

Moreton Bay Regional Council

Local Government Infrastructure Plan (LGIP) Interim Amendment No. 1

Planning Assumptions Extrinsic Material

Consultation version August 2021

Extrinsic material and background reports

The Local Government Infrastructure Plan (LGIP) is supported by a suite of reports available on the Moreton Bay Regional Council website.

An extrinsic material report is provided for each of the following trunk infrastructure networks:

- Transport (roads)
- Transport (active)
- Stormwater (quality and quantity)
- Public parks
- Land for community facilities.

An extrinsic material report is provided for each of the following:

- Planning assumptions
- Schedule of Works model

A background report is provided for each of the following:

- Active transport
- Parks catchment analysis
- Community facilities network
- Stormwater quantity
- Stormwater quality
- Land valuations

Note: The first local government infrastructure plan for Moreton Bay Regional Council came into effect in 2017 and is referred to as LGIP 2017 in all extrinsic materials. The term LGIP refers to the proposed Local Government Infrastructure Plan (LGIP) Interim Amendment No. 1 - Consultation version 2021.

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Appendix A - Planning assumptions tables

Disclaimer

The planning assumptions referenced in this document were prepared in October 2019 for the Local Government Infrastructure Plan network modelling only, based on information and Council policy at the time. Planning assumptions may be reviewed or amended when new information is available.

Future changes to Queensland Government Statistician's Office (QGSO) population and dwelling forecasts, Council policy, planning scheme amendments or future approved developments may require review and amendment of these planning assumptions. The outcomes of the *Regional Growth Management Strategy 2041* (RGMS2041) may also require amendment of the planning assumptions. These planning assumptions are not intended for any other use other than stated.

Some parts of the planning assumptions are derived from information contained in Council records which may have been supplied by other persons. Moreton Bay Regional Council gives no warranty or guarantee of any kind, expressed, implied, or statutory, to the correctness or accuracy of the planning assumptions or the degree of compliance with any Council standards in this matter.

Persons making decisions with financial or legal implications must not rely upon the planning assumptions for the purpose of determining whether any particular facts or circumstances exist. Moreton Bay Regional Council (and its officers and agents) expressly disclaim responsibility for any loss or damage suffered as a result of reliance on this information.

LGIP Interim Amendment No. 1 is made in accordance with Minister's Guidelines and Rules (MGR) 2020. No material difference has been identified which impacted the preparation of these Planning Assumptions when compared with subsequent versions of MGR.

Glossary

Type	Description
ABS	Australian Bureau of Statistics
ANZSIC	Australian and New Zealand Standard Industrial Classification is a standard ABS classification used to analyse industry statistics
ASGS	Australian Statistical Geography Standard
DCDB	Digital cadastre database
DCP	Development Control Plan
ERP	Estimated resident population
GFA	Gross floor area
GIS	A geographic information system used to capture and analyse spatial and geographical data
LGA	Local government area
LiDAR	An active remote sensing system which measures ground surfaces such as terrains
MBRSTM	Moreton Bay Region Strategic Transport Model
MGR	Minister's Guidelines and Rules
PDA	Priority Development Area
PIA	Priority Infrastructure Area
QGSO	Queensland Government Statisticians Office
SA1	ABS Statistical Area Level 1
SA2	ABS Statistical Area Level 2
SEQ	South East Queensland
DZN	Destination zone. A statistical area used primarily to report place of work data from the Census

1 Introduction

Moreton Bay Region is a local government area located between Brisbane and the Sunshine Coast in South East Queensland, Australia. Established in 2008, Moreton Bay Regional Council (MBRC) replaced the City of Redcliffe, Caboolture Shire and Pine Rivers Shire local government areas. Moreton Bay Region is the third most populated local government area in Australia with almost 500,000 residents, and an annual growth rate of approximately 10,000 people (above 2%). The region's diversity spans more than 2,000 square kilometres from coastline to rural hinterland.

Finalised in October 2019, this document describes the methodology, data sources and outputs used to prepare population and employment assumptions during 2016-2018. This work is intended to form the basis of Council's infrastructure modelling associated with the LGIP in the MBRC Planning Scheme.

The planning assumptions include the baseline information and forecast growth for the entire region, including master planned areas such as the Petrie Mill Priority Development Area (PDA), Mango Hill Development Control Plan (DCP) and other areas outside the PIA that form part of the network modelling.

The SEQ Regional Plan (ShapingSEQ 2017) refers to planning assumptions as growth assumptions and are defined as:

> *"The consistent set of dwelling and employment growth assumptions used in ShapingSEQ."*[1]

In the Minister's Guidelines and Rules[2] the planning assumptions are described as: *"Assumptions about:*

- *population and employment growth; and*
- *the type, scale, location and timing of development."*

Their purpose is to inform the preparation of trunk infrastructure plans to service urban development in a Local Government Infrastructure Plan (LGIP) under the Planning Act 2016. Planning assumptions are therefore prepared for sufficiently small areas[3] to inform coordinated infrastructure planning support *ShapingSEQ* strategies[4] at the regional scale and for each of the trunk infrastructure service catchment at the local government area scale.

The Planning Act 2016 defines development as meaning[5]:

(a) Carrying out:

  i. building work

  ii. plumbing or drainage work, or

  iii. operational work, or

(b) Reconfiguring a lot

(c) Making a material change of use of premises (MCU).

The Minister's Guidelines and Rules[6] require that planning assumptions clearly identify a summary of the existing and future projected urban residential and non-residential development by development type

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[1] *ShapingSEQ* August 2017, page 182.

[2] Minister's Guidelines and Rules (MGR) 2017, page 44 dsdmipprd.blob.core.windows.net/general/MGRBook_FINALweb.pdf

[3] A small area is an area sufficiently disaggregated to allow the planning assumptions to be allocated to the service catchments of each trunk infrastructure network to support network modelling.

[4] Queensland Government ShapingSEQ 2017, page 163.

[5] Queensland Government Planning Act 2016, page 297.

[6] dsdmipprd.blob.core.windows.net/general/MGRBook_FINALweb.pdf, page 44

for a projection area in terms of:

- dwellings
- population
- non-residential gross floor area (GFA)
- employment.

The Minister's Guidelines and Rules[7] also require that "…stated for the following development types, as a minimum " for:

- detached dwellings
- attached dwellings
- retail
- commercial
- industrial, and
- community purposes.

2 Background

Council began work on its Planning Scheme in 2011. An initial draft of planning scheme assumptions was prepared in 2011/2012 and revised in 2013. This work was undertaken in accordance with the statutory guidelines for a Priority Infrastructure Plan (PIP) in 2012/2013[8].

In 2014, the Queensland Government released the LGIP guidelines for preparation of the latest iteration of infrastructure charges planning. At that time, Council was undertaking consultation of the draft Planning Scheme. The LGIP , came into effect on 3 July 2017 was based on work undertaken by Council in 2011/2013 to prepare the draft PIP due to the time required for detailed infrastructure modelling and to avoid further delay to the new Planning Scheme process.

The MBRC Planning Scheme began on 1 February 2016.

Council is required to integrate infrastructure planning with the land use identified in the planning scheme.

During 2016-2019 Council began developing planning assumptions to inform the first amendment of the LGIP 2017. These amended planning assumptions contain the following updated information sources:

- 2016 MBRC Planning Scheme zones, precincts and overlay mapping
- Caboolture West included as part of ultimate capacity
- 2016 Census calibrated dwellings baseline
- 2016 ABS estimated resident population (ERP) calibrated baseline
- 2018 QGSO dwelling occupancy rate and dwelling mix projections

[7] MGR (2017), page 45

[8] Statutory guideline 01/11 Priority Infrastructure Plans and PIP Practice Note 1 – planning assumptions, which are consistent with the requirements of section 2.5.2 Planning Assumptions of Statutory Guideline 03/14 Local government infrastructure plans.

- 2017 ShapingSEQ dwelling benchmarks and housing mix policy intent
- 7 years additional observed development patterns and trends
- 2019 development approvals.

These updated assumptions were prepared to align with Council's existing planning scheme and the MGR (2020) for an LGIP. The assumptions are intended to form the demographic and economic data inputs for infrastructure modelling purposes for an amendment to LGIP 2017.

The planning assumptions work is both a top down and bottom up process.[9] Top down means that Council relies on Australian Bureau of Statistics (ABS) statistical area estimates (LGA, SA2, SA1 and DZN) and statistics, and QGSO projections to provide high level estimates and projections of the demand for population, dwellings and jobs for the region. These statistics provide information about the share and distribution of the existing population, dwellings, jobs and projected growth in statistical areas. These projections are supplemented by specialist reports available to Council.[10] The top down projections are used as control totals for the small area assumptions.

Bottom up means that a detailed GIS analysis collected applicable information for each lot, such as zoning, precincts, rates database, development application data, aerial imagery, ABS estimates of past and present population, dwellings, and jobs. Additional analysis was undertaken to determine building footprints, developed and developable land, existing and past estimates of population, dwellings and jobs.

Council also used a bottom up process to identify development trends in a local area, including development type, scale, location, timing or rate of development comparing changes in the built form and land use, development application activity[11] and changes in the availability of developable land.

3 Projection areas

Planning assumptions have been produced for the region at a lot level (residential) and transport zone level (employment) levels. The assumptions have been reported by infrastructure catchments and regional planning areas, localities, ABS SA2, priority infrastructure area, ShapingSEQ consolidation and expansion areas. There has been no change to the five (5) Projection areas, also known as regional planning areas, used in LGIP 2017 :

1. Caboolture
2. Coastal Communities and Bribie Island
3. North Lakes - Redcliffe - Moreton Bay Rail Corridor
4. Rural
5. Strathpine

[9] Consistent with the approach described in the MGR 2017 page 45: *"Development projections must be prepared using - the forward projection of historical residential and non-residential growth data to estimate future growth, based on information from the Queensland Government Statistician and other appropriate sources, considering the development trends for the different areas within a local government (the top down approach); and b) an analysis of the physical capacity available to accommodate growth in a geographical locality, or on a site, consistent with the definition of ultimate development in Schedule 8 (the bottom up approach)."*

[10] Specialist reports include: NIEIR 2014 SEQ Report, AEC Group 2017 Industry Land Supply and Demand Study, Spatial Economics 2017 Residential Land Supply Study, Economic Associates 2013 Retail and Commercial Sectors Needs Assessment.

[11] Development application activity includes pre-lodgment, application, operational works, endorsements, building approval data and lot registrations. Refer to Queensland Government Residential land development activity www.qgso.qld.gov.au/products/tables/rlda-spreadsheets/rlda-spreadsheets.xlsx and residential land development activity profiles www.qgso.qld.gov.au/rlda-profiles.

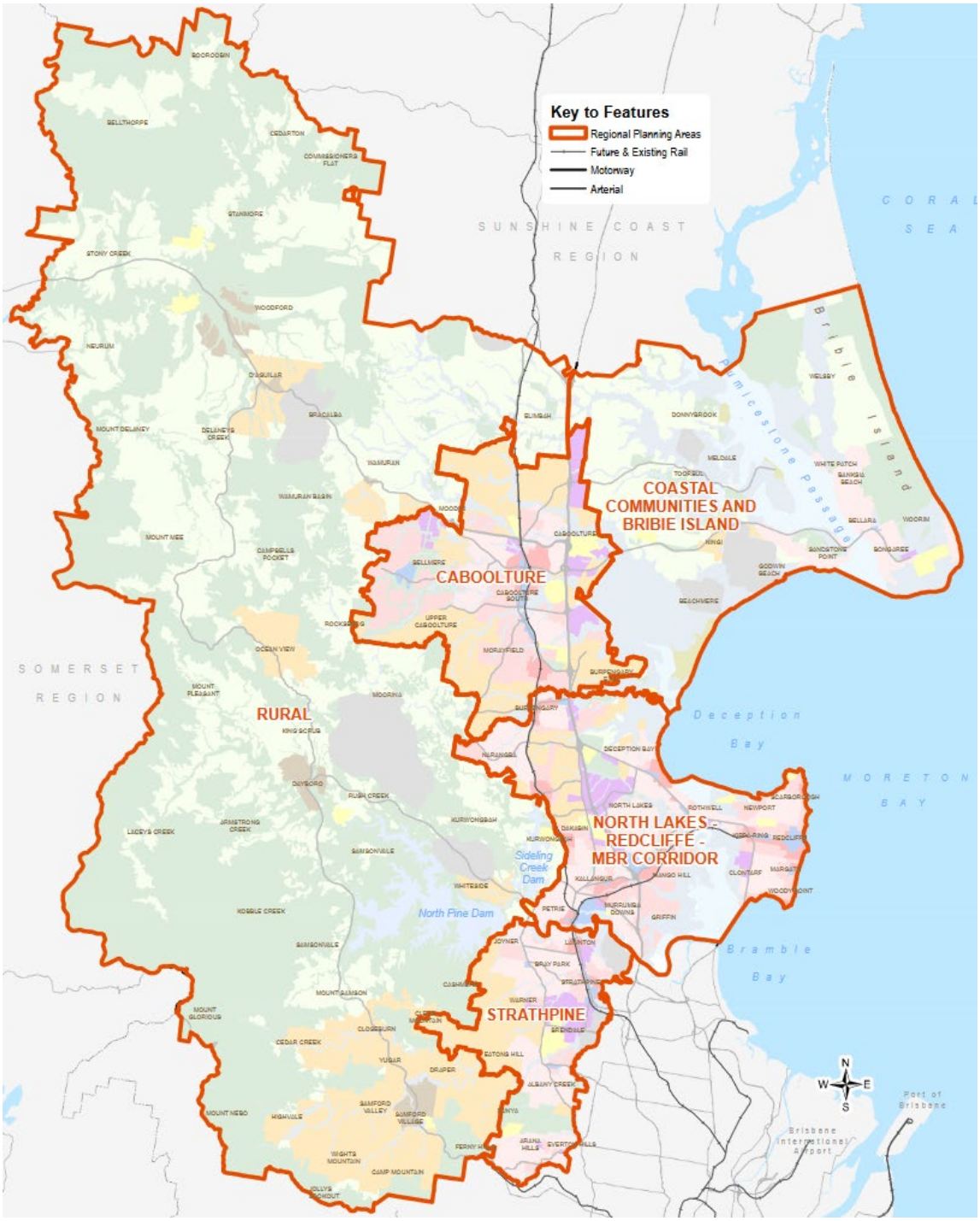


Figure 1: Projection areas (regional planning areas - strategic framework)

4 Development types

Table 1 outlines the relationship between the LGIP development categories, LGIP development types, planning scheme uses and ABS, ANZSIC codes. The development types were used as the building blocks of the planning assumptions.

Table 1: Relationship between LGIP development categories, LGIP development types, Planning Scheme uses and ABS/ANZSIC uses

LGIP development category	LGIP development type	Planning Scheme uses	ABS / ANZSIC
Residential development	Detached dwelling	Caretaker's accommodation	Separate house
		Community residence	Separate house
		Dwelling house	Separate house
	Multiple dwelling	Dual occupancy	Semi-detached, row or terrace house, townhouse
		Dwelling unit	Other dwelling
		Multiple dwelling	Flat or apartment
		Relocatable home park	Semi-detached, row or terrace house, townhouse
		Retirement facility	Semi-detached, row or terrace house, townhouse
		Tourist park (residential component)	Other dwelling
	Temporary accommodation	Detention facility	Public administration and safety
		Hospital (accommodation component)	Health care and social assistance
		Hotel (accommodation component)	Accommodation and food services
		Nature-based tourism (accommodation component)	Accommodation and food services
		Non-resident workforce accommodation	Accommodation and food services
		Residential care facility	Health care and social assistance
		Resort complex (accommodation component)	Accommodation and food services
		Rooming accommodation	Accommodation and food services
		Rural worker's accommodation	Accommodation and food services
		Short-term accommodation	Accommodation and food services
		Tourist park (tourist component)	Accommodation and food services
Non-residential development	Commercial	Brothel	Other services
		Car wash	Other services
		Motor sport facility	Arts and recreation services

LGIP development category	LGIP development type	Planning Scheme uses	ABS / ANZSIC
		Nature-based tourism (non-accommodation component)	Arts and recreation services
		Office	Administrative and support services
		Resort complex (non-accommodation component)	Accommodation and food services
		Sales office	Retail trade
		Telecommunications facility	Information media and telecommunications
		Veterinary services	Professional, scientific and technical services
	Community	Cemetery	Other services
		Child care centre	Health care and social assistance
		Club (not including liquor licence)	Accommodation and food services
		Community care centre	Health care and social assistance
		Community use	Health care and social assistance
		Crematorium	Other services
		Detention facility	Public administration and safety
		Educational establishment	Education and training
		Emergency services	Public administration and safety
		Environment facility	Electricity, gas, water and waste services
		Function facility	Arts and recreation services
		Funeral parlour	Other services
		Health care services	Health care and social assistance
		Hospital	Health care and social assistance
		Indoor sport and recreation	Arts and recreation services
		Landing	Arts and recreation services
		Major sport, recreation and entertainment facility	Arts and recreation services
		Outdoor sport and recreation	Arts and recreation services
		Outstation	Accommodation and food services
		Park	Arts and recreation services
		Place of worship	Other services
		Theatre	Arts and recreation services

LGIP development category	LGIP development type	Planning Scheme uses	ABS / ANZSIC
		Tourist attraction	Arts and recreation services
		Note: There is also a portion of this employment category dispersed throughout residential areas with no fixed location, such as disability support workers.	
	Industry	Air services	Transport, postal and warehousing
		Bulk landscape supplies	Retail trade
		High impact industry	Manufacturing
		Low impact industry	Manufacturing
		Major electricity infrastructure	Electricity, gas, water and waste services
		Marine industry	Transport, postal and warehousing
		Medium impact industry	Manufacturing
		Parking station	Other services
		Port services	Arts and recreation services
		Renewable energy facility	Electricity, gas, water and waste services
		Research and technology industry	Professional, scientific and technical services
		Service industry	Other services
		Special industry	Manufacturing
		Substation	Electricity, gas, water and waste services
		Transport depot	Transport, postal and warehousing
		Warehouse	Transport, postal and warehousing
		Wholesale nursery	Agriculture, forestry and fishing
		Utility installation	Electricity, gas, water and waste services
	Retail	Adult store	Retail trade
		Agricultural supplies store	Retail trade
		Bar	Accommodation and food services
		Club (including liquor licence)	Accommodation and food services
		Food and drink outlet	Accommodation and food services
		Garden centre	Retail trade
		Hardware and trade supplies	Retail trade
		Hotel (non-accommodation component)	Accommodation and food services

LGIP development category	LGIP development type	Planning Scheme uses	ABS / ANZSIC
		Nightclub entertainment facility	Arts and recreation service
		Outdoor sales	Retail trade
		Roadside stall	Retail trade
		Service station	Retail trade
		Shop	Retail trade
		Shopping centre	Retail trade
		Showroom	Wholesale trade
		Tourist park (non-residential component)	Arts and recreation service
		Market	Retail trade
	Rural resource	Animal husbandry	Agriculture, forestry and fishing
		Animal keeping	Agriculture, forestry and fishing
		Aquaculture	Agriculture, forestry and fishing
		Cropping	Agriculture, forestry and fishing
		Extractive industry	Mining
		Intensive animal industry	Agriculture, forestry and fishing
		Intensive horticulture	Agriculture, forestry and fishing
		Permanent plantation	Agriculture, forestry and fishing
		Rural industry	Manufacturing
		Winery	Agriculture, forestry and fishing
	Work from home	Home-based business	Various
		Note: Includes jobs mapped to place of residence and can include all industry sectors. Although based from home can be mobile such as mobile sales, truck drivers., and other home-based professionals in service industry, such as accountants.	
	Construction	Note: This category is generally not mapped to place of residence, rather mapped to place of work, which is mobile. Includes all trades such as plumbers, painters, electricians, etc. Includes areas of both new construction as well as work in existing urban areas.	Construction

Note:

1. *ABS/ANZSIC: There is no one to one correspondence between LGIP categories, planning scheme land uses and ABS/ANZSIC groups. Many economic activities are multi-faceted involving primary and secondary activities. Employment assumptions are allocated to an economic category according to the main industry activity. The above table is therefore indicative of the relationships between the various planning scheme groupings but is not definitive.*

2. *Development types include activities conducted in purpose-built premises which are provided with trunk infrastructure services and activities that are dispersed and/or mobile such as work from home, dispersed industry and personal services, construction, rural and resource activities with varying site and GFA requirements.*

3. *Work from home, dispersed industry and personal services, construction, rural and resource activities are dispersed land uses that have varying site and GFA requirements that have not been aggregated in this report and are treated separately in the employment assumptions.*

5 Methodology - Residential (dwellings and population)

The residential planning assumptions methodology consist of four steps:

1. Establish the existing known baseline
2. Establish the ultimate yield (development capacity)
3. Establish dwelling and population target for planning horizon (2036)
4. Apportion future capacity take-up in five-year intervals to 2036 (development sequencing).

Points 1 and 2 above are the foundation of a bottom up process, to ensure numbers can be explained from real world observations and any future projections can be reconciled with what is achievable within the range of allowable outcomes of the MBRC planning scheme.

5.1 Establish the existing known residential baseline

5.1.1 Existing dwellings - base year (2016)

The digital cadastral database[12] (DCDB) is used as the starting point for residential assumptions, starting from mid-2016 to align with the 2016 Census. The DCDB is a GIS dataset which contains more than 180,000 parcels. This database is processed against other council databases and records to assign the known type and quantity of dwellings by lot.

The primary database used is the rating land use database which lists more than 90 categories of likely uses. Existing dwellings are categorised as detached or attached. Temporary accommodation is also identified and separately assigned.

Following this primary allocation, the dwellings are tallied and reported by Australian Statistical Geography Standard (ASGS) Mesh Blocks[13] which include more than 5,000 for the Moreton Bay Region. These are compared against the 2016 Census[14] dwelling counts for calibration and validation. Any differences are checked against other sources such as DCDB analysis to isolate and validate strata titled and community titled lots. Aerial imagery analysis is often undertaken, and in some cases letter boxes are counted from street view where DCDB does not accurately capture strata titled lots in a multi-storey building identified from LiDAR analysis. Multiple buildings identified against building footprints are also reviewed to account for any secondary dwellings.

Considerable effort is made to establish known quantity and type of dwellings to ensure future projections do not amplify any errors in a base year dataset. As a result, the 2016 dwelling estimates in LGIP are slightly different to the Census[15] data due to:

- The change in the way dwelling structure data was collected in 2016 for mailout areas (majority of dwellings in Australia). Caution should be applied when comparing against previous Census collection cycles.
- Subjective interpretation of structural definitions between Census Field Officers.
- Changes in collection procedures for mailout areas resulted in data differences between

[12] www.business.qld.gov.au/running-business/support-assistance/mapping-data-imagery/data/digital-cadastral

[13] www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1270.0.55.001~July%202016~Main%20Features~Mesh%20Blocks%20(MB)~10012

[14] www.abs.gov.au/ausstats/abs@.nsf/mf/2074.0

[15] www.abs.gov.au/ausstats/abs@.nsf/Lookup/2900.0main+features101352016

2011 and 2016, although there were no classification or definition changes to dwelling structure. This is noticeable in the separate house, semi-detached, row or terrace house, townhouse categories, as well as flat or apartment in a one or two-storey block.

- Flats attached to houses are at a high risk of being missed in canvassing as they are hard to identify – this is also the case for flats above shops.

The 2016 base year estimate of 164,408 residential dwellings in Moreton Bay region is 99.9% aligned with the *ShapingSEQ* Regional Plan's baseline estimate of 164,559 in 2017.[16] This alignment is important as ShapingSEQ is used as a benchmark to calculate future dwelling needs.

Finally, the base year dwelling mix estimates were compared with Unitywater base year dwelling mix estimates based on planning assumptions in the 2019 Unitywater Netserv plan. Unitywater planning assumptions are publicly available in their online mapping tool.[17] Comparison with Unitywater's independent base year dataset, as a separate and independently created lot level assessment of dwellings by the separate water and sewer utility provider of Moreton Bay Region is another benchmark to test the accuracy of the LGIP's dwelling mix. This comparison[18] revealed more than 99% alignment in dwelling mix categorisation. This provides a high degree of confidence in 2016 base year LGIP dwelling mix estimates as an accurate base for future dwellings and population forecasts.

5.1.2 Existing population

The 2016 base year population is calculated from multiplying existing dwelling types by occupancy rate (people per dwelling). Two key sources for occupancy rates are the 2016 Census and QGSO population projections. Different occupancy rates exist for different dwelling types and each ASGS SA2[19], and vary over time. Council's planning assumptions use 64 different occupancy rates for any given year cohort, resulting in more than 300 different values in the planning assumptions database.

Further research[20] analysed differences between Census and QGSO occupancy rates; Census occupancy rates for base year dwelling estimate produced the most accurate results. The 2016 estimated resident population (ERP)[21] figure was used as the LGA target base year population figure. Using the Census occupancy rates with LGIP2 2016 base year dwelling figures resulted in 99.8% alignment with ABS ERP for Moreton Bay LGA for 2016. This provides a high degree of confidence in using the 2016 LGIP base year population figure to determine existing base year infrastructure demand.

5.2 Establish the ultimate residential yield

5.2.1 Ultimate dwelling capacity

The assumptions required for doing a dwelling capacity analysis are:

- Land use suitability
- Developable area
- Dwelling density.

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[16] planning.dsdmip.qld.gov.au/planning/better-planning/state-planning/regional-plans/seqrp

[17] www.unitywater.com/building-and-developing/reference-library (A20472414 base year comparison analysis)

[19] www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1270.0.55.001~July%202016~Main%20Features~Statistical%20Area%20Level%202%20(SA2)~10014

[21] www.qgso.qld.gov.au/statistics/theme/population/population-estimates/regions#current-release-estimated-resident-population

No density calculation is required when using known or reasonably known yields from reliable sources, such as development applications. This is applicable to most growth assumed to 2021 and 2026.

Also, The Mill at Moreton Bay Priority Development Area (PDA) planning assumptions reflect the development scheme's intent and development criteria. Assumed yields reflect The Mill PDA Planning Assumptions Review Report[22] (September 2019) as an example of separate assessment incorporated into a region-wide database.

The developable area is multiplied by dwelling density to give the ultimate dwelling yield for all other land parcels.

5.2.1.1 Land use suitability assumption

The first residential dwelling capacity assumption involves determining what land is suitable for potential future residential purposes. The following Planning Scheme zones are the first source of information used to determine suitable land parcels:

- General residential
- Township
- Centre
- Rural residential
- Emerging community (subject to meeting Council land use and infrastructure planning needs and consequential financial sustainability considerations)
- Rural (limited).

Council's Planning Scheme does not spot zone; for example, the general residential zone includes non-residential uses that support surrounding residential uses, such as schools. The next step involves identifying non-residential committed uses to ensure Council does not assume future residential development potential on land used for schools, churches or other committed uses. The first pass of identifying committed uses involves cross referencing the Planning Scheme overlay community activities and neighbourhood hubs which maps most community type uses such as childcare centres, schools, small shops and similar uses. Following visual inspection and review, almost all these sites are marked as not suitable for future residential use in the planning assumptions database despite being zoned as general residential.

The next source used is Council's rating land use database which has more than 90 rating categories. This information helps identify committed non-residential uses on properties that should not reasonably be assumed for future residential redevelopment, such as service stations, professional offices and utility installations.

An additional review includes the urban neighbourhood precinct, which supports high density redevelopment, to discount any recently developed lots (common along the new Redcliffe rail corridor) or those redeveloped to a higher use (typical on Redcliffe peninsula). These are flagged as already developed at capacity, even if the Planning Scheme may allow higher densities.

5.2.1.2 Developable area assumption

The first assumption on land use suitability above excludes many land parcels not considered developable due to existing and committed uses. This is separate and additional to constraints mapping.

Council uses the Planning Scheme map overlays to identify constrained land and remaining developable land for its constraints mapping when there is no site/application data or available information through structure planning work. Table 2 below lists the Planning Scheme overlays considered constrained and not likely to be developed or provide significant yield for residential and non-residential development.

Overlay	Overlay subcomponent		Constrained for residential purposes	Constrained for non-residential purposes
Coastal hazard - erosion prone area	Erosion prone area (State Planning Policy)	Development generally not supported	100%	100%
Coastal hazard - storm tide inundation	High risk storm tide inundation area	Development generally not supported	100%	100%
	Medium risk storm tide inundation area	Residential development generally not supported	100%	0%
Community activities and neighbourhood hubs	Community activity	Development is unlikely	100%	100%
	Neighbourhood hub	Further development is unlikely in medium term	100%	100%
Environmental areas	Matters of local environmental significance (MLES)	Development generally not supported	100%	100%
	Matters of state environmental significance (MSES)	Development generally not supported	100%	100%
Extractive resources	Resource processing area	Development not supported	100%	100%
	Separation area	Residential development generally not supported	100%	0%
Flood hazard	High risk flood hazard area	Development not supported	100%	100%
	Medium risk flood hazard area	Development is unlikely	100%	100%
Infrastructure buffers	Bulk water supply infrastructure buffer – 20m	Cannot be developed for residential purposes	100%	100%
	Electricity supply substation buffer - 10m	Cannot be developed for residential purposes	100%	100%
	High voltage electricity line buffer	Cannot be developed for residential purposes	100%	100%
	Lake Samsonvale and Lake Kurwongbah setback – 400m	Development generally not supported	100%	100%

Overlay	Overlay subcomponent		Constrained for residential purposes	Constrained for non-residential purposes
	Landfill site	Development not supported	100%	100%
	Landfill site buffer - 200m	Residential development generally not supported	100%	0%
	Property containing bulk water facility	Cannot be developed	100%	100%
	Pumping station buffer	Redevelopment unlikely, greenfield areas not affected.	100%	0%
	Wastewater treatment site	Development not supported	100%	100%
	Wastewater treatment site buffer - 400m	Residential development generally not supported	100%	0%
Riparian and wetland setbacks	Riparian and wetland setbacks	Development generally not supported	100%	100%
	Wetland	Development not supported	100%	100%
Road hierarchy	Proposed arterial (15m buffer used = 30m corridor)	Land likely to be dedicated to infrastructure	100%	100%
	Proposed district collector (15m buffer used = 30m corridor)	Land likely to be dedicated to infrastructure	100%	100%
	Proposed local collector (15m buffer used = 30m corridor)	Land likely to be dedicated to infrastructure	100%	100%
	Proposed sub-arterial (15m buffer used = 30m corridor)	Land likely to be dedicated to infrastructure	100%	100%
Strategic framework - regional infrastructure map	Unformed road (Strategic Framework Road Investigation Corridor)	Land likely to be dedicated to infrastructure	100%	100%
Rural residential lot sizes	No further reconfiguration	Development not supported	100%	N/A

Table 2: Constrained lands assumption

The overlay map layers are combined in a GIS to create a single constraints layer, used to subtract land area from each parcel, leaving the developable area in the database.

Constraints mapping and developable area assumptions tend to underestimate developable area because some of the initial mapped constraints can be overcome through the detailed development design/assessment process.

It should also be noted that the ShapingSEQ Growth Monitoring program is reviewing how to best determine constraints across SEQ.[23] The recommendations being considered could lead to a softening

[23] planning.dsdmip.qld.gov.au/planning/better-planning/state-planning/regional-plans/seqrp/lsdm?release=2019&page=best-practice-research

of the constraints, a more flexible approach to determining developable area, resulting in more land considered potentially developable.

5.2.1.3 Dwelling density assumption

Two approaches are used when assigning a realistic density to land:

1. Redevelopment: Site density is used in established areas where it is reasonable to assume that no developable area needs to be set aside for public uses, such as areas considered for redevelopment and infill. A sample density is used where there is an observable development trend (based on sampling outcomes of recently completed development within the same area and development approvals).
2. Greenfield: Net density is used in larger developable areas where land is expected to be set aside for construction of new roads and local parkland. Net density applied to developable areas is based on sampling existing trends from similar developments, zones, precincts and areas. The value chosen represents a realistic and reasonable outcome based on existing trends.

Realistic densities are used in place of the Planning Scheme's ultimate permissible densities.[24] Realistic achievable densities represent on average what the market is achieving or likely to achieve in a particular zone or precinct. For example, the next generation precinct in the Planning Scheme allows for a maximum dwelling density of 75dw/ha[25], however observed development trends and approvals indicate that the most common density achieved ranges from 15-50dw/ha (depending on location). Using a value that represents the indicative average trends instead of the assumed ultimate density ensures that dwelling capacity is not unrealistically overestimated.

[24] This is consistent with MGR (2017), 32.5 dsdmipprd.blob.core.windows.net/general/MGRBook_FINALweb.pdf (page 45) which states: *"The planned density must reflect the realistic level of development (ultimate development) that can be achieved for the premises."*

[25] consult.moretonbay.qld.gov.au/kse/event/4208/section/ID-2693320-TABLE-6.2.6.3.2#ID-2693320-TABLE-6.2.6.3.2

		Density Assumption (dw/ha)	
		Greenfield Area	Redevelopment & Infill
Planning Scheme Precinct / Zone	***Criteria***	**Net Density (dw/ha)**	**Site Density (dw/ha)**
Urban Precinct	*All other eg. Burp, D'bay etc..*	45	50
Urban Precinct	*Surrounding PAC (Cab Morayfield)*	45	85
Urban Precinct	*Surrounding SMAC (Strathpine)*	n/a	70
Urban Precinct	*Redcliffe within 400m of foreshore*	n/a	110
Urban Precinct	*MBRL & PDA (Lawnton to Kippa)*	75	75
Next Generation Precinct		18	36
Next Generation Precinct	*Redcliffe within 400m of foreshore*	25	66
Next Generation Precinct	*Within 800m of DC or Train Station*	25	50
Suburban Precinct		11	23
Coastal Village Precinct		11	11
Township Residential Precinct		11	15
Hamlet Precinct		11	15
Emerging Community Zone	*Next Gen Place Type*	18	40
Emerging Community Zone	*Urban Place Type*	45	60
Caboolture Centre Precinct		n/a	85
District Centre Precinct		n/a	45
Morayfield Centre Precinct		n/a	70
Strathpine Centre Precinct		n/a	70
Redcliffe Centre Precinct		n/a	245
North Lakes Activity Centre		n/a	100
Rural Residential Zone	*Rural Res RAL Overlay - 2ha*	0.5	0.5
Rural Residential Zone	*Rural Res RAL Overlay - 6000*	1.5	1.66
Rural Residential Zone	*Rural Res RAL Overlay - 3000*	3	3.33
Cab West Urban		35	n/a
Cab West Next Gen		18	n/a
Cab West Town Centre Res		70	n/a
Cab West Rural Living		3	n/a

Table 3: Dwelling density assumed

Note: Cab West categorisation as per Caboolture West Planning Assumptions, January 2014 (Structure Plan - Appendix P).

The criteria above have been applied to distinguish sub-regional variation within the same zone/precinct. Additional subcategories were used for urban and next generation neighbourhood precincts as they contain most of the growth. These subcategories used criteria from density sampling patterns.

5.2.2 Ultimate population capacity

The ultimate population capacity is determined by the ultimate number and type of dwellings. In addition to the ultimate dwelling capacity estimate, the key assumptions required for a population capacity analysis are:

- Dwelling mix (housing typology)
- Occupancy rate.

5.2.2.1 Dwelling mix assumption

Dwelling mix assumptions are derived from sampling and analysis of existing development trends in each zone/precinct, which are used to determine future dwelling proportions of attached and detached dwellings. The assumption on dwelling mix is also guided by the Planning Scheme policy intent. For example:

> "Council's vision for next generation neighbourhoods is that they become walkable

neighbourhoods made up of a mix of housing options."[26]

And

> "Next generation neighbourhoods are expected to change in the next 10-20 years. This change may be gradual in established areas but immediate in new or emerging areas.
>
> Expected changes include:
>
> A mix of housing (eg detached houses on traditional as well as small residential lots, duplexes, townhouses or apartments etc)."

Assumptions on dwelling mix also have regard to state government policy intent in *ShapingSEQ*[27]. For example:

> "Provide housing choice by delivering a mix of dwelling types and sizes in consolidation and expansion locations consistent with the strategies in elements 1-3."

And

> "Plan for and deliver a greater range of missing middle housing forms."

Attached dwellings include:

- Duplexes
- Dual occupancy
- Terrace houses
- Townhouses
- Row houses
- Flats
- Multiple dwellings
- Units
- Apartments

Detached dwellings are separate dwellings with land.

[26] www.moretonbay.qld.gov.au/Services/Building-Development/Planning-Schemes/MBRC/Info-Sheets/Next-Generation-Neighbourhood-Place-Type

[27] https://dilgpprd.blob.core.windows.net/general/shapingseq.pdf page 40.

		Dwelling Mix Assumption			
		Greenfield Area		Redevelopment & Infill	
Planning Scheme Precinct / Zone	***Criteria***	**Attached %**	**Detached %**	**Attached %**	**Detached %**
Urban Precinct	*All other eg. Burp, D'bay etc..*	75	25	100	0
Urban Precinct	*Surrounding PAC (Cab Morayfield)*	100	0	100	0
Urban Precinct	*Surrounding SMAC (Strathpine)*	n/a	n/a	100	0
Urban Precinct	*Redcliffe within 400m of foreshore*	n/a	n/a	100	0
Urban Precinct	*MBRL & PDA (Lawnton to Kippa)*	80	20	100	0
Next Generation Precinct		20	80	60	40
Next Generation Precinct	*Redcliffe within 400m of foreshore*	40	60	100	0
Next Generation Precinct	*Within 800m of DC or Train Station*	40	60	100	0
Suburban Precinct		10	90	20	80
Coastal Village Precinct		0	100	0	100
Township Residential Precinct		0	100	0	100
Hamlet Precinct		0	100	0	100
Emerging Community Zone	*Next Gen Place Type*	20	80	60	40
Emerging Community Zone	*Urban Place Type*	75	25	100	0
Caboolture Centre Precinct		n/a	n/a	100	0
District Centre Precinct		n/a	n/a	100	0
Morayfield Centre Precinct		n/a	n/a	100	0
Strathpine Centre Precinct		n/a	n/a	100	0
Redcliffe Centre Precinct		n/a	n/a	100	0
North Lakes Activity Centre		n/a	n/a	100	0
Rural Residential Zone	*Rural Res RAL Overlay - 2ha*	0	100	0	100
Rural Residential Zone	*Rural Res RAL Overlay - 6000*	0	100	0	100
Rural Residential Zone	*Rural Res RAL Overlay - 3000*	0	100	0	100
Cab West Urban		60	40	n/a	n/a
Cab West Next Gen		20	80	n/a	n/a
Cab West Town Centre Res		80	20	n/a	n/a
Cab West Rural Living		0	100	n/a	n/a

Table 4: Dwelling mix assumed

5.2.2.2 Occupancy rate assumption

Occupancy rates are the assumption of number of people per dwelling. According to the 2016 Census, there are on average 2.7 people per household[28] across Moreton Bay Region.

There is a lot of sub-regional variation within Moreton Bay Region. For example, the average people per household for Bribie Island SA2 is 2.1[29] whereas for North Lakes-Mango Hill SA2 it is 3.0[30]. By way of example, with more than 164,000 dwellings, to give or take an occupancy rate difference of only 0.5 is equivalent to give or take 80,000 population (approximately eight years of population growth). Therefore, it is important to have accurate occupancy rates.

Occupancy rates are most sensitive to dwelling type. Detached dwellings have higher occupancy rates than attached dwellings. Analysis of Census occupancy rates per SA2 regarding sample size of dwelling types in each SA2 and comparison with QGSO occupancy rates determined that Census occupancy rates be used for 2016 base year. For future years, the rate of change in occupancy rates was sourced from QGSO 2018 Population Projections[31].

[28] quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/LGA35010?opendocument
[29] quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/313011363?opendocument
[30] quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/314021390?opendocument
[31] www.qgso.qld.gov.au/issues/3001/qld-government-household-projections-methodology-2018-edn.pdf

	Detached dwellings - occupancy rates assumed					
SA2	2016	2021	2026	2031	2036	Ultimate
Albany Creek	3.00	2.94	2.87	2.80	2.73	2.80
Beachmere - Sandstone Point	2.57	2.61	2.66	2.70	2.74	2.79
Bray Park	2.90	2.85	2.81	2.77	2.72	2.77
Bribie Island	2.19	2.16	2.14	2.11	2.09	2.11
Burpengary	2.93	2.96	2.99	3.02	3.06	3.10
Burpengary - East	3.20	3.26	3.24	3.22	3.21	3.22
Caboolture	2.93	2.84	2.79	2.74	2.69	2.74
Caboolture - South	2.96	2.91	2.89	2.88	2.86	2.88
Cashmere	3.17	3.14	3.12	3.10	3.07	3.10
Clontarf	2.54	2.51	2.52	2.52	2.53	2.54
Dakabin - Kallangur	2.85	2.79	2.76	2.73	2.70	2.73
Dayboro	2.98	2.95	2.96	2.96	2.97	2.99
Deception Bay	2.71	2.67	2.64	2.60	2.57	2.60
Eatons Hill	3.21	3.24	3.25	3.26	3.27	3.29
Elimbah	3.26	3.26	3.27	3.27	3.28	3.29
Lawnton	2.75	2.70	2.66	2.61	2.56	2.61
Margate - Woody Point	2.49	2.50	2.52	2.55	2.57	2.61
Morayfield	3.12	3.13	3.15	3.17	3.18	3.21
Morayfield - East	2.98	2.99	3.01	3.03	3.04	3.07
Murrumba Downs - Griffin	2.98	2.95	2.96	2.96	2.96	2.97
Narangba	3.22	3.23	3.24	3.25	3.26	3.28
North Lakes - Mango Hill	3.17	3.19	3.22	3.23	3.26	3.29
Petrie	2.85	2.78	2.71	2.63	2.56	2.63
Redcliffe	2.52	2.55	2.58	2.61	2.64	2.67
Rothwell - Kippa-Ring	2.79	2.75	2.70	2.65	2.60	2.65
Samford Valley	3.07	3.06	3.07	3.08	3.09	3.11
Scarborough - Newport	2.52	2.48	2.45	2.41	2.38	2.41
Strathpine - Brendale	2.87	2.83	2.82	2.80	2.80	2.80

	Detached dwellings - occupancy rates assumed					
SA2	2016	2021	2026	2031	2036	Ultimate
The Hills District	2.88	2.83	2.80	2.77	2.74	2.77
Upper Caboolture	3.11	3.10	3.10	3.09	3.08	3.09
Wamuran	3.01	3.00	3.01	3.01	3.01	3.03
Woodford - D'Aguilar	2.67	2.63	2.61	2.60	2.59	2.60

Table 5 - Detached occupancy rates assumed by SA2

	Attached dwellings - occupancy rates assumed					
SA2	2016	2021	2026	2031	2036	Ultimate
Albany Creek	1.57	1.46	1.46	1.45	1.44	1.45
Beachmere - Sandstone Point	1.74	1.68	1.75	1.82	1.89	1.97
Bray Park	1.91	1.90	1.90	1.89	1.88	1.89
Bribie Island	1.47	1.46	1.48	1.49	1.51	1.53
Burpengary	2.03	2.02	2.02	2.01	2.00	2.01
Burpengary - East	2.13	2.05	2.04	2.03	2.03	2.03
Caboolture	1.82	1.78	1.83	1.89	1.95	2.02
Caboolture - South	1.89	1.88	1.88	1.87	1.87	1.87
Cashmere	2.14	2.22	2.23	2.24	2.25	2.27
Clontarf	1.68	1.72	1.77	1.81	1.86	1.91
Dakabin - Kallangur	1.99	1.97	1.94	1.91	1.89	1.91
Dayboro	1.42	1.41	1.41	1.40	1.40	1.40
Deception Bay	2.12	2.17	2.17	2.16	2.16	2.16
Eatons Hill	1.57	1.83	1.83	1.82	1.82	1.82
Elimbah	1.42	1.42	1.41	1.41	1.40	1.41
Lawnton	1.85	1.87	1.89	1.91	1.93	1.95
Margate - Woody Point	1.64	1.62	1.63	1.63	1.63	1.64
Morayfield	1.89	1.76	1.78	1.79	1.80	1.82
Morayfield - East	2.13	2.14	2.16	2.17	2.18	2.20
Murrumba Downs - Griffin	2.11	2.11	2.10	2.09	2.09	2.09
Narangba	2.59	2.51	2.44	2.36	2.29	2.36
North Lakes - Mango Hill	2.14	2.14	2.14	2.14	2.14	2.14

	Attached dwellings - occupancy rates assumed					
SA2	2016	2021	2026	2031	2036	Ultimate
Petrie	1.84	1.87	1.91	1.95	2.00	2.05
Redcliffe	1.57	1.60	1.65	1.70	1.74	1.80
Rothwell - Kippa-Ring	1.86	1.87	1.88	1.89	1.90	1.91
Samford Valley	1.42	1.42	1.41	1.41	1.40	1.41
Scarborough - Newport	1.59	1.64	1.70	1.75	1.80	1.86
Strathpine - Brendale	2.03	2.05	2.07	2.09	2.12	2.14
The Hills District	1.92	1.84	1.83	1.82	1.82	1.82
Upper Caboolture	1.89	1.83	1.84	1.85	1.87	1.89
Wamuran	1.42	1.43	1.44	1.45	1.46	1.48
Woodford - D'Aguilar	1.39	1.32	1.32	1.31	1.31	1.31

Table 6: Attached occupancy rates assumed by SA2

Population capacity calculations for emerging community zoned areas assumed 2.9 people for detached dwellings and 1.9 people for attached dwellings.

5.3 Determine dwelling and population targets for planning horizon

There are two primary sources to consider when setting future dwelling and population targets at LGA and sub-regional levels.

- 2017 ShapingSEQ, Consolidation and expansion dwelling benchmarks
- QGSO population projections, 2018 edition.

The combination of above sources presents a range of targets.

5.3.1 ShapingSEQ dwelling benchmarks

2017 ShapingSEQ sets future dwelling benchmarks for Moreton Bay region for 2031 and 2041 which are divided into two reporting areas: consolidation and expansion. A key *ShapingSEQ* implementation action is the annual Growth Monitoring Program, with the Land supply and development monitoring (LSDM)[32] report as one of its deliverables. The LSDM monitors dwelling supply against the consolidation and expansion dwelling supply benchmarks.

[32] planning.dsdmip.qld.gov.au/planning/better-planning/state-planning/regional-plans/seqrp/lsdm

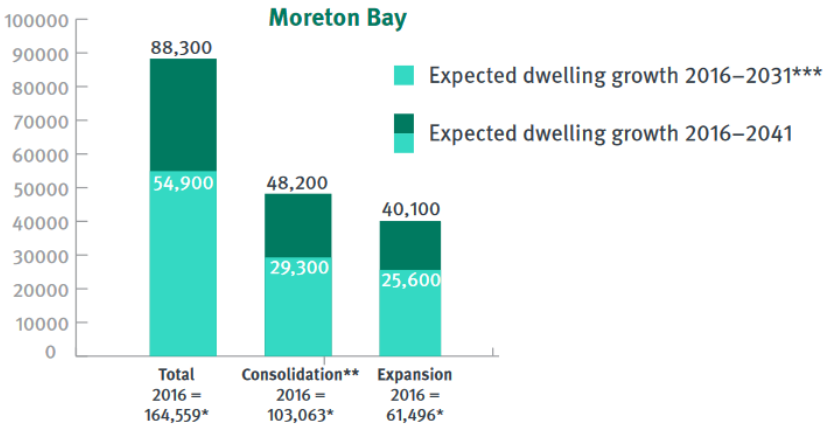


Figure 2: Dwelling benchmarks in ShapingSEQ

The 2036 equivalent value is interpolated by selecting the mid-point between 2031 and 2041, represented in tables 7 and table 8 below.

	2031	*2036*	2041
Consolidation	29,300	*38,750*	48,200
Expansion	25,600	*32,850*	40,100
Total	**54,900**	***71,600***	**88,300**

Table 7: Interpolated ShapingSEQ 2036 new dwelling benchmarks

	2031	*2036*	2041
Consolidation	132,363	*141,813*	151,263
Expansion	87,096	*94,346*	101,596
Total	**219,459**	***236,159***	**252,859**

Table 8: Interpolated ShapingSEQ 2036 total dwelling benchmarks

5.3.2 Queensland Government Statistician's Office population projections

QGSO population projections (2018 edition)[33] consist of low, medium and high series projections by SA2 areas. There are 32 SA2 areas in Moreton Bay Region.

	2036
Low series	604,365
Medium series	640,697
High series	683,013

Table 9: QGSO Moreton Bay Region population projections for 2036.

Projected future dwellings need to exceed the *ShapingSEQ* dwelling benchmarks for consolidation and

[33] www.qgso.qld.gov.au/statistics/theme/population/population-projections/regions#current-release-qld-population-projections-regions-tables

expansion to achieve the 2036 planning horizon targets. Population targets need to consider the QGSO population projections in table 9.

5.4 Determining future residential development sequencing

Once the future capacity amount is calculated for all lots in the region, it is divided into take-up rates of dwelling growth, by lot, at five-year intervals to 2036. Lots are assigned a year they are assumed to be completed and occupied.

Growth rate assumptions for each growth front are determined from the current observable rate of dwelling production, the QGSO growth projections for each SA2, and the competing growth fronts within the same or adjacent area. A dwelling production rate for each SA2 was established for 2002 to 2017.[34] The average observed growth rate is maintained for future assumptions, where applicable.

Growth distribution and sequencing is determined by considering approved development applications (DA), current land use, and the age/condition of existing house stock. For sequencing:

- The first five years of growth (2016-2021) are determined by the approved development that is underway or operational works such as earthworks have begun. Nearmap imagery is used to check where DAs are progressing.
- The second five years of growth (2021-2026) are sequenced by the remaining DAs and approved growth fronts that span over longer periods, such as future stages of multi-stage estates.
- The third five years of growth (2026-2031) are sequenced by applying patterns from the first 10 years of growth onto lots assumed most likely to expect future development.

Assigning the year which future development is expected to be completed and occupied is different for short-term and mid to long term growth. These methods are outlined below.

5.4.1 Short-term residential growth to 2021 and 2026

Short-term growth consists of approved and committed development. Lots with recently observed growth are added into the residential planning assumptions database as part of Council's growth monitoring. This captures dwellings constructed since mid-2016, which are assigned 2021 in the planning assumptions database. It also includes new lots created as part of lot sealing, where the use and dwelling type is validated against rating land use, aerial imagery, street view review and DCDB lot structure.

Active developments are reviewed to determine dwelling production rate. If an approved development is underway, a portion of the approved yield may be assigned to 2021 based on trend of delivery regarding overall 2021 target for local area and LGA.

Growth assigned to 2026 consists mostly of approved development applications. Review of existing larger active developments continuing past mid-2021 determines what remaining capacity will be completed by 2026. That remaining yield is assigned to 2026. Development approvals that appear inactive (by visual inspection) are assigned as completed by 2026 or, in some cases, 2031. The scale and type of development is taken into consideration, as well as competing developments, the trend for a local area to absorb growth, and QGSO SA2 growth rates.

5.4.2 Mid-term residential growth to 2031

Growth assigned for 2031 includes unallocated development approvals not assumed completed by 2026, such as larger yielding multiple dwelling approvals, after considering the concentration of approvals, local development activity and take-up. There is also the remaining capacity of future stages of larger active

[34] Queensland Treasury Queensland regional database www.qgso.qld.gov.au/statistics/queensland-regions/regional-tools-statistics/queensland-regional-database

greenfield estates. Some of these are assumed to have remaining capacity after 2026, based on analysis of take-up rates, and are assigned as completed by 2031. This makes up almost 20% of growth between 2026-2031.

The mid-term growth period also makes assumptions about potential development of lots that may not yet have development approvals.

Guiding principles for allocation of growth included:

- Serviced by existing trunk infrastructure
- Proximity to infrastructure and services
- Development yield (determined by ultimate capacity of lot)
- The character of the potential development type (greenfield, infill or redevelopment)
- Previous development interest over land
- Local patterns and trends of development activity
- Historical demand
- QGSO population growth projections for the local SA2
- Council and state policy on achieving housing choice, mix and diversity objectives
- Age and condition of existing housing stock (redevelopment).

Examples of growth assumed include:

1. Caboolture West
2. Latent infill opportunities
3. Redevelopment of original detached housing stock.

Almost 9% of Caboolture West is assumed developed by 2031, this represents principles above in accounting for local development trends and historical demand for detached housing. It also aligns with Council's commitment to Caboolture West as a growth area through its status as a local plan in the Planning Scheme[35]. Caboolture West is also a high priority in the *ShapingSEQ* implementation program[36]. Future planning work for Caboolture West and Regional Growth Management Strategy 2041[37] areas will be reflected in future amendments to planning assumptions.

Latent infill opportunities include general residential zoned land, with a minimum lot size of 4,000m^2 and up to 1ha or more, that were historically developed as rural or park residential but are now serviced inside the priority infrastructure area and surrounded by urban areas. There are more than 600 lots greater than 4,000m^2 in the general residential zone (half of these are greater than 8,000m^2), serviced by infrastructure networks with development potential that form part of latent infill potential for mid-term and longer-term growth. As a potential supply of future housing, these lots did not have active development applications by July 2019.

Redevelopment of original detached housing stock starts to form part of assumed growth by 2031. This aligns with the principles above by generally being well-serviced by infrastructure and services, having reasonable yield potential due increased density and permissible height in the Planning Scheme,

[35] www.moretonbay.qld.gov.au/Services/Building-Development/Planning-Schemes/MBRC/Info-Sheets/Caboolture-West-Planning-Process

[36] planning.dsdmip.qld.gov.au/planning/better-planning/state-planning/regional-plans/ipra-projects?region=shapingseq

[37] www.moretonbay.qld.gov.au/Services/Reports-Policies/Regional-Growth-Management-Strategy-2041

particularly in the urban neighbourhood precinct.

This assumption aligns with *ShapingSEQ*[38] objectives:

- Chapter 3, Part A, Goal 1, Element 1: Efficient land use
- Chapter 3, Part A, Goal 1, Element 2: Focusing residential density
- Chapter 3, Part A, Goal 1, Element 4: Housing diversity
- Chapter 3, Part A, Goal 4, Element 11: Affordable living.

Redcliffe peninsula's redevelopment activity provides a precedent for further redevelopment. By 2031, most of the original housing stock on Redcliffe Peninsula's urban neighbourhood and next generation neighbourhood precincts will be approximately 70 years old, increasing the probability for renewal of housing stock. Recent large infrastructure investment, including the new Redcliffe rail corridor and duplication of Houghton Highway across Hays Inlet, create potential to facilitate population growth. New land supply within 10km of Redcliffe Peninsula will have mostly been depleted by 2031. New dwelling supply potential in this part of the region will therefore increasingly consider redevelopment. This is consistent with urban renewal observed in other parts of South East Queensland. Therefore, an assumption has been made for a moderate increase in the rate of redevelopment compared to historical trend, due to the combination of factors that potentially supports this. It is also considered responsible to plan for potential infrastructure upgrades required to support the potential demand from future land use intent set out by the Planning Scheme.

Other sources of mid-term and long-term growth include the development of the Mill PDA wider urban precinct[39] and the established historical trend of rural residential lot subdivision. The Planning Scheme and remaining capacity supports the continuation of this rural residential subdivision trend which make up approximately 10% of observed dwelling growth[40] .

5.4.3 Longer term growth to 2036

The allocation of growth for 2036 cohort is informed by the same principles that were used in assigning growth in 2031 cohort.

To determine the significance of a particular density assumption Table 10 below has been prepared which gives a percentage contribution that is relied upon for a particular density assumption category up to 2036 and ultimate. This excludes short term growth which does not rely on density calculations.

Short term growth accounted for in approved and committed development activity represents about 50% of dwelling growth assumed to 2036 and about 25% assumed to ultimate. Table 10 and 11 below list the precincts which reflect the balance of assumed new dwelling growth (the remaining 50% to 2036), and relative proportion of precincts (based on density assumption from Table 3) contributing to dwelling growth beyond known yields (balance of new dwellings) to 2036.

[38] dilgpprd.blob.core.windows.net/general/shapingseq.pdf

[39] www.moretonbay.qld.gov.au/Services/Building-Development/Planning-Schemes/The-Mill-PDA

[40] statistics.qgso.qld.gov.au/rlda-profiles

Dwelling growth supply types that rely on density assumptions, applicable to non-DA growth (mostly beyond 2026)					
		% Dwelling Growth to 2036		% Dwelling Growth to Ultimate	
Planning Scheme Precinct / Zone	***Criteria***	**Greenfield Area**	**Redevelopment & Infill**	**Greenfield Area**	**Redevelopment & Infill**
Urban Precinct	*All other eg. Burp, D'bay etc..*	0.2%	1.8%	0.1%	2.8%
Urban Precinct	*Surrounding PAC (Cab Morayfield)*	n/a	2.8%	n/a	2.7%
Urban Precinct	*Surrounding SMAC (Strathpine)*	n/a	0.6%	n/a	0.6%
Urban Precinct	*Redcliffe within 400m of foreshore*	n/a	2.7%	n/a	2.4%
Urban Precinct	*MBRL & PDA (Lawnton to Kippa)*	2.2%	5.1%	1.3%	6.1%
Next Generation Precinct		5.9%	0.8%	3.0%	2.3%
Next Generation Precinct	*Redcliffe within 400m of foreshore*	n/a	2.2%	n/a	3.9%
Next Generation Precinct	*Within 800m of DC or Train Station*	2.8%	2.9%	1.4%	8.8%
Suburban Precinct		1.5%	3.5%	0.7%	4.0%
Coastal Village Precinct		0.1%	0.1%	0.1%	0.1%
Township Residential Precinct		0.6%	0.3%	0.4%	0.6%
Hamlet Precinct		0.0%	n/a	0.0%	n/a
Emerging Community Zone	*Next Gen Place Type*	1.3%	0.1%	7.9%	0.2%
Emerging Community Zone	*Urban Place Type*	n/a	1.2%	1.3%	1.4%
Caboolture Centre Precinct		n/a	0.2%	n/a	0.1%
District Centre Precinct		n/a	0.3%	0.1%	0.3%
Morayfield Centre Precinct		n/a	0.2%	n/a	0.1%
Strathpine Centre Precinct		0.1%	0.3%	0.2%	0.2%
Redcliffe Centre Precinct		n/a	1.1%	n/a	0.9%
North Lakes Activity Centre		n/a	n/a	n/a	0.1%
Rural Residential Zone	*Rural Res RAL Overlay - 2ha*	0.2%	0.2%	0.1%	0.2%
Rural Residential Zone	*Rural Res RAL Overlay - 6000*	0.2%	0.1%	0.2%	0.3%
Rural Residential Zone	*Rural Res RAL Overlay - 3000*	0.9%	0.4%	0.5%	1.5%
Cab West Urban		n/a	n/a	3.0%	n/a
Cab West Next Gen		3.9%	n/a	12.7%	n/a
Cab West Town Centre Res		n/a	n/a	0.3%	n/a
Cab West Rural Living		n/a	n/a	0.4%	n/a

Table 10: Dwelling growth supply types that rely on density assumptions (non-DA growth)

Summary Growth to 2036		
Designation	**Status**	**Contribution**
Urban Neighbourhood Precinct	Assumed	15.4%
Next Generation Precinct	Assumed	14.6%
Low Density Residential Precincts	Assumed	6.1%
Emerging Community Zone	Assumed	6.5%
Centre Zone (District or above)	Assumed	2.2%
Rural Residential Zone	Assumed	2.1%
Allready Approved Development (All Zones)	Committed	52.3%
Other	Assumed	0.8%
Total		**100.0%**

Table 11: Summary of residential growth apportionment to 2036

In the above table, urban neighbourhood, next generation neighbourhood and suburban neighbourhood precincts represent most of the assumed growth. In the above assumptions:

- To 2036: 43% of new dwelling growth (beyond current approved and committed developments) occurs in greenfield areas and 57% in redevelopment and infill.
- Ultimate dwelling growth: 46% of new dwelling growth (beyond current approved and committed developments) occurs in greenfield areas and 54% in redevelopment and infill.

For the planning assumptions, approved and committed development mentioned in Table 11 includes:

- Development approvals (as at July 2019)
- Any existing housing observed to have been built after June 2016
- Vacant remnant residential lots ready to build a dwelling (eg Pacific Harbour, Bribie Island)
- Future stages in active multi-stage estates.

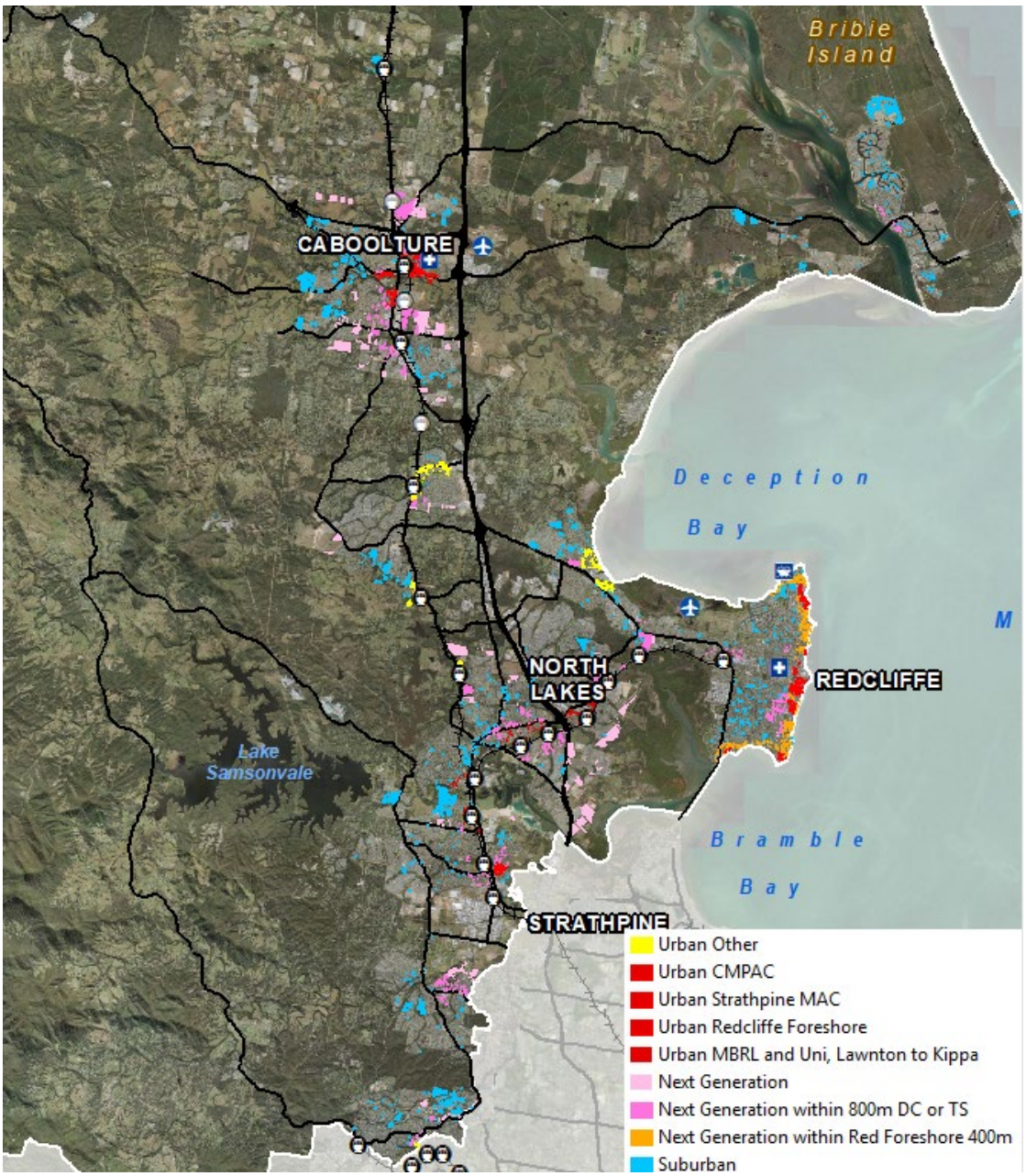


Figure 3: Example of areas of density variation (where used in calculating assumed yields) by similar precincts from Table 3.

Areas where a net density or site density multiplier has been used in Table 3 have been assigned by consideration of lot size, potential yield, clustering and location. Figure 4 below shows examples of where net density and site density multiplier applies.

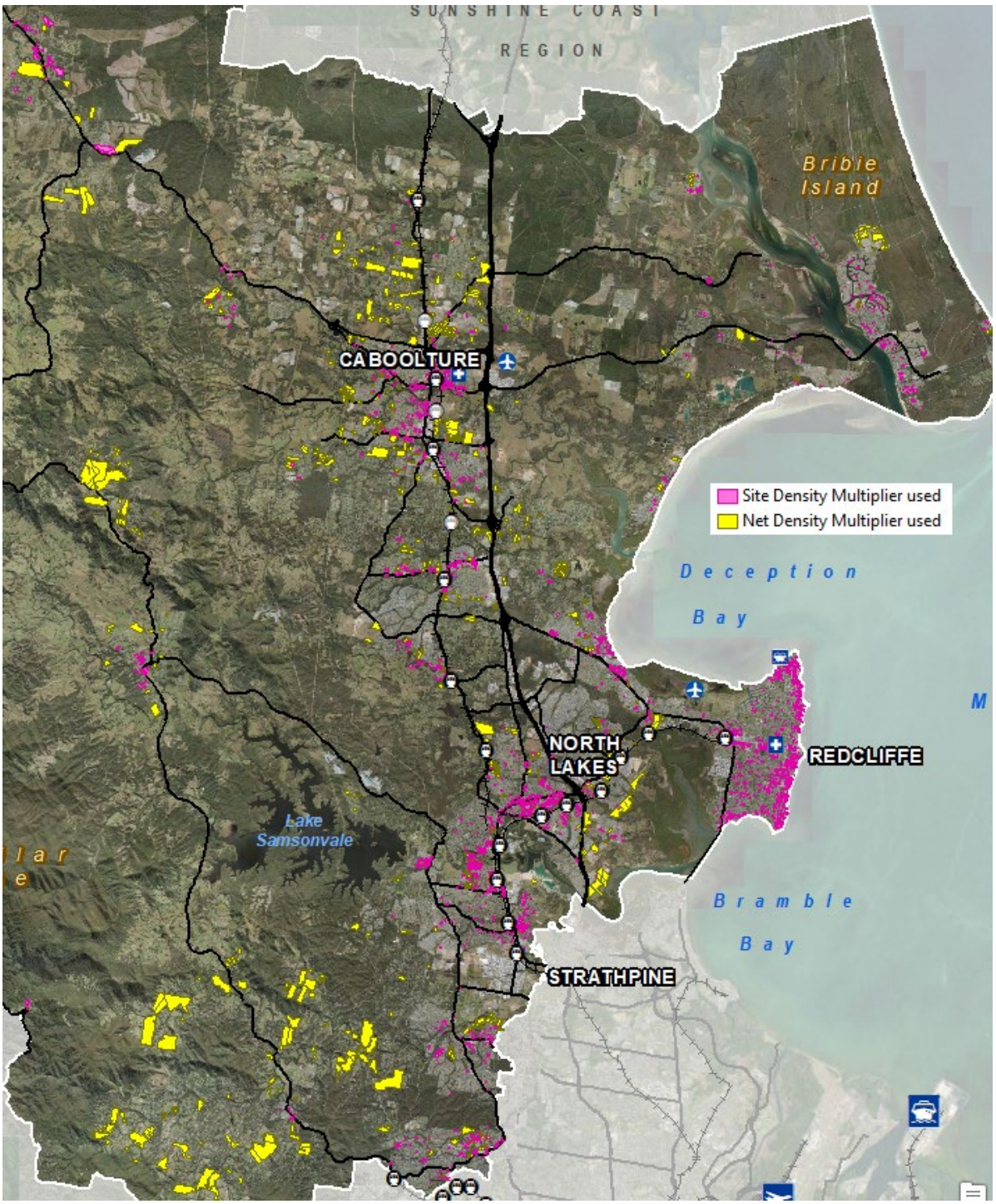


Figure 4: Example of where density multiplier varies based on characteristics of development either being most likely greenfield setting or of redevelopment/infill setting.

6 Methodology - employment

Employment assumptions are produced at the journey to work destination zone (DZN) and transport model zone levels which is the lowest level at which employment assumptions are prepared. The transport zone level assumptions provide a reasonable estimate of the base year employment distribution. Future employment assumptions are distributed to the transport zones based on an assessment of the employment growth in the DZN and developable land availability.

Destination zones area common statistical area used primarily for the reporting of place of work (POWP) data from the Census. The DZNs are not standard ABS catchments and are created by the Department of Transport for recording place of work data from the Census. Moreton Bay has 69 DZNs.[41]

Employment assumptions are prepared separately for the following industry sectors:

1. Retail
2. Commercial
3. Community
4. Industry
5. Construction
6. Rural and resource
7. Working from home and other dispersed employment.

Existing employment quantity, density, mix and distribution are more difficult to assign due to:

- Less precise information existing about where people work
- Poor data on types and locations of businesses
- Large range of uses permitted in employment zones
- Large fluctuations in employee density per use
- Constantly changing economic conditions.

Unlike housing, which is easier to measure by lot, employment assumptions are more complex as they are compiled on a transport zone basis, and specifically transport modelling which focuses on location and quantity of employment. There are more than 1,300 transport zones in Moreton Bay LGA at ASGS SA1[42] level. These are occasionally allocated into smaller levels in some key employment areas or where there is significant land use change. This smaller database of 1,300 areas is more efficient to compile and calibrate than a database with more than 180,000 lots.

In 2015, the SEQ Council of Mayors released the *2014 SEQ Report* (*NIEIR)* containing long run (2041) employment and economic forecasts for SEQ. In 2017 the Queensland Government included employment benchmarks in the *SEQ Regional Plan*. The ultimate employment totals in this report took into account these employment forecasts for Moreton Bay Region, and made adjustments informed by Council's investigations, detailed land use planning work, land supply studies, assessment of the availability of

[41] www.abs.gov.au/statistics/people/population/census-population-and-housing-destination-zones/latest-release

[42] www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1270.0.55.001~July%202016~Main%20Features~Statistical%20Area%20Level%201%20(SA1)~10013

developable land, limits to an area's employment capacity, and extrapolation of development patterns and trends to 2051.

Base year job assumptions start with DZN area estimates derived from the Census Journey to Work data and economic modelling from NIEIR, the AEC Group and other specialist reports available to Council.

Council also undertook a detailed examination of on-ground built form, and land use supplemented by:

- analysis of building footprints and site cover
- web searches of specific industries and activities that provide actual or average employee numbers or rates of employment for business type
- extensive use of Google street view and Nearmap to determine land use
- Council's land use rates database and familiarity with local areas.

Top-down estimates of employment and bottom-up assessment of land use and building footprints are combined to distribute jobs transport zones within each DZN. This area analysis indicates variability of job to GFA ratios across the region.

Where available, development application information that indicates possible new job opportunities (such as shops, schools, and other future uses) is included in subsequent periods based on the development's assumed timing.

Non-residential development assumptions start with local economic activity forecasts derived from various sources. Council based its 2013 forecast of local economic activity on a 2007 study by the National Institute of Economic and Industry Research (NIEIR).[43] This study provided the initial employment projections by SLA[44] which Council modified based on specific circumstances, observed economic activity and Planning Scheme aspirations for specific local areas.

Table 12: Comparison ANZSIC categories used by NIEIR and local government planning assumptions categories.

NIEIR projection categories		MBRC
ANZSIC1 category	**ANZSIC2 category**	**Planning assumptions categories**
Hospitality	Accommodation and restaurants	Retail
Retail	Food retailing	
	Household good retailing	
	Motor vehicle retailing and services	
Communication	Communication services	Commercial
Finance	Finance	
	Insurance	

[43] In 2007 the Office of Urban Management, Queensland Government and the Council of Mayors (SEQ) commissioned NIEIR to develop employment and economic projections for South East Queensland. These projections were developed at the small area level incorporating land use and valuation data supplied by local governments within a complex econometric model for SEQ as a sub-region of a global economy. Forecasts were provided to 2026 at five-year intervals.

[44] An SLA was a statistical local area similar to the current SA2.

NIEIR projection categories		MBRC
ANZSIC1 category	ANZSIC2 category	Planning assumptions categories
	Services to finance and insurance	
Property and business	Business services	
	Ownership of dwellings	
	Property services	
Other services	Other services	
	Personal services	
Cultural and recreational	Film, radio and television services	Community
	Libraries, museums and the arts	
	Sport and recreation	
Education	Education	
Government	Defence	
	Government administration	
Health and community	Community services	
	Health services	
Manufacturing	Chemicals and petroleum	Industry
	Food, beverage and tobacco	
	Machinery and equipment	
	Metal product manufacturing	
	Non-metallic minerals	
	Other manufacturing	
	Printing, publishing and recorded media	
	Textile, clothing, footwear and leather	
	Wood and paper product	
Transport	Air and space transport	
	Other transport	
	Rail transport	
	Road transport	
	Services to transport	
	Storage	

NIEIR projection categories		MBRC
ANZSIC1 category	ANZSIC2 category	Planning assumptions categories
	Water transport	
Utilities	Electricity and gas	
	Water	
Wholesale	Basic material wholesaling	
	Household good wholesaling	
	Machinery wholesaling	
Other services	Repair and maintenance	Construction
Construction	General construction	
Agriculture	Agriculture	Rural and resource
	Services to agriculture, forestry and fishing	
Mining	Coal mining, oil and gas	
	Other mining	
	Services to mining	

The planning assumption categories have been used in subsequent revised planning assumptions work.

A second NIEIR study in 2014 commissioned by NIEIR for the Queensland Government and the Council of Mayors.[45] examined several scenarios for local economic growth across SEQ and provided projections of expected employment and economic characteristics for each LGA at the SA2 level.

In 2016 the Queensland Government published regional employment projections from 2010-2011 to 2040-2041 for each LGA.[46] The report states (at page 4):

> *"Regional employment is provided on both a place of residence and place of employment basis, to allow considerations of possible changes to journey to work over time. For regions outside of South East Queensland, Census data show that there are only a small proportion of workers who travel across regions for work. However, in South East Queensland there are large flows of workers who travel across LGAs for work purposes."* [47]

Small area projections derived from the regional employment projections are incorporated into the Department of Transport and Main Roads (TMR) transport model.

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[45] NIEIR SEQ Report, Economic and employment activity forecasts 2014 (page i) : *"… the Queensland Government and the Council of Mayors (SEQ) partnered to develop long term forecasts of employment growth across SEQ for 2011 to 2041. The purpose of this project is to inform long term strategic planning and deliver rising standards of living for SEQ residents. Queensland Treasury and Trade (QTT) prepared population projections by small area (ABS Statistical Area Level 2 – SA2) and employment projections by industry by local government area (LGA). To inform LGAs on the specific localised distribution of employment and industries across their regions, the National Institute for Economic and Industry Research (NIEIR) was commissioned to develop sub-LGA employment projections based on their expertise in small area economic modelling."*

[46] Queensland Government Regional employment projections and methodology can be accessed at: www.qgso.qld.gov.au/products/tables/reg-employment-proj/index.php

[47] Queensland Government Regional employment projections 2010-11 to 2040-41: The modelling framework, page 4

In 2016 Council commissioned the AEC Group to undertake an industry land supply and demand study as part of its land supply monitoring program.[48] The study was primarily intended to establish the future demand for industry land in the local government area for 20 industry precincts, but also provided employment and GFA projections for 70 industry categories, summarising these projections in 19 industry categories.

The starting point for each industry's assumptions are the regional economic forecasts. In 2013 these forecasts were sourced from:

- 2007 NIEIR report commissioned by the Office of Urban Management, and the Council of Mayors (SEQ) to develop employment and economic projections for South East Queensland.[49]
- The Economic Associates Moreton Bay Industrial Land Demand Study (MBILDS) commissioned by the Department of Infrastructure and Planning.[50]
- The AEC Group Future Land Demand Study (FLDS) commissioned by MBRC. [51]
- The MBRC review of activity centres by Economic Associates.[52]
- The economy.id MBRC economic profile. [53]

Recent regional economic estimates and projections include:

- NIEIR SEQ Report 2014.[54]
- REMPLAN Economy - ABS place of work.[55]
- Australian Local Government Association, State of the regions report 2016-17.[56]
- *ShapingSEQ* Prosper report.[57]
- Queensland Government regional employment projections.[58]

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[48] Moreton Bay Regional Council Industry land supply and demand study 2017. The report state (at page ii): *"In undertaking this study, AEC undertook background research and consultation to understand the historic demand and consumption of industrial land, the availability of industrial land currently zoned for future development, and market and macro-economic forces anticipated to drive demand to 2041. Projections of employment demand for industrial land were then developed using AEC's employment projections model, factoring in findings from desktop research and consultation, and these results were converted to future land demand requirements to 2041 for comparison to industrial zoned land supply."*

[49] In 2007 the Office of Urban Management, Queensland Government and the Council of Mayors (SEQ) commissioned NIEIR to develop employment and economic projections for South East Queensland. These projections were developed at the small area level incorporating land use and valuation data supplied by local governments within a complex econometric model for SEQ as a sub-region of a global economy. Forecasts were provided to 2026 at five-year intervals.

[50] In 2009 The Department of Employment, Economic Development and Innovation commissioned Economic Associates to prepare the Moreton Bay Industrial Land Demand Study.

[51] The AEC Group Future Land Demand Study 2012 www.moretonbay.qld.gov.au/files/assets/public/services/building-development/mbrc-plan/background-studies/future-land-demand.pdf

[52] Economic Associates Commercial and Retail Sector Needs Assessment 2013, www.moretonbay.qld.gov.au/files/assets/public/services/building-development/mbrc-plan/background-studies/retailcommercialsectorsneedsassessmentreport.pdf

[53] economy.id.com.au/moreton-bay/home

[54] In 2013, the Queensland Government and Council of Mayors (SEQ) partnered to develop long term forecasts of employment growth across SEQ for 2011-2041 . The purpose of this project was to inform long term strategic planning and deliver rising standards of living for SEQ residents. The geographic allocations of employment by place of work at SA2 level were based on 2011 Census data, which has been adjusted to account for incomplete and inaccurate reporting. The report examined four scenarios for economic growth. MBRC received a copy of the report in 2015.

[55] REMPLAN Economy is an online platform that provides economic data estimates for the Moreton Bay Region based on data sourced from the Australian Bureau of Statistics and includes the 2016 ABS journey to work employment estimates by destination zone (DZN).

[56] Australian Local Government Association's State of the regions 2016 report by National Economics are is published annually by the Australian Local Government Association (ALGA). The 2016-17 SOR is the third report in the series and is intended to provide a framework for analysing regional development and identifying a regions economic development issues.

[57] Department of Infrastructure Local Government and Planning South East Queensland Regional Plan, 2017 ShapingSEQ Appendix A and Background Paper 2 Prosper October 2017

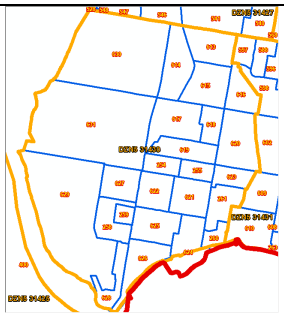
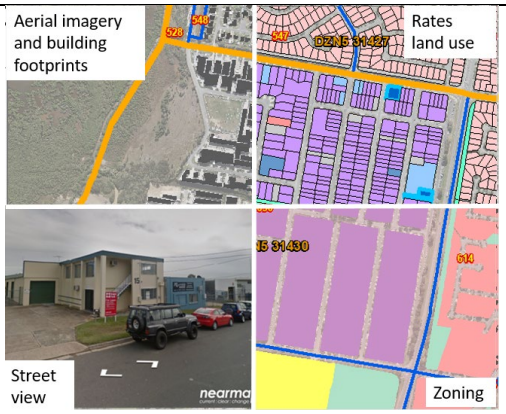
[58] Queensland Treasury 2016 www.qgso.qld.gov.au/products/tables/reg-employment-proj/index.php

- The AEC Group industry land supply and demand study 2017.[59]

Online resources include:

- IBISWorld market research reports www.ibisworld.com.au
- My School www.myschool.edu.au

The table below sets the overall methodology used to forecast employment across the region. This is an iterative process with the key components being the MBRSTM and the TMR transport zones with support and validation from aerial photography and the planning scheme.

1. Identify all component MBRSTM and TMR transport zones within each DZN.	
2. Collate all previous employment assumptions by corresponding DZN and component transport zone.	
3. View each transport zone using aerial imagery.	
4. Compare aerial imagery to Council Planning Scheme zonings, rates land use data, Australian business register, other land use identified by GIS analysis, and Google street view.	
5. Verify the land use against the previous base year assumptions using building footprints, online site specific data, development application data, industry specific employment benchmarks from reports and previous GIS analysis.	

[59] The AEC Group Industry Land Supply and Demand Study 2017 www.moretonbay.qld.gov.au/files/assets/public/services/building-development/industrial-land-supply-and-demand.pdf

6.	If land use and the previous assumptions are not consistent, adjust the previous assumptions based on the observed land use.
7.	Compare future employment projections to existing land use, developable area and assessed capacity to accommodate additional development.
8.	Allocate future employment growth where capacity exists based on previous growth assumptions or recent projections, if available. Limit employment assumptions accordingly if capacity does not exist.

Table 13: Approach taken for all industry categories

These employment forecasts are further refined and validated with the specifics of each industry sector. These varying approaches are discussed in the following sections by employment sector. The variations between the sectors are due to different factors that support each sector and available information sources to inform employment assumptions.

6.1 Retail employment

The distribution of retail jobs was initially based on the distribution of retail floor space in individual centres across the region as identified in studies by AEC Group in 2012[60] and Economic Associates in 2013[61]. Both studies included projections of future retail floor space requirements based on retail expenditure models linked to population projections.

Each transport zone was updated in 2016 by a GIS analysis of the non-residential floorspace, as well as reference to Council's rates land use data, aerial imagery, Google street view, web searches, and review of development approval data. Retail sites in each transport zone were subsequently assessed against:

- The earlier studies
- Growth limits based on assigned roles and functions in Council's centres network
- MBRC Planning Scheme zone and precinct provisions
- The proportion and type of retail activity to non-retail uses in a centre
- Using Nearmap to review signs of growth and change in the centre in previous periods
- The character of the area around the centre, prospects for growth and change in the surrounding area in the foreseeable future based on population projections and development activity
- The assessment of developable land available in each centre
- Development application information which might indicate proposals to expand the centre or establish a competing centre nearby
- Council structure planning investigations.

Retail employment projections were revised for each centre using the above assessment based on two considerations:

1. If the centre had prospects of further expansion and there was opportunity to accommodate additional GFA, the centre's retail employment increased in proportion to growth forecasts applied to the revised 2016 base year employment estimates.

[60] AEC Group Future Land Demand Study 2012 www.moretonbay.qld.gov.au/files/assets/public/services/building-development/mbrc-plan/background-studies/future-land-demand.pdf

[61] Economic Associates Commercial and Retail Sector Needs Assessment 2013 www.moretonbay.qld.gov.au/files/assets/public/services/building-development/mbrc-plan/background-studies/retailcommercialsectorsneedsassessmentreport.pdf and Centre Hierarchy Options 2013 www.moretonbay.qld.gov.au/files/assets/public/services/building-development/mbrc-plan/background-studies/cabwest-centres-hierarchy-options.pdf

2. Base year retail employment estimates were maintained if the centre had limited or no retail growth prospects, based on:

    a. Evidence of significant non-retail uses such as child care centres, other community uses, medical and office uses. If there was no forecast additional demand the retail floor space was expected to continue being shared with existing and possible future non-retail uses which limited opportunities for expansion of retail uses, or

    b. Expansion opportunities assessed to be restricted by site limitations, the nature of adjoining land uses or the prospects of a new competitive centre emerging, or

    c. The centre was assessed as not having future retail expansion prospects because of limited forecast growth in its catchment area.

Revised employment assumptions were distributed to transport zones which intersected with each centre based on the proportional distribution of building footprints and developable site area.

6.2 Commercial employment

The distribution of commercial jobs was also initially based on the distribution of commercial floor space in individual centres across the region as identified in studies by AEC Group in 2012[62] and Economic Associates in 2013[63]. Both studies included projections of future commercial floor space requirements linked to population projections.

Each transport zone was updated in 2016 by a GIS analysis of commercial floorspace, as well as reference to Council's rates land use data, aerial imagery, Google street view, web searches, and review of development approval data. Commercial sites in each transport zone were subsequently assessed against:

- The earlier studies
- Growth limits based on assigned roles and functions in Council's centres network
- MBRC Planning Scheme zone and precinct provisions
- The proportion and type of commercial activity to retail uses in a centre
- Using Nearmap to review signs of growth and change in the centre in previous periods
- The character of the area around the centre, prospects for growth and change in the surrounding area in the foreseeable future based on population projections and development activity
- The assessment of the developable land available in each centre
- Development application information which might indicate proposals to expand the centre or establish competing facilities nearby
- Council structure planning investigations.

Based on the above assessment of each centre,

Commercial employment projections were revised for each centre using the above assessment based on two considerations:

[62] The AEC Group Future Land Demand Study 2012 www.moretonbay.qld.gov.au/files/assets/public/services/building-development/mbrc-plan/background-studies/future-land-demand.pdf

[63] Economic Associates Commercial and Retail Sector Needs Assessment 2013, www.moretonbay.qld.gov.au/files/assets/public/services/building-development/mbrc-plan/background-studies/retailcommercialsectorsneedsassessmentreport.pdf and Centre Hierarchy Options 2013 www.moretonbay.qld.gov.au/files/assets/public/services/building-development/mbrc-plan/background-studies/cabwest-centres-hierarchy-options.pdf

1. If the centre had prospects of further expansion and there was opportunity to accommodate additional commercial GFA, employment in the centre was increased in proportion to earlier growth forecasts applied to the revised 2016 base year employment estimates.
2. Base year commercial employment estimates were maintained if the centre had limited or no commercial growth prospects, based on:
    a. Evidence of significant retail uses where commercial floorspace is expected to be shared with existing and possible future retail uses which limited opportunities for expansion of commercial uses, or
    b. Expansion opportunities were assessed to be limited by the nature of adjoining land uses or the prospects of a new competitive centre emerging, or
    c. The centre was assessed as not having prospects of future commercial employment opportunities.

The investigations undertaken on a centre-by-centre basis indicated that the mix of retail to non-retail uses varied widely with each centre. For existing centres with an established mix of uses, this mix was assumed to continue, and employment projections made accordingly. In proposed new centres with no other indications available, it was assumed that 20% of its floor area would be taken up by commercial uses.

Revised commercial employment assumptions were distributed to transport zones which intersected with each centre based on the proportional distribution of building footprints and developable site area.

6.3 Community employment

One component of the community employment assumptions identifies community facilities such as schools, hospitals, other health services, emergency services, childcare centres, respite centres, aged care facilities and community centres. Verified base year assumptions were recorded from other information sources.[64] Future community employment capacity was examined against each site's capacity to accommodate additional employment. In growth areas, assumptions were made about the need for future community facilities based on Economic Development Queensland's Community Facilities Guideline.[65] Future growth in community employment was also linked to an area's projected future dwellings.

Additional components included:

- The community job allocation to industry precincts in the AEC Group Industry Land Supply and Demand Study 2017.
- Other community sector employment estimates in retail and commercial buildings where these jobs are co-located or share floor space with retail and commercial uses. The community employment floor space assumption in centres is the same as commercial employment in centres. The available data does not allow specific site by site, floor plate by floor plate separation of commercial and community uses, eg for the planning assumptions, government office space in a commercial building is treated the same as a commercial office use instead of a different land use. It is therefore difficult to account for community office jobs separately from commercial office jobs when reconciling regional employment forecasts by industry. Further work is required to refine these assumptions.
- A component of this sector will work from home and the Australian Business Register was used

[64] Sources include: My School web site www.myschool.edu.au/, Aged care workforce census 2016 agedcare.health.gov.au/sites/g/files/net1426/f/documents/03_2017/nacwcs_final_report_290317.pdf, aged care facility websites, Queensland Health Hospital Annual Reports.
[65] www.dsdmip.qld.gov.au/__data/assets/pdf_file/0013/33502/guideline-11-community-facilities-may2015.pdf

as a guide for the proportional distribution of community sector jobs in dispersed locations.

- General dispersion of the balance of other jobs providing personal and other services. These are assumed to be mobile services with no fixed place of work and have been distributed in proportion to the population. Other services providing personal services were treated as commercial jobs.

6.4 Industry employment

The latest industry employment assumptions are based on the AEC Group's Industry Land Supply and Demand Study 2017[66] which examined 20 industry precincts: [67]

1	Sandstone Point
2	First Avenue, Bribie
3	Aerodrome Caboolture
4	Henzell Rd, Caboolture
5	Elimbah East
6	North East Business Park
7	Caboolture West LP
8	PAC Morayfield
9	Bruce Hwy, Burpengary
10	Old Gympie Rd, Narangba
11	Deception Bay Rd
12	Boundary Rd, Narangba-North Lakes
13	Kerr Rd West, Dakabin
14	Clontarf
15	Scarborough Marina
16	Redcliffe Aerodrome
17	Petrie
18	Paisley Drive, Lawnton
19	Brendale
20	The Hills District

Table 14: Industry precincts

The AEC Group base year industry and construction employment estimates were distributed to the transport zones within each industry precinct based on the distribution of building footprints and land use. Industrial and non-industrial buildings were identified using Council's rates land use database, supplemented by aerial imagery and Google street views to confirm land use on each site. Aerial imagery identified sites with small building footprints which showed signs of industrial use, such as storage areas. These were also included in the apportionment of employment to the transport zones. Additional online searches were used to determine the nature of a land use. Aerial imagery was also used to determine the number of vehicles parked on and around the industrial sites to help check estimates of base year employee numbers.

Employment in future projection periods was added to the base year employment based on the assessed remaining developable land.

[66] www.moretonbay.qld.gov.au/files/assets/public/services/building-development/industrial-land-supply-and-demand.pdf

[67] An additional light industry area at Kippa-Ring was not examined in detail as it was substantially developed, however it was included in preparation of the planning assumptions.

Other services providing repair and maintenance were included in the industry job assumptions.

Non-industrial land uses in the AEC study were also distributed to each transport zone following an initial assessment of their location using the rates land use database and aerial imagery assessment. Commercial and retail uses were mainly located on the higher order and perimeter roads with exposure to passing traffic. Additional non-industry jobs were distributed based on this pattern of land use continuing, subject to developable land availability.

Each transport zone was checked for its capacity to accommodate development by:

identifying unconstrained lot areas, multiplying by % site cover, dividing by the jobs/m^2 ratio assumed for each industry category. Employment distribution was constrained by each transport zone's capacity, and any additional employment was distributed to zones with remaining capacity, where necessary.

6.5 Construction employment

The ABS DZN journey to work data provides an estimate of construction jobs in each DZN in 2016.

The AEC Group report provided construction industry jobs within industry precincts which were allocated using its projections. The report also provided a projection of the total number of construction jobs in Moreton Bay. The remaining construction jobs were divided into three categories using the report's 70 industry job category projections as a guide:[68]

- Building construction
- Heavy and civil engineering construction
- Construction services.

These construction jobs categories were distributed to each SA2 and DZN in the base year using the ABS journey to work distribution; in future years they were distributed in proportion to the distribution of dwellings and jobs in each SA2 and DZN.

6.6 Rural and resource employment

Rural and resource jobs include rural (cropping, grazing, forestry, fishing, poultry farms, agriculture services) and mining (extractive industry and mining services). The AEC report provides a projection of jobs in each category. The proportion of jobs in each DZN at the 2016 base year uses the ABS DZN journey to work estimates.

AEC projections of rural and mining jobs are distributed to each DZN in proportion to the base year distribution.

Mapped extents of existing and future cropping potential assisted with the distribution of existing and future employment.

6.7 Other dispersed employment

The 2016 Census recorded 7,319 people worked from home, which equates to 1 job per 21 occupied dwellings in Moreton Bay. The table below shows the breakdown of working from home jobs by industry sector:[69]

[68] AEC Group unpublished data supplied in spreadsheet format.

[69] Census of population and housing - Work and live in region www.remplanlogin.com.au/economy/

Industry sector	Jobs	%
Commercial	2,970	40.6%
Community	1,143	15.6%
Construction	943	12.9%
Industry	810	11.1%
Other services	622	8.5%
Retail	455	6.2%
Rural and resource	375	5.1%
Total	7,319	100.0%

Table 15: Working from home, by industry sector

Previous advice to Council was that:

- up to 24% of people who worked, worked some hours at home [70]
- there had been a significant increase in people working from home and home-based businesses[71]
- a range of 10% to 15% of households operating home-based businesses is deemed appropriate (in master planned communities such as North Lakes).

Comparison of the 2011 and 2016[72] Census indicates that nationally:

- 5.5% of the workforce worked from home in 2016 compared to 5% in 2011.

Using the Queensland Government regional employment projections for Moreton Bay[73] combined with the national working from home rate:

- In 2016 there were 196,806 employed residents – of these 5.5% (10,824) worked from home, representing one job per 14 dwellings.
- In 2011 there were 188,701 employed residents – of these 5% (9,435) worked from home, representing one job per 14.5 dwellings.

According to the 2016 Census, 8.1% of the workforce in Moreton Bay[74] (residents who lived and worked for a business based in the region) worked from home.

[70] 6275.0 - Locations of work, Nov 2008 www.abs.gov.au/ausstats/abs@.nsf/mf/6275.0
[71] URBIS Working from home and home-based businesses unpublished report 2013
[72] ABS media release
www.abs.gov.au/ausstats/abs@.nsf/mediareleasesbyReleaseDate/7DD5DC715B608612CA2581BF001F8404?OpenDocument
[73] www.qgso.qld.gov.au/products/tables/reg-employment-proj/index.php
[74] ABS Census of population and housing 2016, general community profile - G59 (7,319/90,339=8.1%)
www.qgso.qld.gov.au/products/tables/qld-regional-database/index.php

7.0 Outputs of planning assumptions

7.1 Residential dwelling and population outputs

The LGIP planning assumptions are summarised by projection areas, as well as inside and outside the Priority Infrastructure Area (PIA). The planning assumptions tables are available in Appendix 1.

7.1.1 ShapingSEQ dwelling supply benchmarks

ShapingSEQ identifies dwelling supply benchmarks for Moreton Bay Region, which are used in the SEQ Growth Monitoring Program and the annual Land Supply and Development Monitoring Report[75].

LGIP dwelling projections are compared to ShapingSEQ dwelling supply benchmarks (see Figure 5).

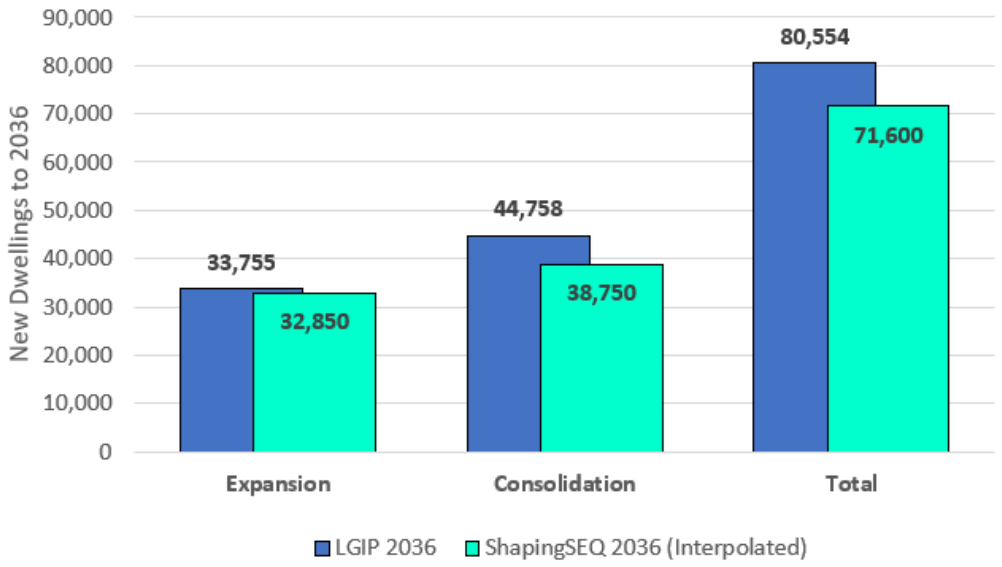


Figure 5: Comparison between LGIP dwelling projections and ShapingSEQ dwelling benchmarks

The above figure shows that LGIP dwelling assumptions exceed ShapingSEQ dwelling supply benchmarks.

7.1.2 QGSO population projections

QGSO develops population projections for regions across the state[76], including local government and statistical areas. Previous population projections were released in 2011, 2013, 2015 and 2018. The next population projection release date is unknown, however the contents are expected to be different due to structural changes to population growth from COVID-19.

Figure 6 shows the LGIP population projections compared with the QGSO 2018 edition population projections.

[75] planning.dsdmip.qld.gov.au/planning/better-planning/state-planning/regional-plans/seqrp/lsdm

[76] www.qgso.qld.gov.au/statistics/theme/population/population-projections/state

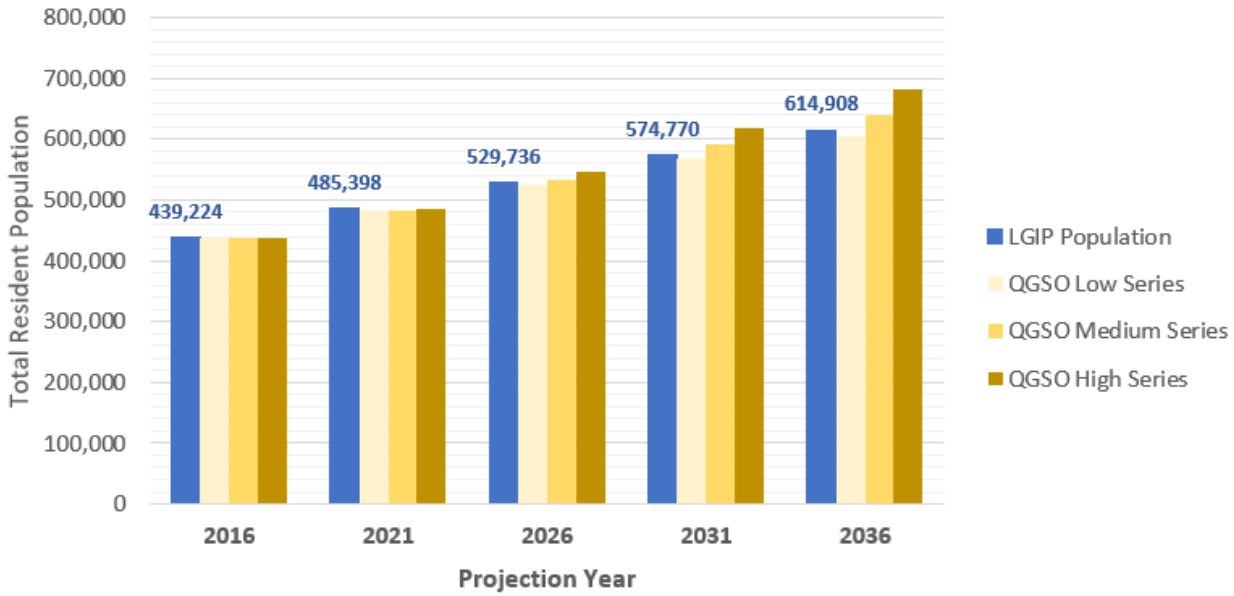


Figure 6: Comparison of LGIP population projections with QGSO 2018 edition

In the LGIP population projections, the majority of SA2s are within 5% of QGSO projected population for 2036 (medium series).

As a secondary comparison, it is useful to gauge changes in population projections over time. Figure 7 shows the LGIP population projections compared with QGSO 2015 edition population projections.

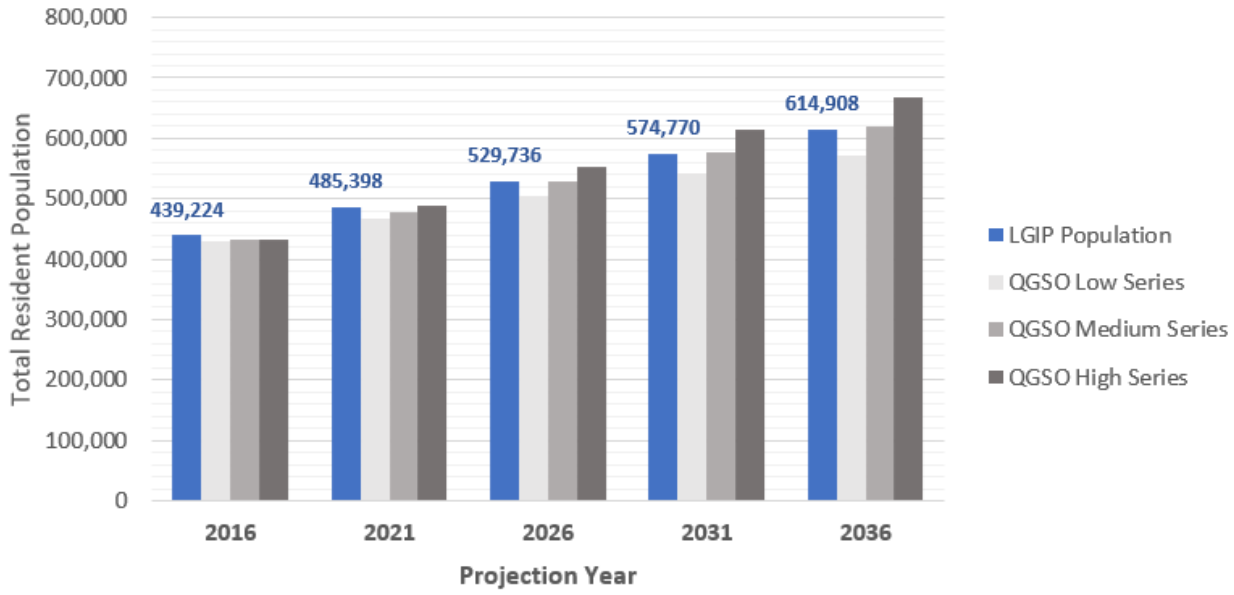


Figure 7: Comparison of LGIP population projections with QGSO 2015 edition

The QGSO household projections 2018 methodology[77] states the following caveats:

"In addition to assumptions about living arrangements and propensities for household formation and dwelling construction, these projections depend on the core assumptions of fertility, mortality and migration underlying the Queensland Government population projections, 2018 edition. Furthermore, population change at the statistical areas level 2 (SA2) and LGA level is more likely to be a function of

[77] www.qgso.qld.gov.au/issues/3001/qld-government-household-projections-methodology-2018-edn.pdf

available land supply and constraints, and consequent dwelling construction, rather than pure demographic factors. The spatial and temporal distribution of land supply arises from regional planning schemes and planning policies and is therefore subject to change and review. The rate at which the available land supply is used is contingent upon economic conditions and decisions made by the business community.

Consequently, these projections of households have a greater degree of uncertainty than the population projections. Household projections should not be interpreted as precise point estimate forecasts or predictions. Rather, the projections reflect the outcomes of applying a set of assumptions about living arrangements, household formation and dwelling construction. While past and current trends provide background to the possible demographic outlook, there is uncertainty around how these trends will develop over a long-term projection horizon. To account for uncertainty, a range of possible outcomes rather than a single projection series provides a more realistic view of the possible scenarios for future household size and formation.

As such, three projection series (low, medium, high) have been produced for households. Note that while a high, medium and low projection series are produced for dwellings at the LGA level, for household projections, only a medium series is available at LGA level."

7.1.3 PIA dwelling capacity

The dwellings and population in the PIA are reported in the planning assumptions tables in Appendix 1. The graph below illustrates how much of the PIA's available ultimate capacity is assumed taken up over the planning horizon to 2036.

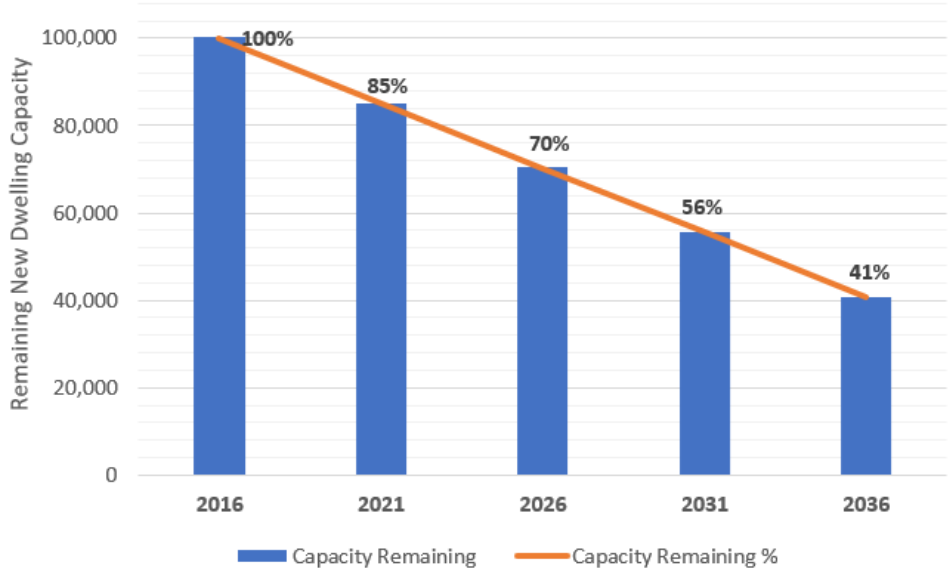


Figure 8: New dwelling capacity remaining within PIA

This graph shows that of the capacity of future new dwellings within the PIA is approximately 100,000 additional new dwellings under the MBRC Planning Scheme, with 59% of this capacity assumed to be taken up by 2036, and 41% (approximately 40,000 dwellings) remaining after 2036.

The region's ultimate residential dwelling yield, including within the PIA, are derived from assumptions in section 5.2.1. As a comparison, Unitywater's Netserv Plan (October 2019)[78] includes planning

[78] www.unitywater.com/building-and-developing/reference-library/water-netserv-plan

assumptions (and ultimate dwelling yield) for Moreton Bay Region which are available online in the Netserv Planning Assumptions map[79]. Unitywater assumed ultimate dwelling capacity within the Moreton Bay Region PIA is more than 12,000 additional dwellings above the LGIP assumed ultimate dwelling capacity. This demonstrates the LGIP's conservative estimate of PIA ultimate dwelling capacity compared to Netserv. The Unitywater ultimate dwelling density assumptions are available in Netserv Plan Part A, Appendix B, Attachment 3[80].

7.1.4 Dwelling mix outcomes

The ShapingSEQ policy intent aims to achieve greater housing mix and diversity to allow for greater housing choice:[81]

- Chapter 3, Part A, Goal 1, Element 1: Efficient land use
- Chapter 3, Part A, Goal 1, Element 2: Focusing residential density
- Chapter 3, Part A, Goal 1, Element 4: Housing diversity
- Chapter 3, Part A, Goal 4, Element 11: Affordable living

ShapingSEQ - the missing middle:

"Missing middle is a form of housing that offers greater density and diversity in a manner compatible with surrounding lower density residential environments. Most 'missing middle' housing is oriented toward the street or laneway. It covers housing types between detached houses and high-rise, and may include Fonzie flats (a small, self-contained apartment on the same land as a house), 'plexes' (duplexes, triplexes, quadplexes etc), row/terrace housing and medium-rise apartments."

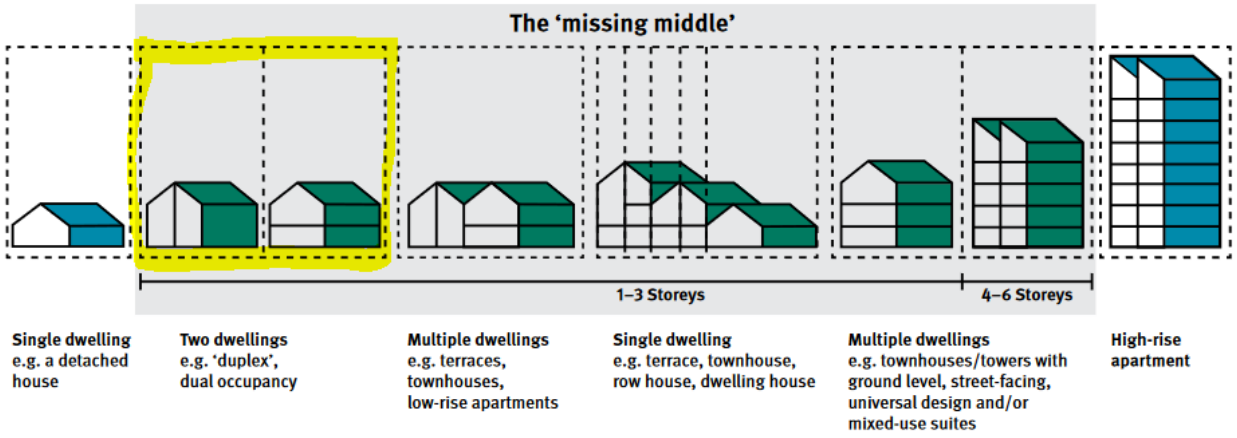


Figure 9: ShapingSEQ - the missing middle [82]

All housing typologies in the missing middle category are contained in the LGIP dwelling assumptions attached dwelling category. In Moreton Bay region the predominant form of missing middle housing is illustrated in yellow in the above figure, and especially single storey semi-detached, two-storey townhouse, and similar typologies.

The Queensland Government annual Land Supply and Development Monitoring (LSDM) report[83] monitors

[79] www.unitywater.com/building-and-developing/reference-library

[80] www.unitywater.com/building-and-developing/reference-library/water-netserv-plan

[81] dilgpprd.blob.core.windows.net/general/shapingseq.pdf

[82] dilgpprd.blob.core.windows.net/general/shapingseq.pdf (Page 44. Figure 8.)

[83] planning.dsdmip.qld.gov.au/planning/better-planning/state-planning/regional-plans/seqrp/lsdm

changes in housing type:

"Recent dwelling approvals indicate an increase in housing diversity in Moreton Bay, consistent with the ShapingSEQ Measures that Matter preferred future." (2019 LSDM)

The ShapingSEQ Measures that Matter[84] dashboard also monitors changes in housing type.

There are currently no established targets, benchmarks for dwelling typologies, or guidelines for housing diversity. The LGIP net increase in attached dwellings has been compared with other sources to provide an indicator for achieving housing diversity objectives set out in state and Council planning policies.

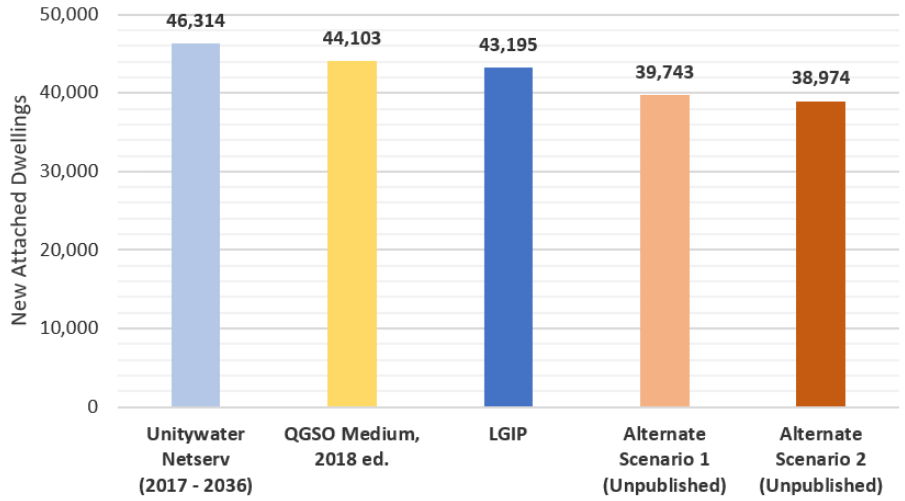


Figure 10: Comparison of net increase in attached dwellings (2016 - 2036)

Figure 10 shows that LGIP assumptions on net increase in attached dwellings fall within the range of other comparable estimates (refer to the Queensland Government dwelling projections, 2018 edition: Methodology[85]). Unitywater's assumed attached dwelling ratio is available in Netserv Plan Part A, Appendix B, Attachment 3[86] (note that Unitywater attached dwelling increase is calculated from 2017 - the base year of its assumptions, therefore one less year of yield. The Unitywater figure is slightly higher when compensating for this difference).

Change to the make-up of overall total housing stock provides an indication of relative change to housing diversity over time.

[84] planning.dsdmip.qld.gov.au/planning/better-planning/state-planning/regional-plans/seqrp/mtm?theme=grow

[85] www.qgso.qld.gov.au/issues/8381/qld-government-dwelling-projections-methodology-2018-edn.pdf

[86] www.unitywater.com/building-and-developing/reference-library

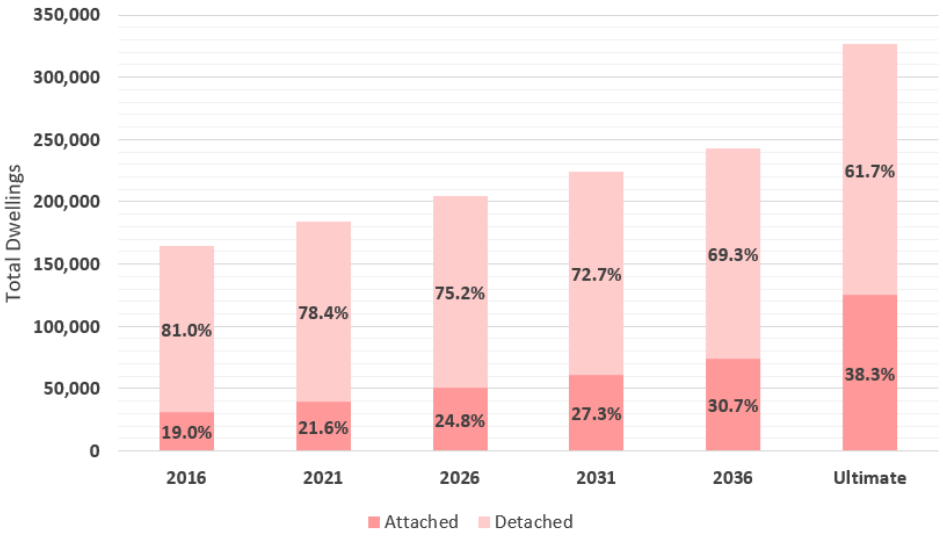


Figure 11: Assumed change in housing diversity over time

Figure 11 shows the percentage of attached housing in Moreton Bay region is assumed to shift approximately 10% over 20 years. It also shows the full build-out of the Planning Scheme intent and current planning assumptions will result in approx. 38% of attached dwellings.

The illustration below shows the dwelling mix outcome consistent with the region's overall dwelling mix beyond 2036.



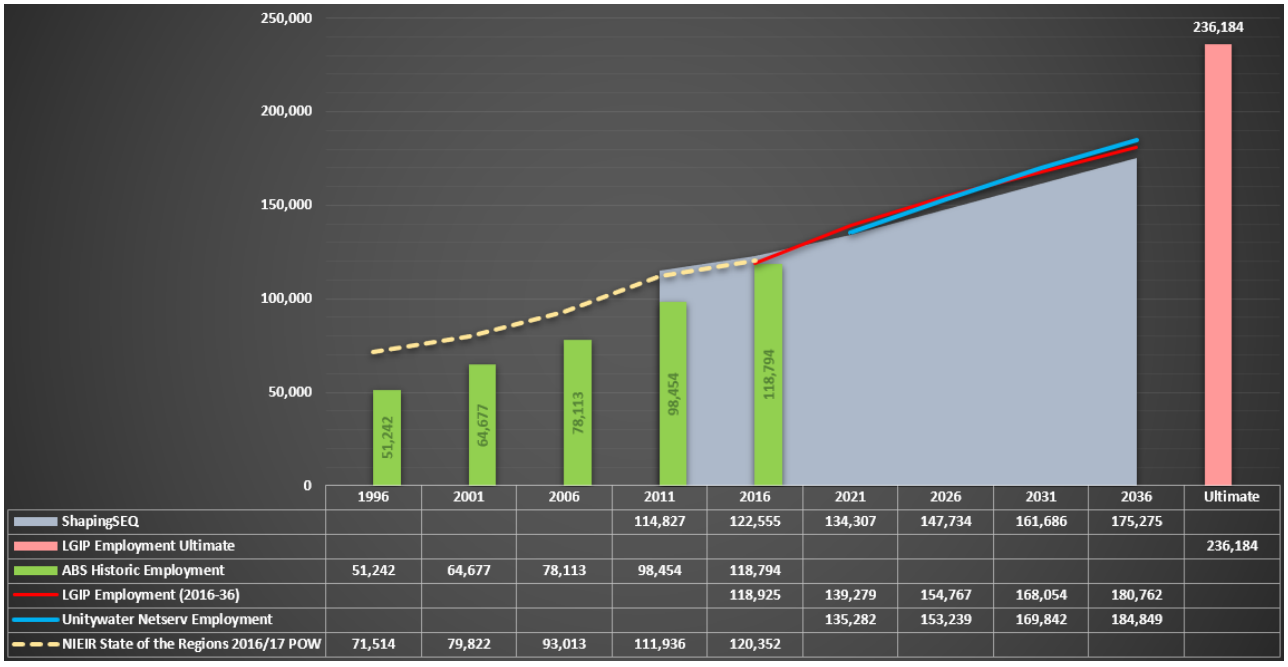
Figure 12: An example of dwelling mix achieving 33% attached dwellings

In the above example: there are 15 lots, with 12 detached dwellings (pink), three lots (red) have duplexes with six attached dwellings. The dwelling mix result is 33% attached dwellings. There are many ways the same dwelling mix outcome could potentially be achieved.

7.2 Employment and GFA outputs

7.2.1 Employment comparison benchmarks

The figure below shows how LGIP employment projections compare with historic estimates and other future projections and benchmarks.



	1996	2001	2006	2011	2016	2021	2026	2031	2036	Ultimate
ShapingSEQ				114,827	122,555	134,307	147,734	161,686	175,275	
LGIP Employment Ultimate										236,184
ABS Historic Employment	51,242	64,677	78,113	98,454	118,794					
LGIP Employment (2016-36)					118,925	139,279	154,767	168,054	180,762	
Unitywater Netserv Employment						135,282	153,239	169,842	184,849	
NIEIR State of the Regions 2016/17 POW	71,514	79,822	93,013	111,936	120,352					

Figure 13: Comparison of historic and forward estimates of employment growth[87]

NIEIR and Queensland Treasury regional employment projections inform the 2016/2017 review of the SEQ Regional Plan.[88]

Census employment estimates of employment from 2006 and 2011 were significantly lower than modelled estimates. NIEIR has advised that Census employment figures are known to undercount employment by varying amounts depending on the Census year:

> *"In general, the Census understates employment by 15-20%, including about 12.5% of known working population in the Census who could not be coded to a valid workplace." (NIEIR)* [89]

[88] www.qgso.qld.gov.au/products/tables/reg-employment-proj/index.php

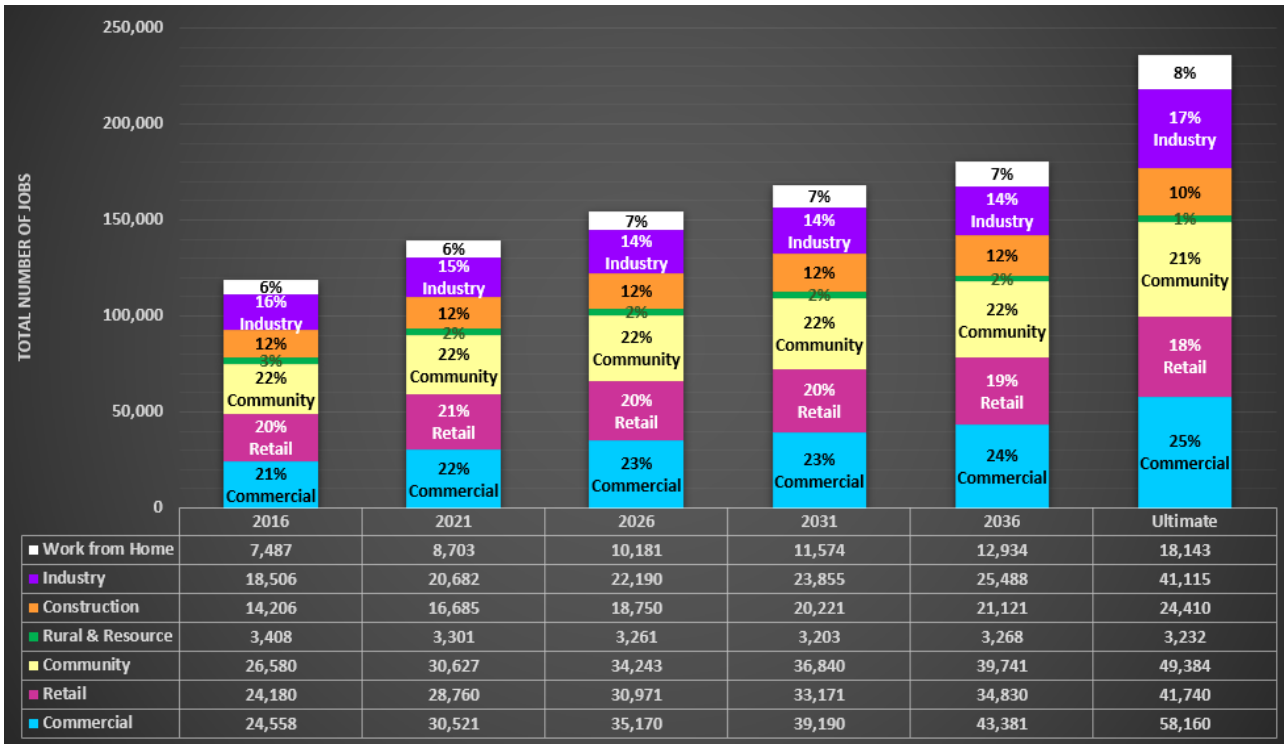
[89] Sourced from .id community Moreton Bay Region economic profile economy.id.com.au/moreton-bay/topic-notes. estimates from NIEIR w generally higher than the Census figures because they adjust for

1. Persons missed by the Census
2. Persons who didn't state their employment status or place of work
3. Persons who reported no fixed place of work
4. Persons whose place of work was not a valid address which could be coded by the ABS.

This suggests that the Census data provided poor quality quantifiable figures for future employment projections.

7.2.2 Employment mix

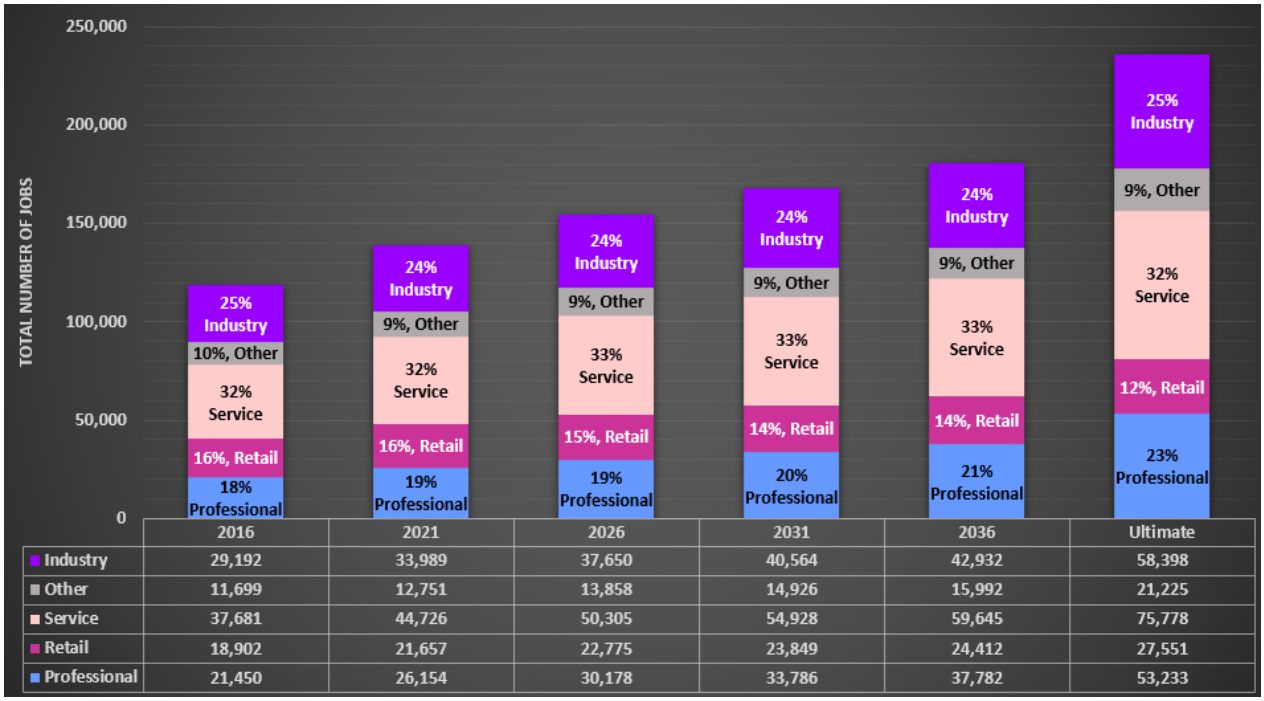
Employment assumption outputs have been created for seven LGIP employment categories. Figure 14 shows the mix and proportion of total jobs.



	2016	2021	2026	2031	2036	Ultimate
Work from Home	7,487	8,703	10,181	11,574	12,934	18,143
Industry	18,506	20,682	22,190	23,855	25,488	41,115
Construction	14,206	16,685	18,750	20,221	21,121	24,410
Rural & Resource	3,408	3,301	3,261	3,203	3,268	3,232
Community	26,580	30,627	34,243	36,840	39,741	49,384
Retail	24,180	28,760	30,971	33,171	34,830	41,740
Commercial	24,558	30,521	35,170	39,190	43,381	58,160

Figure 14: Employment mix (LGIP employment categories)[90]

Council's strategic transport model has different requirements in employment mix categorisation and requires the seven LGIP categories to be reapportioned into five transport model categories, shown in figure 15.



	2016	2021	2026	2031	2036	Ultimate
Industry	29,192	33,989	37,650	40,564	42,932	58,398
Other	11,699	12,751	13,858	14,926	15,992	21,225
Service	37,681	44,726	50,305	54,928	59,645	75,778
Retail	18,902	21,657	22,775	23,849	24,412	27,551
Professional	21,450	26,154	30,178	33,786	37,782	53,233

Figure 15: Employment mix (strategic transport model categories)

7.2.3 Employment gross floor area

Potential gross floor area (GFA) is one consideration when calculating employment figures. Common practice involves calculating the number of potential employees based on standard floorspace multipliers for different industry sectors, which has its limitations.

For example, the retail jobs category includes fast food drive through and service stations. A fast food drive through may have an average of eight employees whereas a service station has an average of two employees at a time. GFA for both is around 500m2, which is 75m2 retail floor space per employee at a fast food drive through and 250m2 (300% more) retail floor space at a service station.

Other retail uses generally have higher density; some guidelines assume 20m2 (35m2 GFA per employee), while the 2012 Priority Infrastructure Plan for MBRC assumptions use 45m2 per retail employee. This indicates there are large margins and/or range of values when using floor space rate multipliers, therefore caution is required when drawing conclusions from calculated floor space rates in Appendix 1, Table A-4.

A set of regional floor space to employee conversion rates were calculated for reporting floor space rates. Table 16 shows the indicative average across the region.

	GFA m2 per job
Commercial	24
Community	59
Industry	139
Retail	54

Table 16: Regional average floor space per employee conversion rates (indicative)

It should be noted that actual rates will vary (sometimes significantly) when reviewing a local area due to regional variation of employment densities as well as the variation and range of specific uses. Additionally, floor space rates will likely vary over time due to the changing nature of the economy. For example, an industrial warehouse using more automation will result in an overall increase in GFA required per employee over time.

Appendix A - Planning assumptions tables

Table A-1: Existing and projected population

Projection area	LGIP development type	Existing and projected population					
		2016	2021	2026	2031	2036	Ultimate development
Coastal Communities and Bribie Island (inside PIA)	Attached dwelling	6,218	7,150	8,947	9,325	9,660	10,601
	Detached dwelling	24,332	26,328	27,760	28,626	29,015	29,799
	Other accommodation *	631	631	736	741	741	817
	Total	**31,181**	**34,108**	**37,443**	**38,691**	**39,416**	**41,217**
Caboolture (inside PIA)	Attached dwelling	8,734	11,698	14,261	17,958	23,168	35,982
	Detached dwelling	45,984	49,843	56,713	61,441	63,483	66,807
	Other accommodation *	669	1,090	1,367	1,437	1,532	1,532
	Total	**55,387**	**62,631**	**72,340**	**80,836**	**88,183**	**104,322**
North Lakes - Redcliffe - Moreton Bay Rail Corridor (inside PIA)	Attached dwelling	29,599	38,521	50,033	62,360	77,532	124,488
	Detached dwelling	134,686	146,503	150,446	157,173	158,664	164,339
	Other accommodation *	1,967	2,246	2,877	3,007	3,077	3,154
	Total	**166,252**	**187,270**	**203,356**	**222,539**	**239,273**	**291,981**
Strathpine (inside PIA)	Attached dwelling	7,911	9,201	11,107	13,068	16,597	28,886
	Detached dwelling	78,551	79,332	79,576	80,092	80,756	83,522
	Other accommodation *	251	347	347	347	347	347
	Total	**86,712**	**88,881**	**91,030**	**93,507**	**97,701**	**112,755**
Rural (inside PIA)	Attached dwelling	79	123	275	275	274	275
	Detached dwelling	3,638	3,836	4,354	4,734	5,448	7,755
	Other accommodation *	108	108	108	108	108	196
	Total	**3,824**	**4,067**	**4,737**	**5,116**	**5,830**	**8,226**
Inside PIA	Attached dwelling	52,540	66,693	84,623	102,985	127,232	200,232
	Detached dwelling	287,191	305,841	318,849	332,065	337,366	352,223
	Other accommodation *	3,626	4,422	5,435	5,640	5,805	6,046

Projection area	LGIP development type	Existing and projected population					
		2016	2021	2026	2031	2036	Ultimate development
	Total	**343,357**	**376,957**	**408,907**	**440,690**	**470,403**	**558,501**
Outside PIA	Attached dwelling	4,582	6,693	9,378	11,788	13,772	39,818
	Detached dwelling	94,910	106,170	116,886	127,931	136,538	222,692
	Other accommodation *	1,535	1,624	2,027	2,102	2,212	2,804
	Total	**101,027**	**114,487**	**128,291**	**141,822**	**152,522**	**265,315**
Moreton Bay LGA	Attached dwelling	57,122	73,386	94,001	114,774	141,003	240,051
	Detached dwelling	382,102	412,012	435,735	459,996	473,904	574,915
	Other accommodation *	5,161	6,046	7,462	7,742	8,017	8,850
	Total	**444,385**	**491,444**	**537,198**	**582,512**	**622,925**	**823,816**

Note: This is temporary accommodation, such as motel rooms, hospital beds, prison cells, marina berths, student dorm rooms and tourist accommodation.

Table A-2: Existing and projected employees

Projection area	LGIP development type	Existing and projected employees					
		2016	2021	2026	2031	2036	Ultimate development
Coastal Communities and Bribie Island (inside PIA)	Commercial	1,156	1,257	1,313	1,349	1,384	1,453
	Community	783	791	823	838	871	984
	Construction	792	845	903	925	893	793
	Industry	405	409	429	433	441	459
	Retail	1,529	1,604	1,620	1,626	1,632	1,697
	Rural resource	67	59	55	51	59	57
	Work from home	638	728	844	900	938	1,014
	Total	**5,371**	**5,692**	**5,987**	**6,122**	**6,218**	**6,456**
Caboolture (inside PIA)	Commercial	4,276	5,242	5,997	6,549	7,193	9,357
	Community	7,431	8,531	9,646	10,400	11,335	14,202
	Construction	1,981	2,347	2,641	2,826	2,929	2,994
	Industry	1,775	1,915	1,987	2,055	2,086	2,239
	Retail	5,225	5,738	5,995	6,297	6,567	7,738
	Rural resource	126	124	132	134	152	157
	Work from home	890	1,059	1,264	1,488	1,714	2,197
	Total	**21,704**	**24,955**	**27,662**	**29,748**	**31,977**	**38,884**
North Lakes - Redcliffe - Moreton Bay Rail Corridor (inside PIA)	Commercial	7,258	8,819	9,531	10,414	11,273	13,984
	Community	10,098	11,806	13,054	13,693	14,287	16,067
	Construction	4,629	5,344	5,924	6,233	6,434	6,783
	Industry	6,762	7,552	7,818	8,056	8,263	9,098
	Retail	7,340	8,832	9,325	9,716	10,037	10,936
	Rural resource	178	172	179	179	223	239
	Work from home	2,880	3,378	3,952	4,530	5,115	6,713
	Total	**39,145**	**45,903**	**49,782**	**52,820**	**55,632**	**63,821**
Strathpine (inside PIA)	Commercial	5,859	7,192	7,774	7,963	8,235	10,743
	Community	4,575	4,854	5,255	5,724	6,171	7,552

Projection area	LGIP development type	Existing and projected employees					
		2016	2021	2026	2031	2036	Ultimate development
	Construction	3,795	4,288	4,632	4,933	5,227	6,351
	Industry	5,799	6,158	6,333	6,408	6,547	8,416
	Retail	5,304	5,872	6,200	6,445	6,558	7,839
	Rural resource	89	88	89	89	99	101
	Work from home	1,366	1,478	1,639	1,781	1,957	2,411
	Total	**26,786**	**29,930**	**31,922**	**33,342**	**34,793**	**43,413**
Rural (inside PIA)	Commercial	277	339	360	381	383	421
	Community	269	281	295	310	333	406
	Construction	89	94	101	106	103	102
	Industry	43	44	44	44	44	44
	Retail	496	504	547	584	582	580
	Rural resource	11	11	11	11	11	11
	Work from home	42	48	59	66	78	112
	Total	**1,227**	**1,321**	**1,417**	**1,501**	**1,534**	**1,676**
Inside PIA	Commercial	18,826	22,850	24,975	26,655	28,467	35,958
	Community	23,157	26,263	29,072	30,964	32,998	39,211
	Construction	11,285	12,917	14,200	15,022	15,587	17,024
	Industry	14,785	16,077	16,611	16,996	17,381	20,255
	Retail	19,894	22,550	23,688	24,668	25,376	28,791
	Rural resource	471	453	466	464	544	565
	Work from home	5,816	6,692	7,758	8,764	9,801	12,447
	Total	**94,234**	**107,802**	**116,770**	**123,533**	**130,154**	**154,250**
Outside PIA	Commercial	5,732	7,671	10,195	12,535	14,913	22,202
	Community	3,423	4,364	5,171	5,876	6,743	10,173
	Construction	2,921	3,768	4,551	5,199	5,534	7,386
	Industry	3,721	4,605	5,579	6,859	8,107	20,861
	Retail	4,286	6,209	7,283	8,503	9,454	12,949

Projection area	LGIP development type	Existing and projected employees					
		2016	2021	2026	2031	2036	Ultimate development
	Rural resource	2,937	2,847	2,795	2,739	2,724	2,667
	Work from home	1,671	2,011	2,423	2,810	3,132	5,697
	Total	**24,691**	**31,476**	**37,997**	**44,520**	**50,608**	**81,934**
Moreton Bay LGA	Commercial	24,558	30,521	35,170	39,190	43,381	58,160
	Community	26,580	30,627	34,243	36,840	39,741	49,384
	Construction	14,206	16,685	18,750	20,221	21,121	24,410
	Industry	18,506	20,682	22,190	23,855	25,488	41,115
	Retail	24,180	28,760	30,971	33,171	34,830	41,740
	Rural resource	3,408	3,301	3,261	3,203	3,268	3,232
	Work from home	7,487	8,703	10,181	11,574	12,934	18,143
	Total	**118,925**	**139,278**	**154,767**	**168,054**	**180,762**	**236,184**

Table A-3: Existing and projected residential dwellings

Projection area	LGIP development type	Existing and projected residential dwellings					
		2016	2021	2026	2031	2036	Ultimate development
Coastal Communities and Bribie Island (inside PIA)	Attached dwelling	4,099	4,742	5,791	5,935	6,040	6,527
	Detached dwelling	10,418	11,322	11,922	12,292	12,438	12,596
	Other accommodation *	631	631	736	741	741	817
	Total	**15,148**	**16,695**	**18,449**	**18,968**	**19,219**	**19,940**
Caboolture (inside PIA)	Attached dwelling	4,665	6,275	7,506	9,349	11,907	18,325
	Detached dwelling	15,578	17,187	19,695	21,519	22,410	23,302
	Other accommodation *	669	1,090	1,367	1,437	1,532	1,532
	Total	**20,912**	**24,552**	**28,568**	**32,305**	**35,849**	**43,159**
North Lakes - Redcliffe - Moreton Bay Rail Corridor (inside PIA)	Attached dwelling	16,093	20,562	26,441	32,700	40,623	64,571
	Detached dwelling	47,977	52,370	54,051	56,629	57,353	58,673
	Other accommodation *	1,967	2,246	2,877	3,007	3,077	3,154
	Total	**66,037**	**75,178**	**83,369**	**92,336**	**101,053**	**126,398**
Strathpine (inside PIA)	Attached dwelling	4,149	4,880	5,894	6,887	8,678	14,780
	Detached dwelling	26,526	27,171	27,578	28,123	28,703	29,323
	Other accommodation *	251	347	347	347	347	347
	Total	**30,926**	**32,398**	**33,819**	**35,357**	**37,728**	**44,450**
Rural (inside PIA)	Attached dwelling	56	89	197	197	197	197
	Detached dwelling	1,287	1,376	1,575	1,717	1,988	2,821
	Other accommodation *	108	108	108	108	108	196
	Total	**1,451**	**1,573**	**1,880**	**2,022**	**2,293**	**3,214**
Total inside PIA	Attached dwelling	29,062	36,548	45,829	55,068	67,445	104,400
	Detached dwelling	101,786	109,426	114,821	120,280	122,892	126,715
	Other accommodation *	3,626	4,422	5,435	5,640	5,805	6,046
	Total	**134,474**	**150,396**	**166,085**	**180,988**	**196,142**	**237,161**
Total outside PIA	Attached dwelling	2,213	3,335	4,785	6,019	7,025	20,571

Projection area	LGIP development type	Existing and projected residential dwellings					
		2016	2021	2026	2031	2036	Ultimate development
	Detached dwelling	31,347	35,256	38,863	42,607	45,559	74,848
	Other accommodation *	1,535	1,624	2,027	2,102	2,212	2,804
	Total	**35,095**	**40,215**	**45,675**	**50,728**	**54,796**	**98,223**
Total Moreton Bay LGA	Attached dwelling	31,275	39,883	50,614	61,087	74,470	124,971
	Detached dwelling	133,133	144,682	153,684	162,887	168,451	201,563
	Other accommodation *	5,161	6,046	7,462	7,742	8,017	8,850
	Total	**169,569**	**190,611**	**211,760**	**231,716**	**250,938**	**335,384**

Note: This is temporary accommodation, such as motel rooms, hospital beds, prison cells, marina berths, student dorm rooms and tourist accommodation.

Table A-4: Existing and projected non-residential floor space

Projection area	LGIP development type	Existing and projected* non-residential floor space (m^2 GFA)					
		2016	2021	2026	2031	2036	Ultimate development
Coastal Communities and Bribie Island (inside PIA)	Commercial	27,746	30,164	31,505	32,367	33,206	34,865
	Community	46,195	46,667	48,556	49,419	51,387	58,037
	Construction	n/a	n/a	n/a	n/a	n/a	n/a
	Industry	56,337	56,818	59,674	60,227	61,264	63,737
	Retail	82,591	86,617	87,477	87,791	88,150	91,613
	Rural resource	n/a	n/a	n/a	n/a	n/a	n/a
	Work from home	n/a	n/a	n/a	n/a	n/a	n/a
	Total	**212,868**	**220,266**	**227,213**	**229,804**	**234,007**	**248,252**
Caboolture (inside PIA)	Commercial	102,621	125,809	143,929	157,168	172,630	224,573
	Community	438,454	503,305	569,141	613,618	668,789	837,910
	Construction	n/a	n/a	n/a	n/a	n/a	n/a
	Industry	246,678	266,117	276,163	285,654	290,008	311,249
	Retail	282,167	309,868	323,757	340,017	354,607	417,870
	Rural resource	n/a	n/a	n/a	n/a	n/a	n/a
	Work from home	n/a	n/a	n/a	n/a	n/a	n/a
	Total	**1,069,920**	**1,205,099**	**1,312,990**	**1,396,457**	**1,486,034**	**1,791,601**
North Lakes - Redcliffe - Moreton Bay Rail Corridor (inside PIA)	Commercial	174,187	211,665	228,742	249,940	270,556	335,617
	Community	595,810	696,531	770,161	807,866	842,960	947,975
	Construction	n/a	n/a	n/a	n/a	n/a	n/a
	Industry	939,962	1,049,674	1,086,763	1,119,745	1,148,511	1,264,570
	Retail	396,342	476,932	503,537	524,671	542,019	590,555
	Rural resource	n/a	n/a	n/a	n/a	n/a	n/a
	Work from home	n/a	n/a	n/a	n/a	n/a	n/a
	Total	**2,106,301**	**2,434,802**	**2,589,203**	**2,702,222**	**2,804,046**	**3,138,717**
Strathpine (inside PIA)	Commercial	140,625	172,618	186,582	191,103	197,636	257,829
	Community	269,897	286,392	310,031	337,715	364,081	445,584
	Construction	n/a	n/a	n/a	n/a	n/a	n/a

Projection area	LGIP development type	Existing and projected* non-residential floor space (m^2 GFA)					
		2016	2021	2026	2031	2036	Ultimate development
	Industry	806,129	855,957	880,221	890,709	910,067	1,169,792
	Retail	286,392	317,086	334,821	348,034	354,108	423,317
	Rural resource	n/a	n/a	n/a	n/a	n/a	n/a
	Work from home	n/a	n/a	n/a	n/a	n/a	n/a
	Total	**1,503,043**	**1,632,053**	**1,711,656**	**1,767,562**	**1,825,892**	**2,296,522**
Rural (inside PIA)	Commercial	6,656	8,142	8,652	9,151	9,190	10,105
	Community	15,878	16,603	17,382	18,274	19,659	23,946
	Construction	n/a	n/a	n/a	n/a	n/a	n/a
	Industry	5,989	6,070	6,070	6,072	6,063	6,093
	Retail	26,765	27,213	29,544	31,538	31,434	31,347
	Rural resource	n/a	n/a	n/a	n/a	n/a	n/a
	Work from home	n/a	n/a	n/a	n/a	n/a	n/a
	Total	**55,288**	**58,028**	**61,649**	**65,035**	**66,346**	**71,491**
Inside PIA	Commercial	451,835	548,398	599,410	639,729	683,217	862,989
	Community	1,366,234	1,549,499	1,715,273	1,826,892	1,946,877	2,313,451
	Construction	n/a	n/a	n/a	n/a	n/a	n/a
	Industry	2,055,095	2,234,635	2,308,891	2,362,407	2,415,913	2,815,441
	Retail	1,074,257	1,217,717	1,279,137	1,332,052	1,370,317	1,554,703
	Rural resource	n/a	n/a	n/a	n/a	n/a	n/a
	Work from home	n/a	n/a	n/a	n/a	n/a	n/a
	Total	**4,947,420**	**5,550,248**	**5,902,710**	**6,161,080**	**6,416,324**	**7,546,584**
Outside PIA	Commercial	137,560	184,111	244,673	300,838	357,922	532,845
	Community	201,985	257,469	305,063	346,673	397,833	600,184
	Construction	n/a	n/a	n/a	n/a	n/a	n/a
	Industry	517,187	640,114	775,515	953,382	1,126,909	2,899,612
	Retail	231,454	335,311	393,297	459,155	510,517	699,259
	Rural resource	n/a	n/a	n/a	n/a	n/a	n/a
	Work from home	n/a	n/a	n/a	n/a	n/a	n/a
	Total	**1,088,187**	**1,417,004**	**1,718,549**	**2,060,048**	**2,393,181**	**4,731,900**

Projection area	LGIP development type	Existing and projected* non-residential floor space (m^2 GFA)					
		2016	2021	2026	2031	2036	Ultimate development
Moreton Bay LGA	Commercial	589,395	732,508	844,083	940,567	1,041,139	1,395,834
	Community	1,568,219	1,806,968	2,020,336	2,173,565	2,344,710	2,913,635
	Construction	n/a	n/a	n/a	n/a	n/a	n/a
	Industry	2,572,282	2,874,749	3,084,406	3,315,789	3,542,822	5,715,053
	Retail	1,305,711	1,553,027	1,672,434	1,791,207	1,880,834	2,253,961
	Rural resource	n/a	n/a	n/a	n/a	n/a	n/a
	Work from home	n/a	n/a	n/a	n/a	n/a	n/a
	Total	**6,035,607**	**6,967,252**	**7,621,259**	**8,221,128**	**8,809,505**	**12,278,484**

Note: GFA values in tables above are the result of applying a regional average floorspace rate to the projected number of employees. Projected number of employees are not determined exclusively from a generic floor space rate. Floor space rates will vary and span a range of values for any given category and be subject to subregional variation as a result of differing mix of uses that make up an employment category for any given place. Construction, rural resource and work from home employment categories do not depend on floor space.