

BEFORE THE AUCKLAND UNITARY PLAN INDEPENDENT HEARINGS PANEL

IN THE MATTER of the Resource Management
Act 1991 and the Local
Government (Auckland
Transitional Provisions) Act 2010

AND

IN THE MATTER of Topics 043 and 044 -
Transport Objectives and
Policies and Transport Rules

**STATEMENT OF REBUTTAL EVIDENCE OF STUART BURNET DONOVAN
ON BEHALF OF AUCKLAND COUNCIL (TRANSPORT)
30 June 2015**

1. INTRODUCTION

1.1 My full name is Stuart Burnet Donovan. I have the qualifications and experience set out in my evidence in chief dated 2 June 2015.

1.2 I have been asked to provide evidence on behalf of Auckland Council (Council) in relation to issues raised by submitters in parts of Topics 043 and 044.

1.3 I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note and that I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise, except where I state that I am relying on the evidence of another person.

2. SCOPE

2.1 This rebuttal addresses issues raised in the evidence by submitters as follows:

- (a) Fraser James Colegrave for multiple parties; AND
- (b) Christopher James Freke.

2.2 In the following sections I consider and discuss the evidence listed in Section 2.1. In Section 3 I discuss the evidence submitted by Mr Colegrave, while Mr Freke's evidence is discussed in Section 4.

3. EVIDENCE SUBMITTED BY MR COLEGRAVE¹

Executive Summary

3.1 I do not accept Mr Colegrave's conclusions. I find there are substantive issues with Mr Colegrave's economic analysis of regulations, and his conclusions with regards to Council's position and my own analysis.

3.2 The following paragraphs of my rebuttal evidence consider Mr Colegrave's evidence in more detail. My rebuttal evidence generally considers two key questions:

- (a) The primary question I consider is does Mr Colegrave present credible evidence to suggest the application of MPRs will improve society's well-being?
- (b) The secondary question I consider is does Mr Colegrave present credible evidence of flaws in my own economic analysis with regards to MPRs?

¹ Evidence of Fraser Colegrave, on behalf of Multiple Parties, dated 16 June 2015.

3.3 In short I find the answer is “no” to both these questions. More specifically:

- (a) The economic case for applying MPRs to the areas affected by the KRG proposal remains unsubstantiated;
- (b) The weight of evidence suggests that MPRs have negative economic impacts and are not statistically accurate;
- (c) The "unintended consequences" of removing MPRs are likely to be minor;
- (d) Developments in parking management policies and technologies mean that MPRs are increasingly ineffective and/or obsolete; and
- (e) The results of my economic analysis is robust to changes in key assumptions, and is not contingent on mode shift to public transport.

The economic case for applying MPRs to centres remains unsubstantiated

3.4 In my opinion, Mr Colegrave’s evidence diverges from conventional frameworks used to analyse the economic impacts of regulations. Convention dictates “no regulation”, in this case “no MPRs”, is the default setting. Economic analysis then normally proceeds by considering the merits of applying regulations to this default setting so as to improve market functioning. This is the approach I adopt in my economic analysis.

3.5 As stated in my evidence in chief (dated 2 June 2015), the 2013 amendment to section 32 (s32) of the Resource Management Act 1991 (RMA) strengthened requirements relating to the economic analysis of planning regulations. Section 32(2)(a) requires a qualitative identification and assessment of costs and benefits, while Section 32(2)(b) requires the quantification of benefits and costs, if practicable. In short, proponents of regulations, such as the KRG, are required to identify and, if practicable, quantify the economic benefits and costs of their proposed regulations.

3.6 The Treasury’s (2013) *Regulatory Impact Analysis Handbook*² contains useful practical guidance on how to frame an economic analysis of regulations. This Handbook notes regulations may improve wellbeing where they correct for market imperfections. In my view, “information problems” and “externalities (spill-overs)” are most relevant to an economic analysis of MPRs. When evaluating the relative benefits of regulations, the Handbook suggests beginning with a robust assessment of potential market imperfections that may arise in the absence of the proposed regulation. The Handbook also notes the need to consider and analyse a range of feasible options.

3.7 Mr Colegrave’s evidence, in my view, does not present an appropriate economic framework to illustrate *how* the application of MPRs *results in* net economic benefits

² Regulatory Impact Analysis Handbook (2013). <http://www.treasury.govt.nz/publications/guidance/regulatory/impactanalysis>

compared to a default setting where MPRs are not applied. Without such a framework, it is difficult to interpret Mr Colegrave's economic analysis. More specifically, Mr Colegrave's evidence does not:

- (a) Identify specific market imperfections that would arise in the absence of MPRs;
- (b) Clearly state the economic benefits and costs of MPRs in general, and the KRG proposal in particular;
- (c) Quantify the economic benefits and costs of the KRG proposal in terms of how it improves imperfect market functioning and at what cost (NB: Or explain why these economic impacts are unable to be quantified);
- (d) Consider the potential for the application of MPRs to give rise to unintended consequences, such as additional congestion and barriers to entry; and
- (e) Consider the merits of possible alternatives, such as parking management.

3.8 In my view, Mr Colegrave's evidence diverges from the conventional approach to economic analysis outlined in Treasury (2013), and ultimately is inconsistent with the intended outcomes of Section 32(2) (a) and (b) of the RMA. I conclude the economic impacts of the KRG proposal remain unsubstantiated.

3.9 In terms of "information problems", paragraphs 3.7 – 3.17 of Mr Colegrave's evidence considers travel associated with retail activities. From this Mr Colegrave concludes retailers have an accurate understanding of the importance of parking to their businesses. I do not dispute these observations, but do not believe they lend support to MPRs, in fact quite the opposite. In my view, the evidence presented by Mr Colegrave suggests retailers understand the importance of accessory parking to their businesses, and as such are likely to provide an appropriate amount. As such, there would seem to be a low risk that "information problems" will result in imperfect market functioning, certainly to a level that would lead to the "whole undersupply of parking" expected by Mr Colegrave.

3.10 In terms of externalities, in later sections of my rebuttal evidence I present evidence to suggest the "unintended consequences" of removing MPRs are likely to be minor. In contrast, regulations designed to increase the supply of parking above what the market would provide of its own accord seem likely to increase congestion. Later sections of my evidence will argue that this is likely to be the case even if MPRs were to be applied only to retail activities, as proposed by the KRG. Based on my analysis, I conclude the application of MPRs is likely to generate significant negative externalities.

3.11 In paragraph 4.2 Mr Colegrave compares the KRG's proposed MPRs to operative district plans, and finds the KRG rates to be lower. In paragraph 4.3, Mr Colegrave's

states “the KRGs proposed MPR is clearly lower ... meaning it will be less stringent overall.” This is not disputed. What is disputed is whether the KRG’s proposal will improve social well-being compared to not applying MPRs. Mr Colegrave’s evidence does not, in my view, analyse this important issue in any detail. While paragraphs 4.4 and 4.5 of Mr Colegrave’s evidence acknowledge the need for an “economic framework” to guide decisions on the optimal level of parking, he concludes “abolishing MPRs is not the answer because shopping will “always generate parking demand.” In my view this is a rather unconventional framework, which does not relate readily to the points noted earlier in paragraph 3.7 of my rebuttal evidence.

- 3.12** Paragraphs 4.6 – 4.13 of Mr Colegrave’s evidence highlight what I consider to be a consistent and serious issue with Mr Colegrave’s analysis and conclusions. That is, Mr Colegrave’s observations consider the *peak demand for free parking*. Mr Colegrave does not explain why the demand for parking is being measured at a zero price. From an economic perspective this assumption is highly unconventional. It implies we are interested in the point on the parking demand curve which is characterised by price = 0. As an economist, it is not clear to me how or why the socially optimal supply of parking could be determined from observations of the demand for *free* parking. In making this critical assumption Mr Colegrave eschews widely accepted microeconomic concepts of supply, demand, and price. In the absence of a theoretical and empirical rationale for such an unconventional analysis, Mr Colegrave’s conclusions with regards to the KRG proposal are, in my view, unsubstantiated from an economic perspective.

The weight of evidence suggests MPRs have negative economic impacts and are not statistically accurate

- 3.13** Since my evidence in chief was submitted, the Productivity Commission has released a draft report titled “Using Land for Housing” (Productivity Commission, 2015). The Productivity Commission conclude MPRs “*create land use inefficiencies and higher construction costs, contributing to increased housing costs. In addition, they represent an effective subsidy to car users, encouraging excessive use.*” The Productivity Commission report refers to my own economic analysis, specifically Appendices 3.9.11 and 3.9.13, and cites the wider literature on MPRs, most notably Shoup (2005). The Productivity Commission subsequently recommends local authorities “*remove District Plan minimum parking requirements and make more use of techniques for managing traffic demand*”.
- 3.14** I agree with the Productivity Commission’s findings and recommendations, and note that applying MPRs to retail activities would have consequential negative impacts for

housing affordability. This is because MPRs reduce the space available to accommodate other activities, including housing. The inter-related nature of land use markets means the applications of MPRs to any area, or activity, reduces the supply of land and places upwards pressure on the price of land more generally. This “unintended consequence” is not noted in Mr Colegrave’s analysis, but seems to warrant discussion given the importance of housing affordability to both Auckland Council and Central Government.

- 3.15** Paragraph 3.1 of Mr Colegrave’s evidence claims to “draw on a wide range of New Zealand literature”. If one excludes sources of data and studies developed during the PAUP process, then Mr Colegrave’s evidence includes reference to approximately six sources. In my view, the sources Mr Colegrave cites are either superseded or not relevant to an economic analysis of MPRs. For example, Mr Colegrave cites Donovan *et al.* (2011), but does not discuss this report’s recommendation to remove MPRs. Mr Colegrave’s evidence also does not comprehensively address the sources referenced in Appendices 3.9.11 and 3.9.13 of the PAUP s32 report, nor other local sources which would seem to be relevant to discussions of MPRs. I attach in Appendix A of my rebuttal evidence some additional local sources which would seem to be relevant to the merits of MPRs. Overall, these sources support the removal of MPRs.
- 3.16** Paragraphs 3.56 and 3.57 of Mr Colegrave's evidence considers the evidence base for my criticisms of MPRs, especially with regards to their economic impacts and statistical accuracy. Mr Colegrave casts doubt on two references cited in my evidence in chief, but does not discuss why he considers these sources not to be relevant to an economic analysis of MPRs. I note that Shoup (2005) refers to “The High Cost of Free Parking”, which is a book summarising a range of evidence on issues with current parking policy. Chapter 2 (pgs. 19 – 65) discusses statistical and economic issues with MPRs. Hulme-Moir (2010), meanwhile, refers to a masters’ thesis published by the School of Geography at Victoria University Wellington,³ which considers issues with MPRs (as documented in Shoup (2005)) in the New Zealand context.
- 3.17** Paragraph 3.57 of Mr Colegrave’s evidence suggests I have “overlooked evidence”, although no references are provided to support this claim. Moreover, the findings of sources cited in Mr Colegrave’s evidence are, in my view, superseded, irrelevant, or not accurately represented. More specifically:
- (a) *ARC draft Regional Parking Strategy (2009)*. This document would seem to be superseded by AT’s Parking Strategy, which Mr Colegrave does not cite.

³ <http://researcharchive.vuw.ac.nz/handle/10063/1458>

- (b) *Reallocation of road space (2013)*. This report is concerned primarily with the allocation of road space within a transport corridor. The findings do not seem especially relevant to an economic analysis of MPRs.
- (c) *Integrated Transport and Land use: Sylvia Park as a Case Study (2011)*. I am the primary author of this report and note that Section 5.3.3, (pg. 49 – 51) of the report recommends the removal of MPRs.
- (d) *Relative costs and benefits of modal solutions (2009)*. This report deals primarily with the relative costs of different transport modes, which does not seem particularly relevant to an economic analysis of MPRs.

3.18 Paragraph 3.58 of Mr Colegrave's evidence cites NZTA Research Report 453 (RR453) as evidence to support MPRs.⁴ In my view, Mr Colegrave's interpretation of RR453 is incorrect. More specifically, RR453 does not present statistical (or economic) evidence to support MPRs, but instead simply adopts and applies existing practices. In my view, the *application of practices* does not constitute *evidence for* those practices.

3.19 I recently submitted a paper to the annual IPENZ Transportation Group Conference which documents statistical and economic issues with parking rates.⁵ In this paper I conclude the practices used to determine parking rates are subject to the following issues:

- (a) Omitted variables, e.g. the effects of location.
- (b) Simultaneous causality, e.g. how increases in the supply of parking will reduce the price and consequently increase demand;
- (c) Sample selection bias, e.g. the sites selected for parking surveys tend to be characterised by higher than average travel demands; and
- (d) Inadequate treatment of statistical dispersion, e.g. the implications of variability in parking rates is often not reported accurately.

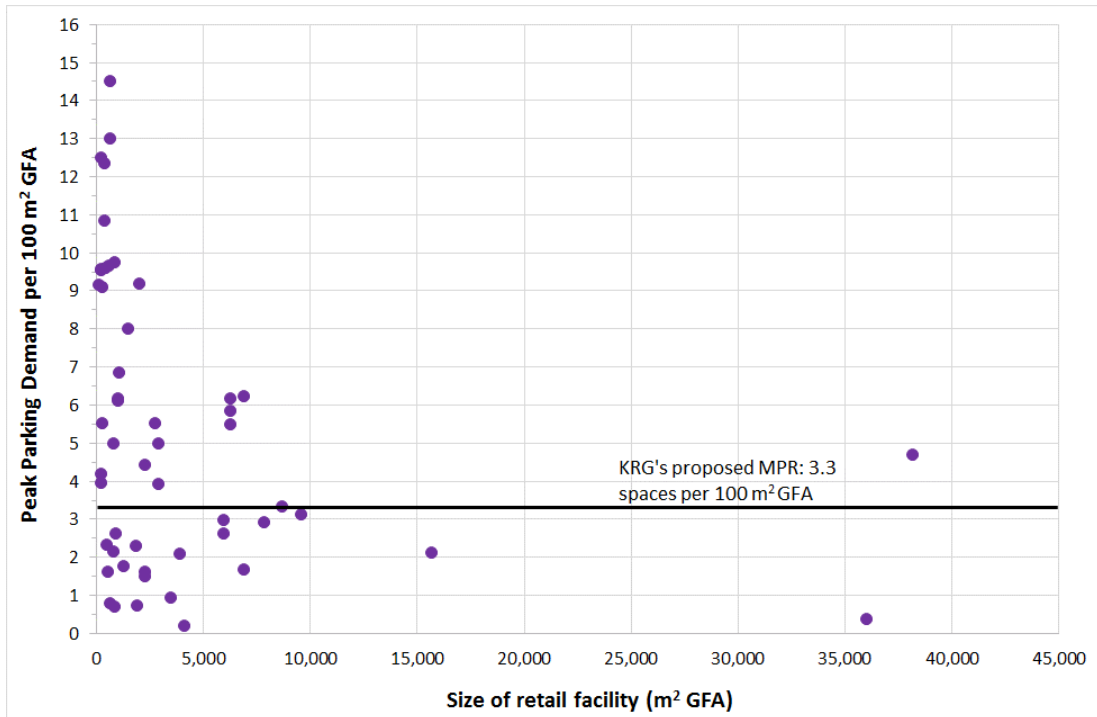
3.20 As a consequence, and in light of the evidence, I consider it likely that current practices, such as that applied in RR453 will over-estimate the degree to which parking demands are related to GFA, and the relative accuracy of the resulting rates. I note that figure 5.2 on page 62 of RR453 illustrates parking demand data for retail developments. This indicates peak parking demand rates ranges 2 – 10 vehicles per 100m² of GFA, i.e. they vary a factor of five. In my opinion, this represents high levels of statistical dispersion and using GFA to predict parking demands would seem likely to result in a high level of error.

⁴ <http://www.nzta.govt.nz/resources/research/reports/453/docs/453.pdf>

⁵ <http://conf.hardingconsultants.co.nz/workspace/uploads/paper-donovan-stuart-do-o-54f3931f0c5cb.pdf>

3.21 In the following figure I present the results of my analysis of data from the Trips and Database Bureau (TDB) for retail sites in Auckland. The KRG's proposed MPR of 3.3 car-parks per 100m² of GFA is also illustrated. I find the KRG proposal is higher than the peak parking demands observed for many of the retail developments included in the TDB. In these cases, the application of MPRs proposed by the KRG would seem likely to result in an oversupply of parking, and hence represent an economic impost.

Figure 1: GFA versus peak parking demand for retail land uses in Auckland (Source: TDB, 2015)



3.22 Paragraphs 3.19 – 3.28 of Mr Colegrave’s evidence discuss key drivers of congestion. Mr Colegrave concludes that because retail trips are more likely to occur at off-peak times, then they contribute less to congestion.

3.23 This conclusion is, in my view, incorrect from an economic perspective. More specifically, the price of parking in a particular location will be determined by so-called “aggregate” supply and demand curves. Aggregate supply is simply the sum of all parking supplied in a location. Basic market functioning suggests that *if* the aggregate supply of parking increases, e.g. due to the application of MPRs, *then* the market price of parking will reduce, and vice versa (Chapter 1 “The Market” in Varian (2014)) discusses this important principle). Hence, applying MPRs to retail activities can be expected to reduce the price of parking for *all* vehicle trips travelling to/from the affected location, including trips made for non-retail purposes. For this reason, I consider that the application of MPRs, even just to retail activities, will result in increased congestion.

- 3.24** I note that the potential for MPRs to negatively impact on competition and innovation is not discussed in Mr Colegrave's analysis: By increasing the space required to support a given level of retail activity, MPRs increase the cost of new retail developments. The barrier to entry which this creates is especially relevant to smaller retail developments, which tend to exhibit significant variability in terms of their peak parking demands (as discussed in more detail in subsequent sections of my rebuttal evidence). All other things being equal, MPRs will protect existing retail developments; reduce competition and innovation in the retail sector; and ultimately undermine retail sector productivity growth. This is an unintended consequence of MPRs which would seem to warrant discussion and analysis by Mr Colegrave, and the KRG.
- 3.25** This evidence causes me to doubt Mr Colegrave's conclusions with regards to MPRs. Indeed, the application of MPRs in New Zealand seem sensitive to the same issues documented in Shoup (2005). More generally, there exists a strong body of evidence to suggest MPRs have negative economic impacts and are not statistically robust.

The unintended consequences of removing MPRs are likely to be minor

- 3.26** Paragraphs 3.43 – 3.63 of Mr Colegrave's evidence consider the potential for unintended consequences to arise from not applying MPRs. I consider these sections are the most relevant parts of Mr Colegrave's evidence with regards to an economic analysis of MPRs.
- 3.27** I was conscious of unintended consequences, and attempted to clearly identify and consider relevant externalities when undertaking my own economic analysis. I note Council has subsequently determined to remove MPRs from a smaller area than what is supported by my economic analysis. Hence, the potential "unintended consequences" of removing MPRs also seem to figure in the position adopted by Council.
- 3.28** Paragraph 3.44 of Mr Colegrave's concludes a "wholesale undersupply of parking" may result from not applying MPRs. No evidence is presented to support this statement. As noted previously in my rebuttal evidence, retailers seem to be aware of the value of parking to their business. Given this awareness, it is difficult to envisage what circumstances might give rise to a "wholesale undersupply of parking".
- 3.29** Section 2.4 of Appendix 3.9.13 of the s32 report discusses parking policy changes in Auckland City Centre. This notes how the removal of MPRs in the late 1990s was followed by a gradual decline in the relative level of parking supplied with new developments. Moreover, I note that over the last two decades Auckland's City Centre has experienced rapid growth in residents and jobs (Statistics NZ, 2013). Hence,

Auckland's experience is that the removal of MPRs precipitates a gradual decline in relative levels of parking supply which supports – rather than undermines – levels of economic activity.

- 3.30** Paragraph 3.48 of Mr. Colegrave's evidence suggests the "most likely outcome" of not applying MPRs is that larger retailers will continue to provide sufficient accessory parking, but that smaller retailers will not. The latter will, Mr Colegrave concludes, rely on parking provided by the former. Paragraph 3.49 of Mr Colegrave's evidence concludes this may have the "unintended consequence" of driving larger retailers out of the area, leading to the dispersion of retailing activity. No empirical data is presented to suggest such an outcome is likely.
- 3.31** One shopping centre in Auckland which would seem most sensitive to the "parking piggyback" issue is 277 Newmarket. I understand 277 Newmarket has, however, adopted validated parking, which allows visitors who spend \$10 or more to park for two hours for free.⁶ In this way, 277 Newmarket has effectively managed the demand for parking associated with nearby retail activities. I further understand Westfield (Scentre) has developed plans to expand the 277 Newmarket. This seems to run contrary to the re-location effect predicted by Mr Colegrave.⁷ In my view, the risk of retail re-location from removing MPRs is unsubstantiated and likely over-stated.
- 3.32** Paragraphs 3.50 and 3.54 of Mr. Colegrave's evidence considers whether parking search costs are fully accounted for in my own economic analysis. Mr Colegrave concludes the parking management costs quantified in my analysis will not fully mitigate increased search costs. Mr Colegrave's evidence, however, does not quantify parking search costs in the current environment, and nor does he quantify how much these search costs would supposedly increase without MPRs.
- 3.33** Paragraphs 3.54 – 3.55 of Mr Colegrave's evidence suggests the implementation of parking management measures is costly and inconvenient. Mr Colegrave cites no evidence or data to support this statement, despite such information being readily available – or fairly easily estimated. In my view the costs of parking management are negligible compared to the benefits of removing MPRs.
- 3.34** Paragraph 3.59 – 3.62 of Mr Colegrave's evidence suggests small retailers will not seek to be "self-sufficient" in terms of the accessory parking they provide. No evidence or data is presented to support this suggestion, nor does Mr Colegrave explain why retailers should be "self-sufficient" with regards to accessory parking. I note that for

⁶ Westfield Newmarket, "Getting Here", <http://www.westfield.co.nz/newmarket/gettinghere>

⁷ "Spectacular mall plans for Newmarket", http://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=10896806

some retail developments it may be more efficient to develop their sites intensively and instead procure parking elsewhere in the vicinity, e.g. leasing car-parks from dedicated facilities.

3.35 Paragraph 3.61 of Mr Colegrave's evidence suggests the profit-maximising strategy for small retailers is likely to see in a conscious decision to rely on the parking provided by larger retailers. In my opinion, this outcome seems unlikely because the small retailer would effectively be assuming they can indefinitely externalise their parking demands onto larger retailers. If the larger retailers were to subsequently manage access to their accessory parking, e.g. through validation, then the small retailer's business would be placed at risk. In my view, consciously externalising parking demands seems to involve considerable downside risk, and is therefore not likely to be profit-maximising.

3.36 Paragraph 3.63 of Mr Colegrave's evidence suggests intervention in the market for parking, i.e. the application of MPRs, is warranted on the grounds of three "unintended consequences", namely 1) local congestion; 2) search costs; and 3) retail spending decisions. I note the following points with regards to these consequences:

- (a) I agree with Mr Colegrave that congestion and search costs are externalities that are relevant to an economic analysis. I do not, however, agree these costs will necessarily be higher in a situation where MPRs were removed.
- (b) I do not agree with Mr Colegrave that impacts on retail spending choices are relevant considerations in an economic analysis of MPRs. Mr Colegrave presents no evidence to suggest that the removal of MPRs would impact on the distribution of retail spending.
- (c) I do not believe Mr Colegrave's characterisation of MPRs as an *incentive* is particularly useful description in the context of an economic analysis. The impact of MPRs is to regulate for an expansion in the supply of accessory parking, which subsequently reduces parking prices and delivers a subsidy to drivers. Hence, MPRs are more usefully viewed as a subsidy, rather than an incentive.

3.37 Paragraphs 3.64 – 3.71 of Mr Colegrave's evidence considers Council's section 32 report. On these matters I refer to Mr Wong-Toi's rebuttal evidence for Council dated 30 June 2015.

3.38 In my view, the "unintended consequences" identified by Mr Colegrave are not substantiated to a level which would support intervention in the market for parking. This finding is reinforced by developments in parking management policies and technologies, which I discussed in more detail in the following section.

Developments in parking management policies and technologies mean MPRs are increasingly ineffective and/or obsolete

- 3.39** In my view, parking search costs are likely to *reduce* substantially under the scenario considered in my economic analysis. Under this scenario the removal of MPRs was not considered in isolation, but included costs for parking management plans/measures, parking enforcement, and pay and display meters.
- 3.40** I note further AT's Parking Strategy contains policies specifically designed to mitigate parking search costs, including⁸:
- (a) Policy 1B (page 12), which presents "intervention triggers" designed to maintain 85% utilisation;
 - (b) Policy 1C (page 13), which outlines how AT will set prices to achieve an occupancy range of 70-90%;
 - (c) Policies 2A and 2B (page 14), which describe AT's approach to off-street parking; and
 - (d) Policy 2C (page 14), which identifies criteria for investment in new off-street parking facilities.
- 3.41** In my view, the collective impact of the policies outlined in AT's Parking Strategy, and considered in my analysis, will be to maintain search costs at reasonable levels and avoid situations where there is a "wholesale undersupply" of parking." I defer to Scott Ebbett's evidence for further details on AT's approach to parking management.
- 3.42** In my view, Mr Colegrave's conclusions in paragraphs 3.4 – 3.6 of his evidence would only be relevant to economic analysis of MPRs if the latter were shown to be an effective way to prioritise short stay over long stay parking. Mr Colegrave does not present or cite evidence to support this claim. In my experience, the primary effect of MPRs is to expand the overall supply of parking. I know of no evidence which shows MPRs are effective at prioritising parking for short stay uses. The lack of evidence that MPRs are effective at prioritising short stay visitation means that paragraphs 3.4 – 3.6 of Mr Colegrave's evidence are unsubstantiated.
- 3.43** Appendix B presents a summary of parking management measures applied at a selection of shopping centres around New Zealand. The presence of parking management measures, such as priced and validated parking, suggests the application of MPRs does not necessarily avoid the need for parking management. Indeed, many

⁸ AT Parking Strategy (2015), <https://at.govt.nz/media/1119147/Auckland-Transport-Parking-Strategy-May-2015.pdf>

retailers have already implemented parking management measures, presumably because it benefits their businesses. Given Auckland's projected growth, it seems reasonable to suggest parking management measures will be more commonly applied under any future scenario, regardless of whether MPRs are applied. For this reason, I conclude that the removal of MPRs will have only a minor impact on the parking management costs incurred by retailers. I also note such costs tend to be recouped from consumers.

- 3.44** Westfield's Chermside Shopping Centre in Brisbane, Queensland is a relevant example of a shopping centre which has voluntarily applied parking management measures. I note Brisbane City Council's development codes apply MPRs to new developments in the Chermside area.⁹ Nevertheless, in 2011 Westfield decided to implement pay parking at the Chermside Shopping Centre.¹⁰ This decision was met with vocal local opposition, including formal challenges from Brisbane City Council.¹¹ MRCagney, myself included, were commissioned by Westfield to present expert evidence in response to Brisbane City Council's (unsuccessful) challenge to the former's decision to adopt pay parking.
- 3.45** Shopping Centres such as 277 Newmarket in Auckland and Chermside in Brisbane present two challenges to Mr Colegrave's conclusions with regards to parking management, and by extension his economic analysis of MPRs. The first challenge is that it shows retailers will implement parking management measures *even in areas that are subject to MPRs*. This casts doubt on Mr Colegrave's suggestion that MPRs help to avoid parking management costs. The second challenge is that retailers have voluntarily chosen to implement these measures, even in situations where it is met with opposition.
- 3.46** Paragraph 3.45 of Mr. Colegrave's evidence observes that AT expects the demand for parking to increase in the future. Paragraph 3.46 in Mr Colegrave's evidence then concludes that the expectation of future growth provides support for regulations to increase the future supply of parking. Mr Colegrave's conclusion is, in my view, unsubstantiated. In particular, it is not linked to an analysis of how much parking the market would provide on its own, the size of the resulting shortfall between parking supplied by the market and the socially optimal level, and the appropriate MPR to apply

⁹ Parking supply rates are provided in Table 13 of Brisbane City Council's "Transport, Access Parking and Servicing" (TAPS) Planning Scheme Policy. Table 13 identifies parking rates for four category locations. Sites surrounding Westfield Chermside are defined as category 4 "All other cases/locations", to which standard minimum rates are normally applied. In my experience, parking rates in Brisbane are generally higher than those currently applied in Auckland.

¹⁰ Westfield Chermside "Getting Here", <http://www.westfield.com.au/chermside/info>

¹¹ "Chermside Shopping Centre set to change for parking", Sydney Morning Herald (2011) <http://www.smh.com.au/business/chermside-shopping-centre-set-to-charge-for-parking-20110622-1gg5q.html>

to mitigate this shortfall. Nor does Mr Colegrave consider potential alternatives to MPRs, e.g. AT investment in centralised parking facilities.

- 3.47** It is useful to consider the extreme end of the scale; those retailers who, in the absence of MPRs, decide it is better for their businesses not to supply any accessory parking. In such a situation what might they do? Some retailers may simply decide business can survive without accessory parking. Others may choose to find other ways to attract customers. This may, for example, include reimbursing customers for parking and/or public transport costs, or offering free home delivery. I understand that these types of initiatives have been implemented at shopping centres in Auckland. Other retailers might seek to procure parking from public or private parking facilities located nearby.
- 3.48** This highlights a major issue with Mr. Colegrave's conclusions (see for example paragraph 4.5). That is, *even if one accepts that shopping will always generate parking demand, then it still does not necessarily follow that MPRs are the most effective way to supply parking to meet this demand.* Mr Colegrave does not, for example, consider the potential for retailers to develop innovative business models for managing the travel demands associated with their activities. While the provision of large quantities of free accessory parking on-site may be the preferred business model of the KRG, it is not necessarily an efficient business model for other retailers, especially those of small to medium size.
- 3.49** Therefore Mr Colegrave's analysis does not recognise that different retailers may have different business models, and that they may manage their demand for and supply of parking in different ways. The chart of parking demand rates derived from TDB data, which I have presented earlier in my rebuttal evidence, reveals high levels of statistical dispersion in peak parking demands for retail activities in Auckland. This in turn suggests the need for on-site accessory parking varies greatly between different retailers.
- 3.50** Mr Colegrave's conclusion that "abolishing MPRs is not the answer" also does not acknowledge the existence of a market for parking. A market for parking enables differences in parking demand and supply to be arbitrated. Supply to the parking market may arise from dedicated public and private parking facilities, or individual developments which find themselves with excess on-site parking.
- 3.51** TradeMe, for example, facilitates leasing of car-parks. At the time of writing (12.00am, Friday 19 June 2015), approximately 100 TradeMe car-park listings were recorded not just in Auckland city centre, but also in suburbs such as Newton, Kingsland, Newmarket, Grafton, Mt Eden, Ponsonby, Eden Terrace, Freemans Bay, Herne Bay,

Browns Bay, and Howick. The emergence of online trading platforms, such as TradeMe, will help businesses who need parking to find it, and vice versa. In the process normal market mechanisms seems likely to result in more efficient use of parking resources.

- 3.52** In my view, developments in parking management policies and technologies mean that MPRs are an increasingly ineffective and obsolete way to manage the supply of parking.

The results of my economic analysis is robust to changes in key assumptions, and is not contingent on mode shift to public transport.

- 3.53** Appendix 1 of Mr Colegrave’s evidence presents a critique of MRCagney’s reports, specifically Appendix 3.9.13. Based on this critique, Mr Colegrave questions my conclusion with regards to the relative benefits and costs of MPRs and how these might vary across Auckland. In the following paragraphs I summarise major issues with Mr Colegrave’s analysis and conclusions. I also present the results of sensitivity analysis demonstrating my findings are robust to changes in key assumptions.

- 3.54** Paragraphs 1.6 – 1.12 and 1.16 of Mr Colegrave’s evidence suggest that the results of my economic analysis are flawed because I report a negative relationship between the proportion of a site used for floor area and the proportion used for parking (specifically pages 46 in Appendix 3.9.13). I conclude Mr Colegrave’s analysis is incorrect when evaluated from both an empirical and theoretical perspective. I reiterate two points made in Appendix 3.9.13 of the s32 report:

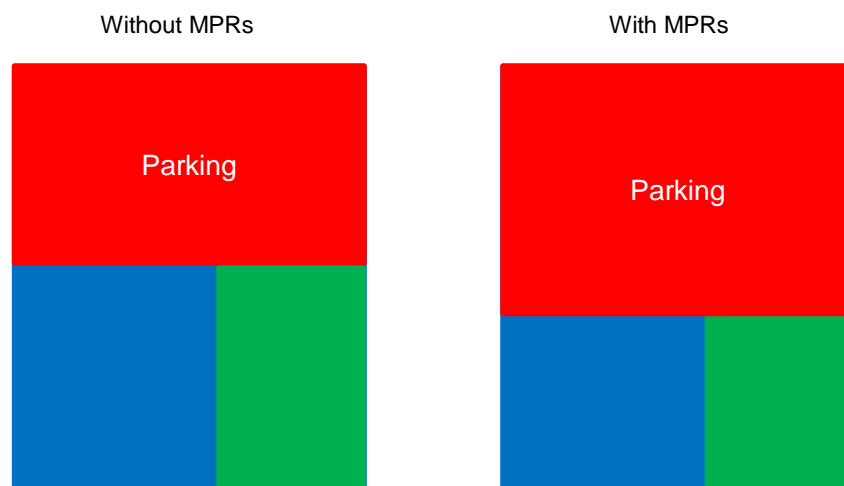
- (a) “... we could not include multi-storey properties where parking is not visible from the air” (pg. 27); and
- (b) “To generalise our findings we first need to establish the degree to which parking “squeezes out”, or substitutes for, floor area ...” (pg. 46).

- 3.55** As multi-level developments are excluded from my data set, my analysis compares developments with similar levels of “capital intensity”. By capital intensity, I am referring to the amount of capital invested in a site. While capital intensity is an unobserved variable, its impacts on my analysis is mitigated by excluding multi-level developments from my analysis. Of course, if another developer has more capital available, then they will be able to develop the same site more intensively. This might include providing more retail space and more parking (as would be required by MPRs). However, when analysing the substitution effects of MPRs it is essential to hold capital constant.

3.56 Mr Colegrave’s confusion with regards to the role of capital intensity is reflected in Figure 5 (paragraph 1.11) of his evidence. Figure 5 shows that as the floor space of a development increases (y-axis), then the car-park area (x-axis) also tends to increase. This is not disputed, but nor is it relevant to an economic analysis of MPRs *because it does not hold capital constant*. The conclusions drawn in paragraphs 1.12 and 1.16 of Mr Colegrave’s evidence are therefore premised on an incorrect interpretation of empirical data which does not control for capital investment.

3.57 A negative relationship between GFA and parking is, in my view, theoretically unsurprising because of the economic principle of substitution. To demonstrate this principle, consider a simple single-storey development, as illustrated in the figure below. This site can be developed for three potential uses: 1) floor area (blue); 2) parking (red); or 3) landscaping (green). The sketch to the left represents the allocation of space without MPRs, whereas the sketch to the right shows the allocation with MPRs. In the latter, the development increases its parking supply to comply with MPRs. To accommodate the increase in parking, the area available for floor area and landscaping respectively (blue and green respectively) *must* reduce, if it is to remain a one-storey development.

Figure 2: Allocation of space between uses with and without MPRs



3.58 More formally, the principle of substitution implies that *at optimal levels of production/consumption, an increase in the production/consumption of one good will cause a reduction in the consumption of other goods*. The principle of substitution acknowledges that if regulations, such as MPRs, compel a developer to do something that they would not otherwise do, then the profitability of the development will be reduced.

- 3.59** The general implication of this discussion is simple and straightforward: Where MPRs require more parking to be provide than the market would provide on its own, then this will reduce the supply of floor space. The only question is to what degree. In my analysis I report a negative relationship between GFA and car-parking of 51%. This suggests that for a given location, where MPRs require developers to provide 1m² more parking, then we can expect a reduction in floor space of 0.51m². This is consistent with the principle of substitution. For these reasons, the conclusions drawn in paragraphs 1.6 – 1.13 and paragraph 1.16 of Mr Colegrave’s evidence are incorrect.
- 3.60** Paragraph 1.15 of Mr Colegrave’s evidence discusses the coefficients of the hedonic regression model presented in Appendix 3.9.13, specifically Figure 29 (page 45). Mr Colegrave observes the coefficient for floor space is positive and statistically significant, and that the coefficient for parking is not significantly different from zero. From this, Mr Colegrave concludes that the calculation of benefits was “statistically invalid”.
- 3.61** Mr Colegrave’s interpretation of the coefficients of the hedonic regression model is partly correct: The coefficient for parking is not statistically different from zero. Where Mr Colegrave errs, however, is in his conclusion. Specifically, the economic benefits I calculate arise from the statistically significant coefficient for floor space.
- 3.62** The coefficients of the hedonic regression model suggest that, in the urban environments I analysed, parking does not have a discernible impact on property values. This is somewhat surprising, but not implausible. And it is certainly not sufficiently problematic to suggest the calculation of benefits was statistically invalid. This result may arise for a number of reasons, including multicollinearity, as mentioned in footnote 19 of Mr Colegrave’s evidence. I note, however, that the issue of multicollinearity between the variables identified by Mr Colegrave was investigated in Nunns *et al.* (2015). Another possible explanation for the statistically insignificant coefficient for parking reported in both these studies is that MPRs have created such an over-supply of parking (relative to demand) that the market attaches very little value to parking.
- 3.63** I note that the coefficients for floor space and parking reported in Appendix 3.9.13 to the s32 report have been corroborated by analysis presented in Nunns *et al.* (2015). This study applies a hedonic regression model to 10,000 residential and commercial property values across the Auckland region. The coefficients for floor space and parking reported in these studies is summarised in the table below.

Table 1: Summary of floor space and parking coefficients derived from hedonic regression studies

Coefficient	Appendix 3.9.13	Nunns <i>et al.</i> (2015)
Floor space	0.403***	0.479***
Parking	-0.068	0.0003

3.64 Paragraph 1.18 of Mr Colegrave’s evidence states the assumption “GFA can be built freely without restriction.” Mr Colegrave observes that there are “a range of planning restrictions that collectively limit development potential”, and concludes that “the MRC analysis ignores this fact”. While Mr Colegrave’s observation with regards to planning restrictions is correct, his conclusions with regards to its role within my economic analysis is not.

3.65 Mr Colegrave’s conclusions in paragraph 1.18 are not correct because my analysis does not assume “GFA can be built freely without restriction”. Instead, the increase in GFA assumed in my analysis is defined as a stated, fixed percentage of the space which is freed up by the reduction in parking that occurs following the removal of MPRs. Also note that due to the 51% substitution factor discussed earlier, the reduction in parking is not converted to GFA on a 1:1 basis. The implications of the scenarios considered in my analysis for the change in parking and floor space are summarised in the table below. This demonstrates that my analysis considers a range of floor space redevelopment scenarios ranging from 10-25%.

Table 2: Summary of floor space redevelopment scenarios

Parameter	Scenario		
	High	Medium	Low
Parking	-50%	-35%	-20%
Floor space	+25%	+18%	+10%

3.66 The key question is whether this reflects a reasonable range of scenarios? In my view it does. My reason for holding this view relates to the coefficients for the hedonic regression models discussed previously. That is, it is fairly clear to me based on my analysis and that of others that, at the margin, the market places a higher value on floor space than it places on parking. This means that, given the opportunity, the market would reduce the supply of parking so as to provide more floor space. The question then is to what degree would the supply of parking reduce if MPRs were removed from these areas? The experience in London was that the removal of MPRs resulted in a reduction in parking supplied with new developments of 40%. In my low scenario I assumed a reduction of 20%, which in turn was assumed to result in a 10% increase in floor space.

- 3.67** Paragraphs 1.19 – 1.22 of Mr Colegrave’s analysis suggest my analysis of PAUP zones is derived from the *medium scenario* illustrated in the table above, which assumed a reduction in the parking supply of 35%. This is incorrect. As explained on page 31 of Appendix 3.9.13, my analysis in Figure 21 is based on the *low* scenario outlined above, which assumed a 20% reduction in parking supply. This is only half that found in London, which – as far as I am aware – is the only study of its kind (Guo & Ren, 2013). In this context, by assuming a 20% reduction in parking supply and a 10% increase in floor space I have adopted what I consider to be a relatively conservative estimate of the impacts of MPRs.
- 3.68** In paragraph 1.23 Mr Colegrave notes I calculate the increase in value associated from an increase in the supply of floor space, but do not account for the resource costs associated with providing this extra floor space. In paragraph 1.24 of Mr Colegrave’s evidence, he concludes this is a “fatal flaw”. Mr Colegrave is correct with regards to my assumption, but incorrect with regards to its implications for the results of my analysis.
- 3.69** It is true that I do not calculate the resource costs of the *increase in GFA* which I expect to follow in the absence of MPRs. However nor do I calculate the resources savings associated with the concomitant reduction in parking. Put another way, while the resource costs of increased GFA are not subtracted from the benefits side of my analysis, nor are the resources savings from reduced parking added to the benefits. Hence, I have been consistent in my treatment of resource costs, i.e. they have been excluded from both the benefits and costs side of the equation. Contrary to what Mr Colegrave implies in paragraph 1.24, it is not possible to simply “net off” the resource costs of increased GFA without also accounting for reduced resource costs from less parking.
- 3.70** In the table below I have summarised resource and opportunity costs per square metre for parking and floor space in the variety of building typologies using data from Rawlinsons (2013). I note I have assumed basement parking has a much lower (although non-zero) opportunity cost, due to the fact that it has more limited alternative uses (predominantly storage). In the right-hand column I have summed the total costs of building and parking space. This suggests the “total costs” of each are comparable, with the costs of parking increasing in higher density environments, as we would expect.

Table 3: Comparing resource and opportunity costs for floor space and parking (Rawlinsons, 2013)

Typology	Resource costs		Opp. costs	Total costs
	Range			
	Low	High		

Building	Basic	<=2 storeys (no lifts)	\$1,225	\$1,425	\$0	\$1,325
		3-5 storeys (lifts)	\$1,475	\$1,675	\$0	\$1,575
	Partial	<=2 storeys (no lifts)	\$1,475	\$1,675	\$0	\$1,575
		3-5 storeys (lifts)	\$1,750	\$1,950	\$0	\$1,850
Parking	Ground level		\$480	\$580	\$633	\$1,163
	Partially underground		\$850	\$950	\$633	\$1,533

3.71 My analysis of the marginal opportunity cost of providing an extra car-park is summarised in figure 32 of Appendix 3.9.13 to the s32 report. This shows the estimated costs of an increase in parking supply for a typical development. In the table below, I extend this analysis to consider resource costs. I use resource costs for a 3-5 storey building with lifts (resource costs = \$1,575 per m²) and partially underground parking (resource costs = \$900 per m²). This analysis suggests the *net* change in resource costs is relatively small +\$2,138 per m², or 10% of the opportunity cost. While different building and parking typologies would yield different numbers, it seems unlikely resource costs would have substantive implications for my analysis, nor the conclusions drawn therefrom.

Table 4: Calculating marginal resource costs

Attribute	Before	After	Change	Resource costs
Floor area	641	622	-18.5	\$29,138
Parking area	279	309	30	-\$27,000
Value	\$1,150,431	\$1,132,573	-\$18,995	\$2,138

3.72 In terms of his paragraph 1.23 and 1.24, this implies Mr Colegrave is incorrect to simply “mark down” the net floor space benefits by a factor of 80%. In preparing my rebuttal evidence I did, however, undertake sensitivity testing of my assumptions. This sensitivity testing considered two additional scenarios, which are summarised in the table below. In the first sensitivity scenario (“Test1”), the land use efficiencies associated with my “low” scenario are marked down 10% to account for resource costs. In the second sensitivity scenario (“Test2”), land use efficiencies are set at \$24 million, as suggested in paragraph 1.23 of Mr Colegrave’s evidence. Congestion benefits and parking management costs are left unchanged.

Table 5: Additional scenarios for sensitivity testing

Outcome	Scenario				
	High	Medium	Low	Test1	Test2
Land use	157.5	120.1	75.7	68.1	24.0
Congestion	12.3	12.3	12.3	12.3	12.3
Parking costs	14.5	14.5	14.5	14.5	14.5

BCR	11.71	9.13	6.07	5.55	2.50
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3.73 I then analysed the implications of the Test2 scenario for my analysis of the PAUP zones presented in figure 21 of Appendix 3.9.13 (pg. 30). This table assesses whether the imposition of MPRs would be likely to have negative economic impacts at the level of individual parcels. These results are then aggregated by PAUP zone. Here I present results only for the Test2 scenario, which is the most conservative.

Table 6: Results of “Test2” sensitivity testing scenario

Unitary Plan Zones	PAUP remove MPRs?	Remove MPRs BCR > 1.0
City Centre	Yes	Yes
Metropolitan Centre	Yes	Yes
Town Centre	Yes ¹²	Yes
Local Centre	Yes ¹³	Yes
Mixed Use	Yes ¹⁴	Yes
Terrace Housing and Apartment Buildings	Yes	Yes

3.74 I model the “Test2” scenario only so as understand whether it has implications for the conclusions drawn from my analysis, rather than because I agree with the process by which Mr Colegrave arrived at the numbers. Nonetheless, this sensitivity testing suggests Council’s position with regards to the removal of MPRs is robust even when using Mr Colegrave’s conservative estimate of the relative size of the land use efficiencies arising in the absence of MPRs. For this reason, I consider Mr Colegrave’s conclusions with regards to Council’s position to be without basis.

3.75 I note further that my analysis does not include unquantified economic benefits associated with improved public health (from increased walking/cycling) and agglomeration economies (from increased density). Including these benefits would lend further support to Council’s position with respect to removing MPRs from these areas.

3.76 Finally, I note that Mr Colegrave’s evidence attempts to summarise the key findings of my economic analysis. In paragraph 3.2 Mr Colegrave suggests my economic analysis considers “a transformation shift to public transport” as “reason for “abolishing MPRs”. I note that my economic analysis is not contingent on mode shift to public transport. More specifically, congestion reduction benefits were analysed using Auckland Council’s transport model. In the model we analysed how an increase in parking prices impacted

¹² Except Town Centre zones in Helensville, Kumeu, Huapai, Pukekohe, Warkworth and Wellsford.

¹³ Except Local Centre zone in Karaka, Kaukapakapa, Leigh, Matakana, Riverhead, Snells Beach, Te Hana, Waimauku and Waiuku.

¹⁴ Except Mixed Use Zone adjacent to Rural Satellite Centres.

on congestion. The congestion reduction predicted by the model reflects a wide variety of demand responses to higher parking prices, including changes in trip generation and distribution, as well as changes in mode split, including greater uptake of car-passenger, walking/cycling, and public transport. The Council's transport model also splits trips by purpose and time period. Hence, only a small proportion of the congestion reduction benefits associated with removing MPRs is attributable to mode shift to public transport, and an even smaller proportion of these benefits would be associated with trips undertaken for retail purposes. For this reason, I conclude that Mr Colegrave is incorrect to suggest that my economic analysis is predicated on mode shift to public transport.

Other matters

- 3.77** In paragraph 4.14 Mr Colegrave concludes the Council's position "fails to ensure any supply and therefore effectively guarantees a satisfaction of 0%, which I consider highly unlikely to be the economic optimum." I am not aware of anywhere where the removal of MPRs has resulted in a "satisfaction rate of 0%". This includes Auckland City Centre, where MPRs were removed over two decades ago, as well as a number of other locations around New Zealand. The latter are summarised in Appendix C.
- 3.78** Paragraphs 4.15 through 4.20 in Mr Colegrave's evidence draw an analogy between car parks and publicly-provided infrastructure. In terms of the latter Mr Colegrave notes that the Council collects development contributions (DCs). I do not consider this analogy relevant to an economic analysis of MPRs. Legislative principles suggest DCs are only required if the effects or cumulative effects of developments will require territorial authorities to provide new or additional infrastructure capacity¹⁵.
- 3.79** It is my understanding that there is no statutory requirement for the Council to provide car parking to service private developments. AT's Parking Strategy notes that its investment in off-street facilities will be set in consideration of prices, which suggests revenues from users will be the primary source of funding for such facilities. Moreover, I do not consider car parking to be analogous to network infrastructure. The latter is characterised by monopolistic attributes which tend to support greater public involvement in its provision. In contrast to network infrastructure, car parking is a private good (i.e. excludable and rivalrous) and it can readily be provided by the private sector, if required.
- 3.80** Paragraphs 4.6 – 4.7 of Mr Colegrave's evidence notes the distinction between parking and other network infrastructure, such as power and gas utilities, where risks of

¹⁵ Refer to Local Government Act 2002 Section 197AB - Development contributions principles

capacity shortage create large downside risks, e.g. network outages. Mr Colegrave notes the “capacity threshold” is lower for parking because these downside risks are reduced. I do not dispute these comments, but do not consider them particularly relevant to the economic analysis of MPRs. I note further that power and gas utilities charge users for the infrastructure services they deliver, whereas Mr Colegrave’s assumptions are derived from observations of the demand for free parking, i.e. price = 0.

4. EVIDENCE SUBMITTED BY MR FREKE

4.1 Here I comment briefly on Mr Freke’s submission where it has relevance to the economic impacts of MPRs. For most aspects of Mr Freke’s submission I defer to the evidence of Mr Kevin Wong-Toi and Ms Mairi Joyce.

4.2 Section 8 of Mr Freke’s evidence presents a case for MPRs, or “parking minimums”. In paragraph 8.1, Mr Freke advances the following three reasons for MPRs:

- (a) Avoidance of parking over-spill and search costs;
- (b) Flexibility to accommodate future land use activities; and
- (c) Adequate provision of parking.

4.3 I agree with Mr Freke that parking over-spill and search costs are relevant issues. I do not agree with Mr Freke, however, that MPRs are the most appropriate policy response to these issues. In my experience, parking management measures, such as that considered in my economic analysis, are a more effective and appropriate way to manage issues with parking over-spill and search costs. AT’s Parking Strategy, for example, adopts clear policies on how to manage over-spill and search costs. For further details of these policies, and their effectiveness, I refer to evidence presented by Mr Scott Ebbett.

4.4 Economic analysis presented in Appendix 3.9.13 of the s32 report and summarised in my evidence in chief suggests the land use and transport efficiencies which arise in the absence of MPRs exceeds the additional costs of parking management. I also note that private developments, such as shopping centres, are able to implement parking management measures to manage access to their own accessory parking if they consider parking over-spill to be an issue. For these reasons I do not agree with Mr Freke’s conclusion that parking over-spill and search costs motivate the adoption of MPRs. These issues are, however, are a rationale for adopting parking management measures.

- 4.5** With regards to point 8.1 (b) in Mr Freke’s evidence, I note that flexibility to accommodate future land uses is a somewhat small and intangible issue. It also seems to be something prospective landowners and tenants are well placed to determine for themselves when developing the site and/or selecting where to locate. As noted earlier in my discussion of Mr Colegrave’s evidence, in the event a tenant found themselves occupying a site with too little accessory parking, then there are alternative ways for them to procure parking. This could be by way of leasing car-parks from a dedicated parking facility (public or private), or by relying on other secondary markets for parking. In his evidence Mr Freke does not seem to consider alternative ways to manage the supply of and demand for parking which, in my view, are likely to be more efficient than MPRs.
- 4.6** Point 8.1 (c) in Mr Freke’s evidence suggests MPRs are required to ensure “sufficient and appropriate amounts of parking”. I disagree with this assessment. Mr Freke’s conclusions seem to be based on the following chain of reasoning:
- (a) Observe the peak demand for free parking price;
 - (b) Assume developments should meet some percentile of this demand; and
 - (c) Specify MPRs accordingly.
- 4.7** I see no prima facie economic reason why such an approach would result in a parking supply which is close to the social optimal. Indeed, the results of my economic analysis suggest complying with MPRs will reduce the value of a property. Moreover, increasing the supply of parking provides a subsidy to driving which results in congestion being higher than it would be otherwise. These two negative land use and transport impacts outweigh the benefits which MPRs deliver to society.
- 4.8** Paragraph 8.2 of Mr Freke’s evidence suggests that Council’s focus on parking management does not address the issue of supply. I disagree. The parking management measures outlined in AT’s Parking Strategy make a clear commitment to managing demand using prices. Where demand is high, then the price of public parking will rise – and vice versa. High prices send a signal to the market that parking has a value. Hence, new developments can be expected to respond to this signal by increasing the level of accessory parking they provide. Policy 2C of AT’s Parking Strategy makes this connection explicit, by linking investment in new facilities to the price of parking. In this way, demand, price, and supply interact. Hence, I disagree with Mr Freke’s conclusions in paragraph 8.2 that the Council’s evidence does not address the issue of how much parking is appropriate; it clearly does – it suggests that transparent price mechanisms are the most appropriate way to influence the supply of parking.

- 4.9** Paragraphs 8.3 and 8.4 of Mr Freke’s evidence argues growth in the demand for vehicle travel will require more parking. I do not dispute this fact, but simply note that increasing demand is not a strong rationale to regulate the supply of parking by way of MPRs. Mr Freke does not present evidence as to why, in the presence of good information and accurate price signals, the private sector would not respond to projected growth and ensure an “appropriate and sufficient” supply of parking.
- 4.10** I note also the evidence, such as that presented in Shoup (2005), which shows that MPRs are a relatively inefficient way of managing parking demand. They are inefficient because they seek to provide for parking demands at the level of individual sites. This means the peak parking demand is provided for individually. In contrast, in a situation where MPRs are removed, and the supply of parking is determined by the market, then I would expect to see a consolidation of the parking supply into fewer, larger parking facilities. Such facilities offer considerable efficiencies because they combine demands from many different activities and are able to provide for a much lower total demand curve that results from an analysis of the demand curves for individual sites.
- 4.11** Paragraph 8.5 of Mr Freke’s evidence considers whether a lack of parking may undermine investment. I do not consider this outcome to be likely. As noted above, parking is a form of investment. Hence, by implementing parking demand measures, and setting a price on parking, Council and AT are creating conditions in which private investment decisions have better information about how much parking is required. They can then determine how much of this demand can be accommodated efficiently on-site.
- 4.12** Paragraph 8.6 of Mr Freke’s evidence concludes it is “best” to plan for and provide parking at the time of initial development so as to ensure future activities can establish there. I disagree with this assessment, and note that it is not supported by data which allows us to estimate its value. I suggest the optimal parking supply for most businesses will change over time, such that flexibility in parking arrangements delivers considerable benefits.
- 4.13** Paragraph 8.7 of Mr Freke’s evidence suggests the removal of MPRs is premised on the assumption of a perfectly functioning market. This is, in my view, not correct. Council’s position with respect to MPRs is that their imposition in certain areas would impose more economic costs (i.e. land use and transport efficiencies) than benefits (i.e. avoided costs of parking management). This is not the same as assuming a perfectly functioning market. Council’s position is more accurately described as one which recognises that the application of MPRs is likely to have costs which exceed their benefits in some areas. AT, for example, has committed to proactive parking

management, which is explicitly designed to improve market functioning, and investment if warranted by demand. In my view, the public sector will have a large influence on parking supply and demand.

4.14 Paragraph 8.8 in Mr Freke's evidence claims that the market cannot be allowed to determine the appropriate level of parking supply because "there can be commercial advantages in relying on off-site parking". I note that the reasons these so-called "commercial advantages" arise is because:

- (a) The application of MPRs has created an over-supply of under-priced parking;
- (b) Parking is therefore less valuable than other potential activities; and
- (c) Off-site parking is not managed appropriately.

4.15 Paragraph 8.9 of Mr Freke's evidence suggests that MPRs are necessary due to changes in land use activities which give rise to increased parking demand. I disagree that MPRs are an appropriate response to such an issue. As noted above, the externalisation of parking demands is only an issue if it takes place in a situation where parking is not appropriately managed. Provided that parking is appropriately managed, then the externalisation of parking demands does not lead to issues that are of consequence, and certainly not to a level which would warrant regulatory intervention such as MPRs.

4.16 Paragraph 8.10 of Mr Feke's evidence notes that that cost of parking is likely to be approximately \$30,000, and that the viability of providing such spaces is minimal. I note that the only reason the viability of providing parking is "minimal" is because the market value of parking is close to zero. The removal of MPRs and the implementation of parking management measures will mean that those who supply parking receive a direct and commensurate pay-off, either in terms of revenue or value to their development. Hence, in the future I would expect the "marginal" nature of parking to change, such that it is in the interests of private developments to provide parking. This is indeed what has happened in Auckland City Centre.

4.17 Paragraphs 8.11 and 8.14 of Mr Freke's evidence considers issues that are specific to Manukau City Centre. I note the following brief points:

- (a) Mr Freke notes high demand for 6,000 car-parks, although does not supply observations on the prevailing price and value of land. I note that this data is required to ascertain whether the parking supply is appropriate. Put another way, high demand is expected when the price of parking is too low; and

(b) Mr Freke notes that recent central government facilities has have developed with little accessory parking. This is exactly the outcome I would expect in a situation where parking was under-priced and/or poorly-managed. In my view, the appropriate solution to such a situation, however, is to price and manage parking appropriately, rather than to apply MPRs.

4.18 I note further that, in 2010, a dedicated parking facility was developed on Ronwood Avenue in Manukau City Centre. This facility is owned and operated by AT. Data supplied by AT indicate the facility has a capital valuation of \$19 million. I understand the construction of the facility cost approximately \$10 million and that it generates \$0.2 million in net revenue (i.e. gross revenue less operating expenses) per annum. Using a discounted cashflow model (with a 6% discount rate and 20 year analysis period) I estimate the net present value (NPV) of the car-park at \$2.5 million. This is considerably less than that required to deliver a reasonable return on investment (ROI). The NPV of the net revenue generated by the car-park facility is only 25% of the construction costs, and approximately 12.5% of the value of the development.

4.19 Further analysis suggests gross revenue from the Ronwood Avenue parking facility would have to be 3-4 times higher than current levels before a reasonable ROI was achieved. Moreover, data supplied by AT indicates the average utilisation of the facility is approximately 44%. Ultimately, my analysis of the Ronwood Avenue parking facility seems to support the removal of MPRs: For these reasons, I do not agree with Mr Freke's analysis of the parking situation in Manukau City Centre; it seems more likely Manukau City Centre suffers from an over-supply of under-priced parking.

4.20 Paragraphs 8.16 – 8.19 of Mr Freke's evidence conclude that the imposition of MPRs is warranted until such time as a more sophisticated parking management regime is developed. I disagree, and would suggest that such a regime already exists. This regime is articulated in AT's Parking Strategy, and is discussed in detail evidence presented by Mr Scott Ebbett. In my professional opinion, the policies in AT's Parking Strategy represent international best-practice parking management. I also note that my economic analysis show that the land use and transport benefits of removing MPRs exceed the costs of parking management. Hence, I consider Mr Freke's conclusions are not supported by the economic evidence.

5. CONCLUSIONS

- 5.1** In this rebuttal evidence I have considered evidence submitted by Mr Colegrave and Mr Freke with regards to the economic impacts of MPRs.
- 5.2** In terms of Mr Colegrave's evidence, I identify substantive issues with his analysis and conclusions. Mr Colegrave does not present credible evidence to show the application of MPRs will improve society's well-being. Mr Colegrave's criticisms of my own economic analysis with regards to MPRs are also largely incorrect. I demonstrate that Council's position with regards to the removal of MPRs is robust to changes in key assumptions.
- 5.3** In terms of Mr Freke's evidence, I find that his conclusions on the merits of MPRs does adequately consider their negative economic impacts, and that these impacts will outweigh the benefits he assigns to them. I also note that Mr Freke draws conclusions with regards to the merits of MPRs that are not substantiated by evidence, and/or do not give adequate consideration to more efficient alternatives to regulatory intervention.
- 5.4** For these reasons, I conclude that Council's position with regards to removing MPRs from these areas is supported by the economic evidence. In short, a wide body of research, as well as my own analysis, suggests the application of MPRs to these areas would have economic costs which exceed their benefits. Hence, applying MPRs to these areas would be inconsistent with Sections 32(2)(a) and Section 32(2)(b) of the RMA.

Stuart Burnet Donovan

30 June 2015

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Appendix A – Literature review of studies relevant to MPRs

Source	Synopsis
Genter, J.A., Schmitt, L, Donovan, S. (2008)	MPR are based on the demand for free parking at the peak hour for different land uses, which creates an oversupply of parking and disregards the value of land used for car parks. This reduces supply and increases cost of land available for economically productive uses. This increased cost is passed on throughout the economy (e.g. property owners, retailers, residents, consumers). In the example of New Lynn Town Centre in 2008, peak parking occupancy was 54% of estimated available supply. This available supply was significantly lower than that required by the existing Waitakere City District Plan.
Cutler, J. and Parfitt, B. (2011)	This article summarises the main economic costs of MPRs in the New Zealand context. The article asserts that the mandated provision of parking, even if 'free' for customers/staff, is never actually free because the cost of surplus parking provision that is initially borne by developers or business owners is ultimately transferred to leases, building sale prices and the costs of goods and services. Second, MPR creates a market distortion by oversupplying parking to a level such that people come to expect parking to be free. This oversupply of parking undermines incentives to use non-car transport modes. Third, adherence to MPR creates barriers to development because the costs of compliance are often too high to ensure a viable return on investment. Finally, when MPRs supplies parking beyond the actual demand, this parking takes up valuable land in urban areas that could otherwise be used for other productive uses such as increased floor space.
Varghese, J (2011)	Economic costs of MPR arise from increased vehicular movements and barriers to economic development. That MPR mandate the provision of parking for each development creates an environment where it is more convenient to drive and park at separate locations rather than parking in a single location and walking to multiple locations. This increased vehicular movement unnecessarily increases pressure on existing road network. The oversupply of parking due to MPR can create poor urban form and unfriendly pedestrian environments, which negatively affects pedestrian volumes and concomitant retail expenditure from pedestrians. MPR create barriers to economic development by requiring developer to purchase or allocate more land for parking than actually needed, which increases costs for businesses.
Donovan, S. <i>et al.</i> (2008)	MPR have a wide range of negative impacts including inflated demand for land and increased costs of living, particularly for medium to high density dwellings; increased costs of redevelopment in existing urban areas, particularly town centres and historic buildings; reduced urban densities; and fragmented and inefficiently utilised parking areas. MPR encourage low density, out-of-centre retailing and increase traffic congestion by encouraging development in fringe areas where land is cheaper. MPR also inflate demand for urban land, which increases land costs that are subsequently distributed throughout the rest of the economy in the form of higher rents and costs of goods and services.
Donovan, S. <i>et al.</i> (2011)	This article examines the Sylvia Park development by Kiwi Income Property Trust (KIPT). KIPT was granted consent to provide 3274 carparks – 800 fewer than were required in the district plan (despite this shortfall, the area of land used for carparking still occupies about 50% of the site). But even though Sylvia Park supposedly has a 'parking shortfall' and experiences a 93% vehicle mode share, the current on-site parking supply has proven to be adequate, even with no parking management or TDM measures being implemented. The study

	concludes by recommending the removal of MPRs.
Donovan, S and I Munro (2013)	This report suggests MPR have significant negative consequences by increasing the supply of parking. This flows through into higher rates of vehicle ownership and travel, and undermines the uptake of other transport modes. Because MPR effectively create a subsidy for drivers, people end up driving more and creating more congestion. Many territorial authorities in New Zealand require one parking space per 30 m ² GFA. With each space typically requiring 30 m ² including manoeuvring space, developments often have at least a 1:1 ratio between space used for parking and floor area. As such, developers and business owners have to pay for costs associated with providing parking, which may be surplus to their requirements.
Hulme-Moir, A. (2010)	This Master's Thesis examined the use of MPR in Porirua City and their effects on transport and land-use patterns. The thesis' results demonstrated that MPR-mandated parking oversupplied parking relative to surveyed mean and peak occupancies while 24 per cent of Porirua's CBD land was allocated to off-street parking. This 24 per cent use of land for parking has opportunity costs, especially when MPR are binding in Porirua because most developments assessed in this study supplied parking below the MPR in Porirua.
Leung, H.Y.A. (2013)	This Master's Thesis examined the quantity of off-street parking available in West Auckland in 1996 and 2006 in relation to census data on employment, population and vehicle access from those years. The thesis' findings showed that the quantity of land allocated to parking in West Auckland increased by over 30% from 1996 and 2006, which were incommensurate with changes in population, employment and access to vehicles during the same time period. The use of MPR in the former Waitakere City therefore contributed to an oversupply of off-street parking, with concomitant economic opportunity costs.
Guo, Z. and Ren, S. (2013)	This study demonstrated that the use of MPR for residential land uses in London were binding, given the reduction in parking supply following the abolition of MPR. There was a 40 per cent decrease in parking supply following the removal of MPR in 2004, 98 per cent of which was attributed to the removal of MPR. Consequently, residential developers in London have lower costs of construction because they are allowed to provide for less parking, which lowers residential dwelling prices for prospective buyers in London.
Willson, R.W. (1995)	MPR increase land consumption and lower site density in urban areas because each development must provide parking to satisfy the demand for free parking at peak periods. A lower site density also has negative implications on land value, which should be concerning to landowners. When developers purchase land for developments in an area that has MPRs, they are aware of the amount of excess land beyond the actual demand that they must set aside for parking. Consequently, a rational developer would only pay a price to the landowner that corresponds to the land value minus the cost of excess parking provision.
Litman, T. (2009)	This article argues MPR exacerbate housing unaffordability by increasing the sale or rental price to residents as well as land values. This is because each additional dollar of construction, maintenance and land costs for off-street parking increases the overall house price. Moreover, the land required per unit of housing increases due to increased off-street surface parking as required by MPR. This reduces the development density for developers and landlords such that they must charge higher prices/rents to recover their costs. Without MPR, developers could construct dwellings with less parking, increasing choices for residents and improving affordability.

Appendix B – Survey of shopping centre parking management measures in New Zealand

Location	Name	Parking management measures
Auckland	Downtown ¹⁶	No accessory parking. Drivers are re-directed to AT's dedicated Downtown parking facility, which charges \$3 per hour up to 5 hours, and a maximum cap of \$17 per day.
	Britomart ¹⁷	\$6 per half hour, \$45 daily maximum (to midnight)
	Atrium on Elliott ¹⁸	One hour free parking with minimum spend of \$5. Present proof of purchase and parking ticket to management office.
	277 Newmarket ¹⁹	Two hours free parking with minimum spend of \$10.00 (proof of purchase required)
	Rialto Centre ²⁰	One hour free parking with minimum spend of \$5.00 for Rialto Centre Customers
	Nuffield Street ²¹	First half hour free, then \$2 per half hour thereafter.
	Manukau ²²	Free car parking for 2-4 hours. People wishing to park for longer must inform Customer Services.
	Lynn Mall ²³	Free parking up to 4 hours.
	SkyCity ²⁴	\$5 per hour parking if spend \$40 or more, otherwise \$15 per hour. Customers must present their car park ticket to the cashier before exiting the car park.
Hamilton	Centre Place ²⁵	Two hours free parking on weekdays with minimum spend of \$10. Increases to 4 hours free parking on weekends.
	Hamilton Central Shopping Centre ²⁶	Two hours free parking with a minimum spend of \$5. Proof of purchase needs to be presented to the parking attendant for validation before your departure.
New Plymouth	Centre City Shopping Centre ²⁷	50 cents per half hour, or part thereof
Palmerston North	Plaza ²⁸	First hour free, \$2 for next 2 half hours, then 50c per hour thereafter.
Wellington	Courtenay Central ²⁹	\$3 per hour for first 2 hours, \$2 per hour thereafter. Price is capped at \$8 after 6pm and on weekends.
	Capital Market ³⁰	45 minutes free parking at Willis Street car park with a minimum spend of \$10 or more at Capital Market.

¹⁶ <http://downtownsc.co.nz/location/>

¹⁷ <http://britomart.org/parking/rates>

¹⁸ <http://www.atriumonelliott.co.nz/carpark.htm>

¹⁹ <http://www.westfield.co.nz/newmarket/gettinghere#>

²⁰ <http://www.rialtocentre.co.nz/>

²¹ <http://nuffieldstreet.co.nz/location/>

²² <http://www.westfield.co.nz/manukau/gettinghere>

²³ <http://www.lynnmall.co.nz/getting-here>

²⁴ <https://www.skycityauckland.co.nz/about-us/carparking/super-saver-parking/>

²⁵ <http://www.centreplace.co.nz/getting-here>

²⁶ <http://www.hamiltoncentralshoppingcentre.co.nz/articles/1036/parking>

²⁷ <http://www.centre-city.co.nz/carpark>

²⁸ <http://www.theplaza.co.nz/carparkingrates>

²⁹ <http://www.courtenaycentral.co.nz/event-1/>

³⁰ <http://www.wellingtonnz.com/discover/things-to-do/shopping/capital-market/>

Appendix C – Summary of Plan Changes where MPRs were removed (2010-2015)

Local Authority	Changes to MPRs	Plan Change Reference
Christchurch City (proposed)	Removed MPRs in the city centre and local neighbourhood centres; reduce elsewhere.	<ul style="list-style-type: none"> • Christchurch Central Recovery Plan (released 30 July 2012 - operative) • The Proposed Christchurch Replacement District Plan (Stage 1 notified 27 August 2014 – currently in hearings)
Hamilton City	Removed MPRs in CBD; reduced MPRs elsewhere.	Proposed Hamilton City District Plan (notified December 2012, currently in appeals phase)
Nelson City	Removed MPRs in Centre City Zone and Inner City Zone; reduced MPRs elsewhere	Plan Change 21 (notified 25 September 2010, operative 28 May 2012)
New Plymouth District	Removed MPRs in CBD	Plan Change 39 (operative as of 12 September 2014)
Rotorua District	Removed MPRs in CBD; Reduced MPRs elsewhere.	Proposed Rotorua District Plan (notified October 2012, currently in appeals phase)
Taupo District	Removed MPRs in Town Centre; reduced MPRs elsewhere.	Plan Change 28 (August 2011 - operative)
Tauranga City	Removed MPRs in CBD; reduced MPRs elsewhere.	Variation 6 to the Tauranga City Plan (notified 12 May 2012 – operative)
Whakatane District	Removed MPRs in "pedestrian focussed areas".	Whakatāne District Council Proposed District Plan (notified 28 June 2013)
Whangarei District	Removed MPRs in the core CBD area and the fringe pedestrian focussed area adjacent to the Hatea River.	Whangarei District Council Operative District Plan