

BEFORE THE WELLINGTON CITY COUNCIL

IN THE MATTER OF of the Resource Management Act 1991

AND

IN THE MATTER OF Hearing of submissions and further submissions on the
Wellington City Proposed District Plan

STATEMENT OF EVIDENCE BY NATALIE HAMPSON

HEARING STREAM 10 – 1 JULY 2024

INTRODUCTION

QUALIFICATIONS AND EXPERIENCE

- 1 My full name is Natalie Dianne Hampson. I am a Director at Savvy Consulting Limited. I was previously a director of Market Economics Limited. I hold a Master of Science degree in Geography from the University of Auckland (first class honours).
- 2 I have worked in the field of economics for over 20 years for commercial and public sector clients, with a particular focus on economic assessment within the framework of the Resource Management Act 1991 (**RMA**). Since 2001, I have specialised in studies relating to land use analysis, assessment of demand and markets, the form and function of urban economies and growth, policy analysis, and evaluation of economic outcomes and effects, including costs and benefits.
- 3 I have a sound knowledge of the National Policy Statement for Urban Development (**NPS-UD**) and the requirements of Tier 1 and 2 local authorities to model and monitor housing demand, supply, capacity and sufficiency. I have had a key role in (and project managed) two Housing and Business Demand and Capacity Assessments (**HBAs**) for Queenstown Lakes District Council (**QLDC**) and one for Rotorua Lakes Council (**RLC**) with another update for RLC now underway. I have been involved in the housing intensification plan changes for QLDC, RLC and Nelson City Council (**NCC**). I have recently represented 6 different submitters on district plan reviews and intensification plan changes in Greater Christchurch, focusing on housing demand and capacity.
- 4 I also have expertise in understanding the economic role of regionally and nationally significant infrastructure. I have provided advice and evidence for Christchurch International Airport Limited to help ensure that planning frameworks in Canterbury support the effective and efficient operation and growth of the Airport. I am assisting Lyttleton Port Company on their submission to the review of the Canterbury Regional Policy Statement. I have also recently provided economic evidence for NCC on the Notice of Requirement (**NOR**) to change the designations (including the Obstacle Limitation Surface (**OLS**)) of Nelson Airport to facilitate a runway extension.

CODE OF CONDUCT STATEMENT

- 5 While this is not an Environment Court hearing, I nonetheless confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023. I agree to comply with the Code and I am satisfied that the matters which I address in my evidence are within my field of expertise. I am not aware of any material facts that I have omitted which might alter or detract from the opinions I express in my evidence.

SCOPE OF EVIDENCE

- 6 In this brief of evidence, I estimate the impact on feasible and reasonably expected to be realised (“realisable”) dwelling capacity potentially arising from Wellington International Airport Limited’s (**WIAL**) modified Designation relating to the Wellington Airport OLS designation (**WIAL1**)¹. I consider whether and how this change in capacity may affect the ability of Wellington City to provide sufficient capacity to meet projected housing demand over the medium² and long-term³ in accordance with Policy 2 of the NPS-UD.
- 7 My assessment compares the impact of the proposed WIAL1 to the baseline realisable capacity that is expected from the final Decisions Version of the Proposed District Plan (**PDP**) based on two height restriction scenarios:
- a. WIAL’s proposal that would limit any new objects or extensions to objects⁴ that penetrate the OLS to 8m above ground level, except where the lowest OLS is the Outer Horizontal Surface, and in which case, the height is limited to 30m above ground level. I refer to this scenario as the “WIAL height restriction scenario (8m + 30m)”.
 - b. An alternative relief suggested by Wellington City Council (**WCC**) (and supported by Guardians of the Bay and Kāinga Ora) that would increase the maximum building height to 11m above ground level (and retain the 30m for the Outer Horizontal Surface). I refer to this scenario as the “WCC height restriction scenario (11m + 30m)”.

¹ This is designation G2 in the Operative District Plan.

² 10 year outlook.

³ 30 year outlook.

⁴ As of 15th June 2022.

- 8 This is followed by estimation of the impact of WIAL1 on feasible⁵ commercial floorspace capacity and sufficiency to meet projected commercial floorspace demand over the medium and long-term relative to the baseline commercial capacity of the final Decisions Version of the PDP based on the same two scenarios above.
- 9 Based on the above analysis, I draw conclusions on the economic effects of WIAL1 and two height restriction scenarios on Wellington City’s future housing and business growth potential. I provide brief comment on overall economic efficiency of WIAL’s proposed WIAL1.
- 10 In preparing this statement of evidence, I confirm that I have read and/or relied on the following documents:
- a. The statement of evidence of Mr L Thurston (dated 1 July 2024);
 - b. The statement of evidence of Mr J Kyle (dated 1 July 2024);
 - c. The statement of evidence of Ms Lester (dated 1 July 2024);
 - d. WIAL’s Notice by Requiring Authority for Designation G2 to be Included with modifications in the PDP, dated 15 June 2022 (attached as Appendix B of Mr Kyle’s evidence);
 - e. The Wellington City PDP Hearing Stream 10 – Designations report, prepared under section 42A of the Resource Management Act 1991 (“the section 42A report”) and its associated appendices;
 - f. The Property Economics report titled “Wellington City Qualifying Matters Capacity Assessment” for WCC dated November 2022;
 - g. The Wairarapa-Wellington Horowhenua Region – Housing and Business Development Capacity Assessment – Chapter 2 Wellington City Council HBA, dated August 2023;
 - h. The Property Economics report titled “Wellington Feasible Capacity Assessment Memorandum” for WCC dated September 2023;
 - i. The capacity modelling results supplied by Property Economics to Savvy Consulting dated 1st July 2024 (and associated explanatory memo attached in **Appendix F**); and

⁵ Under the NPS-UD, this is also referred to as ‘suitable’ business land capacity.

- j. The Beca report titled “OLS Parcel Analysis Methodology Report” for WIAL dated December 2022 (attached in **Appendix E** of this statement) and associated GIS files.

ASSESSMENT APPROACH AND DATA SOURCES

NPS-UD – Requirement to provide at least sufficient development capacity

- 11 Policy 2 of the NPS-UD requires local authorities to provide at least sufficient development capacity for housing and businesses, including by enabling intensification to meet expected demand for housing and for business land over the short, medium, and long-term. Wellington City is a Tier 1 urban environment and as such, the sufficiency of development capacity must be based on a comparison of Plan enabled, infrastructure ready, commercially feasible and realisable capacity⁶ with demand that includes a competitiveness margin of an additional 20% in the short and medium-term and thereafter an additional 15% for the long-term.
- 12 While Policy 2 must be read in conjunction with other objectives and policies of the NPS-UD which are noted in Mr Kyle’s evidence (and that include requirements to integrate planning with the needs of significant infrastructure), it is Policy 2 that is most relevant to my evidence.
- 13 In response to Policy 2, WCC has commissioned a parcel level model of demand and capacity (for housing and business land) so that sufficiency can be understood and reported in accordance with the requirement of the NPS-UD. That model has been developed by Property Economics. Throughout the PDP hearing streams, Property Economics have made several updates to their model, including to account for qualifying matters.

Property Economics Capacity Model 2024

- 14 As the official basis for understanding demand, capacity and sufficiency in Wellington City, the Property Economics model is the best and most efficient and consistent way to test the effect of the respective WIAL1 designation height restriction scenarios. I therefore approached Property Economics and with WCC’s consent (as owners of the model), they agreed to run the two designation height restriction scenarios through the existing model.⁷

⁶ I.e., culminating in realisable capacity.

⁷ At WIAL’s expense.

- 15 To ensure that the two designation height restriction scenarios were being compared with the most current baseline of capacity, Property Economics took the opportunity to again update the capacity model to reflect the final Decisions on the PDP (as recommended by the Minister).⁸ As this update had not previously been commissioned, the Property Economics results attached at **Appendix A and F** of this statement set out those new capacity results for the first time and they supersede all previously reported results by Property Economics.⁹
- 16 The information that I supplied to Property Economics was a parcel level GIS file that showed the maximum height that new objects or extensions (herein referred to as **structures**) would be before they breached the proposed OLS and the maximum height limit of structures under the proposed WIAL height restriction scenario (i.e. 8m + 30m), and the WCC height restriction scenario (i.e. 11m + 30m).
- 17 To develop those maximum heights for each parcel (and for each scenario), I relied on the GIS file prepared by BECA (and supplied to WCC for the District Plan Review). A description of that dataset, and associated methodology is contained in Appendix E of this statement.
- 18 In summary, Beca worked out the average elevation of each parcel (at ground level) as well as the lowest OLS surface that applied to each parcel and what height that was above the ground level of each parcel.¹⁰ The elevation of some parcels is already above the lowest OLS surface, particularly on hill tops and ridgelines. For other parcels, there is clearance before any structures erected on those parcels would breach the lowest OLS surface. This clearance ranges from less than a metre, to hundreds of metres.
- 19 **Table 1** shows how the two height restriction scenario columns that I added to that GIS dataset were created using the BECA data.

⁸ The cost of this baseline update was covered by WCC.

⁹ This includes the results published in the Greater Wellington HBA 2023 which was based on notified PDP, a different Plan enabled capacity model and different assumptions.

¹⁰ The various OLS surfaces are set out in Mr Kyle's evidence in paragraph 28.

Table 1 – Explanation on how WIAL1 height restrictions and clearances to the OLS apply at a parcel level in Wellington City by scenario

Situation	WIAL Height Scenario (8m + 30m)	WCC Height Scenario (11m + 30m)
1	<p>Where the elevation of the parcel (terrain) already penetrates the lowest OLS surface applying to that parcel, the maximum development height is therefore 8m above ground level, unless the lowest OLS surface is the Outer Horizontal Surface, in which case, the maximum development height is 30m above ground level.</p>	<p>Where the elevation of the parcel (terrain) already penetrates the lowest OLS surface applying to that parcel, the maximum development height is therefore 11m above ground level, unless the lowest OLS surface is the Outer Horizontal Surface, in which case, the maximum development height is 30m above ground level.</p>
2	<p>Where the elevation of the parcel (terrain) does not already penetrate the lowest OLS surface applying to that parcel (other than the Outer Horizontal Surface), but the height to that OLS is less than 8m, and therefore the maximum development height is 8m above ground level. Or,</p> <p>Where the elevation of the parcel (terrain) does not already penetrate the lowest OLS surface applying to that parcel, and that is the Outer Horizontal Surface, but the height to that OLS is less than 30m, and therefore the maximum development height is 30m above ground level.</p>	<p>Where the elevation of the parcel (terrain) does not already penetrate the lowest OLS surface applying to that parcel (other than the Outer Horizontal Surface), but the height to that OLS is less than 8m, the maximum development height is 11m above ground level. Or</p> <p>Where the elevation of the parcel (terrain) does not already penetrate the lowest OLS surface applying to that parcel, and that is the Outer Horizontal Surface, but the height to that OLS is less than 30m, and therefore the maximum development height is 30m above ground level.</p>

3	<p>Where the elevation of the parcel (terrain) does not already penetrate the lowest OLS surface applying to that parcel (other than the Outer Horizontal Surface), and the height to that OLS is greater than 8m, the height to the OLS is adopted. Or,</p> <p>Where the elevation of the parcel (terrain) does not already penetrate the lowest OLS surface applying to that parcel, and that is the Outer Horizontal Surface, and the height to that OLS is greater than 30m, the height to the Outer Horizontal Surface is adopted.</p>	<p>Where the elevation of the parcel (terrain) does not already penetrate the lowest OLS surface applying to that parcel (other than the Outer Horizontal Surface), and the height to that OLS is greater than 11m, the height to the OLS is adopted. Or</p> <p>Where the elevation of the parcel (terrain) does not already penetrate the lowest OLS surface applying to that parcel, and that is the Outer Horizontal Surface, and the height to that OLS is greater than 30m, the height to the Outer Horizontal Surface is adopted.</p>
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20 A visual representation of the three situations above is contained in **Appendix B** of this statement.

21 The heights applied to each parcel (arrived at depending on whether the parcel fits situation 1,2 or 3) in the two respective scenarios were the key input provided to Property Economics for their capacity modelling. However, those heights provided do not necessarily indicate that development on a parcel will be constrained. This is because it is the comparison of that height against the maximum Plan enabled building height applicable to the parcel in the final Decisions Version of the PDP that determines if the parcel is potentially impacted or not.

22 Plan enabled heights differ by zone and precinct and may also be impacted by a qualifying matter. However, where no additional restrictions apply, the permitted building height in the Rural Zone is 8m, and so neither the WIAL height restriction scenario, nor the WCC height restriction scenario would constrain permitted building activity. As I understand it, the

permitted height in the Large Lot Zone is also 8m.¹¹ Like the Rural Zone, Large Lot Zone parcels would be unlikely to be constrained by either height restriction scenario.¹²

23 In the Medium Density Residential Zone (**MDRZ**), the Plan enabled height is 11m.¹³ Parcels in the MDRZ may therefore be impacted by the WIAL height restriction scenario (where 8m would apply) but would not be impacted by the WCC height restriction scenario (where 11m would apply).¹⁴ In other zones, Plan enabled heights are higher still, especially in the Metropolitan Centre Zone and the City Centre Zone.

24 **Table 2** below quantifies how many parcels in Wellington City that are modelled by Property Economics could be impacted by one or both WIAL1 height restriction scenarios. Note, the Property Economics model considers only urban zones (in keeping with the NPS-UD requirements), hence the Rural Zone is not captured. This is also why no values are entered for the Makara-Ohariu catchment, as this is wholly in the rural environment but as discussed above this zone has an 8m height limit so unlikely to be constrained by either height restriction scenario.

25 A visual representation of parcels where indicative Plan enabled building envelopes would be impacted by the proposed WIAL building height restriction scenario (8m + 30m as applicable) was presented (I understand) in the PDP Wrap Up Hearing.¹⁵ A screen shot from this GIS model is shown in **Figure 1**. The orange-coloured parcels (across total urban areas) would broadly equate with the count of parcels identified in Table 2 (purple columns). However, the 3D representation related to Plan enabled building heights of the notified PDP and not the final Decisions Version of the PDP which is now contained in the Property Economics capacity model. Hence, Figure 1 is no longer accurate and would need to be updated.

¹¹ Although there are exceptions that allow for a further 1m of height.

¹² This is demonstrated in the Property Economics modelling results in Appendix A.

¹³ Again with some exceptions for an additional 1m.

¹⁴ I understand that this was the motivation for the WCC height preference.

¹⁵ <https://experience.arcgis.com/experience/dd40241bb3b44260bb0ea50d0bb72b286/page/Page/>

Table 2 – Count of Parcels Where Proposed Building Height Restrictions in WIAL1 (by Scenario) Are Less Than Plan Enabled Maximum Building Heights (based on Final Decisions Version of the PDP)

Final PDP Decisions Version Zoning / Property Economic Residential Catchments	Total Property Count	Count of Properties where Plan Enabled Height Exceeds 'WIAL Scenario Height Restriction (8m + 30m)'	Count of Properties where Plan Enabled Height Exceeds 'WCC Scenario Height Restriction (11m + 30m)'	Properties where Plan Enabled Height Exceeds 'WIAL Scenario Height Restriction as Share of Total Properties	Properties where Plan Enabled Height Exceeds 'WCC Scenario Height Restriction as Share of Total Properties
Count of Parcels by Zone *					
High Density Residential Zone	25,092	1,892	885	8%	4%
Medium Density Residential Zone	72,959	17,956	599	25%	1%
Large Lot Residential Zone	353	-	-	0%	0%
City Centre Zone	1,398	368	368	26%	26%
Metropolitan Centre Zone	167	-	-	0%	0%
Local Centre Zone	337	33	31	10%	9%
Neighbourhood Centre Zone	195	25	6	13%	3%
Mixed Use Zone	328	7	-	2%	0%
Total Wellington City	100,829	20,281	1,889	20%	2%
Count of Parcels by Catchment **					
North	32,254	3,912	214	12%	1%
Central	9,612	2,510	671	26%	7%
Inner	9,612	2,510	671	26%	7%
Southern	13,246	6,297	284	48%	2%
Western	28,962	3,644	297	13%	1%
Eastern	14,455	3,431	24	24%	0%
Makara-Ohariu	-	-	-	0%	0%
Total Wellington City	100,829	20,281	1,889	20%	2%

Source: Beca, Savvy, Property Economics.

* Only base zone shown, but sub-zones, precincts and qualifying matters that change maximum building height have been applied.

** See Appendix A map for catchment boundaries.

Figure 1 – An Indicative 3D Visual Representation of Parcels (and Building Envelopes) Where Plan Enabled Building Heights (Notified PDP) Exceeds Proposed WIAL Height Restrictions (8m + 30m) for WIAL1



- 26 Figure 1 is still helpful in showing the hilltops/ridgelines that already penetrate the proposed OLS (lowest surface) and where all properties have the potential to be restricted by the proposed heights in WIAL1.
- 27 Table 2 shows that of the nearly 110,000 urban parcels included in the Property Economics capacity model,¹⁶ the WIAL proposed height restriction scenario would potentially impact development opportunities (in terms of Plan enabled height) on 20% of parcels (i.e. around 20,200 parcels). The significant majority of these are in the MDRZ (nearly 18,000 parcels). In contrast, the WCC proposed height restriction scenario would potentially impact only 2% of urban parcels (around 1,900 parcels). There would still be nearly 600 parcels in the MDRZ that would potentially have impacted development opportunities (in terms of height otherwise Plan enabled), but the significant majority of parcels in the MDRZ would be unconstrained.
- 28 Table 2 also shows no difference in the number of parcels potentially impacted by the WIAL1 in the City Centre Zone irrespective of the WIAL or WCC height restriction scenarios. Both scenarios potentially impact 368 parcels. There are similar counts of potentially impacted parcels in the Local Centre Zone and relatively few parcels impacted in the Neighbourhood Centre Zone and Mixed Use Zone. The WIAL1 height restriction scenario potentially impacts just over double the number of parcels in the High Density Residential Zone compared with the WCC height restriction scenario.
- 29 It is important to acknowledge at this stage, that only new developments / structures (as well as changes to existing buildings / structures) would be impacted by the WIAL1 height restrictions (of either scenario). Existing buildings and structures are not affected. Further, not every impacted parcel will seek or undergo development that would trigger the WIAL1 height restrictions in the foreseeable future. Hence parcels are ‘potentially’ impacted. It is the opportunity to develop to Plan enabled heights that is potentially impacted.¹⁷
- 30 Further, just because there is an exceedance of the WIAL1 height restrictions (under either scenario) does not mean the development cannot proceed. WIAL can and does provide written consent after an evaluation

¹⁶ Parcels not included are understood to be parcels in the open space zones, those that do not have development capacity, and those in the Rural Zone. Refer the Property Economics memo provided in Appendix F for further detail.

¹⁷ And would include developments seeking to exceed Plan enabled heights via consent.

has been carried out if the proposed development/structure is already shielded by a higher building/structure or terrain (within some meaningful distance) or the object is temporary. My evidence therefore considers the worst case outcome, as shielding data is not readily available and is necessarily a cases by case matter as set out in Ms Lester's evidence.

- 31 The following section of my evidence takes into account that not all opportunities to develop residential dwellings (or buildings containing residential dwelling units) to Plan enabled heights will be commercially feasible within the next 30 years or reasonable expected to be realised. The predicted impact of the WIAL1 building height restrictions (in either scenario) is therefore less than the Plan enabled dwelling capacity on potentially impacted parcels described above.

WIAL1 IMPACTS ON DWELLING CAPACITY AND SUFFICIENCY

- 32 The detailed results for this section are contained in Appendix A.

- 33 The Property Economics capacity model (2024) that is based on the final Decisions Version of the PDP (and before designations are applied) estimates that urban residential or commercial zones that provide for housing¹⁸ have the following long-term dwelling capacity:

- a. Plan enabled or theoretical capacity of 542,779 dwellings.¹⁹
- b. Commercially feasible capacity of 74,798 dwellings. This is the long-term dwelling yield when you apply the most profitable dwelling typology to the parcel that is Plan enabled and requires that development to deliver a minimum of 20% profit for a commercial developer. Just under 44% of total feasible capacity is for apartments, just under 42% is for terrace housing, giving a sub-total of attached housing of approximately 85%. The remaining 15% of total feasible capacity is where standalone dwellings were the most profitable option.
- c. Realisable capacity of 39,678 dwellings. Property Economics' approach to estimating realisable capacity is as follows: "*In addition to the feasibility assessment, Property Economics further*

¹⁸ It is my understanding that the Property Economics capacity model applies assumptions for what share of capacity in commercial zones will be taken up by residential units as opposed to commercial floorspace. This approach is necessary to avoid double counting between housing and business capacity models.

¹⁹ Plan enabled capacity is described in the NPS-UD and assumes that all existing buildings are removed, and parcels are developed to the maximum density enabled by the zone provisions.

sought to overlay policy and practical considerations, to consider what is likely to be developed by the market at that point in time. The realisation rates essentially provide for the ‘likelihood of development’, taking into consideration dwelling typology, development options and greenfield competition, and endeavours to consider the risks associated with the development of certain typologies, and the motivation of developers”.²⁰

34 It is typical for capacity models developed under the NPS-UD to show that feasible capacity is a small share of Plan enabled capacity, and that realisable capacity is a small share of feasible capacity.

35 **Table 3** provides a summary of how the inclusion of the WIAL1, and the two respective height restriction scenarios reduce the long-term baseline dwelling capacities above.

Table 3 – Summary Table of Impacts of WIAL1 Height Restriction Scenarios on Long-term Dwelling Capacity

Row Ref.	Residential Capacity Impacts	Theoretical (Plan Enabled)	Feasible				Realisable			
			Standalone	Terrace	Apartment	Total Feasible	Standalone	Terrace	Apartment	Realisable Total
a	ODP	542,779	11,096	31,104	32,598	74,798	13,173	21,982	4,523	39,678
b	ODP (WCC 11m)	523,093	11,096	31,160	29,109	71,365	13,173	21,982	3,339	38,494
c	ODP -> WCC 11m	-19,686	0	56	-3,489	-3,433	0	0	-1,184	-1,184
d	ODP (WIAL 8m)	513,543	10,939	31,160	29,109	71,208	13,040	21,978	3,339	38,357
e	ODP -> WIAL 8m	-29,236	-157	56	-3,489	-3,590	-133	-4	-1,184	-1,321
f	WCC 11m -> WIAL 8m	-9,550	-157	0	0	-157	-133	-4	0	-137

Source: Property Economics, 27th June 2024

36 Row (a) shows the latest baseline capacity of the PDP. Row (b) shows the capacity with the WCC height restriction scenario applied, with row (c) being the difference between row (a) and row (b). Row (d) shows the capacity with the WIAL height restriction scenario applied, with row (e) being the difference between row (a) and row (d). Finally, row (f) shows the difference between the two height restriction scenarios (i.e. between the housing capacity in row (b) and row (d)).

37 Both height restriction scenarios have a minor impact (reduction) on theoretical (Plan enabled) housing capacity at district level. The reduction is only around 4-5% respectively. They also have a minor impact on commercially feasible capacity (a reduction of 5% each compared to the baseline feasible capacity). The most important effect is the reduction on realisable capacity as this is the capacity critical to sufficiency testing under

²⁰ Copied from the Greater Wellington HBA2023, Chapter 2 Wellington City HBA, page 100.

the NPS-UD. Both scenarios only reduce realisable capacity over the long-term by 3%. The difference between the two scenarios is a negligible 137 realisable dwellings. This is a very minor impact of the WIAL1 designation under either height restriction scenario over the long-term at a city level.

- 38 Based on the breakdown of results by zone and catchment in Appendix A, 90% of the potential reduction of realisable capacity under the WIAL height restriction scenario is on apartment dwelling units in the City Centre Zone (-1,184 apartments compared with the baseline).²¹ The other 10% of the potential impact occurs in the MDRZ (-137 dwellings – mainly where standalone dwellings were the most feasible and realisable – this occurs mainly in the Southern catchment).
- 39 The WCC height restriction scenario has the same potential reduction on realisable apartment capacity in the City Centre Zone (-1,184 apartments compared with the baseline), but no potential impacts on realisable capacity in any other zone.
- 40 The reason that the potential impacts on realisable housing capacity for either scenario are very minor is that there is typically more than one dwelling type and size that is commercially feasible to develop on potentially impacted parcels that may also meet the criteria of being realisable by the market.
- 41 In the MDRZ especially, a limit of 8m (two storeys) can still achieve a feasible and realisable dwelling(s) that may not necessarily differ from the yield of the most feasible dwelling identified in the baseline modelling. Put another way, while the zone enables development to 11m (3 storeys), this will not always be a feasible and realisable building height/typology in some locations. In most places in the MDRZ, a 2 storey alternative development is feasible so the impact of the proposed 8m height restriction (by WIAL1) is only small.

Implications for Housing Sufficiency in the Short, Medium and Long-Term

- 42 While the impact of the proposed WIAL1 height restrictions on realisable dwelling capacity in Wellington City is very minor under a worst case scenario of no shielding exceptions, I have tested the implications for housing sufficiency under Policy 2 of the NPS-UD for completeness.

²¹ This occurs mostly in the Central catchment, with a small share occurring in the Inner catchment.

43 **Table 4** shows a summary of sufficiency for the latest baseline realisable capacity for the Final Decisions Version of the PDP compared to what I understand to be the official demand projections for Wellington City (and including the competitiveness margin). It shows that the PDP provides at least sufficient capacity in the short and medium-term (which is the critical requirement under the NPS-UD). In the long-term, it shows a potential shortfall of capacity for standalone dwellings, but at least sufficient capacity when attached and standalone dwellings are combined. Long-term shortfalls simply require more capacity to be identified, but not zoned. This can occur in a Future Development Strategy for example.

Table 4 – Total Wellington City Housing Sufficiency Without and With WIAL1 – WIAL Height Restriction Scenario (8m + 30m)

Catchment and Dwelling Type	Demand (Incl Competitiveness Margin)			Realisable Capacity	Sufficiency		
	Short Term (2021-2024)	Medium Term (2021-2031)	Long Term (2021-2051)		Short Term (2021-2024)	Medium Term (2021-2031)	Long Term (2021-2051)
Total Wellington City - Baseline Capacity (No WIAL1 Designation Applied)							
Attached	1,749	6,162	15,665	26,505	24,756	20,343	10,840
Standalone	1,774	5,175	14,742	13,173	11,399	7,998	- 1,569
Total Dwellings	3,523	11,337	30,407	39,678	36,155	28,341	9,271
Total Wellington City - WIAL1 Designation Applied - WIAL Height Restriction Scenario							
Attached	1,749	6,162	15,665	25,317	23,568	19,155	9,652
Standalone	1,774	5,175	14,742	13,040	11,266	7,865	- 1,702
Total Dwellings	3,523	11,337	30,407	38,357	34,834	27,020	7,950

Source: Property Economics 27th June 2024. Sense Partners (Via HBA2023), Savvy Consulting.

Excludes Greenfield Capacity in Northern Catchment.

44 More detailed sufficiency results are contained in **Appendix C** of this statement. When examined by catchment, there is insufficient capacity in the Northern catchment for attached housing in the short, medium and long-term and insufficient capacity for standalone housing in the long-term.

45 I note that in previous Property Economics reports on housing sufficiency, they have explained that there is realisable capacity of over 4,000 dwellings in greenfield areas in the Northern catchment that are not included in their model, that will address the modelled shortfall.

46 Table 4 shows (bottom block) the sufficiency if the WIAL1 designation is applied as proposed by WIAL. The results are very similar to the baseline situation. The key finding is that the proposed height restrictions of 8m and 30m (as applicable to the OLS) will not impact on WCC's ability to provide

at least sufficient capacity in the short, medium or long-term (once greenfield capacity is taken into account in the Northern catchment).

WIAL1 IMPACTS ON COMMERCIAL FLOORSPACE CAPACITY AND SUFFICIENCY

47 This section of my evidence considers the impact of the WIAL1 height restriction scenarios on commercial floorspace. Property Economics have provided results in Excel format (similar to the residential modelling results). The results cover the City Centre Zone, Local Centre Zone, Metropolitan Centre Zone, Mixed Use Zone and Neighbourhood Centre Zone as provided in the final Decisions Version of the PDP. There has not been sufficient time (between receiving the results and finalising this evidence) to understand why General Industrial Zone capacity is not included in the results provided. I discuss this further below.

48 While the accompanying memo for the results has been provided by Property Economics (immediately prior to finalisation of this evidence), I still only have a cursory understanding of the Property Economics commercial land capacity model (as supplied). It has been communicated that it is not comparable with the business capacity results contained in the Greater Wellington HBA 2023, for example, as their approach has since changed.

49 Despite the limitations of my understanding at this time, I have relied on the results as provided. These are summarised by zone in **Appendix D** of this statement. **Table 5** contains the summary table for total Wellington City.

Table 5 – Summary Table of Impacts of WIAL1 Height Restriction Scenarios on Long-term Business Floorspace Capacity

Row Ref.	Business Floorspace Capacity Impacts	Comprehensive			Infill		
		Total	Less Required for Residential	Remaining Potential	Base	Less Required for Residential	Adjusted
a	ODP	9,749,124	565,007	9,184,117	1,818,480	565,007	1,253,473
b	ODP (WCC 11m)	8,928,694	565,007	8,363,687	1,737,906	565,007	1,172,899
c	ODP -> WCC 11m	-820,430	0	-820,430	-80,574	0	-80,574
d	ODP (WIAL 8m)	8,910,835	565,007	8,345,828	1,734,735	565,007	1,169,728
e	ODP -> WIAL 8m	-838,289	0	-838,289	-83,745	0	-83,745
f	WCC 11m -> WAL 8m	-17,859	0	-17,859	-3,171	0	-3,171

Source: Property Economics, 1st July 2024

- 50 As with the residential capacity results, Table 5 shows that relative to the baseline commercial floorspace capacity, the application of the WIAL1 designation under either height restriction scenario has (under a worst case outcome where there are no exceptions due to demonstrated shielding) only a minor impact (reduction) on commercial floorspace capacity.
- 51 Under the Comprehensive capacity approach, the WIAL height restriction scenario reduces total capacity by 9.1% (compared to 8.9% under the WCC height restriction scenario). Under the Infill capacity approach, the WIAL height restriction scenario reduces total capacity by 6.7% (compared to 6.4% under the WCC height restriction scenario). There is a very minor difference between the two scenarios equating to an estimated 17,859sqm for Comprehensive capacity and 3,171sqm for Infill capacity.
- 52 Given the absence of General Industrial Zone results, I have manually checked the clearances on parcels in that zone (between ground level and the lowest OLS) and in most cases, there is no indication that Plan enabled building heights in the General Industrial Zone²² would be constrained. The only General Industrial Zones that are impacted by the height restrictions (unless shielded) are the South Landfill area – where the terrain already penetrates the proposed OLS and the Industrial Areas in close proximity to the Airport. Having looked at all potentially impacted Industrial Zone locations, there is very little evidence of vacant land or underutilized land. As such, I consider that any potential impacts of the proposed WIAL1 building height restrictions (8m + 30m) would be very minor (and still subject to assessment of shielding if needed).
- 53 Unlike for the residential capacity results provided by Property Economics, there is too much uncertainty to double check implications for sufficiency of commercial floorspace over the long-term without and with the proposed WIAL1. However, I consider that because the net changes to capacity are very minor, then any changes to sufficiency results would equally be very minor.

CONCLUSION ON ECONOMIC COSTS AND BENEFITS

- 54 Based on the worst case scenario testing of the impacts of the proposed WIAL building height restriction scenario (8m + 30m) on residential and commercial capacity in Wellington City, the Property Economics model shows that any reductions in the potential opportunity for development are

²² These range from 18m to 24m depending on which control area applies to the zone.

minor and are unlikely to affect the ability of the Council to meet the needs of the NPS-UD Policy 2 over the long-term.

- 55 While some property owners may not get approval to exceed the height restriction, these properties still have development capacity up to that height limit and so not all development opportunity is removed. While unable to be quantified, this is likely to apply to only a very small share of properties across Wellington City over the life of the PDP. This is also the view reached by the section 42A report (paragraph 318).
- 56 I understand the process through which property owners need to follow if they want to exceed the proposed height restrictions (where that penetrates the OLS) – that is, notifying WIAL for an evaluation or the potential for an aeronautical study to be required – will add transaction/compliance costs for those property owners. However, in the context of the overall cost of their proposed development, this additional cost is unlikely to be material. Further, the new GIS model makes the process more efficient for all involved, and now WIAL generally processes requests within a few days, as set out in Ms Lester’s evidence.
- 57 The minor potential opportunity costs on development height for what is expected (in practice) to be a relatively small share of properties across the City that cannot demonstrate shielding, plus the very minor additional transaction/compliance costs applicable to impacted properties seeking development that would exceed the WIAL1 conditions, must be compared with the significant economic benefits of Wellington International Airport.
- 58 I understand that these benefits, which include the significant contribution that the Airport makes to the economic and social wellbeing of City and Region residents and businesses, and the potentially significant economic benefits that arise from minimizing risks to aircraft/airline safety, have already been presented in evidence in Hearing Stream 1²³ or are covered in Mr Thurston’s evidence. I rely on that evidence and do not repeat it here.
- 59 As the safety benefits are increased by having the WIAL1 height restrictions set at 8m + 30m as proposed by WIAL, and because the net additional costs of those height restrictions are very minor relative to the alternative height restrictions proposed by WCC (11m + 30m), I consider that the WIAL proposal has the greatest net economic benefits and is therefore the most efficient option.

²³ Hearing Stream 1, Statement of Evidence by Ms J Raeburn, dated 16 February 2023.

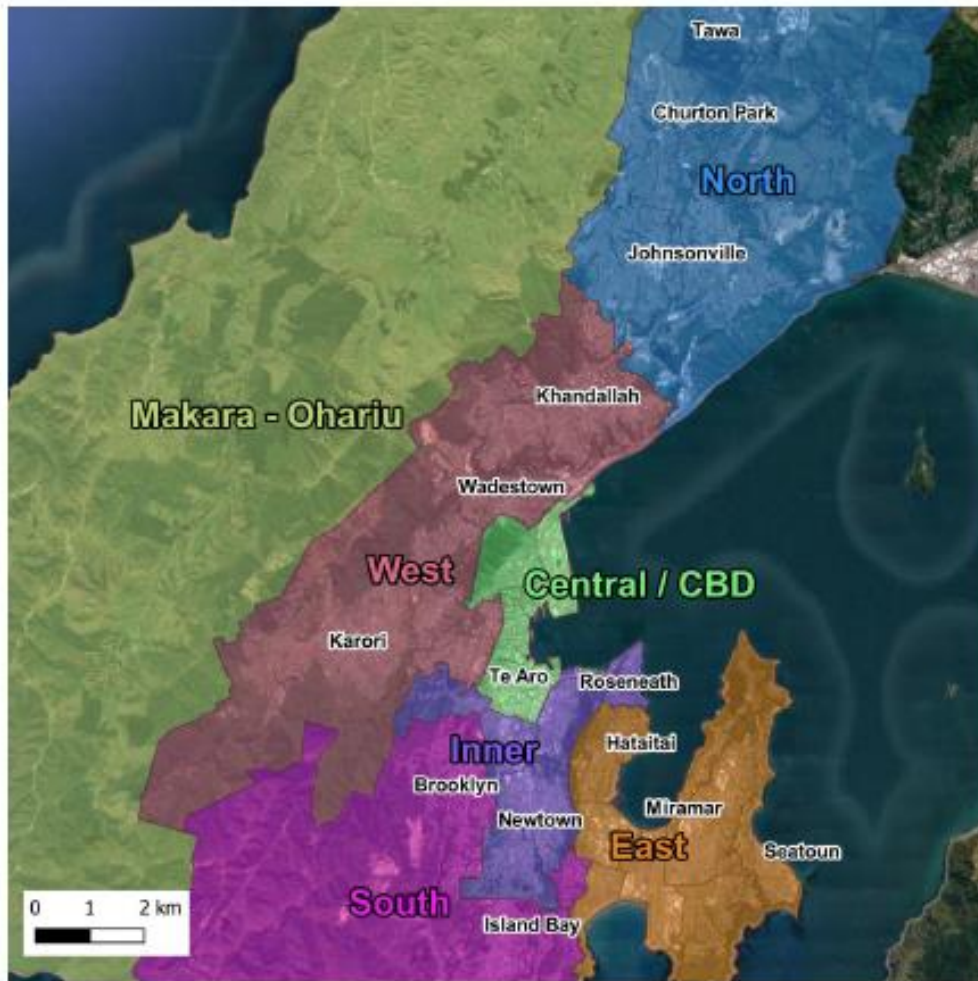
Natalie Hampson

1 July 2024

APPENDIX A – RESIDENTIAL DWELLING CAPACITY RESULTS BY ZONE, CATCHMENT AND SCENARIO

Property Economics Residential Catchment Boundaries

FIGURE 2: MAP OF WELLINGTON CITY RESIDENTIAL CATCHMENTS



Source: Property Economics, LINZ

Dwelling Capacity – Final Decisions Version of PDP – Without OLS Designation

Final PDP Decisions Version Zoning / Property Economic Residential Catchments	Plan Enabled Capacity (Theoretical)	Feasible Standalone	Feasible Terrace	Feasible Apartment	Total Feasible	Realisable Standalone	Realisable Terrace	Realisable Apartment	Total Realisable
Dwelling Yield by Zone *									
High Density Residential Zone	217,361	1,154	4,985	2,634	8,773	1,527	3,701	-	5,228
Medium Density Residential Zone	205,220	9,898	25,961	69	35,928	11,569	18,243	-	29,812
Large Lot Residential Zone	615	44	158	-	202	77	38	-	115
City Centre Zone	103,750	-	-	28,769	28,769	-	-	4,167	4,167
Metropolitan Centre Zone	4,436	-	-	187	187	-	-	42	42
Local Centre Zone	4,172	-	-	389	389	-	-	15	15
Neighbourhood Centre Zone	941	-	-	40	40	-	-	22	22
Mixed Use Zone	6,285	-	-	508	508	-	-	276	276
Total Wellington City	542,779	11,096	31,104	32,598	74,798	13,173	21,982	4,523	39,678
Dwelling Yield by Catchment **									
North	167,635	3,548	547	1,364	5,459	3,613	64	289	3,966
Central	92,576	7	329	24,329	24,665	7	327	3,218	3,552
Inner	69,616	1,062	2,583	5,411	9,056	1,260	1,941	949	4,150
Southern	36,938	2,359	2,278	33	4,670	2,651	831	-	3,482
Western	128,874	2,895	19,600	1,144	23,639	4,143	14,632	37	18,812
Eastern	47,141	1,225	5,767	317	7,309	1,499	4,187	30	5,716
Makara-Ohariu	-	-	-	-	-	-	-	-	-
Total Wellington City	542,779	11,096	31,104	32,598	74,798	13,173	21,982	4,523	39,678

Source: Property Economics, 27th June 2024.

* Only base zone shown, but sub-zones, precincts and qualifying matters that change development parameters have been applied.

** See Appendix A map for catchment boundaries.

Dwelling Capacity – Final Decisions Version of PDP – With OLS Designation (WIAL Height Restriction Scenario (8m + 30m))

Final PDP Decisions Version Zoning / Property Economic Residential Catchments	Plan Enabled Capacity (Theoretical)	Feasible Standalone	Feasible Terrace	Feasible Apartment	Total Feasible	Realisable Standalone	Realisable Terrace	Realisable Apartment	Total Realisable
Dwelling Yield by Zone *									
High Density Residential Zone	204,271	1,154	5,036	2,325	8,515	1,527	3,701	-	5,228
Medium Density Residential Zone	197,448	9,741	25,966	69	35,776	11,436	18,239	-	29,675
Large Lot Residential Zone	615	44	158	-	202	77	38	-	115
City Centre Zone	95,547	-	-	25,598	25,598	-	-	2,983	2,983
Metropolitan Centre Zone	4,436	-	-	187	187	-	-	42	42
Local Centre Zone	4,046	-	-	385	385	-	-	15	15
Neighbourhood Centre Zone	896	-	-	36	36	-	-	22	22
Mixed Use Zone	6,285	-	-	508	508	-	-	276	276
Total Wellington City	513,543	10,939	31,160	29,109	71,208	13,040	21,978	3,339	38,357
Dwelling Yield by Catchment **									
North	165,888	3,543	547	1,364	5,454	3,613	64	289	3,966
Central	84,177	7	329	21,278	21,614	7	327	2,137	2,471
Inner	56,854	1,054	2,629	5,021	8,704	1,241	1,957	846	4,044
Southern	34,015	2,224	2,294	29	4,547	2,528	842	-	3,370
Western	125,815	2,894	19,601	1,101	23,596	4,142	14,637	37	18,816
Eastern	46,795	1,217	5,760	317	7,294	1,492	4,177	30	5,699
Makara-Ohariu	-	-	-	-	-	-	-	-	-
Total Wellington City	513,543	10,939	31,160	29,109	71,208	13,040	21,978	3,339	38,357

Source: Property Economics, 27th June 2024.

* Only base zone shown, but sub-zones, precincts and qualifying matters that change development parameters have been applied.

** See Appendix A map for catchment boundaries.

*Dwelling Capacity – Final Decisions Version of PDP – With OLS Designation
(WCC Height Restriction Scenario (11m + 30m))*

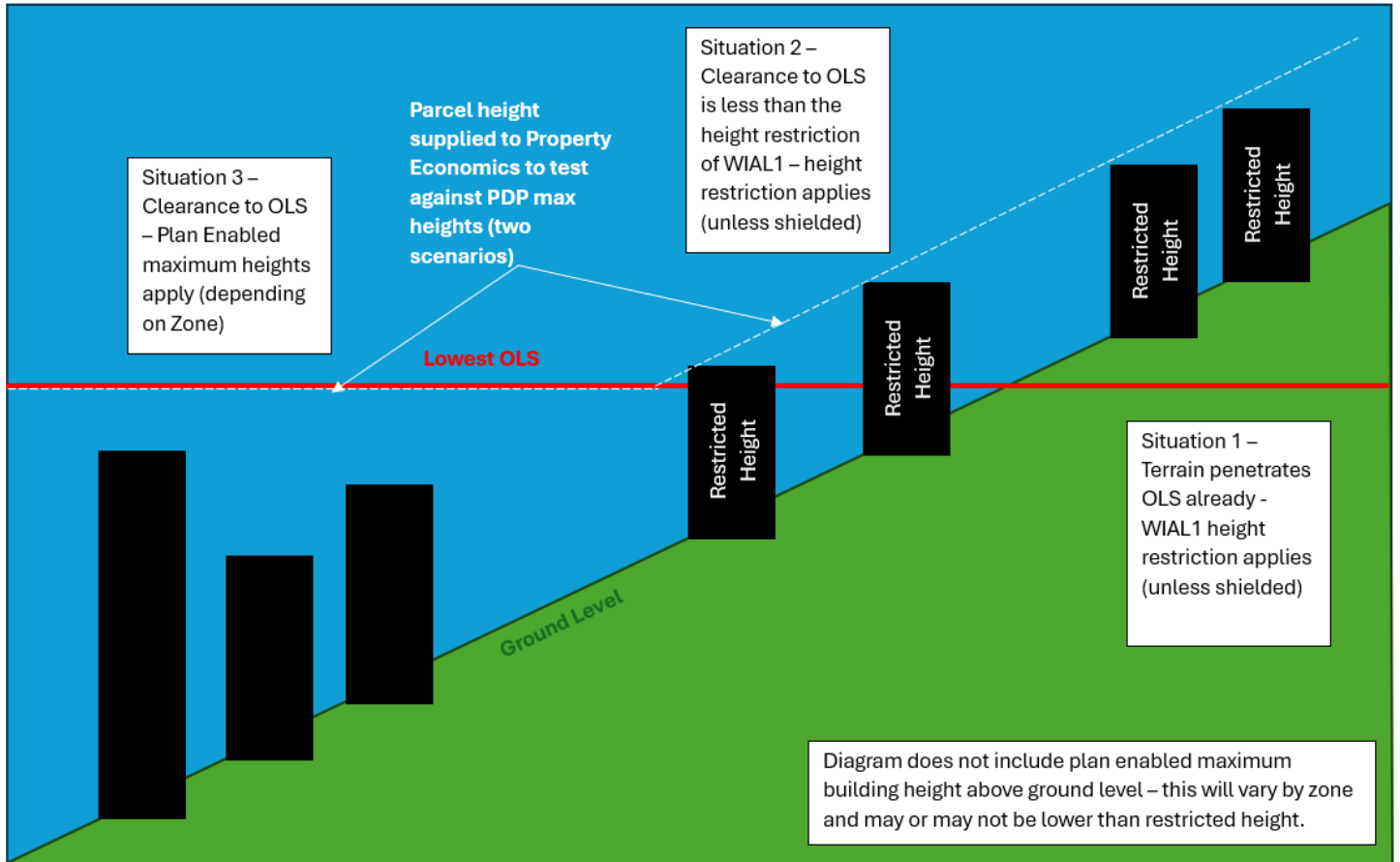
Final PDP Decisions Version Zoning / Property Economic Residential Catchments	Plan Enabled Capacity (Theoretical)	Feasible Standalone	Feasible Terrace	Feasible Apartment	Total Feasible	Realisable Standalone	Realisable Terrace	Realisable Apartment	Total Realisable
Dwelling Yield by Zone *									
High Density Residential Zone	208,780	1,154	5,041	2,325	8,520	1,527	3,701	-	5,228
Medium Density Residential Zone	202,430	9,898	25,961	69	35,928	11,569	18,243	-	29,812
Large Lot Residential Zone	615	44	158	-	202	77	38	-	115
City Centre Zone	95,547	-	-	25,598	25,598	-	-	2,983	2,983
Metropolitan Centre Zone	4,436	-	-	187	187	-	-	42	42
Local Centre Zone	4,081	-	-	385	385	-	-	15	15
Neighbourhood Centre Zone	920	-	-	36	36	-	-	22	22
Mixed Use Zone	6,285	-	-	508	508	-	-	276	276
Total Wellington City	523,093	11,096	31,160	29,109	71,365	13,173	21,982	3,339	38,494
Dwelling Yield by Catchment **									
North	166,581	3,548	547	1,364	5,459	3,613	64	289	3,966
Central	84,558	7	329	21,278	21,614	7	327	2,137	2,471
Inner	61,661	1,062	2,635	5,021	8,718	1,260	1,941	846	4,047
Southern	36,058	2,359	2,278	29	4,666	2,651	831	-	3,482
Western	127,256	2,895	19,604	1,101	23,600	4,143	14,632	37	18,812
Eastern	46,980	1,225	5,767	317	7,309	1,499	4,187	30	5,716
Makara-Ohariu	-	-	-	-	-	-	-	-	-
Total Wellington City	523,093	11,096	31,160	29,109	71,365	13,173	21,982	3,339	38,494

Source: Property Economics, 27th June 2024.

* Only base zone shown, but sub-zones, precincts and qualifying matters that change development parameters have been applied.

** See Appendix A map for catchment boundaries.

APPENDIX B – ILLUSTRATION OF HOW PARCEL LEVEL INPUT DATA FOR PROPERTY ECONOMICS WAS DEVELOPED (APPLICATION OF BUILDING HEIGHT RESTRICTIONS)



APPENDIX C – SUFFICIENCY TESTING BY CATCHMENT AND DWELLING TYPE

Dwelling Demand, Capacity and Sufficiency – Baseline (Final Decisions Version of PDP – Without OLS Designation)

Catchment and Dwelling Type	Demand (Incl Competitiveness Margin)			Realisable Capacity	Sufficiency		
	Short Term (2021-2024)	Medium Term (2021-2031)	Long Term (2021-2051)		Short Term (2021-2024)	Medium Term (2021-2031)	Long Term (2021-2051)
North							
Attached	474	2,332	4,387	353	- 121	- 1,979	- 4,034
Standalone	887	1,993	5,195	3,613	2,726	1,620	- 1,582
Total Dwellings	1,361	4,325	9,582	3,966	2,605	- 359	- 5,616
Central							
Attached	671	2,274	6,276	3,545	2,874	1,271	- 2,731
Standalone	18	25	94	7	- 11	- 18	- 87
Total Dwellings	689	2,299	6,370	3,552	2,863	1,253	- 2,818
Inner							
Attached	291	802	2,244	2,890	2,599	2,088	646
Standalone	85	284	716	1,260	1,175	976	544
Total Dwellings	376	1,086	2,960	4,150	3,774	3,064	1,190
Southern							
Attached	111	214	414	831	720	617	417
Standalone	192	716	2,250	2,651	2,459	1,935	401
Total Dwellings	303	930	2,664	3,482	3,179	2,552	818
Western							
Attached	106	301	914	14,669	14,563	14,368	13,755
Standalone	315	1,396	4,114	4,143	3,828	2,747	29
Total Dwellings	421	1,697	5,028	18,812	18,391	17,115	13,784
Eastern							
Attached	96	239	1,429	4,217	4,121	3,978	2,788
Standalone	206	676	2,243	1,499	1,293	823	- 744
Total Dwellings	302	915	3,672	5,716	5,414	4,801	2,044
Makara-Ohariu							
Attached	-	-	1	Not Assessed	Not Assessed		
Standalone	71	85	130	Not Assessed	Not Assessed		
Total Dwellings	71	85	131	Not Assessed	Not Assessed		
Total Wellington City							
Attached	1,749	6,162	15,665	26,505	24,756	20,343	10,840
Standalone	1,774	5,175	14,742	13,173	11,399	7,998	- 1,569
Total Dwellings	3,523	11,337	30,407	39,678	36,155	28,341	9,271

Source: Property Economics 27th June 2024. Sense Partners (Via HBA2023), Savvy Consulting.

Excludes Greenfield Capacity in Northern Catchment.

Baseline Capacity (No WIAL1 Designation)

*Dwelling Demand, Capacity and Sufficiency – Final Decisions Version of PDP –
With OLS Designation – WIAL Height Restriction Scenario (8m + 30m)*

Catchment and Dwelling Type	Demand (Incl Competitiveness Margin)			Realisable Capacity	Sufficiency		
	Short Term (2021-2024)	Medium Term (2021-2031)	Long Term (2021-2051)		Short Term (2021-2024)	Medium Term (2021-2031)	Long Term (2021-2051)
North							
Attached	474	2,332	4,387	353	- 121	- 1,979	- 4,034
Standalone	887	1,993	5,195	3,613	2,726	1,620	- 1,582
Total Dwellings	1,361	4,325	9,582	3,966	2,605	- 359	- 5,616
Central							
Attached	671	2,274	6,276	2,464	1,793	190	- 3,812
Standalone	18	25	94	7	- 11	- 18	- 87
Total Dwellings	689	2,299	6,370	2,471	1,782	172	- 3,899
Inner							
Attached	291	802	2,244	2,803	2,512	2,001	559
Standalone	85	284	716	1,241	1,156	957	525
Total Dwellings	376	1,086	2,960	4,044	3,668	2,958	1,084
Southern							
Attached	111	214	414	842	731	628	428
Standalone	192	716	2,250	2,528	2,336	1,812	278
Total Dwellings	303	930	2,664	3,370	3,067	2,440	706
Western							
Attached	106	301	914	14,674	14,568	14,373	13,760
Standalone	315	1,396	4,114	4,142	3,827	2,746	28
Total Dwellings	421	1,697	5,028	18,816	18,395	17,119	13,788
Eastern							
Attached	96	239	1,429	4,207	4,111	3,968	2,778
Standalone	206	676	2,243	1,492	1,286	816	- 751
Total Dwellings	302	915	3,672	5,699	5,397	4,784	2,027
Makara-Ohariu							
Attached	-	-	1	Not Assessed		Not Assessed	
Standalone	71	85	130	Not Assessed		Not Assessed	
Total Dwellings	71	85	131	Not Assessed		Not Assessed	
Total Wellington City							
Attached	1,749	6,162	15,665	25,317	23,568	19,155	9,652
Standalone	1,774	5,175	14,742	13,040	11,266	7,865	- 1,702
Total Dwellings	3,523	11,337	30,407	38,357	34,834	27,020	7,950

Source: Property Economics 27th June 2024. Sense Partners (Via HBA2023), Savvy Consulting.

Excludes Greenfield Capacity in Northern Catchment.

WIAL Height Restriction Scenario (8m + 30m)

APPENDIX D – COMMERCIAL FLOORSPACE CAPACITY RESULTS BY SCENARIO

ODP	Commercial Floorspace Potential (sqm)	Comprehensive			Infill		
		Total	Less required for Residential	Remaining Potential	Base	Less required for Residential	Adjusted
	City Centre Zone	6,644,213	529,471	6,114,742	1,069,365	529,471	539,894
	Local centre Zone	802,964	2,471	800,493	132,290	2,471	129,819
	Metropolitan Centre Zone	1,275,318	30,865	1,244,453	297,683	30,865	266,818
	Mixed Use Zone	830,121	2,200	827,921	277,952	2,200	275,752
	Neighbourhood Centre Zone	196,508	0	196,508	41,190	0	41,190
	Total	9,749,124	565,007	9,184,117	1,818,480	565,007	1,253,473

WAL 8m	Commercial Floorspace Potential (sqm)	Comprehensive			Infill		
		Total	Less required for Residential	Remaining Potential	Base	Less required for Residential	Adjusted
	City Centre Zone	5,847,140	529,471	5,317,669	992,345	529,471	462,874
	Local centre Zone	774,969	2,471	772,498	128,259	2,471	125,788
	Metropolitan Centre Zone	1,275,318	30,865	1,244,453	297,683	30,865	266,818
	Mixed Use Zone	826,210	2,200	824,010	276,432	2,200	274,232
	Neighbourhood Centre Zone	187,197	0	187,197	40,016	0	40,016
	Total	8,910,835	565,007	8,345,828	1,734,735	565,007	1,169,728

WCC 11m	Commercial Floorspace Potential (sqm)	Comprehensive			Infill		
		Total	Less required for Residential	Remaining Potential	Base	Less required for Residential	Adjusted
	City Centre Zone	5,847,140	529,471	5,317,669	992,345	529,471	462,874
	Local centre Zone	783,606	2,471	781,135	129,440	2,471	126,969
	Metropolitan Centre Zone	1,275,318	30,865	1,244,453	297,683	30,865	266,818
	Mixed Use Zone	830,121	2,200	827,921	277,952	2,200	275,752
	Neighbourhood Centre Zone	192,508	0	192,508	40,487	0	40,487
	Total	8,928,694	565,007	8,363,687	1,737,906	565,007	1,172,899

Source: Property Economics 1st July 2024

APPENDIX E – COPY OF BECA METHODOLOGY



OLS Parcel Analysis

Methodology Report

Prepared for Wellington International Airport

Prepared by Beca Limited

21 December 2022



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everyday
better.**

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Contents

Revision History	ii
Document Acceptance	ii
1 Project Background.....	1
1.1 Purpose.....	1
1.2 Input Datasets.....	1
1.3 Output Datasets Generated.....	2
Parcel OLS and Ground Height Difference	2
OLS and Ground Height Difference Raster	3
2 Methodology & Assumptions	3
2.1 Methodology	3
2.1.1 Create combined ground DEM	3
2.1.2 Generate the OLS DEM.....	3
2.1.3 Calculate heights at property level.....	3
2.1.4 Generate the OLS and Ground Height Difference Raster	4
2.2 Assumptions	4

Revision History

Revision N°	Prepared By	Description	Date
1	Jaime Smith, Henry Carthew	Initial preparation of report	07/12/2022

Document Acceptance

Action	Name	Signed	Date
Prepared by	Henry Carthew		07/12/2022
Reviewed by	Rick Pemberton		19/12/2022
Approved by	Rick Pemberton		19/12/2022
on behalf of	Beca Limited		

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1 Project Background

1.1 Purpose

Wellington International Airport Limited (WIAL) and Wellington City Council (WCC) are looking to provide the Wellington public with a GIS based tool to facilitate more accessible information surrounding the airport's designation, restrictions and consultation requirements around the airports Obstacle Limitation Surfaces. To support this Beca was engaged to undertake a parcel level analysis for the WCC area to identify the height differential between the ground elevation on a property and the Runway 16/34 280m Runway Strip Obstacle Limitation Surfaces (the 'OLS'), and the specific surface that each parcel falls within. The type of OLS applied to each property will assist in identifying any consultation requirements the property owner may have with WIAL.

In addition, a raster dataset has been generated which identifies the height differential between the ground elevation and the OLS for visualising potential variation across a parcel. This raster dataset can be used in conjunction with the parcel dataset to allow owners to understand which parts of their property may need consideration.

The intent is that these two datasets (parcel information and raster dataset) are loaded into the [Wellington City Proposed District Plan map](#) for the public to interact with. Additional supporting information will be required to direct users to appropriate resources to understand any consultation requirements or restrictions for their property.

This report summarises the input data sources and the process followed to generate these datasets including any assumptions that have been made.

1.2 Input Datasets

The table below summarises the input datasets which were used as part of this project.

Dataset	Source	Comments
Wellington City and WIAL LiDAR 1m DEM (2019-2020)	Land Information New Zealand	Used to apply the highest ground elevation to parcels inside the extent. Note that this covers the urban area.
Wellington Region LiDAR 1m DEM (2013-2014)	Land Information New Zealand	Used to apply the highest ground elevation to parcels outside of the area covered by the 2019-2020 DEM.
Property Parcels	Wellington City Council	Property valuation parcels showing boundary of each parcel within the Wellington City area.
Runway 16/34-280m Strip OLS Triangulated Irregular Network (TIN)	Beca	A TIN representing the OLS height for the lowest surface of runways 16 and 34.
Runway 16/34 OLS Plan	Beca	Polygon dataset identifying the boundaries of the different OLS surfaces.

1.3 Output Datasets Generated

Data has been supplied as an ESRI geodatabase. It contains the feature class with fields and description as outlined in the table below. Additional metadata is available on the feature classes.

Parcel OLS and Ground Height Difference



Field Name	Alias	Description
PV_wufi	PV Wufi	Unique ID for each property parcel as supplied on WCC input dataset
Val	Valuation	Valuation number as supplied on WCC input dataset
Roll	Roll	Roll as supplied on WCC input dataset
Version	Version	Version as supplied on WCC input dataset
ID	ID	Unique ID created for this project
Highest_Ground_Elevation	Highest Ground Elevation	The highest ground level elevation inside each parcel
Lowest_OLS_Elevation	Lowest OLS Elevation	The lowest OLS height inside each parcel
Ground_Elevation_OLS_Difference	Ground Elevation OLS Difference	The height difference between the OLS and the ground surface (Highest_Ground_Elevation minus Lowest_OLS_Elevation). A positive value in this field represents a clearance between the highest ground point on the property and the lowest OLS point on the property whereas a negative value represents the height by which the highest ground point on the property penetrates the OLS.
OLS_Surface_Type	OLS Surface Type	The surface type the parcel intersects with. In cases where the parcel crosses multiple surfaces the surface with the highest level of restriction is applied.

OLS and Ground Height Difference Raster



The raster dataset contains data representing the height differential between the ground and the OLS. It can be used to visually show clearance or penetration heights by colouring it into bands or by clicking a specific point on the map to return the height differential. A positive value in this raster represents a clearance between the ground elevation and the lowest OLS whereas a negative value represents the height by which the ground penetrates the OLS.

2 Methodology & Assumptions

2.1 Methodology

An overview of the methodology used and assumptions that were made throughout the process is included below. Analysis was completed in ArcGIS Pro and FME. The steps involved were

1. Create combined ground digital elevation model (DEM)
2. Generate the OLS DEM
3. Calculate heights at property level
4. Generate the OLS and Ground Height Difference Raster

2.1.1 Create combined ground DEM

There are two DEMs available in Wellington City. The *Wellington City LiDAR 1m DEM (2019-2020)* is more recent, however does not cover the full region, only the urban areas. The *Wellington Region LiDAR 1m DEM (2013-2014)* provides full coverage. In order to use the latest information where it is available in the analysis, these two DEM's were stitched together to create a combined raster elevation dataset. This raster dataset displays the most recent elevation data for the Wellington region and was used in steps 2.1.3 and 2.1.4.

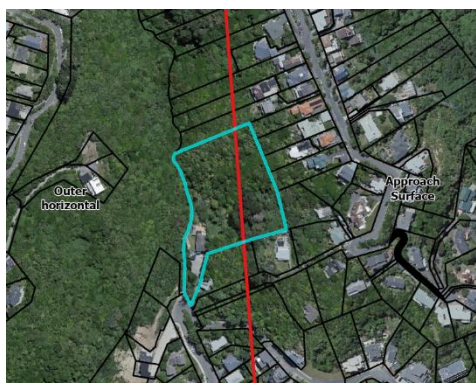
2.1.2 Generate the OLS DEM

The OLS DEM was generated from a Triangulated Irregular Network (TIN) polygon dataset. It includes the WIAL OLS based on NZ Civil Aviation AC139-6 requirements for a combined 16/34 runway with a 280 metre wide Runway Strip. Surfaces included are the Runway Strip, Takeoff Surface, Approach Surface, Transitional Surface, Inner Horizontal, Conical Surface and Outer Horizontal surface. The data was clipped to the boundary of the OLS.

2.1.3 Calculate heights at property level

Using the two DEM's generated in steps 2.1.1 and 2.1.2, heights were applied to each parcel where these intersected. Zonal statistics were generated to obtain the maximum ground level and the minimum OLS level on each parcel. The OLS Surface Type attribute was applied to each parcel. In cases where a parcel

intersects more than one surface the surface with the highest level of restriction is applied, using the following order:



1 Example of parcel intersecting two surfaces. Basemap sourced from the LINZ Data Service

- a. Runway Strip
- b. Takeoff Surface
- c. Approach Surface
- d. Transitional Surface
- e. Inner Horizontal
- f. Conical Surface
- g. Outer Horizontal

In the example to the left, the highlighted parcel will be given a value of 'Approach Surface' although part of the parcel falls into the Outer Horizontal Surface due to the approach surface having a greater level of restriction.

2.1.4 Generate the OLS and Ground Height Difference Raster

This OLS and Ground Height Difference raster was generated to help visualise potential variation in clearances or penetration across a parcel in the web viewer. The combined ground DEM (from step 2.1.1) was subtracted from the OLS DEM (from step 2.1.2) to identify the height difference between the ground and OLS and allows owners to understand the extent of ground clearance below the OLS or ground penetration above the OLS.

2.2 Assumptions

The following assumptions have been made during this project.

- Only the Wellington Territorial Authority Area has been included in the analysis.
- The ground height identified on the parcel dataset is from the highest point on the property and the OLS Surface height is at the lowest on the property. This is to highlight the 'worst case' scenario however there may be other parts of the property which have significantly different values in terms of clearance or penetration.
- The parcel dataset contains multi-part parcels, these were not disaggregated for the analysis. As such there are some parcels where the height values and OLSSurface_Type attribute may vary significantly depending on which parcel is being reviewed.

Please note that the data supplied should not be used for compliance or legal reporting purposes or as the sole source of information to inform decisions. This file contains data derived in part or wholly from sources other than Beca, and therefore, no representations or warranties are made by Beca as to the accuracy or completeness of this information.

**APPENDIX F – PROPERTY ECONOMICS MODELLING
RESULTS MEMO 1 JULY 2024**

PROPERTY **E**CONOMICS



WELLINGTON AIRPORT

OLS DESIGNATION CAPACITY

IMPACT MEMORANDUM

Client: Wellington Airport Limited

Project No: 52358

Date: July 2024



1 July 2024

MEMORANDUM

To: Natalie Hampson
Director
Savvy Consulting

RE: WELLINGTON CITY FEASIBLE AND REALISABLE CAPACITY RESULTS SCENARIO 2

Hi Natalie

Property Economics has previously undertaken Residential and Business Floorspace modelling for Wellington City Council. This capacity assessment was relied upon by the council for the HBA last year (2023). Property Economics also assessed the Independent Hearing Panel decisions on the Proposed District Plan and provided guidance on the impact of various planning decisions on the Feasible and Realisable residential capacity in Wellington City.

This latest capacity assessment differs from the capacity assessment undertaken for the HBA for reasons that are outlined in the Property Economics report to the Council titled Wellington City Feasible Residential Capacity Assessment IHP Decisions Version (February 2024). The modelling methodology remains the same as outlined in this report and the details of the model have been repeated here in Appendix 1.

Savvy Consulting has subsequently engaged Property Economics on behalf of Wellington Airport Limited to assess the effect of the Obstacle Limitation Surface (OLS) Designation on Wellington's Capacity in relation to their upcoming designation hearing.

This memorandum provides a high-level outline of the residential and business capacity of the Wellington 2024 Operative District Plan and the impact of the proposed OLS Designation on this capacity. Comparisons are made between both Wellington Council's preferred 11m height limit option and Wellington Airport Limited's proposed 8m height limit within the affected areas.

GLOSSARY

- **Theoretical Yield / Plan Enabled Capacity** – The total number of properties that could be developed according to the planning provisions within the permitted building envelope, irrelevant of market conditions.
- **Comprehensive Development** – A development option that assumes the removal of all existing buildings for a comprehensive redevelopment of the entire site with fewer restrictions.
- **Infill Development** - A development option that assumes the existing building is retained, and new residential house(s) are developed on the balance of the site (i.e. the backyard).
- **Standalone House** – Single detached dwelling.
- **Terraced** –Attached Dwellings up to three storeys.
- **Apartments** – Vertically attached dwellings.
- **Total Yield**- The total number of dwellings developed.
- **Net Yield** – The total number of dwellings constructed net of any existing dwellings removed. For Infill development, the total yield is equal to the net yield, while for Comprehensive development the net yield is equal to the total yield less the existing dwellings.
- **PDP** – Proposed District Plan
- **IHP**– Independent Hearing Panel. This acronym is used to refer to the version of the plan that incorporates the changes recommended by the Independent Hearing Panel.
- **ODP**- Operative District Plan
- **HRZ** – High-Density Residential Zone
- **MRZ** – Medium Density Residential Zone
- **OLS** – Obstacle Limitation Surface

OPERATIVE DISTRICT PLAN MODELLING OUTPUTS

The Council voted on several changes to the district plan relative to the decisions made by the IHP. A summary of the changes can be found on the Council's website [here](#). Some of the key changes made by the Council decisions include:

- Reduction in Character Areas
- Upzoning residential area around Kilbirnie to High Density Residential Zone
- Inclusion of the Johnsonville Line as a Rapid Transport Network and consequently the upzoning of the surrounding residential area in the walking catchment to High Density Residential Zone.
- Other changes to the extent of High Density Residential Zone including extension of area surrounding the City Centre and the Kapiti Train Line.
- Removal of setback requirements in the residential zones for front and side boundaries.

Residential Capacity

Property Economics has assessed the Plan Enabled / Theoretical capacity under Wellington's Operative District Plan. The details of the modelling methodology is contained in Appendix 1. Theoretical Capacity represents the total number of properties that could be developed according to the planning provisions within the permitted building envelope, irrelevant of market conditions. Property Economics' modelling found that for the most part, six-storey apartments are unfeasible and or unlikely to be realised under the current market conditions. The current market conditions are less favourable for development compared to the market conditions assessed for the HBA due to construction cost inflation and lower house prices.

Table 1 below outlines a summary of the Feasible and Realisable Capacity under the Operative District Plan. The results in Table 1 show that there are just under 74,800 feasible dwellings in Wellington. As all development options have been considered in Table 4, this represents the total feasible capacity in the market. This level of feasible capacity represents a 14% feasibility rate on the theoretical capacity.

On top of the feasible capacity modelling, practical considerations must be taken into account as to what is likely to be developed in the real world. The realisation rates essentially provide for 'development chance' given the propensity for development variances.

TABLE 1: OPERATIVE DISTRICT PLAN THEORETICAL, FEASIBLE AND REALISABLE CAPACITY RESULTS

Feasible (Max Profit)	Theoretical	Apartment	Standalone	Terraced	Total	% of Theoretical
Residential Zones	423,196	2,703	11,096	31,104	44,903	11%
Commercial Zones	119,583	29,895	0	0	29,895	25%
Total	542,779	32,598	11,096	31,104	74,798	14%

Realisable	Theoretical	Apartment	Standalone	Terraced	Total	% of Theoretical
Residential Zones	423,196	0	13,173	21,982	35,155	8%
Commercial Zones	119,583	4,523	0	0	4,523	4%
Total	542,779	4,523	13,173	21,982	39,678	7%

Source: Property Economics

While all three typologies may be feasible, the feasible capacity shows only the development scenario with the highest profit margin. However, practically while the model assesses the standard 20% profit margin, there is greater risk in some typologies, and thus a matrix of 'risk factors' have been applied across each combination of typology and development type.

Risk has been accounted for developments undertaken by developers by increasing the required profit level for a development to be classified as 'realisable', on top of being feasible.

In addition, Restricted Discretionary Activities are included in the capacity assessment such as development within the Low Flood Hazard area. The Realisable Capacity accounts for the additional risk this imposes on development.

Table 1 also shows that there are just under 39,700 dwellings that are reasonably expected to be realised after adjusting for the relative risk and demand profiles.

The addition of High-Density Residential Zones in the Operative District Plan relative to the IHP and PDP has resulted in a considerable increase to the Theoretical Capacity. However, only a small proportion of this capacity is Feasible and a smaller proportion of the capacity is considered realisable.

Commercial Floorspace

In addition to the residential assessment, the Theoretical Model can also be used to assess the commercial floorspace potential. Table 2 shows the commercial floorspace potential in Wellington City by zone. The floorspace required for residential demand has been estimated based on the location and demographic household demand projections. The remaining capacity is considered to be theoretical / plan enabled capacity available for commercial land uses. No feasibility assessment is undertaken as this is not required by the NPS-UD, nor is it practical to assess against a variety of potential land uses.

Note that this calculation of reducing total theoretical floorspace potential by the estimated residential floorspace required differs from the assessment in the HBA which multiplied the total supply by the assumed proportion of commercial vs residential activity in each centre. This approach is different in that it assumes any unfeasible residential capacity could still be feasible for non-residential purposes.

Table 2 also shows two mutually exclusive development scenarios for both Comprehensive and Infill development which represent the floorspace potential if only that one type of development occurs. In reality, there will likely be a combination of infill development and comprehensive.

TABLE 2: COMMERCIAL FLOORSPACE POTENTIAL IN WELLINGTON CITY BY ZONE - IHP

Commercial Floorspace Potential (sqm)	Comprehensive			Infill		
	Total	Less required for Residential	Remaining Potential	Base	Less required for Residential	Adjusted
City Centre Zone	6,644,213	529,471	6,114,742	1,069,365	529,471	539,894
Local centre Zone	802,964	2,471	800,493	132,290	2,471	129,819
Metropolitan Centre Zone	1,275,318	30,865	1,244,453	297,683	30,865	266,818
Mixed Use Zone	830,121	2,200	827,921	277,952	2,200	275,752
Neighbourhood Centre Zone	196,508	0	196,508	41,190	0	41,190
Total	9,749,124	565,007	9,184,117	1,818,480	565,007	1,253,473

Source: Property Economics

Table 2 shows that there is the potential for nearly 9,750,000sqm additional commercial floorspace potential within Wellington City's Commercial Zones if all the existing buildings were knocked down and rebuilt up to its maximum potential. Once accounting for the commercial space required for residential land use, there is 9,200,000sqm remaining.

Alternatively, there is the potential for over 1,250,000sqm of additional floorspace without knocking down any of the existing buildings (infill) after accounting for residential uses. It should be noted however that many of the "vacant" portions of land within Commercial Zones that could be used for infill development are parking lots. Extensive infill development may raise the demand or requirements for additional parking buildings.

AIRPORT OBSTACLE LIMITATION SURFACE

The Wellington Airport Obstacle Limitation Surface (OLS) is a defined area surrounding the airport that establishes the limits to which objects may project into the airspace to ensure safe aircraft operations. This surface includes several imaginary planes that extend outward and upward from the airport's runways, taking into account factors such as approach and departure paths, and transitional surfaces. The purpose of the OLS is to prevent any potential obstructions, such as buildings, towers, or natural features, from infringing upon the critical airspace needed for the safe take off, landing, and manoeuvring of aircraft.

Property Economics was provided with a GIS layer detailing the height at which each site would exceed the OLS. Although it is possible that a developer would be able to exceed the OLS height with approval from the Wellington Airport, Property Economics has simply removed all storeys which exceed the OLS designation height.

In the Commercial Zones, the impact is often directly proportional to the difference between the maximum height permitted by the plan and the height enabled by the OLS designation. Residential Zones on the other hand have to contend with Height In Relation to Boundary standards which restrict the height potential of sites. As Property Economics assumes each storey needs to have practical dimensions, there are many 'thin' sites which are not able to reach their maximum height under the District Plan Rules. Consequently, these sites are not affected by the OLS designation in the model.

IMPACT OF AIRPORT OBSTACLE LIMITATION SURFACE

Table 3 breaks down by zone the number of properties which have their development potential adversely affected by the proposed OLS designation. It is important to note here that the Total Property Count does not all properties in Wellington, but only those with development potential (i.e. it excludes Character Areas and other sites with significant development constraints). Furthermore, the count of properties affected by the OLS excludes sites which could not feasibly exceed the OLS height limit due to the height in relation to boundary standards (i.e. thin sites).

Table 3 shows that out of the over 100,000 sites with development potential, about 20% of sites are affected by WAL proposed OLS designation. Most of the affected sites are in the Medium Density Residential Zone. In comparison, under the Council's position only 2% of sites are affected by the OLS designation. On a proportional basis, most of these sites are in the City Centre Zone with 26% of sites affected (same as WAL 8m). Nominally however there are more High and Medium Density Residentially Zoned sites affected. In the case of the Medium Density Residential Zone and Council's proposed 11m height limit, the sites affected are namely those which have a 14m height limit.

TABLE 3: COUNT OF PROPERTIES AFFECTED BY OLS DESIGNATION

Zones	Total Property Count	Count of Properties which could exceed OLS		% Share of Properties	
		WAL 8m	WCC 11m	WAL 8m	WCC 11m
High Density Residential Zone	25,092	1,892	885	8%	4%
Medium Density Residential Zone	72,959	17,956	599	25%	1%
Large Lot Residential Zone	353	-	-	0%	0%
City Centre Zone	1,398	368	368	26%	26%
Metropolitan Centre Zone	167	-	-		
Local Centre Zone	337	33	31		
Neighbourhood Centre Zone	195	25	6		
Mixed Use Zone	328	7	-	2%	0%
Sub-Total Wellington City	100,829	20,281	1,889	20%	2%

Source: Property Economics

Table 4 illustrates the impact of the Airport's Obstacle Limitation Surface Designation on the Theoretical and Feasible Residential Capacity in Wellington City. It indicates an estimated loss of 19,686 Theoretical dwellings and 3,433 Feasible dwellings. Most of the loss in Feasible Capacity are City Centre Apartments. This is because there is a larger gap between the ODP height limit and the OLS height constraint. For example, there are sites with a district plan Height of 90m but the OLS designation means they will require approval from the airport for anything over 47m.

It is also worth noting that there is a small increase in the number of Feasible Terraces (+56). This increase is due to sites that previously had feasible apartments changing development type to terraced due to the height limitations.

TABLE 4: OLS THEORETICAL AND FEASIBLE CAPACITY IMPACTS

Residential Capacity Impacts	Theoretical	Feasible			
		Standalone	Terrace	Apartment	Total Feasible
ODP	542,779	11,096	31,104	32,598	74,798
ODP (WC11m)	523,093	11,096	31,160	29,109	71,365
ODP -> WCC 11mm	-19,686	0	56	-3,489	-3,433
ODP (WAL8m)	513,543	10,939	31,160	29,109	71,208
WCC 11m -> WAL 8m	-9,550	-157	0	0	-157

Source: Property Economics

Table 4 shows a very limited additional loss of Standalone dwellings due to the Wellington Airport proposed 8m height limit in the OLS areas. Although Table 1 shows a large number of affected sites, the 8m height limit only restricts the maximum buildable floorspace, not necessarily the number of potential dwellings. In the theoretical capacity model, only Large Standalone and Large Terraces require three storeys to maximise yield on a particular site (subject to no other site constraints and a regular site shape). Each storey of a Standalone or Terrace dwelling needs to be a practical size/dimension and each dwelling has an outdoor living area. On most affected residential sites, you

can simply build the same number of houses as before but with one less storey making each house smaller.

In Table 5, we can see the impact of the proposed OLS designation on the expected Realizable dwelling yield. While the expected capacity loss is nominally lower than the Feasible capacity, it's important to note that the expected loss of 1,184 apartments represents a significantly higher proportion of the total number of Realizable Apartments (26% of the total). This is due to the fact that some of the sites in the City Centre with the highest height limits are considered to have a higher expected development potential.

TABLE 5: OLS REALISABLE CAPACITY IMPACTS

Residential Capacity Impacts	Realisable			
	Standalone	Terrace	Apartment	Realisable Total
ODP	13,173	21,982	4,523	39,678
ODP (WC11m)	13,173	21,982	3,339	38,494
ODP -> WCC 11mm	0	0	-1,184	-1,184
ODP (WAL8m)	13,040	21,978	3,339	38,357
WCC 11m -> WAL 8m	-133	-4	0	-137

Source: Property Economics

Table 6 outlines the effect of the proposed OLS designation on the maximum Theoretical Commercial Floorspace (Comprehensive Redevelopment only). This shows that the Council's proposed OLS designation reduces the maximum floorspace potential by 820,000sqm or about 9% of the total. Wellington Airport's proposed 8m height limit has only a small additional effect on the Commercial Floorspace since it is mostly a residential constraint but there are a few sites in the Local, Mixed Use and Neighbourhood Centre zones which are affected. The effect of the Wellington Airport's proposed OLS Designation only reduces the potential commercial floorspace by an additional 18,000 sqm (-0.2%) over and above the WCC position.

**TABLE 6: OLS DESIGNATION IMPACT ON COMMERCIAL FLOORSPACE (REMAINING POTENTIAL)
COMPREHENSIVE**

Zone	ODP	WCC 11m	ODP -> WCC 11m	WAL 8m	WCC 11m -> WAL 8m
City Centre Zone	6,114,742	5,317,669	-797,073	5,317,669	-
Local centre Zone	800,493	781,135	-19,357	772,498	- 8,637
Metropolitan Centre Zone	1,244,453	1,244,453	0	1,244,453	-
Mixed Use Zone	827,921	827,921	0	824,010	- 3,911
Neighbourhood Centre Zone	196,508	192,508	-4,000	187,197	- 5,311
Total	9,184,117	8,363,687	-820,430	8,345,828	- 17,859

Source: Property Economics

ALTERNATIVE MARKET CONDITIONS

The Feasible Capacity assessment has up till this point relied upon the market conditions assessed at the start of this year for the February 2024 report. This represents a comparatively less favourable market for development than the mid-2022 market used to evaluate capacity for the 2023 HBA. Specifically, construction costs have continued to increase while the average house price has declined.

As a scenario, we also assess the effect of the OLS designation on the feasible and realisable capacity under the same comparatively more favourable market conditions that were used to assess the 2023 HBA. The improved market conditions result in significantly more Feasible and Realisable Capacity compared to our early 2024 market scenario. The decrease in Feasible Capacity remains about the same, but the impact on Realisable Capacity is nominally three times greater under the mid-2022 market conditions compared to the baseline scenario. This results in a reduction of Realisable Capacity by 4.6% as opposed to the 3% reduction estimated under the baseline scenario.

The effect of the Wellington Airport Limited's 8m height restriction also increases slightly but it ultimately remains small relative to the total capacity potential.

TABLE 7: OLS THEORETICAL, FEASIBLE AND REALISABLE CAPACITY IMPACTS MID 2022 MARKET CONDITIONS

Residential Capacity Impacts	Theoretical	Feasible			
		Standalone	Terrace	Apartment	Total Feasible
ODP	542,779	15,082	46,632	56,980	118,694
ODP (WC11m)	523,093	15,085	46,755	51,602	113,442
ODP -> WCC 11mm	-19,686	3	123	-5,378	-5,252
ODP (WAL8m)	513,543	14,900	46,639	51,552	113,091
WCC 11m -> WAL 8m	-9,550	-185	-116	-50	-351

Residential Capacity Impacts	Realisable			
	Standalone	Terrace	Apartment	Realisable Total
ODP	17,191	34,173	22,842	74,206
ODP (WC11m)	17,191	34,221	19,391	70,803
ODP -> WCC 11mm	0	48	-3,451	-3,403
ODP (WAL8m)	16,977	34,227	19,391	70,595
WCC 11m -> WAL 8m	-214	6	0	-208

Source: Property Economics

SUMMARY

This memo addresses the impacts of the Obstacle Limitation Surface (OLS) designation proposed by Wellington Airport Limited on Wellington's residential and commercial capacity under the city's Operative District Plan (ODP).

Key findings include:

- Residential Capacity: The proposed OLS designation has a small but not insignificant impact on residential capacity. The largest impact is on apartments, with a reduction of 1,184 realisable units under the Wellington City Council's (WCC) proposed designation.
- The 8m height limit proposed by the Wellington Airport results in an additional reduction of 128 dwellings compared to the Council's position. Most of these are Standalone Homes, namely large homes. On most affected sites, a two-storey development option is feasible with no loss in the number of built dwellings (but potentially an effect on the size of those dwellings).
- Commercial Floorspace: The OLS designation slightly reduces the maximum commercial floorspace potential. Under Council's proposed OLS designation, the reduction is about 9% of the total capacity. The Airport's proposed 8m height limit results in only a small (-0.2%) additional reduction in commercial floorspace potential over the Council's position.
- Under more favourable market conditions, the estimated impact of the proposed OLS designation increases. The effect on Realisable Capacity increases from a loss of 1,184 dwellings (3%) to over 3,400 dwellings (4.6%). The effect of WAL's proposed 8m height limit relative to WCC's position increase under the more favourable market from 128 to 208 realisable dwellings.

If you have any queries, please give me a call.

Kind Regards

Phil Osborne

APPENDIX – PROPERTY ECONOMICS THEORETICAL AND FEASIBLE CAPACITY MODELLING

OVERVIEW

The purpose of this section is to provide a high-level outline of the methodology and assumptions used to model the Theoretical Residential and Commercial development capacity across Wellington City.

METHODOLOGY

The data is imported into a geospatial mapping software where the buildable area of each site is calculated simultaneously based on the difference between the site area and area which cannot be developed due to the district plan rules (e.g. setback requirements, maximum site coverages) or practical considerations (e.g. areas of high slope).

From this buildable footprint, the floorspace of each subsequent storey is calculated by assuming each storey has a set height and calculating the setbacks required at the highest point of that storey to fit within the prescribed recession planes. These recession planes are calculated from the boundaries between properties which take into account any zone change (e.g., Buildings in the Commercial Zones are only subject to Recession Planes along the residential boundary).

The procedural modelling is designed to assess the potential floorspace under two different development scenarios, Infill (retaining the existing dwelling) and a Comprehensive Redevelopment (where the existing dwelling is removed). The potential dwelling yield is then calculated for upwards of nine different size and typology options. The sizes and assumptions applied to each of the development options are shown in Table 1 below.

The Dwelling Size column shows the minimum and maximum sizes applicable to that typology option while the minimum floor size affects the number of dwellings based on the size of each floor.

TABLE 8: DWELLING TYPOLOGY AND SIZE ASSUMPTIONS

Typology	Dwelling Size (sqm)	Min Floor Size (sqm)	Maximum Storeys
Small Houses	100-120	50	2
Medium Houses	150-170	50	3
Large Houses	220-245	75	3
Small Units	75-85	35	2
Medium Units	100-110	35	3
Large Units	130-140	42.5	3
Small Apartments	50-55	50	-
Medium Apartments	65-70	65	-
Large Apartments	90-95	90	-

Source: Property Economics

1.1. KEY ASSUMPTIONS

Some of the key assumptions applied in the model are as follows:

- To avoid unrealistic developments the setback required from existing dwellings for infill development is set to 3m and for all developments the minimum building width is 5m. The minimum floor areas depend on the typology and size and are shown in Table 1 above.
- Infill has only been modelled on sites that have no more than three existing dwellings. In testing, it was found that the buildable area on these sites often ended up covering driveways and parking bays for the existing dwellings.
- Commercial Zones do not have required setbacks but for residential units, they do have 1m by 1m outlook space for all habitable rooms and a 1.8m outdoor living space requirement. Consequently, they have been modelled with a 1m side boundary setback.
- Each storey is assumed to be an average of 3.5m in height for the purposes of assessing the Height in Relation to Boundary Standards. Although it is noted that the minimum ground floor height of commercial sites is 4m, allowing for varying floor heights would significantly complicate the model. It is also unlikely to have a significant effect on capacity as Commercial Zones do not have recession planes except on the adjoining boundaries.
- The Mixed-Use Zone has a 500 sqm maximum building size but no set separation requirements. This restriction has not been included in the model. Instead, a 70% site coverage maximum has been applied.
- School sites have been removed from development as have sites marked in the valuation dataset as being used for community land uses or recreation.
- Retaining the assumption from previous assessments, there is an assumed maximum density of one dwelling per 100sqm and 150sqm of land area for each terrace or standalone dwelling respectively. Apartments do not have such a requirement. Although higher density townhouse developments are possible (there are some examples of 80sqm average land areas), the higher average is a more conservative assumption applied in Wellington to account for slope.
- The 21m Height Limit and 8m60 Recession Planes in the High-Density Residential Zone and the equivalent 14m height limit and 5m60 Recession Plane within the MRZ Height Area 2 only apply to multi-unit housing which requires a Restricted Discretionary Consent. Since the more permissive recession planes only provide a limited benefit to three-storey developments, it is assumed that developers would tread the path of least resistance.

Consequently, in these zones, the developable floorspace for Standalone and Terraces is assessed under the standard MRZ rules while apartments are modelled using the more permissive standards (noting that the high consenting requirements and risk are already incorporated in the realisation rates).

It should also be noted that due to the aforementioned minimum land areas for standalone and terrace dwellings, this assumption has no impact on the modelled capacity.

- In the High-Density Zone and Commercial Zones there is no maximum site coverage for multi-unit developments. Instead, there is a maximum building depth of 20m in the High-Density Zone and 25m in the Commercial Zones. Buildings on the same site are also required to be setback by a minimum of 10m in the HDRZ and 8m in the Commercial Zones.

To model the effect this rule has on development capacity; the model approximates the buildable area as a rectangular shape with the longer dimension perpendicular to the road boundary. The result of the calculations in combination with the required setbacks meant that the maximum buildable area on High Density Sites averaged 60% while the maximum buildable area on Commercial Sites averaged 70%.

- For sites smaller than 450sqm in the High-Density Zone on which the building separation rules rarely apply, the buildable land area is limited to 70%.
- Although there are no district plan rules that control what can be built on sloped areas, there are practical considerations that need to be considered. For the purposes of this assessment, Property Economics has decided to remove from the buildable floorspace area, land that exceeds a 25-degree slope for greater than 4m in diameter. The cost of building on sloping sites below 25-degrees is otherwise included in the construction and earthworks costs.

1.2. MODELLING OF CONSTRAINTS

The Qualifying Matters that were included in Wellington's District Plan and were modelled as part of this assessment are as follows:

- **Heritage buildings, structures, and areas.** – Development within heritage areas and construction of new dwellings is not enabled by the plan and therefore development on these sites has been excluded.
- **Notable Trees** – Small area of protection around Notable Trees.
- **Airport Noise Overlay** – Only two dwellings are enabled within the Inner Noise Overlay and additional mitigation costs are incurred by developments within either the Inner or Outer Noise Overlays.
- **Character Precincts and the Mount Victoria Townscape Precinct** – Development in these precincts is a Restricted Discretionary Activity that requires adherence to design standards. Because these standards limit the intensification that could be achieved, development within these precincts has been removed. It should also be noted that the IHP recommended an expansion of the character precincts over the PDP.
- **Significant Natural Areas** – Development of SNA's is not enabled however the extent of the SNA overlay was mostly removed from the Urban Area between the Draft District Plan and Proposed District Plan. The effect this has on the rural environment has been assessed separately from the urban capacity model.

- **Waterfront Zone** – The addition of new buildings is a Discretionary Activity subject to the council's design approval. Consequently, development within this area has been removed from the modelling.
- **Natural and Coastal Hazards** –
 - **Low Flood Hazard** – Restricted Discretionary (RD) Activity. The model includes development within this area but it incurs additional mitigation and consenting costs as well as reduced development propensity.
 - **Low Coastal Hazard** – Residential Development involving more than three total dwellings is considered an RD Activity.
 - **Medium and High Coastal Hazards** – Residential Activities within these areas are removed except in the City Centre where it is an RD Activity.
 - **Medium and High Flood Hazards** – Residential Activities are not enabled anywhere in the city within these Hazard Overlays (i.e. also affects CCZ).
 - **Fault Line** – Development is only enabled on empty sites.

It should be noted that the IHP recommended some small changes to the geospatial distribution of the Coastal Hazard overlays but the Flood Hazard Overlays remain the same.

- **Viewshafts** – was found to have no significant impact on development capacity in previous assessment and so not included in this modelling.
- **Sites and Areas of Significance to Māori and Designations** – These areas were excluded from development.

1.3. COMMERCIAL LAND-ADJUSTED CAPACITY

Unlike the Residential Zones where residential activities make up the bulk of activity, there is a need to consider other competing activities in Commercial Zones. Commercial Zones are designed to accommodate a range of uses with residential only being enabled above ground in many locations.

The simple approach to modelling this is to apply a proportional split on total floorspace within these zones based on the current and expected future activity split. The proportions used for this Commercial and Residential Split were provided by the Council and were based on a previous assessment. The splits used are as follows:

- Metropolitan Centre Zone: 80% Commercial and 20% Residential
- Mixed Urban Zone: 60% Commercial and 40% Residential
- Central City Zone:
 - Wellington Central: 60% Residential and 40% Commercial / Retail
 - Te Aro: 75% Residential and 25% Commercial / Retail
 - Mt Victoria: 98% Residential and 2% Commercial / Retail
 - Mt Cook: 80% Residential and 20% Commercial (This is rezoned to Mixed Urban Zone in the IHP but the proportion is retained).
 - Thorndon: 50% Residential and 50% Commercial / Retail
- Local Centre Zone: 70% Commercial and 30% Residential
- Neighbourhood Centre Zone: 70% Commercial and 30% Residential.

It is important to note that most realisable apartments are in the commercial zones, namely the City Centre Zone. Therefore, the total assessed capacity for apartments is highly sensitive to these commercial-to-residential ratios.

Realistically, the proportion of commercial development capacity utilised for residential purposes will be highly dependent on the relative supply and demand of commercial and residential activities.

Essentially, if the demand for apartments outstrips the demand for commercial and retail, it is likely that the residential proportion of development in commercial zones will exceed the proportions identified above, resulting in more apartment capacity delivered. Conversely, the opposite would be true if the density enabled by the District Plan provides for an excess of higher-density dwellings in the residential zone such that demand for residential apartments in the City Centre is reduced