



THE UNIVERSITY OF
SYDNEY



BALANCING ACT: HOW REFUSE COLLECTION SHAPES URBAN DENSITY

AITPM Webinar: 19 March 2025

Dr Supun Perera & Andy Johnston



ACKNOWLEDGEMENT OF COUNTRY

Urbis acknowledges the Traditional Custodians of the lands we operate on.

We recognise that First Nations sovereignty was never ceded and respect First Nations peoples continuing connection to these lands, waterways and ecosystems for over 60,000 years.

We pay our respects to First Nations Elders, past and present.

Title: Sacred River Dreaming
Artist: Hayley Pigram
Darug Nation
Sydney, NSW



WHO ARE WE?



DR SUPUN PERERA

Senior Research Fellow at the
Institute of Transport and Logistics
Studies (ITLS) at the University of
Sydney



ANDY JOHNSTON

Director – Transport Advisory
Urbis

AGENDA

1. INTRODUCTION

2. CURRENT PRACTICE

3. WHY IS IT THE WAY IT IS?

4. WHAT CAN WE DO ABOUT IT?

5. DISCUSSION



1. WHY ARE WE HERE?

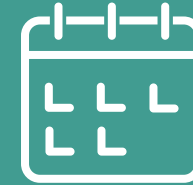


**Max Per
Week¹**



**8mins
35 secs**

**Median Duration
in High Density
Apartments²**



0.255%

**Proportion of
the week the
Refuse Collection
we are designing
for is in use**

¹ Max per week based on Brisbane City Council Refuse Planning Scheme Policy

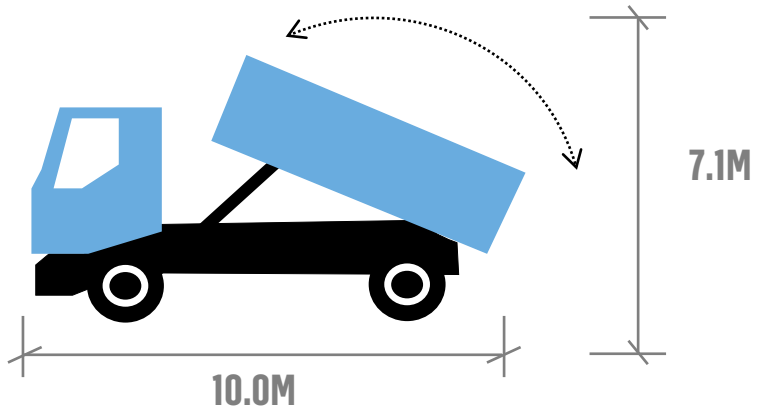
² Median Duration in High Density Apartments based on data from Transport For New South Wales "Freight Trips in High Density Residential Apartments" May 2021

Design for this:

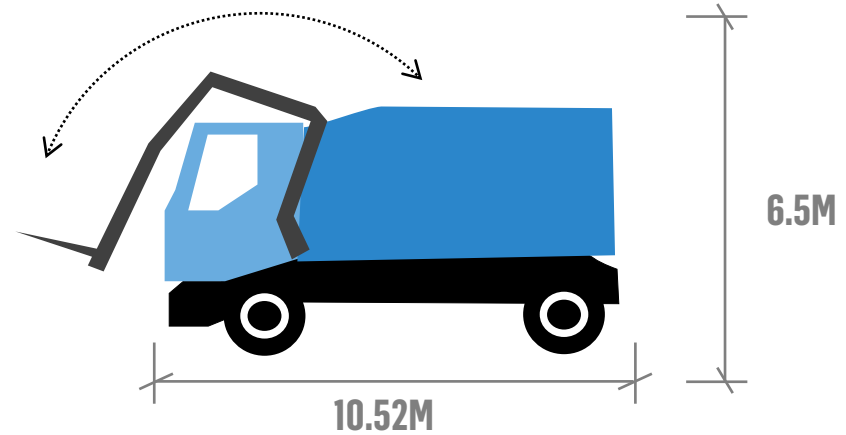


2. WHAT IS CURRENT PRACTICE?

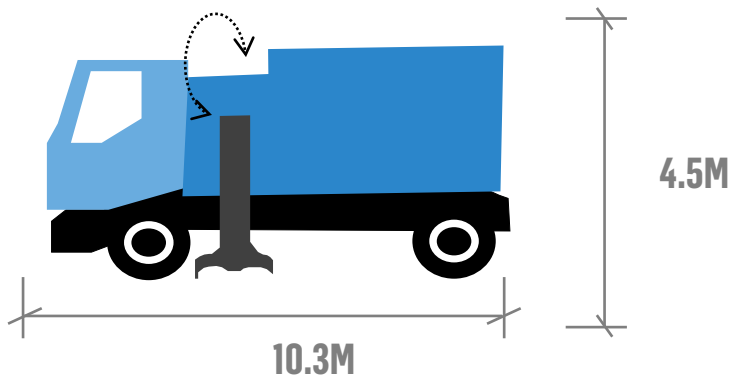
RoRo / Compaction Collection



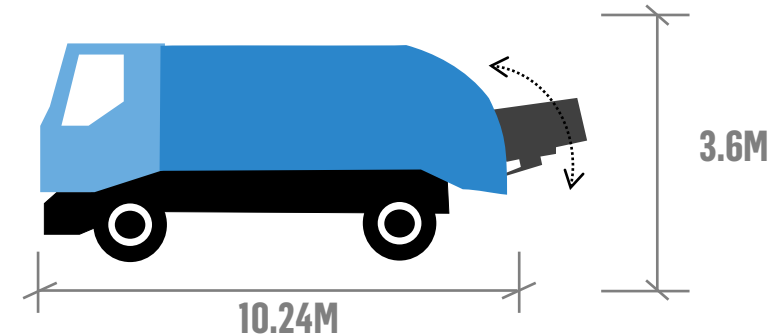
Front Lift Refuse Collection



Side Lift Refuse Collection

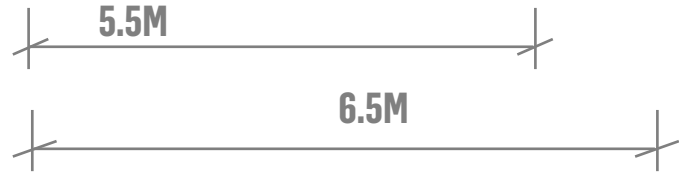


Rear Lift Refuse Collection

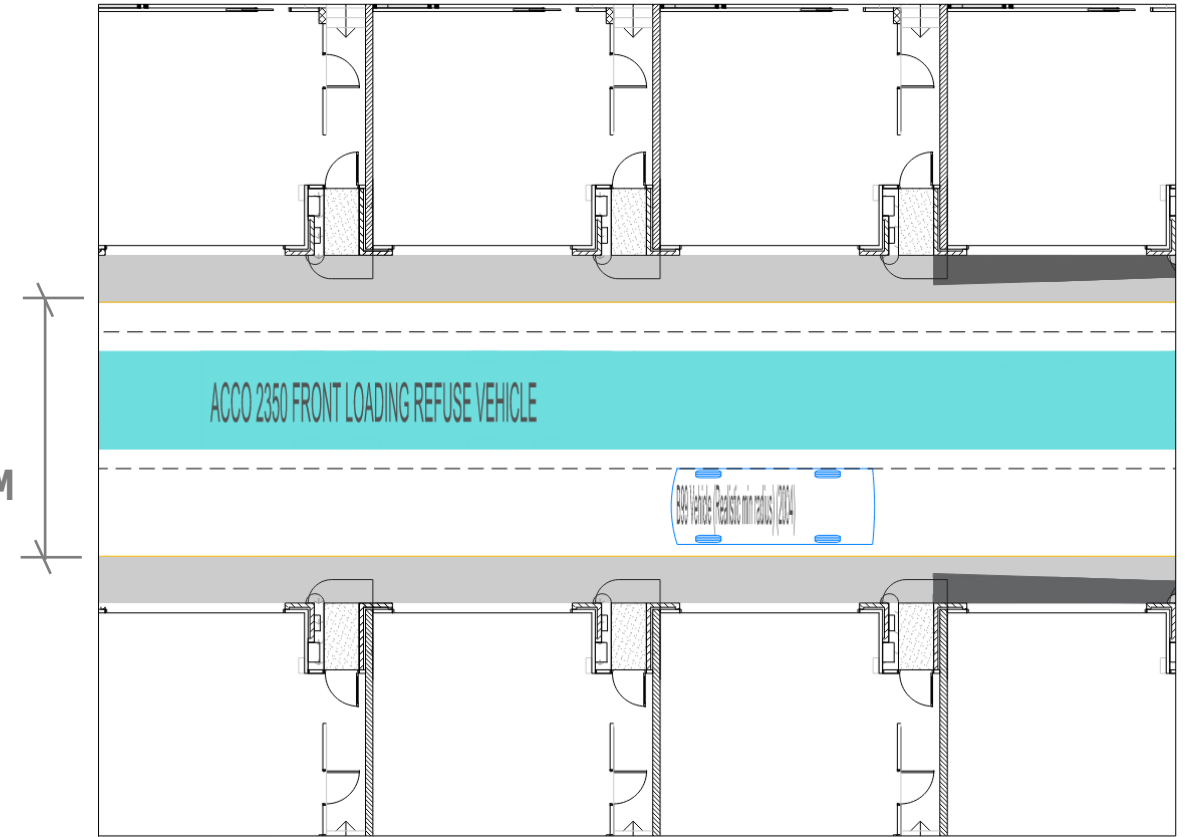


2. WHAT IS CURRENT PRACTICE?


Minimum Operational Widths



5.5M



ONLINE SURVEY 1 – CURRENT WASTE COLLECTION PRACTICE



Our current waste collection practices:

1. Need to change so we can achieve more developable area

1

2

3

4

5

6

7

8

9

10

2. Are optimal and do not need change

1

2

3

4

5

6

7

8

9

10

3. Need to change so we achieve more space for waste collection vehicles

1

2

3

4

5

6

7

8

9

10

Submit

ACCESS THIS SURVEY ON YOUR COMPUTER:
[HTTPS://FORMS.OFFICE.COM/R/4N7Q1WY2](https://forms.office.com/R/4N7Q1WY2)

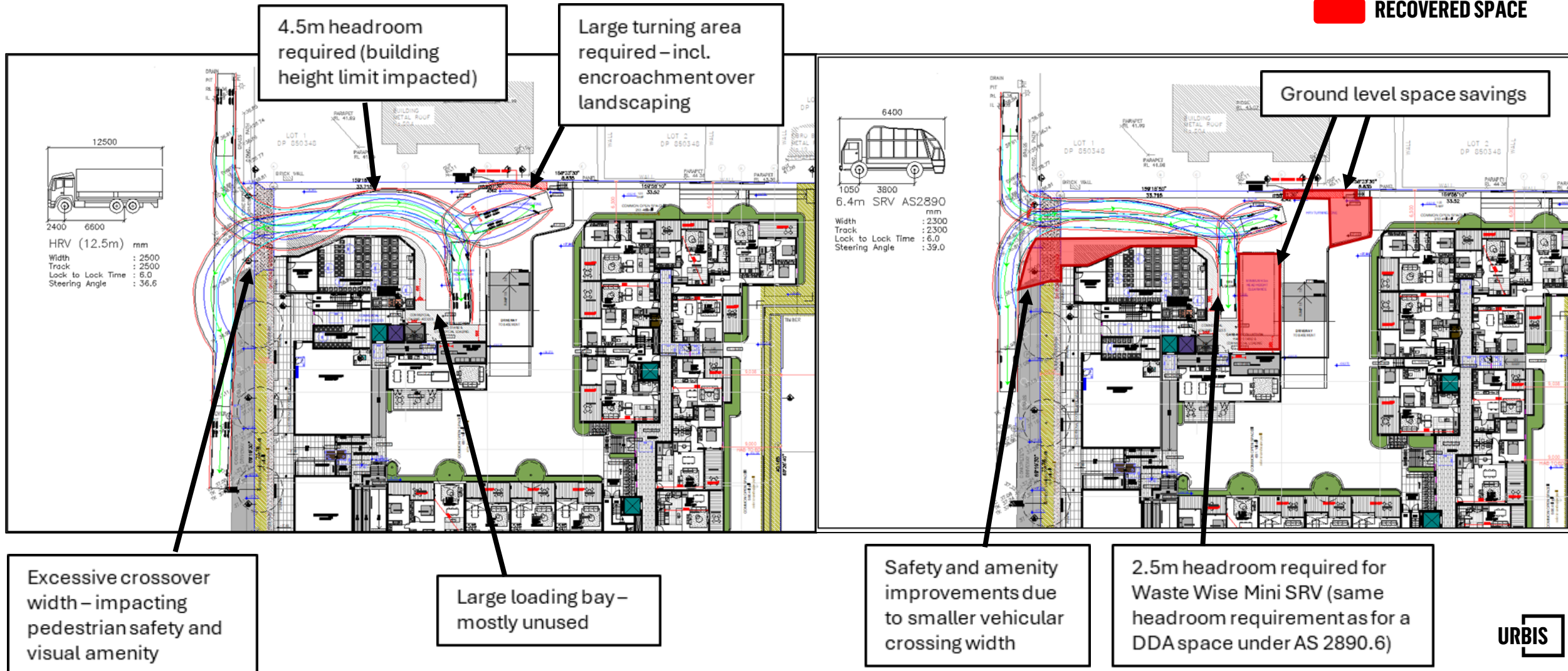
IF USING A PHONE, SCAN THIS QR CODE:



1 – STRONGLY DISAGREE
10 – STRONGLY AGREE

2. WHAT IS CURRENT PRACTICE?

What would we do better



3. WHY IS IT THIS WAY?



We seek to minimise operational costs to ratepayer by using large trucks



Council policy requires designs to cater for large trucks

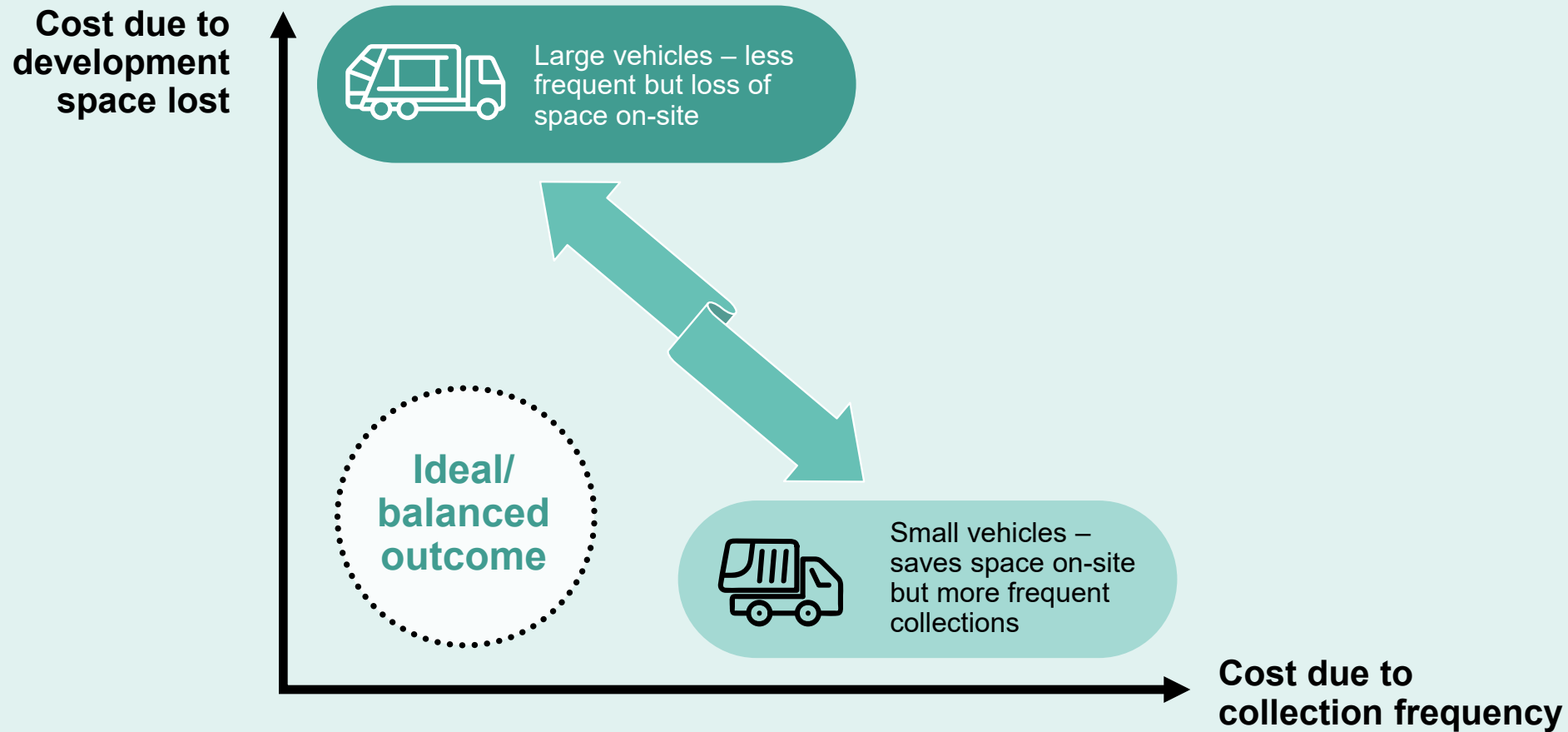


Development density is impacted, and construction costs increase



Purchasers & ratepayer foot the bill + density outcome is not optimal

3. WHY IS IT THIS WAY?



ONLINE SURVEY 2 – IS THIS ACCEPTABLE?



ACCESS THIS SURVEY ON YOUR COMPUTER:
[HTTPS://FORMS.OFFICE.COM/R/U5TPU7X5US](https://forms.office.com/R/U5TPU7X5US)

IF USING A PHONE, SCAN THIS QR CODE:

Acceptability of a sample scenario



4. WHAT CAN WE DO ABOUT IT?

Approach 1: Increase flexibility for waste collection activities

Council



Private
Contractor



4. WHAT CAN WE DO ABOUT IT?

Approach 2: More variability in waste fleet

Small RCV – HINO 300 Series

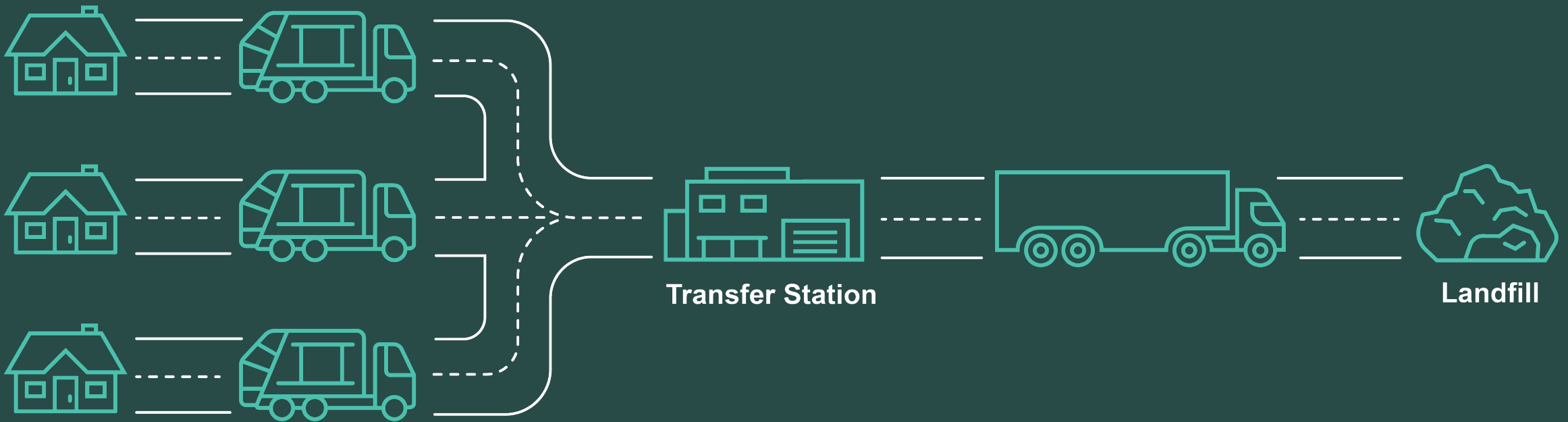


10.52M



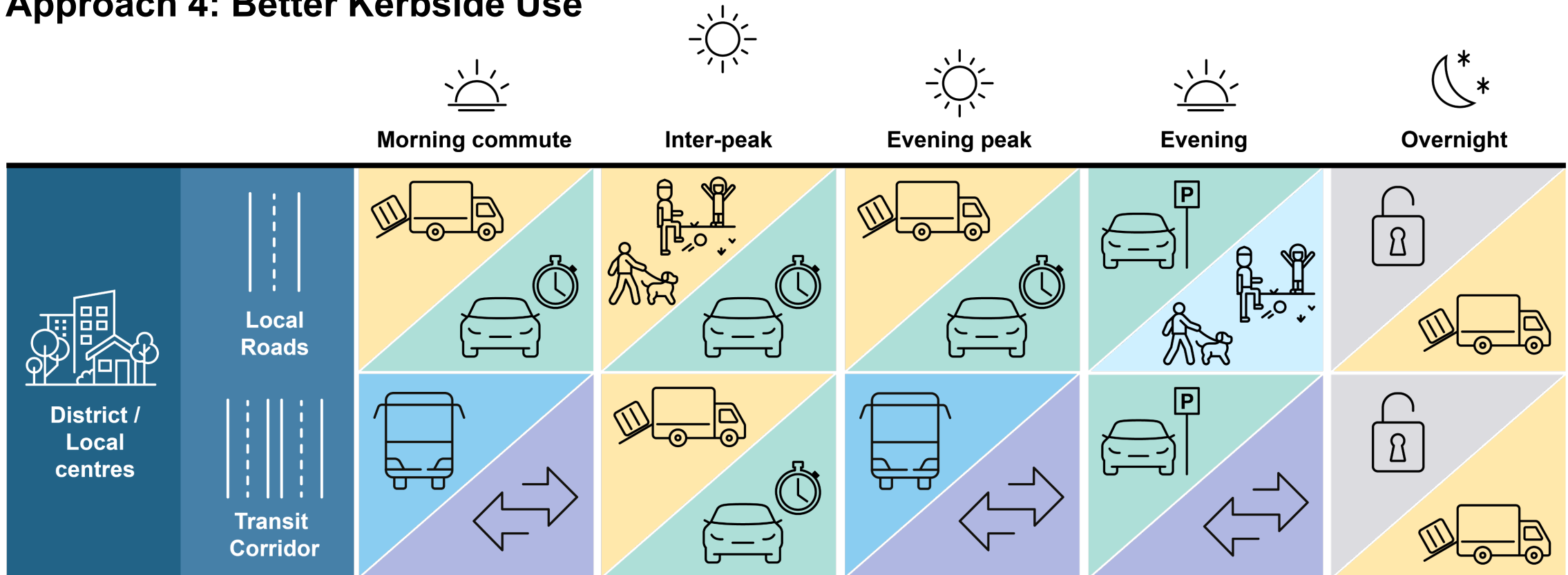
4. WHAT CAN WE DO ABOUT IT

Approach 3: (more) Local Transfer Stations



4. WHAT CAN WE DO ABOUT IT

Approach 4: Better Kerbside Use



WHAT WE CAN DO ABOUT IT?

Approach 5: Pneumatic Networks



Compactor container fed by pneumatic tube; Map of pneumatic pipe network at Clichy-Batignolles (collection terminal is at far left)

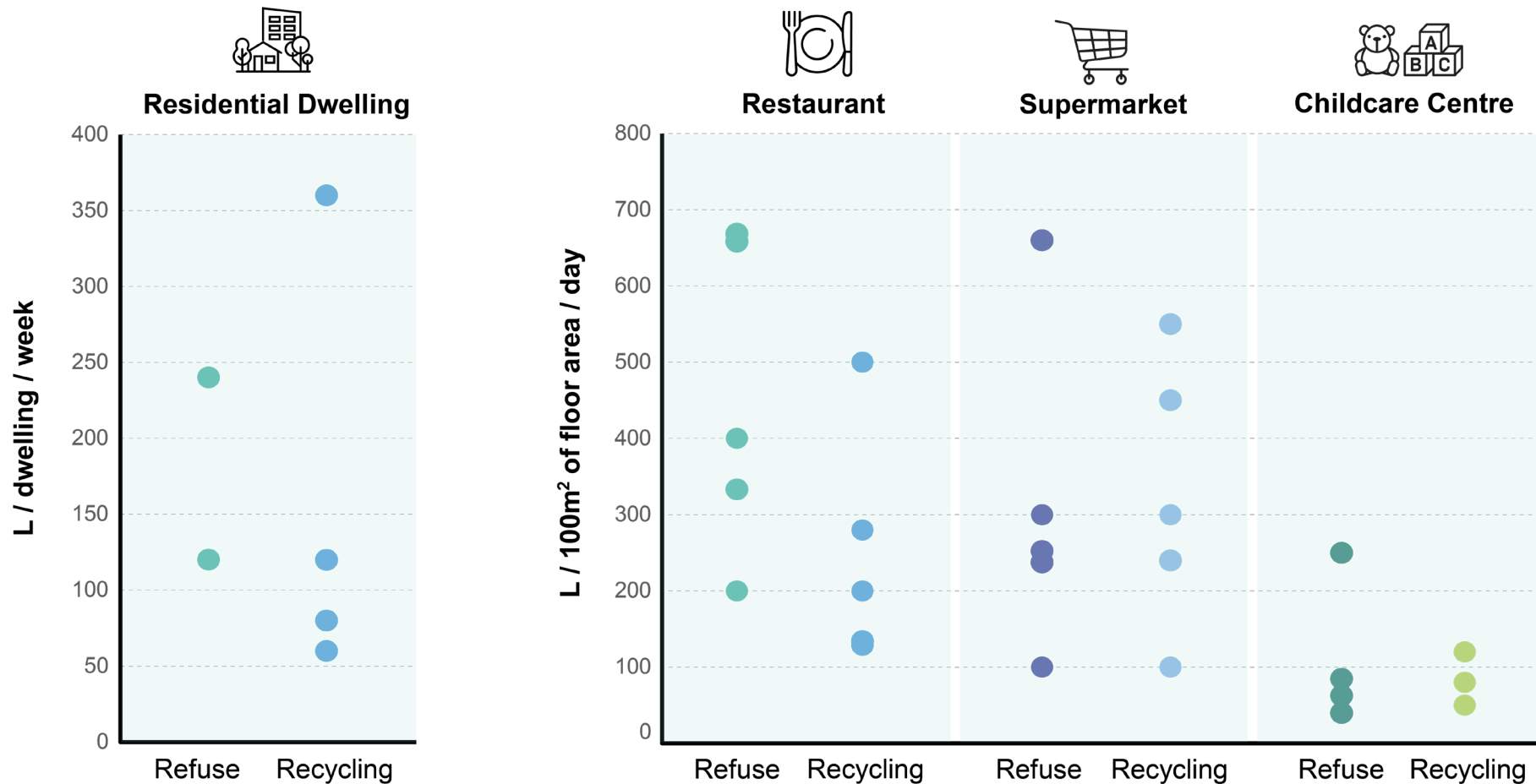
WHAT WE CAN DO ABOUT IT?

Approach 6: More Flexible Street Design



WHAT CAN WE DO ABOUT IT?

Approach 7: National database of waste generation



WHAT CAN WE DO ABOUT IT?

Approach 8: Neighbourhood Scale Collection Points



Shared compaction bins

A number of designs are now available for externally located compaction systems. These systems are typically suited for high-density retail areas. Access is secure, usually by a card identification system. Waste is deposited through an inlet hopper suitable for regular smaller loads arising from retail outlets or some commercial premises. The compactor storage container is typically collected by a hook-lift-type vehicle. When considering these systems, noise impacts and collection access should be taken into account.



In Kissimmee, Florida, the first US city to install submerged containers, a standard collection truck modified with a hoist that can be used with both submerged and surface containers

ONLINE SURVEY 3 – HOW CAN WE IMPROVE OUR APPROACH TO WASTE COLLECTION?



ACCESS THIS SURVEY ON YOUR COMPUTER:
[HTTPS://FORMS.OFFICE.COM/R/TE6S58H8GK](https://forms.office.com/R/TE6S58H8GK)

IF USING A PHONE, SCAN THIS QR CODE:

Improving our current approach



CONCLUDING REMARKS

- No 'one size fits all' solutions
- Solutions need to be less prescriptive and more flexible / context dependent
- Need to identify the trade-offs and recognise the long-term impacts
- Policy mechanisms need to be flexible to support alternative collection methods
- Decentralised collection options (e.g. shared waste hubs or micro collection points) or underground waste systems can be considered in dense urban areas
- We need nationally consistent waste generation rates to better inform planning
- Early engagement and collaboration between stakeholders is essential for precinct scale developments to achieve a balanced solution

FUTURE DIRECTIONS

- Consolidate insights from the online surveys – survey link will be active until end of the month
- Guidance document will be developed to inform practitioners of key considerations under different contexts
- Updates will be distributed via AITPM channels

Feel free to contact us via email:



DR SUPUN PERERA

Supun.perera@sydney.edu.au



ANDY JOHNSTON

ajohnston@urbis.com.au