



# T-TRIID Inclusive Interchanges Design Brief

Training presentation and workshop exercises

Version 1.0 | June 2024



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# 1. About Inclusive Interchanges

**Public transport interchanges are vibrant focal points in city life**, where transport, commerce and social interaction weave together.

**Getting interchange design right is key** to enabling and promoting low carbon, efficient, inclusive and affordable mobility, while getting it wrong can lock in disincentives and problems for many years.

Many cities in Africa face **the challenge of how to integrate new formal Public Transport with the existing Informal Public Transport (IPT)/** paratransit services that continue to play an important role.

The [HVT TRANSITIONS Routemap](#) highlighted infrastructure provision for IPT as an important aspect for improving services.



## 1.1 Project aim

The project team, LAMATA (Lagos Metropolitan Area Transport Authority) and SLR, set itself the following aim:

***to develop and pilot an Inclusive Interchanges Design Brief (IIDB)...***

***for use by public transport and urban planning authorities...***

***that enables identification and appraisal of key interchange design and management parameters...***

***as well as communication of findings and suggestions to an interchange design team.***





## 1.2 What do we mean by 'Inclusive'

**Socially inclusive** – delivering public transport that is accessible to all, for example by providing a safe option for women and families, and ensuring that people with disabilities can move through the interchanges.

**Sectorally inclusive** – providing the ability for both formal and informal transport and retail/market trading stakeholders to operate at an interchange in a mutually beneficial manner.

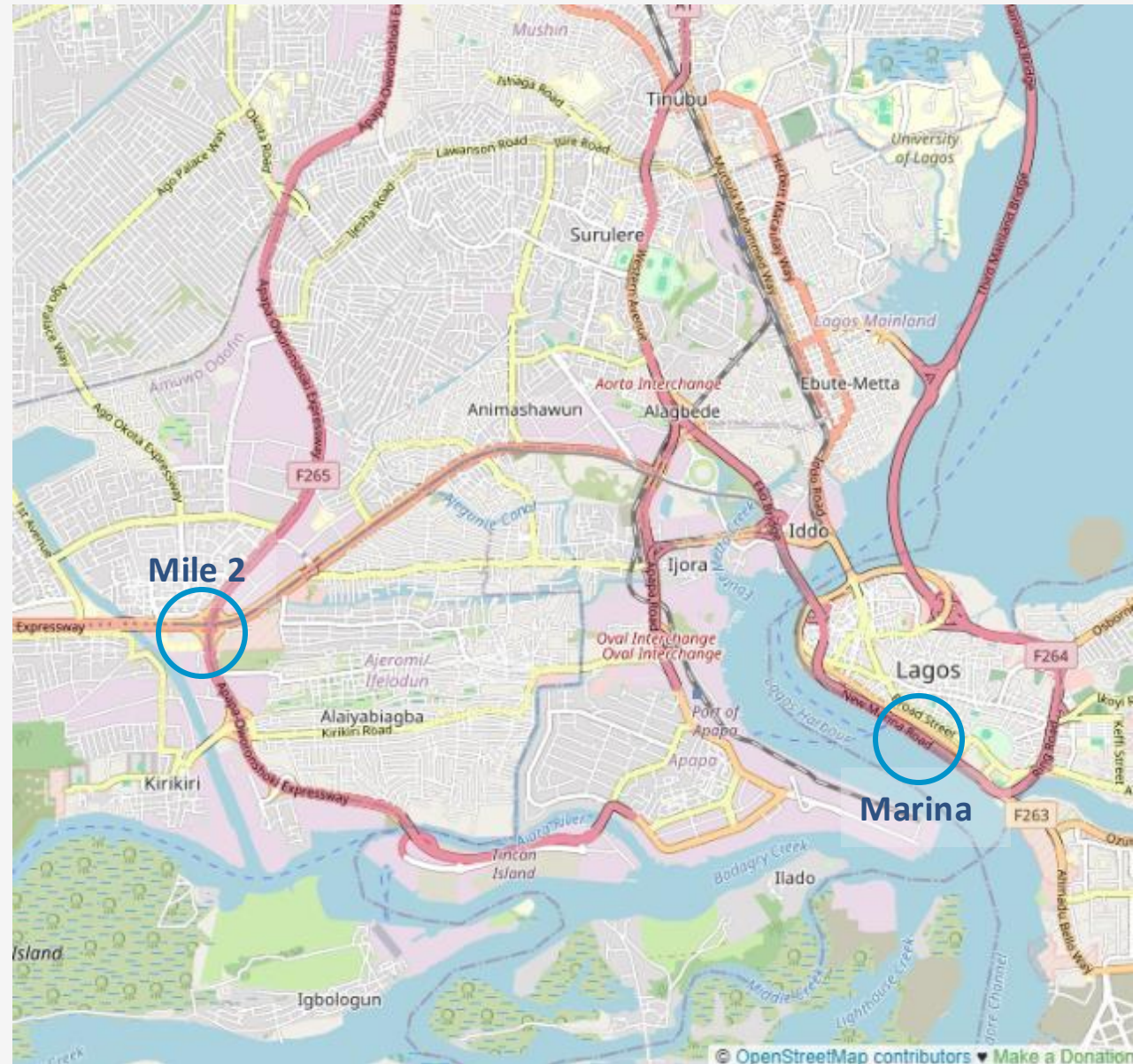




## 1.3 Methodology

The project involved:

- Review of interchange and topic-specific design guidance – leading to the production of a Version 1.0 IIDB
- Lagos case studies – application of the IIDB to two case study interchanges in Lagos: Mile 2 and Marina
- Site visits & stakeholder meetings – multi-disciplinary inputs and discussions with informal and formal sector representatives
- A pilot passenger survey
- Update of the IIDB template – resulting in Version 1.1



## 2. About the IIDB

The **Inclusive Interchanges Design Brief (IIDB)** has been developed for use by public transport and urban planning authorities, to provide:

- **a catalogue of design topics to be taken into account** during the planning and design of a public transport interchange, together with summary guidance and inclusion of links to more detailed guidelines;
- **a template enabling design appraisal** of existing interchanges, as well as those currently in the design process; and
- **a document to record appraisal comments**, as well as interchange design and management suggestions.





## 2.1 Structure, design categories and topics

The IIDB template is structured to provide for:

- **An interchange site context appraisal**
- Consideration of **55 design topics**
- These are divided into **four main design categories**

*Please note that the IIDB covers many topics where detailed technical assessments are necessary. The IIDB template seeks to provide an overview of design aspects and the merit of current proposals and facilities, and does not replace the need for these.*

IIDB Section	Content summary
<b>1. Context and site appraisal</b>	<ul style="list-style-type: none"><li>• Interchange location and transport connections</li><li>• Interchange zone</li><li>• Interchange site and proposed layout</li><li>• Forecast passenger numbers</li></ul>
<b>2. Multimodal sustainable mobility</b>	<b>2.1 Multi-modal interchanges</b> 12 topics relating to the layout of the interchange site and building and measures to enable efficient and inclusive movement of passengers between modes
	<b>2.2 Transport mode specific</b> 14 topics covering the provision of different transport options and related operational requirements, including gender dimensions, safety and security.
<b>3. Comfort and safety</b>	13 topics addressing the fundamental passenger requirements for inclusive interchanges, including gender dimensions, safety and security.
<b>4. Hubs for public life</b>	9 topics that cover the role of interchanges as hubs in public and cultural life, that can provide opportunities for work, shopping and leisure, while also generating income streams.
<b>5. Integrated planning and design</b>	7 topics ensuring that broader planning considerations relating to Transit Oriented Development (TOD), energy efficiency and generation, as well as climate resilience, are taken into account
<b>References and further inspiration</b>	A full list of the guidance and publications referred to in the IIDB is provided in the final section.



## 2.2 When to use the IIDB template

<b>RIBA Plan of Work</b>	<b>0</b> <b>Strategic Definition</b>	<b>1</b> <b>Preparation &amp; Briefing</b>	<b>2</b> <b>Concept Design</b>	<b>3</b> <b>Spatial Coordination</b>	<b>4</b> <b>Technical Design</b>	<b>5</b> <b>Manufacturing &amp; Construction</b>	<b>6</b> <b>Handover</b>	<b>7</b> <b>Use</b>
<b>Use of IIDB</b>	<p>Undertake site appraisal</p> <p>Define transport requirements (formal &amp; informal sectors)</p> <p>Assess potential for Transit Oriented Development</p>	<p>Use IIDB to prepare design brief/list of requirements and sustainability outcomes for design team</p>	<p>Apply IIDB for design appraisal of concept design, providing feedback and suggestions to design team</p>	<p>Update IIDB design appraisal, based on final drawings for planning applications/ board approval</p>	<p>Use summary guidelines and IIDB references to inform and check results of technical studies (e.g. lighting, building energy efficiency)</p>			<p>IIDB used to appraise potential improvements to existing facilities</p> <p>Passenger Survey utilised to gain feedback.</p>

# 2.3 Format of the design appraisal tables

For each of the appraisal sections 2 – 4, the design topics are presented in a standard table format, as illustrated below. This provides:

**Summary guidelines for each design topic** – explaining briefly:

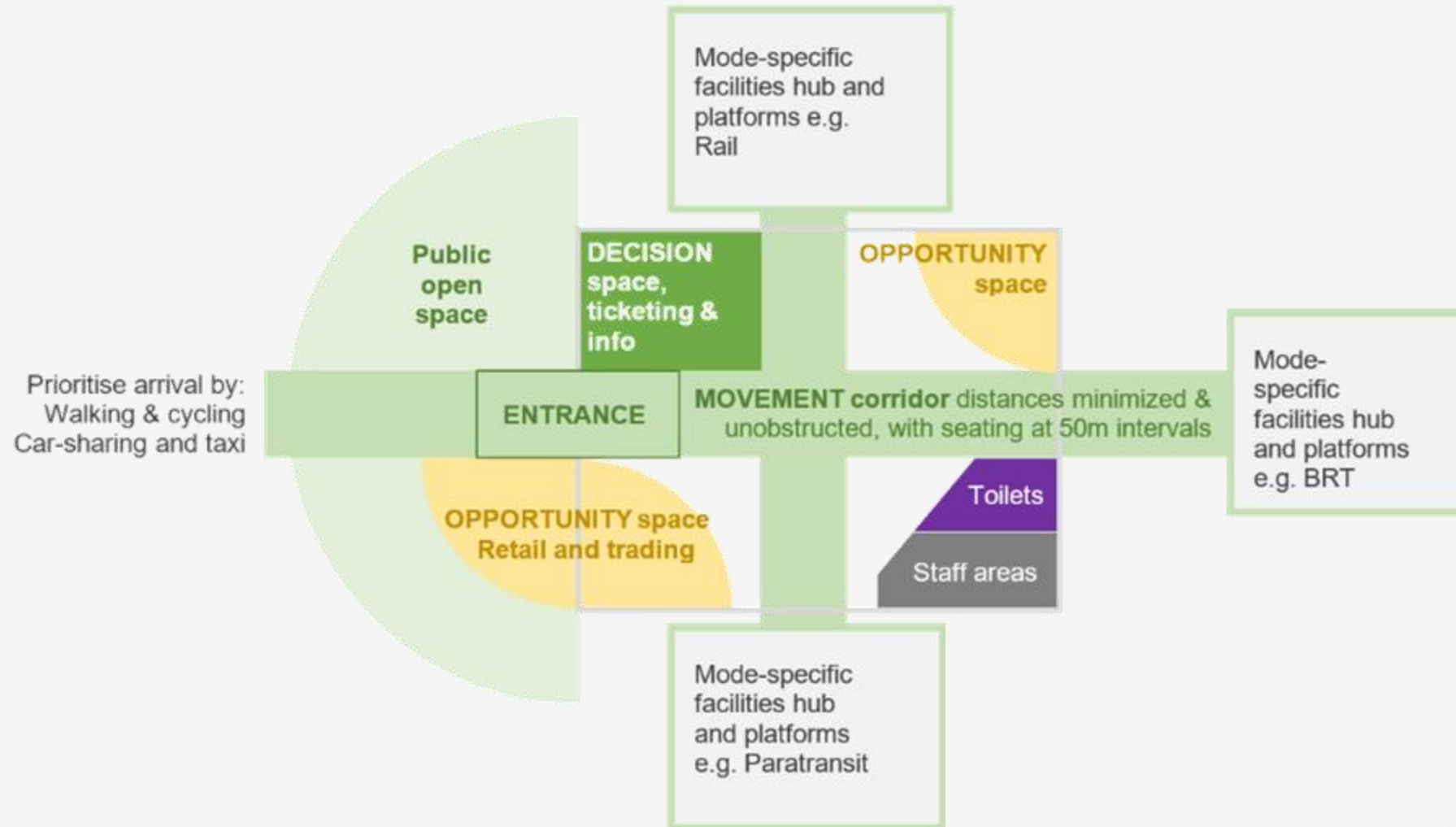
- **Why the topic is included in the IIDB template**
- **Selected key design principles and factors for consideration**
- **Recommendations for further, more detailed, sources of information**

**Space to indicate the current design status for each topic (using traffic-lighting) and images and notes for the design t**

Topic	Guidelines & resources	Status	Site appraisal and recommendations
Topic title	<div>Explanatory statement, plus checklist of design considerations:</div> <div><div>• Design issue 1</div><div>• Design issue 2</div></div> <div>Recommendations for more detailed guidelines</div>	<div><div>●</div><div>●</div><div>●</div><div>●</div><div>?</div><div>N/A</div></div>	<div>Explain the ‘status’ of traffic-light grading for each topic:</div> <div><div>• what works well</div><div>• which design issues are not addressed</div><div>• ideas and recommendations to put forward to the design team</div></div>



## 2.4 Interchange layout concept and terminology



### 3. Lagos interchange case studies and findings

Extract from LAMATA's animation of the Mile 2 interchange, showing three bus terminals within the loops of the Expressway junction, and the existing rail station in the background





## 3.1 Mile 2 case study context

Interchange for:

- Formal metropolitan rail, BRT, ferry and first & last Mile shuttle buses
- Informal Danfo and three-wheeler operations
- Hub for international passenger and freight transport



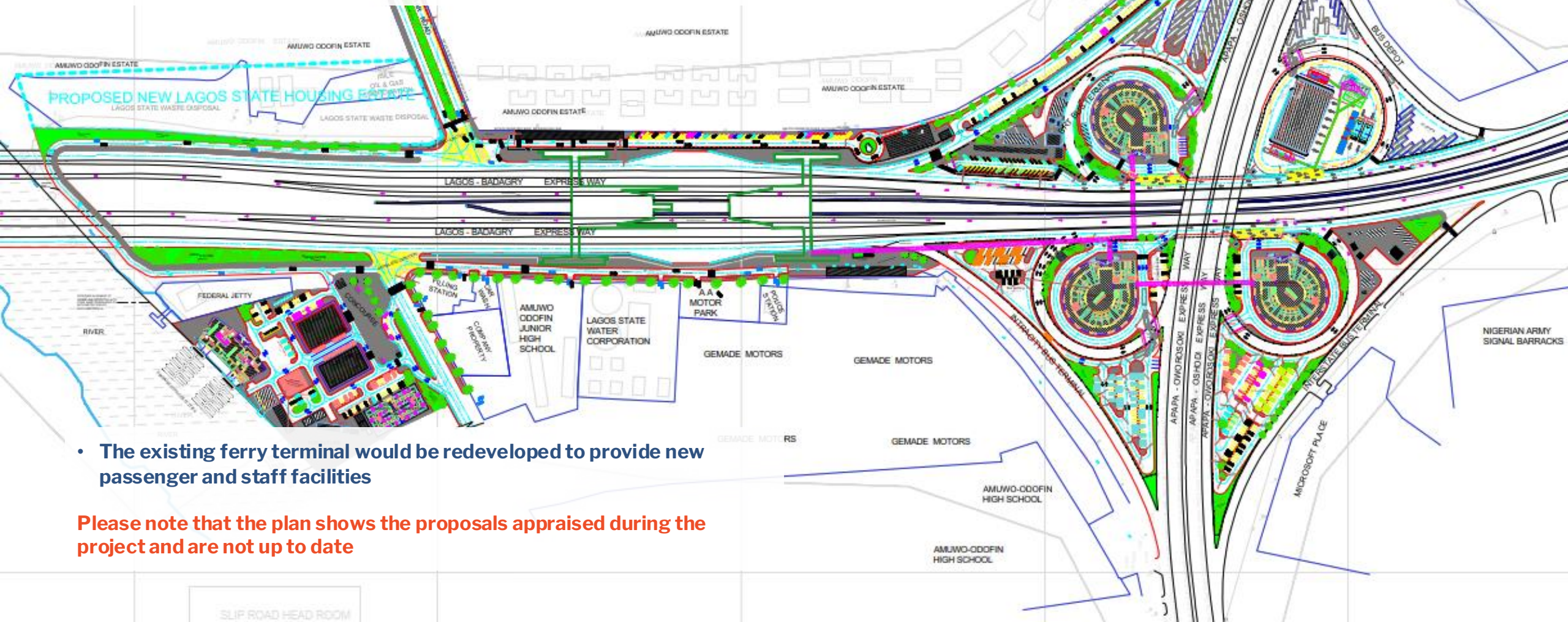
Location dominated by Expressway junction – the pedestrian bridges to the railway station already provide improved access by walking

There is substantial market trading activity in this location



## 3.2 Mile 2 proposed layout

- Proposed design encompasses the existing rail station
- Plus significant new development to provide BRT, intercity and interstate bus terminals within the highway cloverleaf junction loops
- The fourth loop would be used for vehicle maintenance



- The existing ferry terminal would be redeveloped to provide new passenger and staff facilities

Please note that the plan shows the proposals appraised during the project and are not up to date



## 3.3 Marina case study

### Interchange for:

- Formal metropolitan rail, BRT, ferry and first & last Mile shuttle buses
- Informal transport and market trading not yet present at the site, although this is expected to change following launch of rail services
- National rail services and metropolitan red line may be extended to this site.

Interchange located close to CBD and there is a big opportunity to make the waterside location more accessible.

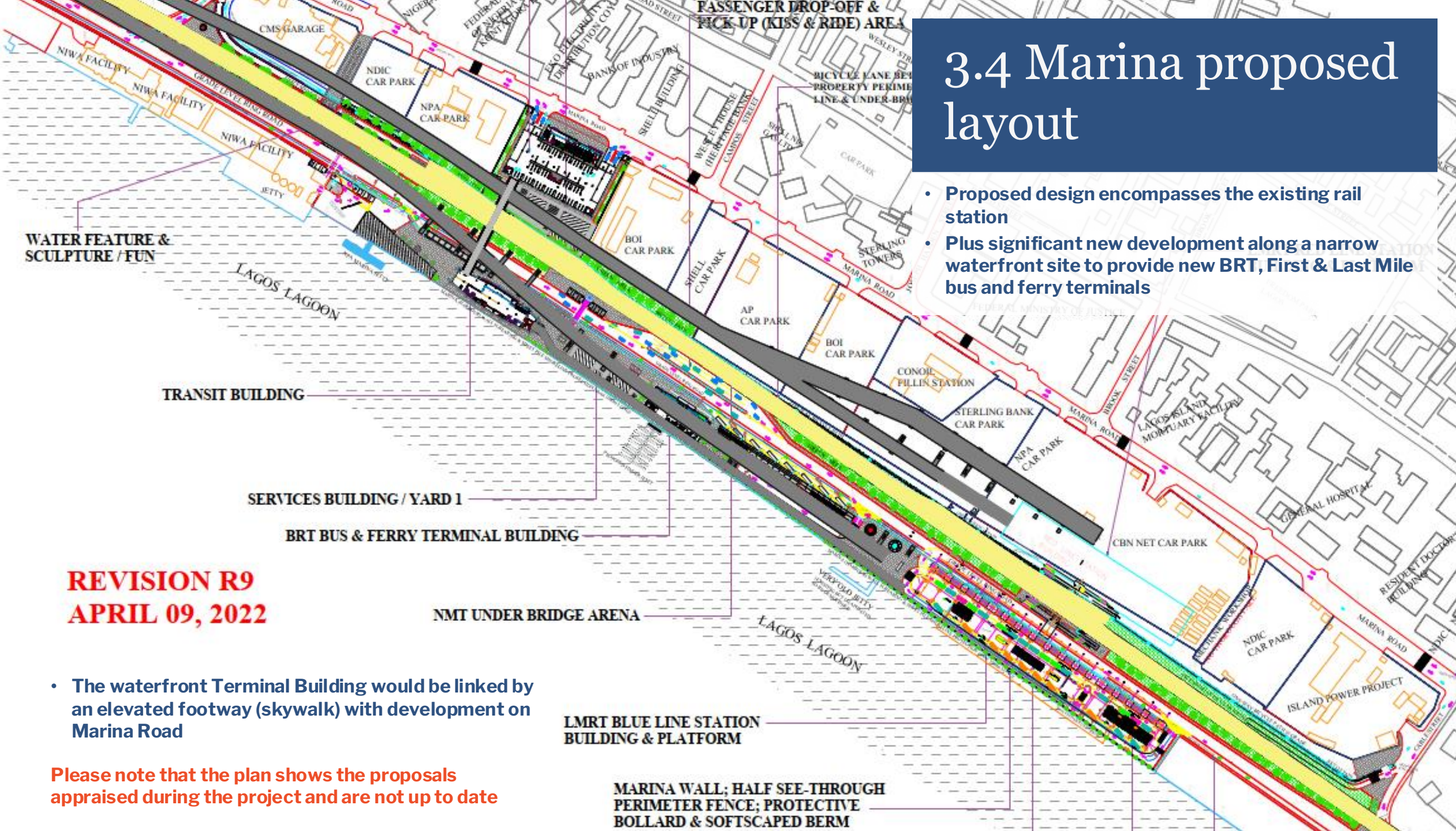
Interchange located on major ring road highway (one carriageway is elevated on concrete pillars)





## 3.4 Marina proposed layout

- Proposed design encompasses the existing rail station
- Plus significant new development along a narrow waterfront site to provide new BRT, First & Last Mile bus and ferry terminals



**REVISION R9**  
**APRIL 09, 2022**

- The waterfront Terminal Building would be linked by an elevated footway (skywalk) with development on Marina Road

Please note that the plan shows the proposals appraised during the project and are not up to date





# Multimodal Interchanges

## 3.3 Multimodal interchanges



Access to a shaded ramp and pedestrian footbridge at Mile 2



Investigation of new pedestrian links from city centre at Marina



### Access by walking and cycling

- **Substantial walking and cycling access improvements are proposed at the sites**
- **Mile 2** – elevated walkways are used to provide safe links between terminals, across the railway and expressway lanes.
- **Marina** – acknowledging that elevated walkways (skywalks) can be underutilised when not necessary, and introduce security and maintenance problems, the emphasis is on providing new surface level access from the city centre and through the interchange site.
- Cycling – both interchange sites provide for new cycle paths and dedicated parking areas for bicycles.

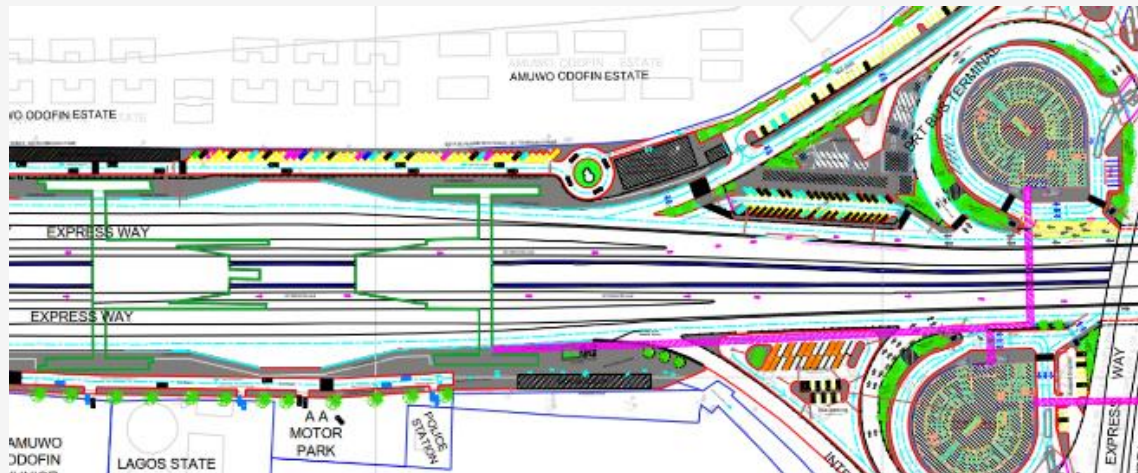


## 3.4 Multimodal interchanges



Danfos parking adjacent to the Mile 2 railway station

Laybys retained for Danfos to collect and drop-off passengers at Mile 2 (yellow)



### Informal transport

- **Mile 2** – the interchange proposals retain space for the collection and drop-off of passengers by Danfo informal public transport services.
- Additionally, it is planned that one terminal in the loops of the expressway junction will be allocated for informal transport operations.
- **Marina** – As there are currently no informal services, consideration to be given to: whether space should be provided directly at the interchange; and if so, what routes and scale of operations would best complement the LAMATA services.

## 3.4 Multimodal interchanges



### Intelligent Transport System (ITS)

ITS involves the deployment of informal and communication technologies in relation to traffic management and mobility management, with the aim to use infrastructure in an efficient way. This may involve

- Traffic signal management and prioritisation
- Public transport lane violation monitoring
- Automated monitoring/tracking of public transport to provide passenger information

**Mile 2** – A concern raised through the appraisal process was that the location where buses gain access to the terminals are congestion hotspots in the cloverleaf junction design. Incorporation of a combination of strict speed limits, and bus priority signalisation are therefore being considered.

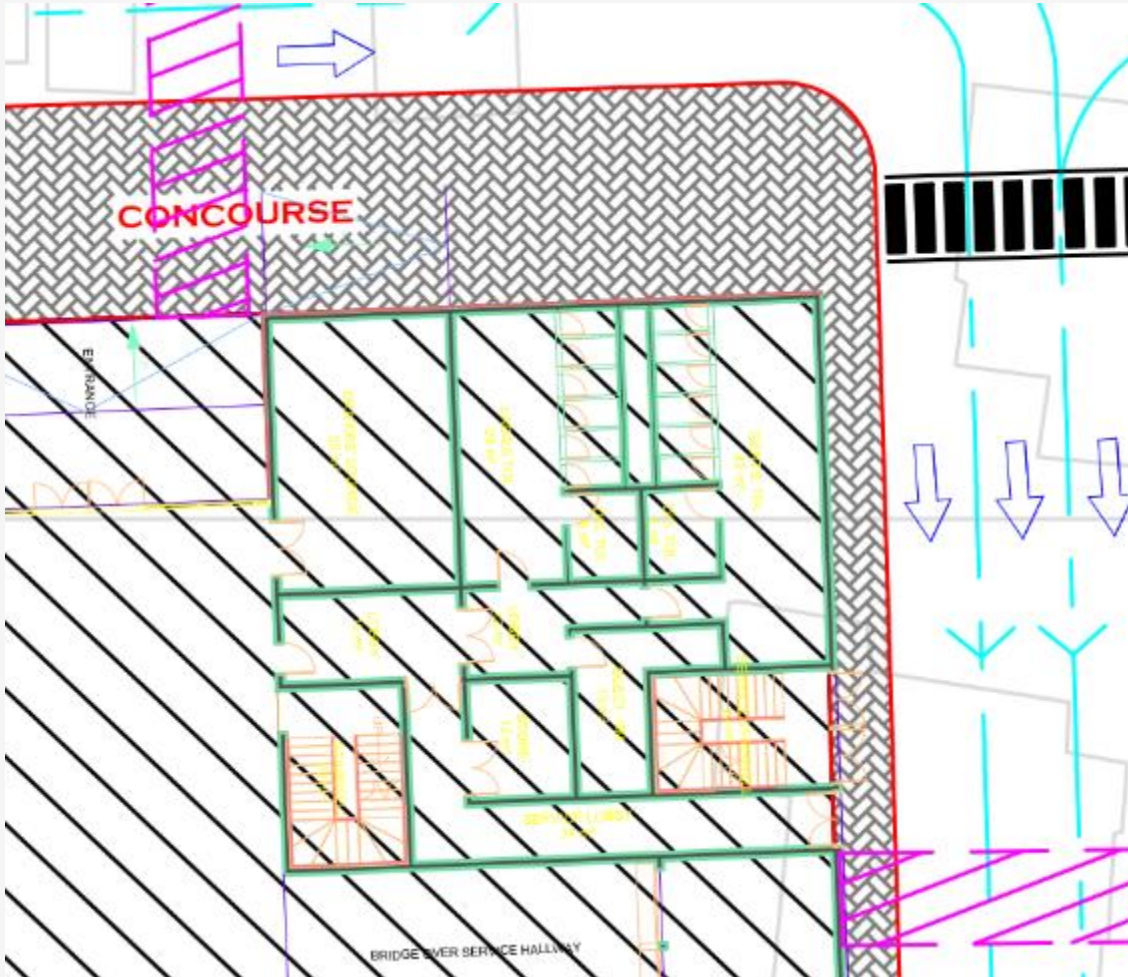




# Comfort and Safety



## 3.5 Comfort and Safety

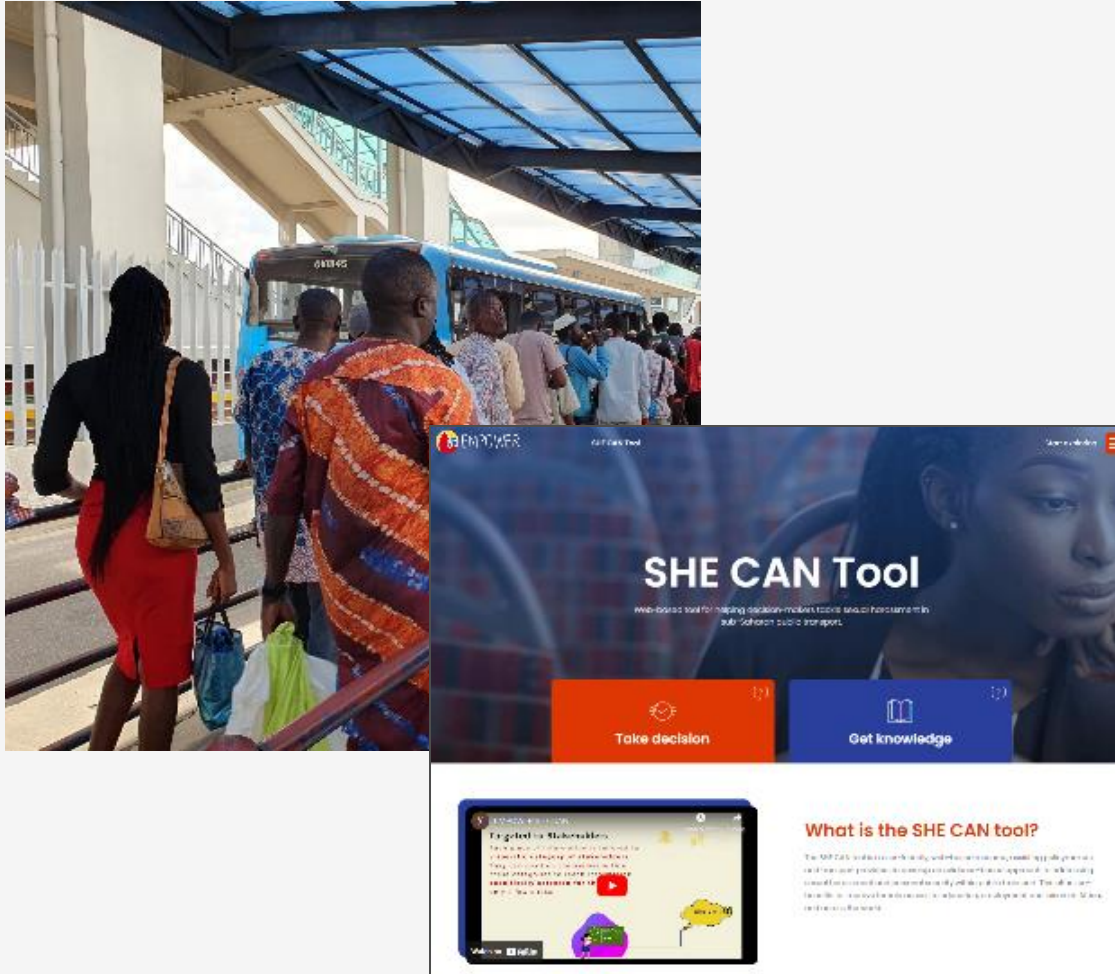


### Provision of public toilets and baby-changing facilities

- Toilet provision an important topic, with LAMATA aiming to make facilities available to the general public and not only passengers.
- This has implication for planned locations for facilities, also relation to security barriers
- LAMATA plan to use a concession-model, whereby there would be a low charge to use toilets managed and maintained by another company
- The Mile 2 interchange plans provide segregated facilities for women and men, including disabled access cubicles.



## 3.6 Comfort and Safety



### Planning for safety of women at interchanges

- Women's physical harassment in public transport and public spaces is a pervasive and pressing issue, which can influence important decisions about when and where women are willing to travel.
- Overall, it was found that the interchange designs provide for good sightlines and passive surveillance.
- Further options for LAMATA to consider include the allocation of specific waiting areas for women and families at the terminals
- See also the HVT EMPOWER SHE CAN Tool for further information and guidance



# Hubs for public life





## 3.7 Hubs for public life



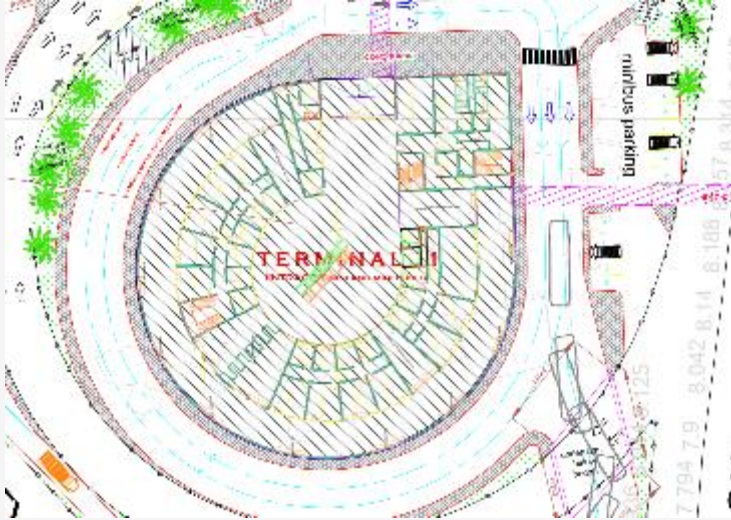
### Informal market trading

Through ongoing interchange design work, LAMATA has given to how market trading activities could be accommodated and managed. The updated proposals include:

- Allocation of areas for use by market traders, where a rental agreement with the micro-enterprises would be agreed.
- Provision of lockable stalls and storage sheds.
- Where existing scale of trading cannot be accommodated, nearby premises to be identified to enable relocation.
- Offering training, such as financial literacy, adult literacy, shoe & leather works, textile design.

In order to deliver these, LAMATA is fostering collaboration with other relevant authorities and initiatives – e.g. Ministry of Women Affairs and Poverty Alleviation

## 3.8 Hubs for public life



Planned BRT terminal at Mile 2, showing retail units around a central atrium.

Retail and food & drink kiosks forming a plaza on the Marina waterfront



### Formal market provision

Retail provision (including food & drink outlets) can help to make passenger's journeys more comfortable, bringing vitality to interchange environments.

- **Mile 2** – three terminals within the Expressway junction loops each provide for 26 retail units. To enable flexibility (depending on demand to let units), as well as creating more space and improving sightlines, an approach of replacing some permanent units with flexible kiosks/booths was suggested during the appraisal.
- **Marina** – this would be more similar to the flexible use of kiosks shown around the waterfront public open space at Marina.





# Integrated planning and design



## 3.9 Integrated planning and design



Proposed Transit Building on the waterfront at the Marina interchange

### Informal market trading

TOD, or Transit-Oriented Development refers to **an approach of bringing people, activities, buildings and public space together, within easy walking and cycling distances and with excellent public transport connections to the rest of the city** (ITDP 2017).

As interchanges are key elements of the TOD concept, they are good locations to explore potential for urban densification, including provision of housing, commercial floorspace and/or community facilities.

**Marina** – alongside the retail opportunities at the case studies referred to, the Marina interchange proposals include a major landmark building on the waterfront.



## 3.9 Integrated planning and design



Image showing standing water in a Danfo passenger collection layby at Mile 2. It is recognised that improved maintenance of drainage infrastructure is required.

### **Climate resilience – heatwaves, plus more variable and intense heatwaves**

The rail stations at Mile 2 and Marina utilise strategies such as shading of windows (including brise soleil), together with use of ceiling fans, to create comfortable conditions for passengers.

Marina is located in an area of Very High flood hazard, while Mile 2 is also located on a river bank:

- For Marina, the interchange proposals are designed with raised floor levels, following a flood risk assessment.
- Further opportunities, such as the specification of Sustainable Urban Drainage Systems (SUDS) were identified during the appraisal.

## 4. Inclusive Interchanges passenger survey

Main aspects of the passenger survey:

- Survey can be undertaken separately, or specific questions may be included in a more general passenger satisfaction survey. **BUT - important to clarify whether questions relate to one interchange, or interchanges in general.**
- Aim was to develop a concise survey (13 questions) to help ensure good response rate
- Questionnaire inspired by IIDB framework of design factors, filtered to those topics of greatest passenger relevance and understanding
- Design topics often clustered together within a single question to help ensure brevity

**Preliminary 'test' survey was undertaken by LAMATA during March 2024, with a total of 150 responses.**





# 4.1 Passenger survey questionnaire

## About you and your journey

- 1. What is the purpose of your trip?
- 2. Which forms of transport have you used to make your trip?
- 3. How long does your trip normally take, from door to door?
- 4. What is your age?
- 5. Gender: how do you identify?

## Your experience at the interchange

- 6. How would you rate the safety and convenience of walking routes to this interchange?
- 7. For this interchange, how easy or difficult is it to find the transport service stops/platforms and information on departure times?
- 8. When you change between transport services at this interchange, how easy or difficult do you find the walking routes?
- 9. How would you rate your feeling of safety at this interchange?
- 10. How would you rate your feeling of comfort at this interchange?
- 11. How regularly do you think you would use the following services, where/if they are made available?
- 12. For this interchange, are there any other suggestions or problems you would like to highlight?
- 13. Do you know helplines to call in case of an emergency?



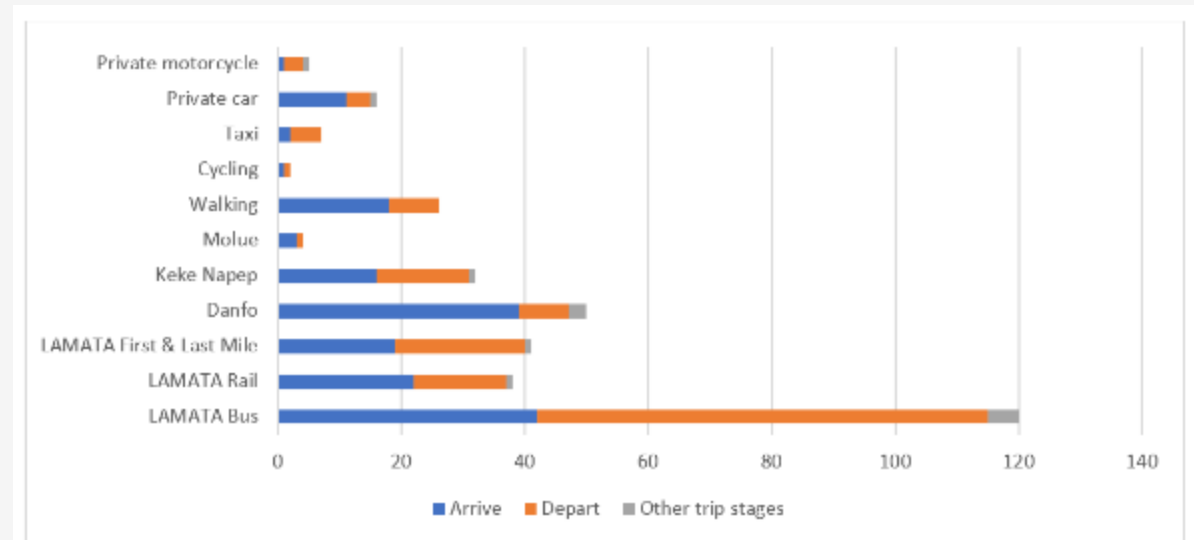
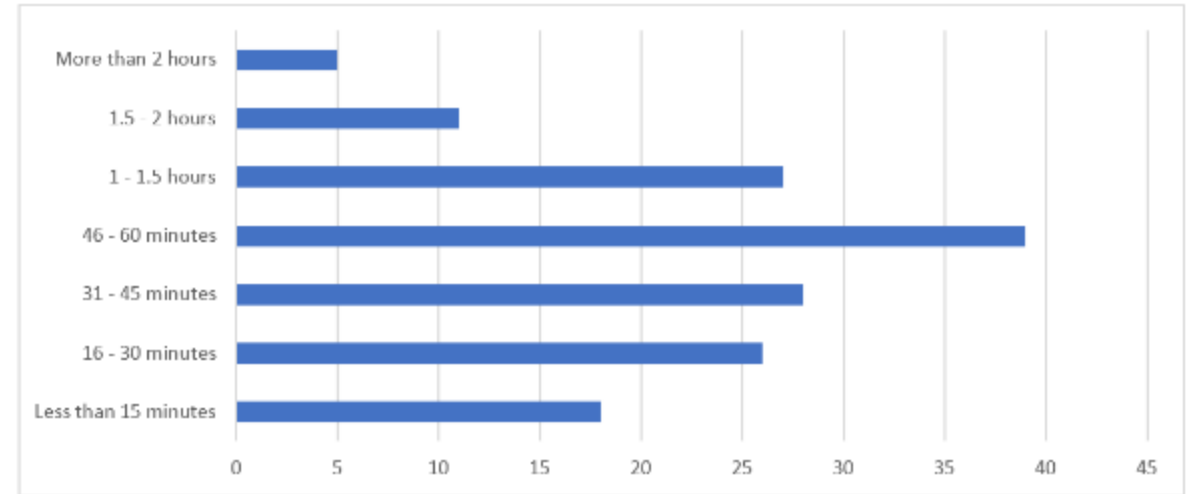
## 4.2 Passenger survey – about you and your journey

Alongside gaining basic demographic information, this section of the survey provides:

**Insights on how long (duration) journeys typically are**

**And, the combination of formal and informal modes used by passengers**

Please note that for specific interchanges, higher levels of Danfo (informal transport) usage by passengers were found.





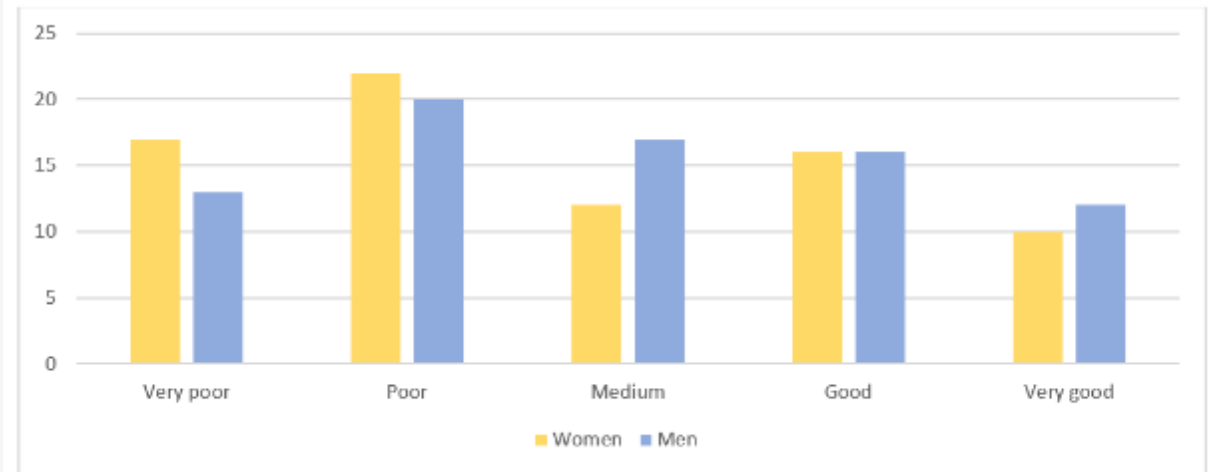
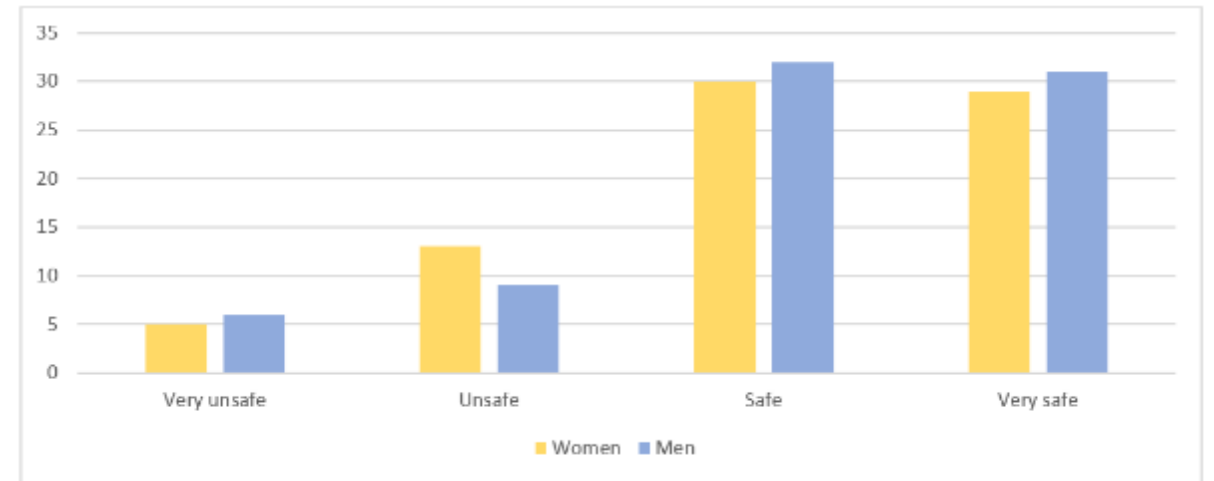
## 4.3 Passenger survey – your experience and facility needs

Alongside gaining basic demographic information, this section of the survey provides:

**Insights on how long (duration) journeys typically are**

**And, the combination of formal and informal modes used by passengers**

Please note that for specific interchanges, higher levels of Danfo (informal transport) usage by passengers were found.



## 5. Reflections and discussion points arising from the project

The IIDB appraisal process forms **one element of a wider major scheme planning and implementation process**, within which a continual process of informing and engaging with local stakeholders (including existing informal transport sector operators and market traders) should be carried out.

**Mapping of informal sector activities and assets**, as well as understanding the organisational arrangements, should form part of the initial site analysis.

Where the integration of formal and informal transport operations are planned, **interchanges may form a focal point for capacity building and professionalisation of informal transport associations**, as well for improved enforcement of route licensing, vehicle inspections, etc.

**Interchange design should be informed by the mapping of public and semi-public (i.e. ticket-holders) zones**, to ensure that access to pedestrian and cycle routes are maintained, as well to beneficial retail and toilet facilities, etc.

**Planning interchanges with minimal distances and level changes** between modes is of great importance to ensure efficient and convenient multi-modal travel, and this is of even greater significance for people with disabilities, and for families and older people that may need to rest while changing from one form of transport to another.

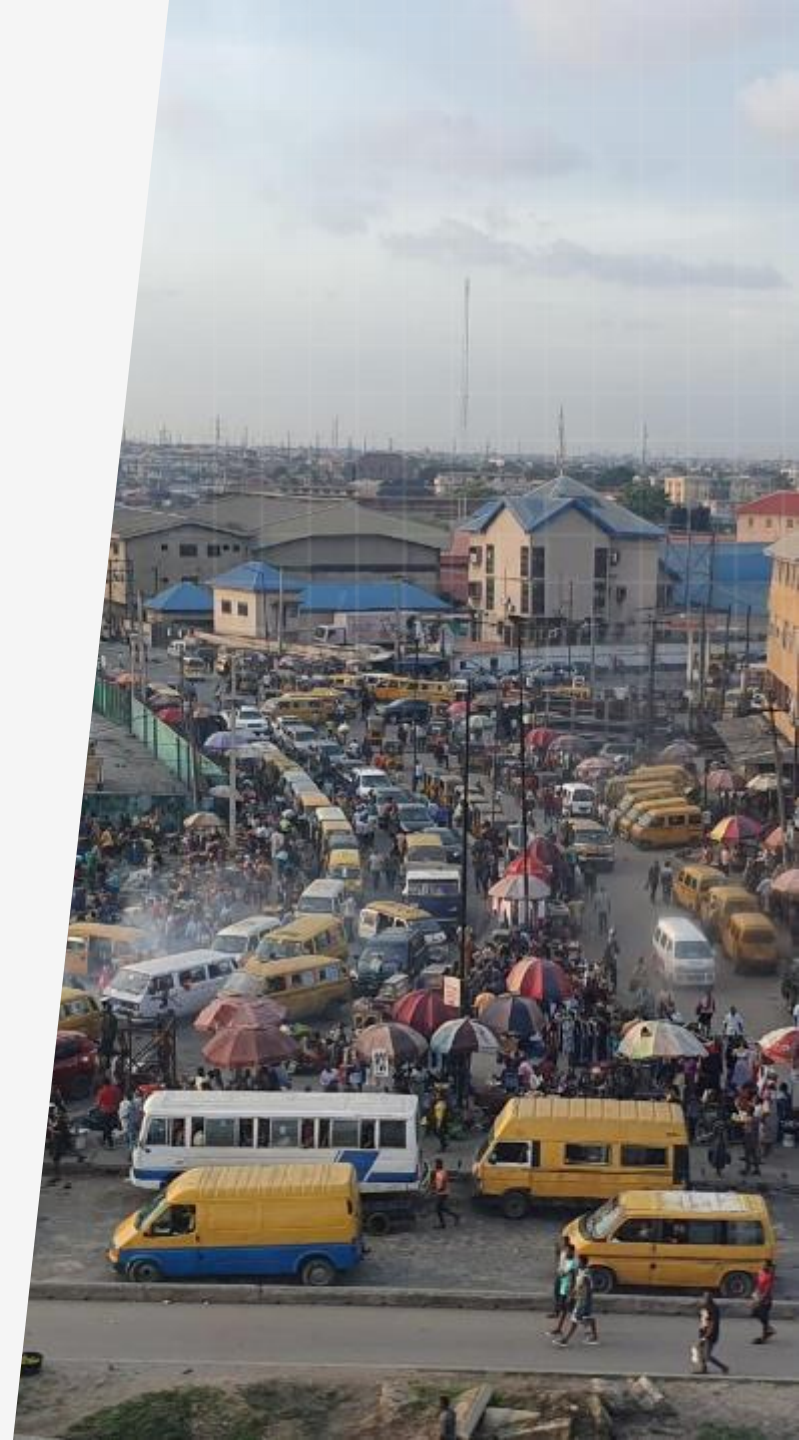


## 6. Resources

**Publicly available resources from the project providing further information, guidance and tools are:**

- **Inclusive Interchanges Design Brief** – setting out 55 design topics, summary guidance and providing links to further resources
- **Report on LAMATA pilots and Inclusive Interchanges Deployment Strategy (IIDB)** – providing:
  - further observations from the Mile 2 and Marina case studies
  - the Inclusive Interchanges passenger survey questionnaire and results from the preliminary survey by LAMATA

These are available at [transport-links.com](https://transport-links.com)





# T-TRIID Inclusive Interchanges

## Part B – Groupwork exercises

Version 1.0 | June 2024





# Groupwork Objectives

**Objective** – to familiarize trainees with the key principles and the structure of the IIDB template, as well as the ‘facilities’ question in the Inclusive Interchanges survey.

**Concept** - The four groupwork exercises involve the trainees taking the perspective of a passenger arriving at a case study interchange:

1. Arrival at the interchange via another public transport mode (formal or informal), walking or cycling.
2. The process of finding information about their onward trip, purchasing a ticket, and locating the correct platform.
3. Consideration of the facilities available to the passenger for a waiting period of around 20 mins.
4. Checking what information is in place to assist and guide passengers in the case of an emergency.



# 1. Arrival at the interchange

**Key principle** – In order to promote sustainable mobility, access to the interchange via Non-Motorised Transport (NMT – walking and cycling), public and shared modes of transport should be prioritized.

**Tasks** – Utilise Section 2.2 of the IIDB template to appraise access by sustainable modes and opportunities for improvements to be made. This should involve checking:

- The safety and convenience of walking routes to the interchange from different directions and trip generators (e.g. schools, shopping centres, large offices, residential districts) (see topic 2.2.2)
- The availability of secure cycle parking close to an entrance to the interchange (see topic 2.2.5)
- The provision of laybys (or parking areas) where informal public transport operators can safely collect and drop-off passengers without causing congestion on public transport routes and highways.
- Provision of laybys (or short-stay parking areas) where people can be collected and dropped-off by cars and taxis, without causing congestion on public transport routes and highways.





## 2. Accessing information and moving around the interchange

**Key principles** – Interchanges should enable ease of access and efficient transfer between modes. Provision of ‘decision spaces’ enable passengers to purchase tickets and access information (topic 2.1.2), while ‘movement’ corridors should seek to minimize transfer distances and level changes (topics 2.1.3).

**Tasks** – Utilise Section 2.1 of the IIDB template to appraise the layout of the interchange. This should involve checking:

- The availability of information on all transport services and ability to purchase tickets in a quick and easy to understand way (see topics 2.1.2 & 2.1.9)
- Provision of mobility service information and good wayfinding and signage (topics 2.1.6 & 2.1.7)
- Design of the interchange to enable ease of movement by people with disabilities, as well as access to mobility service information (topics 2.1.4 & 2.1.8)



### 3. Facilities at the interchange

**Key principles** – Interchanges can provide opportunities to buy daily essentials, eat and drink, and even to enjoy art and public performances. Rental from retail operations can provide an income stream for the interchange operators.

**Tasks** – Utilise Sections 3 and 4 of the IIDB template to appraise the provision of facilities. This should involve checking:

- Are the fundamental needs of passengers met, in terms of providing shelter, lighting and seating, as well as the provision of toilets (see topics 3.2, 3.3, 3.4 & 3.6)
- Is space provided for both formal and informal retailers to offer services to passengers, in accessible locations that do not compromise the operation of the interchange (topics 4.1 & 4.2)
- Do you see opportunities to introduce art to the interchange, and what form could this take? (topic 4.9)

As an additional task, review the interchange facilities question from the Inclusive Interchange survey. Which facilities do you think you would use most regularly?

11. How regularly do you think you would use the following services, where/if they are made available?

	More than 1 time per week	1 time per week	1 time per month	Occasionally	Never
Toilets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Baby changing area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Waiting area for women and families only	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Purchases from market traders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lockers or luggage storage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business lounge or workspace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Car sharing / car rental service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parcel collection point	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## 4. Preparation for incidents and emergencies

**Key principles** – A clear plan and process should be set in place to deal with incidents that could range from harassment and personal injuries, through to larger scale incidents, such as fire or flooding.

**Tasks** – Check whether there is information for passengers on what they should do in case of different incidents and emergencies (see topics 3.4, 3.11, , 4.8 & 2.1.6), which could include: posters and signage on exit routes; provision of numbers to call; clear availability of interchange and security staff.



learn more at

[transport-links.com](https://transport-links.com)

