



BANKWEST CURTIN ECONOMICS CENTRE

BUILDING THE DREAM

THE FUTURE OF WESTERN AUSTRALIA'S
CONSTRUCTION INDUSTRY

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BANKWEST CURTIN ECONOMICS CENTRE
FOCUS ON INDUSTRY SERIES, NO. 9

BUILDING THE DREAM

THE FUTURE OF WESTERN AUSTRALIA'S CONSTRUCTION INDUSTRY

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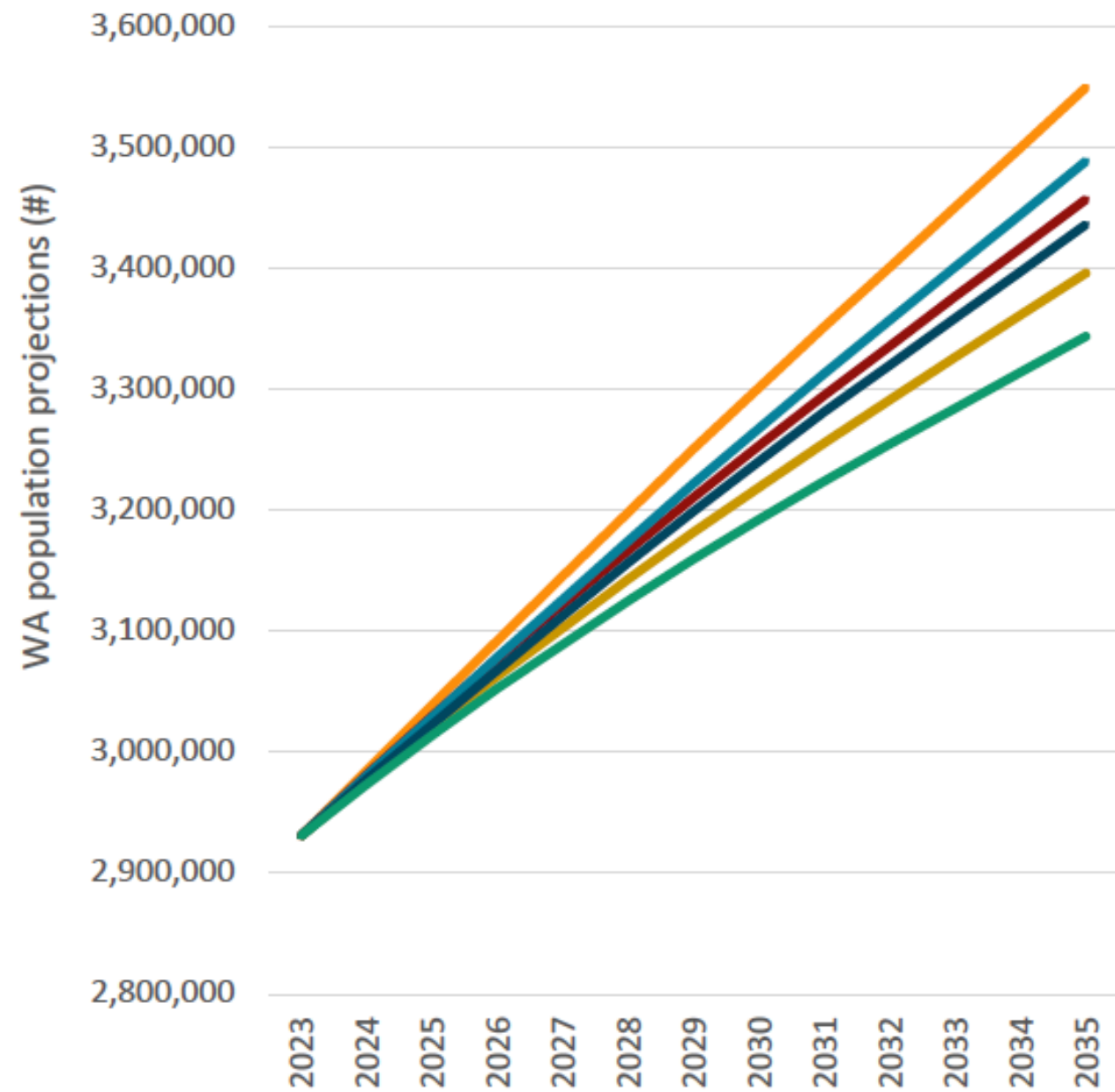
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WA'S POPULATION AND HOUSING DEMAND

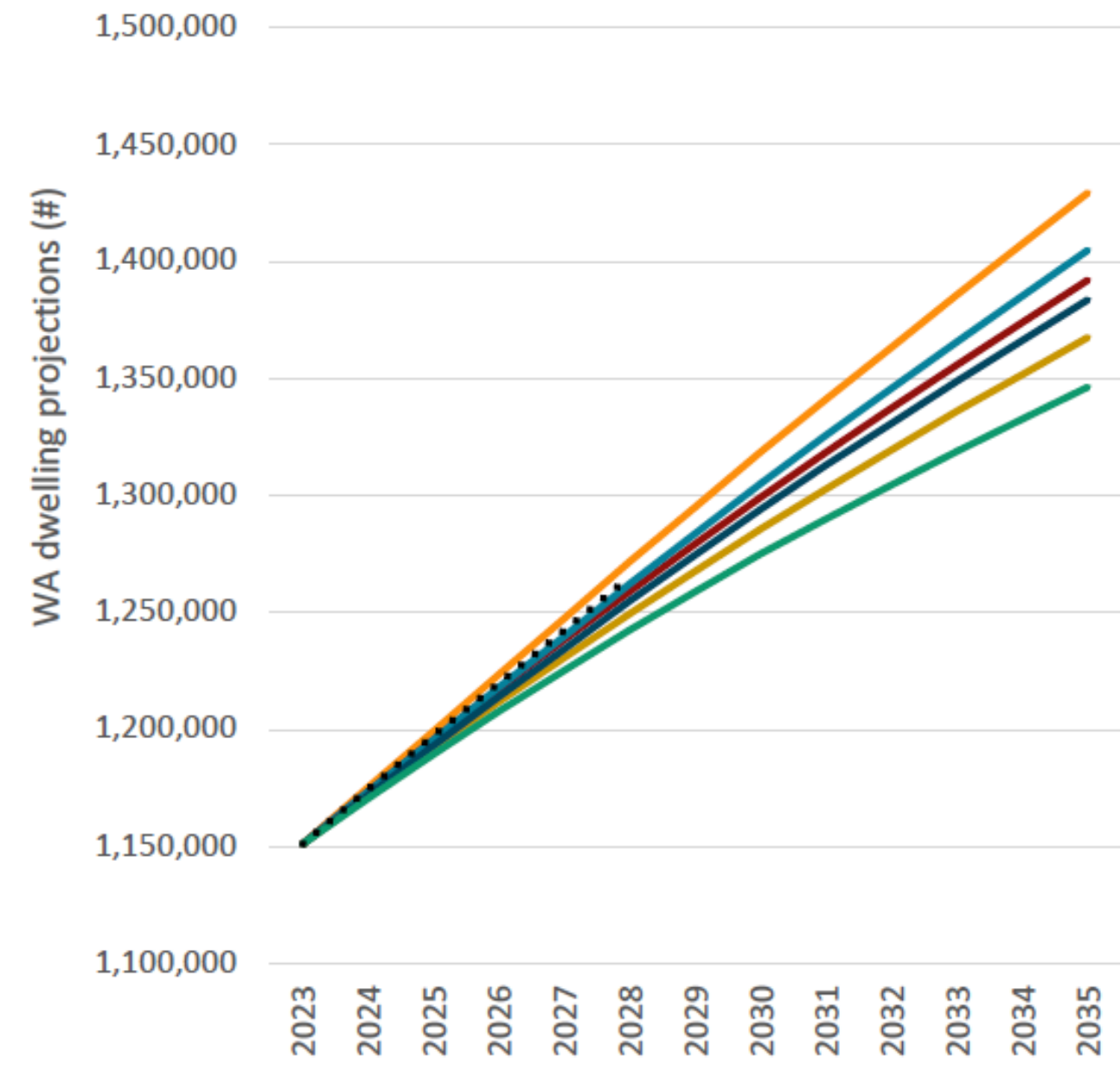
Population change influences housing demand..

WA population projections: alternative migration scenarios, 2023 to 2035

(a) number of people



(b) number of households

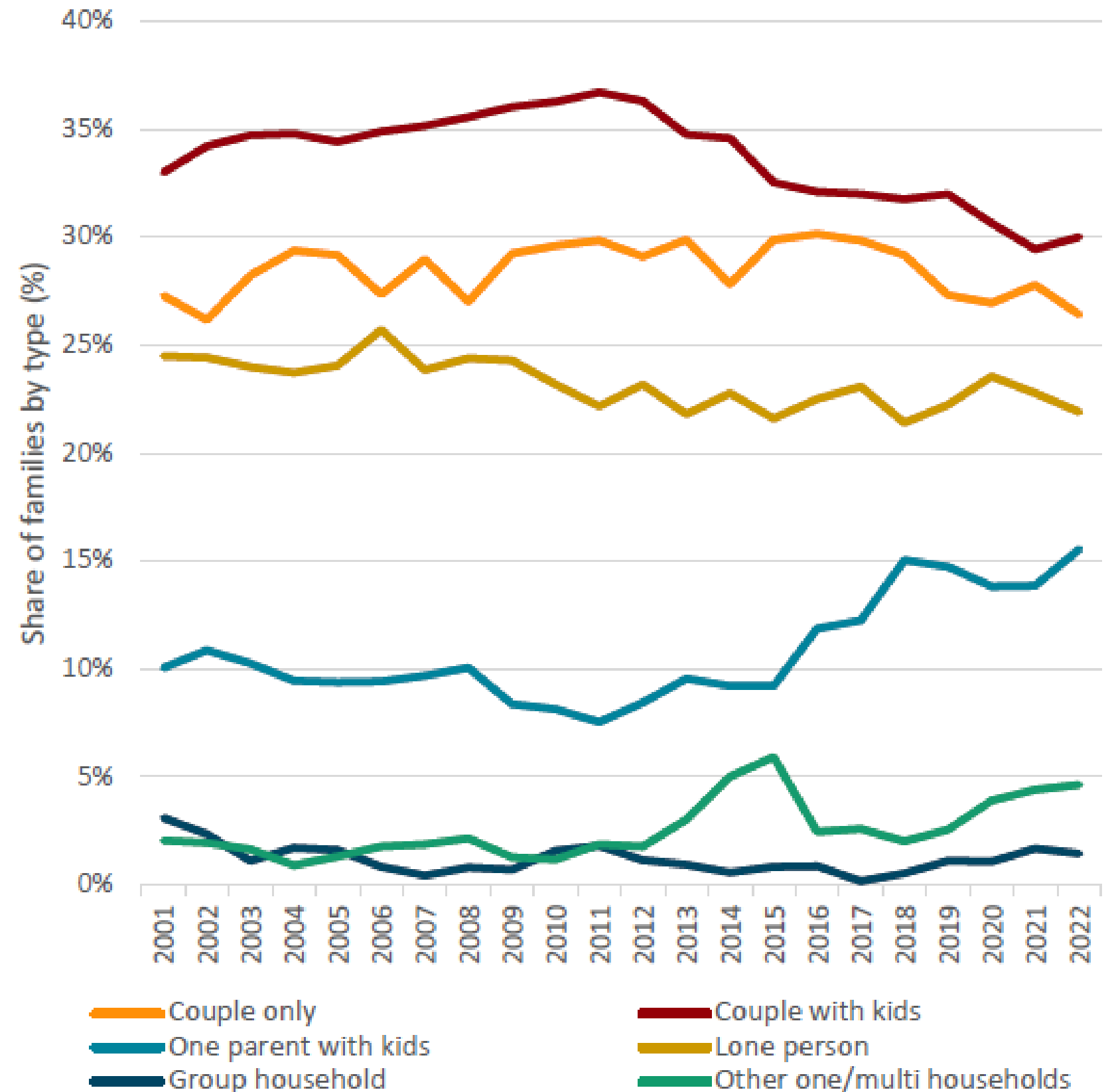


Household composition in WA is changing...

Share of WA households by type: 2001 to 2023

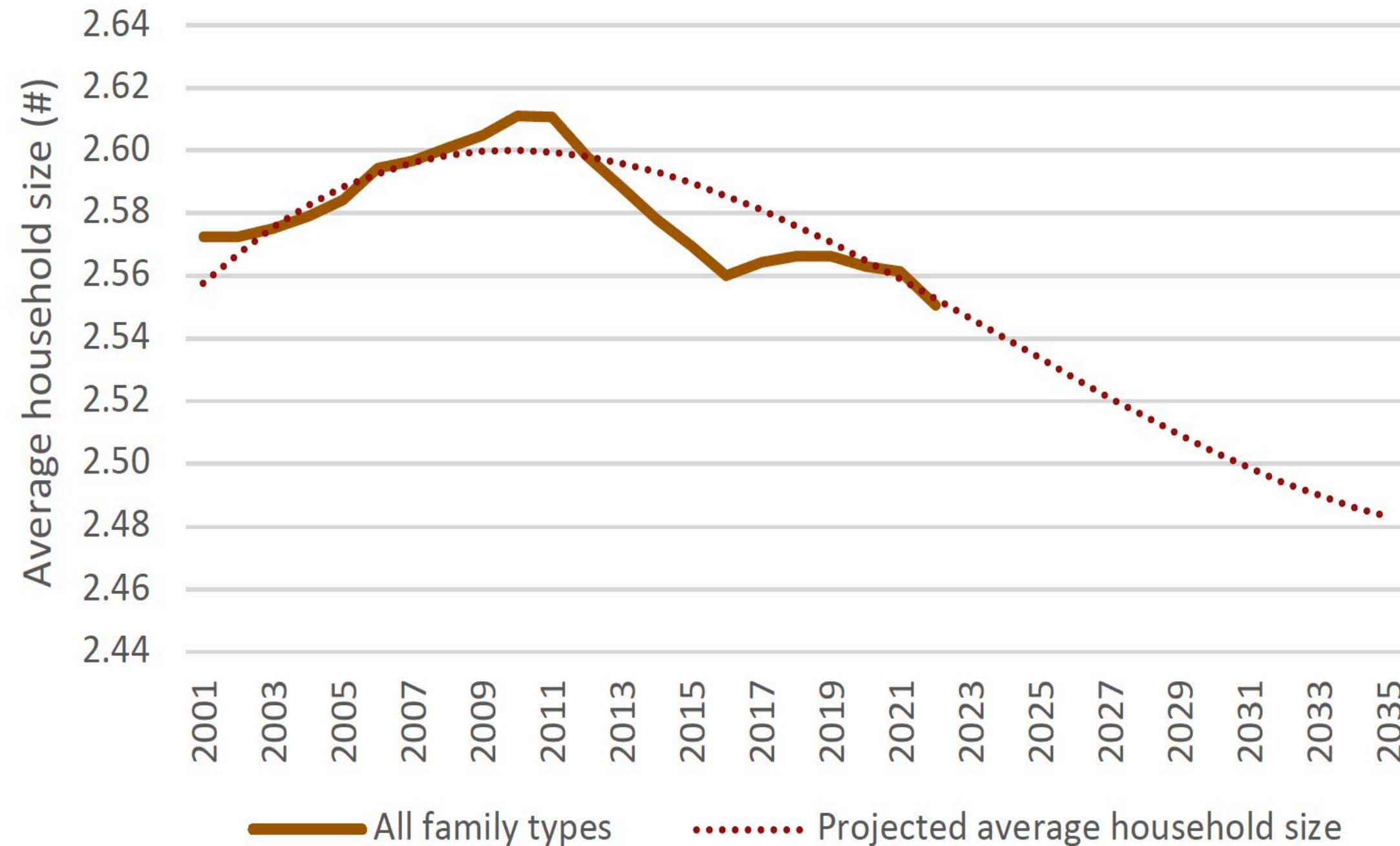
The share of **single parent families** in WA has more or less **doubled in a decade**

The share of **couples with children** rose for the first decade of the millennium, but has declined over the past ten years



Household composition in WA is changing...

Projected average household size for WA families: 2001 to 2035

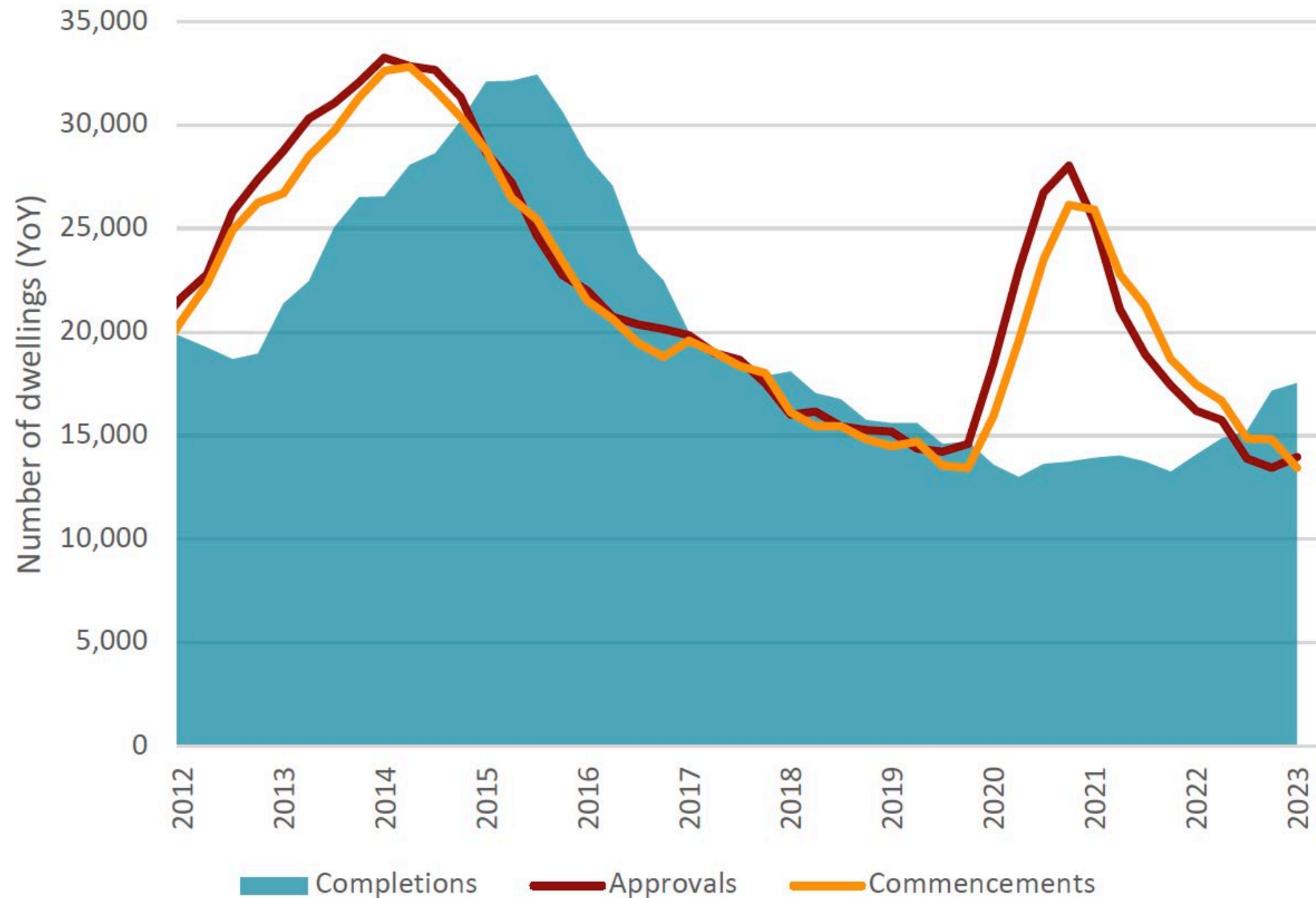


These changes, combined with an **ageing population** reduces **average household size** and increases the demand for rightsizing

This emphasises the compelling need for **greater housing diversity in WA**

Dwelling completions falling short of housing targets

Annual new dwelling completions in WA: 2012 to 2023



There were an average of **14,065** new dwelling completions per year in WA between 2019 and 2023...

... and an average of **19,724** completions each year over the past decade

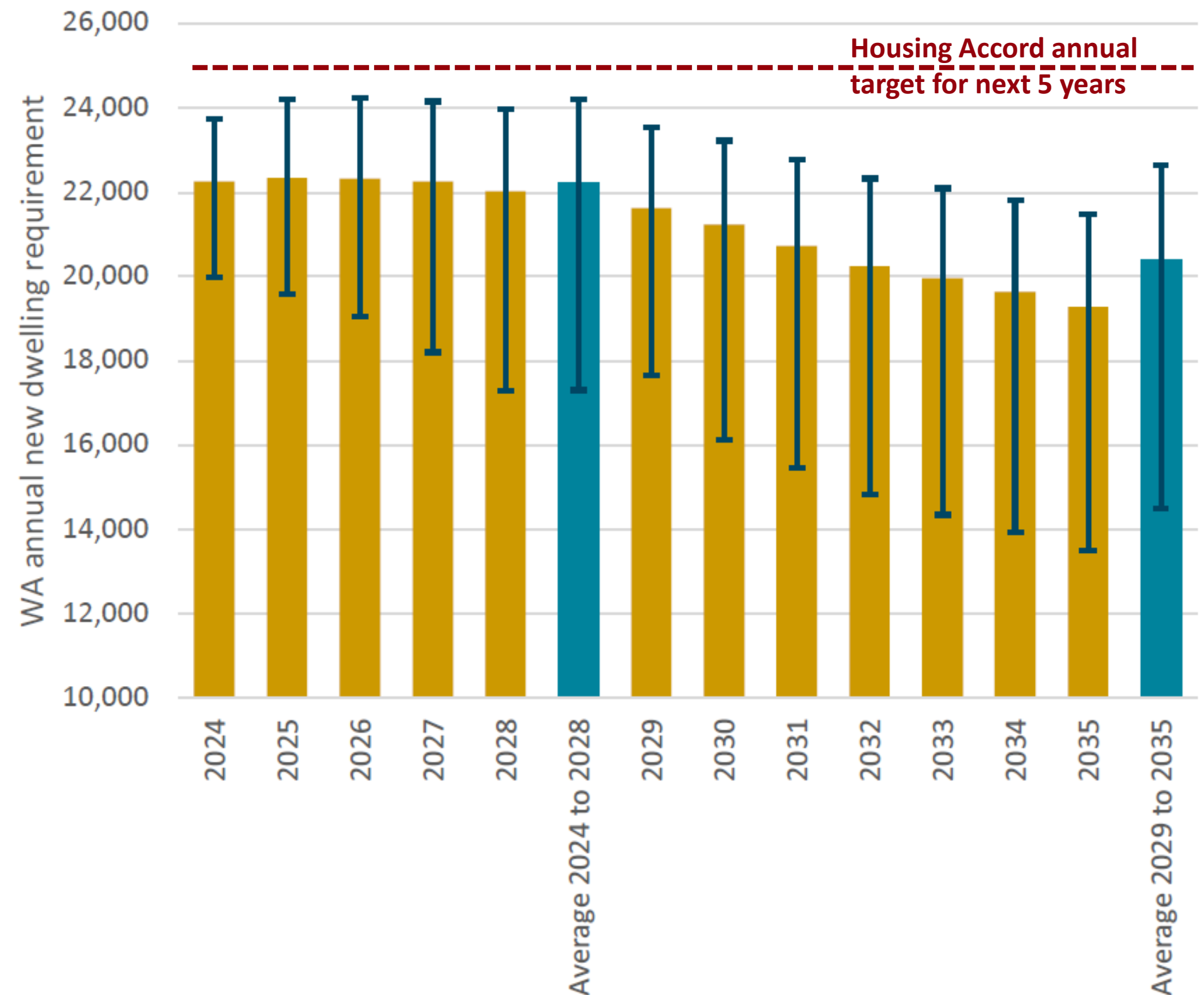
Dwelling completions falling short of housing targets

Projected new dwelling completions targets for WA: 2024 to 2035

National Housing target of **25,000** new dwellings annually for WA

BCEC projects demand of between **21,000** and **24,000** new dwellings annually over the next five years

Construction industry must lift productive capacity to respond to **changing demand**



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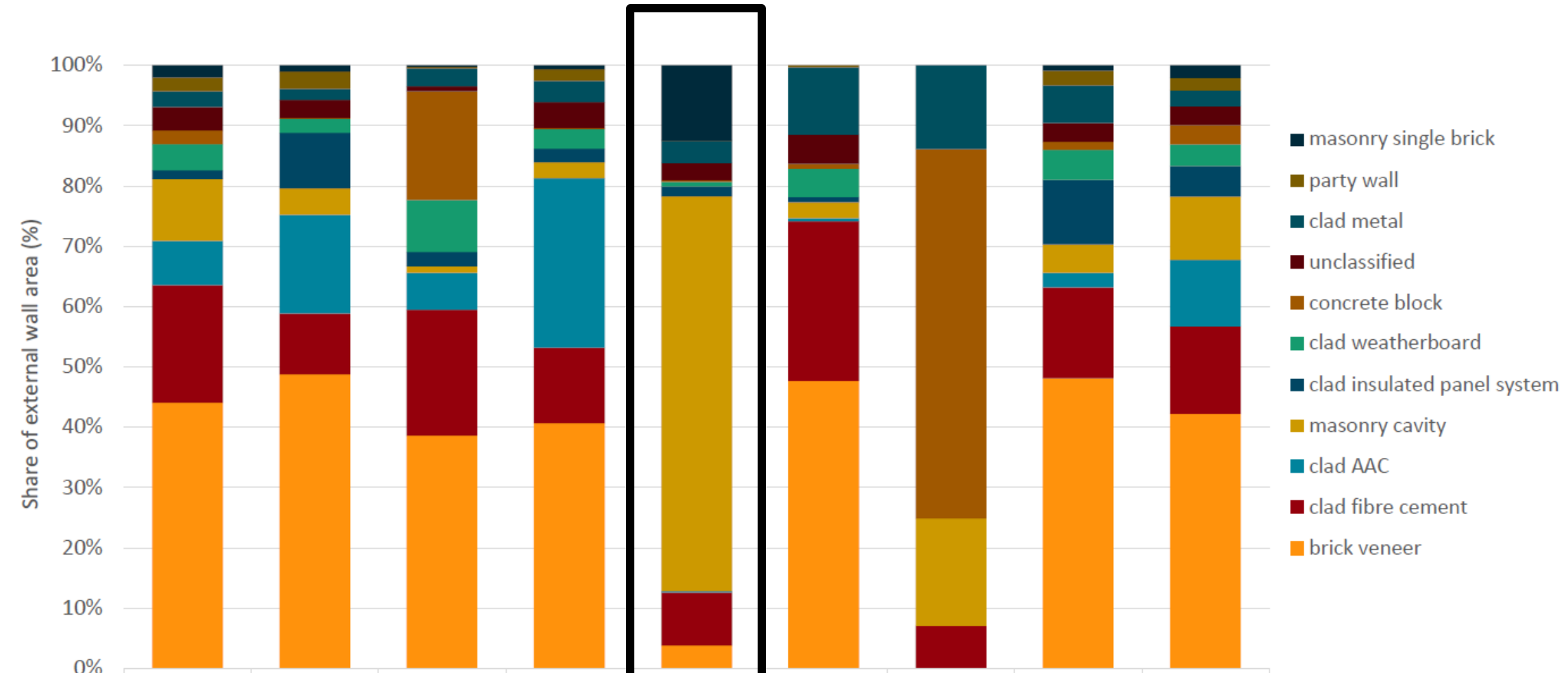
HOUSING SUPPLY AND DIVERSITY

WA builds houses differently....

Wall construction types by state/territory, new dwellings (Class 1 House): 2023

Double brick (masonry cavity) accounts for **64 per cent** of WA's new wall construction

Brick veneer is the main floor construction method for most other states



	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
masonry single brick	2	1	0	1	12	0	0	1	2
party wall	2	3	0	2	0	0	0	2	2
clad metal	2	2	3	3	4	11	14	6	3
unclassified	4	3	1	4	3	5	0	3	3
concrete block	2	0	18	0	0	1	61	1	3
clad weatherboard	4	2	8	3	1	5	0	5	3
clad insulated panel system	1	9	2	2	2	1	0	10	5
masonry cavity	10	4	1	3	64	2	18	4	10
clad AAC	7	16	6	28	0	0	0	2	11
clad fibre cement	18	10	21	12	9	25	7	14	14
brick veneer	41	47	38	40	4	45	0	45	40

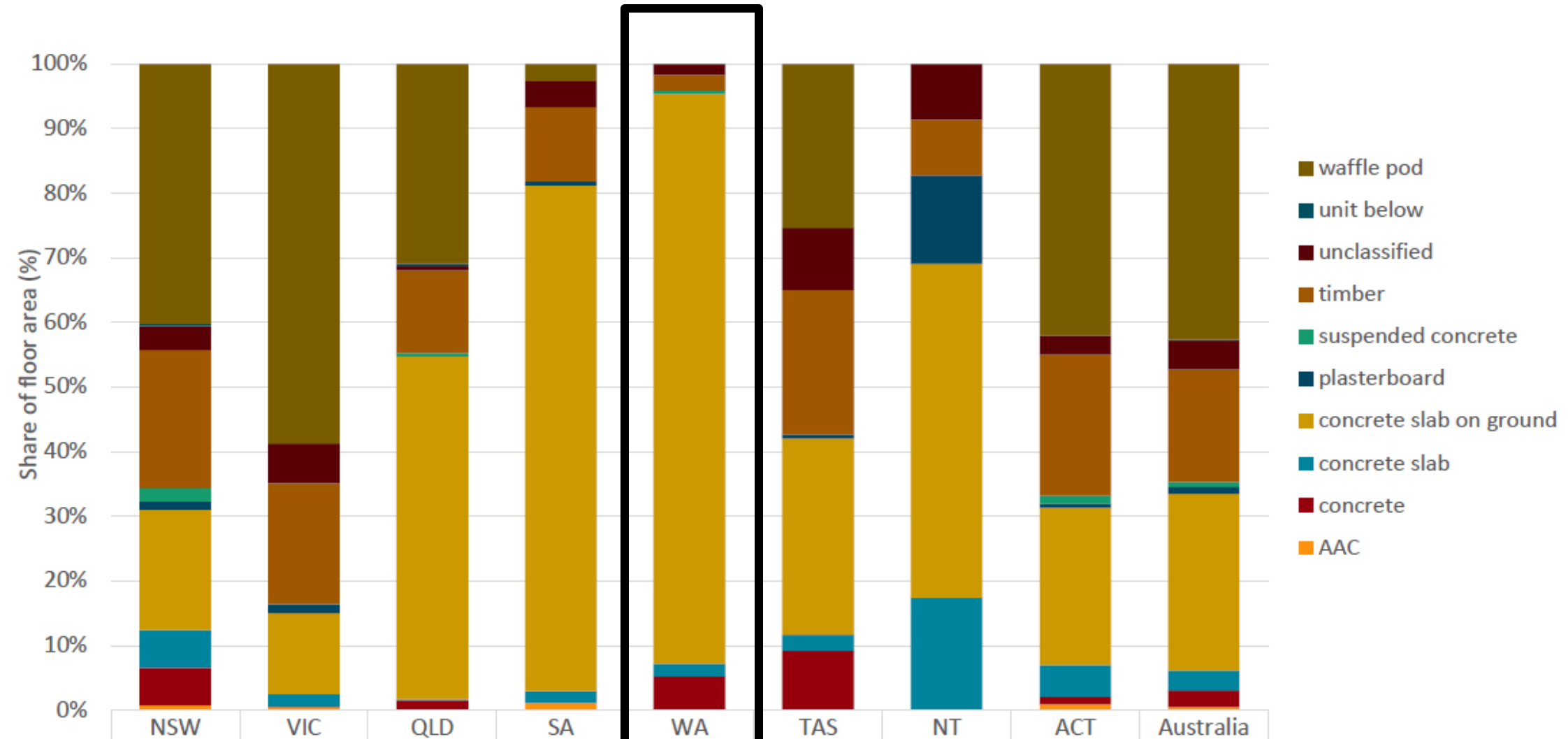
WA builds houses differently....

Floor construction types by state/territory, new dwellings (Class 1 House): 2023

Double brick (masonry cavity) accounts for **64 per cent** of WA's new wall construction

Brick veneer is the main floor construction method for most other states

Almost all floors in WA are **concrete slab on ground** compared to **waffle pod methods** for most other states of Australia



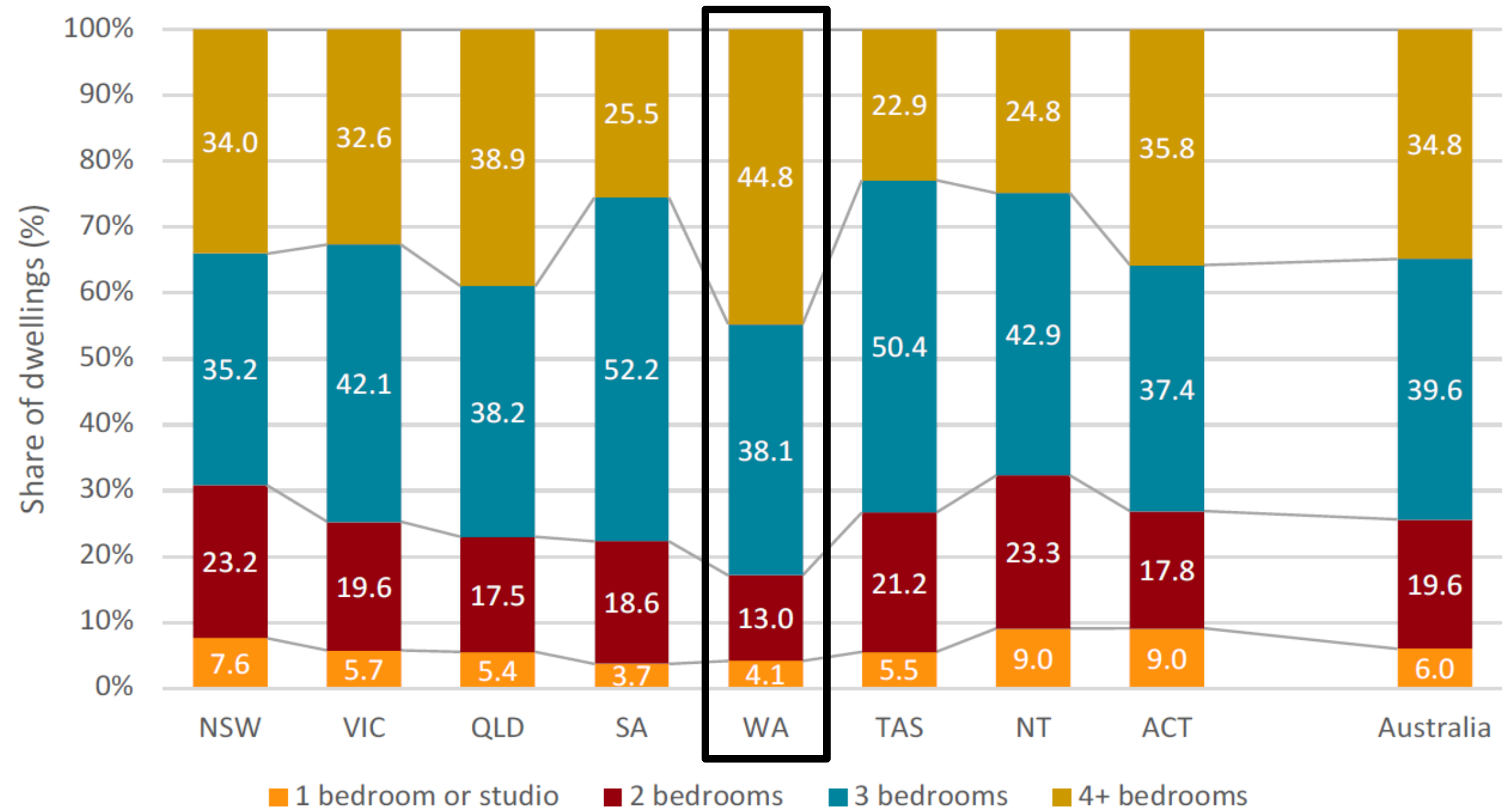
	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
waffle pod	40	59	31	3	0	25	0	42	43
unit below	0	0	0	0	0	0	0	0	0
unclassified	4	6	1	4	2	10	9	3	4
timber	21	19	13	11	2	22	9	22	17
suspended concrete	2	0	1	0	1	0	0	1	1
plasterboard	1	1	0	1	0	1	14	1	1
concrete slab on ground	19	13	53	78	88	30	52	24	27
concrete slab	6	2	0	2	2	2	17	5	3
concrete	6	0	1	0	5	9	0	1	3
AAC	1	0	0	1	0	0	0	1	0

WA houses are bigger....

Shares of dwellings by number of bedrooms by state/territory: ABS Census 2021

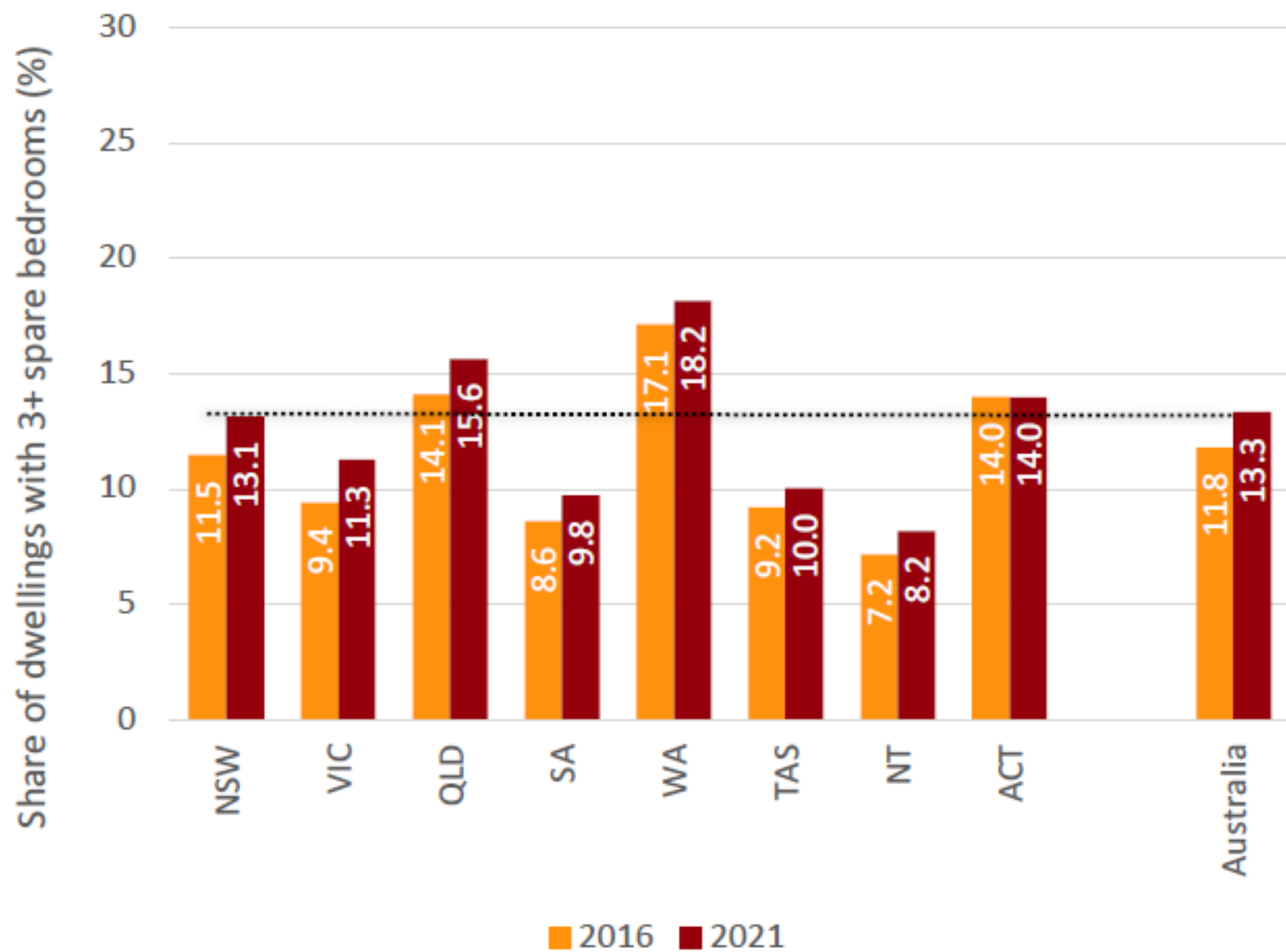
Nearly 45 per cent of dwellings in WA have **four or more bedrooms**

Nearly 83 per cent of dwellings have **three bedrooms or more**



... with far more vacant capacity

Share of dwellings with extra bedrooms, by state and territory: 2016 and 2021



How many spare bedrooms are there in WA?

1.4 million

If one unused bedroom is used for a guest bedroom, home office, or study, this leaves:

675,000 bedrooms as vacant capacity

WA needs far greater housing diversity

Share of dwellings by type, WA versus other states and territories: ABS Census 2021

Dwelling type	WA %	Differences in WA's share of dwellings by type compared to states and territories							
		NSW ppt	VIC ppt	QLD ppt	SA ppt	TAS ppt	NT ppt	ACT ppt	
Separate house	77.4	+13.7	+6.0	+5.6	+1.0	-9.2	+7.3	+16.5	
Semi-detached/terrace with one storey	9.8	+4.6	+1.4	+4.8	-1.3	+5.3	+2.0	+1.5	
Semi-detached/terrace with two or more storeys	3.6	-3.0	-1.9	-3.2	+0.1	+1.8	-0.6	-5.6	
Flat or apartment in a one or two storey block	2.5	-2.6	-1.9	-1.7	-2.5	-1.9	-3.9	-1.1	
Flat or apartment in a three storey block	1.7	-4.3	-0.8	-1.6	+1.0	+1.1	-0.9	-3.2	
Flat or apartment in a four or more storey block	3.1	-8.7	-3.8	-3.2	+1.6	+2.8	-4.8	-9.3	
Other dwelling type	2.0	+0.2	+1.0	-0.6	+0.2	+0.2	-9.1	+1.2	

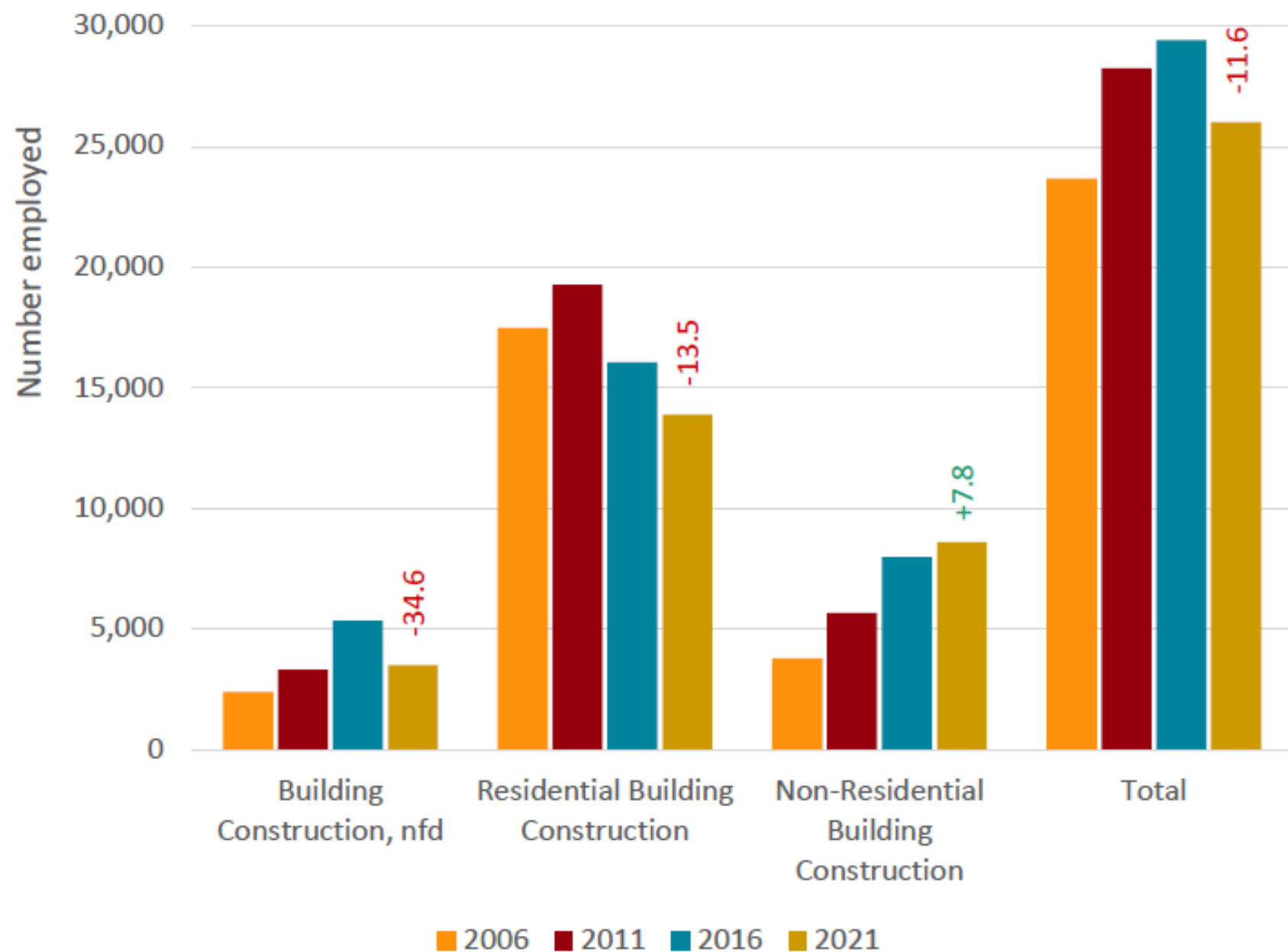
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CONSTRUCTION WORKFORCE ISSUES

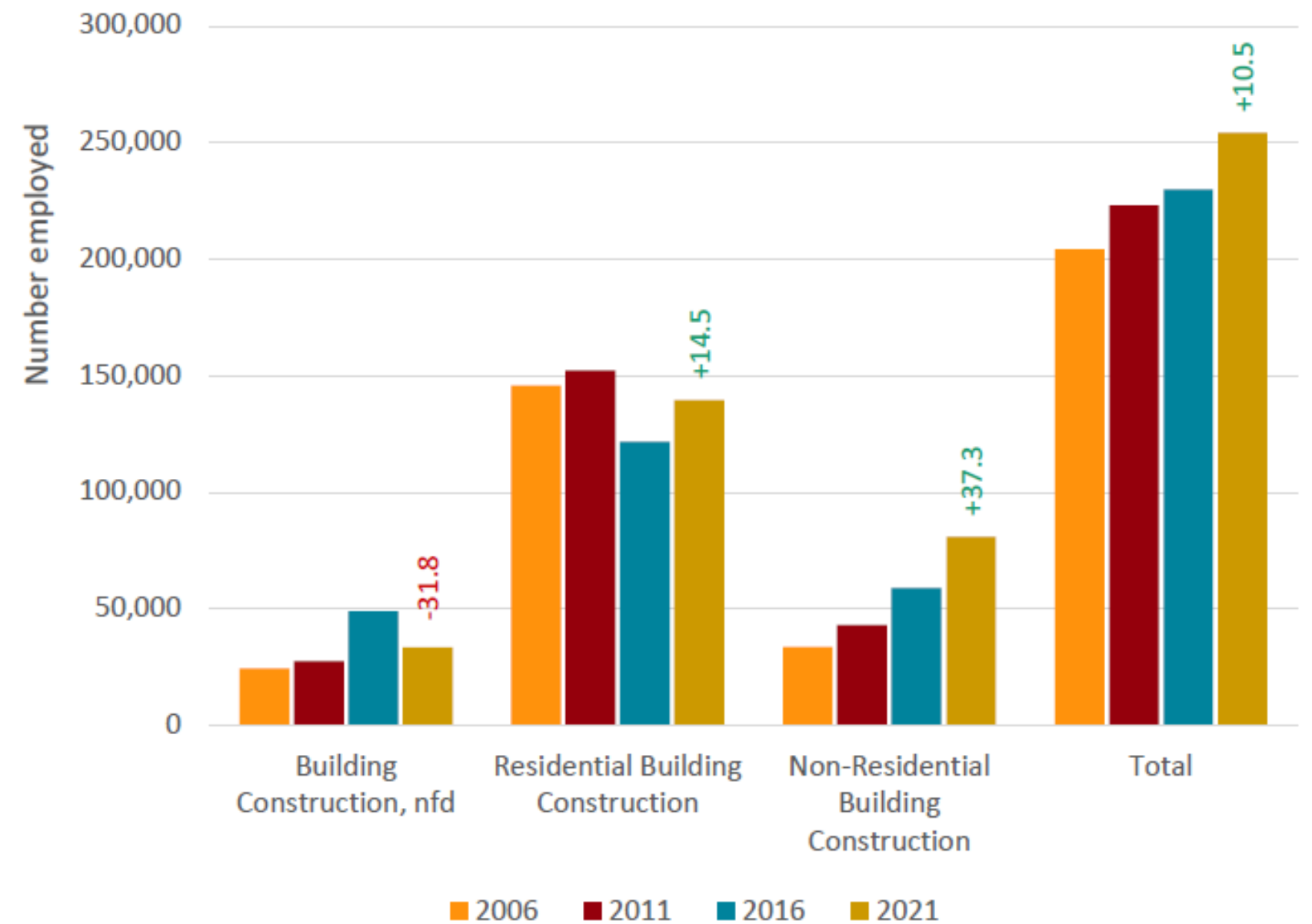
Construction worker profile

Construction workforce in WA and rest of Australia: by subsector, 2006 to 2021

(a) Western Australia



(a) Rest of Australia



Workforce shortages linked to poor retention

Worker flows between WA's construction industry and other sectors: 2016 to 2021

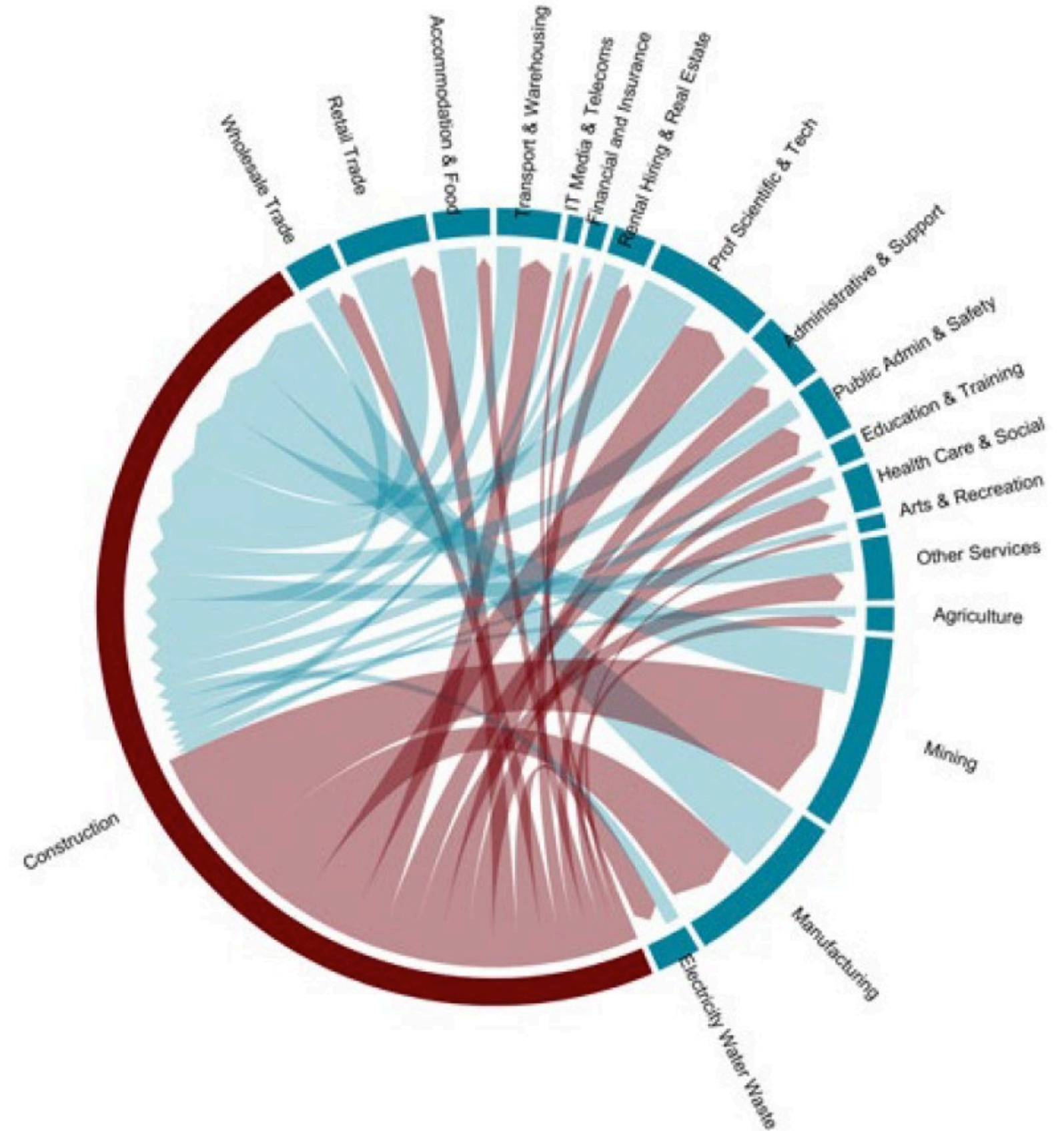
There has been a strong outflow of construction workers to other industry sector in WA between 2016 and 2021

8,050

workers to mining sector (11.6%)

5,200

workers to manufacturing sector (7.4%)



Where are construction trade shortages most acute?

Construction skills shortages and change in internet job advertisements: 2024 Q1

Shortage of finishing trades

High retention and long-term training gaps

No signs of improvement

	Shortage rating (WA)	Shortage Driver	Count of WA workers	Internet job vacancies advertised	
Construction trades occupations				As at 2024 Q1	12 month change (%)
Architectural, Building and Surveying Technicians	No Shortage		4,763	299	+29.4
Bricklayers and Stonemasons	Shortage	Short Training Gap	3,361	22	+6.5
Structural Steel Construction Workers	Shortage	Retention Gap	2,627	165	+38.9
Earthmoving Plant Operators	Shortage	Not known	2,570	342	+19.4
Crane, Hoist and Lift Operators	Shortage	Retention Gap	859	99	-1.3
Glaziers	Shortage	Retention Gap	835	27	+37.9
Electricians	Shortage	Long Training Gap	9,135	664	+13.1
Plumbers	Shortage	Long Training Gap	6,245	189	+25.7
Airconditioning and Refrigeration Mechanics	Shortage	Long Training Gap	983	99	+60.0
Electronics Trades Workers	Shortage	Short Training Gap	509	44	+33.3
Painters	Shortage	Long Training Gap	3,707	125	+9.4
Plasterers and renderers	Shortage	Retention Gap	2,544	12	-2.8
Wall and Floor Tilers	Shortage	Retention Gap	1,883	(a)	
Floor Finishers	Shortage	Short Training Gap	661	(a)	
Cabinet and Furniture Makers	Shortage	Long Training Gap	653	38	+0.9
Carpenters and Joiners	Shortage	Long Training Gap	7,243	160	-6.6
Gardeners (General)	Shortage	Not known	1,840	110	-7.5

More apprentices and trainees needed

WA apprentices compared with the rest of Australia

Significant training gaps among finishing trades

**Wall and floor tilers
(5.3% lower)**

Flooring installers (5.7% lower)

**Cabinet and furniture makers
(18.6% lower)**

**Carpenters and joiners
(11.3% lower)**

IS THE CONSTRUCTION INDUSTRY GETTING ITS HOUSE IN ORDER ON CO₂ ?

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Emissions reduction should leverage circular economy...

Linear versus circular housing economy



How should carbon emissions from buildings be measured?

Carbon emissions by scope and building life cycle

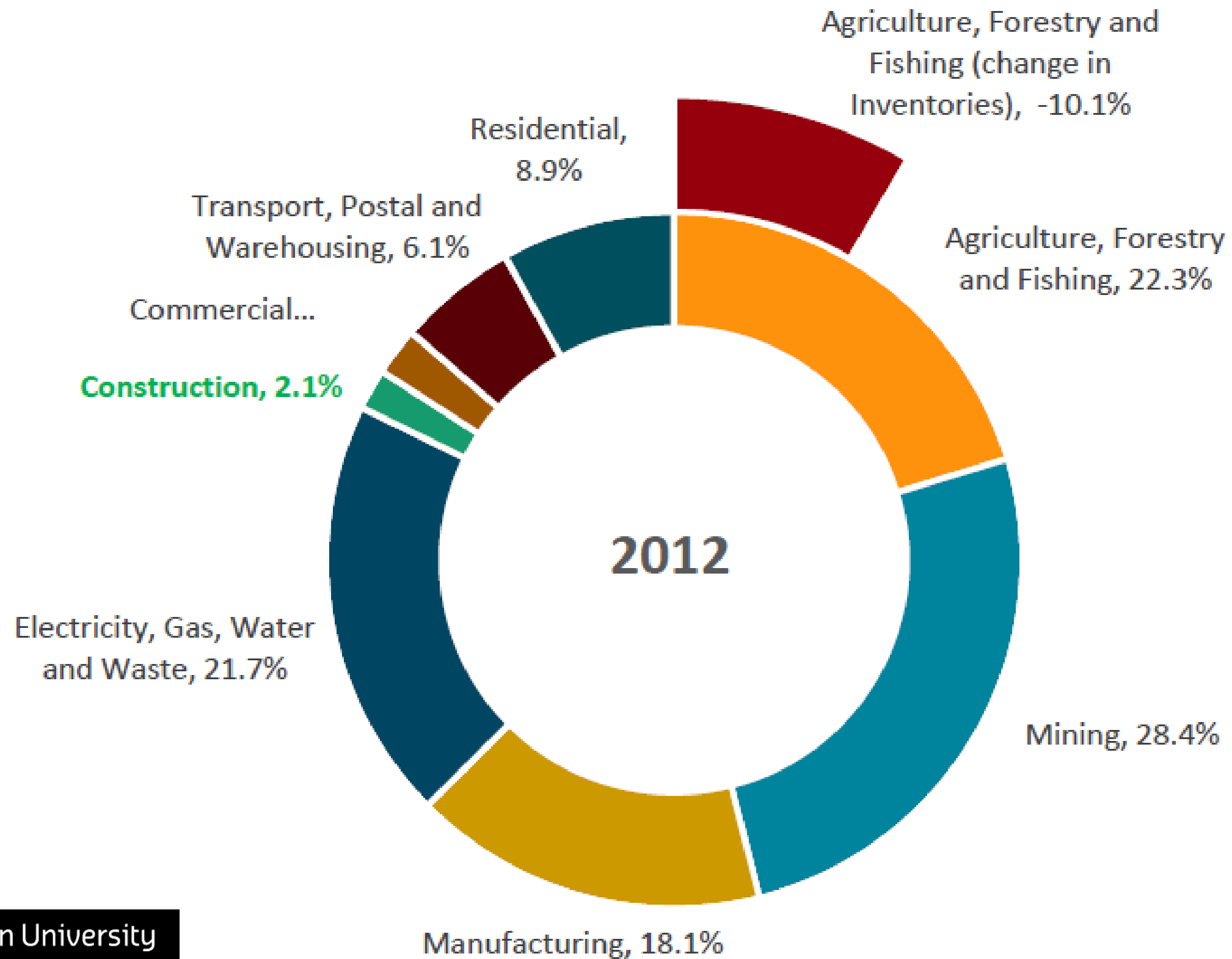
Scope 1 emissions are direct emissions from sources and energy usage owned by or controlled within a company.

Scope 2 emissions are indirect emissions from electricity or heating purchased from external providers

Scope 3 emissions stem from sources other than energy consumption (materials, embodied carbon, transport)

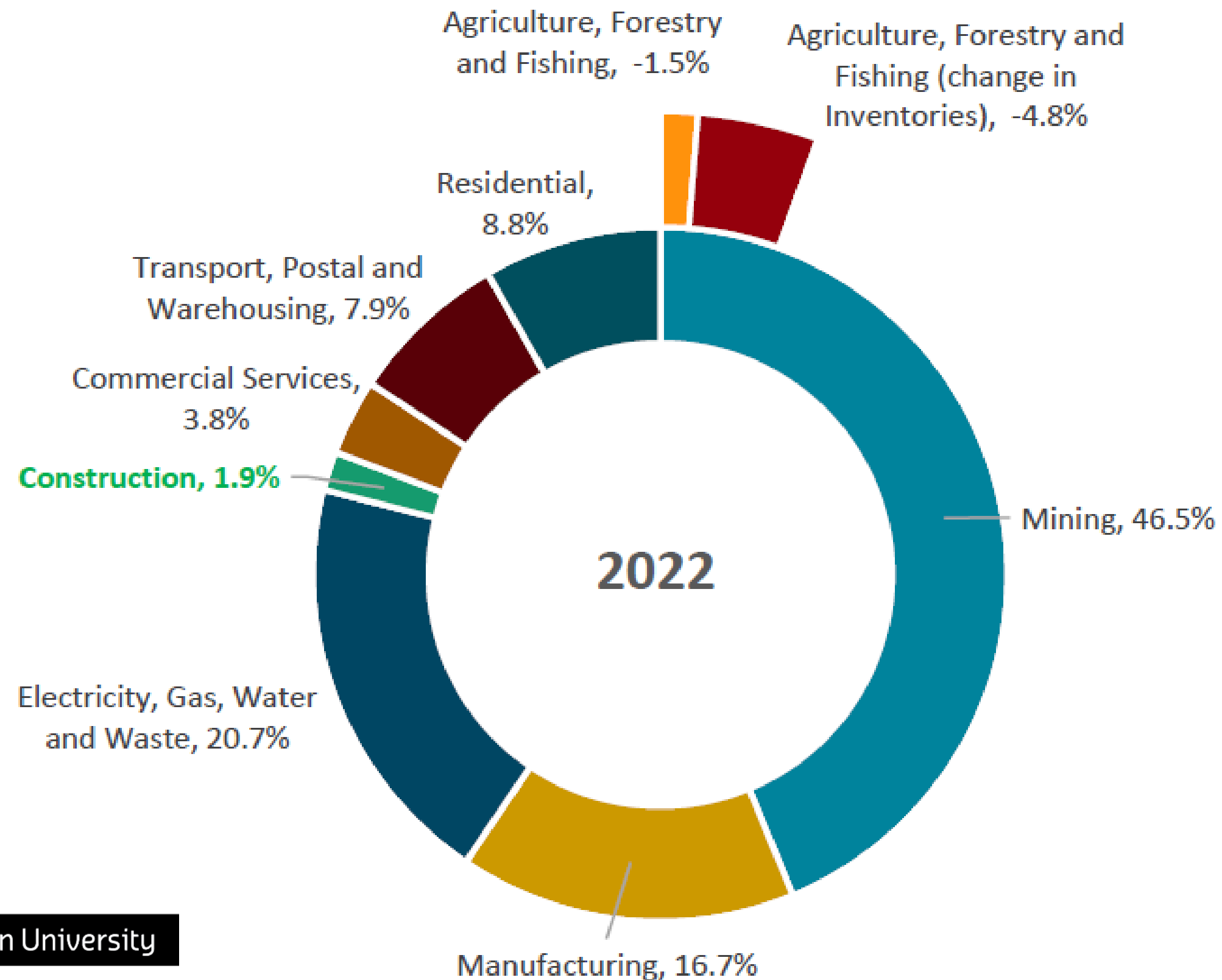
How should carbon emissions from buildings be measured?

Scope 1 Carbon dioxide emissions for WA: by sector, 2012 and 2022



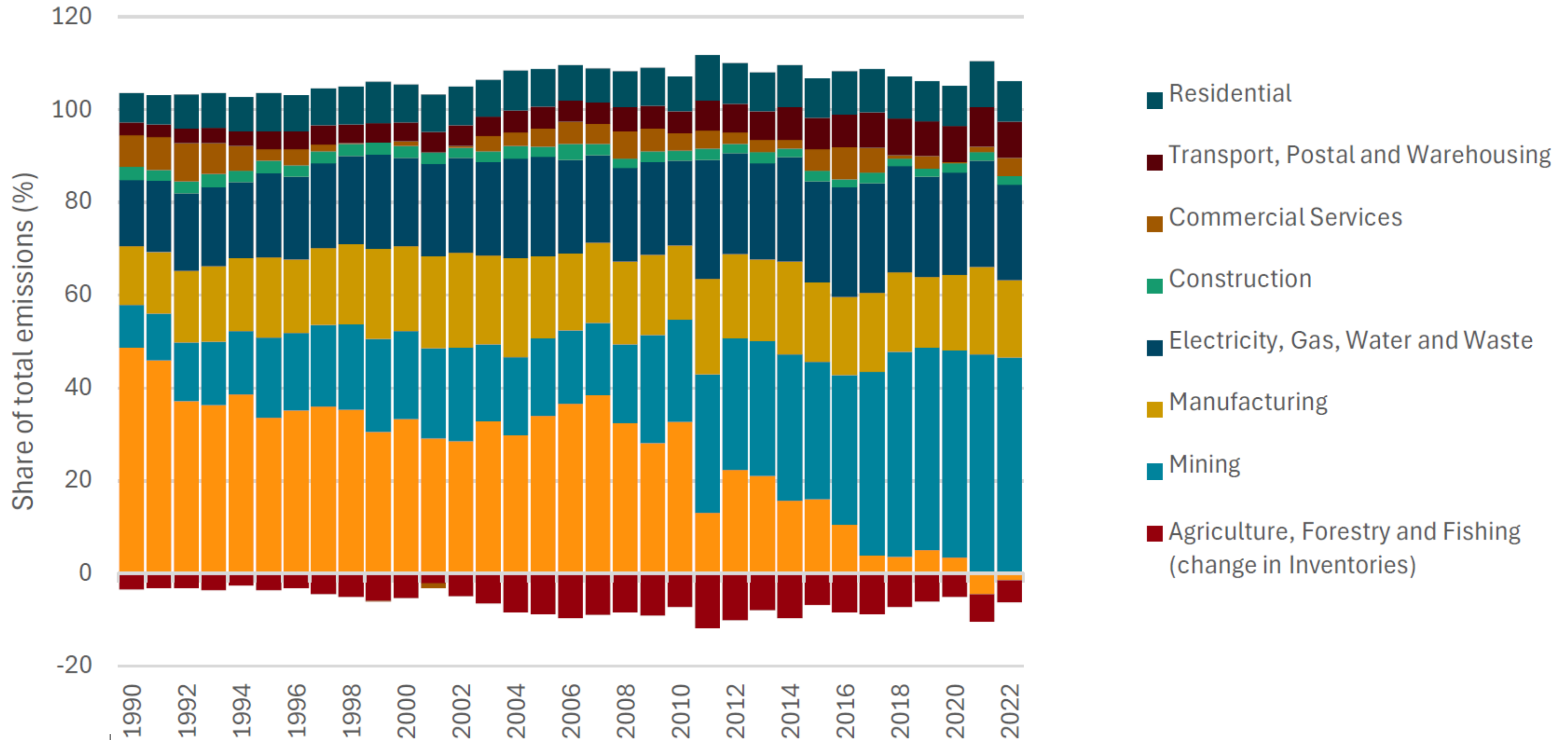
How should carbon emissions from buildings be measured?

Scope 1 Carbon dioxide emissions for WA: by sector, 2012 and 2022



Direct emissions for construction

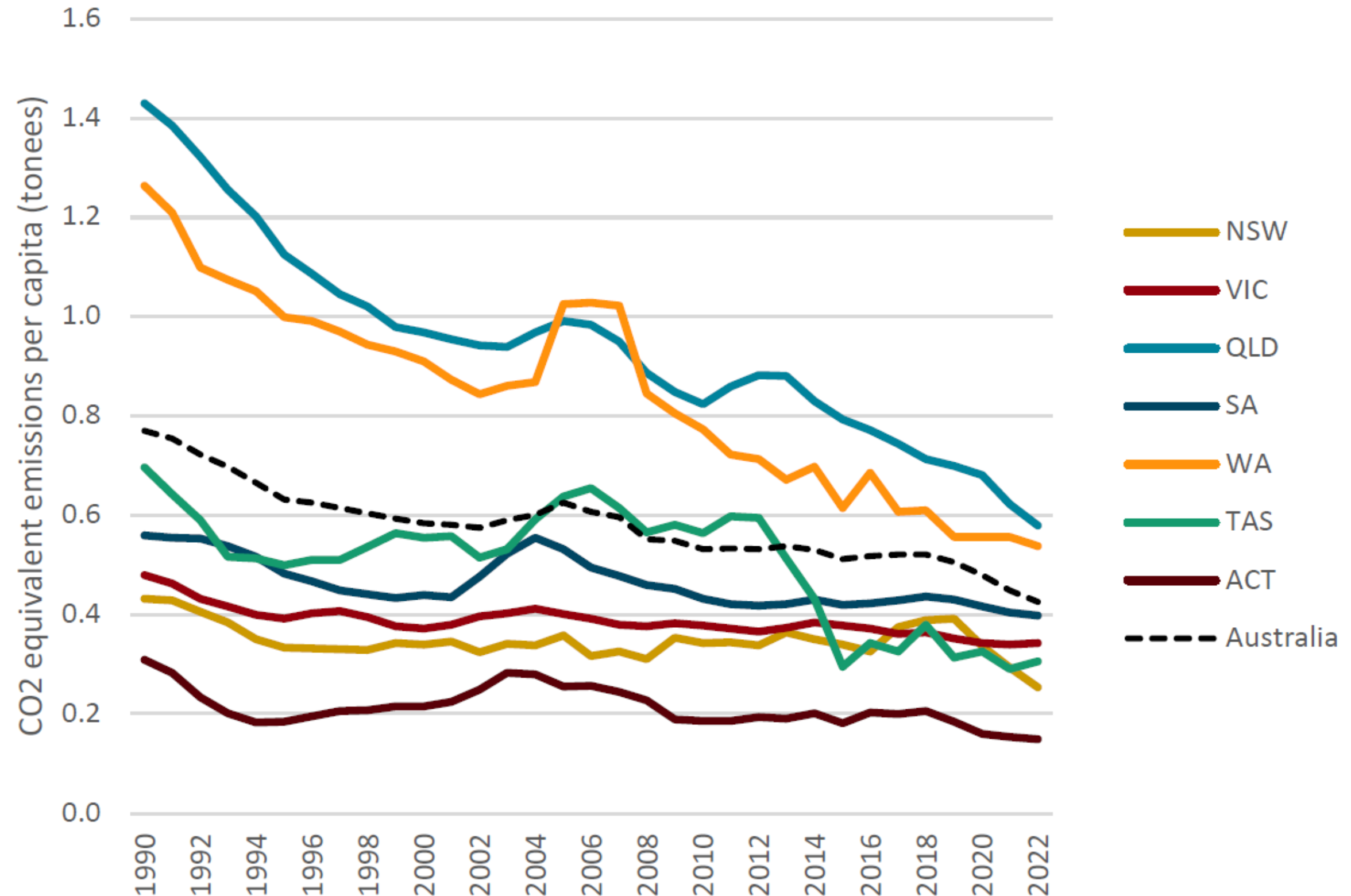
WA carbon dioxide emissions (Scope 1): by industry sector, 1991 to 2022



Direct emissions for construction

WA carbon dioxide emissions (Scope 1): by industry sector, 1991 to 2022

On a **per capita basis**, the level of carbon emissions from the **WA construction sector** have declined relatively consistently and rapidly over the past two decades





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SUSTAINABLE CONSTRUCTION OPTIONS

What are the options to achieve net-zero?

Off-site modular construction methods could be part of the solution

International experience demonstrates:

- increased efficiency
- cost savings
- better workplace practices
- reduced delays
- improved sustainability outcomes

Appropriate regulatory support is critical

A workforce for a low carbon future

Skilled workforce needed:

Innovative business & construction methods

Bridging skills gap:

Attract young talent & retain existing workers

Policy deficit:

No major initiatives since 2007–2013

Collaboration required:

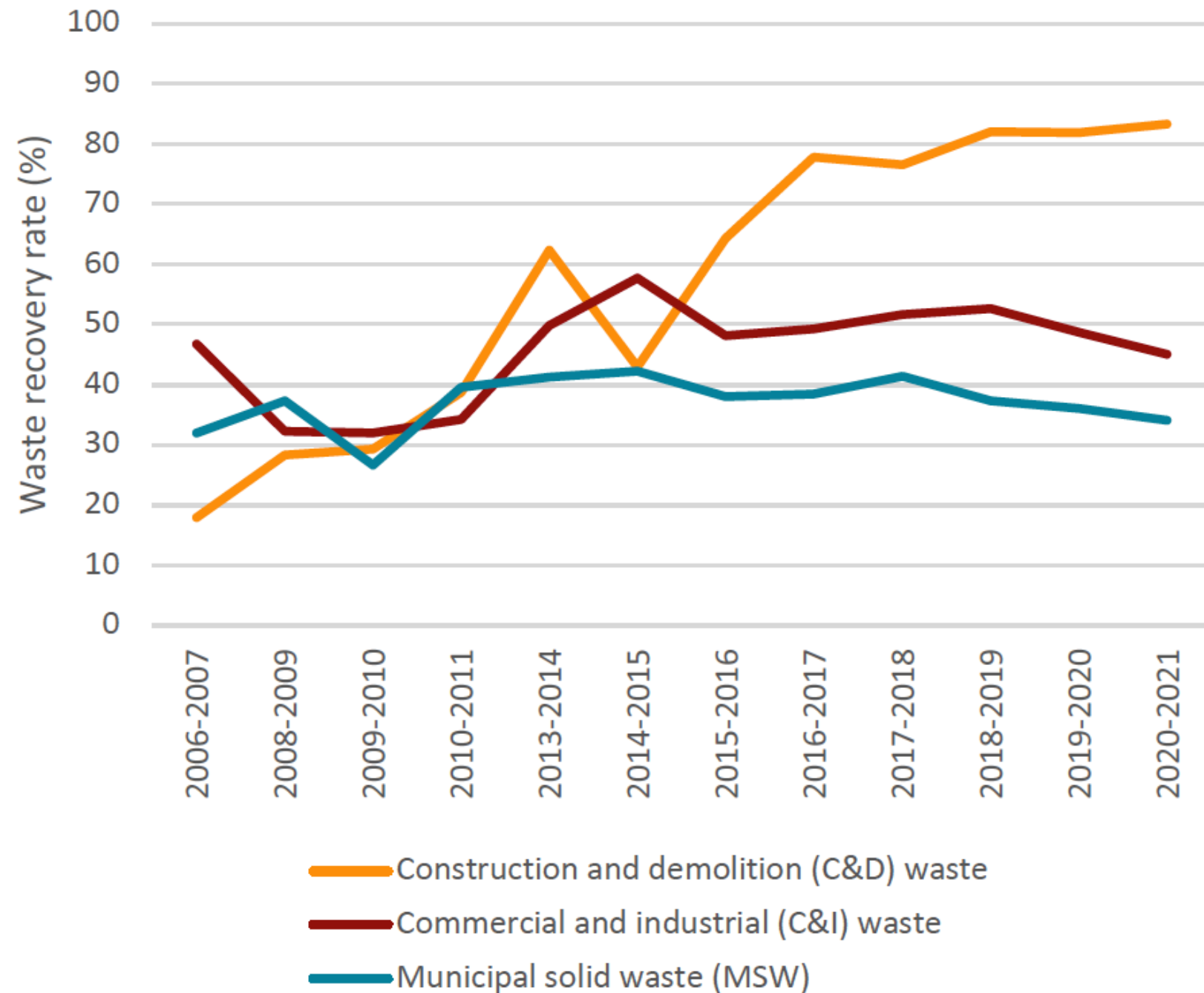
Government, VET, tertiary, housing industry

International models:

EU Build Up Skills, Germany's VET system.

Waste reduction – evidence & mitigation strategies

Waste recovery rate is improving in WA



Significant waste production: Concrete, masonry, scrap metal

Environmental impact: Landfill and particulates release

Fluctuating waste volume: 3M tonnes in 2015, 1.5M in 2018, 3M in 2021

Waste Recovery rate: Increased sharply, over 80%

International insights: Strategic deconstruction over demolition.

Reducing carbon emissions in construction

Investment needed:

R&D in circular materials & net zero housing

Circular construction practices:

Renewable, non-toxic & recycled materials

Material banks:

Existing materials as resources for future buildings

Localised supply chain:

Environmental, social & economic benefits

RECOMMENDATIONS



RECOMMENDATIONS: HOUSING SUPPLY

Promote Housing Diversity:

Increase affordable housing options, greater supply diversity, explore government incentives, infill planning reforms, reduce transaction costs.

Off-site & Modular Construction:

Prioritise R&D investment in off-site and modular construction, expand housing choices and reduce reliance on traditional building methods.

Expand Social Housing:

Maintain net addition of at least 1,000 new social housing units, improve the transition from social to affordable rental housing

Accelerate Land Release:

Collaborate with industry on lot and land release to increase housing supply to tackle rising lot prices, balance greenfield development with the state's net zero commitments.

Review Contracting Methods:

Review and improve building contracting models to protect both consumers and builders, consider pilots of alternative contracting models for public sector projects.



RECOMMENDATIONS: CONSTRUCTION WORKFORCE

Attract and Retain Skilled Workers:

Subsidised training, retention incentives, competitive relocation packages, faster qualification assessment, hiring subsidies for new trainees

Support Apprenticeships & Trainees:

Expand the Construction Training Fund apprenticeship program, consider wage subsidies that extend beyond the training period

Update Skills Lists:

Establish ongoing consultation mechanisms to keep the core skills occupation list up to date with current worker shortages and demands

Train and Upskill Workforce:

Prioritise upskilling in sustainable construction. Expand/fund training in low-carbon design, sustainable procurement, low-carbon supply chains

RECOMMENDATIONS: SUSTAINABILITY

Circular Construction Practices:

Implement policies to encourage investment in low and zero carbon construction processes and comprehensive housing solutions.

Government Standards:

Set environmental standards, low-carbon solutions for government buildings and procurement processes, energy performance disclosures

Localise Supply Chains:

Improve access to local supply chains, grow local capacity, streamline procurement procedures, maintain databases of local suppliers

Material Banks:

Provide specific incentives to decrease embodied carbon and boost the reuse and recycling of building materials

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