



# Improvement of Al Khail Road Fast Track Project and Challenges

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# 01

## 1. RTA Background

### Brief History

The Dubai Roads and Transport Authority was established in November 2005 through decree number 17, 2005. Since then, the RTA has made significant strides in improving Dubai's transportation infrastructure. The total length of Dubai's Road network has grown from 8 715 lane-km in 2006 to 18 768 lane km in 2022 marking a remarkable growth of 115 percent.

The number of bridges and underpasses has also seen a substantial increase, rising from 129 to 988 during the same period an impressive expansion of 666 percent. Furthermore, the number of pedestrian bridges and underpasses has increased from just 26 in 2006 to an impressive total of 122 by the year 2022 marking an incredible increase of over three times 369 percent.

Since its establishment, the RTA has adopted a challenging vision and mission aimed at effectively contributing to Dubai's overall vision and serving the vital interests of the Emirate. The RTA strives to become the world leader in seamless and sustainable mobility, providing innovative and safe travel experiences to make every journey in Dubai a world class experience. The RTA has developed a highly integrated transportation system that includes various modes of transportation, such as the Dubai Metro, buses, taxis, and other forms of transport.

The driverless and fully automated metro network spans over two lines with a total length exceeding 75 kilometres and includes about 49 stations connecting different parts of the city. Additionally, interchanges at various stations connect the metro system to other modes, such as buses and taxis. Dubai's bus network is extensive with more than 150 bus routes operated by RTA with over 500 buses equipped with air conditioning and free Wi Fi for passenger convenience.

Taxis are also widely available in Dubai, with both regular taxis and luxury taxis operated by companies such as Uber and Careem Taxis can be hailed on the street or booked through mobile apps. Overall, Dubai's transportation system is designed to provide residents and visitors with convenient access to all areas of the city through an integrated network of metro lines, bus routes, taxis, and water transport systems, ensuring safe travel for all users while improving their experience within the city to make every journey in Dubai a world class experience.

# RTA Achievements

The Roads and Transport Authority (RTA) in Dubai has demonstrated remarkable achievements in project management, establishing itself as a leader in the field. Key accomplishments include the successful planning and execution of major infrastructure projects, such as the Dubai Metro, tram systems, and extensive road network expansions.

The RTA has also implemented advanced traffic management systems and smart technologies to improve transportation efficiency and safety. Their commitment to sustainability and innovation has earned them numerous prestigious awards and recognition. Notably, the RTA received the Global Infrastructure Congress Award for Best Public Transport Project for the Dubai Metro. They were also honored with the International Road Federation (IRF) Global Road Achievement Award for their intelligent traffic systems. Additionally, the RTA was awarded the Sheikh Mohammed bin Rashid Government Excellence Award for their outstanding contributions to public service. These accolades solidify their reputation as pioneers in urban mobility and infrastructure development.



Dubai Tram: Covers 10.6 km with 11 stations, integrating with the metro and Palm Monorail.



Intelligent Traffic Systems: Covers over 60% of main roads, reducing traffic congestion by 20%.



Dubai Metro: One of the longest driverless metro networks (75 km), serving over 600,000 passengers daily.



Road Network Expansion: Added over 500 km of new roads and multiple interchanges, improving connectivity.



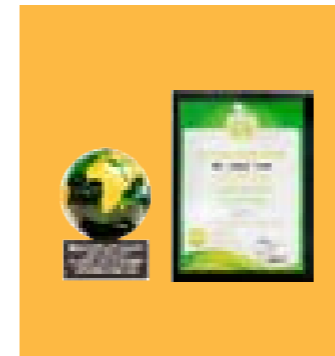
Public Transport Ridership: Over 1.5 million daily users across buses, metro, tram, and marine transport.



Sustainability Initiatives: Introduced electric and hybrid buses, aiming for 50% hybrid taxis by 2025.

# RTA Awards

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### Green World Award - Global Gold Winner

The Green Organization (UK-Based), for the Route 2020 project for outstanding achievements in environmental performance, effective resource use, support of sustainable development goals, and carbon reduction - 2024



### Five-star rating in Occupational Health and Safety Audit

by British Safety Council - 2024



### The European Foundation

for Quality Management's (EFQM) Excellence Award in the Vision Realization and Strategic Planning category with a seven-star rating - 2022



### First transport authority

in the Middle East & Africa region, and leading entity of Dubai government, to achieve ISO 50001 certification - 2013



### Three Asian Leadership Awards

in the categories of Excellence in Sustainable Water Management, Business Innovation, and Digital Innovation - 2023



### GovTech Innovation Award 2021

in the Smart City Initiative of the Year category of the awards

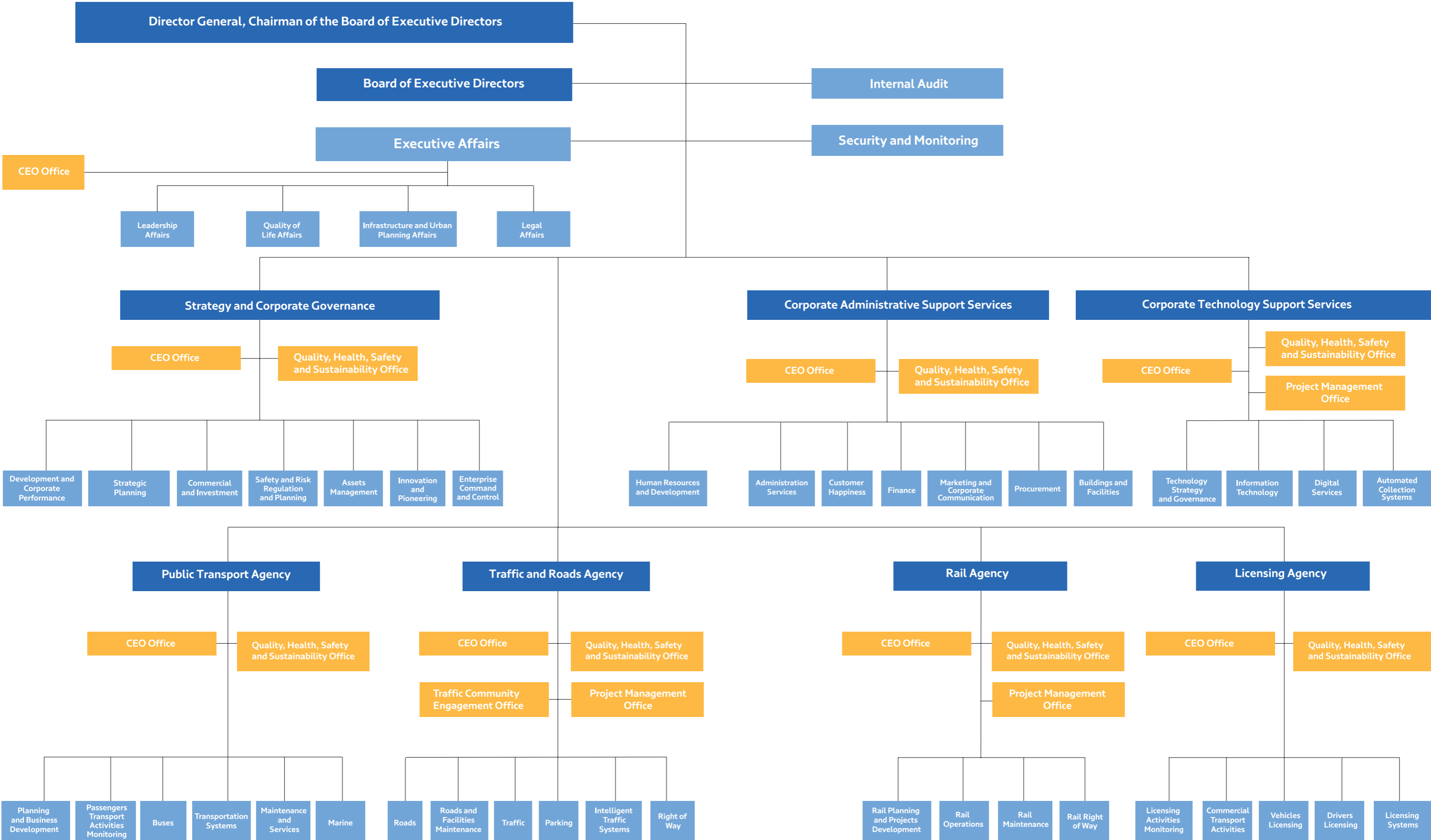
**The Global Benchmarking Award**  
Presented by the Global Benchmarking Network (GBN) in collaboration with the European Foundation for Quality Management (EFQM) - 2019

**The International Innovation Award**  
organized by Enterprise Asia - 2019

**Four recognition certificates by the International Association of Public Transport (UITP) - 2024.**

1. Organising Transport
2. Investment Pillar certificate
3. Digital Transformation Pillar
4. Innovation and Future Foresight Pillar

# RTA Organizational Structure



# 02

## Improvements of Al Khail Road

### Brief History

Al Khail Road is a major highway in Dubai, running parallel to Sheikh Zayed Road. It connects key business and residential areas, serving as a crucial transportation link. As Dubai continues to grow, Al Khail Road faces both unique challenges and opportunities, with the potential to play a pivotal role in the city's ongoing transport development and expansion.

### The Program is divided into three separate packages:

#### Package One

Location No. 4: Zabeel area, between Oud Metha Road and Financial Center Street.  
Location No. 5: Meydan area, between Al Meydan road and Ras Al Khor road.

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#### Package Two

Location No. 6: Al Quoz 1 area, between Al Meydan road and Latifa Bint Hamdan Street.  
Location No. 8a: Ghadir Al Tair area, between Latifa Bint Hamdan Street and Al Meydan Road.  
Location No. 8: Jumeirah Village Circle area, between Al Khamilah Street and Hessa Street.

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#### Maintenance Packages

Expansion of Al Khail Street at Al Jaddaf area towards the north by adding a lane.  
Expansion of Al Khail Road at Business Bay towards the south by adding a lane.

# Project Overview

## Goals



01. Reduce travel time along Al Khail Road by 30%.
02. Increase capacity on bridges and intersections to accommodate 19,600 vehicles per hour.
03. Resolve weaving issues at strategic locations to improve traffic safety and efficiency.
04. Support Dubai's rapid urbanization by integrating infrastructure with the city's broader mobility network.

## Key Challenges



01. Tight construction schedule of 10 months, including interim milestones.
02. Limited time to secure approvals and No Objection Certificates (NOCs).
03. Managing resource constraints across multiple project sites.
04. Minimizing inconvenience to adjacent communities during 24/7 operations.
05. Ensuring timely traffic diversions and addressing critical utility conflicts.

## Solutions



01. Proactive risk management and resource allocation, including 24/7 shift-based work.
02. Innovative engineering solutions, such as modifying bridge designs to avoid utility relocations.
03. Close coordination with stakeholders and authorities to expedite approvals and minimize delays.
04. Implementation of robust traffic management plans to ensure safety and continuity of movement.

## Outcomes



01. Delivered five bridges and associated road improvements within record timelines.
02. Enhanced traffic efficiency and capacity across multiple intersections.
03. Achieved significant sustainability benefits by reducing emissions through improved traffic flow.
04. Demonstrated successful stakeholder collaboration and adaptability in fast-track project delivery.



# Project Overview

The purpose of the project is to enhance the transportation network in Dubai by ensuring smooth traffic flow on one of the major highways.

The project aims to increase capacity and traffic efficiency, address weaving issues at strategic intersections on Al Khail Road, provide continuous free-flowing traffic, and ensure a safe and efficient driving experience for Dubai Road Users.

The fast-track approach was adopted to address immediate traffic challenges caused by urban growth.



The Al Khail Road Development Project is a key strategic initiative aimed at developing this major arterial road corridor, which runs parallel to Sheikh Zayed Road, Sheikh Mohammed bin Zayed Road, and Emirates Road. The project aims to further enhance the road network infrastructure to accommodate the needs of the city's rapid urbanization and population growth, and to alleviate congestion along critical routes, improve travel times, and integrate seamlessly with Dubai's broader mobility network.

# Scope and Purpose

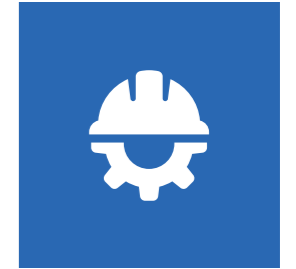
## Scope



3.3 km of Bridges



Modifications to existing roads, utility diversions, etc



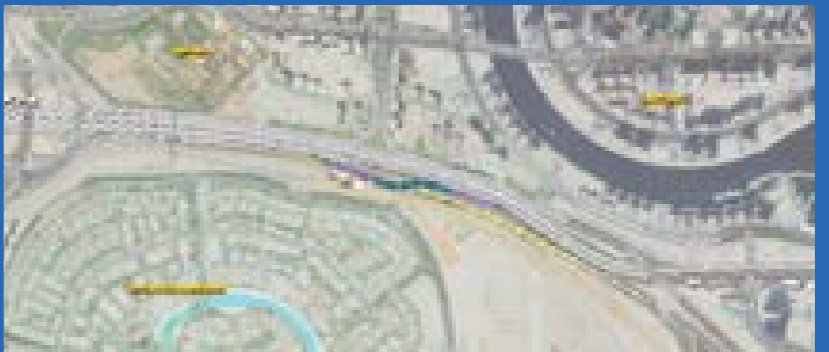
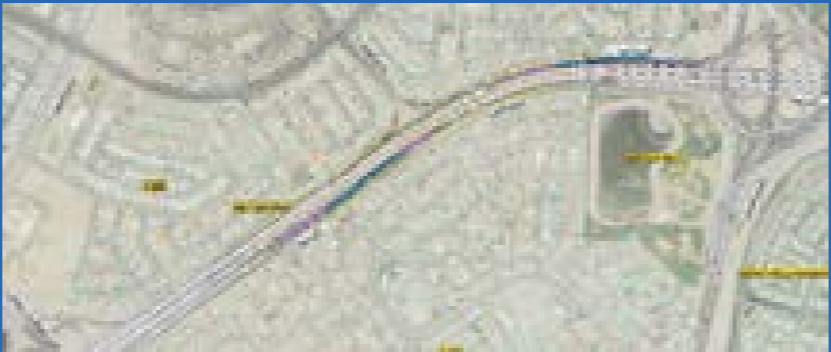
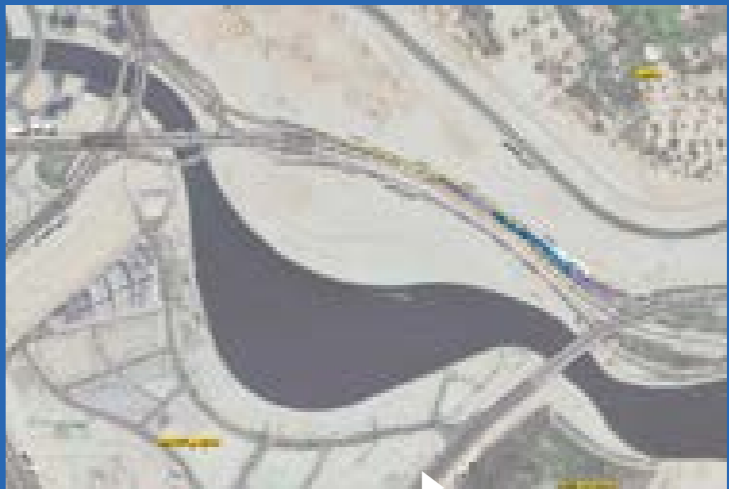
6.8 km of at-grade Road development and widening

Bridge Location	Capacity Improvement (vehicles per hour)	Bridge Details	Surface Roads Improvements
Zabeel Area	4,800	3 lanes, 700 m	3 lanes, 850 m
Meydan Area	3,200	2 lanes, 610 m	2-6 lanes, 1550 m
Al Quoz 1 Area	3,200	2 lanes, 650 m	4 lanes, 2170 m
Ghadir Al Tair Area	3,200	2 lanes, 640 m	2-3 lanes, 1350 m
JVC Area	3,200	2 lanes, 700 m	2 lanes, 900 m

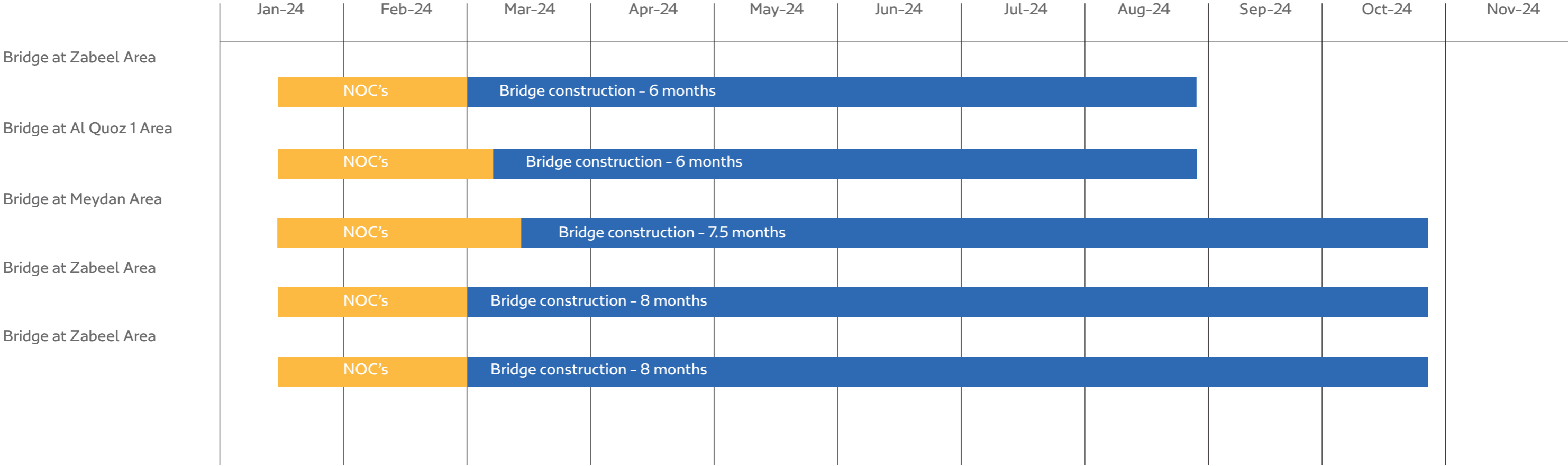
## Purpose

01. Reduce travel time along Al Khail Road by 30%.
02. Increase the total capacity on bridges and existing intersections to approximately 19,600 vehicles per hour.
03. Enhance Al Khail Road's capacity and reduce traffic overlap at elevated intersections.
04. Ensure continuous free-flowing traffic on Al Khail Road and improves traffic service levels and safety along the corridor and at the intersections.

# Project Details



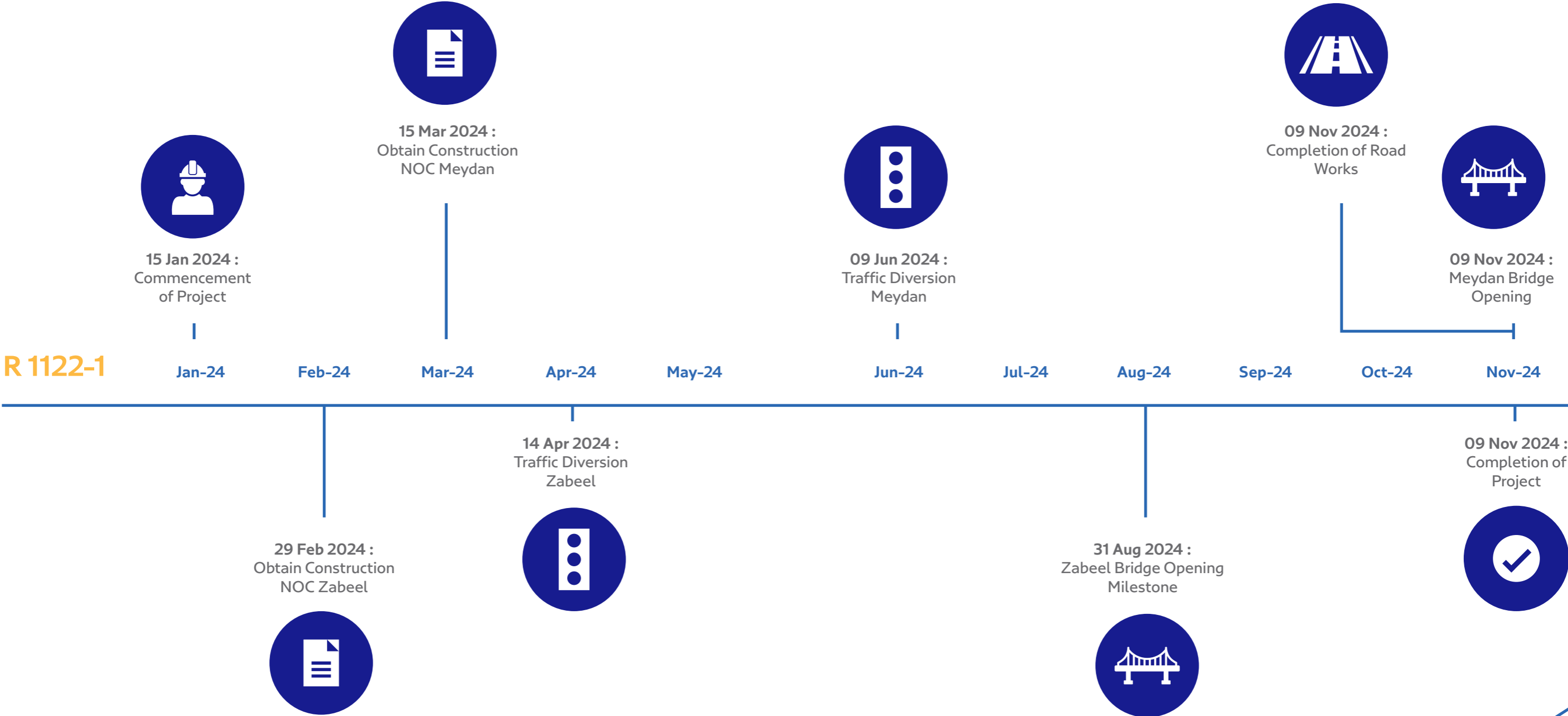
# Fast Track Project Implementation



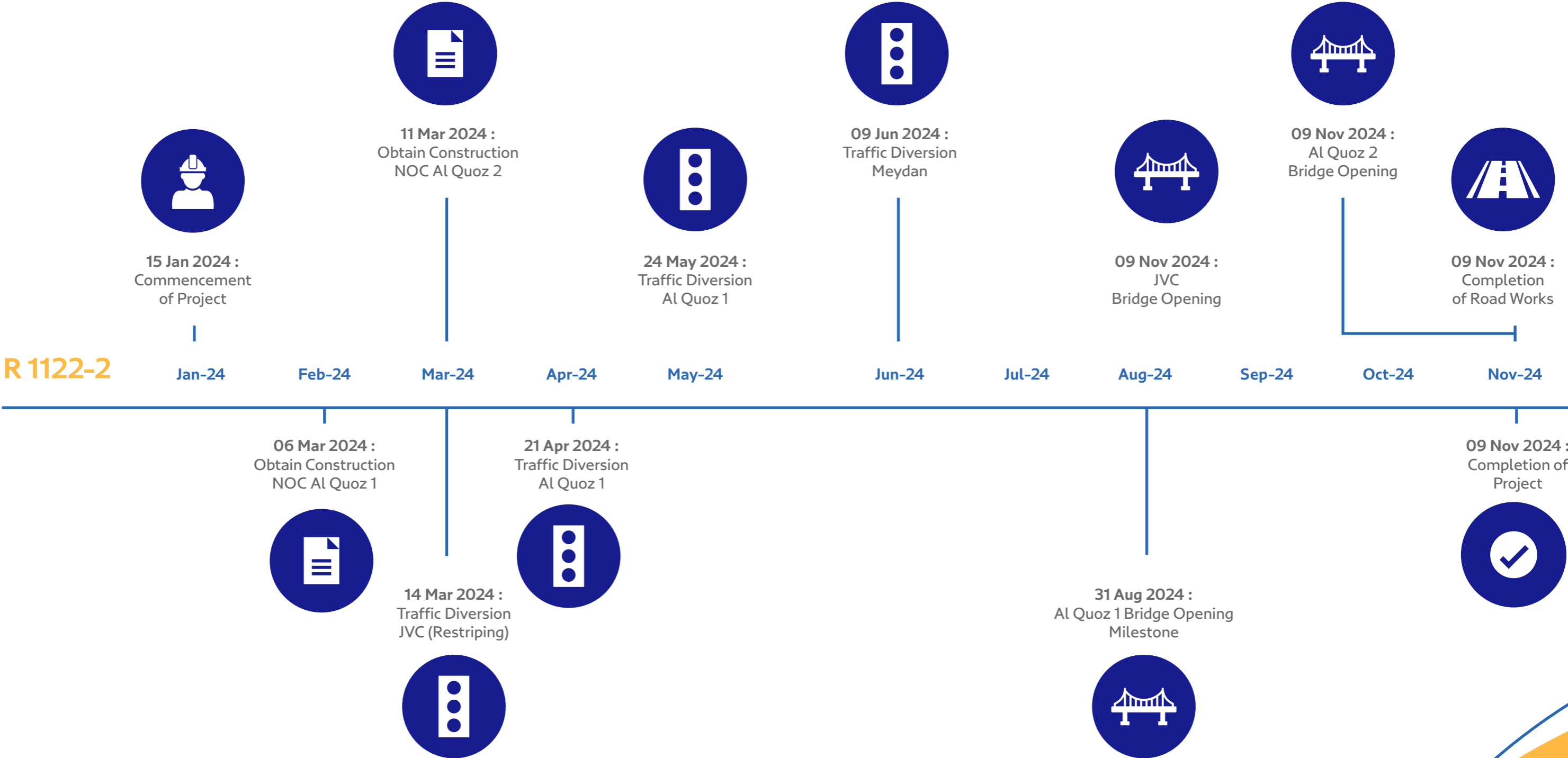
Two of the five bridges in this program were completed in a record time frame of just six months from commencing construction and were opened to traffic by end of August 2024.

This involved massive efforts including fast tracking engineering and procurement of long lead materials like bearings, 24/7 working, maintaining high standards of quality and managing the challenge of safely working near a busy live highway.

# Fast Track Timeline



# Fast Track Timeline



# 03

## Challenges and Mitigations

A robust risk management process was undertaken to assess potential risks and implement mitigation strategies during the design, procurement, and construction phases of the project.

### 01. Tight Construction Schedule of 10 Months

Completing five bridges with roads and services within a record period of ten months—including interim milestones to open two bridges within eight months—was a significant challenge. The 10-month period was initially considered insufficient due to the usual timeframes required for obtaining construction NOCs, designing and implementing traffic diversions, and long-lead procurement.

#### MITIGATION

01. Deploying high levels of resources to meet the demands of fast-tracking and project acceleration.
02. Implementing 24/7 shift-based working.
03. Allocating a higher contract budget to anticipate project requirements.
04. The Contractor treated each of the five locations as independent projects with dedicated project managers and resources.

### 02. Limited Time to Secure NOC's

With just eight months to open two bridges, the conventional protracted time frame for securing construction NOCs was not feasible.

#### MITIGATION

01. NOC applications were split for each location.
02. Incomplete Design NOCs were merged with construction NOCs to save time in coordination with various service authorities.
03. The site team and RTA worked in close coordination during the follow-ups with authorities.
04. Authority approval related bottlenecks were minimized by proactive involvement of RTA higher management with the authorities.

### 03. Fulfilling Requirements of Service Authorities

Coordination with authorities for engineering and securing approvals usually are time consuming.

#### MITIGATION

01. The site team and RTA worked in close coordination with various service authorities to secure shutdowns or permits to protect lines etc. without impacting the limited construction duration.
02. Foreseeing this concern, the designer conducted detailed utility mapping and coordination with authorities and stakeholders early on. Measures like extending the bridges to span over critical utility corridors to avoid or minimize the need to relocate or divert these utilities were adopted.
03. The designer also explored various corridor design options to efficiently use space and minimize the amount of utility diversions and necessity for expropriations.
04. During the construction phase, all execution drawings and shutdown dates for utilities were coordinated and agreed upon in advance by relevant service authorities, which minimized the disruption to construction activities.

### 04. Minimizing Inconvenience to Adjacent Communities

One of the significant challenges faced by the team during the project implementation which involved 24/7 site operations was to reduce the inconvenience to the residents of the area to a minimum as Zabeel, Meydan, Al Quoz 1, Ghadeer Al Tair and Jumeirah Village Circle are among the vital areas in Dubai.

#### MITIGATION

01. Noise creating operations like piling or sheet piling etc. were meticulously reviewed and executed during daytime.
02. Close coordination with residents were maintained for management of complaints.
03. Detours were implemented with due regard for all existing accesses to communities as well as by providing 24/7 guidance.

### 05. Unavailability of 132 kV Shutdown Window

It was not feasible to divert the 132 kV at Location No. 6 (At Al Quoz 1 area) which was clashing with the piling works of proposed bridge as the time for engineering and procurement of long lead 132 kV materials was insufficient from the commencement date of 15 Jan 2024 to manage the shutdown within permitted shutdown window ending by 31 Mar 2024 . The next available window was in October 2024 which will fail the interim Milestone date of opening the bridge at Location 6 by 31 August 2024.

#### MITIGATION

01. The Designer adjusted the orientation of proposed bridge during construction phase to avoid relocation related delays to this milestone scope.



## 06. Timely Implementation of Traffic Diversions

The timely design and implementation of traffic diversions along Al Khail Street, Meydan Street, Oasis Street, Latifa Bint Hamdan Street, Ghadeer Al Tair Street and the street coming from Mohammed Bin Zayed Road near Jumeirah Village Circle in accordance with the highest safety requirements, posed a serious challenge for affected services, roads and bridge works. Regardless of the time constraints, RTA emphasis was to adhere to the highest international safety standards at all stages.

### MITIGATION

01. RTA pre-approved traffic sub consultant was proposed and mobilized at early stage of the projects for developing detour proposals.
02. TMS schemes requiring minimum efforts like adjusting lane widths through restriping of existing road markings was adopted at Locations 8, 4 and 5 in close coordination with RTA.
03. The Contractor studied various options and avoided time consuming options like those necessitating installation and removal of steel gantries for bridge construction.
04. All concerned RTA departments processed these proposals with high priority and respecting the restricted timeline of the project.



## 07. Continuous Monitoring of Traffic Diversions

After implementing the traffic diversions, the site team in coordination with RTA, continuously evaluated the detours managing the conflicting requirement of avoiding traffic congestion as well as to complete the project in a timeous manner.

### MITIGATION

01. Traffic signs were placed at entry and exit points controlling the movement of construction vehicles.
02. Detour patrolling was implemented to maintain high safety standards at all times.
03. Transitions from Detour to Permanent Bridges and roads were planned meticulously to provide a seamless and safe experience to road users despite the heavy traffic movement along Al Khail Street.





## 08. Coordinating Operations at Five Locations

Coordination for managing the seven project sites located considerably far from each was a challenging task, especially as to the areas of overlap and tie ins.

### MITIGATION

01. Despite being independent projects, the site operations were controlled from a single office to expedite coordination efforts.

## 09 . Supply Chain Management

Coordination for managing the seven project sites located considerably far from each was a challenging task, especially as to the areas of overlap and tie ins.

### MITIGATION

01. To avoid delays, it was decided at early stage that the existing approved suppliers from another major ongoing RTA project will be utilized to cut short the engineering durations like pre qualifications and material finalizations.

## 10. Meeting Sustainability Goals

Given the time-sensitive nature of the program, concerns were consistently raised about whether RTA's goal of ensuring sustainability would be compromised.

### MITIGATION

01. By achieving a substantial reduction in journey time, the project successfully promoted sustainability, reduced waste, and mitigated future carbon emissions.



# 04

## Lessons Learnt

### Continuous Collaboration of Stakeholders

The project emphasizes the importance of collaboration among stakeholders, including government agencies, utilities, and the public.



Regular forum meetings were conducted with senior management from the RTA, consultants, and contractors to evaluate project progress. These meetings served as a platform for making important strategic decisions related to budget, schedule, design changes, and traffic management. Ultimately, these decisions positively impacted the interests of all stakeholders involved.



The RTA assisted contractors in securing approvals and No Objection Certificates (NOCs) from government entities within critical timelines.



During construction, execution drawings and utility shutdown dates were coordinated with service authorities in advance, minimizing disruptions to construction activities.

### Resources Availability and Management



Due to high resource demand, the contractor had to prioritize this project over other ongoing RTA projects. This can impact the progress of other projects, and the employer should carefully consider selecting contractors based on their capabilities and past performance.



There was no time for a learning curve in this project, making it essential to have experienced and skilled resources—both direct and indirect—from the outset.

# 05

## Keys to Success

The following represents the key factors that contributed to project success:



Effective Project Management



Quality Assurance and Project Control



Robust Risk Management



Environmental Sustainability



Safety First



Skilled Workforce



The attention of Higher Management



Traffic Management



Stakeholder Engagement and Collaboration



Addressing Issues Effectively

## Project Cost Saving Resulted from Value Engineering

The following represents some examples of the value engineering efforts:

### 01. PILE CAP DESIGN REVISED TO AVOID 132 KV RELOCATION AT LOCATION 6:

Pile cap design was modified, and bridge orientation was adjusted to avoid 132 kV relocation at Location 6 necessary for commencing piling works

### 02. AVOIDING RELOCATION OF EXISTING 132 KV LINK BOX AT LOCATION 8A:

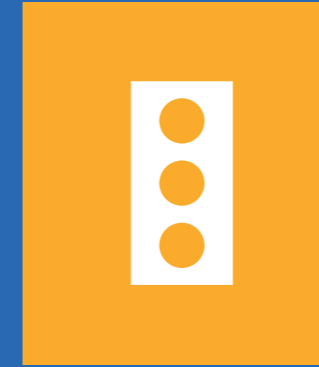
Barrier Protection was introduced at Location 8 A to avoid relocation of existing 132 kV Link Box

# 06

## Recommendations

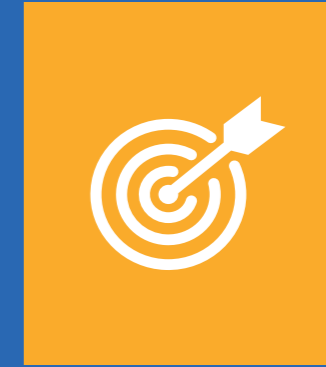
(for Future Projects and Urban Mobility Initiatives)

RTA will build on the success of this project by ensuring efficiency, sustainability, and seamless implementation in future initiatives!



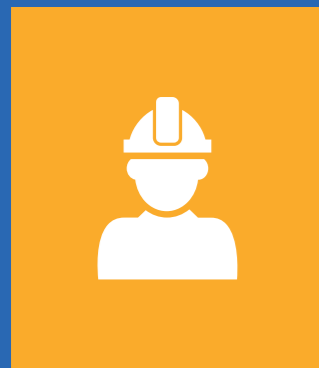
### Enhance Traffic Management Strategies

Develop adaptive traffic diversion plans to maintain safety and minimize congestion, ensuring smooth operations during construction.



### Focus on Sustainability Goals

Incorporate measures to reduce environmental impact and align with long term urban mobility and emission reduction targets.



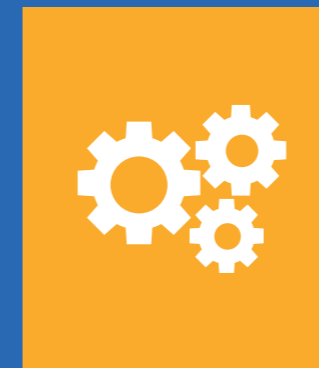
### Prioritize Value Engineering

Explore design optimizations early in the project to minimize costs and avoid delays caused by utility relocations or site constraints.



### Strengthen Coordination with Stakeholders

Establish clear communication frameworks with authorities, contractors and service providers to streamline approvals and mitigate disruptions.



### Deploy Skilled Resources Effectively

Allocate experienced personnel and ensure sufficient resource availability to meet the demands of fast track project timelines.



### Institutionalize Risk Management Practices

Implement proactive risk assessment and mitigation strategies to handle project uncertainties effectively.

