#### BEFORE INDEPENDENT HEARING COMMISSIONERS AT CHRISTCHURCH

#### I MUA NGĀ KAIKŌMIHANA WHAKAWĀ MOTUHAKE KI ŌTAUTAHI

UNDER	the Resource Management Act 1991
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**IN THE MATTER** Of the hearing of submissions and further submissions on Plan Change 14 to the Operative Christchurch District Plan

AND Submitter #681 – Andrew Gregory McCarthy

#### STATEMENT OF EVIDENCE OF DAVID JOHN ROBERT SMITH (TRANSPORTATION)

DATED 20 SEPTEMBER 2023

Christchurch

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Anthony Harper

# **1 EXECUTIVE SUMMARY**

- 1.1 I have been engaged by Mr Andrew McCarthy to provide transportation evidence in relation to his submissions and further submissions on Plan Change 14.
- 1.2 Mr Andrew McCarthy opposed the retention of the Residential Hills Zone in PC14 as notified, and seeks the establishment of medium density residential development in the hillside suburbs and the removal of reference the Low Public Transport Accessibility Area Qualifying Matter (LPTAAQM).
- 1.3 I have considered the appropriateness of establishing medium density residential development in the hillside suburbs in Christchurch from a transport perspective, and have concluded that the hillside suburbs are:
  - (a) currently accessible by a range of travel modes including public transport, walking and cycling based on 2018 census travel to work and education data;
  - (b) well serviced by regular public transport services with increasing frequencies on these services signalled through the Greater Christchurch PT Futures Combined Business Case.
  - (c) Located in close proximity to the central city, Key Activity Centres and other destinations (relative to many other suburban areas intended to be MDRZ) and more centrally located than identified greenfield areas on the outskirts of the City.
  - (d) Not entirely dependent on travel to the central city with schools and neighbourhood shops located throughout the hillside suburbs as well as Key Activity Centres and the Ferrymead bulk retail areas nearby.
- 1.4 I have also assessed the suitability of the LPTAAQM in the context of the hillside suburbs and am of the view that this qualifying matter should be removed from PC14 as:
  - (a) by restricting density in existing urban areas, it restricts the viability of increasing the frequency of current bus services and/or establishing new bus services.
  - (b) it ignores the wide range of options to access bus services (the first mile and last mile challenge) including bikes on buses, micromobility, informal park-and-ride and ondemand services.
  - (c) it precludes existing developed areas with good accessibility by other modes (and the potential to have improved public transport accessibility) from increasing density, potentially pushing development into outlying greenfield areas with relatively poorer transport accessibility outcomes.
- 1.5 From a transport perspective I support the establishment of medium density residential development on the hillside suburbs, and the removal of the LPTAAQM.

## 2 INTRODUCTION – QUALIFICATIONS AND EXPERIENCE

- 2.1 My full name is David John Robert Smith, I hold a Bachelor of Technology (with Honours) in Industrial Operations Research and Master of Philosophy in Operations Research from Massey University. I am a Chartered Member of the Institute of Logistics and Transport (CMILT), a member of Engineering New Zealand (MEngNZ) and a member of the NZ Modelling User Group sub-group of ENZ. I have been appointed to the NZ Transport Agency Independent Professional Advisors panel for Transportation Modelling. I am also certified as a Hearings Commissioner having complete the Making Good Decisions course in 2019.
- 2.2 I hold the position of Technical Director of Transportation Planning at Abley. I have been in this position since 2018 and have been employed at Abley for over 11 years. I lead a range of development planning and transportation planning projects for both public and private sector clients.
- 2.3 My previous work experience includes 23 years of transportation planning and engineering experience. I have managed and led numerous projects related to transportation business cases, transportation research and Resource Management Act (RMA) related matters for public and private sector clients.

## 3 CODE OF CONDUCT

- 3.1 Although this is a Council hearing, I confirm that I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2023. I have complied with the Code of Conduct in preparing this evidence and agree to comply with it while giving evidence.
- 3.2 Except where I state that I am relying on the evidence of another person, this written evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

#### 4 SCOPE OF EVIDENCE

- 4.1 I have been engaged by Mr Andrew McCarthy to provide transportation evidence in relation to his submission on Plan Change 14.
- 4.2 Mr Andrew McCarthy opposes the retention of the Residential Hills zone and seeks the following:
  - (a) Amend the Residential Hills Zone to be Medium Density Residential Zone (Residential Hills Precinct) with rule changes sought; and
  - (b) Completely remove all reference to and effects of the Low Public Transport Accessibility Area Qualifying Matter (LPTAAQM).

- 4.3 I have reviewed the following documents:
  - (a) Submission of Andrew McCarthy
  - (b) Transport Planning evidence of Chris Morahan on behalf of Council
  - (c) Section 42A 05 Qualifying Matter: Low Public Transport Accessibility ("LPTA chapter") prepared by Ike Kleynbos on behalf of Council
- 4.4 My evidence is structured as follows:
  - (a) Suitability of Medium Density Residential on Christchurch hillside suburbs
  - (b) Assessment of LPTAAQM in context of hillside suburbs
  - (c) Conclusions

# 5 SUITABILITY OF MEDIUM DENSITY RESIDENTIAL ON CHRISTCHURCH HILLSIDE SUBURBS

- 5.1 PC14 as notified proposed to retain the Residential Hills Zone (RHZ). I have been advised by Ms Bealey that the amended provisions now rezone the majority of hills sites to Residential Medium Density, but also include the Suburban Hill Density Precinct (SHDP) across the sites. The SHDP has similar effects as retaining the Residential Hills Zone, in particular the overlay includes minimum density requirements that in the view of Ms Bealey are identical to the former RHZ and therefore do not enable medium density development in accordance with the Medium Density Residential Standards (MDRS).
- 5.2 I have considered the appropriateness of establishing medium density residential development within the hillside suburbs by analysing travel data collected by Statistics New Zealand from the 2018 census, noting that at the time of preparing this evidence 2023 census data is not publicly available. My intention is to understand whether the underlying travel patterns support the establishment of medium density residential activity in hillside suburbs.
- 5.3 The datasets I have reviewed from Statistics New Zealand are the Main Means of Travel to Work (also known as Journey to Work or JTW) and Main Means of Travel to Education (Journey to Education or JTEd) data sets which break down the mode of transport used for the corresponding regular trips undertaken by residents. I have observed that there is a substantive uptake of public transport and walking / cycling trips in hillside suburbs as shown in **Table One**.

Statistical Area	JTW PT	JTW Walk/Cycle	JTEd PT	JTEd Walk/Cycle
Heathcote Valley	4% (48)	6% (69)	21% (117)	15% (84)
Mount Pleasant	2% (42)	5% (108)	17% (123)	16% (117)
Redcliffs	2% (24)	7% (72)	37% (153)	4% (18)
Clifton Hill	1% (12)	6% (60)	28% (99)	9% (33)
Sumner	4% (78)	7% (138)	23% (216)	32% (297)
Cashmere East	2% (33)	13% (255)	7% (60)	38% (351)
Cashmere West	2% (42)	10% (180)	9% (75)	41% (333)
Huntsbury	3% (36)	11% (147)	11% (60)	34% (177)
Hillsborough	2% (27)	12% (156)	14% (84)	49% (174)
Westmorland	2% (22)	8% (99)	10% (57)	13% (75)
Total	2.5% (364)	8.7% (1,284)	16.2% (1,044)	25.7% (1,659)
Christchurch City Ave	4.2%	9.5%	11.5%	30.2%

 Table One
 2018 Census Travel Data for Residential Hill Suburbs

- 5.4 The uptake of public transport in the hillside suburbs is not insignificant with JTW mode share of 2.5% despite the absence of frequent (core) bus services to many of these areas. The proportion of bus users among students is much higher at 16.2% which is well ahead of the City average of 11.5%. In my view the relatively high levels of public transport usage despite the current lack of high frequency services demonstrates that there is potential for increased uptake on the hills. I also note that across the hillside suburbs there are over 1400 public and/or school bus trips per day based on the census data which demonstrates a substantial level of provision and patronage of bus services across these areas.
- 5.5 The proportion of residents in the hillside suburbs who walk or cycle every day is also comparable to Citywide averages at 8.7% (for work trips) and 25.7% (for education trips). This equates to a total of just under 2,000 trips per day undertaken by walking and cycling. In my view this demonstrates that living in the hillside suburbs is not an impediment to walking and cycling across the City.
- 5.6 I have mapped the mode share for each of the key modes including driving trips and these are included with this evidence as Attachment One. These outputs provide an alternate representation of the dataset shown in Figure 2 of Mr Morahan's evidence. I have aggregated the areas to Statistics New Zealand SA2 (suburb) levels and shown the range of percentage of uptake of each mode of transport from the underlying census data. The location of the hillside suburbs is in thick black borders. As one might expect the suburban areas that are adjacent to the City Centre show the lowest levels of car usage and highest levels of public transport and walking and cycling uptake based on their proximity. On this basis I agree that these areas are well suited for medium density as access to these other modes of transport is high.
- 5.7 However, I also observe that the spatial trends for with respect to car, public transport and walk/cycle usage for hillside suburbs is not dissimilar and in some instances is better than other

suburban areas in the north of the City that are equidistant from the central city. On this basis I consider that with respect to transportation accessibility the hillside suburbs are as well or better suited than many other areas (proposed to be rezoned) to accommodate higher density development such as could be achievable under a MDRZ.

- 5.8 This is further demonstrated by considering the reach in terms of distance from the central city as the to the hillside suburbs. This is shown in Figure A2 1 in attachment two to my evidence which measures distance across the transport network from the Bus Exchange on the corner of Lichfield and Colombo Street. The majority of the hillside suburbs (Westmorland in the west through to Heathcote in the east) are well within 10km of the central city which corresponds to an approximate 30 minute cycle ride, and this is either much closer or equidistant to central Christchurch than many other suburban areas proposed to be MDRZ including Halswell, Hornby, Russley, Harewood, Redwood and Belfast. Other hillside suburbs towards the east (Mt Pleasant, Redcliffs and Sumner) are well served with high frequency public transport in the form of the Route 3 Sumner service.
- 5.9 Importantly, transport accessibility is further improved by having key destinations within a convenient walking or cycling distance and this concept extends well past simply access to the central city. Figure A2 2 demonstrates that there are many such destinations located within the hillside suburbs including schools, supermarkets and smaller neighbourhood/retail centres. There are also several conveniently located Key Activity Centres within close proximity and large format retail in Ferrymead.
- 5.10 I also consider that the establishment of medium density within the existing urban footprint will lead to much improved transport outcomes relative to enabling more greenfield development on the outskirts of the City. The hillside suburbs are in closer proximity to the central city, key activity centres and other destinations, compared to potentially having to rezone greenfield areas at some stage in the future past the current urban/rural boundary of the City. From a transport outcomes perspective providing more opportunities to establish higher densities in existing urban areas is far better than rezoning greenfield land which increases urban sprawl on the outskirts of the City.
- 5.11 My observations with respect to accessibility from hillside suburbs are consistent with Christchurch City Council's Integrated Transport Assessment (ITA) Guidance<sup>1</sup> Appendix C which includes a helpful set of accessibility maps that "*have been developed to help applicants describe how accessible their site for access to jobs and district centres for public transport, cycling and private vehicles*". With respect to accessibility to employment and Key Activity Centres by public transport and cycling, this set of maps demonstrates that the hillside suburbs are comparable to other residential suburbs throughout the urban area. I have included an excerpt from the CCC ITA Guidance Appendix C map set below, which corresponds to accessibility to jobs by Public Transport in the morning peak (in 2016). The lighter colours have access to a larger number of jobs in terms of reach across the City using Public Transport. The majority of the residential hillside suburbs have similar accessibility outcomes to many other suburban areas.

<sup>&</sup>lt;sup>1</sup> https://www.ccc.govt.nz/assets/Documents/Consents-and-Licences/resource-consents/ITAGuidelines.pdf



Figure One Accessibility to jobs by public transport in 2016 morning peak

5.12 On this basis from a transport perspective, I support the establishment of medium density on the hillside suburbs or Christchurch.

# 6 ASSESSMENT OF LPTAAQM IN THE CONTEXT OF HILLSIDE SUBURBS

- 6.1 The Low Public Transport Accessibility Area Qualifying Matter (LPTAAQM) as notified precludes the establishment of medium density development across much of Christchurch including the hillside suburbs in what is currently the RHZ. I understand that the LPTAAQM corresponds to areas where core or high frequency public transport services are accessible within 800m (or an approximate 10-minute walk), and this extends to include specific routes connecting employment services together.
- 6.2 With respect to public bus services, there are currently five that serve the hillside suburbs as follows:
  - (a) Route 1 Rangiora / Cashmere this is a high frequency service operating every 10-15 minutes throughout the day, however services extend beyond Princess Margaret Hospital into Cashmere less frequently at every 20-30 minutes in the peak and 30 minutes off-peak.

- (b) Route 3 Airport or Sheffield Crescent/Sumner this is a high frequency service which runs past several hillside suburbs and terminates at the southern end of Sumner, running every 10 minutes in the peak and off-peak.
- (c) Route 27 Northwood / Huntsbury this is a recently established crosstown suburban service which connects through the central city and services Huntsbury Hill every 20-30 minutes in the peak and 30 minutes off-peak.
- (d) Route 44 Shirley / Westmorland this is a crosstown suburban service which connects through the central city and services the hillside suburb of Westmorland every 20 minutes in the peak and off-peak.
- (e) Route 140 Mount Pleasant / Russley this is a crosstown suburban service which connects through the southern edge of the central city and services the hillside suburb of Mount Pleasant every 30-40 minutes throughout the day.
- 6.3 Mr Morahan in paragraph 36 helpfully categorises bus routes as high frequency (typically 15minute frequency), city connector (typically 30 minute) services.
- 6.4 I note that of the five services serving the hillside suburbs, one (Route 3 Sumner) runs at 10 minute frequencies, and three (Route 1 Cashmere Hill extension; Route 27 Huntsbury Hill; Route 44 Westmorland) run at 20-30 minute frequencies, so sit between the high frequency and city connector categorisations. Irrespective, none of these are considered core services under the LPTAAQM.
- 6.5 Mr Morahan discusses significant improvements to infrastructure and improvements from the Greater Christchurch Public Transport Futures Combined Business Case<sup>2</sup> (the "Business Case") in his evidence including outlining the intended frequency of bus routes in paragraph 58. It is stated that the planned outer core and additional routes are intended to move to 15 min headways under the Business Case. My interpretation of the Business Case is that:
  - Route 1 is a core route so is proposed to operate at a 7.5 minute (peak) or 10 minute (off-peak) frequency in the inner core, past Princess Margaret Hospital is an outer branch of a core route so is proposed to operate at a 15 minute frequency all day;
  - (b) Route 3 is a core route so is proposed to operate at a 7.5 minute (peak) or 10 minute (off-peak) frequency in the inner core, and in the outer core is proposed to operate at a 15 minute frequency across the foot of the hillside suburbs;
  - Route 27 which has recently replaced route 28<sup>3</sup> is a secondary core route and is proposed to operate every 15 minutes all day; and

<sup>&</sup>lt;sup>2</sup> Included as Section 32A Appendix 47

<sup>&</sup>lt;sup>3</sup> As of 4<sup>th</sup> September 2023

- (d) Route 44 is not referred to explicitly in the public-facing summary document but is likely a branch service from the core routes which would similarly operate every 15 minutes all day.
- (e) Route 140 is proposed to be re-routed to provide a more direct connection, to provide a spine through the industrial employment area and increased service frequency in the future.
- 6.6 Consideration of these future planned service upgrades is important, as noted in paragraphs 101-106 of Mr Morahan's evidence where he highlights the National Policy Statement on Urban Development 2020 reference to accessibility on the basis of "*the area is well-serviced by future or planned public transport*". Whilst there is no clear directive as to what well-serviced entails in terms of the frequency or connectivity of services, Mr Morahan concludes that the LPTAAQM is consistent with the NPS UD Objective 3(b). I disagree in that the Qualifying Matter as set out in PC14 does not consider future planned public transport. As demonstrated in paragraph 6.5, all of the bus routes currently serving the hillside suburbs are planned to run in the future at 15 minute (or more frequent) headways and therefore these areas meet this criterion.
- 6.7 The Ministry for the Environment have produced guidance for the implementation of the intensification provisions of the NPS-UD<sup>4</sup>. Helpfully this addresses accessibility including reference to frequent public transport but does not specify what this means in terms of the actual frequency of services (that is how many minutes between services). The application of the LPTAAQM through PC14 to only enable intensification to core services which operate at 15 minute frequency is not in my view consistent with the MfE guidance. Whilst I acknowledge that some engineering judgment may be required, services operating at 20 or 30 minute frequencies provide regular and convenient access to public transport and are consistent with the concept of operating as frequent services.
- 6.8 The NPS-UD implementation guidance refers to accessibility measures including accessibility by cycling within 30 minutes and public transport within 45 minutes. I take from this that it is clear that accessibility under the implementation guidance is not exclusively a matter of access via public transport as the application of an LPTAAQM would suggest.
- 6.9 I observe from my Figure A2 1 appended to this evidence that the central city is located within 10km of the majority of the hillside suburbs which is an approximate 30 minute cycle journey (at average speed of 20 kph). I have further studied the weekday morning peak timetables of all five bus services and calculated the scheduled travel time from the end terminal of each services to the central city bus exchange. The range of travel times for these services is 23-42 minutes which is comfortably less than the 45 minute threshold referred to in the implementation guidance. The Mount Pleasant service is currently not a direct service<sup>5</sup> but reaches Selwyn Street (past the central city) in approximately 45 minutes). Subsequently I have concluded that the

<sup>&</sup>lt;sup>4</sup> https://environment.govt.nz/assets/Publications/Files/Understanding-and-implementing-intensification-provisions-for-NPS-UD.pdf

<sup>&</sup>lt;sup>5</sup> However is intended to become a more direct and frequent service under the Business Case.

hillside suburbs have cycling and public transport accessibility levels that are generally better than the thresholds proposed in the corresponding MfE guidance.

Route	Terminus	Scheduled travel time	MfE Implementation threshold
1	Cashmere Hill	23-24 min	45 min
3	Sumner	36-42 min	45 min
27	Huntsbury	28-31 min	45 min
44	Westmorland	26-27 min	45 min
140	Mount Pleasant	41-50 min (to Moorhouse Ave near Selwyn St)	45 min

**Table Two**Public Transport Scheduled Travel Times to Central City

- 6.10 The nature of public transport in Christchurch is changing with more emphasis on providing easy access to regular public transport services. Noting that all of the hillside services are intended over time to operate at frequencies which are consistent with current high frequency bus services, the future state would provide an excellent level of provision of public transport services across the current hillside suburbs.
- 6.11 The challenge of accessing bus services is often referred to as the 'first mile and last mile' portion of the trip and focuses on enabling bus users to safely and efficiently travel to and from their destination (whether that be their home, workplace, school, shop or recreational facility). This challenge can be met in several different ways:
  - (a) Accommodating bikes on buses the Environment Canterbury metro fleet enables bikes to be carried on the front of all services.
  - (b) The rise of micromobility electric scooters and other electric mobility devices improve the reach of bus users including on terrain with a gradient.
  - (c) Mobility as a service and on-demand services the industry is trending towards ondemand services which can provide for first mile and last mile users. In Timaru the entire public transport service has migrated from contracted to on-demand services through the MyWay service.
  - (d) Hide and ride this is an informal version of Park and Ride and is a common occurrence in hillside suburbs whereby bus users drive a short distance to the nearest bus stop and park before boarding the service.
- 6.12 Additionally, the rise of micromobility and in particular e-bikes is providing more travel choice for residents in hillside suburbs, which means while there may be a perception that these areas are car dominated, the landscape is changing. I note that the cycling data I presented in Table One is based on 2018 so is unlikely to represent the impact of e-bikes on mobility in hillside areas.

- 6.13 I have concluded that the LPTAAQM has little relevance as the aspirations for Greater Christchurch clearly demonstrate that a higher level of service (with respect to frequency) is anticipated across all services under the Greater Christchurch PT Futures Combined Business Case.
- 6.14 In paragraphs 31-32 of Mr Morahan's evidence the relationship between population density and public transport usage is established in the context of Christchurch as well as a reference to international evidence. It is intuitive that areas with higher residential density development provide a larger catchment for public transport services and in doing so this relationship between increased density and higher public transport uptake is self-fulfilling, as the larger catchment makes the provision of higher frequency services and any corresponding infrastructure upgrades (such as bus priority measures and improved bus stop infrastructure) more viable. If higher density development is not encouraged on existing and potential future bus corridors, then the future success of these services and their ability to be convenient, high frequency services is undermined.
- 6.15 By removing the LPQAAQM as a barrier to achieving higher densities in suburban areas, it is possible to provide a greater catchment in close proximity to current non-core bus services or potential future bus services, such that they can become viable, convenient, high-frequency services. I see no impediment to this being achievable on hillside suburbs noting the challenges of first mile and last mile access to bus services can be met through several means as documented in paragraph 6.11, and noting that in some cases smaller buses are deployed where there may be limited manoeuvring space on the tighter hillside streets.
- 6.16 The benefits of the removal of the LPTAAQM extend beyond the hillside suburbs which have been the primary focus of my assessment. The potential to increase bus patronage on second-tier routes would be substantially increased by any intensification in the vicinity of these routes (irrespective of location) as it enables them to have a comparable catchment over time as the core routes. The increased catchment and patronage through intensification also provides the opportunity for other investment in the public transport system including bus priority, park-andride and associated bus stop infrastructure improvements as this becomes financially more viable. This is consistent with the trends shown in paragraphs 60-62 of Mr Morahan's evidence.
- 6.17 I understand that the process to establish new or change existing bus services is the mandate of the Regional Council, and they regularly review bus services across greater Christchurch. Mr Morahan's statement in paragraphs 34-35 of his evidence that public transport services have not fundamentally changed over time is based on the premise that key corridors where tram services were established in the 1920s continue to have bus services. Like the relationship between population density and higher bus patronage, this observation is intuitive as they are key transport corridors around which the growth of the city has continued. In my view this is another self-fulfilling observation, and is not a valid reason to only focus intensification around these corridors.
- 6.18 However, I disagree with the premise that the core of bus services are unlikely to change fundamentally in the future. The concepts of the extremely successful Orbiter services, crosstown routes and hub-and-spoke service design are all recent initiatives in Christchurch that have

in my view fundamentally changed how we travel across the City by public transport in response to changing travel needs. New services have been introduced into more recent development areas including Northwood, Pegasus, Prestons and Wigram and such expansions of the service are in my view a business-as-usual approach to providing improved public transport services throughout the City.

- 6.19 It is logical to me that should areas of intensification be enabled and implemented to provide a greater catchment and corresponding demand for public transport, the Regional Council have the ability to respond by adding new services, redirecting services and increasing the capacity (that is through increasing the frequency) of services.
- 6.20 There are also recent examples whereby the public have asked the Regional Council to provide additional services which can be subsidised by those that would benefit from these services through targeted rates. Most recently the bus route servicing West Melton and Darfield is an example of the establishment of a new bus service based on a request from and contribution made by the public through rates.
- 6.21 The removal of the LPTAAQM would support intensification across more of the city, maximising opportunities to achieve a more compact urban form rather than relying on greenfield development on the outskirts of the city. Mr Morahan notes in paragraph 97 that based on transport modelling, a more compact urban form may reduce vehicle kilometres travelled and corresponding vehicle-related emissions by 4-5% compared to a more dispersed urban form. I agree that this is a logical outcome, and my view is that this would be enhanced by providing more opportunities for intensification within the existing urban areas through the removal of LPTAAQM from the Plan Change.

### 7 CONCLUSIONS

7.1 From a transport perspective I support the establishment of medium density residential development on the hillside suburbs, and the removal of the LPTAAQM for the reasons as set out in this statement of evidence.

David John Robert Smith

20 September 2023



# ATTACHMENT ONE – Christchurch Mode Share Travel Data

Figure A1 – 1 Journey to Work %age Vehicle Driver Trips





Figure A1 – 2 Journey to Work %age Public Transport Trips

Figure A1 – 3 Journey to Work %age Walk and Cycle Trips



Figure A1 – 4 Journey to Education %age Vehicle Driver Trips



Figure A1 – 5 Journey to Education %age Public Transport Trips



Figure A1 – 6 Journey to Education %age Walk and Cycle Trips



# **ATTACHMENT TWO – Accessibility from Hillside Suburbs**

Figure A2 – 1 Distance to travel from Central City



Figure A2 – 1 Key Destinations in Hillside Suburbs