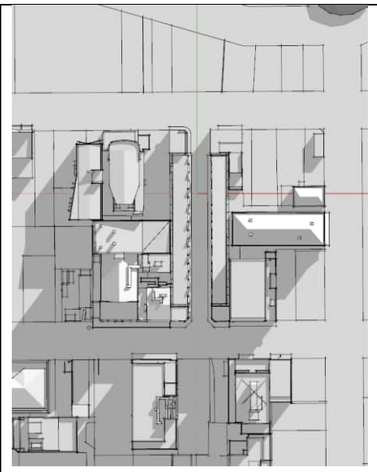
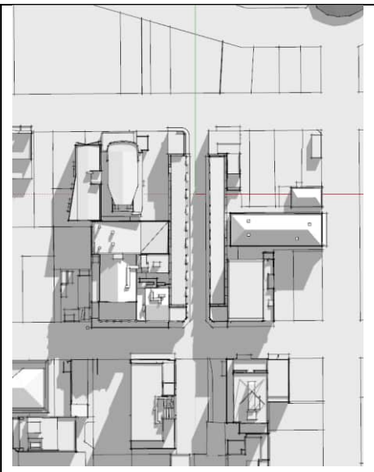
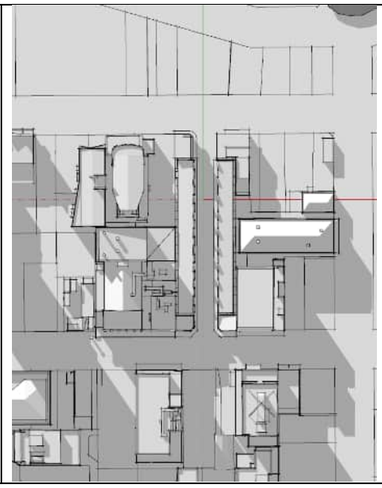
New Regent Street surrounding heights - Equinox shading diagram:

90m	10am	11am	12pm	1pm	2pm	3pm
						
45m	10am	11am	12pm	1pm	2pm	3pm
						

28m	10am	11am	12pm	1pm	2pm	3pm
						
Existing - Indicative						

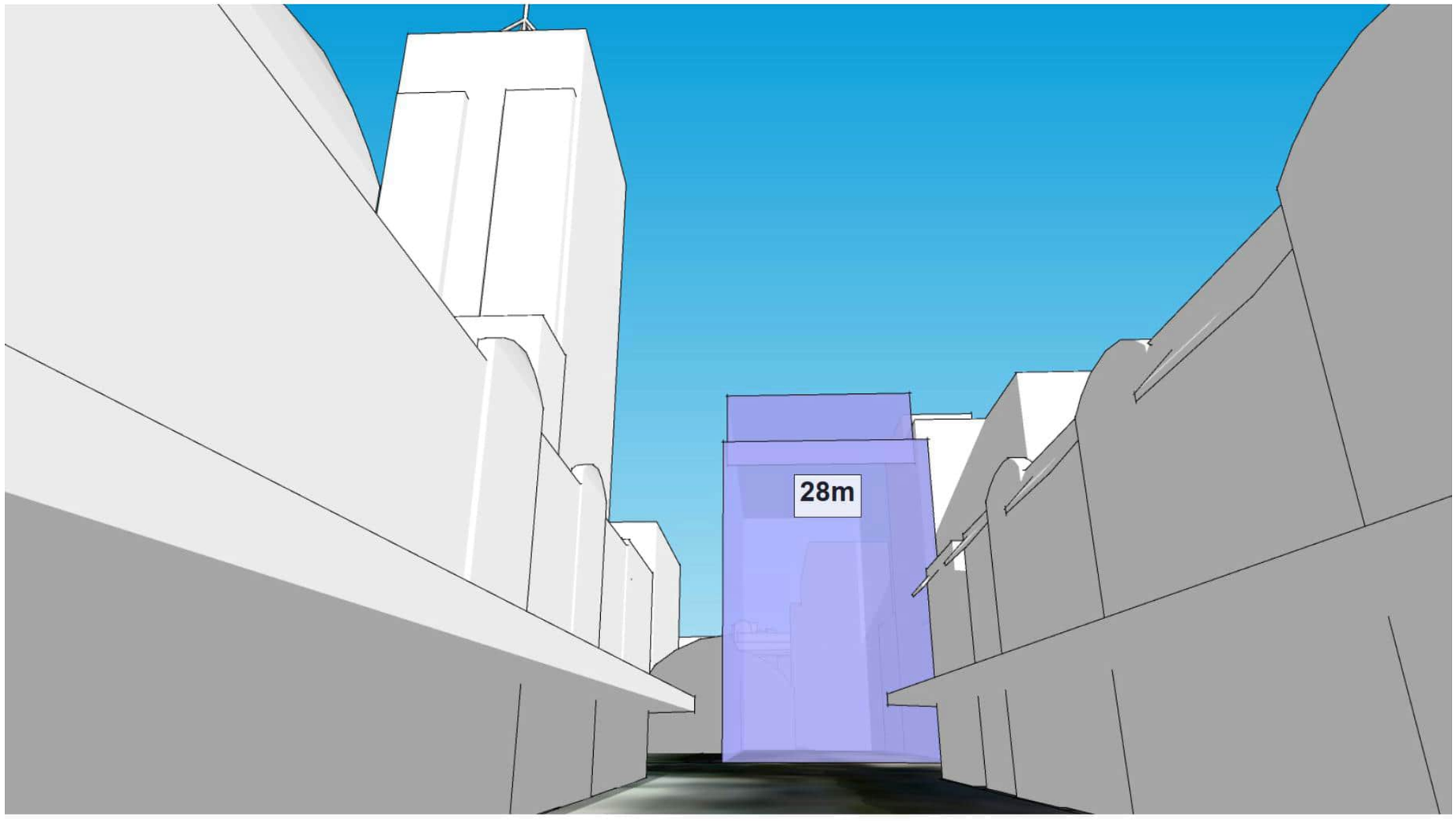
Winter solstice shading diagram:

90m	10am	11am	12pm	1pm	2pm	3pm
						
45m	10am	11am	12pm	1pm	2pm	3pm
						
28m	10am	11am	12pm	1pm	2pm	3pm
						

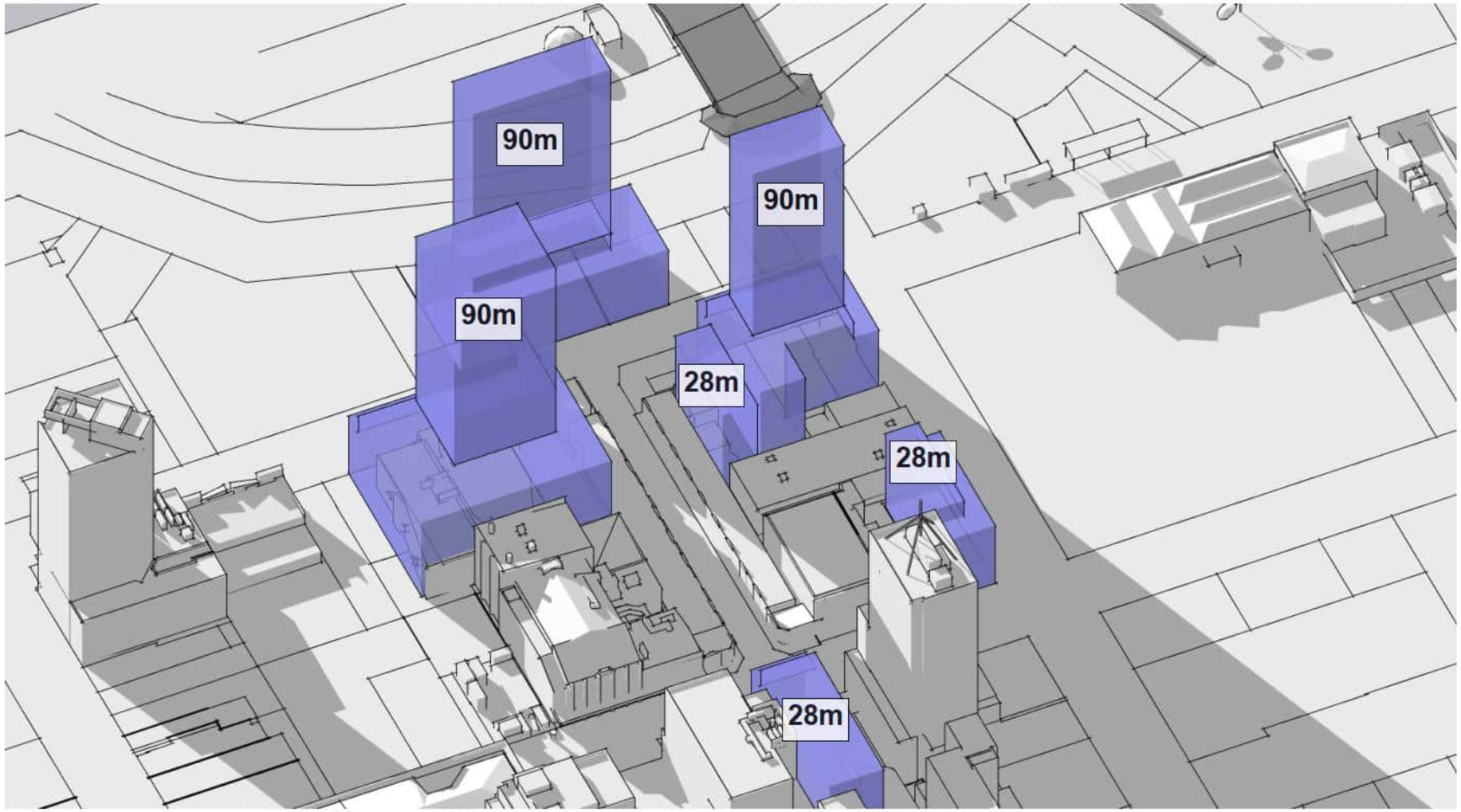
Existing - Indicative						


90m
90m
90m
28m
28m
New Regent Street
28m
KEY:
This model shows shading at winter solstice 2pm.
The surrounding City Centre zone allows for up to 90m. Some smaller sites modelled at 28m to reflect a more realistic scenario given the limited opportunity to develop to 90m under the proposed rule set due to site constraints.

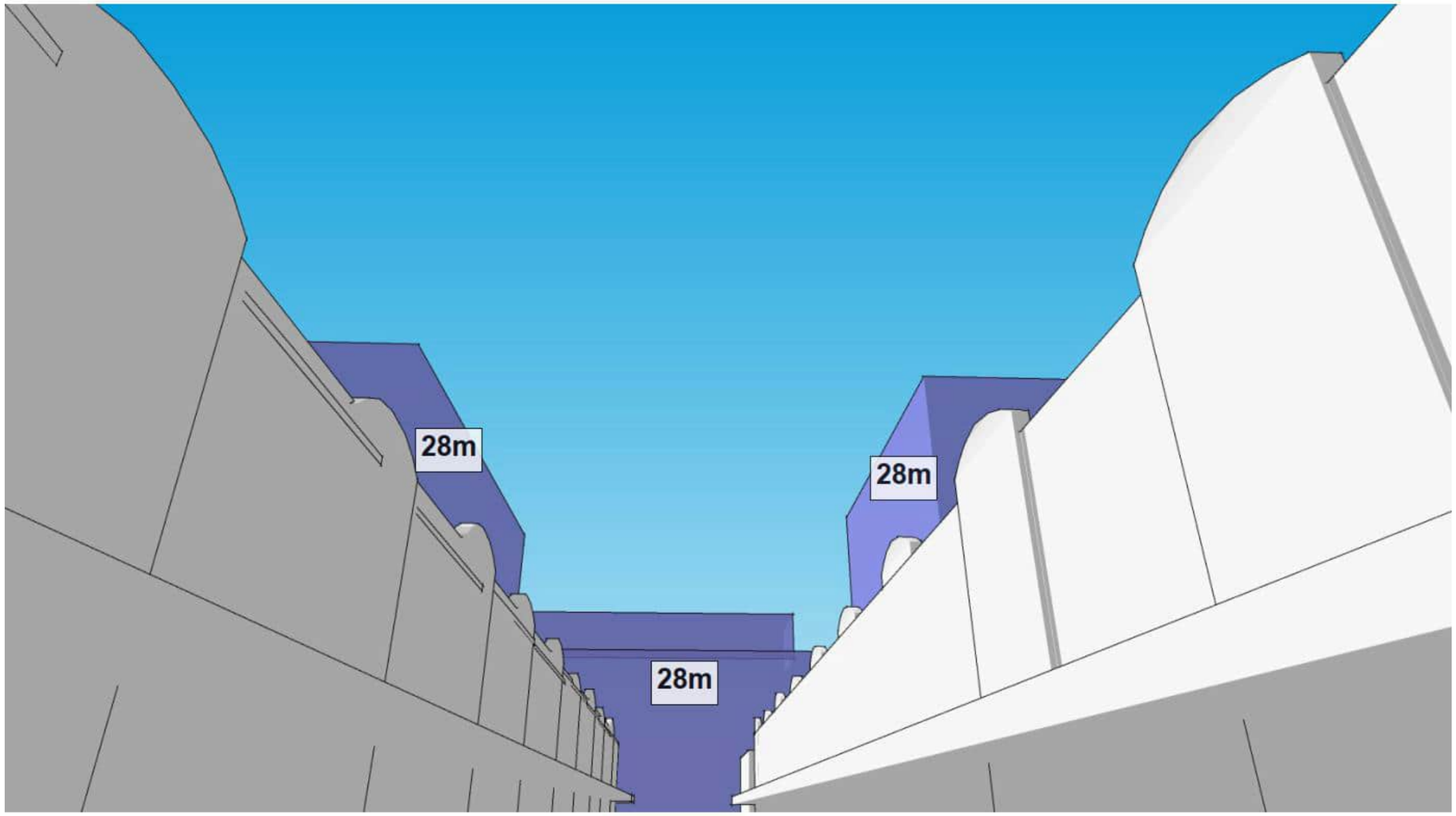
South-facing perspective view from New Regent Street



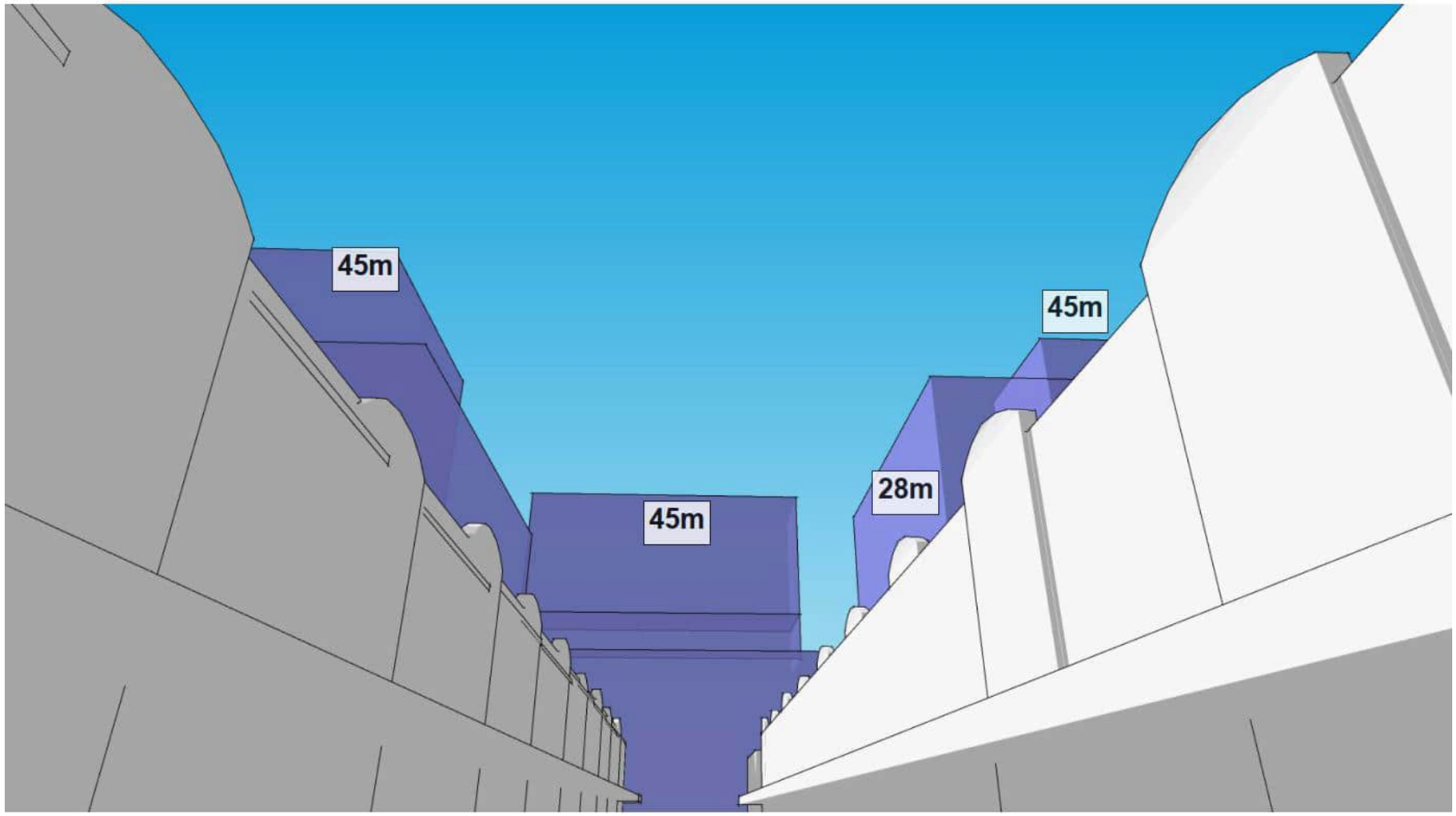
New Regent Street surrounds model at 90m



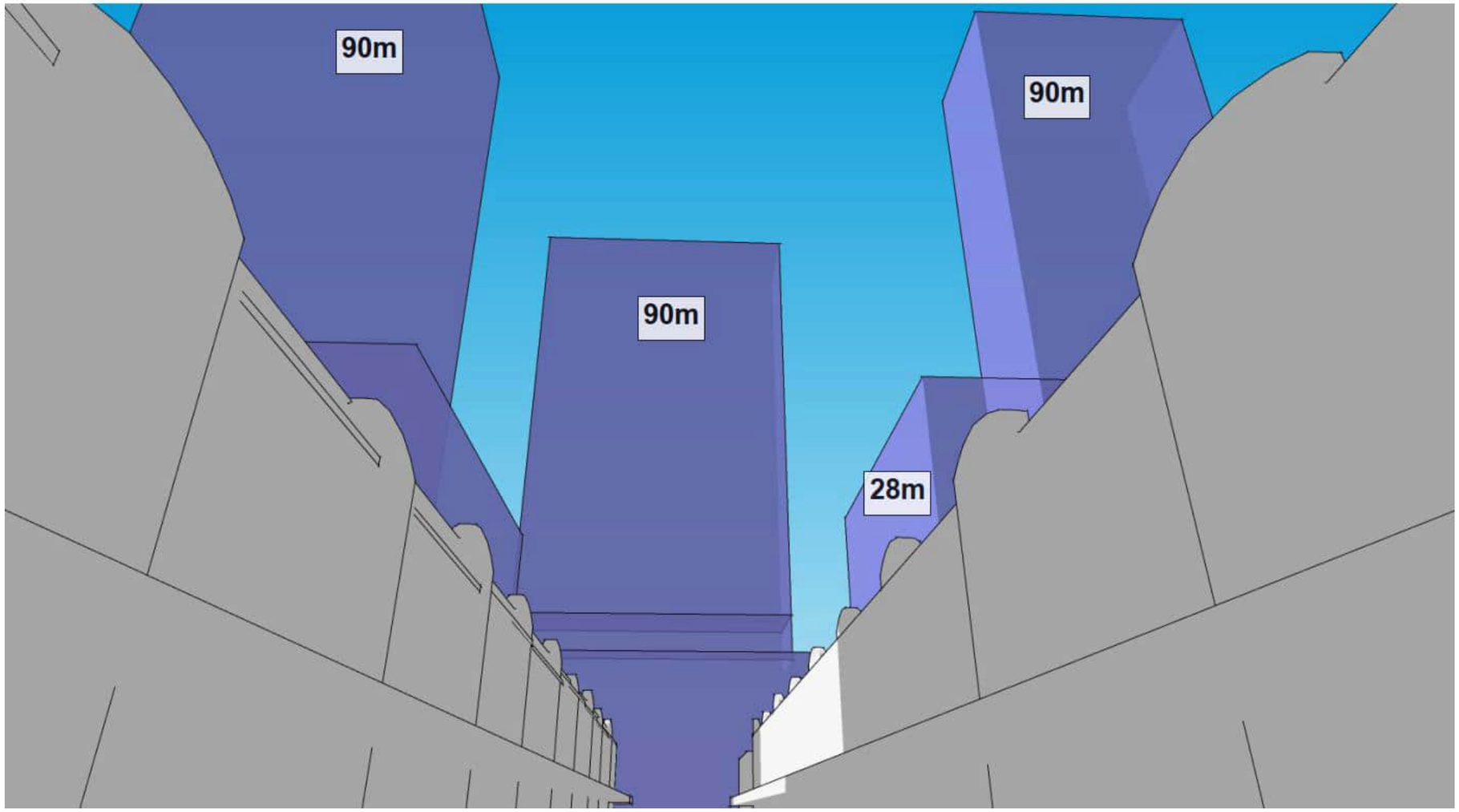
North-facing perspective view from New Regent Street



North-facing perspective view from New Regent Street



North-facing perspective view from New Regent Street



The Arts Centre

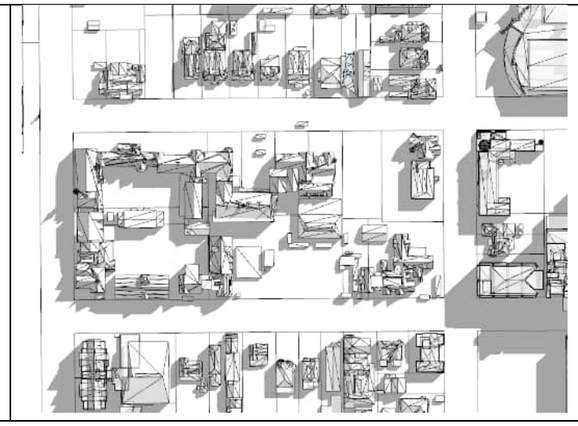
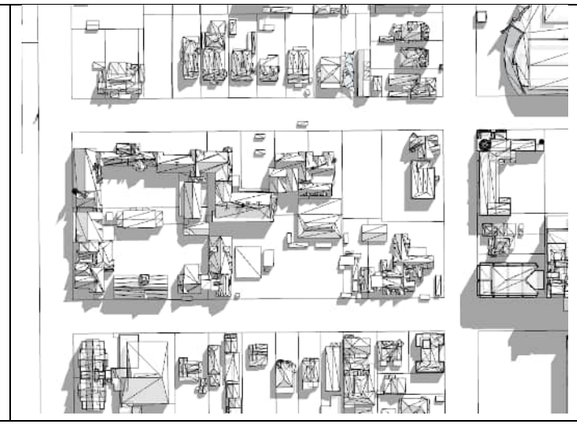
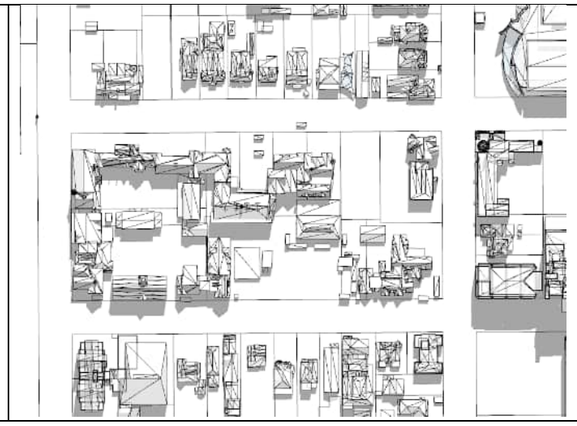
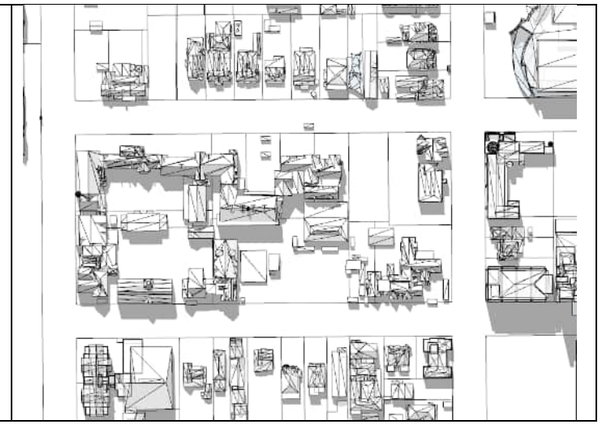
Modelling notes – The Arts Centre:

- The shading analysis illustrates the sunlight access during 10am to 1pm on both the spring equinox and the winter solstice, as the buildings east of the Arts Centre will not have an impact on the afternoon sun access.
- Some sites identified east of the Arts Centre block are amalgamated to illustrate a realistic outcome in redevelopment.
- Some sites are relatively unlikely to be redeveloped again in the medium term as they have been redeveloped since the Canterbury Earthquakes of 2010-11. For the purpose of this study, it assumes a scenario where these sites can be developed.

Arts Centre surrounding heights

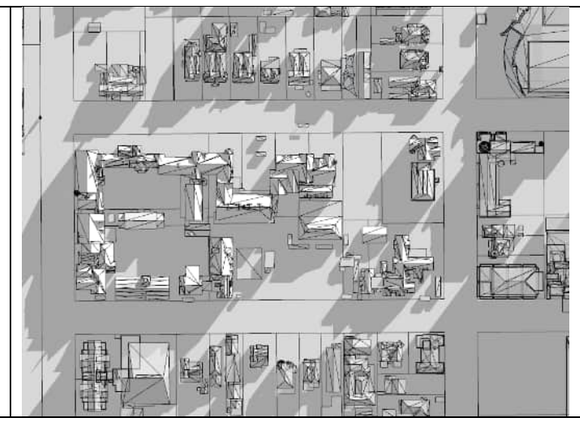
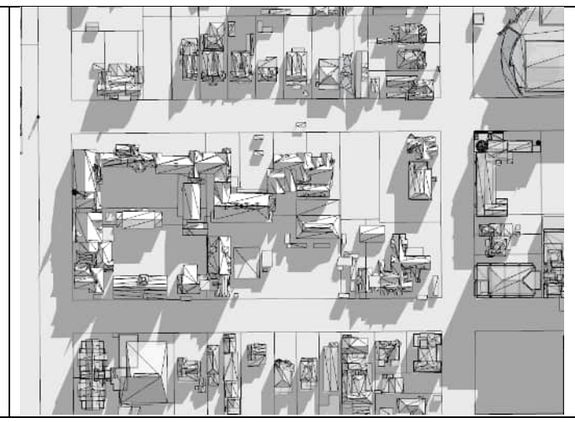
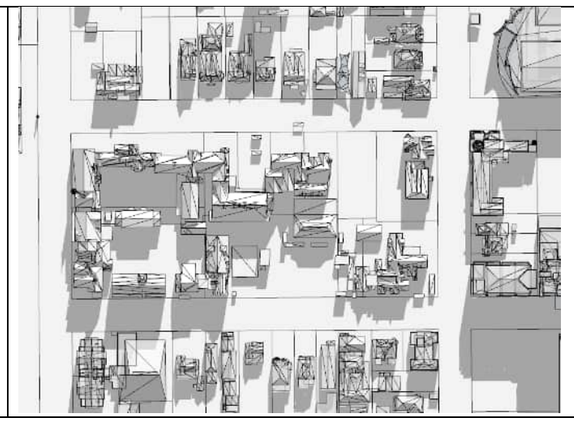
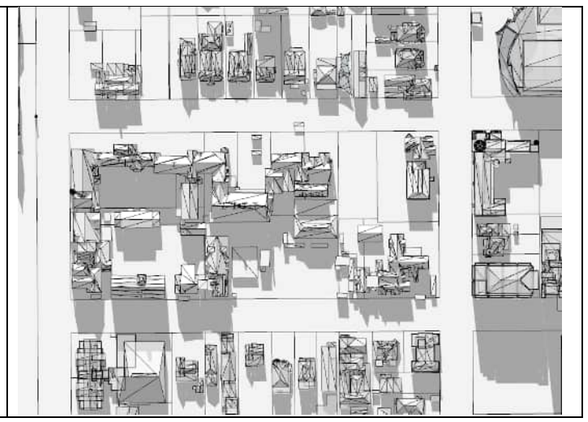
– Equinox shading diagram

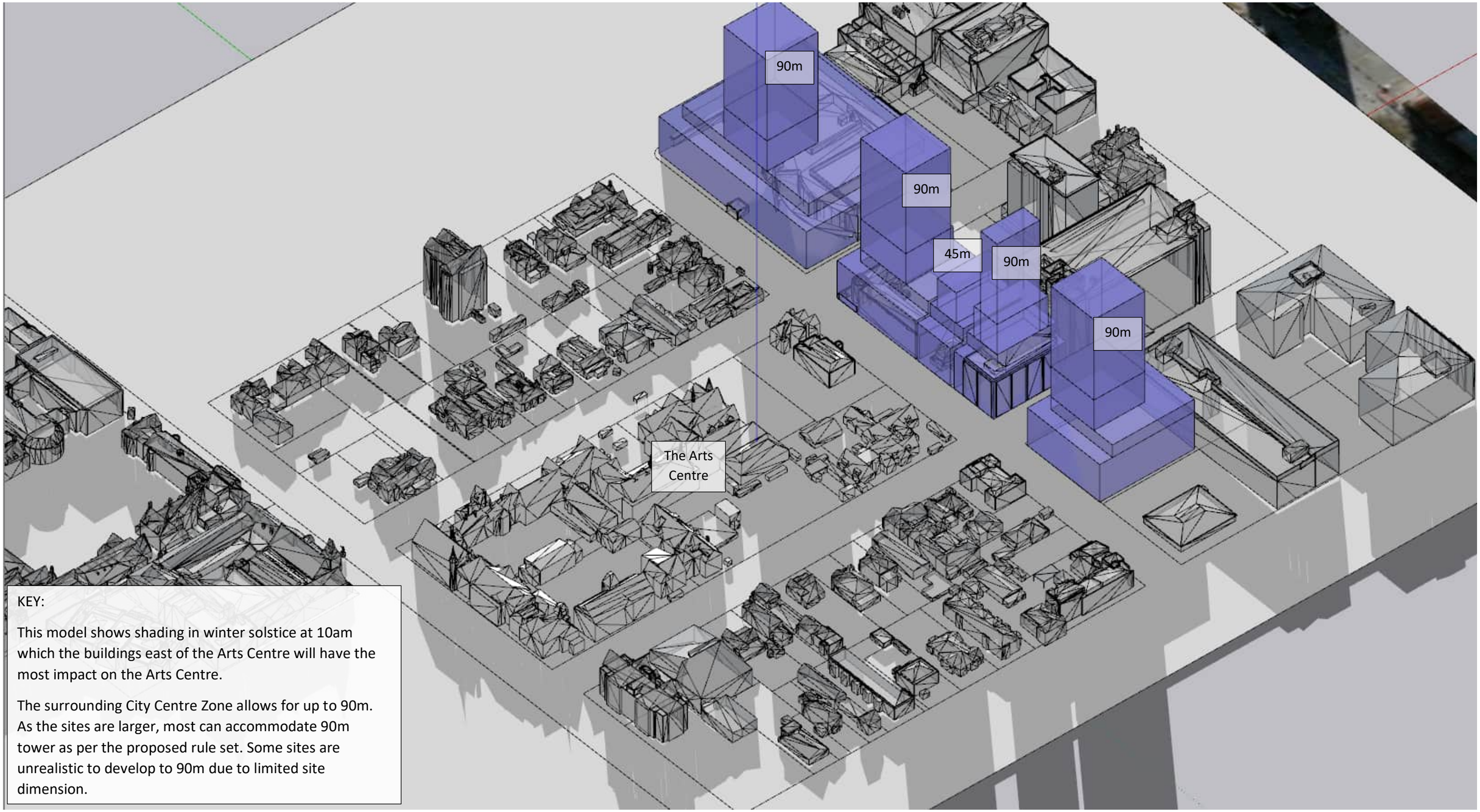
90m	10am	11am	12pm	1pm
45m	10am	11am	12pm	1pm
28m	10am	11am	12pm	1pm

Existing - Indicative				

– Winter solstice shading diagram

90m	10am	11am	12pm	1pm
45m	10am	11am	12pm	1pm
28m	10am	11am	12pm	1pm

Existing - Indicative				



KEY:

This model shows shading in winter solstice at 10am which the buildings east of the Arts Centre will have the most impact on the Arts Centre.

The surrounding City Centre Zone allows for up to 90m. As the sites are larger, most can accommodate 90m tower as per the proposed rule set. Some sites are unrealistic to develop to 90m due to limited site dimension.

Perspective view from Worcester Street, north of Arts Centre

Perspective view from Worcester Street, north of Arts Centre

Perspective view from Worcester Street, north of Arts Centre

Appendix 33

Technical Memo on Vacuum Sewer Systems as Qualifying Matter - Christchurch City Council

Attachments Ngā Tāpirihanga

There are no attachments to this memo.

0. Draft Plan Change 14: Technical Report on Vacuum Sewer Systems as Qualifying Matter

Reference / Te Tohutoro:	22/660715
Report of / Te Pou Matua:	Daniela Murugesh, Senior Planning Engineer (daniela.murugesh@ccc.govt.nz) Michele McDonald, Team Leader Water & Wastewater Asset Planning (michele.mcdonald@ccc.govt.nz)
General Manager / Pouwhakarae:	Jane Davis, General Manager Infrastructure, Planning & Regulatory Services (jane.davis@ccc.govt.nz)

1. Purpose of this Memo

1.1 The draft Housing and Business Choice Plan Change (PC14) process requires technical input from Council business units to inform viable planning provisions.

1.2 The purpose of this memo is for the Water & Wastewater Asset Planning Team to provide technical input on the vacuum sewer systems for the report required under section 32 of the Resource Management Act.

1.3 It describes the Shirley, Aranui and Prestons vacuum sewer systems and outlines why vacuum systems should be included as a Qualifying Matter in the draft PC14.

2. Executive Summary

2.1 Vacuum sewer systems were installed in Shirley and Aranui, by the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) as part of the earthquake rebuild, and in Prestons, by Ngai Tahu, when the greenfield subdivision was developed.

2.2 The systems were designed based on wastewater flows from existing dwellings and from future development using the land zoning and density requirements of the then operative Christchurch City Plan (Living 1 zone: one dwelling per 450 m^2 land parcel).

2.3 The land zoning and density requirements were changed, when the Christchurch District Plan was introduced in 2016, and the vacuum sewer systems are not capable of accommodating further intensification.

2.4 The systems also experience inflow and infiltration during wet weather which is thought to be related largely to faulty private drainage pipes.

2.5 Vacuum sewer systems are complex and are not easily upgraded to provide more capacity. There is no funding in Council's Long Term Plan 2021-31 to resolve the capacity issue.

2.6 It is proposed that vacuum systems be included as a Qualifying Matter in the draft PC14.

3. Background

SCIRT Decision Process

3.1 The wastewater gravity networks in Shirley and Aranui were significantly damaged in the 2010/11 Canterbury earthquakes and the SCIRT was tasked:

3.1.1 To return the infrastructure networks to a condition to meet the levels of service prior to the 4 September 2010 earthquake, within the timing constraints of the rebuild.

3.1.2 Where restoration work was undertaken, and where reasonably possible and economically viable, greater resilience was to be incorporated into the network.

3.2 Only 'like for like' restoration was funded. Betterment, if economically favourable and required for the rebuild, had to be funded by Council.

3.3 SCIRT considered the following options for Shirley and Aranui: gravity system replacement, enhanced gravity system, vacuum sewer system and pressure sewer system.

3.4 These options were evaluated in terms of constructability, resilience, planning / communication, estimated lifecycle costs (capital and operational costs, inflow and infiltration savings, further seismic damage costs).

3.5 In both cases the vacuum sewer system option achieved the highest multi-criteria score and was approved by the SCIRT Scope & Standards Committee.

Vacuum Sewer System Description

3.6 In a conventional gravity wastewater system, private sewer laterals are connected to deep gravity wastewater mains which convey wastewater to the wastewater treatment plant.

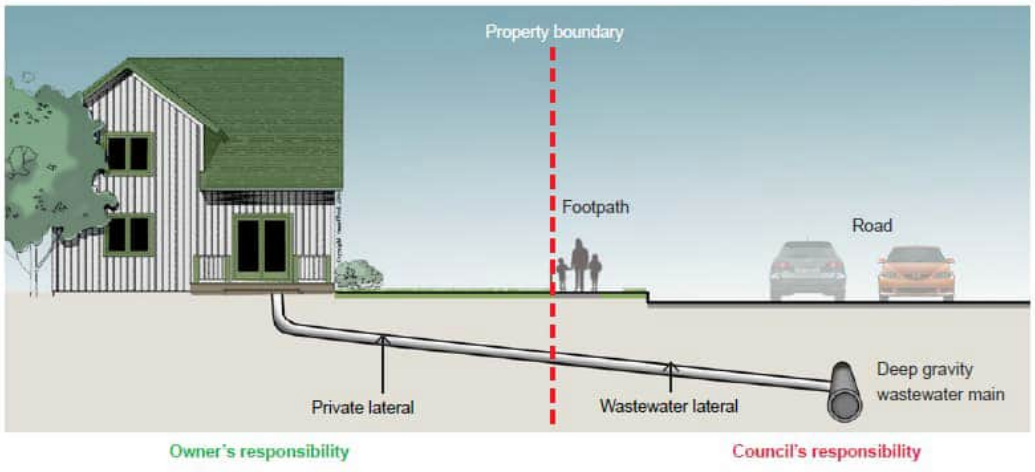


Figure 1: Conventional Gravity Wastewater System

3.7 In a vacuum system, four to six private gravity sewer laterals are connected to a vacuum valve/collection chamber. The vacuum pump station creates a vacuum on the wastewater mains and when a vacuum valve/collection chamber is full, wastewater is sucked out of the chamber and propelled towards the vacuum pump station – illustrated in Figure 3 and Figure 4.

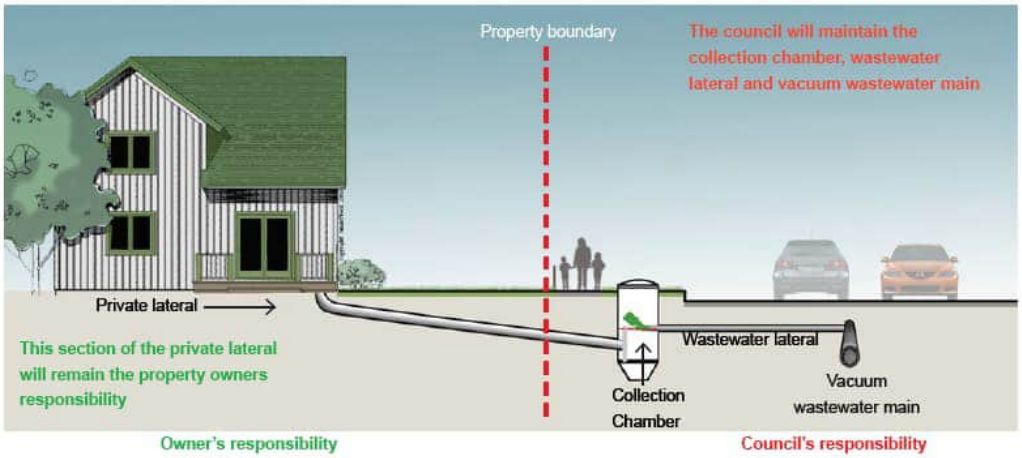


Figure 2: Vacuum Wastewater System

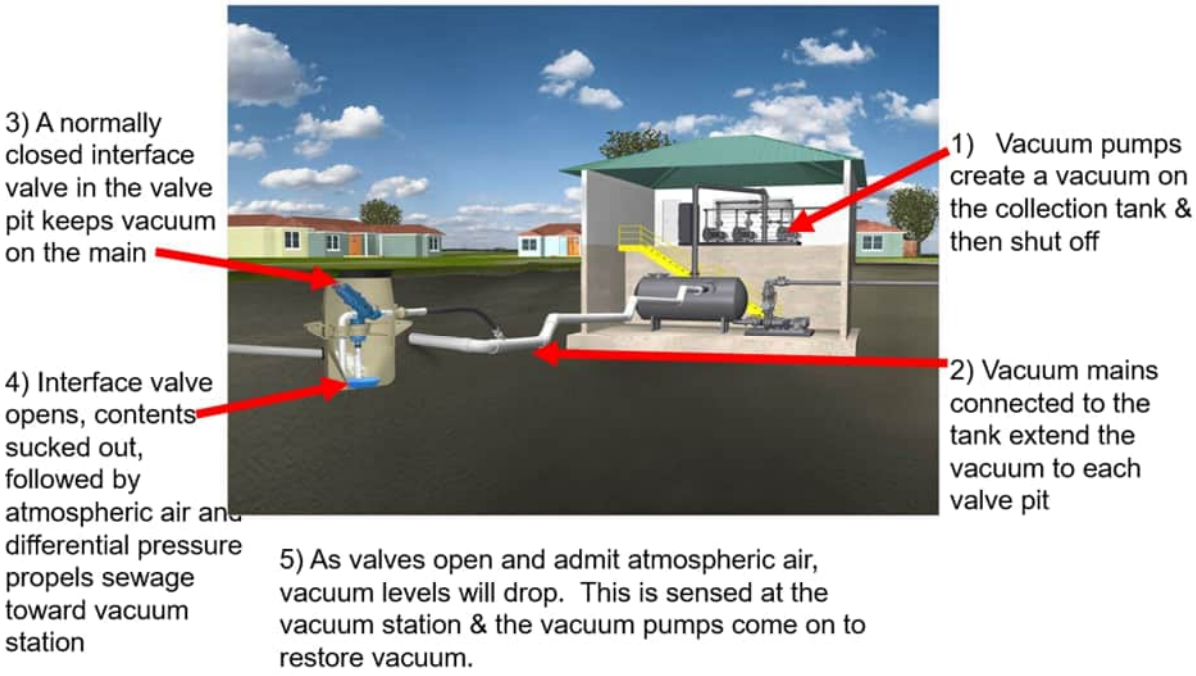


Figure 3: Vacuum Wastewater System Components

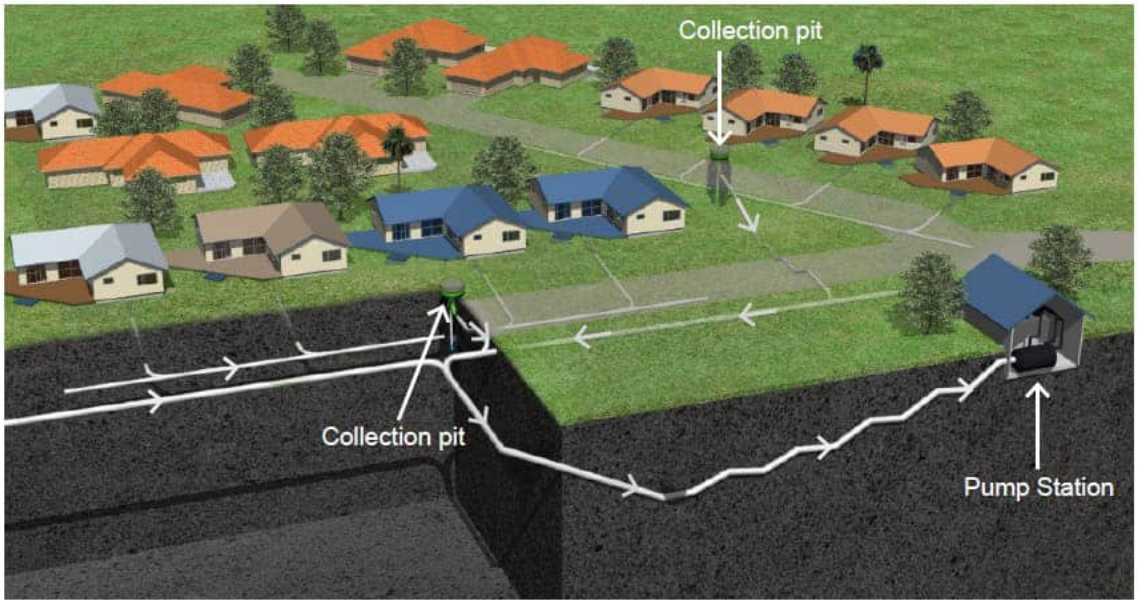


Figure 4: Vacuum Wastewater Network

3.8 The Shirley vacuum system has three vacuum arms (branch systems) and three vacuum mains enter the vacuum station. A single pipe creates the vacuum in all arms. There are 862 properties in the catchment.

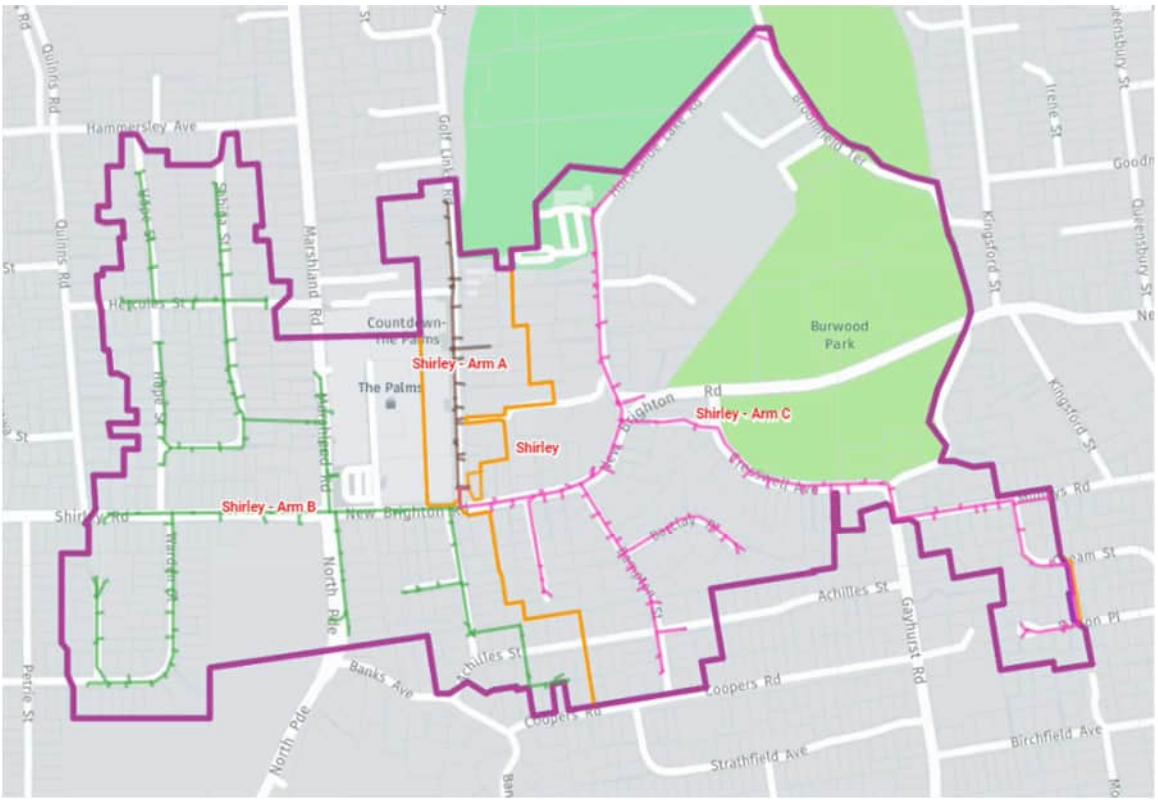


Figure 5: Shirley Vacuum Catchment

3.9 The Aranui and Prestons vacuum systems have six vacuum arms (branch systems) each and six vacuum mains enter the respective vacuum station. A single pipe creates vacuum in each system. There are 2,807 properties in the Aranui catchment and 1,685 (so far) properties in the Prestons catchment.

Figure 6: Aranui Vacuum Catchment

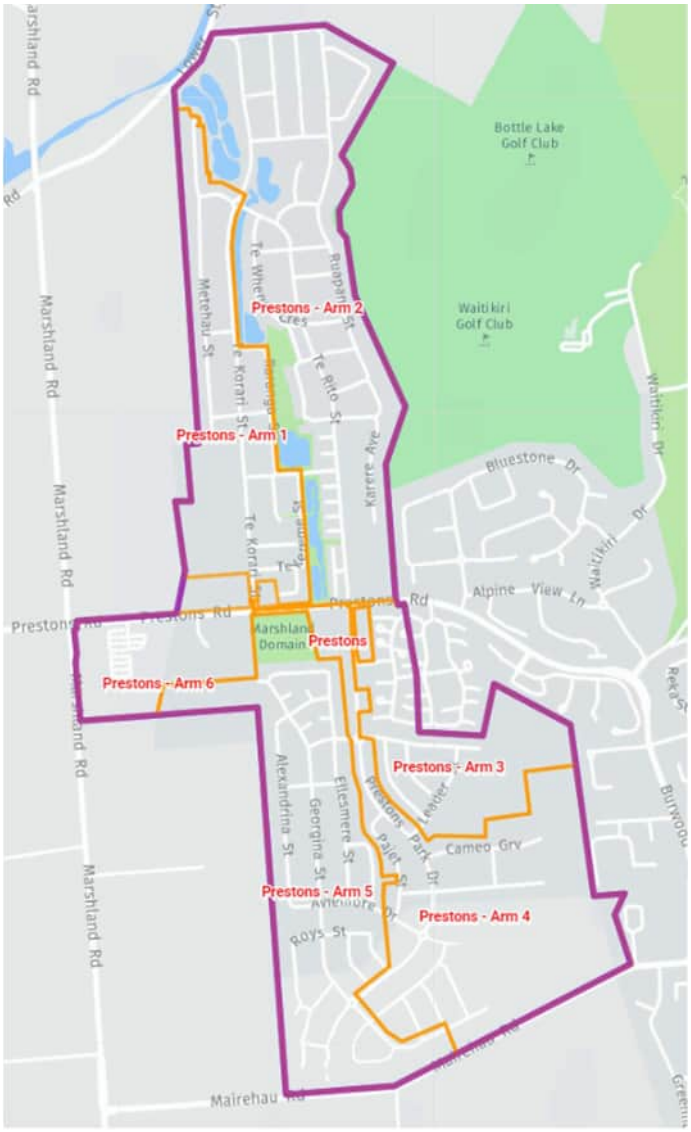


Figure 7: Prestons Vacuum Catchment

4. Vacuum Sewer System Design Capacity

4.1 In the Shirley and Aranui vacuum systems, SCIRT designed the sizes of the vacuum sewer mains and the vacuum pump stations to accommodate flow from existing dwellings and from future development using the land zoning and density requirements of the Christchurch City Plan (Living 1 zone: one dwelling per 450 m^2 land parcel).

4.2 Inflow and infiltration is the process of water, other than wastewater, entering the wastewater system and increasing wet weather flows:

4.2.1 Inflow refers to stormwater entering the wastewater network and occurs mainly through low gully traps and incorrectly connected private stormwater drains.

4.2.2 Infiltration describes the entry of groundwater, including sea-water, into the networks, mainly through faults such as cracked and broken private pipes.

4.3 The design made allowance for a Peak Wet Weather Flow (PWWF) Factor of 2.78. The design PWWF is the factor used to multiply the peak dry weather design flow with to allow for inflow and infiltration. A factor of 2.78 means that 64% of the peak design flow represents inflow and infiltration.

4.4 The Prestons vacuum system is based on similar design parameters with the exception of the storm inflow and infiltration peak factor which was set at 75% of the Shirley and Aranui PWWF factor. It was argued that all private infrastructure would be newly constructed and it was likely that inflow and infiltration would be lower.

4.5 The release of the Land Use Recovery Plan (LURP) resulted in the Christchurch City Plan being replaced by the Christchurch District Plan in 2016. Following information provided in a SCIRT memo in September 2014, approximately 30% of the Shirley vacuum catchment was rezoned from 'Living 1' to 'Residential Medium Density'. Infill development has been occurring over the last few years under the updated density rules, however, the capacity of the vacuum sewer system has not changed. Vacuum sewer systems are not as easily upgraded as a gravity sewer system as all components of the system – including the vacuum pump station – would need to be upgraded at the same time to increase capacity; or an alternative option such as splitting an existing vacuum sewer system or the creation of satellite wastewater storage and pump stations, would need to be implemented.

4.6 The Christchurch District Plan allows for significantly denser infill development than the Christchurch City Plan. For instance in areas zoned 'Residential Medium Density', the District Plan specifies a minimum density of 30 dwellings per hectare (one dwelling per 333 m^2 land parcel). Based on consents processed in the previous 12 months, consented densities have ranged between 40 and 135 dwellings per hectare, with the average being 71 dwellings per hectare (average of one dwelling per 141 m^2 land parcel).

4.7 For comparison, the design densities for the vacuum sewer systems range from 11 to 29 dwellings per hectare in Aranui and 10 to 16 dwellings per hectare in Shirley.

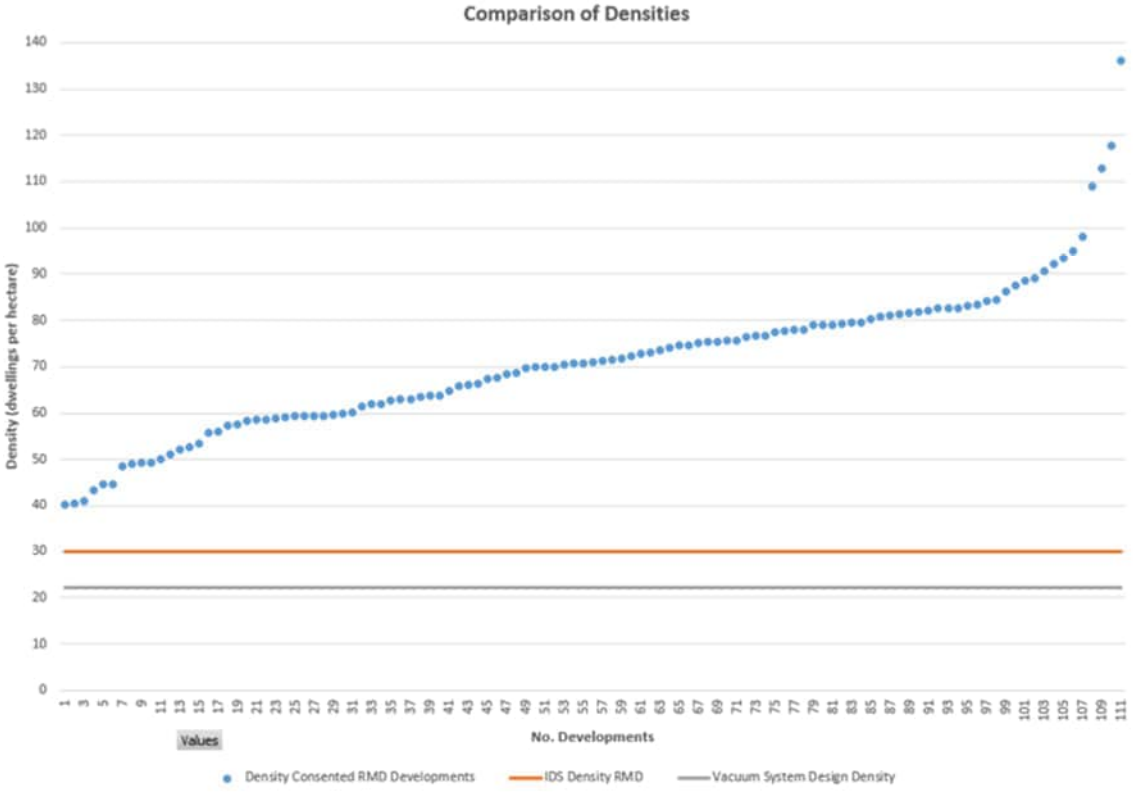


Figure 8: Comparison of consented RMD Developments vs IDS RMD Design Density and Vacuum System Design Density

5. Vacuum System Design Capacity and Performance Issues

Current Households Exceed the Design Households

5.1 As outlined in Section 4, SCIRT designed the vacuum sewer catchments to accommodate flow from existing households and from future development using the land zoning and density requirements of the Christchurch City Plan (Living 1 zone: one dwelling per 450 m^2 land parcel).

5.2 Since the current Christchurch District Plan allows for denser infill development than the Christchurch City Plan, consented densities have been significantly higher than the catchments were designed for and therefore the number of households now exceeds the SCIRT design.

5.3 A comparison between the number of households considered in the SCIRT design and the actual number of households shows that in Shirley, two vacuum arms exceed the design and one arm is close to the design, with households ranging between 99% and 127%. In Aranui, the six arms are between 78% and 104% of the SCIRT design.

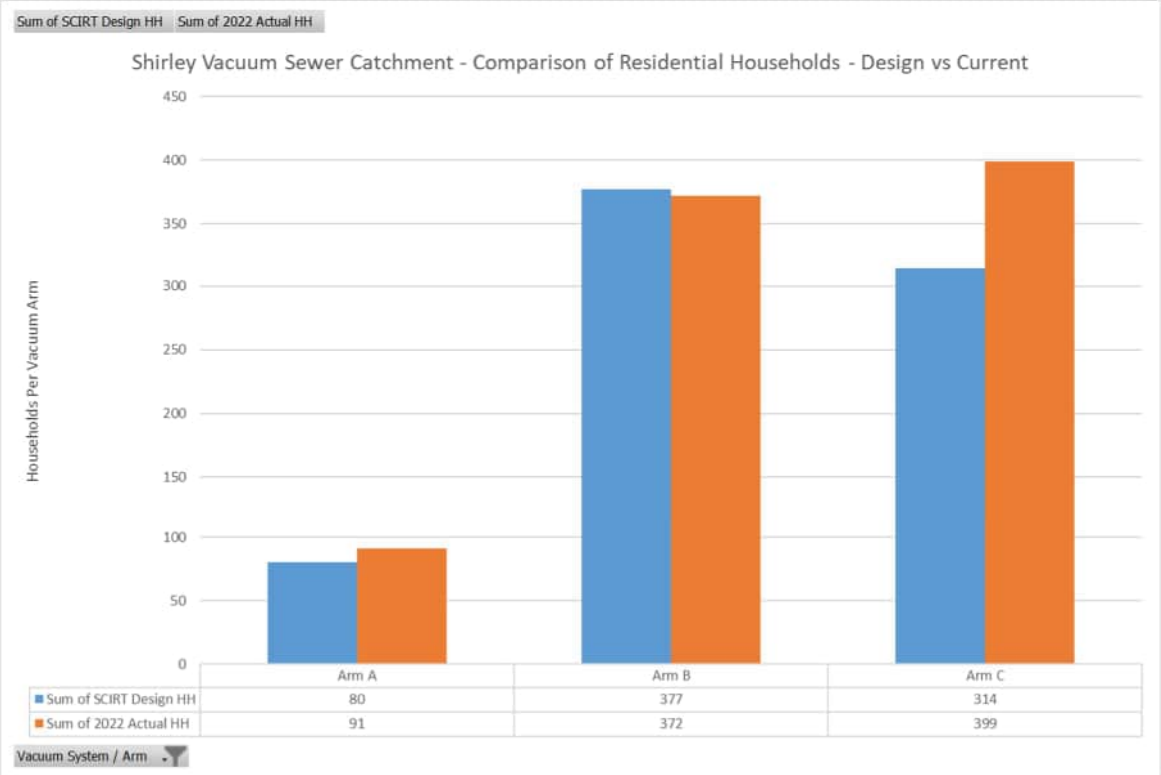


Figure 9: Shirley – Design vs Current Residential Households

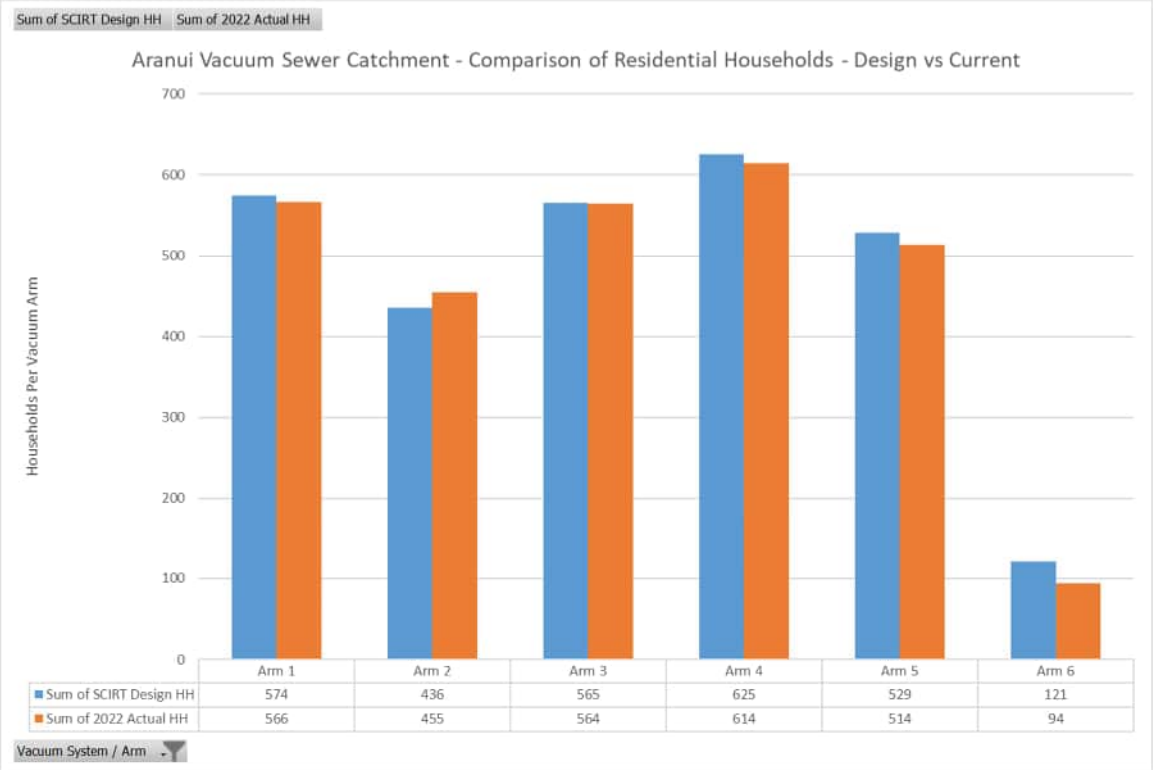


Figure 10: Aranui – Design vs Current Residential Households

Inflow and Infiltration Exceeds the Design Allowance

5.4 The risk of high inflow and infiltration from damaged private property laterals was highlighted in the Shirley and Aranui design phase.

5.5 Staff recommended that only properties that could demonstrate that the private laterals were in good condition should be allowed to connect to the vacuum sewer system. This approach was not supported by Council as it would have left several properties without service.

5.6 Vacuum system performance is dependent on maintaining the balance between air and liquid in the pipes (air-to-liquid ratio). This requires regular checking and setting of individual valve controls and ensuring that the vacuum mains do not become waterlogged.

5.7 Both the Shirley and Aranui vacuum sewer systems experience significant operational issues during wet weather which is an indicator that inflow and infiltration from private property laterals exceeds the design allowance.

5.8 Where flows exceed the design allowance into the collection chamber and through the vacuum valves, the system responds as follows:

5.8.1 The air to liquid ratio in the vacuum main decreases and eventually the mains become waterlogged

5.8.2 The vacuum pressure in the network decreases while the vacuum pumps try to respond by increased pumping times

5.8.3 The entire system performance becomes sluggish and leads to a reduced service or total loss of service in parts of the catchment

5.8.4 This has been experienced in both the Shirley and Aranui catchments and results in entire vacuum branches being closed down on a regular basis.

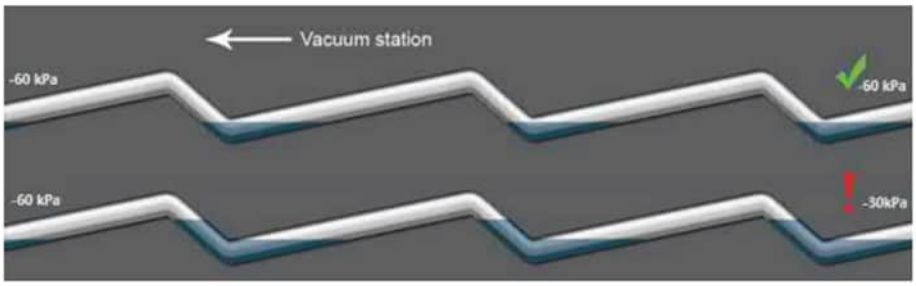


Figure 11: Vacuum Pressure in Pipes Affected by Waterlogging

5.9 Performance issues create a high operational staff presence onsite and it takes many days and sometimes weeks for the systems to recover after a significant wet weather event

5.10 An analysis of recent wet weather performance data has shown that compared to the design PWWF Factor of 2.78, in the Aranui catchment the actual PWWF Factor varied between 1.73 and 6.69 whereas in the Shirley catchment the actual PWWF Factor varied between 3.83 and 6.84. The analysis was carried out on the number of vacuum chamber valve opening events which are an indirect indicator of flow through the chamber. The PWWF data is illustrated in Figures 12 to 14.

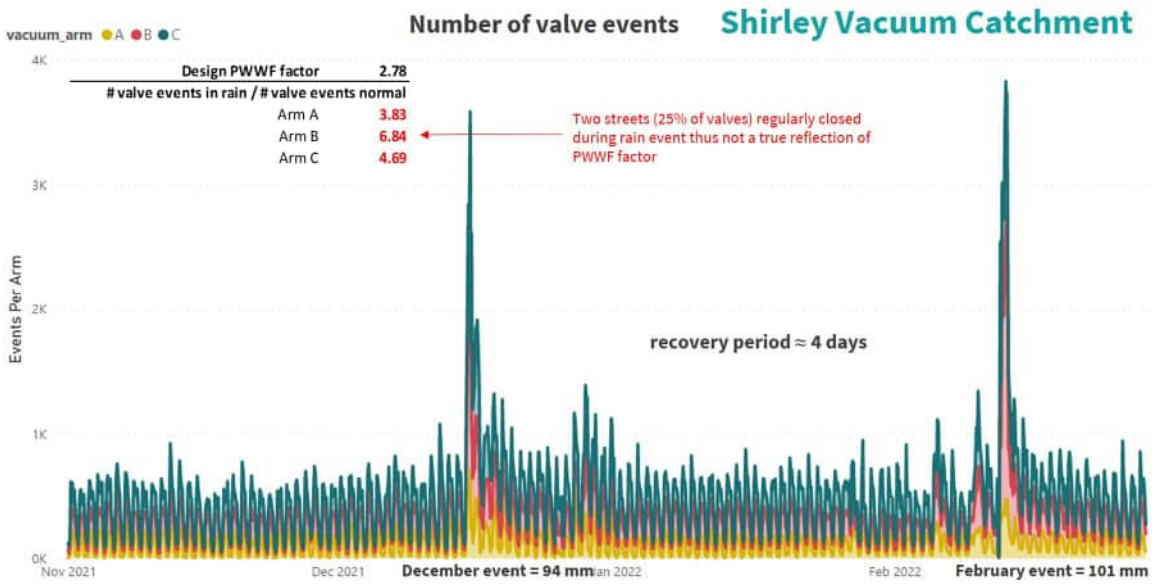


Figure 12: Shirley Vacuum System Wet Weather Performance

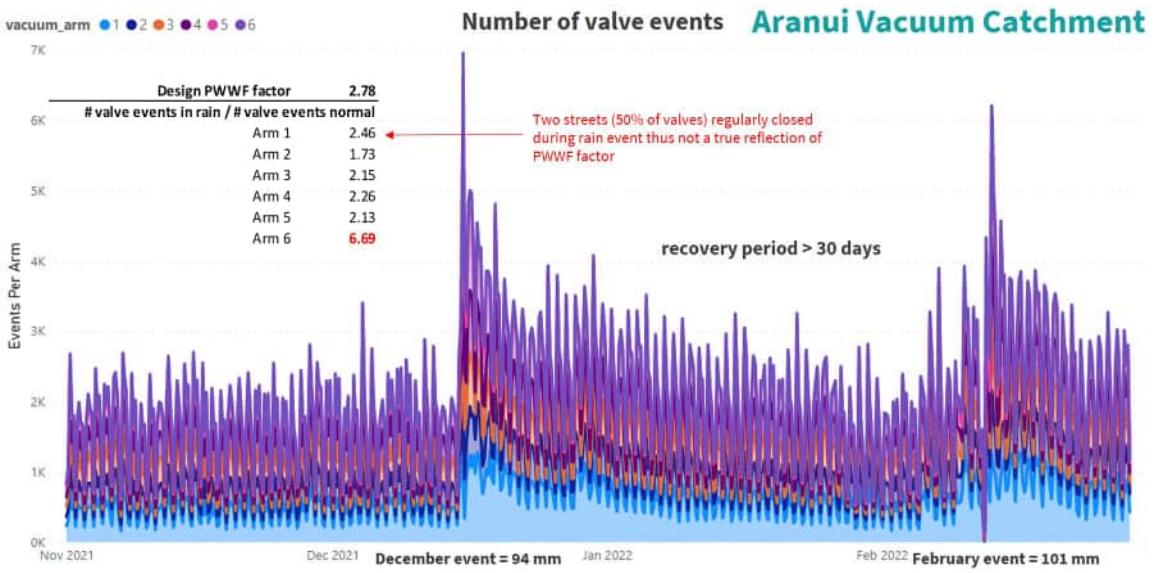


Figure 13: Aranui Vacuum System Wet Weather Performance

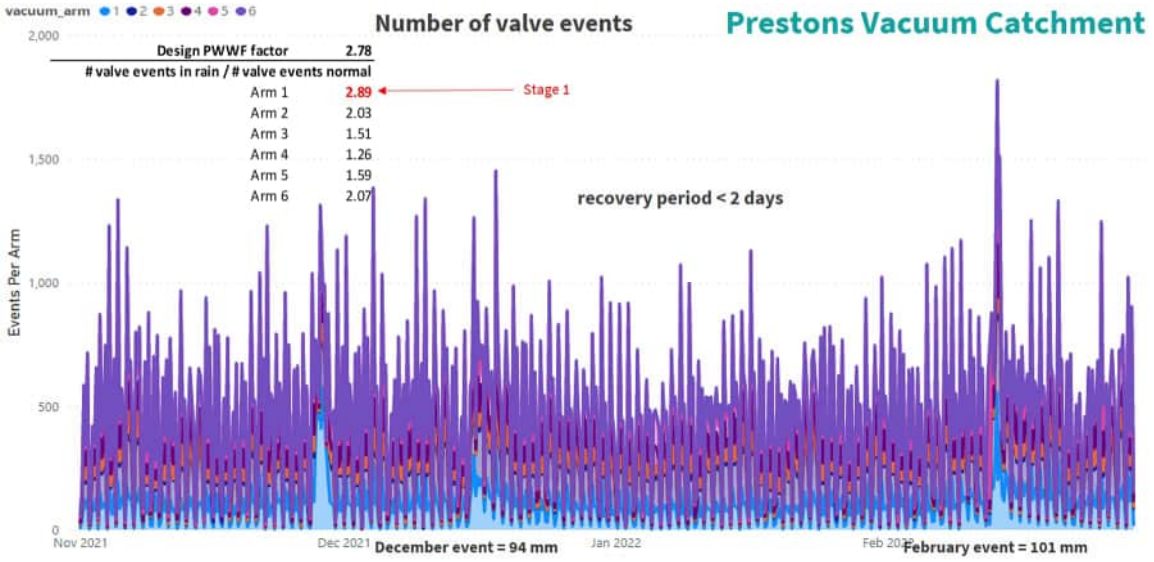


Figure 14: Prestons Vacuum System Wet Weather Performance

5.11 The true PWWF Factors are likely to be even higher since in both catchments some of the worst performing vacuum valve chambers had to be closed down.

Implications of Design Capacity and Performance Issues

5.12 The compounding effect of vacuum arms in the Shirley and Aranui vacuum sewer catchments either exceeding or being close to the SCIRT design capacity as well as significant inflow and infiltration issues have resulted in vacuum sewer pipes in some parts of the branched vacuum networks running at full capacity; while there are people who are still applying or enquiring to develop under current residential zoning provisions of the District Plan.

5.13 Capacity issues and associated drops in vacuum pressure affect the entire vacuum system, and allowing additional development would further exacerbate the issue.

6. Draft Plan Change 14: Housing and Business Choice Plan Change

6.1 The draft PC14 proposes significantly higher development densities across the city.

6.2 Since intensification in line with the existing District Plan provisions is unable to be accommodated due to the existing vacuum sewer capacity constraints, the draft Housing and Business Choice District Plan Change (PC14) has the potential to place an even greater operational burden on the vacuum sewer systems.

Draft Plan Change 14 Provisions

6.3 Under the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 (the "Enabling Housing Act"), in most residential areas of the city resource consent will no longer be required to build up to three homes, up to 12 metres high (three storeys, depending on building design), from August 2022. These new rules are called Medium Density Residential Standards (MDRS).

6.4 The National Policy Statement on Urban Development 2020 (NPS-UD) requires even greater building development – both residential and commercial – to be allowed within and around the central city, suburban commercial centres and planned high frequency and capacity public transport.

6.5 Council City Planners expect that intensification would allow up to 100 dwellings per hectare in the proposed 'Medium Density Residential' zone and up to 200 dwellings per hectare in the proposed 'High Density Residential' zone.

6.6 Enabling NPS-UD intensification in the vacuum sewer catchments would place additional significant demand on a system that is already at or near its design capacity. The effects on household numbers based on 10% or 30% uptake of the NPS-UD intensification is illustrated in the two figures below.

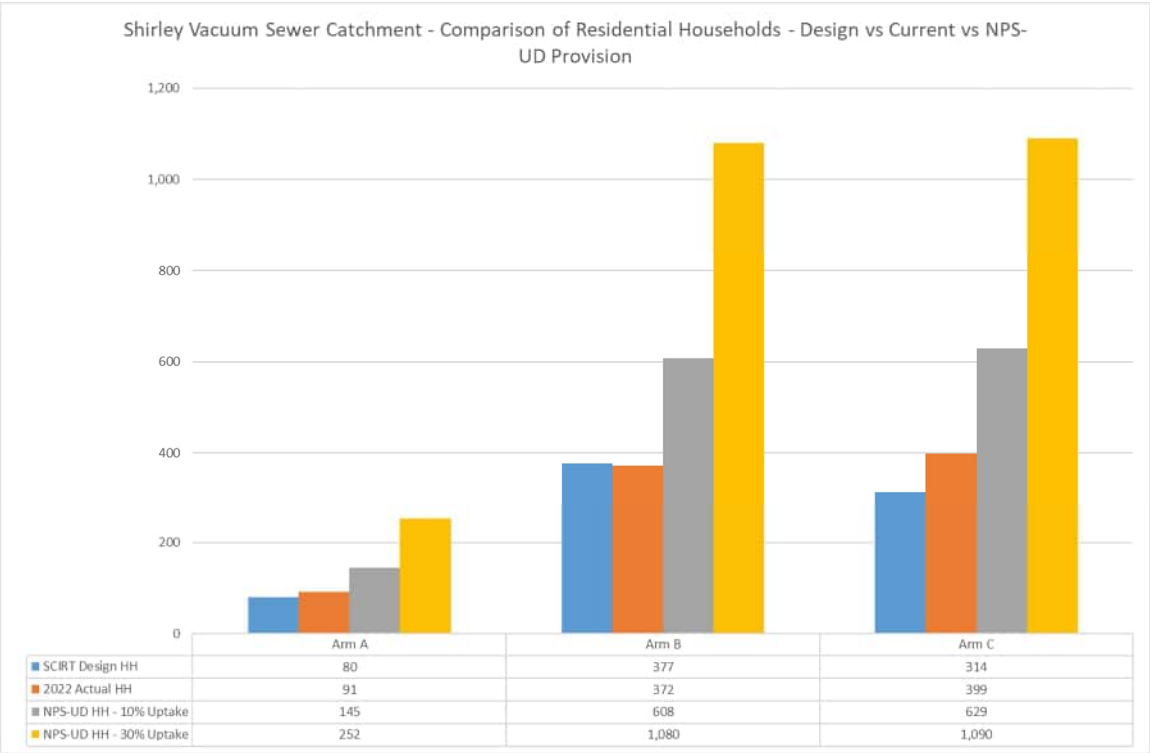
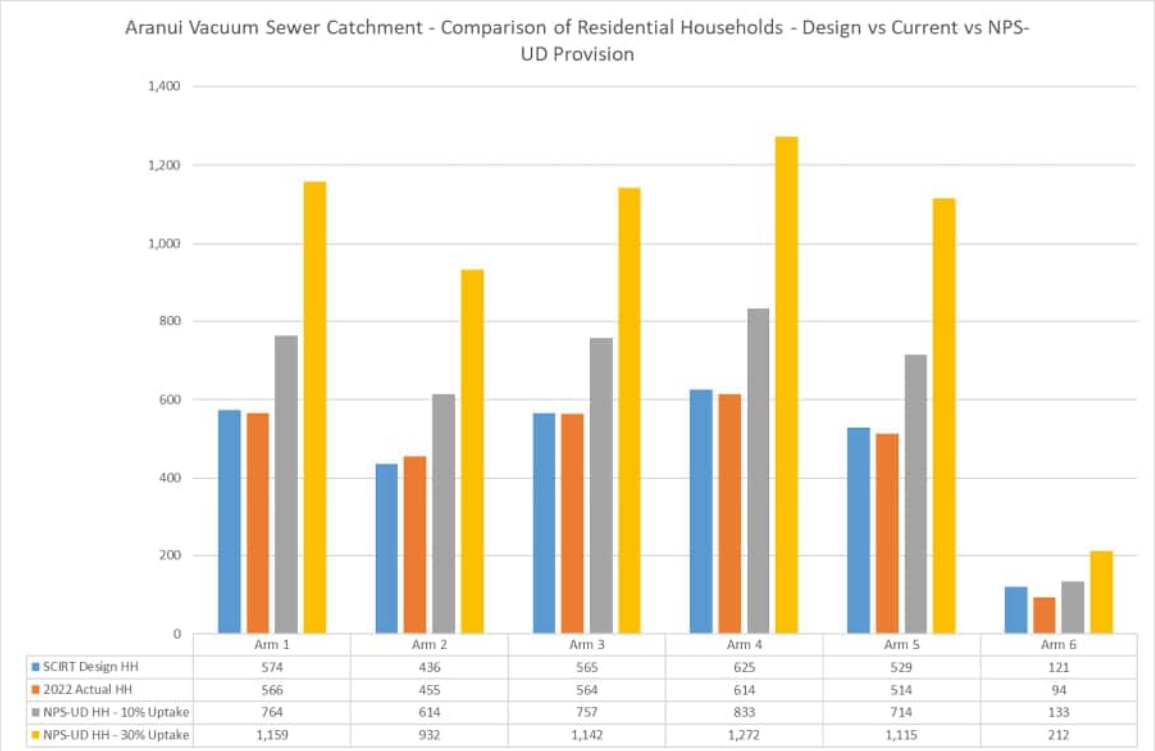


Figure 15: Shirley – Design vs Current vs NPS-UD Households



	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 6
SCIRT Design HH	574	436	565	625	529	121
2022 Actual HH	566	455	564	614	514	94
NPS-UD HH - 10% Uptake	764	614	757	833	714	133
NPS-UD HH - 30% Uptake	1,159	932	1,142	1,272	1,115	212

Figure 16: Aranui – Design vs Current vs NPS-UD Households

Vacuum Sewer Systems as Qualifying Matter

6.7 Vacuum sewer system catchments are not suitable for the level of increased development that is enabled by the Enabling Housing Act and need to be excluded from the rules enabling increased development.

6.8 While some improvements can be implemented to enhance vacuum system performance and provide some extra capacity, the vacuum systems are constrained by the size and number of vacuum mains and the pump capacities of the vacuum pump stations.

6.9 Due to the existing wastewater system constraints in the Shirley, Aranui and Prestons vacuum sewer catchments the draft PC14 proposes that these areas be listed as Qualifying Matters and be exempt with reduced densities of housing.

6.10 Draft PC14 recommends that these areas should not be targeted for Medium Density Residential Zone or High Density Residential Zone (around The Palms Town Centre) intensification and proposes the following development instead:

6.10.1 Development within the Shirley and Aranui vacuum catchments would need to retain current density and be restricted to 'like for like' development.

6.10.2 Development within the Prestons vacuum catchment would need to be aligned with the existing Prestons vacuum sewer masterplan.

7. Improving Vacuum Sewer System Capacity and Performance

Improvements Already Implemented

7.1 The Council has already implemented several improvements that enhance the operation of the vacuum sewer networks.

7.2 Vacuum sewer system monitoring: installation of 1,494 vacuum monitoring devices plus dashboard (cost $1.7 million) which allow for the identification of vacuum chambers with

unusually high numbers of valve events, and are therefore susceptible to inflow and infiltration or other operational issues, and targeted remedial actions.

7.3 Automatic air inlet systems (AAIS): installation of 13 automatic air inlet systems (cost $0.91 million) at the upstream end of vacuum arms that are prone to waterlogging. The AAIS detect low vacuum within a vacuum main and allow additional air to be introduced into the system to reduce the risk of vacuum loss. However, while the AAIS will reduce the risk of waterlogging during wet weather, the introduction of additional air may reduce the vacuum pumps' ability to handle the maximum flow.

7.4 Draft Water Supply and Wastewater 2022 Bylaw: Clause 32 strengthens the Council's rights in terms of the Local Government Act 1974 which will greatly improve the process of getting cooperation from property owners to repair faulty and leaky private drainage pipes.

32 MAINTENANCE OF PRIVATE WASTEWATER DRAINS

(1) The customer owns the private wastewater drains within the customer's property and on the customer's side of the point of discharge, and is responsible for all repairs and associated costs.

Explanatory note: *The Council owns and is responsible for maintenance of the public wastewater system including the pipe and the fittings from the point of discharge.*

(2) Private wastewater drains must be maintained in a state which is free from cracks and other defects which may allow infiltration, leakage, or cause blockages.

(3) If the Council believes that wastewater drains on private property are deficient, damaged, blocked, receiving excessive inflow and infiltration, are leaking, or are otherwise not in a satisfactory operating state; the Council may require the property owner to investigate the drain and rectify any issues, at the owner's cost.

Explanatory note: *Wastewater leaching from substandard drains can cause public health or environmental health issues (such as contaminating groundwater, producing a foul odour or attracting flies). Stormwater, groundwater, tree roots, sediment and other contaminants can enter the public wastewater system from cracks and damage in private wastewater drains, and overload or block the public wastewater system, or cause damage to the system or its machinery.*

(4) Where the Council requires a property owner to investigate and rectify any issues, a property owner must:

(a) Engage a suitably qualified person to undertake a camera investigation (or other agreed method of investigation) of the drain, and prepare a report on the findings; and
(b) Submit the report to the Council on the condition of the drains, prepared by a registered drainlayer, that includes either an appropriate repair strategy, or confirmation that the drain is in a satisfactory operating state (ie: contains no cracks, substandard joins, tree roots or other signs of blockage); and
(c) If repairs or replacements are necessary to fulfil the repair strategy, the property owner must demonstrate, to the Council's satisfaction that the repairs or replacements have occurred.

(5) Where the Council requires a property owner to investigate and rectify a drain under subclauses (3) and (4), the investigation and any repairs or replacements must be completed within timeframes as specified or agreed by the Council.

Explanatory note: *The requirements of this bylaw do not limit the Council from taking action under section 459 of the Local Government Act 1974.*

Figure 17: Draft Water Supply and Wastewater 2022 Bylaw, Clause 32

Potential Future Improvements

7.5 Use the Water Supply and Wastewater 2022 Bylaw to require properties identified as high inflow and infiltration contributors to inspect their drains and repair if found faulty (additional resources required to manage).

7.6 Expand the Vacuum Sewer Monitoring System functionality (in progress) to:

- Monitor pressure at ends of vacuum mains and integrate into vacuum monitoring dashboard
- Enable remote control of the AAIS and integration into the vacuum monitoring dashboard.

7.7 Seal vacuum chambers to reduce inflow and infiltration into the chambers (surface flooding, etc.) – additional funding required.

7.8 Large-scale upgrade of the vacuum systems which could comprise options such as providing large wastewater storage facilities from which wastewater would be pumped directly into neighbouring catchments, or dividing existing catchments and building new vacuum pump stations.

7.9 Potential upgrade options include: large-scale duplication of vacuum mains together with vacuum pump upgrades; splitting of existing vacuum sewer catchments and constructing new vacuum pump stations; creating satellite vacuum wastewater collection and storage facilities with alternative wastewater outfalls into neighbouring wastewater catchments.

7.10 Detailed cost estimates are not yet available as they will vary markedly between the different upgrade options and the expected household densities and associated wastewater flows.

7.11 Non-engineered, rough cost estimates for different capacity scenarios and expected household densities in development areas are as follows:

I&I Strategy	50% private I&I reduction		No private I&I reduction	
Development Density	70 HH/ha	100 HH/ha	70 HH/ha	100 HH/ha
Required Capacity	Capacity x3	Capacity x4	Capacity x5	Capacity x8
Rough Cost	≈ $35 million	≈ $50 million	≈ $60 million	≈ $100 million

Figure 18: Shirley: Non-engineered Cost Estimates

I&I Strategy	50% private I&I reduction		No private I&I reduction	
Development Density	70 HH/ha	100 HH/ha	70 HH/ha	100 HH/ha
Required Capacity	Capacity x2	Capacity x3	Capacity x5	Capacity x7
Rough Cost	≈ $75 million	≈ $115 million	≈ $200 million	≈ $280 million

Figure 19: Aranui: Non-engineered Cost Estimates

7.12 It needs to be borne in mind that the expected PC14 densities in MRZ and HRZ areas are likely to be much higher than the 70 households/hectare and 100 households/hectare used in the non-engineered cost estimates and therefore the actual costs much higher as well.

8. Alternative Options and Controls to Manage the Constraints

8.1 This section discusses whether there are viable alternative options and controls to manage the infrastructure constraints in the Shirley, Aranui and Prestons catchments.

8.2 On-site wastewater systems: the introduction of on-site wastewater systems that are commonly used in rural areas would not be a permitted activity in an urban environment as they would not meet the Canterbury Land and Water Regional Plan with respect to the following conditions contained within Rule 5.8:

- The discharge is not located within an area where residential density exceeds 1.5 dwellings per hectare and the total population is greater than 1000 persons;
- The discharge is not onto or into land where there is an available sewerage network.

8.3 Conventional local pressure sewer systems with tanks located on private property: the following factors make local pressure sewer systems unsuitable for a large scale rollout or as a full vacuum sewer system replacement.

- A local pressure sewer system cannot directly connect into a vacuum sewer system.
- While a local pressure sewer system might be a viable option for diverting a discrete area of the vacuum sewer catchment into the neighbouring gravity catchment under special circumstances (e.g. to divert a commercial area) there is insufficient capacity in neighbouring catchments for pressure sewer systems to divert the full proposed additional MRZ and HRZ development flows.
- Local pressure sewer systems have a higher initial capital costs and a higher life cycle cost. There can be issues with accessing Council infrastructure on private property for ongoing maintenance (as observed in greenfield local pressure sewer systems) and Council infrastructure located on private property is susceptible to abuse or misuse.
- Works on private property require property owner consent and obtaining property owner agreement on the location of the pump chamber and implementing the necessary legal arrangements for the vesting of the local pressure sewer infrastructure on private property is a complex administrative task.
- Property owners have concerns regarding the aesthetic nature of the pressure sewer tanks on private property.
- Construction on private property with existing houses is a complex undertaking with many constraints.

8.4 Local pressure sewer systems with tanks located on Council land (footpath or berm): while this option would eliminate the issue of obtaining property owner agreement and legal arrangements, it is not a viable option as there is no space available in an existing urban environment to install a tank in the footpath or berm outside each house; as the tanks would have to compete with other services such as water supply, power and telecommunications.

8.5 Install wastewater gravity networks: this option was also considered by SCIRT but was assessed as being too expensive and not providing sufficient resilience for future earthquakes.

9. Lost Development in Vacuum Sewer Catchments

9.1 In order to assess the impacts of including vacuum sewer systems as a Qualifying Matter in PC14, an assessment of current versus PC14 medium or high density development must be undertaken, using a location specific approach. Assuming a development uptake between 10% and 30%, lost development is assumed to be between 520 and 1,561 households in Shirley and 1,008 and 3,024 households in Aranui, as shown in Figure 20 and Figure 21.

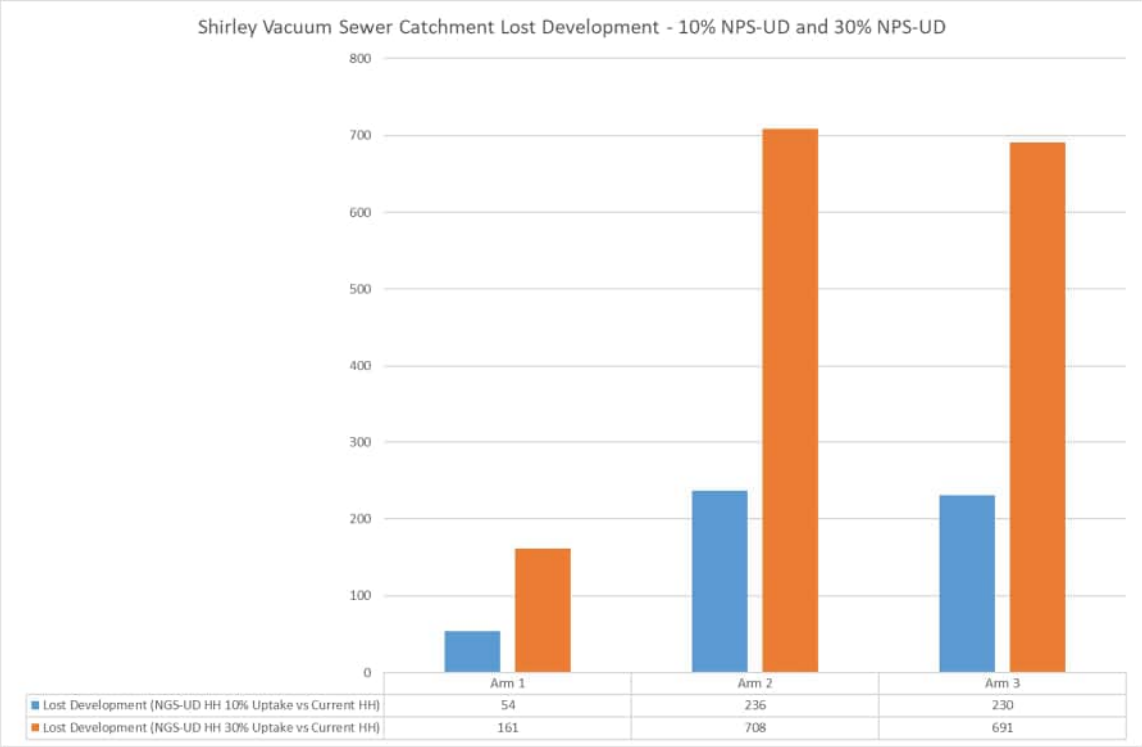


Figure 20: Shirley – Lost Development

Figure 21: Aranui – Lost Development

10. Conclusion

10.1 Due to the vacuum sewer design capacity constraints and associated negative environmental outcomes outlined in this report, vacuum sewer catchments should be included as a Qualifying Matter in the draft PC14.

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Signatories / Ngā Kaiwaitohu

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