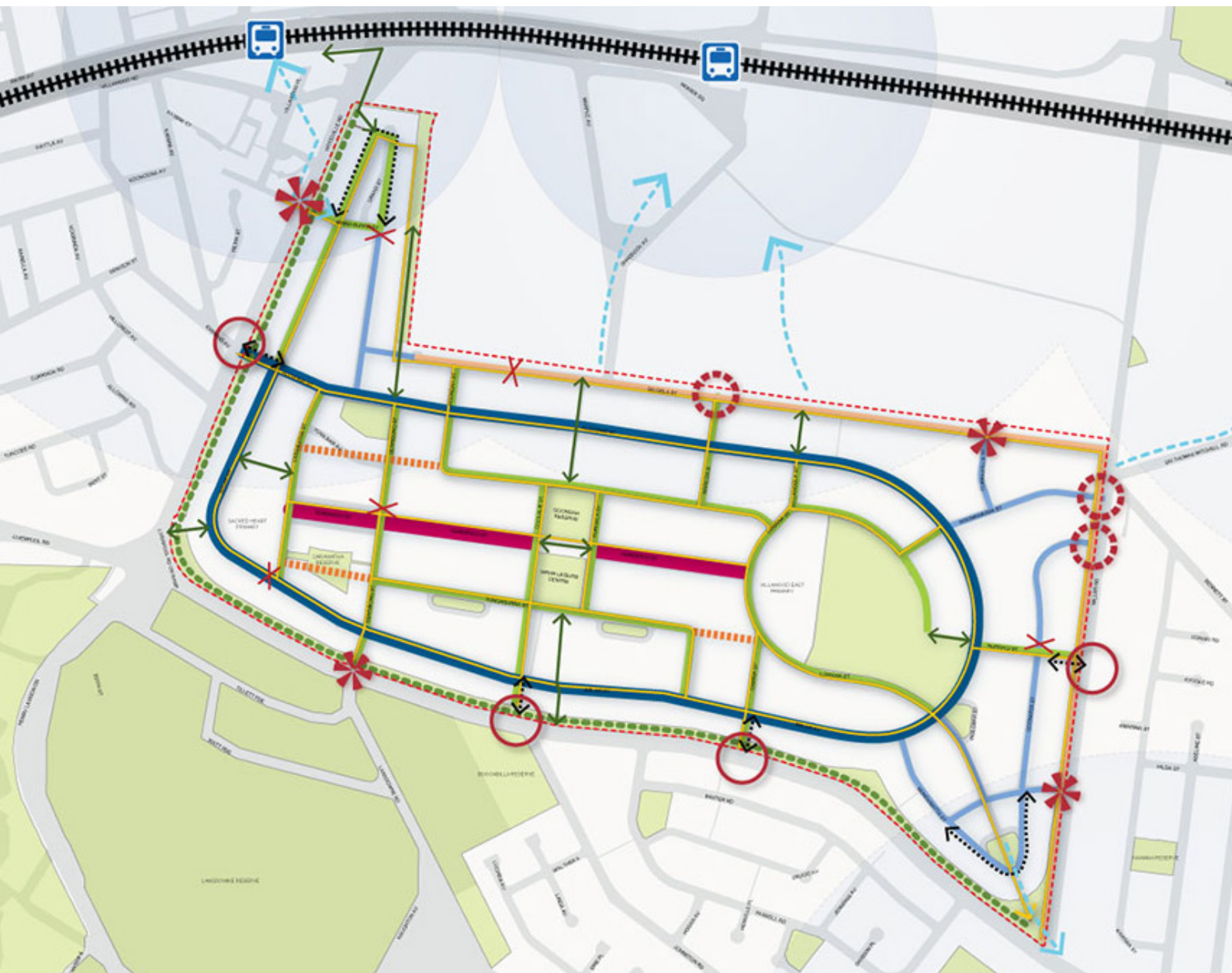


Villawood East Master Plan Health Impact Assessment Report

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MAY 2013



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Executive Summary

This report details the conduct and recommendations of a health impact assessment (HIA) on the Master Plan being developed for the Villawood East estate in South Western Sydney, NSW, Australia. The HIA was conducted collaboratively by the Centre for Health Equity Training Research and Evaluation (CHETRE), Population Health South Western Sydney & Sydney Local Health Districts, the NSW Department of Family and Community Services (FACS) and the NSW Land and Housing Corporation. The Master Plan itself was developed by SJB Urban for the NSW Department of Family and Community Services (FACS) and the NSW Land and Housing Corporation.

The information used to inform the assessment included profiling the community of Villawood East and a comprehensive literature review focussing on the scoped areas of health impact: mental health, social cohesion, access to services and access to good quality space / urban design. In addition we utilised the materials developed for the Master Planning process by SJB Urban and were informed by the expert knowledge of the HIA working group.

We used this information to assess the potential impacts of the following activities within the plan:

1. Improved housing quality and sustainability
2. New housing types
3. Increased housing densities
4. Reduced concentration of public housing
5. Affordable housing as a new form of tenure
6. Improved personal and community safety through quality urban design
7. Movement (pedestrian and cyclist, rationalised parking and vehicle access, and public transport)
8. Improved quality, accessibility and performance of the existing and new public spaces
9. Improve access to and quality of green space
10. Strengthened and improved sustainability of existing services through population increase

Overall the HIA shows that the Master Plan has the potential to impact positively on health and wellbeing in Villawood East. In particular:

- Improving the physical quality of the housing resulting in reduced exposure to hazards, cold, heat, mould and damp is likely to positively impact on health outcomes.
- Introducing new housing typologies may positively impact on mental and physical wellbeing of residents if they are accessible, acceptable, available, affordable and appropriate for the current and future needs of Villawood East.
- Increasing housing density can support increases in physical activity and social cohesion if this forms part of a wider approach to improving the urban environment.
- Reducing the concentration of public housing alone is unlikely to positively impact on the health of current residents. The mix of new and old residents could have negative or positive effects depending on how the Master Plan is implemented.
- Improving the urban design of the area through measures to enhance walkability (e.g. density, mixed use, design), real and perceived safety and access to and quality of green space could impact positively on levels of physical activity, community pride and access to resources resulting in potentially positive impacts on health.
- Improving transport and connectivity are likely to make the area more accessible for older people, children, cyclists and people with mobility problems. This is likely to impact positively on health.
- Improving the quality and access to green space is likely to have positive impacts on health.
- Improving access to and level of service availability in the area is likely to positively impact on health if they are accessible, acceptable, available, affordable and appropriate for the current and future needs of Villawood East residents.
- Incorporating activities that facilitate participation, promote inclusion, enhance control, increase resilience and improve community assets will promote and protect mental wellbeing in the Villawood East community.

In addition the Master Plan provides an opportunity to specifically target reducing health inequalities in the area. However, if the implementation of the Master Plan is not linked to considerations of social disadvantage, then although there is a possible overall improvement in health, health inequalities are likely to remain and may increase. It follows that without strategies targeted at population groups within Villawood East experiencing health inequity, health inequalities are likely to remain and may increase.

The Master Plan is likely to have a mix of negative and positive impacts on mental health. All of the activities contained within the Master Plan have the potential to impact significantly on the mental wellbeing of current and future residents. Improvements in housing quality, urban design and greenspace are likely to positively impact on mental wellbeing. However there are also potential risks associated with higher density housing (in particular high rise buildings), changing the current mix of residents and the process used to plan, implement and manage the Master Plan.

The Master Plan could have negative and positive impacts on social cohesion. There is an evidence gap with regards to the impacts on health of creating mixed tenure and deconcentrating disadvantage. Research does provide evidence that deconcentrating disadvantage impacts on health outcomes and there is no or negative effects of mixed tenure impacts on social cohesion or capital. Improving services, greenspace and urban design can positively impact on social cohesion. How the Master Plan process facilitates participation and inclusion and the process of moving people in and out of the community will also have a significant impact on social cohesion.

Improving the quality of urban design, access to services and green space is likely to have positive impacts on health. Improving the quality of urban design, access to services and green space has been shown to positively impact on health. However evidence also shows that people who are more interested in physical activity and healthy lifestyles are more likely to select neighbourhoods that are conducive to this. This can potentially result in increasing inequalities as those that could benefit most from healthy urban design are least likely to benefit from it. Plans to maintain levels of social housing in Villawood East should help ensure that people currently experiencing health inequity will also have access to a 'walkable' healthy community.

The HIA working group developed recommendations for actions to take place now and actions to take place when the Master Plan is implemented. Short term recommendations concern enhancing communication and participation in planning related activities, establish a community hub, implement some quick win environmental improvements, and focusing on equity in the community in terms of communication and engagement with hard to reach populations. Actions to take place when implementing the Master Plan are detailed against: the space (housing design, walkability, greenspace, encouraging movement, and access to shops and services), the place (improving service access and infrastructure, and focusing on the potential risks associated with decanting), and the people (enhancing communication and focusing on affordability through rental relief and prioritizing affordable housing options).

We conclude the report with some observations about monitoring and evaluation. Concerning data for monitoring, overall, we found that obtaining data for specific geographies is, currently, challenging and time consuming. This HIA has been hampered by lack of outcome data at the postcode level. The stakeholders involved in this HIA should consider designing an intervention based study which collects qualitative and quantitative data about the impacts of Master Planning in different sites. A process evaluation of this HIA is currently being undertaken and will inform a reflections report which is to be developed for the South West Sydney Health and Housing Partnership. An impact evaluation is dependent on Master Planning activities proceeding in Villawood East.

1 Introduction and background

Villawood East is a public housing estate in Western Sydney, established during the early 1950s and in need of improvement. The housing is of a low standard and requires upgrading, is considered unsuitable for the current and future population and although the greenspace is a highly valued community asset, it is not currently utilised to its potential.

NSW Finance and Services and NSW Family & Community Services are developing a Master Plan for the Villawood East area. The Master Planning project is funded by the Commonwealth Government as a Housing Affordability Project, with funding allocated for Master Planning only and not for implementation. The Master Plan is being developed by urban planning and design consultants SJB Urban. The key objectives of the Master Plan are to:

- Reduce the concentration of public housing and increase the availability of affordable housing.
- Enhance the urban structure.
- Enable the formulation of detailed planning controls to achieve high quality urban design outcomes.

The area's potential in terms of existing greenspace and layout provides a unique opportunity for Housing NSW and other stakeholders to comprehensively regenerate the area creating opportunities for healthy spaces, places and people.

In 2008 Housing NSW (the NSW Department of Family and Community Services (FACS)), Sydney and Sydney South West Local Health Districts and the Centre for Health Equity Training Research and Evaluation formed the Health and Housing Partnership. The vision of the housing and health partnership is working together to improve the health and wellbeing of the communities of South West Sydney. As part of the partnership's strategic development, in late 2010 it was decided to follow the planning process for the Master Plan being developed for Villawood East. Health would collaborate with housing NSW across the process to understand the points where health could usefully add value to that process. This health impact assessment (HIA) forms part of this activity.

This report details the process, findings and recommendations of a HIA of the Master Plan for the Villawood East Housing Estate. The objectives of the Project were to:

1. Identify potential positive and negative health impacts resulting from the Master Plan.
2. Develop recommendations to facilitate the consideration of health impacts within the final Master Plan.
3. Build capacity to undertake health impact assessments on Master Plans for each agency involved.
4. To add information to a broader project concerning the points where health could usefully add value to the Master Planning process.

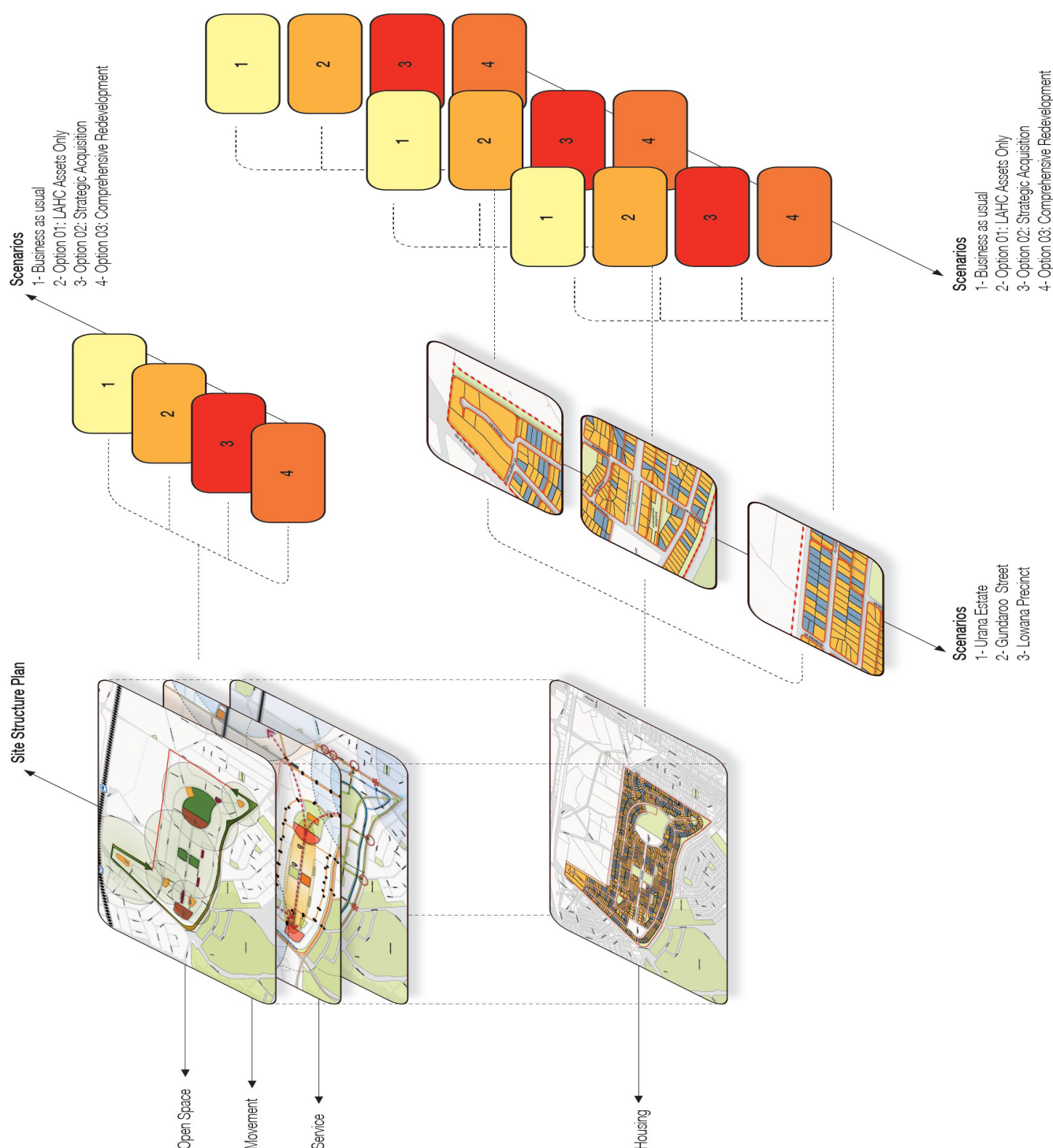


1.1 Essential elements of the Master Plan

The development of the Master Plan evolves through a process of consultation with the community and the key stakeholders. The process involved four phases, initiation, option development, preferred option development and Master Plan. At each stage stakeholder and community consultation takes place.

Four scenarios were developed from the options: business as usual, bring to code, HNSW assets only and Land transfer. Within each scenario plans for open space, movement, services and housing were developed. The scenarios ranged from minimal investment to complete regeneration of the estate involving knock down and rebuild of housing, increasing height and density of buildings, new roads and footpaths, shops and services, and green space improvement.

Figure 1 Master Plan design process¹



1.2 Summary of the HIA process

Health Impact Assessment (HIA) is a combination of procedures, methods and tools by which a policy, program or project may be assessed and judged for its potential effects on the health of the population and the distribution of these impacts within the population.² The methods and tools used within HIA vary but there are standard steps involved; screening, scoping, identification, assessment, decision making and recommendations.

Screening

Screening determines whether a HIA is appropriate or required, and ensures that resources, time and effort are targeted effectively.³

A HIA Working Group consisting of representatives from the NSW Department of Family and Community Services (FACS), Sydney and Sydney South West Local Health Districts and the Centre for Health Equity Training Research and Evaluation (CHETRE) was formed. The HIA working team met and used an adapted screening tool³ to systematically determine that an HIA should be undertaken. The screening identified that the Master Plan has potentially significant health impacts and that the HIA could influence the Master Planning process.

Scoping

The scoping phase determines the terms of reference for the HIA including areas of focus, geographical scope, priority population groups, types of evidence, timeframes and the methods to be used.

The working group decided to focus on the implementation phase of the Master Plan. As the Master Plan was under development during the HIA process there was difficulty identifying specific activities within the Master Plan to assess. A specific focus has been given to impacts on mental health, social cohesion, and access to services and good quality urban design and green space. We identified priority population groups; elderly people, children, single parents, men (particularly those in bedsits) and people living with multiple issues. In addition the community profile identified a significant proportion of culturally and linguistically diverse populations.

Identification

A community profile was developed to gain an overview of the current health and wellbeing of the community. Census data (2011) specific to the Villawood East area was collected. We sometimes had difficulty accessing area specific data. In these situations we utilised data for the larger Villawood area. In addition to publically available data we requested specific hospitalisation data from NSW Health for the Villawood East area. There were two purposes in obtaining this data. Firstly the data itself would provide area specific information about the health status of residents and how that compares to South West Sydney, Metropolitan Sydney and NSW. Secondly it would contribute to the wider purpose of piloting HIA within the Master Planning process and identifying strengths, weaknesses and areas for improvement.

Figure 2 HIA steps



A literature review was commissioned specifically for the HIA with the intention of it informing this HIA and also providing an evidence base for future work within the housing and health partnership. This review was carried out by Ben Cave Associates and . A summary of the findings is presented in Section 3 and a detailed summary of the search strategy and literature included in the review can be found in the report commissioned for this HIA.⁴ In addition, two recent reviews that CHETRE has carried out on housing density and health and models of intervention in social housing transition were used to inform the assessment.

In addition to the literature reviews and profile data we utilised the materials developed for the Master Planning process by SJB Urban, the consultants responsible for developing the Master Plan, and were informed by the expert knowledge of the HIA working group which included representatives from Housing NSW, SJB Urban, Population Health, South Western Sydney and Sydney Local Health Districts and CHETRE.

Assessment, decision making and recommendations

An assessment matrix was used to structure the impact assessment. Because the scenarios developed for the Master Plan cover a wide scale of actions (business as usual to complete regeneration) it was difficult to define specific activities to predict potential health impacts from. It was therefore decided to focus on areas of activities (Figure 3) and develop predictions and recommendations applicable to the broad potential scale of activities.

The initial assessment was carried out by CHETRE and Population Health and then presented and discussed with the project control group. Further work was then carried out refining and strengthening the assessment and recommendations and then this was brought to a second assessment meeting with the project control group where the recommendations were adopted in principle. There is no current funding in place to implement the Master Plan. Therefore alongside general and detailed recommendations for implementation we have also identified some 'quick wins' that could be acted on without waiting for funding or plans to be in place.

Evaluation

A process evaluation of this HIA is currently being undertaken. This has included interviews with representatives of all agencies involved and will inform a reflections report which is to be developed for the Health and Housing Partnership. An impact evaluation is dependent on Master Planning activities proceeding in Villawood East.

Figure 3 Areas of Master Plan activity

1. Improved housing quality and sustainability
2. New housing types
3. Increase housing densities
4. Reduced concentration of public housing
5. New forms of housing tenure
6. Improve personal and community safety through quality urban design
7. Movement[†]
8. Improve the quality, accessibility and performance of the existing and new public spaces
9. Improve access to and quality of green space
10. Strengthen and improve sustainability of existing services through population increase and addition of new services.

[†] Encourage pedestrian and cyclist movement. Integrate pedestrian and cycle movement with existing public transport network. Rationalise parking and improve vehicle access. Increase the frequency and coverage of public transport .



2 Baseline data and community profile

Urban spaces impact on our health and wellbeing. To inform the baseline data and community profile we focused on three established characteristics of an urban environment that influence health - place, space and people:

- Space: the physical nature of the area and the infrastructure that is available;
- Place: the historical and social relationships that exist within the community that shape values and norms; and
- People: the characteristics of the people and their ways of acting and interacting.



The estate covers approximately 118 hectares and includes 1,070 dwellings, consisting of: 545 cottages, 401 units, 54 townhouses or villas. 737 of these dwellings are currently in the possession of Housing NSW and 17 of these sites are identified as vacant land.

Villawood East is a locationally disadvantaged area. Locational disadvantage is a broad term referring to the spatial clustering of social disadvantage through, for example, poor access to recreational, educational, health and other services and infrastructure and is typified through high rates of crime, unemployment and poor educational outcomes. Locational disadvantage is thought to negatively affect wellbeing through both material deprivation and psychosocial stressors, operationalised as:

- diminished access to social networks that link residents to job opportunities
- limited availability of role models to socialise residents into 'appropriate' behaviours of broader society
- postcode prejudice and stigma associated with residing in perceived undesirable areas
- decreased access to essential services resulting from 'service overload'.



Villawood has a low Socio-Economic Index For Areas (SEIFA) score (668) which makes it one of the top ten most disadvantaged areas in NSW. The area is characterised by relatively high unemployment and low income levels.

Describing an area as locationally disadvantaged can however mask the many positive aspects of a community and hide the heterogeneity within it. Consultation events carried out during the Master Planning process identified community strengths including good neighbours, people easy to get along with, a multicultural community, and a great local school. Villawood East has two schools and leisure, recreation and sporting facilities including significant amounts of greenspace. There are shops, services and access to public transport nearby.

Table 1 provides an overview of population characteristics of Villawood East and a comparison to NSW. The data is sourced from the 2011 Census. The 2011 Census introduced new statistical areas. The smallest available areas are called Statistical Areas Level 1 (SA1). Eight SA1s fit into Villawood East (1135421, 1135422, 1135445, 1135446, 1135452, 1135453, 1135454, 1135447).

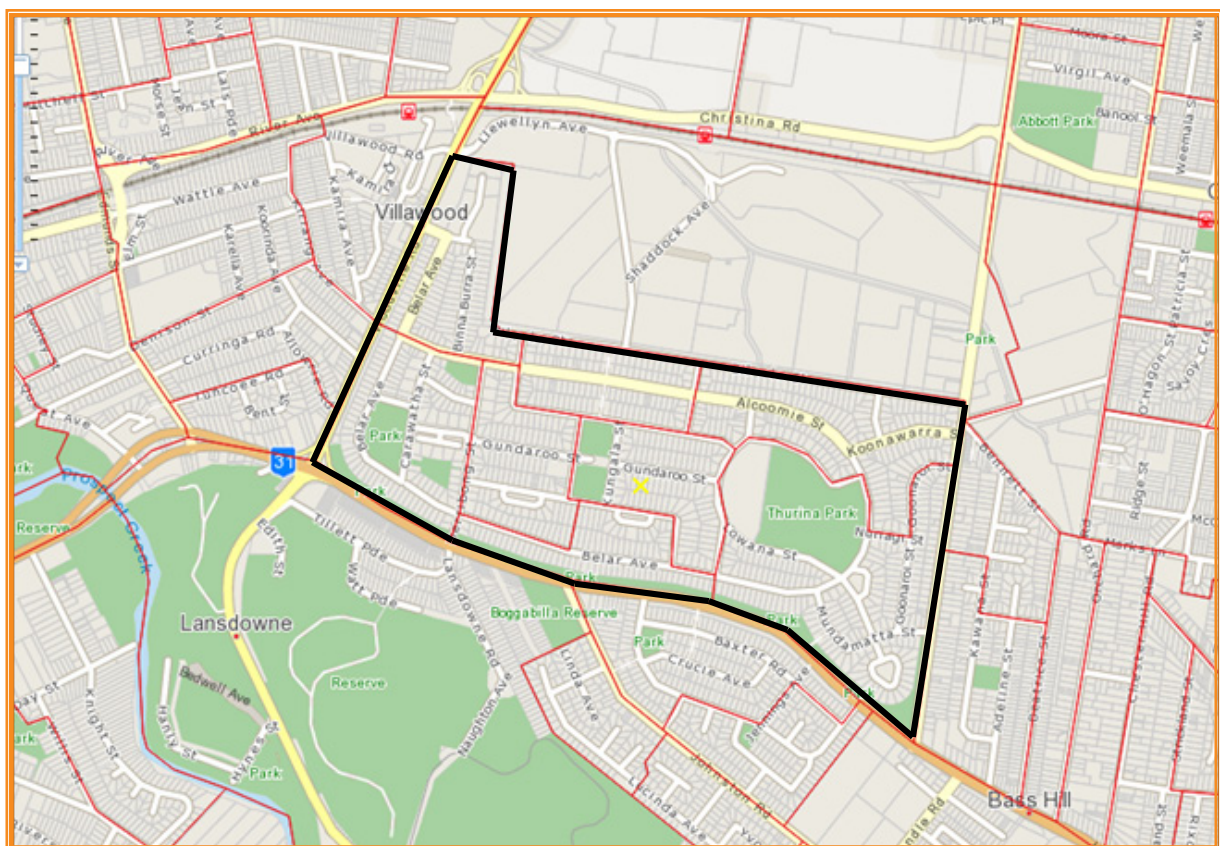


Villawood East differs substantially from NSW averages in a number of areas.

- There are a high proportion of lone person households (33% compared with 21% NSW).
- More people are born overseas compared to the NSW average (41% vs 26%) with a significant Vietnamese (12%) and Lebanese (10%) born population.
- A majority of residents speak a language other than English at home (66% vs 28%), with 17% having limited English.
- There are also high levels of disability with 11% of residents reporting to need assistance with core activities (5% NSW) and 11% report providing unpaid care to a person with a disability (9% NSW).
- A higher proportion of residents are outside of the labour force (76% compared to 54% NSW). A relatively high level of residents did not go to school (5% vs 3% NSW). Many of these factors are relevant to the planning and implementation of the Master Plan.



Figure 4 SA1 Area boundaries for Villawood East



Villawood East is outlined in black. The SA1 boundaries within this are outlined in red.

Table 1 Population characteristics of Villawood East (Data Source: 2011 Census of Population and Housing)

Population Characteristics		Villawood East (2011)	NSW (2011)
Total persons		2,883	6,917,658
Age	0-9 years	391 (14%)	893,344 (13%)
	10-19 years	486 (17%)	882,585 (13%)
	20-29 years	327 (11%)	922,852 (13%)
	30-39 years	332 (12%)	956,458 (14%)
	40-49 years	386 (13%)	964,927 (14%)
	50-59 years	382 (13%)	888,634 (13%)
	60-69 years	286 (10%)	695,003 (10%)
	70-79 years	166 (6%)	423,393 (6%)
	80-89 years	123 (4%)	244,852 (4%)
	90-99 years	4 (0.2%)	44,518 (0.6%)
	100 years and over	0 (0%)	1,090 (0.02%)
Culture			
	Indigenous persons (Aboriginal and Torres Strait Islander persons)	39 (1.4%)	172,622 (2.5%)
	Household with indigenous person	31 (2%)	73,910 (3%)
	Persons born overseas	1,323 (41%)	1,778,458 (26%)
	Country of birth – four most common responses other than Australia		
	Vietnam	382 (12%)	71,838 (1%)
	Lebanon	333 (10%)	56,295 (1%)
	Fiji	56 (2%)	32,304 (0.5%)
	New Zealand	55 (2%)	114,230 (2%)
	Language spoken at home		
	English only spoken at home	1,097 (34%)	5,013,344 (72%)
	Speaks other language and speaks English: Very well or well	1,423 (44%)	1,285,078 (19%)
	Speaks other language and speaks English: Not well	433 (13%)	210,361 (3%)
	Speaks other language and speaks English: Not at all	128 (4%)	61,328 (1%)
	Three most common languages other than English spoken at home		
	Middle Eastern Semitic Languages	928 (29%)	208,468 (3%)
	Mon-Khmer	548 (17%)	97,816 (1.4%)
	Chinese	88 (3%)	295,479 (4.2%)
Disability			
	Has need for assistance with core activities	309 (11%)	338,362 (5%)
Carers			
	Unpaid assistance provided to a person with a disability	362 (11%)	638,613 (9%)
Education			
	Highest Year of School Completed – Year 12 or equivalent	817 (25%)	2,657,044 (38%)
	Highest Year of School Completed – Year 10 or equivalent	541 (17%)	1,346,994 (19%)
	Did not go to school	146 (5%)	55,370 (0.8%)
Labour Force Status			
	Total labour force	702 (24%)	3,143,914 (46%)
	Employed full time	377 (13%)	2,007,927 (29%)
	Employed part time	185 (6%)	939,465 (14%)
	Unemployed	140 (5%)	196,522 (3%)
Family characteristics			
	Households*	1,328	2,871,555
	Couple families with dependent child/ren	248 (17%)	676,386 (24%)
	One parent families with dependent child/ren	165 (12%)	193,720 (7%)
	Couple families without dependent children	71 (5%)	155,465 (9%)
	Lone person household	428 (33%)	599,148 (21%)
Dwelling characteristics (three most common responses)			
	Occupied private dwellings – owned outright	143 (11%)	830,224 (19%)
	Occupied private dwellings – owned with a mortgage	167 (13%)	822,534 (29%)
	Occupied private dwellings – rented	801 (61%)	731,206 (25%)
Landlord type			
	Real estate agent	50 (4%)	436,683 (15%)
	State housing authority	680 (52%)	109,555 (4%)
	Private	24 (2%)	147,341 (5%)
	Housing co-operative/community/church group	18 (1%)	17,467 (1%)
Internet connection dwellings			
	No internet connection	472 (36%)	505,088 (18%)
	Broadband	554 (42%)	1,741,915 (61%)

A family is defined by ABS as two or more persons, one of whom is at least 15 years of age, who are related by blood, marriage (registered or de facto), adoption, step or fostering, and who are usually resident in the same household.

Table 2, Table 3 and Table 4 present the hospitalisations by cause and gender of Villawood East residents and the standardised incidence ratios (SIRs) of Villawood East to the South Western Sydney LHD, Metropolitan Sydney, and NSW population between 2000-2008.

The Villawood East population is small and the reported numbers possibly include repeat hospitalisations for individuals, hence the table data should be interpreted with caution. Numbers highlighted in red and green are statistically significant. Red indicates that Villawood East was higher than the comparison group whilst green indicates that it was lower. For example, the blood and immune diseases category shows women in Villawood East experience higher levels of hospitalisations compared to the South Western Sydney LHD population. However, this does not necessarily mean women in Villawood East are significantly more likely to experience blood and immune diseases.

The data reveals Villawood East residents generally experienced similar levels of hospitalisation as Sydney South West, Metropolitan Sydney and NSW, with some causes of hospitalisation possibly higher and others lower. This is of interest for the HIA because it suggests that Villawood East is not as different from the surrounding area as might have been expected given its reputation as a disadvantaged neighbourhood.



Table 2 Hospitalisations by cause and sex for residents of Villawood East, 2000-2008 compared to South Western Sydney LHD standard population

Cause	Number of hospitalisations Villawood East		South Western Sydney Local Health District Standard Population					
	Females	Males	SIR	Females 95% CI lower	95% CI upper	SIR	Males 95% CI lower	95% CI upper
Infectious diseases	28	44	1.09	0.72	1.57	1.71	1.24	2.29
Malignant neoplasms	60	184	0.83	0.63	1.07	2.00	1.72	2.31
Other neoplasms	48	27	0.87	0.64	1.15	0.74	0.49	1.08
Blood & immune diseases	129	22	5.38	4.50	6.40	1.05	0.66	1.58
Endocrine diseases	27	30	0.85	0.56	1.23	1.14	0.77	1.63
Mental disorders	95	153	1.82	1.48	2.23	2.28	1.94	2.67
Nervous & sense disorders	122	91	1.01	0.84	1.21	0.82	0.66	1.01
Cardiovascular diseases	148	159	1.25	1.06	1.47	1.00	0.85	1.17
Respiratory diseases	113	128	1.28	1.06	1.54	1.22	1.02	1.45
Digestive system diseases	264	211	1.13	1.00	1.28	0.98	0.85	1.12
Skin diseases	25	36	0.88	0.57	1.30	1.15	0.81	1.60
Musculoskeletal diseases	71	73	0.85	0.66	1.07	0.94	0.74	1.18
Genitourinary diseases	152	72	1.14	0.97	1.34	0.99	0.77	1.24
Maternal, neon. & congenital	317	44	1.20	1.07	1.34	1.17	0.85	1.57
Symptoms & abnormal findings	112	121	0.97	0.80	1.17	1.18	0.98	1.41
Injury & poisoning	221	312	1.19	1.04	1.36	1.42	1.27	1.59
Dialysis	109	1115	0.55	0.45	0.66	3.31	3.12	3.51
Other factors influencing health	154	206	0.79	0.67	0.92	1.15	1.00	1.32
Other	5	27	0.92	0.30	2.16	4.81	3.17	7.00

These statistics are based on the time period 1 July 2000 to 30 June 2008. Villawood East consists of the following Collection Districts: 1340807, 134008, 134009, 1341001 and 1341013. Hospital separations are classified using ICD-10-AM classification and distributed according to ICD-10-AM chapters. Standardised Incidence Ratios (SIRs) were calculated using 5-year age-groups. The confidence intervals are Poisson confidence intervals.
Source: NSW Admitted Patient Data Collection and ABS population estimates (HOIST). Centre for Epidemiology and Evidence NSW Ministry of Health.

Table 3 Hospitalisations by cause and sex for residents of Villawood East, 2000-2008 compared to metropolitan Sydney standard population

Cause	Number of hospitalisations Villawood East		Metropolitan Sydney Standard Population					
	Females	Males	SIR	Females 95% CI lower	95% CI upper	SIR	Males 95% CI lower	95% CI upper
Infectious diseases	28	44	1.07	0.71	1.55	1.65	1.20	2.21
Malignant neoplasms	60	184	0.76	0.58	0.98	1.85	1.60	2.14
Other neoplasms	48	27	0.85	0.63	1.13	0.67	0.44	0.97
Blood & immune diseases	129	22	5.80	4.84	6.89	1.19	0.75	1.80
Endocrine diseases	27	30	0.93	0.61	1.35	1.22	0.82	1.74
Mental disorders	95	153	1.13	0.91	1.38	1.79	1.51	2.09
Nervous & sense disorders	122	91	0.90	0.74	1.07	0.75	0.60	0.92
Cardiovascular diseases	148	159	1.37	1.16	1.61	1.04	0.88	1.21
Respiratory diseases	113	128	1.39	1.15	1.67	1.29	1.08	1.54
Digestive system diseases	264	211	1.16	1.03	1.31	0.97	0.85	1.11
Skin diseases	25	36	0.93	0.60	1.37	1.22	0.85	1.69
Musculoskeletal diseases	71	73	0.78	0.61	0.98	0.87	0.68	1.09
Genitourinary diseases	152	72	1.19	1.01	1.39	0.96	0.75	1.21
Maternal, neon. & congenital	317	44	1.31	1.17	1.46	1.03	0.75	1.39
Symptoms & abnormal findings	112	121	0.89	0.74	1.07	1.06	0.88	1.26
Injury & poisoning	221	312	1.07	0.93	1.22	1.34	1.20	1.50
Dialysis	109	1115	0.55	0.45	0.66	3.66	3.45	3.88
Other factors influencing health	154	206	0.55	0.47	0.65	0.89	0.77	1.02
Other	5	27	1.51	0.49	3.53	8.24	5.43	11.99

These statistics are based on the time period 1 July 2000 to 30 June 2008. Villawood East consists of the following Collection Districts: 1340807, 134008, 134009, 1341001 and 1341013.

Metropolitan Sydney includes the following Local Health Districts (LHDs): Sydney LHD, South Western Sydney LHD, Western Sydney LHD, Nepean Blue Mountains LHD, Northern Sydney LHD, and South Eastern Sydney LHD. Hospital separations are classified using ICD-10-AM classification and distributed according to ICD-10-AM chapters. Standardised Incidence Ratios (SIRs) were calculated using 5-year age-groups. The confidence intervals are Poisson confidence intervals.

Source: NSW Admitted Patient Data Collection and ABS population estimates (HOIST). Centre for Epidemiology and Evidence NSW Ministry of Health.

Table 4 Hospitalisations by cause and sex for residents of Villawood East, 2000-2008 compared to NSW standard population

Cause	Number of hospitalisations Villawood East		NSW Standard Population					
	Females	Males	SIR	Females 95% CI lower	95% CI upper	SIR	Males 95% CI lower	95% CI upper
Infectious diseases	28	44	0.99	0.66	1.43	1.55	1.13	2.09
Malignant neoplasms	60	184	0.74	0.56	0.95	1.75	1.51	2.03
Other neoplasms	48	27	0.86	0.64	1.15	0.67	0.44	0.98
Blood & immune diseases	129	22	5.96	4.98	7.08	1.23	0.77	1.86
Endocrine diseases	27	30	0.84	0.55	1.22	1.06	0.71	1.51
Mental disorders	95	153	1.22	0.98	1.49	1.94	1.64	2.27
Nervous & sense disorders	122	91	0.88	0.73	1.05	0.74	0.59	0.91
Cardiovascular diseases	148	159	1.24	1.05	1.46	0.97	0.82	1.13
Respiratory diseases	113	128	1.23	1.01	1.48	1.19	0.99	1.41
Digestive system diseases	264	211	1.12	0.99	1.27	0.95	0.83	1.09
Skin diseases	25	36	0.90	0.58	1.32	1.16	0.81	1.61
Musculoskeletal diseases	71	73	0.70	0.55	0.88	0.75	0.59	0.94
Genitourinary diseases	152	72	1.13	0.96	1.33	0.95	0.75	1.20
Maternal, neon. & congenital	317	44	1.24	1.10	1.38	1.10	0.80	1.48
Symptoms & abnormal findings	112	121	0.87	0.72	1.05	1.05	0.87	1.25
Injury & poisoning	221	312	1.00	0.87	1.14	1.20	1.07	1.35
Dialysis	109	1115	0.53	0.43	0.63	4.10	3.86	4.35
Other factors influencing health	154	206	0.60	0.51	0.70	0.95	0.82	1.09
Other	5	27	1.22	0.40	2.85	6.65	4.38	9.67

These statistics are based on the time period 1 July 2000 to 30 June 2008. Villawood East consists of the following Collection Districts: 1340807, 134008, 134009, 1341001 and 1341013.

Hospital separations are classified using ICD-10-AM classification and distributed according to ICD-10-AM chapters. Standardised Incidence Ratios (SIRs) were calculated using 5-year age-groups. The confidence intervals are Poisson confidence intervals.

Source: NSW Admitted Patient Data Collection and ABS population estimates (HOIST). Centre for Epidemiology and Evidence NSW Ministry of Health.

3 Evidence from the literature on the potential health impacts of Villawood East Master Plan

A comprehensive literature review was commissioned for this HIA⁴ and it is available from www.hiaconnect.edu.au. The review included a mix of peer-reviewed and grey literature sources, including relevant health impact assessments. The main findings and their implications for vulnerable populations are summarised in Table 5.

Table 5 Summary of key findings and vulnerable populations⁴

Potential health effects associated with housing developments	Potential for differential effects within the population
Improved warmth in the home may produce long-term positive socioeconomic health benefits, such as less time off work/school, and increased social and educational opportunities. ⁵⁻⁷ People with existing respiratory illness who are living in houses that are difficult and costly to heat. The elderly are at particular risk of extremes of temperature.	People with existing respiratory illness Elderly
Remediation of mould in houses decreases asthma-related symptoms and decreases respiratory infections. ^{5,8}	Children and people with existing respiratory illness.
The lack of affordable housing has been linked to: decreased spending on health and health care (including delays in seeking preventative medical care, medication non-adherence and increased emergency department utilisation); trade-offs among housing, heating, food, medical care, and other basic needs; and moving frequently, living with other families in overcrowded conditions, or experiencing periods of homelessness. ^{9,10} Affordable housing costs should be calculated to reflect rates that allow local residents to be paying no more than 30% of their income on rent or mortgages. ¹¹ Women who live in low income neighbourhoods are significantly more likely to have a low birth weight infant. Behavioural problems among children are more common in poor neighbourhoods, and within these communities more prevalent amongst families of low socioeconomic status.	Women and infants Children
There is limited causal evidence that particular types of housing give rise to mental health problems, however living in multiple family housing or on the upper floors of high rise buildings is associated with greater mental health problems. ¹² There are associations between flat dwelling and stressful living conditions such as increased social isolation, crime, reduced privacy and reduced opportunities for safe play for children. ^{13,14}	Women with young children
Access to nearby parks and natural settings is associated with improved mental health and reduced anxiety. ¹⁵	General population
High levels of neighbourhood social disorder is associated with greater depression. ¹⁶	General population
Suicide rates increase as socioeconomic levels in an area decrease. ¹⁷	Residents living below the poverty level
High social capital (as measured by 'low social disorder' or a 'high level of belief in the capabilities of the community to collectively achieve social and political outcomes') protect against increased obesity. ¹⁸	General population
Effective social support or large social networks are associated with lower risk of coronary heart disease and cancer (particularly breast cancer). However poor psychosocial environments (including exposure to community violence, anti-social behaviour, or discrimination) may reduce health outcomes and contribute to health inequalities. ¹⁹	General population
The presence of sidewalks and crosswalks, bike paths, playing fields, parks, shopping accessible on foot, and public transportation, along with the perception that it is safe to be outside, contribute substantially to the average amount of regular physical activity that residents of a neighbourhood achieve. ⁹	Elderly, children and young people
Education and employment opportunities influence health by providing the means to achieve an adequate standard of living now and in the future. ⁹	Children and the unemployed
Neighbourhoods with better access to supermarkets and other retail outlets with minimally processed foods tend to eat a healthier diet (and have lower prevalence of obesity) than their counterparts in neighbourhoods with less access to these goods. ⁹	Low-income communities and the elderly
Zoning that keeps industrial sites and pollutants at a distance from residential areas contribute to an environment that is conducive to the achievement and maintenance of good health. ⁹	Low-income and minority residents, particularly children
Although effective measures to reduce neighbourhood noise levels (excludes construction noise) may reduce disturbance and annoyance, there is little evidence of health impacts associated with such changes in exposure in a housing context. ¹²	General population
Neighbourhood characteristics such as the proximity and mix of land uses, pedestrian connectivity, aesthetics and interesting scenery, and traffic and personal safety are important correlates of physical activity. ¹⁵	Elderly
Neighbourhoods that are characterised as more walkable and either leisure-oriented or destination-driven, are associated with increased physical activity, increased social capital, fewer overweight people, lower reports of depression, and less reported alcohol abuse. ²⁰	General population
To reduce concentrations of harmful indoor air pollutants, there is a need to strike a balance between improving building energy efficiency and maintaining adequate ventilation. ²¹	The elderly and children are at particular risk of indoor air quality
Home ownership is generally associated with improved health. However the trend does not hold for those people who are living on the margins of home ownership where mortgage arrears increase insecurity and are detrimental to mental health. ¹³	People with insufficient income to meet mortgage repayments
Positive mental wellbeing is associated with: having a home in good repair; living in an area perceived as having attractive buildings; and living in an attractive, quiet and peaceful environment. ²²	Low income and minority populations
A neighbourhood renewal intervention can be particularly effective in improving health and life satisfaction among disadvantaged people living in the target areas if there is effective cooperation between stakeholders. ²³	Immigrants from non-English speaking countries, people with low educational achievement and the unemployed
Moving house can be a stressful, health damaging life event, particularly in the field of social housing where there are limited opportunities to negotiate with the housing authority. ¹³	Children and adolescents
Housing regeneration projects can lead to displacement of original residents, which may result in misleading shifts in routine social and health statistics. ¹³	Residents displaced from the area of development
Health improvements are likely where employment, education and social integration opportunities increase alongside housing. ¹³	General population
Residents in neighbouring areas not part of a regeneration program may feel excluded resulting in community divisions between improved and non-improved areas. ¹⁴	Residents in areas adjoining area of development

Potential health effects associated with housing developments	Potential for differential effects within the population
Good access to waste storage is an important requirement to reduce domestic infestation that pose potential health hazards e.g. cockroaches, rats and mice. ²⁴	General population
Incorporating clear signposting, good acoustics and natural lighting into building design may reduce stress. ²⁵	General population
Housing the poor in discreet areas of a city with few amenities is linked to obesity and adverse mental health outcomes. Housing in such areas is typically dilapidated, with increased exposures to: lead; asthma triggers (such as mould, moisture, dust mites, and rodents); and mental health stressors such as violence and social isolation. ²⁶	Ethnic minority populations and low-income communities
Dispersed community-based housing is superior to clustered housing on the majority of quality of life indicators for adults with intellectual disabilities. The only exception being that there are some benefits to village communities for people with less severe disabilities. ²⁷	Adults with intellectual disabilities
Providing housing to formerly homeless persons with severe and persistent mental illness reduces hospital admissions and reduces days hospitalised. The evidence suggests that 95% of housing costs can be offset by the reduced use of hospital services. ²⁸	Homeless people
Construction can cause considerable disruption of daily routines with adverse impacts on mental health, social networks and access to services. Disruption can affect access to local shops and services. ²⁹ Children are particularly vulnerable to disruption of school and extra-curricular activities. Other disadvantaged groups included, women with childcare responsibilities, older people and people with disabilities.	Local residents close to site of construction Children Other disadvantaged groups
Provision for maintenance should be built into the proposals to avoid structural defects which could have adverse health impacts (e.g. build-up of pollutants/allergens, infestation and mould).	Children and the elderly
Housing development offers the opportunity to include on-site community centres with extended hours (e.g. computer labs, job training, sports and fitness, after school education and college planning). ³⁰	Children and young people
Housing development offers the opportunity to include residents in the design process, as they would be able to quickly identify improvements simply by looking at the design with a view to living in it. ³¹	General population
Access plans for those with disability should provide a complete solution from within the home, to shops/work and back to home. ³²	People with physical disabilities
There is also an opportunity to identify how individual health needs can be catered for within dwellings. ³³	
Public art can be a potential focus for community activity, with benefits for community involvement and social cohesion. ³²	General population
Home design should be 'flexible' to accommodate changing family needs, e.g. provision for the study needs of children and students. ^{32,33}	Children and young people
The size and number of bedrooms in housing units should reflect the range of family size in the local population. ¹¹	
It is important that appropriate social infrastructure is established in advance of, or in tandem with, the population moving in. ³²	Elderly and people with disabilities
Residential development should include income opportunities though the inclusion of businesses that provide living wage jobs in the area. ³⁴	The unemployed and people on low incomes.
Traditionally regeneration initiatives are often filled by workers from other areas, which whilst having beneficial regional or sub-regional effects may miss opportunities for beneficial health impacts from local employment. ³²	The unemployed and people on low incomes
Although there are health benefits from employment, jobs that offer only low pay, insecurity and limited job sustainability will not promote the social inclusion of the worst off. ³²	The unemployed and people on low incomes
To reduce stress and uncertainty about the development local residents should be regularly updated on the development's progress, e.g. meetings and newsletters. Forming a residents association early on in the process can be an effective facilitator of consultation. ³³	Local residents, particularly socially excluded and hard to reach groups
Residential developments should ensure retail, grocery, and other amenities essential to daily life are within easy walking distance (ideally 400 metres) of housing. ³⁴	Elderly and people with disabilities
It is important to maintain accessibility for the elderly and those with disabilities, e.g. frequently stopping public transport options and well maintained sidewalks suitable for wheelchairs. ³⁴	Elderly and people with disabilities
Parks and increased 'urban canopy' are linked to increased physical and mental health. ³⁴	Elderly
High density residential housing can improve: access to goods and services; the success of neighbourhood retail; walkability; the success of public transit; and the amount and access to parks and open space. This is primarily due to the ability to offer services more efficiently with less supporting infrastructure per capital. ³⁵	General population
Although evidence is not conclusive, ¹⁴ consideration should be given to offering a reasonable proportion of the new units without carpeting; as carpeting serves as a nesting environment for dust mites and people who rent their accommodation have limited control over the flooring. ³⁶	Children and people with existing respiratory conditions

4 Impact Assessment

The assessment stage synthesises and critically analyses the information collected during the identification stage.³ The outcome of the assessment stage is the identification and description of the priority potential health impacts resulting from the Villawood East Master Plan.

An initial impact assessment was carried out by the CHETRE and Population Health project team members. An assessment matrix (see Table 6) was developed to systematically synthesise and prioritise potential impacts. Within the matrix, each pathway consists of an *Activity* identified in the draft Master Plan that has the potential to change one or more *Health determinants*, which in turn can alter one or more *Health outcomes*. From this assessment we developed *Recommendations* (See Section 5) to maximise the benefits and minimise the risks of the regeneration plan based on the *Potential Health Impacts* with particular attention to *Vulnerable Populations*, informed by *Evidence from literature*, *Local data*, and *Evidence from community/stakeholders*. The sources of evidence used include:

- The community profile
- Literature reviews:
 - Ben Cave Associates Ltd (2012). *Villawood East Master Plan HIA Literature Review*. Leeds: BCA.⁴
 - Rose V and Ng Chok H. (2012). *Developing a model of intervention in social housing transition. Phase 1 Integrative evidence review*. Sydney: Centre for Health Equity Training Research and Evaluation (CHETRE), University of New South Wales.³⁷
 - Haigh F, Ng Chok, H & Harris, P. (2011). *Housing density and health: A review of the literature and Health Impact Assessments*. Sydney: Centre for Health Equity Training, Research and Evaluation (CHETRE), University of New South Wales.³⁸
- Project documentation including:
 - Human Services Housing NSW. (2011). *Villawood East Estate: Greater Western Sydney Division: Options Output Paper*. Sydney: Project Development Assets Division.³⁹
 - SJB Urban. (2012). *Villawood East Stage 01 Report: Chester Hill and Villawood East Affordable Housing Project*. Sydney: SJB Urban.⁴⁰
 - SJB Urban. (2012) *Villawood East Stage 02 Report: Chester Hill and Villawood East Affordable Housing Project*. Sydney: SJB Urban.¹
- Stakeholder evidence from:
 - Project Working Group
 - Project Control Group
 - Villawood East Master Plan Community Consultation

This matrix was then used as the basis for an assessment meeting with the Project Control Group. Initial recommendations were developed to mitigate negative impacts and maximise positive impacts of the Master Plan.

As a result of discussion at the assessment meeting:

- The assessment matrix was further refined to make the links to the Master Plan more explicit and include more data specific to Villawood East.
- The pathways within the matrix were used to inform the overall assessment of impacts.
- Recommendations were refined and grouped into actions to take place now that are not dependent on the implementation of the Master Plan and recommendations to take place if the Master Plan is implemented.

The assessment and preliminary recommendations were then presented to the Project Control Group for validation.

Table 6 Health Impact Assessment Matrix

Activity	Baseline data [§]	Evidence from Literature/ other HIAs	Evidence from community/ stakeholders	Health determinants	Health outcomes	Potential Health impacts	Vulnerable Population(s)/ Equity
1. Improved housing quality and sustainability	The majority of public housing stock is over 50 years old.	The link between poor housing and poor health is well established. There is high strength evidence, for example, that improved warmth in the home may produce long-term positive socioeconomic health benefits (such as less time off work/school, increased social and economic opportunities). Mould remediation linked to decreased asthma related symptoms.	Community consultations identified Urana as having a perceived safety risk and low quality housing.	Mould exposure Pest infestation Exposure to allergens Air pollution Temperature extremes Safety Stigma	Mental Health Respiratory illness Hospital admissions Accidents	Reduced exposure to health risks; reduced risk of hospital admissions, reduced children's days off school/adults days off work. Improved mental health. Reduced number of accidents.	Vulnerable groups such as the sick, the elderly, and the unemployed, are among those most likely to live in poor housing and also tend to spend large amounts of time in their homes exposed to potentially hazardous environments. Elderly are at particular risk of indoor air quality and extremes of temperature. Children are also sensitive to indoor exposures such as lead, dust mites, mould and radon.
2. New housing types	There are a higher proportion of single parent families in Villawood East (12% vs 7% NSW).	Residents living in areas of higher population density may benefit from better access to goods and services, as well as better transportation options. At the same time they may be subjected to higher levels of crowding and its associated health impacts such as traffic related air-pollution and noise.	Community consultations identified the need for garage/parking with increased density and private open spaces. Some community residents expressed concerns about building heights over six stories For the senior living centre, there were community concerns about buildings over three stories.	Density Road traffic (accidents and air quality) Stress Safety Access Improving community assets Social cohesion Stigma Physical activity	Mental Health Accidents Access to services and resources Obesity	If housing types linked to population requirements then could improve quality of life for those groups currently living in unsuitable housing. High density housing may create concerns relating to privacy, noise, rubbish and maintenance issues, and health issues related to problems of crowding. Improved connectivity potentially offset by increase in vehicle traffic from population growth. Increased stress and anxiety from proposal.	Large families, extended families tend to be from immigrant and lower-income communities. Living in multiple family housing or on the upper floors of high rise buildings is associated with greater mental health problems (in particular for women and children). Elderly People. People living with disability. Exposure to traffic related air pollution and community noise have greater impact on youth and elderly.
3. Increase housing densities	Relatively high proportion of lone person households (33% vs 21% NSW). Relatively lower proportion of couple families with dependent children (17% vs 24% NSW). Relatively high level of households need assistance with core activities (11% vs 5% NSW). 24% of households own their own property, 61% are renting. The majority of dwellings (737/1,070) in Villawood East are owned by Housing NSW and are predominantly cottages (545) and units (401) with small proportion of townhouses or villas (54).	Health implications of changing the mix of tenure types (e.g. from state leases to private ownership) on a housing development are unknown.	Community indicated concern about reckless drivers and the number of traffic related accidents that currently exist. Community indicated interest in creating communal spaces with new housing options (gardens, meeting rooms, etc) in a redeveloped Urana. Previous large-scale regeneration projects suggest that tenants who want and are able to move into new housing are pleased. Villawood East is generally not regarded by applicants/residents as part of the high demand Bankstown area, and accepting a property is often seen as a last resort.			Temporary relocation and changes in housing typologies and density may disrupt social networks, employment, access to services (including health). Concerns about crime and safety issues may be exacerbated in high-density housing. At the same time, with more people and activity within the same space, research has shown that some communities with higher-density development have been found to have greater safety.	Those most affected by the development are those often least likely to come to community consultations or be aware of housing support services.

§ Some data refers to Villawood as opposed to Villawood East

Activity	Baseline data [§]	Evidence from Literature/ other HIAs	Evidence from community/ stakeholders	Health determinants	Health outcomes	Potential Health impacts	Vulnerable Population(s)/ Equity
4. Reduced concentration of public housing	Villawood (2163) is ranked 9th of the disadvantaged postcodes in NSW. Residents in Villawood East have a relatively low weekly median income compared with Sydney (\$586 vs \$1447 in 2011). A higher proportion of families in Villawood are living with mortgage and rental stress (more than 30% of income used on housing payments).	Moving people from high to low poverty neighbourhoods can improve mental health, reduce obesity and impact positively on some wider determinants of health, such as experience of social disorder. No clear evidence showing benefits to health from de-concentration of disadvantage alone. Housing interventions that are carefully targeted at those in greatest need may hold the most promise for improving health. Reducing income related residential segregation may improve household safety, reduce exposure to crime and decrease neighbourhood social disorder.	There have been problems with issues of decanting with previous regeneration projects.	Economic trade-offs Safety Trust Stigma Social Cohesion Access Social networks and relationships Sense of control Opportunities to influence decisions	Access Mental Health	Improvements in household safety (reduced exposure to crime and neighbourhood social disorder), weighed against potential for housing displacement and social network/access to services disruption. People with low incomes if priced out of market or faced with higher living costs.	According to the evidence currently available mixed tenure does not lead to change in social disadvantage, inequalities and deprivation. People with low incomes if priced out of market or faced with higher living costs.
5. Affordable Housing as a new form of tenure	Compared to Sydney, housing repayments in Villawood are considerably lower. Current residents have limited ability to finance housing loan repayments. Residents in Villawood East have a relatively low weekly median income compared with Sydney (\$586 vs \$1447 in 2011).	The lack of affordable housing has been linked to: decreased spending on health and health care; including delays in seeking preventive and routine medical care; medication non-adherence and increased emergency department utilization. Lack of affordable housing can undermine benefits of a stable family home and cause disruptions that may affect schooling, health care and social networks. Higher utility bills (following redevelopment) can place an additional burden on residents, especially low-income families, who are forced to make trade-offs among housing, heating, food, medical care, etc.		Economic trade-offs Social cohesion Stress Access Enhancing control	Mental health Social cohesion Access	As dwelling density is increased, creation of mixed-income housing has the capacity to enhance social equity and social cohesion. However, if the economics unfairly burden low-income residents through high rents of relocation, such cohesion will be challenging. Home ownership is generally associated with improved health. However the trend does not hold for those people who are living on the margins of home ownership where mortgage arrears increase insecurity and are detrimental to mental health.	If people with low incomes are unable to pay for 'affordable' housing then they will not benefit. Home ownership is generally associated with improved health. However the trend does not hold for those people who are living on the margins of home ownership where mortgage arrears increase insecurity and are detrimental to mental health.

[§] Some data refers to Villawood as opposed to Villawood East

Activity	Baseline data [§]	Evidence from Literature/ other HIA's	Evidence from community/ stakeholders	Health determinants	Health outcomes	Potential Health impacts	Vulnerable Population(s)/ Equity
6. Improve personal and community safety through quality urban design		<p>Access to nearby parks and natural settings is associated with improved mental health and reduced anxiety.</p> <p>Access to parks and green spaces has multiple physical, psychological, and social health benefits, and contributes to community cohesion and identity.</p> <p>Neighbourhoods that are characterised as more walkable, either leisure-oriented or destination-driven, are associated with increased physical activity, increased social capital, fewer overweight people, lower reports of depression, and less reported alcohol abuse.</p>	<p>Community consultations indicated the importance of creating a sense of community and safety, particularly in the design of the parks.</p> <p>Community members see visibility of car park from flat/house as a design/safety issue.</p> <p>Due to a history of traffic offenses that have compromised safety of residents, planted road blocks have been placed throughout the suburb to slow traffic.</p>	<p>Real and perceived crime</p> <p>Access (to green space, sidewalks, recreation, schools, work, shopping, food environment)</p> <p>Social cohesion/capital</p> <p>Physical activity</p>	<p>Access</p> <p>Social cohesion</p> <p>Obesity</p>	<p>Improved levels of physical activity and improved access.</p> <p>Improved perception of safety.</p>	<p>Older people, women and people with mental illness appear to suffer disproportionately from fear of crime.</p> <p>Young men, in contrast, have a high-risk rate and a lower fear.</p>
7. Movement: Encourage pedestrian and cyclist movement.	<p>In Villawood East: hospitalisations by injury is higher than in the Metropolitan Sydney population.</p> <p>Hospitalisation for Dialysis and lifestyle diseases are also considerably higher.</p> <p>Villawood has a walkability score of 57 (Sydney = 100).</p> <p>Lower proportion of people that walk to work in Villawood than in Sydney. Most are car dependent and some catch public transport - bus and train.</p>	<p>Physical activity provides mental and physical health benefits and can also reduce the risk of many chronic diseases.</p> <p>Improving the availability and acceptability of public transport improves access and mobility.</p> <p>Motor vehicles are a leading cause of accidental death.</p> <p>Presence of sidewalks and crosswalks, bike paths, playing fields, public transport - along with the perception that it is safe outside - contribute substantially to average amount of regular physical activity that residents of a neighbourhood achieve.</p> <p>Health improvements can be achieved by aspects of build quality and designing community layouts and land use mixes that promote social interactions.</p> <p>Neighbourhood characteristics such as the proximity and mix of land uses, pedestrian connectivity, aesthetics and interesting scenery, and traffic and personal safety are important correlates of physical activity.</p>	<p>Reported high levels of road and traffic accidents.</p> <p>Community consultations concerning the Seniors Living Centre expressed need for greater connectivity with access, services and spaces that facilitated community interaction.</p> <p>Design Charrette raised questions about linkages across Woodville Road.</p> <p>Suburb is oriented towards car travel, while still well serviced by two bus routes.</p> <p>There are no dedicated cycle ways.</p> <p>Industrial traffic focused on northern and eastern edges of suburb.</p>	<p>Physical activity</p> <p>Access</p> <p>Safety</p> <p>Noise</p> <p>Social networks and relationships</p>	<p>Access to services and resources</p> <p>Social cohesion</p> <p>Accidents</p> <p>Obesity</p>	<p>Increased physical activity, reduced risk of obesity, reduced risk of diabetes, improved opportunities for social connectedness, improve access to services and community; gains partly offset by increase in traffic.</p> <p>Improved traffic safety features could lead to a reduction in road and traffic accidents.</p> <p>Increased vehicle traffic and traffic permeability throughout the estate, increasing air pollution and potential for accidents.</p> <p>Increased noise.</p> <p>Improved access to services.</p>	<p>For children, the environmental attributes consistently associated with physical activity were walkability, traffic speed/volume, access/proximity to recreation facilities, land-use mix, and residential density. For adolescents the most supported correlates were land-use mix and residential density.</p> <p>Health risks associated with transport and connectivity include: the disproportionate effect of poor public transport access on women, children and disabled people, people from minority ethnic groups, older people and people with low socioeconomic status; and the trade-off between the benefits of improved transport and the potential for severance of community networks at the local level due to large traffic volumes.</p>

§ Some data refers to Villawood as opposed to Villawood East

Activity	Baseline data [§]	Evidence from Literature/ other HIA's	Evidence from community/ stakeholders	Health determinants	Health outcomes	Potential Health impacts	Vulnerable Population(s)/ Equity
8. Improve the quality, accessibility and performance of the existing and new public spaces	Most residents travel to work by car (68%). This is followed by train. Fewer residents (4.5%) walk to work than in Inner Sydney (around 20%).	Sidewalks and crosswalks, bike paths, playing fields, parks, shopping accessible on foot, and public transportation, along with the perception that it is safe to be outside, contribute substantially to the average amount of regular physical activity that residents of a neighbourhood achieve.	Community consultations concerning the Seniors Living Centre expressed need for greater connectivity with access, services and spaces that facilitated community interaction.	Physical activity Access Community asset Shared public spaces Social networks and relationships	Social cohesion Obesity Mental wellbeing	Increased physical activity and associated health gains as well as improved opportunities for social connectedness. Improved mental health.	The design of public spaces impacts (positively or negatively) on levels of social inclusion/isolation and the ability of certain groups (disabled people, the elderly and families with young children) to access community/social networks and services.
9. Improve access to and quality of green space		Aesthetic features such as landscaping and good building design increase active transport use, while deteriorated physical environments often have higher rates of crime, making neighbourhoods less safe for walking. Creating streets, green spaces, and neighbourhoods that encourage more walking or cycling and opportunities for informal social interaction are associated with improved physical activity and mental health. Incorporating clear signposting, good acoustics and natural lighting into building design may reduce stress.	Existing greenspace perceived to be underutilised and in need of improvement.				
10. Strengthen and improve sustainability of existing services through population increase.	Relatively high levels of people outside of labour force or unemployed. Relatively high levels of disability and caring for someone with disability (11% vs 9% NSW). Relatively low levels of educational attainment. Relatively high levels of speaking English not at all or not well (17% vs 4% NSW). Relatively high levels of persons born overseas (41% vs 26% NSW) Relatively high levels of lone person households (33% vs 21% NSW)	Provision for small retailers were described as the linchpin of a sustainable business base at neighbourhood level in an HIA of a sustainable community in the UK; and good availability of services and amenities that supported eating fresh vegetables, obtaining medicines, or getting regular exercise. The density of fast food outlets and preponderance of energy-dense foods in convenience stores and other small markets has been linked with higher prevalence of obesity and higher BMI. Integrated community services that support groups can help build a sense of community.	Design Charrette identified the need to ensure the proposal defines the services necessary across the site to get an even distribution oriented to the needs of the demographic profile.	Access Physical activity Social cohesion Increasing/improving community assets Facilitating participation and promoting inclusion Shared public spaces Social networks and relationships Access to good quality food Leisure opportunities	Access to services and information Social cohesion Obesity Mental wellbeing	Increase in supportive networks improving quality of life in the community.	Potentially will help reduce health inequality if physically accessible, acceptable, affordable and appropriate for Villawood East residents.
• New services e.g. Community Hub: relocation of services to a new community centre and one-stop-shop for the provision of services; Café and/or shops; Day care centre; New recreational facilities at the Wran Leisure Centre.							

[§] Some data refers to Villawood as opposed to Villawood East

4.1 Statement of impacts

The analysis carried out within the assessment matrix provides the basis for the overall assessment of the potential health impacts of the Villawood East Master Plan.

The Master Plan aims to improve the socioeconomic and environmental conditions affecting the daily lives of the community in Villawood East. At this stage it is not known to what extent the Master Plan will be implemented. The HIA working group identified crucial impacts but the complexity and degree of uncertainty of the Master Plan implementation, availability of evidence and the pace of change in the policy agenda have made it difficult to assess the distributional effects, size of population affected and latency of these impacts.

Overall the Master Plan has the potential to impact positively on health and wellbeing in Villawood East. In particular:

- Improving the physical quality of the housing resulting in reduced exposure to hazards, cold, heat, mould and damp is likely to positively impact on health outcomes.
- Introducing new housing typologies may positively impact on mental and physical wellbeing of residents if they are accessible, acceptable, available, affordable and appropriate for the current and future needs of Villawood East.
- Increasing housing density can support increases in physical activity and social cohesion if this forms part of a wider approach to improving the urban environment.
- Reducing the concentration of public housing alone is unlikely to positively impact on the health of current residents. The mix of new and old residents could have negative or positive effects depending on how the Master Plan is implemented.
- Improving the urban design of the area through measures to enhance walkability (e.g. density, mixed use, design), real and perceived safety and access to and quality of green space could impact positively on levels of physical activity, community pride and access to resources resulting in potentially positive impacts on health.
- Improving transport and connectivity are likely to make the area more accessible for older people, children, cyclists and people with mobility problems. This is likely to impact positively on health.
- Improving the quality and access to green space is likely to have positive impacts on health.
- Improving access to and level of service availability in the area is likely to positively impact on health if they are accessible, acceptable, available, affordable and appropriate for the current and future needs of Villawood East residents.
- Incorporating activities that facilitate participation, promote inclusion, enhance control, increase resilience and improve community assets will promote and protect mental wellbeing in the Villawood East community.



4.2 Impacts on health equity

The Master Plan provides an opportunity to specifically target reducing health inequalities in the area.

If the implementation of the Master Plan is not linked to considerations of social disadvantage, then although there is a possible overall improvement in health, health inequalities are likely to remain and may increase.

Without strategies targeted at population groups within Villawood East experiencing health inequity, health inequalities are likely to remain and may increase.

If the implementation of the Master Plan is not linked to considerations of social disadvantage... health inequalities are likely to remain and may increase.

Without strategies targeted at population groups within Villawood East experiencing health inequity, health inequalities are likely to remain...

4.3 Priority area impacts: mental health, social cohesion and access to services and high quality urban design and green space

The impact assessment has identified that all of the activities contained within the Master Plan have the potential to impact significantly on the mental wellbeing of current and future residents. Improvements in housing quality, urban design and greenspace are likely to positively impact on mental wellbeing. However there are also potential risks associated with higher density housing (in particular high rise buildings), changing the current mix of residents and the process used to plan, implement and manage the Master Plan. The Master Plan is likely to have a mix of negative and positive impacts on mental health.

The Master Plan is likely to have a mix of negative and positive impacts on mental health.

The potential impacts on social cohesion are unclear. There is an evidence gap with regards to the impacts on health of creating mixed tenure and deconcentrating disadvantage. Research has found no evidence that deconcentrating disadvantage impacts on health outcomes and there is no or negative effects of mixed tenure impacts on social cohesion or capital. Improving services, greenspace and urban design can positively impact on social cohesion. How the Master Plan process facilitates participation and inclusion and the process of moving people in and out of the community will also have a significant impact on social cohesion. The Master Plan could have negative and positive impacts on social cohesion.

The Master Plan could have negative and positive impacts on social cohesion.

Improving the quality of urban design, access to services and green space has been shown to positively impact on health. However evidence also shows that people who are more interested in physical activity and healthy lifestyles are more likely to select neighbourhoods that are conducive to this. This can potentially result in increasing inequalities as those that could benefit most from healthy urban design are least likely to benefit from it. Plans to maintain levels of social housing in Villawood East should help ensure that people currently experiencing health inequity will also have access to a 'walkable' healthy community. Improving the quality of urban design, access to services and green space is likely to have positive impacts on health.

Improving the quality of urban design, access to services and green space is likely to have positive impacts on health.

5 Recommendations

The HIA working group has identified a number of short term actions (Table 7) that could be implemented immediately and are not dependent on the Master Plan going ahead. These recommendations are targeted at strengthening the community. A second set of recommendations (Table 8) are targeted at implementation of the Master Plan. The recommendations ensure that the potentially negative impacts on health and wellbeing are mitigated and positive health and wellbeing impacts enhanced. These recommendations should be revisited and an implementation plan developed at a point in time when the Master Plan or other significant developments in the Villawood East area are being planned. In addition principles to guide the overall approach have been derived from evidence.

Table 7 Action to take place now

Theme	Recommendation	Activity
Communication and participation	<ol style="list-style-type: none"> Disseminate project information updates to reduce fear and enhance trust. Support community participation in planning and implementation (through forums, meetings, festivals, committees) to increase engagement, ownership and project validity. Establish strong project governance structure to promote transparency and outcomes. It is recommended that the governance structure include representatives from each of the priority population groups in addition to the stakeholders from member organisations. 	Equity Focus
Community Hub	<ol style="list-style-type: none"> Establish and support a community hub venue for community development activities. Early introduction of social infrastructure (e.g. community hubs) has been shown to maximise potential benefits of community generated activity. Employ outreach/ community engagement worker. This will require long-term investment to ensure that staffs are retained to sustain their relationships with families (and individuals), and that staff are appropriately trained and supported for their work. Implement community development activities and events (including festivals drama, arts, music, sports etc) to promote social cohesions, enhance community pride and increase safety. 	10
Quick wins	<ol style="list-style-type: none"> Implement some quick win environmental improvements to increase trust and enhance community pride. 	6, 8,9
Equity	<ol style="list-style-type: none"> Ensure messages are communicated in accessible formats to enable participation of all members of community (e.g. language, medium). Develop targeted approaches to engage hard to reach members of the community. Employ outreach worker with skills relevant to engaging Villawood East community. 	Equity Focus
Key learning	<ol style="list-style-type: none"> Develop a brief for the Housing and Health Partnership identifying key learning from the HIA process. 	
Monitor and evaluate	<ol style="list-style-type: none"> Monitor and evaluate the implementation of these recommendations at 6 month intervals until complete. 	All

The "Activity" column relates to Table 6.

Table 8 Action to take when implementing the Master Plan

	Space - Housing and urban design	Activity
Housing design	1. Ensure that housing typologies are appropriate for the Villawood East population. This should include sufficient housing being built to accommodate large families as well as single person households.	1,2,3, Equity Focus
	2. Housing designed to accommodate households at different life stages (ageing in place), or can be adapted to meet the needs of people as they age or become disabled.	1,2,3, Equity Focus
	3. Housing should enable wheelchair and pram access.	1,2,3, Equity Focus
	4. Learn from local examples of best practice (for example Bonnyrigg designed culturally appropriate houses for the local population).	1,2,3,4,5, Equity Focus
	5. Housing built to best practice building standards and noise controls.	1,6
Walkability	6. Adopt a 'walkable community' development principle.	6,7,9
	7. Enhance walkability through incorporating best practice guidance. Including,	6,7,9
	a. Land use – density of housing, people and land use for multiple activities within walking distance – critical mass also provides feeling of safety.	6,7,8,9,10
	b. Street networks – small block size and street connectivity, also accessibility of services along street, footpaths and cycleways – also linked to public transport, continuous network.	6,7,10
	c. Marked pedestrian crossings, raised crosswalks, pedestrian refuge islands, medians (no wider than 6 metres to keep walkable, shouldn't compromise sidewalk width) curb extensions (no further than edge of travel lane, extension at least width of sidewalk, not impinging on bikeways), trees and landscaping (safety, enjoyability protection from elements), benches (especially for elderly, disabled, small children etc).	6,7,8,9, Equity Focus
	d. Ensure that the current potentially hazardous crossing of Woodville Road is addressed in the design for Villawood East	6,7
	e. Ensure that public transport stops are located in a comfortable walking distance (approximately 400-500 metres for bus stops and 800 metres for train stations).	7
	f. Definition of street edge, buildings abutting footpath preferable to being separated (e.g. by parking lot). Buildings close together to create perceptible street edge. Have parking, loading etc at back. Encourage cafe seating etc on sidewalk while maintaining comfortable width for pedestrians.	6,7
	g. Ratio of building height to street width also helps create an enclosed pedestrian space; an ideal ratio for providing definition is between 1:2 and 1:3. Larger ratio acceptable but smaller may create street that is too wide and unwelcoming.	6,7
Greenspace	h. Design variety – smaller buildings give more variety, transparency of facades, entries etc. provide visual interest.	8,10
	8. Dedicate some of the mixed housing sites to community gardens, shared spaces.	9
	9. Aim to increase park density and quality.	9
	10. Ensure parks and community gardens are both safe and easily accessible for elderly, children and disabled (including walkability, benches, buildings overlooking park space, lighting). Ensure that people using wheelchairs and prams/strollers can get to, and move freely about, the space.	6, 9, Equity Focus
	11. Ensure greenspaces are multifunctional allowing a variety of outdoor activities suitable for the range of population groups (e.g. children's play area, sports pitches, footpaths, benches, gardens, picnic spots). Design public spaces design to accommodate community celebrations, festivals and other events. Ensure amenities such as picnic areas and cooking facilities (barbeques) are included in park design.	7, 9, Equity Focus
	12. Designed play areas to be easily observable by parents, and provide seating for parents/guardians to observe children when playing.	6, 9
	13. Ensure public open spaces are sufficiently buffered from traffic in terms of noise, fumes and pedestrian safety.	6, 9
	14. Ensure public open spaces offer clear lines of sight, with few "hiding" or unobservable spaces.	6, 9
Movement	15. Create several 'hubs' where clustered services (retail, grocery, etc) are within easy walking distance.	6,7,8,10
	16. Ensure variety of transit options in order to reduce dependence on automobiles.	7,10
	17. Implement safety measures related to traffic calming, signalised crosswalks, protection from air and noise pollution.	6,7
	18. Where possible locate residential areas and mixed-use nodes away from major roads to increase distance from exposure to air pollution.	6,7
	19. Create barriers, planting trees and set design standards for new residences and businesses to address air pollution and noise from traffic.	6
	20. Conduct travel surveys and include of residents in the detailed design of each aspect of public/private travel planning.	6,7,8,9,10
Access	21. Ensure there is adequate emergency service access.	6,7
	22. Include a strategy for disabled access as part of the planning process.	6,7,8,9,10, Equity Focus
	23. Shopping areas should be family friendly and prioritise use by families, older people and those with disabilities.	7,8,10, Equity Focus

	Place	Activity
Services	24. Establish and support a community hub venue for community development activities; a. Employ outreach/ community engagement worker. b. Implement community development activities and events (including festivals, drama, arts, music, sports etc) to promote social cohesion, community pride and increase safety.	10, Equity Focus
	25. Community cafes and small local food retailers, which offer nutritious and locally produced foods, operate locally and should be incorporated into neighbourhood centres.	10
	26. Flexible social infrastructure that accommodates a diversity of needs. For example, services and facilities that cater to different age groups as well as different faith groups.	10, Equity Focus
	27. Develop a coordinated cross-sector planning process that addresses access to services. There is recognition that services across sectors will need to be strengthened, expanded and improved with the projected population increase. Vulnerable populations are especially susceptible to falling through the cracks during this transition period.	10, Equity Focus
	28. Partnership working with local producers and retailers to ensure continuity of services and sustainability.	10
	29. Consider public health programming services (e.g. smoking cessation, healthy eating and active living, stress management) for FACS properties.	10
	30. Partnerships should be established to give local producers of fruits and vegetables preferential access to market opportunities in or around the development.	10
Decanting	<i>The scope of the HIA focused on implementation stage of the Master Plan (excluding construction). Although this is outside the scope of the HIA it is likely that the construction process and potential decanting of residents will have potentially significant health impacts.</i>	
	31. Develop an integrated service intervention framework to assist social housing transition that activates change in people, place and space. See report by Rose and Ng Chok. ²	Equity Focus
	32. Investigate the suitability of tenant-based rental assistance programs. These subsidise the cost of housing secured by low-income households within the private rental market through the use of vouchers or direct cash subsidies and have been shown to be effective in improving household safety (reduced exposure to crime and neighbourhood social disorder).	Equity Focus
	33. Considerations should be given to ensuring that any decanted residents are able to access available support (e.g. for disability needs, mental health support, school attendance).	Equity Focus
	People – Engagement and communication	Activity
Communication	34. Ongoing, open and clear communication and engagement with residents at every step of the process.	
	35. Establish strong project governance structure to promote transparency and outcomes. It is recommended that the governance structure include representatives from each of the priority population groups in addition to the stakeholders from member organisations.	
	36. Disseminate project information updates to reduce fear and enhance trust.	
	37. Support community participation in planning and implementation (through forums, meetings, festivals, committees) to increase engagement, ownership and project validity.	
	38. Greater targeted outreach should be undertaken to ensure those who are at greatest risk are aware of what is happening and impending changes.	Equity Focus
	39. Provide a means for residents to identify their home as it is being built, which will help create a sense of identify and community attachment.	
Affordability	40. Develop a maintenance regime of identified environmental health issues with resident input and involvement.	1
	41. Develop criteria to provide rate relief for vulnerable populations if rates rise significantly in order to mitigate financial impacts of rates increases on low-income households.	5, Equity Focus
	42. Prioritise affordable housing options.	5, Equity Focus
	43. Monitor for population stability and housing tenure during evolution of the project in order to identify potential impacts as they occur.	5
	Monitoring and evaluation	
	44. Monitor and evaluate the health and wellbeing impacts and recommendations made in this HIA. Like the recommendations these can be divided into short and long term activities, where short term changes can be made in the absence of implementing the Master Plan and longer term activities are associated with implementing the Master Plan. A collaborative project involving members of the health and housing partnership should be developed which evaluates changes in Master Planning against perceived and actual health outcomes across different sites in Sydney South West (or beyond across Sydney or NSW).	

6 Evaluation

A process evaluation of this HIA is currently being undertaken. This has included interviews with representatives of all agencies involved and will inform a reflections report which is to be developed for the Health and Housing Partnership. An impact evaluation is dependent on Master Planning activities proceeding in Villawood East as recommended in the previous section (number 40). Overall, we found that obtaining data for specific geographies is, currently, challenging and time consuming. This HIA has been hampered by lack of outcome data at the postcode level.

As also detailed in recommendation 40, the stakeholders involved in this HIA should consider designing an intervention based study which collects qualitative and quantitative data about the impacts of Master Planning in different sites.

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