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A Blue-sky Report

Pole Position:
Transport and wellbeing in a greenfield estate

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(A report for the Henry Halloran Trust, May 2018)

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Executive Summary

Introduction:

Asynchronies in the provision of infrastructure relative to housing has been a hallmark of greenfield development in Australia. This project seeks to provide a deeper and situated understanding of the impact of asynchronies in development on the health and wellbeing of a newly established community in Western Sydney. To explore the heart of concerns, the focus is on asynchronies in the provision of transport infrastructure. The project examines the transport behaviour and attitudes of greenfield residents, and conceptualises the impact of these things on health and wellbeing. The master planned estate, Oran Park, is used as a site for analysis.

Method:

This project's theoretical approach is inspired by recognition that urban growth as a spatial outcome is only realised at the point where real people start to live and work in new locations. The way these people experience these places, and the practices they establish, construe important indicators of the success of greenfield development. Records of these practices and experiences provide valuable guidance into the future. The project's practical approach uses quantitative and contextual analyses. A purpose built survey was administered to residents of Oran Park using social media, local schools, childcare centres and other community groups for participant recruitment. The survey was completed by 317 people. Assuming only one person per household completed the questionnaire, this is a response rate of 20.3%. Survey analysis involved descriptive statistics, dimension reduction and multiple regression techniques. This analysis was combined with a review of the historical, planning, transport and built environment context of the Oran Park site.

Key findings:

- While the estate of Oran Park has been designed and marketed as a precinct supportive of active transport modes and healthy living, the imprints of the private car are writ large. The estate celebrates its heritage as a car racing track, has street names based on legendary race car drivers and car themed children's parks. Ironically, speeding drivers on Peter Brock Drive were cited by this study's participants as the biggest crime issue in Oran Park. More significantly, the dominance of the private car is expressed in residents' attitudes, and their practices of getting from A to B.
- Access to and from Oran Park by modes other than the private car is extremely difficult. While most residents live within walkable (800m) distance of a public transport stop, the frequency of services and connectivity to the wider network is inadequate to stimulate regular use.
- Provision for active transport (walking and cycling) modes within the precinct is ample. Outside of the precinct, there are very few destinations within a walkable or cycleable distance, and infrastructural provision for these modes is poor.
- Most of this study's participants cited superior private car access as a reason for relocation to Oran Park. This was more important for more participants than access to jobs, schools, family and

friends, and the desire to purchase a bigger home. This could be related to the increased mobility of employment, and to the lack of affordable housing options in Sydney. It could also be indicative of an acceptance of long travel times augmented by superior experiences of driving, poor public transport services and cultural attachments to private car use. Just over 67% of participants said that they would prefer to drive than walk whenever possible, even though 25% agreed that walking can be easier for them than driving. Almost 80% of respondents agreed with the statement 'I like to drive'. Over 54% indicated that they preferred to drive rather than take public transport wherever possible. Only 20% of respondents would choose public transport over driving, if it were available.

- The average commute time for this study's participants had increased from 35 minutes to just under 50 minutes each way since relocation. Nearly 20% of respondents now live the harsh reality of the 'extreme commute' (defined as more than 90 minutes one way). This increased from 6.3% prior to relocation. Just under 45% of respondents indicated that they were dissatisfied with their commute – an increase from 19% prior to relocation.
- Increased commute times and emergence of resentment of travel time were significantly related to lower mental health scores, self-reported feelings of anxiety and a negative response for self-reported feelings of happiness. Conversely, private car ownership and use was associated with self-reported feelings of happiness in Oran Park.

Recommendations for policy:

- The assumption that people will base decisions of where they live on the location of their employment is unjustified. This assumption fails to acknowledge that employment in the 21st Century is increasingly mobile, and housing choice is increasingly constrained. It also disregards technological advances making time in cars more comfortable, usable and therefore tolerable. Policies advocating the 30-minute city as a panacea to urban problems must acknowledge stretching personal travel time budgets as a risk.
- The current commitment to agglomerations of employment uses in major centres as articulated by the Greater Sydney Commission and conceptualised by its 'Three Cities' approach, could increase the likelihood that a change in employer or job will not necessitate a change in job location. This will provide some reassurance to those who dare make the decision to live close to where they work. More affordable housing close to employment locations will also increase popular ability to realise the dream of home ownership closer to work.
- More effective road pricing would externalise the true cost of living a long distance from work and act as a further deterrent to long commutes (in addition to the stress, wasted time and discomfort already experienced). Better public transport infrastructure and more affordable housing is a more equitable solution to ensure the distance between the reality of work and the dream of a family home can be traversed as efficiently as possible.
- The immediate design features within greenfield estates are insufficient to overcome the potential health risks linked to disjointed development across the wider city. While local walking and cycling facilities, as well as open space access and local service provision are imperative to good health,

long commutes and sparse access to a variety of services may erode the health benefits of the immediate environment by perpetuating private car use.

- Car sharing, particularly peer to peer operations, may find an interesting niche in greenfield estates. These schemes have the capacity to prompt a decrease in car ownership as well as increased community conviviality.

Conclusions:

- This study records the context and experiences of a sub-set of people and is not generalisable to the wider population. It does, however, demonstrate some plausible pathways through which private car use continues to be cemented in modern Australian life and illustrates the way this can impact personal health.
- The residents of Oran Park are living lives shaped by private car use. The analysis of attitudes to transport and urban life presented here demonstrates that this is not only a reaction to a lack of tangible transport alternatives, but also reflective of a cultural attachment that takes private car travel as a given.
- The dream of home ownership in Sydney's greenfields will come with costs, as well as the benefits of open space, backyards, newly cemented footpaths and a Woolworths down the road. These costs include more time driving. It would be patronising to believe the residents of Oran Park had not acknowledged this when moving. They have bought into, and accepted a lifestyle. This may be news, however, to the various planning agencies depending on a large scale transition away from private car use, a re-adoption of local living, and an embrace of Western Sydney as the confines of day-to-day life. As a profession, we must continue to question and observe the reality of accepted planning wisdoms, such as the 30 minute city ideal. As a society, it is time for a more comprehensive and lateral approach to the problems facing contemporary Australian cities.

Pole Position

Transport and wellbeing in a greenfield estate

1. Introduction

Australia's urban areas face constant pressure to accommodate population growth. While consolidation within existing urban footprints is a key land use planning strategy, around 50% of housing construction still occurs in new suburbs at the rural-urban interface of cities (Newton et al. 2012). This is known as greenfield development and research on this type of growth has highlighted that its perpetuation has potential negative impacts on residents, communities and the economic productivity of the city (Maher 1994; Yigitcanlar et al. 2007; McGuirk and Dowling 2012). Long travel distances, and reliance on cars for transport are usually at the heart of these concerns (Yigitcanlar et al. 2008; Currie et al. 2010; Delbosc et al. 2016). This is widely considered to be problematic: for human health through injury, respiratory illness, declining rates of physical activity and the erosion of the social ties that allow us to flourish (Douglas et al., 2011), environmentally through CO2 emissions and reliance on a finite resource (Moriarty and Honnery 2012); and economically through the costs of traffic congestion (BITRE 2015).

Ongoing advances in technologies of connectivity, as well as emergent cultural appreciations of modes and lifestyles alternative to the private car, mean our capacity to envision a less car dependent city is stronger than ever. Yet our cities and routines remain defined by private car use. Greenfield development provides a case in point. Car dependence is perpetuated in outer urban areas because residential growth often precedes increases in employment opportunities, as well as essential services, in the short to medium term (BITRE 2012; Sultana and Weber 2014). The timetables of infrastructure provision are out of sync with the requirements of those who call these places home.

Well-meaning strategic plans generally articulate visions to prevent this outcome. For example, the new Greater Sydney Region Plan, released by the Greater Sydney Commission in 2017, has an intense focus on the need to balance the provision of jobs, housing and services in Sydney's outskirts. Titled 'The Greater Sydney Region Plan, A Metropolis of Three Cities', the plan carves Sydney up into three distinct urban areas which creep across the sprawling city from east to west. The plan:

> *….is built on a vision of three cities where most residents live within 30 minutes of their jobs, education and health facilities, services and great places.*

It goes on to say that the new residents of Sydney's third city in the west will have:

> *… quick and easy access to jobs and essential services. Housing supply and choice will increase to meet the growing and changing needs of the community….Importantly, infrastructure will be sequenced to support growth and delivered concurrently with new homes and jobs.*
>
> (Greater Sydney Commission 2017)

There is plenty of research to suggest that getting this wrong has dire implications for affected communities. Faced with long commutes, new residents may experience decreased time for family and friends, or simply stress associated with time spent in traffic (Sultana and Weber 2014). Young families and women in particular, may experience social isolation, loneliness, boredom, disconnection from community and exclusion from employment (Lupi 2006; Williams and Pocock 2010). There are concerns about residents spending little time in their residential neighbourhood as their work and social activities are located elsewhere (Walters and Rosenblatt 2008). While the best laid plans generally convey that infrastructure will echo growth, the first waves of residents are often left to devise ways to make their new lives work without it. They develop skills to accommodate a lack of local services and poor public transport provision. These skills become habits, and once habits are established they are difficult to break (Ouellette and Wood 1998; Garling and Axhausen 2003). There is strong evidence that this is particularly the case for transport practices, and continuance of attachments to the private car (Weinberger and Goetzke 2011). Once we learn to navigate a new life and locality by car, we are likely less interested in the public transport options that (one day) follow.

Once we learn to navigate a new life and locality by car, we are likely less interested in the public transport options that (one day) follow.

This project accepts the fact that there are asynchronies in Sydney's rapid development. These aredescribed in the section below which introduces the case study site. The aim of this study is not to question or rationalise the facts of asynchronous growth. Instead, it is to provide a deeper, situated understanding of the impact of asynchronies in the staging of development on the health and wellbeing of a newly established community. To explore the heart of concerns around rapid greenfield development, the focus is specifically on how this is expressed in practices and perceptions of transport. The master planned estate, Oran Park, is used as a case study site, and a survey completed by 317 of Oran Park's recent residents provides data for analysis.

2. Oran Park[1]

Strategic planning in Sydney has long advocated for higher density residential development in existing urban areas as the key to satisfying the increasing demand for housing. This demand, however, is positioned as insatiable, and as such new residential construction endures in various greenfield sites on Sydney's outskirts. The North-West and South-West Priority Growth Areas (PGAs) epitomise this process, and were established in 2005 to manage growth on Sydney's urban fringe. By 2040, these PGAs will house an additional 500,000 people. More recently, the Australian and NSW Governments, together with eight local governments of Western Sydney, announced renewed focus on Western

[1] This review of the planning processes, intentions and outcomes to date at Oran Park is intentionally brief. For further information on the precinct, including indicative and existing layout plans, site context and intended future character, we direct you to the South-West Growth Centre –Oran Park page on the NSW Department of Planning and Environment website: https://www.planning.nsw.gov.au/Plans-for-your-area/Priority-Growth-Areas-and-Precincts/South-West-Growth-Area/Oran-Park (accessed 25.05.18).

Sydney through the Western City Deal (Commonwealth of Australia 2018). This is a 20 year agreement between the three levels of government to deliver various infrastructure projects to western Sydney. The deal builds on the federal government's $5.3 billion investment in the Western Sydney Airport and the Badgerys Creek Aerotropolis. In short, there is a lot of activity set to occur in south western Sydney as the 21st Century rolls on.

The local government area (LGA) of Camden is partly within the South-West PGA. It is located approximately 60 kilometres from the Sydney Central Business District, covering 200 square kilometres, spanning six postcodes and 30 suburbs. Historically Camden was a small community, separated from greater Sydney by predominantly rural land used for agricultural purposes. More recently, the area has been nominated in multiple metropolitan and local plans as a locality with potential to provide significant residential supply, and targets for dwellings have been attached to this process. Relative to its historic size and context, contemporary Camden is undergoing rapid transformation to the built environment and considerable population growth. In addition to targets imposed by the PGA planning process, several other precincts throughout the LGA have been nominated as ready for renewal, resulting in a forecasted 192.67% population increase for the LGA between 2010 and 2036 (Profile.id, 2014). This is the largest forecasted percentage increase in any LGA in Australia for this period, and as such the area represents an interesting site from which to explore the social and cultural expressions of such a rapid and large scale shift.

Historically Camden was a small community, separated from greater Sydney by predominantly agricultural lands. More recently, contemporary Camden is undergoing rapid population growth. The ABS forecasts a 192.67% population increase between 2010 and 2036. This is the largest increase in any LGA in Australia.

Oran Park is just one of several master planned estates within the Camden LGA. Covering 300 hectares, it was the first precinct to be developed in the South West Growth Centre. Development was led by family-owned Greenfields Development Company (GDC) and the NSW State development agency, Landcom. GDC is owned by the Perich family, who were also the primary land-holders in Oran Park prior to its development. The estate is in the northern part of Camden LGA, approximately 10km from the historical centre Camden, and 6km from retail and business hub, Narellan. It is 60km southwest of the Sydney CBD, and 40km southwest of Sydney's second CBD, Parramatta. It is 20km south of the site of the Badgerys Creek Airport – a major development proposed to drive investment and infrastructural provision in Western Sydney throughout the next 20 years. Prior to 2010 the land was used as a dairy farm, and was also well known as a car racing circuit.

When complete, Oran Park will house over 21,000 people. Most will live in free standing houses however there is also provision for some apartments and terrace houses. Future plans provide for 50,000m2 of retail and 150,000m2 of commercial floor space. In addition, the proposed final estate will contain three schools, the new administration headquarters for Camden Council, a retirement village, a library, aquatic centre and an integrated health care facility. The vision for Oran Park as articulated by its developers was for the precinct to be 'self-contained' (Landcom 2013).

As part of the South West Priority Growth Area in New South Wales, Oran Park was subject to the special Precinct Planning Process under the former Growth Centres Commission (GCC), which included the release of a Structure Plan, Indicative Layout Plan and, finally, a Development Control Plan (DCP).

Planning at the DCP level articulated a strong vision for Oran Park to be a healthy built environment (Kent and Thompson 2014) and it was assessed as such by the NSW Ministry of Health (Sydney South Western Area Health Service 2008). The final masterplan for the site benefits from the fact only two developer interests needed to be accommodated – Landcom and GDC. It was designed using a best-practice healthy planning design guide at the time: 'Healthy by Design' (Heart Foundation 2004). The vision for the site articulated in the DCP also reflects this: 'the Oran Park Precinct will establish itself as a high quality urban environment founded on the principles of community pride, well-being, healthy living and educational excellence' (DPE 2016, p15). The DCP contains both general objectives and specific controls for the site. General objectives relate to the delivery of healthy residential neighbourhoods and include the provision that the majority of residential lots be located within 400m walking distance from an existing or proposed bus stop. Specific controls include the condition that all dwellings should be located no further than 400m from a public park, articulate minimum requirements for off-street shared cycle and pedestrian pathways, and mandate the planting of shade providing street trees on every street.

Rezoning of what was previously rural and recreational land occurred in 2006, construction commenced in 2007, and the first residents arrived in 2010. In 2018, Oran Park is home to over 6,000 people. In 2016, the Australian census recorded that relative to the Sydney GMR the population of Oran Park was younger, more dominated by households with children and more likely to have a mortgage (see Table 1). The urban form is characterised primarily by detached dwellings (94% of dwellings), although some semidetached housing has been incorporated into early releases to appeal specifically to first home buyers. The first stage of the main shopping centre has opened and about 50 businesses, including a full-range supermarket, have moved into the commercial space. Camden Council opened its new Civic Centre at Oran Park in September 2016 and a new library and community centre are under construction, due to open later in 2018.

Table 1: Oran Park Statistical Profile, 2016 Census

	Oran Park	Greater Sydney
Population	4,770	4,823,991
Dwellings	1,559	1,855,734
Average household size	3.17	2.60
Median Age, years	29	36
Aboriginal and Torres Strait Islander population	1.7%	1.5%
Couples with children	49%	35%
Older couples without children	4%	8%
Lone person households	10%	20%
Medium and high-density housing	6%	44%
Median weekly mortgage repayment	$612	$495
Median weekly rent	$547	$447
Households with a mortgage	51%	32%
Households renting	29%	33%
Overseas born	22%	37%
Language at home other than English	25%	36%
University attendance	3%	6%
University qualification	19%	28%
Trade qualification (certificate)	25%	15%
Unemployment rate	2.9%	6.0%
Participation rate (population in labour force)	72%	62%
Public transport to work	9%	23%
SEIFA index of disadvantage	1081	1020
Households with no cars	0.6%	10.7%
Households with 1 car	19.7%	35.4%
Households with 2 cars	46.3%	31.1%
Households with 3 or more cars	23%	14.9%

Transport Context

Cars have had pride of place in Oran Park since 1962 when the site was home to the Oran Park Motor Racing Circuit. The main grand prix circuit was 2.6 kilometres long with a mixture of slow, technical and fast sweeping corners as well as changes in elevation around the track. The track hosted its first Australian Touring Car Championship in 1971, which was a battle between racing legends Bob Jane and Allan Moffat, and drew a crowd of over 30,000 (Willis 2010). Many car racing innovations were implemented at the track, including night racing and NASCAR racing. The development of Oran Park Town celebrates its heritage as the former raceway through public art, such as an artistic rendition of

a chequered flag where the old finish line used to be, and commemorative street naming after famous racing car drivers. Residents live in streets named after racing legends such as Peter Brock and Alan Moffat. They relax in Wayne Gardner Reserve; and watch their children play on the pedal cars on the miniature racetrack opposite the home display centre.

Perhaps ironically, while celebrating its car racing history, the Oran Park Town precinct has been designed explicitly to encourage reduced car dependence (Image 1). As discussed above in relation to the development of the DCP for the precinct, Oran Park was designed in collaboration with the NSW Ministry of Health, and used the Heart Foundations Healthy by Design guidelines to incorporate a best practice approach to the provision of walking and cycling networks. At 1.5 metres, most footpaths are wider than standard. The cycling network is made up of 2.5-metre-wide share ways on key roads, and bicycle routes are planned to enable easy access to key destinations such as schools, retail and public open spaces. Walking and cycling routes are as direct as possible, well signed, well-lit at night, and mostly shaded by emergent tree canopy during the day.

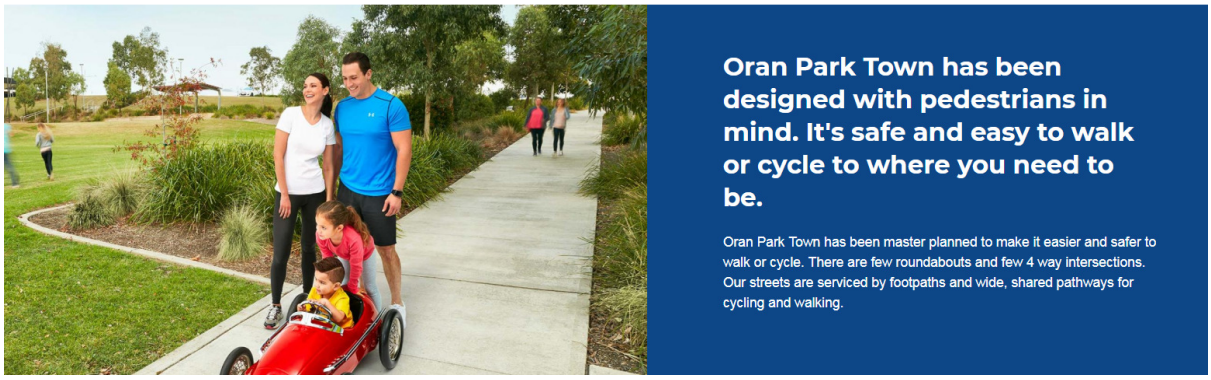


Image 1: Marketing material from Oran Park Town website, a site maintained by the developer, Greenfields Development Company, accessed 02.04.18.

Although the precinct itself is designed to be accessible by bike and on foot, once residents need, or simply want, to leave Oran Park, the car becomes a necessity. The obvious trip outside the precinct is the journey to work. It is likely that employment options in the area are only supporting a small percentage of the growing community. Over 65% of residents do not work within the Camden LGA, let alone within their own walkable neighbourhood (ABS 2016). Even for those who do work locally in the Camden LGA, travelling to work by car is very much the norm – over 95% of Camden's workers either drive or are driven to work (ABS 2016). Although primary data on transport practices other than the commute is scarce, there are several factors to suggest these trips would also be car dependent. In short, there are activities occurring outside of Oran Park that, quite reasonably, make up modern life. No matter how happy life is in the new estate, the residents of Oran Park will need or want to leave their neighbourhood from time to time. They will visit family and friends, drop by an old favourite cafe, see a preferred doctor or hairdresser, pick up something from a discount hardware store, or simply explore a new place.

Analysis of the transport options available in Oran Park demonstrates just how difficult it currently is for residents to leave the precinct using any other mode than a private car. The closest train station to Oran Park is the Leppington station, 13km away. This station was opened in February 2015 as part of the South West Rail Link to serve the expanding area, with the line set to be extended at an as yet indeterminate date. There are plans to provide Oran Park with a train station, however the proposed site is currently a vacant lot. The NSW State Transport Minister, Andrew Constance, has previously said that construction on the station 'could be decades away' (McInnes 2017). This reflects Sydney's legacy of ongoing temporal mismatch between the provision of housing, jobs and infrastructure that has dominated planning discourse since at least the mid 20th Century (Spearitt 1978; Foster 2004).

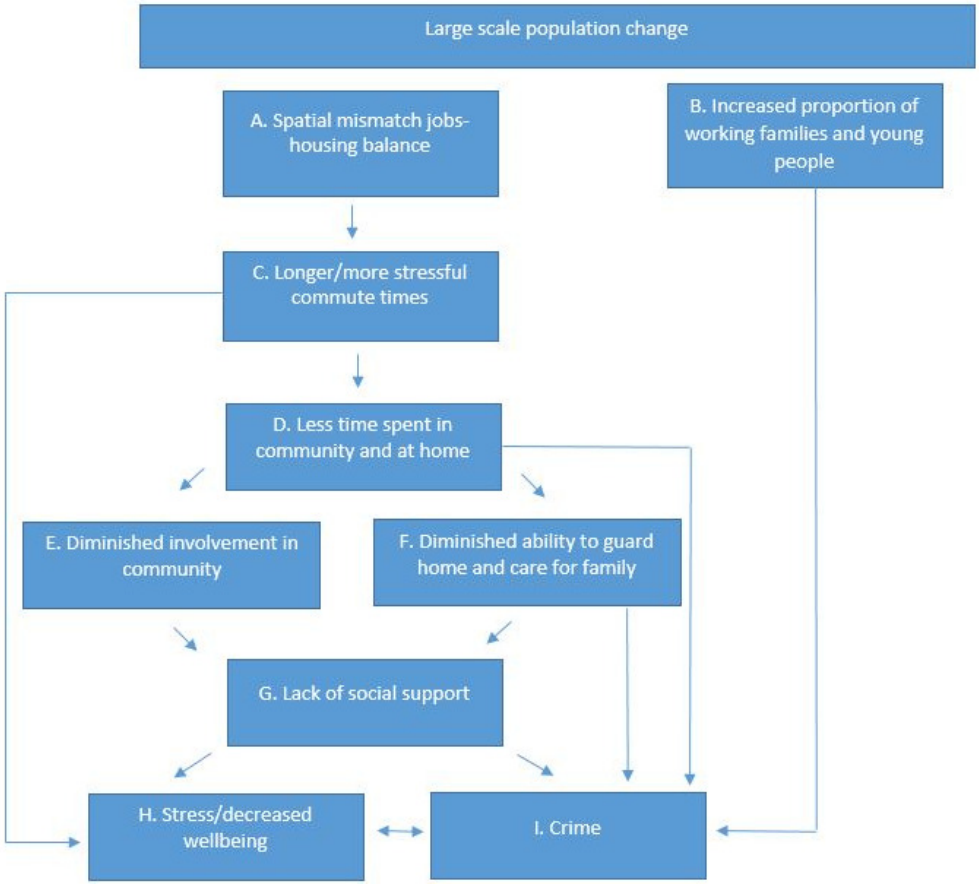
At the time of writing, three bus routes travel through Oran Park. The 896, opened in 2015, travels from Oran Park to Campbelltown. Operating approximately one bus per hour, the bus takes 55 minutes to cover just over 11km. The 841 route, opened in 2017, zig zags its way from south of the Camden LGA to the north, starting at Narellan Town Centre and finishing at Leppington Station, via Oran Park. The 13km trip from Oran Park to Leppington station via this route takes approximately 40 minutes. Bus 858, opened in 2016, takes a more direct route from Oran Park to Leppington Station, taking 28 minutes. At peak times buses come approximately every 30 minutes. This is reduced to hourly outside of peak times. Once at Leppington Station, trains only go north, first to major employment area Parramatta, then onto the Sydney CBD. A change of trains is required to access any other employment zones within Sydney's South West, including Blacktown, Penrith and Campbelltown. In short, those travelling from Oran Park can expect an average travel time of 1 hour and 40 minutes to either the Sydney CBD or Parramatta (Transport for NSW 2018). The frequency of services and connectivity to the wider network is inadequate to stimulate regular public transport use and as a result the precinct is currently car dependent.

3. Methods and Variables

In 2015, the project team used seed funding from the Sydney Law School to conduct a preliminary review of census data for the Camden LGA. This review enabled identification of several potential implications of unsynchronised rapid growth for wellbeing, crime and community cohesion in the area. An article addressing these themes has been published in Crime Prevention and Community Safety: An International Journal, 19(1): 17-30 (Clancey et al. 2017).

A model was subsequently developed from this initial exploration to conceptualise the links between population growth on the urban fringe, wellbeing and crime (Figure 1).

Figure 1: A model of wellbeing, transport and crime in greenfield development



A purpose-built survey instrument was used to explore the efficacy of this model (Appendix Two). Oran Park was selected as a case study site within the Camden LGA for several practical reasons. First, at the time the survey was administered the suburb was experiencing rapid growth and thus provided a large pool of newly arrived residents from which to draw participants. Second, Oran Park was planned, approved and marketed as a health promoting development. Several evaluations are currently underway of the impacts of small scale urban design interventions on the health of its residents. It was thought that this study would provide a more holistic and critical perspective of the health impacts of greenfield development by examining the relationship of the precinct to wider structural planning processes in Sydney.

Administration of the survey was approved the Human Research Ethics Committee at the University of Sydney (project number: 2016/639). It was made available online to residents of Oran Park between April and July 2017. Participants were recruited through a combination of hard copy

posters and postcards delivered to residents and local businesses (Appendix One). Community organisations such as church groups, schools and child care centres also promoted the survey through newsletters and distribution of flyers. Posts were made on 17 different Facebook sites, ranging from those representing local sporting clubs, to the Oran Park Punjabi community page. In all cases the survey was promoted as a research project by the University of Sydney, funded by the Henry Halloran Trust. Its aim was described as 'to find out about life in south western Sydney'. The survey was self-administered, and took, on average, 18 minutes to complete.

The survey consisted of eight sections:

1. Getting started
   Screening questions to establish participant eligibility.

2. Choosing Oran Park
   A series of questions to determine why the participant moved to Oran Park.

3. Work and Study
   Whether the participant is working and/or studying, current and past mode of transport to work/study, parking availability at work or study, current and past travel time to work/study, current and past time of day travelling to work/study, current and past commute satisfaction.

4. Transport Attitudes
   A series of questions to determine participant attitudes to different transport modes.

5. On Community and Social Interaction
   Current and past interactions with neighbours, current and past satisfaction with interactions, factors preventing interactions.

6. Your Neighbourhood
   Current and past satisfaction with service access, current and past perceived criminal activity.

7. Community Safety
   Current and past perceptions of safety in Oran Park.

8. About You
   Self-reported physical and mental health status, demographics (age, income, housing tenure, household structure).

A full copy of the survey is contained in Appendix Two of this report.

For many variables, participants were asked to recall their attitudes and experiences prior to moving to Oran Park with their current attitudes and experiences. As much as was practicable, existing measures were used to enable cross comparisons of data with other studies.

Survey analysis involved descriptive statistics, dimension reduction and multiple regression techniques, and results are presented below.

4. Results

The survey was completed by 317 people. Assuming only one person per household completed the questionnaire, this results in a response rate of 20.3%. Although this is a reasonable response rate for analysis, the usable sample for variables of interest is approximately 200, with the exact number dependent on the variables used in each model. This is not a large sample for a multivariate study, and care has been taken in the analysis to ensure that results are not simply the result of potential spurious relationships that can appear when the number of explanatory variables becomes too large in relation to the sample size. Details on this, and other limitations to this study, are contained in this report under the heading *Limitations*.

4.1 Demographics

Tables 2-9 show the frequencies for relevant demographic variables. Reflective of the selection criteria for the study, all participants had moved to Oran Park within the 24 months prior to completing the questionnaire. Over 60% had relocated in the past year, enhancing the likely accuracy of questions based on participant recall of practices prior to relocation (Purvis and Ruiz 2003). The nature of the survey and the community meant that it was not feasible to apply quotas to achieve representativeness. Nevertheless, the sample is generally reflective of the idiosyncrasies displayed for Oran Park relative to the Sydney GMR. Respondents came mostly from households with children and over 50% of respondents were aged between 18-34. The workforce participation rate was also reflective of Oran Park more generally. Most respondents were paying off a mortgage. As is often the case with quantitative data collection, the sample was dominated by female respondents.

Table 2: Time lived at current address	**%**
0-3 months	18.5
3-6 months	17.5
6-9 months	14.8
9-12 months	13.8
1-2 years	35.4
Total responses	189

Table 3: Employment status	**%**
Not working	18.4
Employed FT	53.6
Employed PT	4.2
Self employed PT	18.8
Other	5.0
Total responses	239

Table 4: Gender	%
Male	30.1
Female	69.9
Total responses	183

Table 5: Age group	%
18-34	51.4
35-44	26.4
45-64	16.9
65 and above	5.4
Total responses	148

Table 6: Highest level of educational attainment	%
Below Year 12 or equivalent	6.6
Year 12 or equivalent	12.6
Tafe or trade certificate or diploma	31.7
Bachelor degree	31.1
Postgraduate degree	18.0
Total responses	183

Table 7: Marital status	%
Single, never married	11.6
Married	69.1
Living with partner	14.4
Separated/Divorced/Widowed	5.0
Total responses	181

Table 8: Household composition	%
Single person household	3.9
Family - all adults	11.2
Family with children under 18	60.9
Couple	22.3
Two or more unrelated adults	1.7
Total responses	179

Table 9: Household tenure	%
Owned with a mortgage	68
Rented	16
Other	16
Total responses	183

4.2 Reasons for Choosing Oran Park

To measure reasons for relocation to Oran Park, the survey asked respondents whether they agreed or disagreed with a series of 12 statements on a 5-point scale from 1 ('not important at all') to 5 ('extremely important'). Table 10 shows the percentage of respondents indicating the statement was either 'important' or 'very important'. Several variables related to quality of life and affordability feature, taking priority over concerns regarding access such as proximity to work. Responses to this subset of questions in the survey is subject to factor analysis for the purposes of modelling as described in the section of this report on *Modelling*.

Table 10: How important were the following when choosing to live in Oran Park	% important
Better quality housing/new build	89.5
Family friendly area	89.5
Attractive urban environment	86.7
Being able to drive everywhere	84.3
Being able to afford a bigger home	77.8
Being close to schools	71.0
Being close to paid work	60.9
Good public transport access	58.9
Being close to family	50.4
Being close to friends	37.1
Being close to where you study	31.9
Returning to the neighbourhood of my childhood	13.3
Total responses	248

4.3 Transport

Tables 11 to 16 show the frequencies for variables relevant to the journey to work.

Most participants travelled to work or study by car. Comparing mode prior to relocation with mode from Oran Park, the incidence of car travel increased by 7.3% and participants were less likely to commute using public transport (23.3% present compared to 27.9% prior to moving). Those who did commute by public transport from Oran Park were more likely to drive to the train station or bus rather than walk like they had before relocating.

Commute times, on average, increased substantially since moving to Oran Park. Average one-way commute time prior to moving to Oran Park was 35.2 minutes compared to 49.2 minutes since relocating. This is just under half an hour each day *additional* time spent commuting. Commuters were leaving home earlier to get to work, and were less likely to be satisfied with their commute than they were before they moved.

Table 11: Mode of travel to work/study	% Before moved	% Present
Car by self or others	67.1	74.4
(of which car with others)	(3.9)	(5.1)
Car to PT	13.7	19.3
M/C or scooter	0.5	0.6
Walk	3.9	1.1
Walk to PT	14.2	4.0
Work at home	0.5	0.6
Total responses	204	176

Table 12: Commute travel time one way	% Before moved	% Present
0-20 mins	39.9	21.6
>20-40 mins	30.3	25.6
>40-60 mins	17.8	26.7
>60-80 mins	5.8	6.3
>80-100 mins	3.4	13.1
>100 mins	2.9	6.8
Total responses	208	176

Table 13: Commute travel time minutes one way	Before moved	Present
Average	35.2	49.2
Total responses	208	176

Table 14: Satisfaction with commute travel time	% Before moved	% Present
Very dissatisfied	7.7	20.5
Dissatisfied	11.5	24.4
Neither satisfied nor dissatisfied	21.6	19.9
Satisfied	37.0	22.7
Very satisfied	22.1	12.5
Total responses	208	176

Table 15: Commute time of day	% Before moved	% Present
Between 5am and 7am	24.5	28.4
Between 7am and 10 am	66.3	63.6
Between 10am and 3pm	4.3	4.5
Between 3pm and 7pm	2.4	1.1
After 7pm and before 5am	2.4	2.3
Total responses	208	176

To measure attitudes to transport, the survey asked respondents whether they agreed or disagreed with a series of 27 statements on a 5-point scale from 1 ('strongly disagree') to 5 ('strongly agree'). Table 16 shows the percentage of respondents indicating the statement they either 'agree' or 'strongly agree'. This data was subject to factor analysis for inclusion in further analysis, the results of which are reported below under the heading *Modelling*.

Table 16: Attitudes to Transport: to what extent do you agree or disagree with the following statements	Agree
Travelling by car is safer overall than riding a bicycle	77.4
I feel free and independent if I drive	77.3
I like walking	69.4
I like driving	63.3
To me the car is nothing more than a convenient way to get around	58.0
Travel time is generally wasted time	55.7
It does not matter to me which type of car I drive	54.3
The only good thing about travelling is arriving at your destination	50.2
The travelling that I need to do interferes with doing other things I like	47.9
My commute is a real hassle	45.2
Public transport can sometimes be easier for me than driving	40.6
I prefer to walk rather than drive whenever possible	34.8
Travelling by car is safer overall than walking	30.6
My commute trip is a useful transition between home and work	28.6
Getting there is half the fun	27.7
Travelling by car is safer overall than taking public transport	26.2
Walking can sometimes be easier for me than driving	26.2

I use my commute time productively	24.7
I like riding a bicycle	23.3
I like taking public transport	22.3
I prefer to take public transport rather than drive whenever possible	21.5
I like to drive just for fun	19.6
To me, the car is a status symbol	11.4
Getting stuck in traffic doesn't bother me too much	8.2
Riding a bicycle can sometimes be easier for me than driving	5.5
I prefer to ride a bicycle rather than drive whenever possible	4.1
Total responses	218

4.4 Community Cohesion and Satisfaction

Table 17 shows a score of community cohesion prior to relocation and present. The score is an average of agreement with six positive community cohesion statements designed to assess perceptions of neighbourhood trust and reciprocity. Low scores indicate that participant perceives community cohesion to be weak. Responses to the six individual questions are contained in Appendix Three. Aggregate cohesion scores were higher for Oran Park than those articulated for previous neighbourhoods. Similarly, as demonstrated in Table 18, participants felt that the facilities, services and characteristics of their new neighbourhood more suited the needs of their household than in their previous neighbourhood. This is expected given residents have self-selected into their new neighbourhood presumably based on the structure and function of the neighbourhood meeting their needs. Note that these questions all relate to the Oran Park neighbourhood and the satisfaction questions do not ask the respondent to consider suitability of the neighbourhood from the broader context of its position relative to the Sydney GMR.

Table 17: Community cohesion summary score	% Before moved	% Present
Very low	9.3	1.0
Low	17.6	5.2
Medium	36.3	36.8
High	30.6	47.2
Very high	6.2	9.8
Total responses	193	193

Table 18: Satisfaction with the extent that the facilities, services and characteristics of your neighbourhood meet the needs of your household	% Before moved	% Present
Very dissatisfied	4.1	3.6
Dissatisfied	19.2	7.3
Neither satisfied nor dissatisfied	22.3	16.1
Satisfied	43.0	53.9
Very satisfied	11.4	19.2
Total responses	193	193

4.6 Perceptions of Safety and Crime

Table 19: How safe or unsafe do you feel at home by yourself after dark: present

Very safe	37.8
Safe	44.1
Neither nor unsafe	12.2
Unsafe	1.1
I am never home alone	4.8
Total responses	188

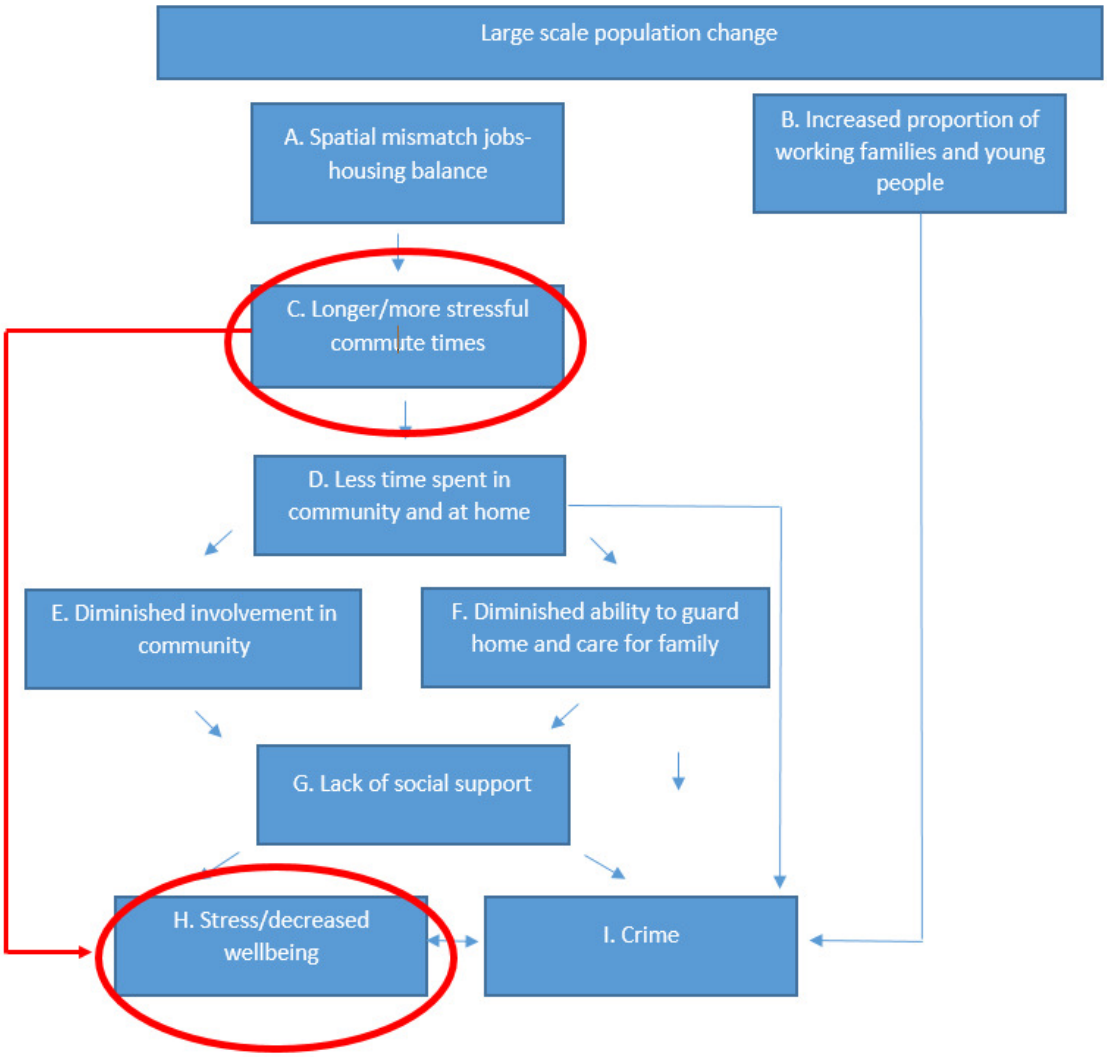
Table 20: How safe or unsafe do you feel walking alone in your local area after dark: present

	%
Very safe	21.8
Safe	36.7
Neither nor unsafe	19.1
Unsafe	8.0
I never walk alone after dark	14.4
Total responses	188

Table 21: Are these issues a problem in your neighbourhood	% Major problem	%Minor problem	% Not a problem
Graffiti	1.0	7.5	91.2
Vandalism	1.6	19.2	79.3
Noisy neighbours	5.2	22.3	72.5
Inconsiderate behaviour in the street	6.2	24.4	69.4
Teenagers hanging around in the street	2.1	11.9	86.0
Noisy/dangerous driving	27.5	48.7	23.8
People being harassed in the street	2.1	3.1	94.8
Public drunkenness	2.6	3.1	94.3
People using or dealing drugs	2.6	6.2	91.2
Intentional damage to property other than graffiti	2.1	14.0	83.9
Your home being broken into	6.2	16.6	77.2
Total responses			193

This initial, descriptive analysis of the data shows, on paper, a relatively satisfied community. Self-reported perceptions of safety and crime reflect crime statistics for Oran Park and it is promising that the community feel connected, engaged and secure in their neighbourhood. Several transport related variables stood out as inconsistent with this picture. Commute times had increased considerably with a concurrent decrease in satisfaction with the commute. Modes of transport even featured in respondents concerns around safety and crime, with noisy and dangerous driving nominated by 76.2% of the sample as an issue in Oran Park. On reflection, the decision to name the main street after legendary Australian race car driver Peter Brock was perhaps not prudent. Emergence of commute and other transport variables as discordant prompted further specific analysis of the extent to which various indices of wellbeing were impacted by the way residents of Oran Park travel and perceive travel. This would provide a better understanding of the relationship between C and H in the original model (Figure 2). To do this, a combination of linear regression, tobit (censored) regression and binary logistic regression was used.

Figure 2: Basis of analysis of wellbeing and transport in Greenfield development



4.5 Dependent Variables

Physical and Mental Health (PCS and PCS)

General physical and mental well-being was assessed using the Short Form-12, version 2 (SF-12-v2). This scale consisted of 12 items scored so that high scores reflect better health (Cronbach's alpha=0.87). Following recommended scoring algorithms, the items were converted into standardized T-scores and summed to form two scales (Ware, Kosinski, & Keller, 1996). The first, Physical Component Summary (PCS) measures physical health. The second, Mental Health Component Summary (MCS) measures mental health.

Subjective Wellbeing (SWB)

While SWB is a broad concept, its defining feature is self-evaluation. Such evaluation is both affective (felt) and cognitive (thought) with the research generally concurring that pre-conditions for positive SWB are regular experiences of pleasant emotions and physical sensations, (and avoidance of unpleasant emotions and sensations), engagement in activities that are subjectively interesting, and a sense of internal satisfaction with life. There are additional features of what it takes to be happy in modern life, but the field of SWB focuses specifically on an individual's own appraisal of their existence (Diener 2000). This study features SWB for analysis because of its undeniable role in presentations of well-being more generally. A positive appraisal of one's life and circumstances is an integral component of human health.

SWB is measured as cognitive (thought) and affective (felt) states (Diener 1998). To ensure the survey remained as brief as possible, cognitive SWB was measured using the Satisfaction with Life Scale developed by Diener et al. (1988). The Satisfaction with Life Scale has been widely applied as a comprehensive assessment of satisfaction with one's life rather than satisfaction with specific domains of life (such as work or family). It has shown strong internal reliability, and moderate temporal stability (Pavot and Diener, 1993). The Satisfaction with Life Scale consists of five items, with the participant asked to provide an evaluation of their life for each:

- In most ways my life is close to my ideal;
- The conditions of my life are excellent;
- I am satisfied with my life;
- So far I have gotten the important things I want in life;
- If I could live my life over, I would change almost nothing.

Affective SWB was measured using two questions asking about specific emotions experienced by the respondent 'yesterday'. This is also a widely applied measure (see Ettema et al. 2016) however the number of emotions in this inquiry was limited to two (as used in Ma et al. 2018). Again this was done in an effort to reduce the burden of the survey on participants. The two questions measuring the positive and negative affect are:

- I felt happy yesterday

- I felt anxious yesterday

Each item was scored using a 7-point Likert scale, ranging from strongly disagree to strongly agree. The mean of the scores of the five items taken from the Satisfaction With Life Scale was then used for the measurement of life satisfaction. The two affect measures were scaled in the same way, but analysed separately from life satisfaction. This is because, theoretically, life satisfaction, positive affect and negative affect are three independent components of SWB. This also facilitates examination of whether these components of SWB have different associations with independent variables.

4.6 Independent Variables

Transport Attitudes

As outlined above, to measure attitudes to transport, the survey asked respondents whether they agreed or disagreed with a series of 27 statements on a 5-point scale from 1 ('strongly disagree') to 5 ('strongly agree'). Factor analysis was then used to extract the fundamental dimensions spanned by these 26 items. As shown in Table 22, seven underlying dimensions were identified:

1. Resents travel time
2. Pro public transport
3. Pro car
4. Pro bike
5. Pro walk
6. Pragmatic car user
7. Travel is a necessity

The exploratory factor analysis was conducted using principle components as the method of extraction and varimax (i.e. non-orthogonal) rotation. The choice of the number of factors to use in subsequent analyses was based on eigenvalues (>1) and visual inspection of the scree plots. In this case the scree plot suggested that factor 7 should not be used.

Table 22: Transport attitudes factor analysis

	Component						
	1	2	3	4	5	6	7
Travelling by car is safer overall than taking public transport		-.607					
I prefer to walk rather than drive whenever possible					.796		
Walking can sometimes be easier for me than driving					.763		
Travel time is generally wasted time	.752						
Travelling by car is safer overall than riding a bicycle		-.290		-.400			
I like driving		-.262	.609				
To me, the car is a status symbol						-.733	
I prefer to take public transport rather than drive whenever possible		.736				.283	
The only good thing about travelling is arriving at your destination	.254						.605
I like walking					.732		
It does not matter to me which type of car I drive						.785	
Public transport can sometimes be easier for me than driving		.716					
I like riding a bicycle				.801			
Travelling by car is safer overall than walking		-.333	.319				.590
I prefer to ride a bicycle rather than drive whenever possible				.798			
To me the car is nothing more than a convenient way to get around						.628	.366
Getting there is half the fun			.705				
Riding a bicycle can sometimes be easier for me than driving				.751			
I like to drive just for fun			.729				
I like taking public transport		.725					
I feel free and independent if I drive			.670				
My commute is a real hassle	.677	.255					
My commute trip is a useful transition between home and work	-.642						
The travelling that I need to do interferes with doing other things I like	.744						
I use my commute time productively	-.573	.347					
Getting stuck in traffic doesn't bother me too much	-.617						

Travel behaviour

Travel behaviour was variously measured through a series of questions on commute trips and non-work trips, both before and after relocating to Oran Park. Respondents were asked to estimate the amount of time, past and present, it takes them to get to work '*on most days*'. They were asked to rate their satisfaction with their commute time, both past and present, as well as the time of day they usually travel, both past and present. In addition, respondents were asked to list vehicles

currently available to the household, and access to parking both onsite and at their place of work or study.

Location Choice

To measure reasons for relocation to Oran Park, the survey asked respondents whether they agreed or disagreed with a series of 12 statements on a 5-point scale from 1 ('not important at all') to 5 ('extremely important'). Factor analysis was then used to extract the fundamental dimensions spanned by these 12 items. As shown in Table 23, three underlying dimensions were identified:

1. Family and friends
2. Work College School
3. Quality of Life

The factor analysis was conducted using principle components as the method of extraction and varimax (i.e. non-orthogonal) rotation. The choice of the number of factors to use in subsequent analyses was based on eigenvalues (>1) and visual inspection of the scree plots. In this case the scree plot suggested that all three factors with an eigenvalue greater than 1 should be used.

Table 23: Reason for relocation factor analysis

	Component		
	1	2	3
Q7_1 Importance in choosing where live now - Being close to family			.854
Q7_2 Importance in choosing where live now - Being close to friends		.263	.818
Q7_3 Importance in choosing where live now - Being close to paid work		.721	
Q7_4 Importance in choosing where live now - Being close to where you study		.729	.317
Q7_14 Importance in choosing where live now - Being close to schools	.367	.666	
Q7_5 Importance in choosing where live now - Good public transport access	.400	.397	
Q7_6 Importance in choosing where live now - Being able to drive everywhere	.522		.289
Q7_7 Importance in choosing where live now - Better quality housing/new build	.822		
Q7_8 Importance in choosing where live now - Being able to afford a bigger home	.723	.265	
Q7_9 Importance in choosing where live now - Attractive urban environment	.841		
Q7_10 Importance in choosing where live now - Family friendly area	.799		
Q7_12 Importance in choosing where live now - Returning to the neighbourhood of my childhood		.418	.385

Social Interaction and Community Cohesion

Respondents were asked how regularly they spoke with their neighbours now and prior to their move to Oran Park. They were also asked whether they were satisfied with the amount of interaction they have with their neighbours – past and present. Measures of perceptions of neighbourhood trust/cohesion are included as a measure of the neighbourhood's social

environment. These measures include responses to statements such as 'People around my neighbourhood are willing to help their neighbours'; 'This is a close-knit neighbourhood'; 'People in this neighbourhood can be trusted'; 'People in this neighbourhood generally don't get along (reverse scored)'; and 'People in this neighbourhood do not share the same values (reverse scored)'. These statements are adapted from Sampson et al. (1997). Again, each item was coded using a 4-point scale from strongly disagree to strongly agree. The measure of the social environment was calculated as the mean of the scores on these five items. Finally, respondents were asked to rate their satisfaction with the facilities, services and characteristics of their neighbourhood – past and present.

Demographics

Demographic variables factored into the analysis included age, gender and employment status. Inclusion of spending on mortgage and rental expenses relative to income was also attempted, but the small number of respondents who declared both income and spend on either of these items rendered this impractical.

Overall approach to regression analysis

The number of valid cases available for regression analysis was between 105 and 130 depending on which independent variables were used. There were 39 potential independent variables. The high ratio of independent variables to valid cases resulted in relatively high sensitivity of which variables finished up in the model to the method used to decide which ones to reject. As a result, a filtering process was required prior to the regression modelling.

The filtering method involved two considerations:

1. Whether there was a significant (or near-significant) correlation between the independent and dependent variables. In cases where the correlation was small and statistically insignificant the potential independent variable was excluded from the regression.

2. The extent to which potential independent and dependent variables were related in existing literature. This criterion was intended to capture cases where an independent variable, whilst not directly correlated with the dependent variable, would come into play as an explanatory factor when considered as part of a multiple regression model (i.e. it may be a factor that explains other less directly causal but correlated potential independent variables).

This filtering process stabilised the modelling process and helped to ensure that it did not produce spurious relationships that can appear when relatively small samples are used to model large numbers of potential explanatory variables. Regression diagnostics were used to examine the models to ensure that the models did not violate the assumptions of the linear regression model. Multicollinearity was checked using VIF scores. All other assumptions (homoscedasticity, normality of the error terms, linearity, and zero autocorrelation) were checked by visual examination of the error plots.

4.7 Regression Results

Statistically non-significant independent variables are included in the following analyses where there is a belief that their exclusion may cause bias when the model is used to produce estimates from the significant variables.

Model 1: Mental Health Scale

Method: Linear regression.
Dependent Variable: MCS12
Predictors: (Constant), Travel time earlier since moving to Oran Park, Age, Increase in travel time mins since moved to Oran Park, Transport factor score - Resent travel time
Results

Number of cases	105	
Rsquare	0.228	
F	7.386	(4,100 df)
F-Sig	.000	

Coefficients

	B	SE(B)	t	P>t
Constant	-15.740	3.745	-4.203	.000
Travel time earlier since moving to OP	-9.460	2.716	-3.483	.001
Transport factor score Resent travel time	-2.067	.956	-2.162	.033
Age	.118	.094	1.254	.213
Increase in travel time mins since moved to OP	-1.664	2.061	-.808	.421

The results of the linear regression model for mental health are shown in Model 1. As outlined above, the dependent variable, MCS12, is calculated from a standard questionnaire used to assess participant experiences of stress, mood and vitality. This model indicates two variables that are significantly associated with a lower mental health score.

The first is having to leave for work earlier since moving to Oran Park. These are participants who, for example, may have left for work between 7am and 10am before moving to Oran Park, now find they need to leave for work between 5am and 7am. Having to leave for work earlier is associated with a lower mental health score in Oran Park.

The second is an attitude to transport that resents time spent travelling. These people were more likely to say that their commute was wasted time, that transport generally interferes with more enjoyable activities, and that travel time cannot be used productively. Resenting travel time is associated with a lower mental health score in Oran Park.

Model 2: Physical Health Scale

Method: Linear regression.
Dependent Variable: PCS12
Predictors: (Constant), Age

Results

Number of cases	139
Rsquare	0.104
F	16.013
F-sig	.000

Coefficients

	B	SE(B)	t	P>t
Constant	2.999	2.213	1.356	.177
Age	-.221	.055	-4.002	.000

The results of the linear regression model for physical health are shown in Model 2. As outlined above, the dependent variable, PCS12, is calculated from a standard questionnaire used to assess participant's level of activity, incidences of impedance due to physical incapacity and experiences of physical pain.

This model indicates only one variable significantly associated with physical health – age. Younger people were more likely to report a higher physical health score in Oran Park. This is obviously expected. The fact none of the variables of interest were significant for physical health indicates the potential that the changes experienced are yet to be expressed physically.

Model 3: Subjective Wellbeing, Life Satisfaction

Method: Tobit (censored) regression.
Dependent Variable: Subjective Wellbeing Life Satisfaction
Predictors: (Constant), Changed mode of travel when moved to Oran Park, Transport factor score Pro car, Free parking at work/study, Travel time changed since moving to Oran Park, Travel time later since moving to Oran Park

Results

Number of cases	129
Pseudo Rsquare	0.050
Chisquare (5)	21.21
Chisquare-sig	.000
Loglikelihood	-202.130
Censored cases	0 at lower bound (value=1), 6 at upper bound (value=7)

Coefficients

	B	SE(B)	t	P>t
Constant	4.837	0.223	21.66	.000
Transport factor score Pro car	0.267	0.096	2.78	.006
Travel time of day changed since moving to Oran Park	-0.666	0.275	-2.42	.017
Free parking at work/study	0.251	0.234	1.07	.285
Changed travel mode when moved to Oran Park	-0.198	0.251	-0.79	.431

The results of the Tobit (censored) regression model for life satisfaction are shown in Model 3. The life satisfaction score is the average of five 7-point scale items. Therefore, even though it can be treated as a continuous variable, it has a minimum value of 1 and a maximum value of 7. The Tobit censoring method allows for the possibility that in a truly continuous measure there may have been scores below 1 or above 7. The five items ask participants questions about things such as whether they consider their life to be close to their ideal, whether they have the things that matter in life and whether they have regrets. The model indicates two variables that are significantly associated with the life satisfaction score.

The first is an attitude to transport that favours driving and car use. These people were more likely to say they like driving, that they drive just for fun, and that they feel free and independent when they drive. Having an appreciation of private driving and private car use is associated with higher satisfaction with life in Oran Park.

The second is a change in the commute time of day since moving to Oran Park. This variable is similar to that which featured in the model above for mental health and below for happiness. These are participants who have had to change the time of day they commute since moving to Oran Park. Both earlier and later commute times were significant – it is simply the change that is important. Having to leave for work at a different time since moving to Oran Park is associated with a lower satisfaction with life.

Model 4: Subjective Wellbeing, Negative Effect: 'did you feel anxious yesterday?'

Method: Binary logistic regression
Dependent Variable: SWB negative effect
Predictors: (Constant), Transport factor score Resent travel time, Travel time earlier since moving to Oran Park

Results

Number of cases	129
Cox & Snell Rsquare	0.077
Nagelkerke Rsquare	0.113
McFadden Rsquare	0.070
Chisquare(2)	10.324
Chisquare-sig	.006
-2 Loglikelihood	136.383

Coefficients

	B	SE(B)	Wald	P>t	Exp(B)
Constant	-1.382	.240	33.111	.000	
Travel time earlier since moving to Oran Park	1.462	.523	7.805	.005	4.317
Transport factor score Resent travel time	0.190	.215	.778	.378	1.209

Comments
The seven-point score for negative affect subjective wellbeing was reduced to a binary variable by recoding all the agree responses as 'yes' and all other (including neutral) to 'no'. The sample size did not permit a multinomial logit regression including all seven data points.

The model indicates one variable that is significantly associated with feeling anxious – having to leave for work earlier since moving to Oran Park. This variable also featured in model 1 above for mental health, and model 5 below for happiness. These are participants who, for example, may have left for work between 7am and 10am before moving to Oran Park, now find they need to leave for work between 5am and 7am. Having to leave for work earlier is associated with feeling anxious in Oran Park.

Model 5: Subjective Wellbeing, Positive Effect: 'did you feel happy yesterday?'

Method: Binary logistic regression
Dependent Variable: SWB positive effect
Predictors: (Constant), Changed mode of travel when moved to Oran Park, Transport factor score Pro car, Free parking at work/study, Travel time earlier since moving to Oran Park, Travel time later since moving to Oran Park

Results

Number of cases	127
Cox & Snell Rsquare	0.193
Nagelkerke Rsquare	0.279
McFadden Rsquare	0.182
Chisquare(8)	27.259
Chisquare-sig	.000
-2 Loglikelihood	126.501

Coefficients

	B	SE(B)	Wald	P>t	Exp(B)
Constant	0.777	0.287	7.307	.007	
Transport factor score – Pro car	0.643	0.220	8.576	.003	1.903
Increased interaction satisfaction since moved to Oran Park	1.643	0.709	5.359	.021	5.168
Work status self employed	1.416	0.679	4.347	.037	4.119
Travel time earlier since moving to Oran Park	-1.117	0.545	4.200	.040	0.327

Comments
The seven-point score for positive affect subjective wellbeing was also reduced to a binary variable by recoding all the agree responses as 'yes' and all other (including neutral) to 'no'. The sample size did not permit a multinomial logit regression including all seven data points.

The model indicates four variables that are significantly associated with feeling happy in Oran Park.

The first is an attitude to transport that favours driving and car use – also significant in the model for life satisfaction. These people were more likely to say they like driving, that they drive just for fun, and that they feel free and independent when they drive. Having an appreciation of private driving and private car use is associated with feeling happy in Oran Park.

The second is increased satisfaction with interactions since moving to Oran Park. These respondents answered that they were more satisfied with the level of interaction they have with their neighbours in Oran Park than they were with the level of interaction they had in their previous neighbourhood. Note that this does not mean having more or less interaction, simply that the current level of interaction is more satisfying than it was prior to moving. Increased satisfaction with interactions in Oran Park compared to previous neighbourhoods is associated with feeling happy in Oran Park.

The third is being self-employed. Being self-employed is associated with being happy in Oran Park.

The final variable of significance for happiness is, again, having to leave for work earlier since moving to Oran Park. This variable also featured in the model above for mental health and anxiety. These are participants who, for example, may have left for work between 7am and 10am before moving to Oran Park, now find they need to leave for work between 5am and 7am. Having to leave for work earlier is associated with feeling unhappy in Oran Park.

In summary, results of modelling suggest several significant relationships between transport variables and different indices of wellbeing. First, resenting travel time by, for example, feeling that travel time is wasted, and that the need to travel impedes participation in other activities, is associated with lower well-being scores. Second, and obviously related, is that changes to commute times – whether a change to the time of day at which the commute occurs, or a change in duration since moving to Oran Park - is also associated with lower well-being scores. Third, having an appreciation for car-travel, for example, acknowledging a sense of freedom from driving a car, is associated with higher well-being scores in Oran Park. Finally, while several variables were found to be significant for measures of mental health and subjective well-being, the results for physical health were less conclusive. In summarising these results it is also instructive to assess those variables included in modelling that were not found to be significant. Satisfaction with neighbourhood facilities and sense of community cohesion, reasons for choosing Oran Park, and the amount of time passed since relocating (0-24 months) did not have significant impacts on health or subjective well-being in this study.

5. Discussion – Commuting and Cars

The precinct of Oran Park was planned as a healthy built environment (DPE 2017). Walkability, social connection, green open space and easy access to education, retail and services within the precinct have been hallmarks of its development and promotion. While acknowledging these positive features of Oran Park, this study was particularly interested in the potential health impacts of the estate's relationship with Sydney's broader urban structure. Given transport inevitably shapes this relationship, the study has concentrated on the impact of Oran Park's development on transport practices, as well as resident health and wellbeing.

It was initially hypothesised that those moving to Oran Park would experience longer commute times and that this would impact wellbeing in different ways. The findings do demonstrate increased commute times since relocation. They show a degree of frustration with transport from Oran Park, and a dependence on private car use. For study participants, the average commute time had increased from 35 minutes to just under 50 minutes each way. It was more likely to be by private car. More participants were travelling >30 minutes each way to work than they had prior to relocating to Oran Park. Nearly 20% of respondents now lived the harsh reality of the 'extreme commute' (defined as more than 90 minutes one way (Marion and Horner 2007, 39; see also Rapino and Fields 2013, Bissell 2014)). This increased from 6.3% prior to relocation. Just under 45% of respondents indicated that they were dissatisfied with their commute – an increase from 19% prior to relocation. These changes to commute times and emergence of a degree of resentment for travel time were significantly related to lower mental health scores, self-reported feelings of anxiety and a negative response for self-reported feelings of happiness. Conversely, enjoying and appreciating the private car was associated with self-reported feelings of happiness in Oran Park.

For study participants, the average commute time had increased from 35 minutes to just under 50 minutes each way.

A comprehensive analysis of the various economic geographies, cultural inclinations and planning politics that have shaped jobs-housing balance and infrastructure distributions across South Western Sydney is beyond the scope of this research. It is common knowledge that infrastructure has not followed development with the synchronicity demanded by those establishing habits of travelling. Nevertheless, the findings do suggest plausible pathways to explain the outcomes described above. These insights are potentially useful for those seeking to sustain health and wellbeing while simultaneously accommodating rapid growth in Australian cities.

5.1 Understanding reasons for relocating

Survey participants did not choose to live in Oran Park to be closer to work. They were more motivated by the affordability of a new house in a family friendly and attractive urban neighbourhood. Proximity to employment and public transport access were less important. The subjugation of these elements

of access as less significant was balanced by most respondents ranking the ability to drive everywhere as an appealing feature of Oran Park. This confirms existing research suggesting location relative to employment is not a particularly strong influence on housing choice (Reed and Mills 2007; Weidmann and Kelly 2011). It also confirms research demonstrating ongoing attachments to private car use are alive and well in subsets of Australian culture (Kent 2014). Yet these factors are rarely considered by proponents of jobs-housing balance within a city's sub-regions, including those seeking to realise the dream of a 30 minute city.

Survey participants did not choose to live in Oran Park to be closer to work. They were more motivated by the affordability of a new house in a family friendly and attractive urban neighbourhood. Proximity to employment and public transport access were less important.

Sydney's most recent metropolitan strategy, The Greater Sydney Plan, has the 30-minute city as its key aspiration. Ensuring that the majority of dwellings are located within a 30-minute public transport trip of a strategic centre or cluster is proposed as a solution to the current inadequacies in transport, infrastructure and housing affordability dominating the headlines and lives of Sydneysiders (Greater Sydney Commission, 2018). Proponents of the 30 minute city generally rely, either explicitly or implicitly, on a concept known as the Marchetti Constant (Marchetti 1994). This constant promotes a universal travel time budget of around 60 minutes on average per person, per day. The assumption is that although city structure, transport systems and technologies might change, people gradually adjust their lives to their conditions such that the average travel time per day stays approximately constant at one hour long. In 2014, influential Australian transport planners Peter Newman and John Kenworthy used 2005 data to apply the Marchetti Constant to transport practices in 41 cities around the world. Using average mode travel speeds, the analysis showed that mean and median travel times per day were 66 and 65 minutes respectively (Newman and Kenworthy 2015, 106). Sydney is included in this list.

The application of Newman and Kenworthy's analysis is difficult to replicate. It relies on multiple assumptions and masks variability and nuance in its use of averages. Nevertheless, claims such as this are used to inform planning policy with little regard for the dynamic complexity undeniably faced by households making mundane decisions of where to live and where to work. Elements of life and employment in cities have shifted since the Marchetti finding (1980), and since Newman and Kenworthy's most recent data collection (2004, as cited in Newman and Kenworthy 2015, 106). First, global labour markets have become more flexible (Campbell and Burgess 2018). The workforce in 2004 was less dominated by fixed term contracts and casual positions (Haas and Osland 2014), and the gig economy based on short-term contract work, freelancing and self-employment, was relatively nascent (Lewchuk 2017). Second, the housing market was more accessible. More suburbs had median house prices that were affordable to more people. These factors made the idea of households following employment seem sensible. In addition to changing housing and employment conditions, the commute has also changed. Technology has started to free time travelling from complete redundancy (Kent 2014; Wells and Xenias 2015; Robertson et al. 2017). We can, more than ever, use travel time for other purposes. In 2018 we can legally drive a car while participating in teleconferences, sending e-mails and texts, listening to audio-books and podcasts and/or chatting to family and friends. Factor in the idea that driving itself is becoming more automated (Fraedrich et al 2015; Buckley et al 2018;

Robertson et al. 2017), the ability (if not desirability) to conduct business and personal life while travelling is predicted to increase. These three basic shifts – working conditions, housing affordability and the commute - highlight that it is time to question the idea of a universal time budget of 60 minutes per day. Both our willingness to travel, and the way we experience travel, is being re-cast. While the 30 minute city may remain a desirable eventuality to most, the people expected to make it work are happy to trade elements of access for 'Better quality housing/new build', a 'Family friendly area', and an 'Attractive urban environment' (see Table 10 for the context of these quotes relative to this study).

Three basic shifts – working conditions, housing affordability and the commute - highlight that it is time to question the idea of a universal time budget of 60 minutes per day. This is a mix with unanticipated potential to derail the 30-minute city ideal.

Where does this leave those seeking to plan for Sydney's growth? This study suggests a population so desperate to buy into the lifestyle of a detached family home with paths for walking, schools for learning and parks for playing that they will wear an increased commute, and will erode their own health and wellbeing as a result. This willingness – a cultural inclination to sacrifice for home ownership – is lived out in both greenfield estates and infill developments across Australia's rapidly growing cities. It is exacerbated by a contemporary context of decreasing housing affordability and increased uncertainty in employment – including where that employment will be located. This is a mix with unanticipated potential to derail the 30-minute city ideal.

5.2 Unpicking the links between transport and health in Oran Park

These results raise several potential implications for the wellbeing of Oran Park's residents, now and into the future. They confirm some of the financial, social and wellbeing implications of transport-related time poverty for residents of greenfield estates in Australian cities (*Cf.* Dodson and Sipe 2008, Currie et al. 2010, Pocock et al. 2012). They also add weight to existing evidence that long commute times to work may be a risk factor for poor health (*Cf.* Costal et al. 1988, Cassidy 1992, Lyons and Chatterjee 2008, Gottholmseder et al. 2009, Novaco and Gonzalez 2009, Hansson et al. 2011, Roberts et al. 2011, Ettema et al. 2013, Olsson et al. 2013, Feng and Boyle 2014, Legrain et al. 2015, Milakis et al. 2015). Furthermore, the findings shed new light on some of the plausible pathways through which transport may affect mental health and subjective well-being. These are now discussed.

Travel time as wasted time

Primarily, it may be that additional time getting to and from work reduces the amount of time a person has for other daily activities (for example, personal care, sleep, exercise, family time), thus cutting into the time available to recover from the demands of a job. A similar explanation has been given for the relationship between long working hours and mental health (Dugan 2017; Roxburgh 2004). This study did ask basic questions about the time pressures experienced by respondents with most saying they did sometimes feel rushed and pressed for time. These results are not reported in detail because useful inferences cannot be drawn from these findings, except to suggest that time scarcity is a fact of modern life reflected by this study's participants.

Travel time as stressful

Another related pathway between poorer mental health/subjective wellbeing and the commute is that the experience of commuting is stressful in and of itself. There are two components to this. First, unlike other time-related stressors (such as long work hours) time spent commuting may be considered to be 'wasted,' because individuals are not able to use the time commuting for other activities such as actual paid work, or time with family. Almost half of this study's participants agreed to feeling that travel time was wasted time, and that time travelling prevents participation in more useful activities. From a psycho-social perspective, this divestment of time raises discord within the individual because their social role (as, for example, employee or parent) is compromised by what they perceive to be an undue amount of facilitative but disassociated time (see Morris 2013). The perception that a person's commute time is excessive is formed (in part) by the individual's previous experiences of getting to and from work. Hence the anxiety felt by those whose commute time has increased since moving to Oran Park will be greater than those who may have had a similarly long commute time all along. Second, the actual act of the commute, its impact on the body and mind (Bissell 2014), may be a source of frustration which is then reflected in poorer mental health and subjective wellbeing. Not all commutes are created equal. For some, an hour speeding up a deserted highway is likely to be less abhorrent than 60 minutes stuck in a slow moving line of fellow urban aspirants.

The perception that a person's commute time is excessive is formed (in part) by the individual's previous experiences of getting to and from work. Hence the anxiety felt by those whose commute time has increased since moving to Oran Park may be greater than those who have had a similarly long commute time all along.

A vast body of psycho-social research has concentrated on the way travel impedance (also known as being stuck in traffic) shapes the stress associated with the commute. Traffic congestion is frustrating because it thwarts both our physical movement and our goal attainment. Being stuck in traffic interferes with behavioural objectives, evokes unpleasant emotional states, and detracts from efficient performance and personal satisfaction (Novaco et al. 1990, Novaco et al. 1991, Novaco and Gonzalez 2009). Impedance as a concept was originally operationalised as a three-level factor defined by the conjunction of the distance and duration of the commute. Other objective indices, such as the number of intersections traversed were later added (Novaco et al.1990). More recently, research in this space has factored in unpredictability to measures of the health impact of commuting time. The most stressful trips therefore result from travelling long distances through multiple intersections at a slow speed, where the average duration of the trip is highly variable. Conversely, the least impedance occurs when short distances are travelled in small amounts of time and the trip is relatively predictable. Validation for these concepts has been confirmed in several quasi-experimental investigations involving criterion measures of physiology, task performance, mood states, subjective distress, and physical health problems. Generally, high impedance and low predictability trips are associated with higher blood pressure, lower frustration tolerance, more negative mood, more work absences, more colds and flu, and lower residential and job satisfaction. Again, this report emphasises that experiences of commute impedance are subjective. Even the criterion measures used by Novaco et al. (2009) are expressions of a subjective experience. Of particular relevance to the commuters of Oran Park is that commute related stress is likely to be influenced by past experiences of commuting

(Bissell 2014). The wellbeing impacts of increased impedance are likely to be greater than those expressed by someone who has always had a long commute. The social and cultural impacts of a community experiencing increased impedance *en masse* are potentially substantial.

Travel time as duration and point in time

Also relevant to the commute is that this study is the first in the Australian context to measure not only the impact of commute duration, but a change in the time of day when the commute occurs. Time in the context of the commute, can be conceptualised as *duration* or a *point in time*. To date, studies of the commute generally concentrate on the impact of the commute duration. This study shows that the point in time when the commute occurs, and more precisely relative changes to this time since relocating, is also important. Again, there are several potential pathways for this. Respondent X, for example, moved to Oran Park from a suburb approximately 15 kilometres directly to the west of the Sydney CBD. His commute increased by 45 minutes each way. For reasons not captured by this survey, he started to leave for work between 5am and 7am instead of previously leaving between 7am and 9am. We can assume this is either to avoid the traffic associated with peak hour in Sydney, or because he simply needs to leave earlier to start work on time. This study's survey shows that he lives in a detached dwelling with a spouse and one child under the age of 6. What is unknown, but can be easily imagined, is that when respondent X leaves for work, his spouse and child are, quite possibly, asleep. It is dark. His routine prior to relocation of having breakfast with his family is eroded. This demonstrates that not all time is created equal. It is, potentially, when the commute occurs relative to previous commuting patterns rather than the duration as such that impacts mental health and subjective wellbeing. This finding adds to research demonstrating that the impact of built environments on health is subjective, relevant to past experience and therefore difficult to measure (Kent et al. 2018). It adds to calls for healthy built environment research to better accommodate the nuance of perception, complexity of past experience and subjectivity of interactions with urban environments in development of indicators for what is a healthy built environment.

Time in the context of the commute, can be conceptualised as duration or a point in time. This study is the first in the Australian context to measure not only the impact of commute duration, but a change in the time of day when the commute occurs.

Transport and physical health

The final point of relevance from these findings on transport and wellbeing is that none of the explanatory variables featured in a model for physical health. There are several plausible reasons for this. First draws upon the binary relationship between mental and physical health. The relationship between mental and physical presentations is complex and although there is evidence that major physical illness has mental health impacts, in the general population mental deterioration precedes a decline in physical health. It can be inferred with confidence that the health impacts of more time spent in cars, less quality time with family, and resentment of this situation, will first be expressed as experiences of depleted energy, feeling downhearted and blue or agitated prior to showing physical symptoms of bodily pain or impedance. This emphasises that this study is a point in time worthy of replication in the future, as discussed further below under the heading *Limitations*.

5.3 Pride of place for the private car

The imprints of the private car are writ large in Oran Park. From its heritage as a race track, street names based on legendary race car drivers, themed children's parks, resident's attitudes and dominant practices of getting from A to B. Some of these issues have been described above in the introduction to Oran Park. Again, there is an irony that an estate designed to be walkable is also cemented (figuratively and literally) in private car appreciation. The data supports this observation in several ways.

Cars dominate transport practices

The private car dominates residents' transport practices. Just over 99% of working residents participating in this survey started their morning commute in a car. In Oran Park overall, only 0.6% of households did not have a car, compared to just over 10% of households in Greater Sydney (ABS 2016). Almost 70% of Oran Park households have two or more cars (ABS 2016).

Just over 67% of participants said that they would prefer to drive than walk whenever possible, even though 25% agreed that walking can be easier for them than driving. Almost 80% of respondents agreed with the statement 'I like to drive'. Over 54% indicated that they preferred to drive rather than take public transport wherever possible. Only 20% of respondents would choose public transport over driving, if it were available.

A key limitation of this study is that it did not examine transport practices beyond the journey to work. The stocktake of attitudes to transport and relocation, however, suggest that these would also be car dependent. The analysis of transport attitudes showed little regard for walking and cycling as modes of transport. Just over 67% of participants said that they would prefer to drive than walk whenever possible, even though 25% agreed that walking can be easier for them than driving. Almost 80% of respondents agreed with the statement 'I like to drive'. Over 54% indicated that they preferred to drive rather than take public transport wherever possible. Only 20% of respondents would choose public transport over driving, if it were available. Over 75% of respondents indicated they 'feel free and easy' when they drive. These results need to be seen in the context that only 11% of respondents agreed with the statement that the car for them is a status symbol. Children's play equipment aside, a picture emerges of a community in which the car is a tool rather than a trophy. This confirms other research on Australian car cultures which suggests Australia is not attached to the *object* of the car as much as they are attached to the freedom, flexibility and comfort that the car affords (Davison 2004). It paints a clear warning for those seeking to predict a shift away from private car use based on its demise as a rite of passage or object of admiration. A decline in car love does not necessarily indicate a decline in car use or appreciation.

With regards to reasons for relocating, it has already been outlined above in the section of this report titled *Understanding reasons for relocating* that survey participants chose to live in Oran Park primarily because of the promise of a new build in an attractive family friendly neighbourhood. Coming in just under the appeal of an 'attractive urban environment' was 'being able to drive everywhere'. Other issues of access, including public transport availability and proximity to employment were far less important factors, indicating that what matters to these people is living in a new home which they can easily leave and return to in their private car.

Cars are still a necessary component of life in Sydney's south west

Oran Park as a precinct is firmly situated in a built and historical context that both reveres and reinforces private car use. Although walkability within Oran Park echoes best practice infrastructure provision, opportunities to leave Oran Park in anything but a private car are thin on the ground. This context is described above in the introduction to Oran Park. The pinnacle of car appreciation is the enthusiastic celebration of cars throughout the precinct. Its street names, children's play equipment and public art firmly position the car and its legacy in pride of place.

The factors outlined above demonstrate the various ways private car use is alive and well in Oran Park. Does this mean that all is lost for health and wellbeing? Of course not. Cars are not the new tobacco (Douglas et al. 2011). It is important for urban planners to understand that many people outside of the inner urban core of cities continue to embrace the private car and its undeniable standard of comfort and convenience. They are a key component to making life work in Australian cities and data suggests that they will be for some time to come. The fact that residents of Oran Park are dependent on private cars once they leave the precinct, does not undermine the dire need to ensure the urban form within greenfield estates is designed to encourage walking, cycling, recreation and community connection. This understanding is the first step to serious attempts to plan for less car use. Policy recommendations for this are outlined below.

6. Limitations and future research

A key limitation of the study is its relatively low response rate. This is often the case with spatially and temporally specific surveys conducted independent of the luxury of an existing panel (Nulty, 2008). The inability to perfect quantification is not a valid reason to avoid exploration of the many and varied issues facing Australia's cities. If care is taken in the analysis, and the results are situated within broader findings, the type of data collected by small scale, situated surveys does provide useful insights into trends that can be analysed further. Such analysis should be bi-directional on the qualitative/quantitative spectrum.

The fact that residents of Oran Park are dependent on private cars once they leave the precinct, does not undermine the dire need to ensure the urban form within greenfield estates is designed to encourage walking, cycling, recreation and community connection.

With regards to this specific survey, the usable sample is in the region of 200, however the exact number depends on the variables used in each model. This is not a large sample for a multivariate study and care has been taken in the analysis to ensure that results are not simply the result of potential spurious relationships that can occur when the number of explanatory variables becomes too large in relation to the sample size. A common rule of thumb is to ensure that there are at least 10 respondents per independent variable (see below). Since there were 42 potential independent variables collected by the survey instrument, it was necessary to reduce this to a more realistic number

for each model. According to the rule of thumb, this should have been less than 20 variables. In practice, in all cases, it was less than 10. This was achieved through the following process:

- Each potential independent variable was considered with respect to each model to ensure that there was a sound basis for inclusion based on the literature.
- Bivariate correlations between the remaining independent variables and the dependent variables were examined. In cases where this was very low the independent variables were not included in the analysis.
- Attention was paid to multicollinearity: variables were rejected appropriately in any cases where the variance inflation factor (VIF) was greater than 5 (the normal rule of thumb is the more risky value of 10).

These measures ensure that the model building has been suitably conservative with respect to the limited sample size.

The study is also limited by its cross-sectional nature, which prohibits the assertion of causal relationships. The generalisability of the study findings are limited because results may be specific to the south-western Sydney transport context. There are other areas of analysis that would have strengthened the findings but were excluded from the survey instrument in an effort to limit participant fatigue. For example, the study did not seek to interrogate transport practices outside of the journey to work. A direct focus on non-commute based transport would have given a more rounded insight into the extent of car dependence in Oran Park. Furthermore, mental and physical health indicators were both self-reported, as were experiences of crime.

The strength of the study lay in its provision of a relatively detailed snapshot in time of life lived in a new greenfield suburb on the outskirts of Sydney. The study has unpicked some of the pathways between commute times, mental health and subjective well-being, and identified the prime position of the private car in these indicators. It has also contextualised these findings against a backdrop of a recently re-located population, and revealed links between reasons for relocating and transport practices. In this sense, the study has identified significant elements to models of health related to built environments. These findings need further and more focused research, possibly using several areas of high population growth so as to overcome the issues around limited population numbers from which the samples are drawn. This report, however, cannot ignore its own (statistically significant) findings and therefore includes suggestions for policy and practice.

7. Recommendations for policy and practice

Policy responses produced by this research are (depressingly) similar to those regularly proposed by academics and practitioners alike to ‘fix’ Australian cities – more affordable housing, better infrastructure and a more strategic approach to conurbation.

A primary policy relevant finding of this study is the potentiality that the residents of Sydney are not quite as on board with the 30-minute city ideal as is often assumed by policy makers and practitioners

in this space. This ideal relies on the assumption that people will base decisions of where they live on the location of commonly accessed destinations, primarily employment. This assumption fails to acknowledge that in contemporary Sydney employment is increasingly mobile and housing choice is increasingly constrained. It could be that our tolerance of time in our cars will stretch to accommodate the dream of home ownership, particularly when employment is precarious and cars are normal and comfortable.

There are, however, some policy responses that might assist the realisation of the 30 minute city ideal out in the greenfields. The current commitment to agglomerations of employment uses in major centres as articulated by the Greater Sydney Commission and conceptualised by its 'Three Cities' approach, may well increase the likelihood that a change in employer or job will not necessitate a change in job location. This will provide some reassurance to those who dare make the decision to live close to where they work. More affordable housing close to employment locations will also increase popular ability to realise the dream of home ownership closer to work, or at least the feasibility of that antiquated notion of relocating to accommodate a job.

This report also proposes several policy directions that are more radical. For example, increased certainty in employment might return some of the loyalty that once prompted the purchase of a home, settlement of a family and establishment of a network around the location of a job. More effective road pricing would externalise the true cost of living a long distance from work and act as a further deterrent to long commutes (in addition to the stress, wasted time and discomfort already experienced by those driving long distances to work). Better transport infrastructure is a more equitable solution to ensure the distance between the reality of work and the dream of a family home can be traversed as efficiently as possible. Workplace certainty and road pricing are policy realms not usually traversed by the embattled planning profession in NSW. Perhaps, however, it is time for a more comprehensive and lateral approach to some of the problems facing contemporary Australian cities.

In relation to the development of healthy built environments (Kent and Thompson 2014), the findings of this project demonstrate the way design features within small estates are insufficient to overcome disjointed development across the wider city. While walking and cycling facilities, as well as open space access and local service provision are imperative to good health, long commutes and sparse access to a variety of services may erode the health benefits of the immediate environment by perpetuating private car use.

On a final, more practical note, the indication by residents at Oran Park that the car is not so much of a status symbol as it is a necessity to get from A to B does open the possibility that the community might be interested in car sharing schemes such as GoGet. The peer to peer equivalent, Car Next Door, may be more effective, particularly in providing households with the option to shed one car, keeping a single car for the commute and other regular journeys, and using car sharing to fill the gaps. Peer to Peer options do not rely on financial investment of a fleet of cars, and also avoid the need to engage with local authorities for the provision of parking (Kent and Dowling 2016). Indeed, as a new development, when community connections are supposedly at a high point, this may be a perfect opportunity to introduce schemes such as Car Next Door.

8. Conclusion

This project has used a case study approach to examine the impact of processes of rapid greenfield urban growth on the health and wellbeing of residents in a newly established community in Western Sydney. It seeks to provide a deeper, situated understanding of the impact of asynchronies in the staging of development with a specific focus on practices and perceptions of transport. The master planned estate, Oran Park, is used as a site for analysis.

This study's key conclusion is that the residents of Oran Park are living lives shaped by private car use and this is impacting their health. In the analysis of attitudes to transport and urban life the study has also shown how this is not only a reaction to a lack of tangible transport alternatives, but also reflective of a cultural attachment that takes private car travel as a given.

The findings at Oran Park illustrate how the gulf between policy discourse on '30 min cities' and residents' lived experiences can impact health in outer urban areas. Oran Park was the product of a co-ordinated effort to plan a precinct with positive health outcomes for residents. Its marketing focused on this result. Neighbourhood streets for walking and prolific open space are important. Yet they will not off-set the potentially negative impacts of car dependent lifestyles in Australian cities. If opportunities for viable local employment are limited, and broader locational connectivity and transport disadvantages are not immediately addressed, the ability to enjoy the design attributes of the immediate environment is compromised, as is the capacity of urban design attributes designed to have a positive effect on the health and wellbeing of the community.

The findings reported here support conclusions from two other recent studies on the efficacy of micro-design variables on health. First, the RESIDE study conducted in Perth, Western Australia, which found that design features within small estates are insufficient to overcome disjointed residential development whose broader urban structure does not support active transport (Hooper et al. 2015). Second, the study of Selandra Rise in Melbourne, which found that uncoordinated development of outer urban regions, the lack of connections between isolated developments such as Selandra Rise and destinations for residents had detrimental health impacts (Nichols et al. 2017).

If opportunities for viable local employment are limited, and broader locational connectivity and transport disadvantages are not immediately addressed, the ability to enjoy the design attributes of the immediate environment is compromised, as is the capacity of urban design attributes designed to have a positive effect on the health and wellbeing of the community.

The key question raised in conclusion is whether it is ok to 'wait and see'? This research presents a snapshot in time of a community finding its feet in a masterplanned estate on Sydney's outskirts. It could be that many of the issues identified are growing pains that will right themselves over time as people and urban form adjusts. This report accepts this with two cautions. First is the importance of habit and the opportunity to establish good habits presented by

relocation. This opportunity is missed by asynchronous development. A week, a month, a year – all are too long for a new resident of Oran Park to wait to decide upon their preferred commute mode. Post the stress of relocation, the journey to work will no doubt be the one that is easiest. The choices made immediately after the move will shape the lives of the entire household –whether two cars are needed, whether it is easier to walk or just drive that second car to the shops. Commutes are open to change (Bissel 2014a), however the comfortable, easiest and fastest route will usually win out (Mattioli et al. 2016). As will the route with the least cognitive load, the one that is familiar….simply out of habit (Verplanken et al. 2008). The second response to the hopeful idea that Australia's greenfields will right themselves all in good time is that Australian cities are experiencing several rapid transitions, unprecedented and echoed throughout the world. Technology, mass migration, confused yet undeniably resurgent national pride and environmental precariousness are adding unsurpassed dimensions of fluidity to both the super structures that shape our cities and the mundane minutiae of modern lives. The pace of change is perhaps the biggest challenge to planning in Australia since the embrace of neoliberalism.

The solution is first to keep an ear to the ground. We need to continue to observe, engage with, and reflect in an informed way on the way lives are lived in Sydney's greenfields. But Western Sydney is not an experiment. It is a place that will shape peoples' lives, and the lives of those to come. We can start by acknowledging that the dream of home ownership in Sydney's greenfields will come with costs, as well as the benefits of open space, backyards, newly cemented footpaths and a Woolworths down the road. It would be patronising to believe the residents of Oran Park had not acknowledged this when moving, so it will not be news to them. It may be news, however, to the various planning agencies depending on a large scale transition away from private car use, a readoption of local living, and an embrace of western Sydney as the confines of day-to-day life as they know it.

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Appendix One: Recruitment Material

Do you live in Oran Park?

If you live in Oran Park, and are over the age of 18, we would love to hear from you.

THE UNIVERSITY OF SYDNEY

How is life in Oran Park?

The University of Sydney is conducting research about life in Oran Park, including the way you travel and your perceptions of safety.

If you live in Oran Park, and are over the age of 18, please tell us what you think in our online survey.

tinyurl.com/oranpark2017

We really appreciate your time. By completing this survey you will be entered into a draw to **win one of five $100 Woolworths vouchers** as a way to say thank you.

Contact the Research Team:
jennifer.kent@sydney.edu.au
0412 625 234.

The survey is confidential and takes about 15 minutes to complete.

THE UNIVERSITY OF SYDNEY

Appendix Two: Survey Instrument

(This is a paper version reproduced from the online survey and formatting has been removed).

INTRODUCTION - Your new neighbourhood survey

What is this study about?
The aim of this survey is to find out about life in south western Sydney. We are particularly interested in the experiences of those who have just moved to this area. We ask basic questions about your local neighbourhood, the way you travel, and perceptions of safety. All up, the survey should only take about 15 minutes to complete.

Who is running the study?
The study is being run by the University of Sydney. It is funded by the Henry Halloran Trust at the University of Sydney.

Participant Information Statement
For more detailed information on what this research involves, please see the Participant Information Statement here [link to participant information statement].

Consent to be involved
All responses to this survey are entirely anonymous and confidential. Submitting a completed survey is an indication of your consent to participate in the study.

What if I would like further information about the study?
If you would like to know more at any stage during the study, please feel free to contact Dr Jennifer Kent. Jennifer is the researcher running the study. Her e-mail address is jennifer.kent@sydney.edu.au, or phone 0412 625 234.

Section 1: Getting started

Do you currently live in the Camden Local Government Area?

- ❍ Yes (1)
- ❍ No (2)

Are you over 18-years old?

- ❍ Yes (1)
- ❍ No (2)

How long have you lived at your current address?

- ❍ 0-3 months (1)
- ❍ 3-6 months (2)
- ❍ 6-9 months (3)
- ❍ 9 months to 1 year (4)
- ❍ 1-2 years (5)
- ❍ More than 2 years (6)

Section 2: Choosing Oran Park

Did you move to your current address from within Australia?
Yes (1)
No, I moved from outside Australia (2)

Answer If Yes Is Selected
What was your previous postcode?

Answer If No Is Selected
What country did you move from?

What type of dwelling do you currently live in? (Select one)
- ❍ Flat, apartment or unit (1)
- ❍ Semi-detached house, row or terrace house, townhouse (2)
- ❍ Separate house (3)
- ❍ Something else (please state) (4) _____

How important were each of the following when choosing where you live now? (Respond to all)

	Not at all important (1)	Somewhat important (2)	Important (3)	Very important (4)	Extremely important (5)
Being close to family	❍	❍	❍	❍	❍
Being close to friends	❍	❍	❍	❍	❍
Being close to paid work	❍	❍	❍	❍	❍
Being close to where you study	❍	❍	❍	❍	❍
Being close to schools	❍	❍	❍	❍	❍
Good public transport access	❍	❍	❍	❍	❍
Being able to drive everywhere	❍	❍	❍	❍	❍
Better quality housing/new build	❍	❍	❍	❍	❍
Being able to afford a bigger home	❍	❍	❍	❍	❍
Attractive urban environment	❍	❍	❍	❍	❍
Family friendly area	❍	❍	❍	❍	❍
Returning to the neighbourhood of my childhood	❍	❍	❍	❍	❍
Something else (please state)	❍	❍	❍	❍	❍

Section 3: Work and Study

Are you working at the moment?
- ❍ Yes (1)
- ❍ No (2)

Are you working: (Select one)
- ❍ Full time (1)
- ❍ Part time (2)
- ❍ Intermittent (e.g. casual, seasonal) (3)

Which of the following best describes your current employment situation? (Select one)
- ❍ Work for an employer (1)
- ❍ Self-employed (2)
- ❍ An unpaid intern or volunteer (3)

How many hours do you usually do paid work in a week? (Enter hours)

Which of the following best describes the reason you are not working? (Select one)
- ❍ I am caring for others (e.g. children, older people) (1)
- ❍ I am unemployed but looking for work (2)
- ❍ I do not want or need to work (3)
- ❍ I am currently unable to work (4)
- ❍ I am retired (5)

Are you studying at the moment? (Select one)
Yes (1)
No (2)

Are you studying: (Select one)
Full time (1)
Part time (3)

Were you working or studying before you moved to where you live now?
Yes (1)
No (2)

Which suburb do you mainly work in?
Suburb/Postcode (enter) (1) _____
Variable work location (2)
Work at home (3)

Which suburb do you mainly study in?
Suburb/Postcode (enter) (1) _____
Variable study location (2)
Study at home (3)

Do you have access to free car parking where you work? (Select one)
Yes (1)
No (2)

Do you have access to free car parking where you study? (Select one)
Yes (1)
No (2)

At the moment which of these best describes how you travel to work or study on most days? (Select one)

- ❍ I drive on my own all the way (1)
- ❍ I drive with, or am driven by another person (2)
- ❍ I drive or am driven to the station and catch the train (3)
- ❍ I drive or am driven to the bus stop and catch the bus (4)
- ❍ I ride a motorcycle or scooter all the way (5)
- ❍ I ride my motorcycle/scooter to the station and catch the train (6)
- ❍ I ride my motorcycle/scooter to the bus stop and catch the bus (7)
- ❍ I walk all the way (8)
- ❍ I walk to the station and catch the train (9)
- ❍ I walk to the bus stop and catch the bus (10)
- ❍ I cycle all the way (11)
- ❍ I cycle to the station and catch the train (12)
- ❍ I cycle to the bus stop and catch the bus (13)
- ❍ Something else (please state) (14) _____

Before you moved, which of these best describes how you travelled to work or study on most days? (Select one)

- ❍ I drove on my own all the way (1)
- ❍ I drove with, or was driven by another person (2)
- ❍ I drove or was driven to the station and caught the train (3)
- ❍ I drove or was driven to the bus stop and caught the bus (4)
- ❍ I rode a motorcycle or scooter all the way (5)
- ❍ I rode my motorcycle/scooter to the station and caught the train (6)
- ❍ I rode my motorcycle/scooter to the bus stop and caught the bus (7)
- ❍ I walked all the way (8)
- ❍ I walked to the station and caught the train (9)
- ❍ I walked to the bus stop and caught the bus (10)
- ❍ I cycled all the way (11)
- ❍ I cycled to the station and caught the train (12)
- ❍ I cycled to the bus stop and caught the bus (13)
- ❍ Something else (please state) (14) _____

Which suburb do you mainly work in?

At the moment how long does it take you to travel to work? (Enter minutes)

At the moment how long does it take you to travel to study? (Enter minutes)

Before you moved, approximately and on average, how long did it take you to travel to work? (Enter minutes)

Before you moved, approximately and on average, how long did it take you to travel to study? (Enter minutes)

At the moment overall how satisfied are you with your travel time to work and/or study? (Select one)

- ❍ Very dissatisfied (1)
- ❍ Dissatisfied (2)
- ❍ Neither satisfied nor dissatisfied (3)
- ❍ Satisfied (4)
- ❍ Very satisfied (5)

Before you moved overall how satisfied were you with your travel time to work and/or study (Select one)

- ❍ Very dissatisfied (1)
- ❍ Dissatisfied (2)
- ❍ Neither satisfied nor dissatisfied (3)
- ❍ Satisfied (4)
- ❍ Very satisfied (5)

What time of the day do you mostly travel to work now? (Select one)

- ❍ Between 5am and 7am (1)
- ❍ Between 7am and 10 am (2)
- ❍ Between 10am and 3pm (3)
- ❍ Between 3pm and 7pm (4)
- ❍ After 7pm and before 5am (5)

What time of the day do you mostly travel to study now (Select one)

- ❍ Between 5am and 7am (1)
- ❍ Between 7am and 10am (2)
- ❍ Between 10am and 3pm (3)
- ❍ Between 3pm and 7pm (4)
- ❍ After 7pm and before 5am (5)

Before you moved what time of the day did you mostly travel to work? (Select one)

- ❍ Between 5am and 7am (1)
- ❍ Between 7am and 10am (2)
- ❍ Between 10am and 3pm (3)
- ❍ Between 3pm and 7pm (4)
- ❍ After 7pm and before 5am (5)

Before you moved what time of the day did you mostly travel to study? (Select one)

- ❍ Between 5am and 7am (1)
- ❍ Between 7am and 10am (2)
- ❍ Between 10am and 3pm (3)
- ❍ Between 3pm and 7pm (4)
- ❍ After 7pm and before 5am (5)

Section 4: Transport Attitudes

Q18 To what extent do you agree or disagree with the following statements about travel? (Respond to all)

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
Travelling by car is safer overall than taking public transport (1)	❍	❍	❍	❍	❍
I prefer to walk rather than drive whenever possible (2)	❍	❍	❍	❍	❍
Walking can sometimes be easier for me than driving (3)	❍	❍	❍	❍	❍
Travel time is generally wasted time (4)	❍	❍	❍	❍	❍
Travelling by car is safer overall than riding a bicycle (5)	❍	❍	❍	❍	❍
I like driving (6)	❍	❍	❍	❍	❍
To me, the car is a status symbol (7)	❍	❍	❍	❍	❍
I prefer to take public transport rather than drive whenever possible (8)	❍	❍	❍	❍	❍
The only good thing about travelling is arriving at your destination (9)	❍	❍	❍	❍	❍
I like walking (10)	❍	❍	❍	❍	❍
It does not matter to me which type of car I drive (11)	❍	❍	❍	❍	❍
Public transport can sometimes be easier for me than driving (12)	❍	❍	❍	❍	❍
I like riding a bicycle (13)	❍	❍	❍	❍	❍

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
Travelling by car is safer overall than walking (14)	❍	❍	❍	❍	❍
I prefer to ride a bicycle rather than drive whenever possible (15)	❍	❍	❍	❍	❍
To me the car is nothing more than a convenient way to get around (16)	❍	❍	❍	❍	❍
Getting there is half the fun (17)	❍	❍	❍	❍	❍
Riding a bicycle can sometimes be easier for me than driving (18)	❍	❍	❍	❍	❍
I like to drive just for fun (19)	❍	❍	❍	❍	❍
I like taking public transport (20)	❍	❍	❍	❍	❍
I feel free and independent if I drive (21)	❍	❍	❍	❍	❍
My commute is a real hassle (22)	❍	❍	❍	❍	❍
My commute trip is a useful transition between home and work (23)	❍	❍	❍	❍	❍
The travelling that I need to do interferes with doing other things I like (24)	❍	❍	❍	❍	❍
I use my commute time productively (25)	❍	❍	❍	❍	❍
Travel time is generally wasted time (26)	❍	❍	❍	❍	❍

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
Getting stuck in traffic doesn't bother me too much (27)	❍	❍	❍	❍	❍

Section 5: On Community and Social Interaction

How often do you speak to your neighbours? (Select one)

- ❍ Seldom or never (1)
- ❍ Sometimes (2)
- ❍ Regularly (3)

Before you moved, how often did you speak to your neighbours?(Select one)

- ❍ Seldom or never (1)
- ❍ Sometimes (2)
- ❍ Regularly (3)

Are you satisfied with the level of interaction you have with your neighbours? (Select one)

- ❍ Yes (1)
- ❍ No (2)
- ❍ Don't know (3)

Before you moved, were you satisfied with the level of interaction you had with your neighbours?(Select one)

- ❍ Yes (1)
- ❍ No (2)
- ❍ Don't know (3)

To what extent do the following impact on your interactions with neighbours now? (Respond to all)

	Not at all (1)	Sometimes (2)	Often (3)	Don't know (4)
I feel too shy (1)	❍	❍	❍	❍
Not enough time (2)	❍	❍	❍	❍
Language barriers (3)	❍	❍	❍	❍
Health reasons (4)	❍	❍	❍	❍
I don't feel welcome (5)	❍	❍	❍	❍
We don't seem to have enough in common (6)	❍	❍	❍	❍
I'm not interested (7)	❍	❍	❍	❍

Section 6: Your Neighbourhood

Thinking about your neighbourhood *before you moved*. To what extent do you agree or disagree with the following statements:(Respond to all)

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
People around my old neighbourhood were willing to help their neighbours (1)	❍	❍	❍	❍	❍
My old neighbourhood was a close knit neighbourhood (2)	❍	❍	❍	❍	❍
People in my old neighbourhood shared the same values (3)	❍	❍	❍	❍	❍
People in my old neighbourhood could be trusted (4)	❍	❍	❍	❍	❍
People in my old neighbourhood generally got along with each other (5)	❍	❍	❍	❍	❍
In my old neighbourhood I felt like we could have an impact on making the neighbourhood a better place to live (6)	❍	❍	❍	❍	❍

Thinking about *where you currently live*. To what extent do you agree or disagree with the following statements: (Respond to all)

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
People around my current neighbourhood are willing to help their neighbours (1)	❍	❍	❍	❍	❍
This is a close knit neighbourhood (2)	❍	❍	❍	❍	❍
People in this area share the same values (3)	❍	❍	❍	❍	❍
People in this neighbourhood can be trusted (4)	❍	❍	❍	❍	❍
People in this neighbourhood generally get along with each other (5)	❍	❍	❍	❍	❍
I feel like we can have an impact on making this neighbourhood a better place to live (6)	❍	❍	❍	❍	❍

How satisfied are you with the extent that the facilities, services and characteristics of your neighbourhood meet the needs of your household now? (Select one)

- ❍ Very dissatisfied (1)
- ❍ Dissatisfied (2)
- ❍ Neither satisfied nor dissatisfied (3)
- ❍ Satisfied (4)
- ❍ Very satisfied (5)

Thinking about your old neighbourhood, how satisfied were you with the extent that the facilities, services and characteristics of the neighbourhood met the needs of your household?(Select one)

- ❍ Very dissatisfied (1)
- ❍ Dissatisfied (2)
- ❍ Neither satisfied nor dissatisfied (3)
- ❍ Satisfied (4)
- ❍ Very satisfied (5)

To what extent are any of these a problem in your neighbourhood? (Respond to all)

	Major problem (1)	Minor problem (2)	Not a problem (3)
Graffiti (1)	❍	❍	❍
Vandalism (2)	❍	❍	❍
Noisy and/or nuisance neighbours (3)	❍	❍	❍
Noisy/rowdy/inconsiderate behaviour in the street (4)	❍	❍	❍
Teenagers hanging around in the street (5)	❍	❍	❍
Noisy/dangerous driving (6)	❍	❍	❍
People being harassed in the street (7)	❍	❍	❍
Public drunkenness (8)	❍	❍	❍
People using or dealing drugs (11)	❍	❍	❍
Intentional damage to property other than graffiti (12)	❍	❍	❍
Your home being broken into (burgled) (14)	❍	❍	❍
Any other problems (Please specify) (15)	❍	❍	❍

Thinking about your previous neighbourhood, to what extent were any of these a problem in that neighbourhood? (Respond to all)

	Major problem (1)	Minor problem (2)	Not a problem (3)
Graffiti (1)	❍	❍	❍
Vandalism (2)	❍	❍	❍
Noisy and/or nuisance neighbours (3)	❍	❍	❍
Noisy/rowdy/inconsiderate behaviour in the street (4)	❍	❍	❍
Teenagers hanging around in the street (5)	❍	❍	❍
Noisy/dangerous driving (6)	❍	❍	❍
People being harassed in the street (7)	❍	❍	❍
Public drunkenness (8)	❍	❍	❍
People using or dealing drugs (11)	❍	❍	❍
Intentional damage to property other than graffiti (12)	❍	❍	❍
Your home being broken into (burgled) (14)	❍	❍	❍
Any other problems (Please specify) (15)	❍	❍	❍

Section 7: Community Safety

Since you've moved to your current address, have you taken any of the following precautions against crime in your local area? (Respond to all)

	Yes (1)	No (2)	Prefer not to say (3)
Avoided using public transport during the day (1)	❍	❍	❍
Avoided using public transport at night (2)	❍	❍	❍
Avoided certain streets or areas during the day (3)	❍	❍	❍
Avoided certain streets or areas at night (4)	❍	❍	❍
Carried some means of self-defence (5)	❍	❍	❍
Enhanced security in and/or around your home (6)	❍	❍	❍

Since you've moved to your current address, how safe or unsafe do you feel at home by yourself after dark? (Select one)

- ❍ Very safe (1)
- ❍ Safe (2)
- ❍ Neither safe nor unsafe (3)
- ❍ Unsafe (4)
- ❍ Very unsafe (5)
- ❍ I am never home alone after dark (6)

Since you've moved to your current address, how safe or unsafe do you feel walking alone in your local area after dark? (Select one)

- ❍ Very safe (1)
- ❍ Safe (2)
- ❍ Neither safe nor unsafe (3)
- ❍ Unsafe (4)
- ❍ Very unsafe (5)
- ❍ I never walk alone after dark (6)

Section 8: About You

I am? (Select one)
- ❍ Male (1)
- ❍ Female (2)
- ❍ Blank (3)

What was your age on your last birthday? (Enter number)

Are you of Aboriginal or Torres Strait Islander ancestry? (Select one)
- ❍ Yes Aboriginal or Torres Strait Islander (1)
- ❍ No (2)
- ❍ Both Aboriginal and Torres Strait Islander (3)
- ❍ No response (4)

What is your highest level of educational attainment? (Select one)
- ❍ Below Year 12 or equivalent (1)
- ❍ Year 12 or equivalent (2)
- ❍ Tafe or trade certificate or diploma (3)
- ❍ Bachelor degree (4)
- ❍ Postgraduate degree (5)

What is your marital status? (Select one)
- ❍ Never married (1)
- ❍ Widowed (2)
- ❍ Divorced (3)
- ❍ Separated (4)
- ❍ Married (in a registered marriage) (5)
- ❍ Other - De facto (6)
- ❍ Other - Single/not married (7)

What best describes your household? (Select one)
- ❍ Just yourself (1)
- ❍ Family - all adults (2)
- ❍ Couple (3)
- ❍ Two or more unrelated adults (4)
- ❍ Family with children under 18 (5)

Please indicate the number of your children falling into the differing age groups given below.

Children under 6 years old (1)
Children 6 to 11 years old (2)
Children 12 to 17 years old (3)

Do you use any of the following for your children? (Respond to all)

	Yes (1)	No (2)
Childcare/Pre-school (1)	❍	❍
Before or afterschool care (2)	❍	❍

Where do your children aged 12-17 go after school (Respond to all)

	Home alone (1)	Supervised by an adult at home (2)	Friend's house alone (3)	Supervised by an adult at a friend's house (4)	After school activity (5)
Monday (1)	❍	❍	❍	❍	❍
Tuesday (2)	❍	❍	❍	❍	❍
Wednesday (3)	❍	❍	❍	❍	❍
Thursday (4)	❍	❍	❍	❍	❍
Friday (5)	❍	❍	❍	❍	❍

Do you currently own any of the following that you are able to use? (Respond to all)

	Yes (1)	No (2)
Bicycle (1)	❍	❍
Motorcycle (2)	❍	❍
Car (3)	❍	❍

Before tax and other deductions are taken out, what is your total income per fortnight. Please include income from all sources, including wages, investments and government pensions and benefits. If you can't remember the exact amount, an approximate is fine. (Enter dollar amount)

Are you currently making payments on any mortgages or secured loans on your current dwelling? (Select one)

- ❍ Yes (1)
- ❍ No (2)
- ❍ Prefer not to say (3)

What is the usual repayment amount for your current dwelling per month? If you cannot remember an exact amount, an approximate amount is fine. (Enter dollar amount)

What is the total amount still owing? If you cannot remember an exact amount, an approximate amount is fine. (Enter dollar amount)

Do you rent your dwelling? (Select one)

- ❍ Yes (1)
- ❍ No (2)
- ❍ I live rent free (3)
- ❍ Prefer not to say (4)

What is the usual rental amount for your current dwelling per week? If you cannot remember an exact amount, an approximate amount is fine. (Enter dollar amount)

To what extent do you think you can get help from these people if you need it? (Respond to all)

	Not at all (1)	Sometimes (2)	Definitely (3)	Don't know (4)
Close family (1)	❍	❍	❍	❍
Extended family (2)	❍	❍	❍	❍
Friends (3)	❍	❍	❍	❍
Neighbours (4)	❍	❍	❍	❍

If you needed to get $2000 for something important, could the money be obtained in a week? (Select one)

- ❍ Yes (1)
- ❍ No (2)
- ❍ Don't know (3)

Section 9: Your Health

In general, would you say your health was:

- ❍ Poor (1)
- ❍ Fair (2)
- ❍ Good (3)
- ❍ Very good (4)
- ❍ Excellent (5)

Thinking about *before you moved to your current address*, in general, would you say your health was:

- ❍ Poor (1)
- ❍ Fair (2)
- ❍ Good (3)
- ❍ Very good (4)
- ❍ Excellent (5)

The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

	No, not limited at all (1)	Yes, limited a little (2)	Yes, limited a lot (3)
Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf (1)	❍	❍	❍
Climbing several flights of stairs (2)	❍	❍	❍

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	Yes (1)	No (2)
Accomplished less than you would like (1)	❍	❍
Were limited in the kind of work or other activities (2)	❍	❍

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	Yes (1)	No (2)
Accomplished less than you would like (1)	❍	❍
Did work or other activities less carefully than usual (2)	❍	❍

During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

- ❍ Not at all (1)
- ❍ A little bit (2)
- ❍ Moderately (3)
- ❍ Quite a bit (4)
- ❍ Extremely (5)

These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...

	None of the time (1)	A little of the time (2)	Some of the time (5)	A good bit of the time (6)	Most of the time (3)	All of the time (4)
Have you felt calm and peaceful? (1)	❍	❍	❍	❍	❍	❍
Did you have a lot of energy? (2)	❍	❍	❍	❍	❍	❍
Have you felt downhearted and blue? (3)	❍	❍	❍	❍	❍	❍

During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

- ❍ None of the time (1)
- ❍ A little of the time (2)
- ❍ Some of the time (3)
- ❍ Most of the time (4)
- ❍ All of the time (5)

Please indicate the extent to which you agree or disagree with each of the following statements on a seven point scale from ‘strongly disagree’ to ‘strongly agree’. There are no right or wrong answers.

	Strongly disagree (14)	(15)	(16)	Neutral (10)	(18)	(17)	Strongly agree (19)
In most ways my life is close to my ideal (1)	❍	❍	❍	❍	❍	❍	❍
The conditions of my life are excellent (2)	❍	❍	❍	❍	❍	❍	❍
I am satisfied with my life (3)	❍	❍	❍	❍	❍	❍	❍
So far I have the important things I want in life (4)	❍	❍	❍	❍	❍	❍	❍
If I could live my life over, I would change nothing (5)	❍	❍	❍	❍	❍	❍	❍
I feel the things I do in my life are worthwhile (6)	❍	❍	❍	❍	❍	❍	❍
I felt happy yesterday (7)	❍	❍	❍	❍	❍	❍	❍
I felt anxious yesterday (8)	❍	❍	❍	❍	❍	❍	❍

How often do you feel rushed or pressed for time? (Select one)

- ❍ Never (1)
- ❍ Rarely (2)
- ❍ Sometimes (3)
- ❍ Often (4)
- ❍ Always (5)

Please rank the extent to which these things make you feel rushed or pressed for time? (Respond to all)

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Always (5)
Trying to balance work and family responsibilities (1)	❍	❍	❍	❍	❍
Pressure of work/study (2)	❍	❍	❍	❍	❍
Demands of family (3)	❍	❍	❍	❍	❍
Take too much on (4)	❍	❍	❍	❍	❍
Not good at managing time (5)	❍	❍	❍	❍	❍
Too much to do/too many demands placed on you (6)	❍	❍	❍	❍	❍
Unpredictable working hours (7)	❍	❍	❍	❍	❍
Transport difficulties (8)	❍	❍	❍	❍	❍
Other (Please state) (9)	❍	❍	❍	❍	❍

THANK YOU

Appendix Three: Community interaction detailed tables

How often speak to neighbours	% Before moved	% Present
Seldom or never	34.7	22.3
Sometimes	36.3	46.1
Regularly	29.0	31.6
Total responses	193	193

Satisfied with level of interaction with neighbours	% Before moved	% Present
No	18.1	16.6
Don't know	5.2	8.3
Yes	76.7	75.1
Total responses	193	193

Agreement: People willing to help their neighbours	% Before moved	% Present
Strongly disagree	9.8	1.6
Disagree	16.1	7.8
Neither agree nor disagree	26.9	34.2
Agree	34.7	45.1
Strongly agree	12.4	11.4
Total responses	193	193

Agreement: Neighbourhood close knit	% Before moved	% Present
Strongly disagree	13.5	3.6
Disagree	30.6	15.0
Neither agree nor disagree	28.5	44.6
Agree	20.7	29.5
Strongly agree	6.7	7.3
Total responses	193	193

Agreement: People in neighbourhood share the same values	% Before moved	% Present
Strongly disagree	12.4	1.0
Disagree	18.1	9.3
Neither agree nor disagree	42.5	43.5
Agree	22.8	39.4
Strongly agree	4.1	6.7
Total responses	193	193

Agreement: People in neighbourhood can be trusted	% Before moved	% Present
Strongly disagree	9.3	1.0
Disagree	15.0	2.6
Neither agree nor disagree	36.3	47.2
Agree	32.6	43.0
Strongly agree	6.7	6.2
Total responses	193	193

Agreement: People neighbourhood get along with each other	% Before moved	% Present
Strongly disagree	6.2	0.0
Disagree	8.3	2.1
Neither agree nor disagree	31.6	30.6
Agree	47.2	61.7
Strongly agree	6.7	5.7
Total responses	193	193

Agreement: Can have an impact on making the neighbourhood a better place to live	% Before moved	% Present
Strongly disagree	11.4	2.1
Disagree	16.6	3.6
Neither agree nor disagree	42.0	33.2
Agree	24.4	49.2
Strongly agree	5.7	11.9
Total responses	193	193