



## **Enterprise Asset Management - International Association of Public Transport (UITP) Peer Review**

**Date:** September 11, 2024  
**To:** TTC Audit and Risk Management Committee  
**From:** Chief Capital Officer

### **Summary**

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At the April 11, 2024, meeting, the TTC Board adopted a decision to request the International Association of Public Transport (UITP) to conduct a peer review of the TTC's subway and streetcar assets and maintenance programs, with the proposed scope of the peer review to be confirmed at the next meeting of the Audit & Risk Management Committee. Since then, staff have coordinated with UITP to prepare a proposed scope for the Committee's consideration.

The proposed UITP Peer Review, as outlined on pages 29 – 35 of the attached proposal, will be conducted by an international multidisciplinary pool of three to five experts led by a Senior UITP staff member. These experts are public transport professionals with extensive practical and field experience in the Peer Review topic. The proposed UITP team is comfortable working in international contexts and is independent of any industrial or commercial interests.

### **Recommendations**

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It is recommended that the Audit and Risk Management Committee:

1. Endorse UITP online/onsite proposal of €70,000 plus travel and accommodation costs to carry out a peer review on TTC Subway and Streetcar assets and maintenance programs.

### **Financial Summary**

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Funds are included in the TTC's 2024-2033 Capital Budget and Plan under Program 3.9 – Enterprise Asset Management, State of Good Repair to implement the TTC's Enterprise Asset Management Program, which the TTC Board approved at its meeting on December 20, 2023, and by City Council on February 14, 2024.

The 10-Year Capital Plan includes a total of \$59.25 million for the Enterprise Asset Management Program. In addition, the TTC is upgrading its information technology

systems to implement Maximo to enable asset management planning and end-to-end asset lifecycle management processes, which includes \$17.8 million.

The Chief Financial Officer has reviewed this report and agrees with the financial impact information.

## **Equity/Accessibility Matters**

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The EAM Program seeks to ensure that TTC assets meet the performance requirements set out by the TTC in its corporate policies and plans. This includes levels of service requirements relating to equity and accessibility. These requirements provide accessibility objectives for TTC services that ensure decisions are made that align with customer needs and the guidance of the Advisory Committee on Accessible Transit (ACAT).

## **Decision History**

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In accordance with Provincial Regulation, [Asset Management Planning for Municipal Infrastructure Regulation, O. Reg. 588/17 \(as amended by O. Reg. 193/21\)](#), and the [City of Toronto Corporate Asset Management, Policy CAM-001](#) was adopted by City Council on June 19, 2019 and came into effect on July 1 of the same year. It provides the framework to develop a whole government asset management approach that will ensure long-term asset sustainability, demonstrate a commitment to good stewardship of the City's infrastructure assets, and support improved accountability and transparency to the community through the adoption of appropriate asset management practices.

The TTC Board authorized the award of a contract in the amount of \$7,155,703, inclusive of HST, for Enterprise Asset Management Professional Services at its meeting on April 13, 2023. This contract provides expert EAM professional services for a duration of up to three years to accelerate the establishment of the TTC's EAM practice, implement the TTC's EAM Program and its sustainment, develop the TTC's Asset Management and Investment Plan that must meet asset management regulatory compliance milestones set out in the Ontario. Reg. 588/17, as amended. The contract includes two optional, one-year extensions at the TTC's sole discretion.

[TTC Enterprise Asset Management \(EAM\) Program: Contract Award for Professional Services.](#)

At the February 22, 2024, meeting, the TTC Board endorsed the report, providing an overview of the TTC's Enterprise Asset Management Program (EAM). The intent of the EAM Program is to mature the TTC's asset management capabilities to align with international best practice. The program will also ensure that TTC is complying with the Asset Management Planning for Municipal Infrastructure Regulation, O.Reg. 588/17.

[Enterprise Asset Management Program Update](#)

At the April 11, 2024, meeting, the TTC Board endorsed the TTC's 2024 Asset Management Plan. The Plan will ensure that TTC is complying with the Asset Management Planning for Municipal Infrastructure Regulation, O.Reg. 588/17. [2024 TTC Asset Management Plan](#)

## **Issue Background**

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The TTC is an asset-intensive organization that provides a high-quality transit service to Canada's largest urban centre and economic hub. In order to ensure that TTC's assets are able to deliver a safe, reliable, and integrated transit service, the TTC is maturing its asset management capability through its Enterprise Asset Management Program. This program meets the requirements of the Provincial Regulation and fully aligns with asset management best practice.

## **Comments**

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### **Toronto Transit Commission Asset Management Plan**

To meet the requirements of Ontario Regulation 588/17, the TTC has developed an Asset Management Plan (AMP). This Plan addresses the requirements of O.Reg 588/17. It encompasses all assets owned and managed by the TTC and includes information on inventory, age, condition, asset lifecycle activities and the capital and operating costs required to maintain current service levels.

### **Asset Management Maturity at TTC**

Asset management is not new to TTC. As an asset-intensive organization, TTC continues to mature and evolve its asset management program in order to align with international best practice. Doing so will support the TTC's asset management capabilities and enable many elements required for keeping assets in a state of good repair.

TTC staff are currently implementing a multi-year asset management maturity improvement roadmap consisting of a portfolio of different programs. Each program has a series of projects that will support the TTC's asset management capabilities and is intended to:

- Improve the quality of the information used for optimized decision-making.
- Leverage state-of-the-art technology.
- Support the adoption of achievable and affordable levels of service.
- Support the life cycle and financial strategies that address needs and prioritize funding allocation.

## **Peer Review**

As part of an asset management maturity improvements program, it is always good practice to periodically undertake a peer review of work completed. Such a review provides objective advice from independent subject matter experts to ensure alignment with best practice. In keeping with this best practice, staff are proposing that the attached UITP Peer Review be considered. This peer review will assess TTC's asset management relevant documents and practices in order to identify gaps and improvements. The peer review team will be provided opportunity to query maintenance and operating staff (unionized and non-union) as they conduct their review.

TTC staff recommend that the Committee endorse engaging UITP to undertake the scope of work contained in Option II, which includes a site visit, to conduct a peer review of the TTC's subway and streetcar assets and maintenance programs.

## **Contact**

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Sam Sidawi, P.Eng. Head – EAM Program Delivery  
416-472-2499  
sam.sidawi@ttc.ca

## **Signature**

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Gary Downie  
Chief Capital Officer

## **Attachments**

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Attachment 1 - UITP Peer Review Proposal



# TTC Peer Review Project

## Asset Management Plan

Online / Onsite



# Content

- **UITP & Peer Review Services**
- **Summary of Proposals**
- **Technical Proposals**
- **Experts Pool**
- **Financial Proposals**



**UITP**

**Peer Review Services**

# PEER REVIEWS

- Receiving true objective advice can be very difficult for the strategic decisions that public transport organizations sometimes face.
- A peer review aims to solve this problem.
- A group of members out of UITP's extensive network will be carefully chosen based on decades of operational experience in the sector.
- During a workshop (behind closed doors) on-site at the requesting organisation, each member will objectivity comment, advise and discuss the problems and solutions the public transport organization is facing.
- UITP staff member will act as an observer of the peer review and also act as a rapporteur of the workshop, structuring the discussions and advice in a helpful format.



# A PEER REVIEW CAN ASSESS:

- Urban Transport Policies and Regulations
- Urban mobility plans for a city/region
- Public Transport Network & Operations
- Pricing, Fare Management and Fare Evasion
- Ticketing Systems & Loyalty & CRM Systems
- Travel Information Systems, Signage and Wayfinding
- Safety and security
- Emergency Preparedness & Crisis Management
- Anti-Terrorism
- Human Resources Management
- Marketing Strategy & Revenue Management
- Asset & Maintenance Management
- Accessibility
- Autonomous Mobility
- Service Quality
- Mobility as a Service
- New Mobility Services
- Tendering and Contracting Model & Process
- Mode and Technology Choice
- Crowd Management and Organization of Large Events
- Formalization of Informal Transport
- Funding, Financing and PPPs
- Specific projects or systems
  - a BRT line,
  - a metro extension,
  - an interchange station,
  - the set-up of a transport authority

# ➤ WHO CARRIES OUT THE PEER REVIEW?

- The UITP Peer Reviews are conducted by an international multidisciplinary pool of three to five experts, led by a Senior UITP staff member.
- All UITP experts are public transport professionals with extensive practical and field experience of the Peer Review topic.
- All are comfortable working in international contexts and multicultural environments and are independent of any industrial or commercial interests.



## DELIVERABLES

- UITP delivers a Peer Review report analyses the main issues and provides concrete conclusions with recommendations for improvement.
- UITP may deliver a certificate of recognition to the subject of the Peer Review, expressing its support for the achievements in the city/ region.
- UITP may support the beneficiary in disseminating the results to the media (drafting press releases, conducting media interviews, holding a press conference etc.)
- The beneficiary may prefer to keep the results of the Peer Review confidential



# KEY STEPS

## **Pre-review (up to three months in advance):**

- UITP will acquaint itself with the subject, define the approach, identify the optimum Peer Review team members and undertake a desk review of relevant information and all reports provided by the Peer Review's beneficiary.

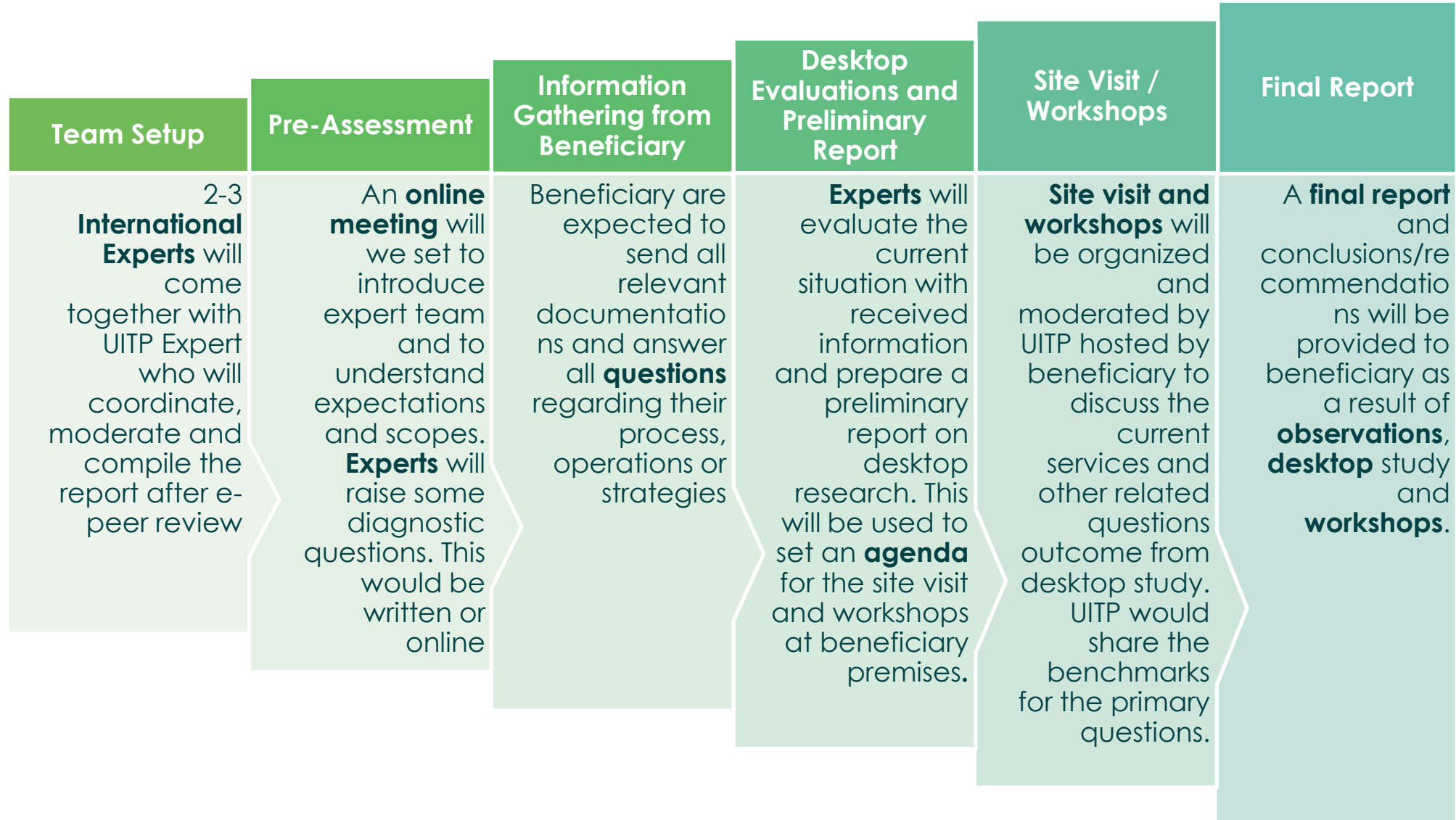
## **On-site mission (three to five days):**

- Peer Review team will study the beneficiary's city/region transport system and main infrastructure, meet with key decision-makers and experts in the city/region and present the preliminary findings.

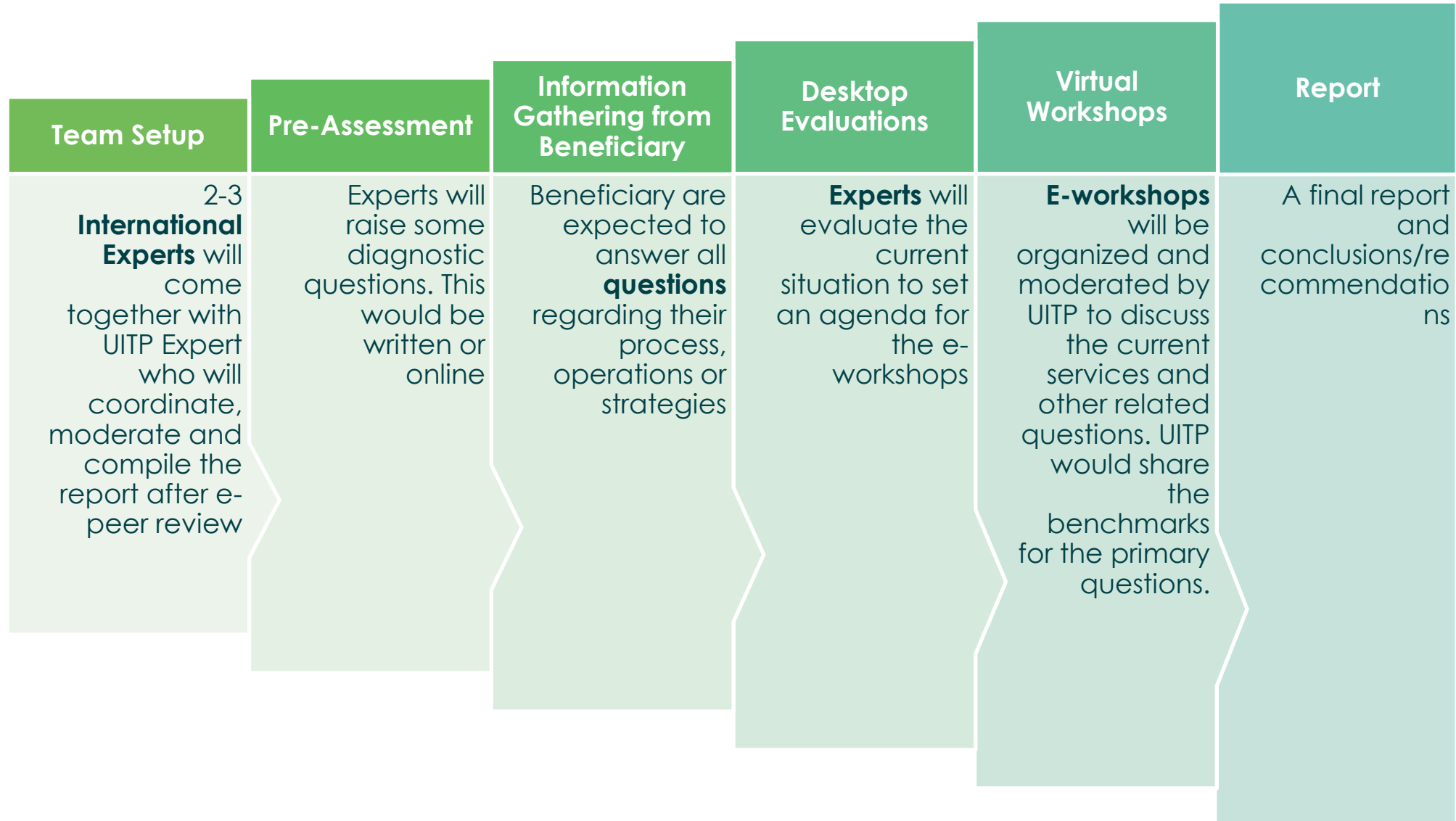
## **Post Mission:**

- UITP will elaborate the Peer-Review report and deliver it four weeks after the end of the mission at the latest. The beneficiary may choose to hold a special meeting for the presentation and discussion of the report.

# PEER REVIEW-ONSITE



# PEER REVIEW-ONLINE





# PROCESS FOR PEER REVIEWS

## 1) Signature of Contract

## 2) Preparations to "Peer Review"

- Kick-off Meeting
- Establishment of Peer Review Panels and Identification of Panel Members
- Preparation of Pre-Review Questionnaires
- Analysis of Answers
- Desk Reviews of Related Materials and Reports.
- Online Meeting with Peer-Review Panel Members

## 3) Onsite Peer-Review (\* or online )

- Peer Review team will study details
- Review, meet with key decision-makers and experts, get presentations, involve to Q&A Sessions and present the preliminary findings.

## 4) Post Mission:

- UITP will elaborate the Peer-Review report the mission at the latest.
- RTA may choose to hold a special meeting for the presentation and discussion of the report.



# ➤ SELECTED REFERENCES



THE WORLD BANK

TIP



RTA

هيئة الطرق والمواصلات  
ROADS & TRANSPORT AUTHORITY



نيوم NEOM



TGA

الهيئة العامة للنقل  
Transport General Authority

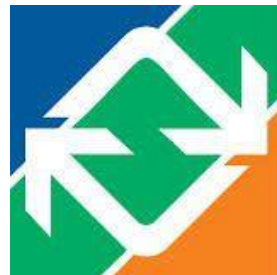
metlink



ATM

AZIENDA TRASPORTI MILANESI S.p.A.

Auckland  
Transport  
An Auckland Council Organisation



HKL  
HST



Московский  
метрополитен



# ➤ SELECTED PEER REVIEW SERVICES-1

1

## Review of Regulations School Bus and Specialized Transport

Review and provide feedback and recommendations on the current:

- Specialized Transport Regulation.
- School Transport Regulation.

2

## Review of Land Transport Strategy

- A Desktop Review of the LT strategy study and its outputs for passenger transport sectors . Afterwards a subjective report will be delivered with recommendation. This will not be full review of LTS but reviewed by 1-2 experts and provision of suggestions.

3

## Assessment of New Mobility Services and Maas Readiness

- An assessment for the readiness of the New urban mobility modes (ride-hailing, MaaS, Micro-mobility, shared mobility). The team should deliver these 3 topics:
  - Maas Readiness assessment
  - MaaS platform business models from a regulatory perspective.
  - Review of global experience in providing incentives for e-mobility deployment for all modes

4

## Review of Public Transport KPI on National Level

- Assess current and expected data availability
- Suggest a set of proposed strategic measures
- Revise and finetune measures
- Propose a final set of measures

5

## Review of Taxi services and Regulations

- Review the ongoing study on:
  - Taxi transformation to franchise operations

# > SELECTED PEER REVIEW SERVICES-2

6

## Digital Transformation

- Reviewing the level of maturity of strategies and activities for several pillars
- Benchmarking initiatives with known best practices of the public transport sector
- Providing recommendations and proposing a roadmap for further improvement

7

## Innovation and Foresight

- The innovation strategy is structured around six innovation focus areas and five innovation pillars.
- Advanced mobility
- Social and environmental sustainability
- Financial innovation
- Smart infrastructure
- Operational innovation and internal efficiency
- Future technology

8

## Organizing Transport

- The transport planning process in the city is notable for its complete feedback loop from planning to execution. Results and outcomes from transportation initiatives are systematically evaluated and subsequently looped back into the planning process. This feedback-driven approach allows for an incremental and low-risk approach to improving the transport system

9

## Investment

- Additional funds are required to finance (capital) projects which must meet feasibility criteria and be approved for funding by Government which allocates authority budget.

# > SELECTED PEER REVIEW SERVICES-3

## Rail Revenue Protection Assessment Project

10

•The City will be moving from paper-based cash ticket sales to electronic ticketing with the introduction of the National Public Transport Ticketing Solution. Accordingly, PT operators need to consider what the introduction of electronic ticketing will mean to the way in which it protects its rail service fare collection and how future revenue protection functions need to interface with other on-platform / station functions.

## Benchmarking / Service Delivery Comparison Studies

11

•Benchmarking / Service Delivery Comparison Studies that each produce a report containing a list of potential opportunities, highlighting of benefits / successes achieved overseas and which includes any specific complexities and associated costs of implementation. Each study output would as appropriate, contain photos / visuals of initiatives and opportunities in action.

## Non-Fare Revenue Generation (NFRG)

12

•How other Public Transport Authorities have developed their NFRG streams including – Recurrent: Transit Advertising, Licensing, Retail, Property Management, Telecom Services and other forms of value-added service offerings. Non-Recurrent: ToD / Property Development, Naming Rights and Station / Transit Connection Development.

## Decarbonisation Initiatives

13

•How other Public Transport Authorities / Public Transport Operators globally are lowering / mitigating their service delivery carbon output, over and above fleet electrification, associated PT Network Service enhancements such as On Demand Transport and mode shift activities.

# SELECTED PROJECTS & TEAM

| Customer               | Topic  | Peer Review Expert Team   |
|------------------------|--|---|
| <b>HKL Helsinki</b>    | Security Structure Enhancement   | Stockholm-Sweden, Brussels-Belgium, Prague-Czech, Hamburg-Germany, Lisbon-Portugal                  |
| <b>STIB Brussels</b>   | Gender Equality in Public Transport  | Dublin-Ireland, Hague-NL, Lisbon-Portugal, Essex-UK   |
| <b>Dhaka Mumbai</b>    | Bus Rapid Transit Development  | Madrid-SP, London-UK, Brussels-Belgium, Amsterdam-Netherlands                                       |
| <b>Porto</b>           | Advanced Ticketing Solutions   | Oslo-Norway, Flanders-Belgium, Barcelona-Spain  |
| <b>ATM Milano</b>      | Public Transport Security Measures   | Brussels-Belgium, Lisbon-Portugal, Amsterdam-Netherlands, Berlin-Germany                            |
| <b>Oman</b>            | Taxi Operations and Driver Management  | UAE, Malaysia, India, Tanzania, UK  |
| <b>Abidjan</b>         | Workforce and Human Resources Development  | Finland, Belgium, S. Korea, USA   |
| <b>Doha, Qatar</b>     | Major Event Planning and Public Transport Coordination                           | UK, China, Turkey, Spain, Hong Kong   |
| <b>Costa Rica</b>      | Bus Technical Standards  | Brussels-Belgium, Madrid-Spain, Porto-Portugal, Vienna-Austria                                      |
| <b>Bucharest</b>       | Sustainable Urban Mobility Solutions   | Belgium, Spain, UK, Austria, USA  |
| <b>Dubai</b>           | Network Design, KPI Management, AI Integration, and Electric Bus Regulations     | London-UK, Singapore, Vienna-Austria, Istanbul-TR, China, Finland, Budapest, Hong Kong, Sydney, USA |
| <b>Riyadh</b>          | Accessibility, Planning, Network Design, AI and Metro Operations, PT Regulations | UK, Singapore, Munich-Germany, Stockholm, Istanbul-Turkey, China, Finland, Hong Kong, Sydney        |
| <b>Toronto, Canada</b> | Cybersecurity in Public Transport  | Copenhagen-Denmark, Barcelona-SP, Milano-IT, Singapore, Brussels-Belgium                            |
| <b>Auckland, NZ</b>    | Non-Fare Revenue Generation, Zero Emission Bus Implementation, and TOD           | Istanbul, Brussels-UK, Hamburg, Madrid, Dubai, Hong Kong, Singapore                                 |
| <b>Kuala Lumpur</b>    | Performance Assessment in Public Transport                                       | Hong Kong, Singapore, Dubai, Brussels, Istanbul   |



# EXPERTS

EXPERTS for this Peer Review



# EXPERTS



**Ignasi OLIVER**

Director Director of Metro Project Area,  
Transports Metropolitans de Barcelona  
(TMB)

SPAIN

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Experienced Director with a demonstrated history of working in the utilities industry. Skilled in Negotiation, Railway Signalling and automation, Engineering, Strategic Planning, and Project Engineering. Ignasi Oliver joined TMB in 1988 in Metro de Barcelona as engineer of Remote-Control Systems department. After that he has been **manager of several departments of maintenance and of projects**, leading teams +200 people. He has been in charge of all kind of installations: signalling, remote control, communications, ticketing, tracks and catenary, electrical and electromechanical installations. He has been involved in the major changes in the metro network, introducing automation, adapting installations, procedures and organisational charts to the needs of the metro operation and driverless lines. His main focus has been to provide the best availability to get the best metro service with limited costs. To do that he introduced technical improvements, RAMS, obsolescence and **assets management**, monitoring systems and the team of engineers to take benefit of it, and also the change of processes and culture to get a true transformation by mean of the digitalisation. Nowadays he is the Director of Project Area of Metro in charge of the planning and management and execution of all areas of Metro: Infrastructure, tracks, energy, signalling, installations and rolling stock. Strong professional graduated from La Salle BCN.



# EXPERTS



**Ignacio BARRÓN DE  
ANGOITI**

Professor and International Railway  
Advisor

BELGIUM

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Ignacio has an executive MBA at IESE Business School, Madrid and studied initially as a civil engineer, Technical University of Catalonia, Barcelona. Ignacio has vast professional experience with the RENFE (Spanish National Railways) acting as Director of the Renfe Office in Brussels since March 2020. He has worked in various roles such as international director for special projects in strategy and development for RENFE since 2017. On top of that, he originally worked with the Spanish National Railways between 1981 and 1997 in the Planning and Management Controlling Direction, operations, technical studies as well as commercial departments across Spanish speaking countries.

He has also worked with the International Union of Railways (UIC) for more than 10 years as director of the Passenger, High Speed and Stations Department, as well as Coordinator of Latin America Region.

On a regular basis Ignacio has published numerous articles , reports and books related to railways and has advised various governmental organizations across the globe. He is a regular trainer and lecturer for training organizations and various universities in China, Korea and Spain.



# EXPERTS



**Andreas OBERHAUSER**  
Senior Manager  
Global Rail Group

Andreas has more than 14 years of experience as an expert in Urban Rail Management and is an active member of the railway community in Austria, where he is well-known as an lecturer and researcher at several universities.

2018 – 2021:

Head of Department Track Infrastructure at Wiener Linien

2011 – 2018:

Head of Staff Unit Infrastructure Inspection at Wiener Linien

2007 – 2011:

Maintenance Process Manager Track at Wiener Linien

2003 – 2007:

Research Fellow at Vienna University of Technology (TU Wien)

# EXPERTS



**Corentin WAUTERS**

Head of Rail Unit Knowledge & Innovation

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Corentin Wauters is director of the Railway Unit of the Department of Knowledge and Innovation at UITP. His work focuses mainly on the activities of the work bodies of the UITP Metro Division, such as the Metro Committee and the Automated Metro Observatory. Corentin also actively collaborates with other groups and initiatives involving operators, organizing authorities and the supplying industry, reflecting the multi-stakeholder composition of the association's members. Corentin joined UITP in 2010 from the world of communication and journalism.



# EXPERTS



## **Jaspal SINGH**

Sr Director Membership & Global  
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Operations

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+1-647 860 2235

CANADA

Jaspal Singh has 16+ years of experience in mobility, innovation, and technology space. Presently serving as the Senior Director of Membership and Global Operations (MGO) at UITP (International Association of Public Transport), he concurrently holds the position of Head of the UITP North America Office. His earlier roles include serving as the Manager of the IT and Innovation Committee and as the Head of the UITP India Office.

He is also the host of Mobility Innovators Podcast. He has a 360-degree view of the sector as he has worked with the public agencies, operator, startups, and consulting firms.

He is also Principal at Valoriser Consultants, Inc. specializing in new mobility, cleantech, startups, electric mobility, and ITS. Previously, he was working with a public transit authority, reforming the urban transport system in India. In past, he also worked with Uber India's early team to navigate the regulatory challenges and build partnerships.

He has received several awards for his contribution in the field of public transport and social work, as well as has been widely quoted in publications. He completed his Master of Management and Innovation (MMIE) at Queen's University, Canada and received his master's in business administration specialized in International Business.

He is actively working with startups in mobility and logistics space as an advisor, mentor, and investor. Jaspal is an avid traveller and travelled to around 55 countries around the world and counting.



# ➤ EXPERTS



## Dr Feyzullah GÜNDOĞDU

Senior Advisor Academy, Head of Eurasia, UITP

BELGIUM

He is a public transport professional with over 25 years of experience in different phases, fields, and modes; rail, bus, micro-mobility.

Currently, working for uitp as senior advisor to academy and head of Eurasia, responsible for peer review and assessment services as well as content management for training programs.

He completed the Ph.D. program in Business Administrations, with a thesis “Effects of Formalization of Informal Transport System on Stakeholder Satisfaction”.

He started his public transport journey in METRO ISTANBUL in 1999 and worked for six years in different positions such as signaling engineer, vehicle maintenance planning, software development engineer, risk management, etc.

He was head engineer for Kayseri rail system construction project in which later became managing director of the operator company, Kayseri Transportation. Under his management the company took over the operation of bus system including rural transport, bike sharing system, electronic fare collection, city car parking system, fiber communication backbone of the city, R&D center that developed smart traffic management and enforcement systems. Under his mandate, with his innovative approach the company received several national and international awards.

During his public transportation carrier, he worked in different fields and took different management roles like fixed installation (communication, power, track, signaling, overhead catenary) manager, RAMS&EMC manager, R&D manager, corporate development manager, construction manager, vehicles, and maintenance manager.

He was a member of the policy and executive board, and chairman of light rail division of UITP between 2015-2019. He was chairman of UITP informal Transport working group and member of presidential committee between 2019-2021. He was the president of Rail System Operators Association TÜRSID, in Turkey. Vice president of Anatolian Rail Transportation Systems Cluster, ARUS. He was the Member of higher advisory board of Kayseri Industrial Chamber, Vice president board of Turkish quality association of Kayseri, and Member of the Advisory Board of Istanbul Technical University, Railway Safety and Security Application & Research Center.



# EXPERTS



**Muhammed Emre KIRAN**

Head of Product & Business  
Development Unit Events & Academy  
Services

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Emre KIRAN based in Brussels at UITP Headquarters working as Head of UITP Academy. He has a global responsibility for Public Transport Trainings and increasing the efficiency of the trainings.

Mr Kiran worked as Head of Strategic Marketing Manager and led the Pricing, product management of Caterpillar and based in Istanbul Borusan Headquarter in his previous job.

M.Emre Kiran involved several projects when he was a Lean 6 Sigma Blackbelt like Global Parts Pricing Strategy, Efficiency in Fleet Management and Logistics optimization in Europe-Asia Regions. Kiran has lectured service quality, process management and marketing in many different Caterpillar dealers' territories. He has more than 13 years of experience in management, training and business development.

Muhammed Emre Kiran has graduated Industrial Engineering in Istanbul Technical University and completed postgraduate programme of "Leadership and Management" in Sabancı University. He also holds a Lean 6 Sigma black belt Certificate after finishing the Lean management in BMGI University, USA and Lean Six Sigma in CAT University, France.



# EXPERTS



**Piers CONNOR**

International Railway Systems  
Consultant

UNITED KINGDOM

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A senior railway professional with wide ranging management expertise and front-line experience in railway systems, operations and maintenance, planning, project development, design and rolling stock manufacturing in Europe, North America, South Africa and Asia. Piers has an MSc in Railway Systems Engineering from the University of Sheffield and was awarded Doctor of Philosophy by the University of Birmingham.

Piers has professional membership of the Chartered Institute of Logistics and Transport (CILT) and is a Fellow of the Institution of Railway Operators (IRO). He is a railway systems consultant and has worked as an operator, planner, project manager and facilitator, writer, lecturer and expert witness. He is Lead Tutor for two IRO Railway Systems modules and visiting lecturer for the University of Birmingham.

# EXPERTS



**Poi Chung Tjhin**  
Head of Applied  
Rail Technologies

- Head of Applied Rail Technologies, SMRT
- Former Senior Vice President/ Head Operation, Land Systems, ST Engineering
- Former General Manager/Vice President at ST Engineering
- Former Chief Maintenance and Engineering Officer, Singapore Army
- Chairman, State Funeral Service Committee. Organised the State Funeral Services for the late Mr Lee Kuan Yew in 2015 and the late Mr SR Nathan in 2016 , as well as state memorial service for the late Mr Othman Wok in 2017
- Public Administration Medal (Military) (Silver)/Pingat Pentadbiran Awam (Tentera) (Perak) in 2015

# PROFILES

## Experts:

<https://www.linkedin.com/in/i%C3%B1aki-ignacio-barr%C3%B3n-de-angoiti/>

<https://www.linkedin.com/in/ignasi-oliver-78466341/>

<https://www.linkedin.com/in/andreas-oberhauser/>

<https://www.linkedin.com/in/poi-chung-tjhin-1b31b6126/>

<https://www.linkedin.com/in/piers-connor-phd-9a07b520/>

## UITP Team:

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<https://www.linkedin.com/in/feyzullahgundogdu/>

<https://www.linkedin.com/in/muhammedkiran/>

<https://www.linkedin.com/in/jaspalsinghna/>



# TECHNICAL PROPOSAL



# SUMMARY OF PROPOSAL

## 1. Scope:

TTC operating public transport systems, bus, subway and streetcars of Toronto more than 100 years. Vehicles fleet consists of 2577 bus, 234 streetcars and 143 subway trains. TTC maintains 70 kilometers of subway tracks and 388 km of streetcar way with various small and large industrial equipment. Subway vehicles and Streetcars are main elements in the scope of the peer review as well as other subsystems like power, track, overhead catenary, signaling systems which are essential parts for operations of Subway and Streetcars.

The aim of this peer review is to review TTC asset management plan and other relevant documents to identify gaps and improvements area with international best practices and standards.

**2. Reporting :** In addition to standard reporting and executive summaries reports would contain the risks that are identified based on best practices and peers experience. The report will represent the neutral view of the expert team.

# SUMMARY OF PROPOSAL

## **3. Organization and pricing:**

- All estimated cost is defined in following page
- There will be extra cost for the client if any specific documentation need to be reviewed in detail by the peers in advance and requires additional efforts.
- Any additional workshops or tasks will be priced separately on top of the quoted cost estimate in this proposal
- The workshops will be hosted by TTC according to site mission plan and moderated by UITP Expert/Team Leader with relevant people invited by TTC .
- The duration of the deliverables would be changed depending on the availability of the panelists and the team

## **4. Expert Team:**

- UITP staff member will act as an observer of the peer review and also act as a rapporteur of the workshop, structuring the discussions and advice in a helpful format.
- The UITP Peer Reviews are conducted by an international multidisciplinary pool of 3 experts, led by a Senior UITP staff member.
- All the experts will be confirmed after signature of the contract and presented to client for their approval.
- For this peer review experts will be from Europe, Singapura and Hong konk who had experienced the on same issue, names and profiles are given in this documents but uitp has rights to change in case needed by informing client.



# PROCESS FOR PEER REVIEWS

## 1) Signature of Contract

## 2) Preparations to "Peer Review"

- Kick-off Meeting
- Establishment of Peer Review team and Identification of team Members
- Desk Reviews of Related Materials and Reports.
- Preparation of Pre-Review Questionnaires
- Online Meeting with Peer-Review Panel Members
- Drafting & Submission of desktop review report

## 3) Online Peer-Review

- Online meeting to discuss on desktop review report with team members & TTC
- Peer Review team will study details & feedbacks
- Peer review site mission plan preparation & submission

## 4) Onsite Peer-Review – Site Mission

- Workshops & Meetings according to site mission plan
- Review, meet with key decision-makers and experts, get presentations, involve to Q&A Sessions and present the preliminary findings.
- Site visits according to mission plan
- Preparation of draft peer review report
- Presenting to TTC

## 4) Post Mission:

- UITP will elaborate the Peer-Review report the mission at the latest.
- Finalizing peer review report & Submission & Presenting to
- TTC may choose to hold a special meeting for the presentation and discussion of the report.



# PEER REVIEW PLAN

## Preparation

- Creating Team with 3 Experts – Approval of:
- Financial/Technical Proposal

## Desktop Review

Reviewing TTC Asset Management Plan & other documents

## Site Mission

Meeting & Workshops  
Site Visit

**Final Report**  
Presenting to TTC

## Signing Contract

## Desktop Review Report

Presenting Draft report & Feedback from TTC  
Site Mission Plan

## Draft Peer Review Report

Presenting to TTC  
Getting Feedback  
Revision

After agreement we will provide exact timing





# FINANCIAL PROPOSAL





# FINANCIAL PROPOSAL I- FULL ONLINE

| OPTION I |  |                    |
|----------|--|--------------------|
|          | Peer Review Online/Onsite  | Person Days        |
| 1        | Desktop Review of TTC Asset Management Plan & Documents & Online Meetins | 9                  |
| 2        | Online& Meetings - Workshops   | 12                 |
| 3        | Desktop review report & final meetings                                   | 4                  |
|          |  |                    |
| 4        | Administrating - Moderation and Reporting                                | 12                 |
|          |  |                    |
|          | <b>Total excl. tax</b>   | <b>€ 40.000,00</b> |

- The workshops and site visits dates will agree mutually with hosts and TTC.
- *The duration of the deliverables would be change depending on the availability of the panelists and the TTC availability.*
- *Any additional workshops or tasks will be priced separately on top of the quoted cost estimate in this proposal*



# FINANCIAL PROPOSAL II-ONLINE/ONSITE

| OPTION II                    |  |                    |
|------------------------------|--|--------------------|
|                              | Peer Review Online/Onsite  | Person Days        |
| 1                            | Desktop Review of TTC Asset Management Plan & Documents & Online Meetins | 9                  |
| 2                            | Onsite Mission & Meetings - Workshops - Site Visits *                    | 12                 |
| 3                            | Desktop review report & final meetings                                   | 9                  |
|                              |  |                    |
| 4                            | Administrating - Moderation and Reporting                                | 16                 |
|                              |  |                    |
| 5                            | Travel Costs & Accomodations included for team members and uitp staff    | -                  |
|                              | <b>Total excl. tax</b>   | <b>€ 70.000,00</b> |
|                              |  |                    |
| *3 day site mission foreseen |  |                    |

- The workshops and site visits dates will agree mutually with hosts and TTC.
- *The duration of the deliverables would be change depending on the availability of the panelists and the TTC availability.*
- *Any additional workshops or tasks will be priced separately on top of the quoted cost estimate in this proposal*



# Contact

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