

Tel Aviv LRT- Procurement Strategy of UG Station's Fit Out Package

Name:						
Project Reference	Issuing Entity	Line	Technical Package	Type	Chrono Number	Version
8162	ERA	RED	SFO	TRP	120285	B

Participants:			
	Produced by	Checked by	Approved by
Surname and first name	xxxxxx	Ily TOIBER	Bruno COMPERAT
Title	Expert	S. Project Manager	Project Manager
Date	June 5 th , 2016	June 8 th , 2016	June 12 th , 2016
Signature			

Revision record:			
Index, Version	Issue by	Date	Revision reason
B	B Comperat	12 th July 2016	Integration of NTA's comments

Table of Contents

1. Introduction	3
2. Background and current construction packaging	3
2.1 Typical underground station, as in the Red Line	3
2.2 Allotment of UG stations' in activities in the Red line	5
3. Procurement strategy analysis	5
3.1 Design methodology	5
3.2 Timeline Analysis	6
3.3 risks	6
4. Further question	8
4.1 Fit Out design budget	8
4.2 quality for IBI design	9
5. Conclusion	10
6. Recommendations	11

1. Introduction

NTA had in the past (years 2011-2013) the intension of procuring the construction of the Underground stations (including Fit Out) of the through a number of Design and Build type agreements with contractors. Accordingly, a tender for design for this purposes (tender and permitting) was launched and awarded in the year 2011 to a joint group of the companies IBI and DHV. This packaging and Procurement Strategy was approved by the GOI.

Later on, during the first quarter of 2013, NTA has requested from the GOI changing the Procurement Strategy of the Underground stations to a Build only type, and accordingly requested that the scope of its designers of the underground stations will be vastly enlarged from the original scope as described above to a scope fitting with full detailed design leading to a Build-only tenders, construction documents and oversight, and at the same time asked to add elements to their design scope such as the Carlibach extended project. This notion of NTA was commented by EMC in a report from 4/2013: 8162-ERA-RED_CWS_TRP_120092_B_UG Stations Design Contract and eventually approved by the GOI. In the following years NTA exercised this extension of scope through an addendum to the designer's agreement and consequently went out for Build-only tenders for the construction of the station "boxes" and most of its internal concrete inner lining (also known as TBM and Station Boxes West and East), while the complementary finishes and Mechanical & Electrical Building systems were intended to be procured through a subsequent Build only tender (also known as Stations' Fit out).

In the last months NTA had decided/requested to change once again the procurement strategy of the Stations' Fit Out back to Design and Build type. The reasoning behind this last change are brought by NTA in appendix 1 to this report; an immediate outcome of this conception is the de-scoping of the design contract. EMC does not have the details of such de-scoping and this note does not cover commercial aspects of it. Rather, in this note EMC will highlight repercussions and project risks arising from the change in procurement strategy for the Fit Out package itself.

2. Background and current construction packaging

2.1 Typical underground station, as in the Red Line

In earlier stages of the project, UG stations were broken into 3 main construction phases:

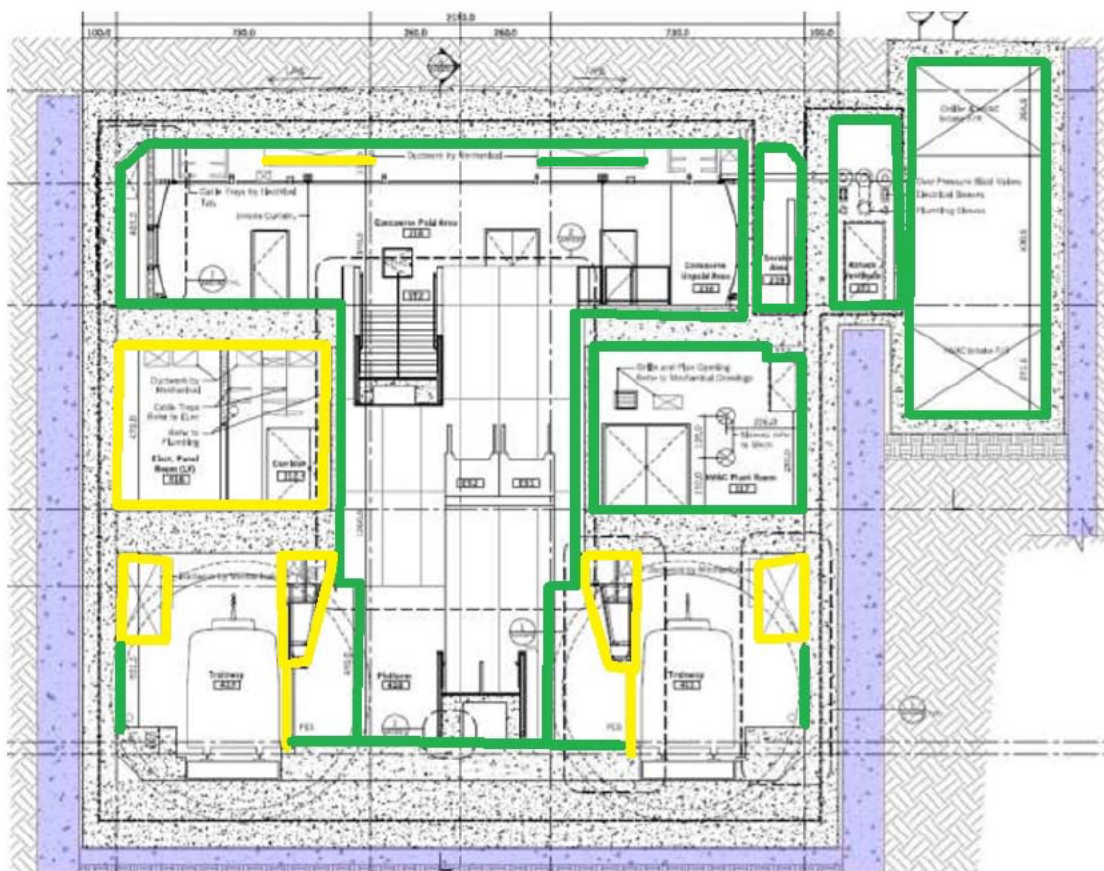
- "BOXES" (Blue in the typical cross section below) - Enabling works, perimeter D-walls and other concrete piling for the station and entrances, temporary strutting and other supports, decking (where applicable) and the bottom slab.
- "STRUCTURAL INNER LINING" (Clear/Grey) - Most of remaining concrete works in the stations - main floor slabs, stairs, internal walls, big part of the partitioning walls,

Monitoring Services for the Tel Aviv Mass transit Network

complex concrete works and embedded preparations as part of Civil Defence functionality of the stations.

- "FIT OUT" (Green) - Remaining works in the stations, including i.a. architectural finishes such as cladding and flooring, Mechanical, Electrical and Plumbing components of the stations, building services, unique Civil Defence components and systems.

Typical Red line underground station cross section



*The above breakdown is non exhaustive and is a rough breakdown for explanatory purposes of this report.

Interfacing heavily with the above design are:

- Rail Systems are embedded and tightly linked with station design and then construction, mainly in works on phases b - **STRUCTURAL INNER LINNING** and c - **FIT OUT**. Such Systems activities are described generally in yellow in the cross section above.
- Designation of the stations as Civil defence ABC shelters has also deep influence on design and construction of the station due to its to the embedding of the unique associated building elements throughout the phases.

- Permits: both initial permits "BOXES" phase and final Permits for the operating stations.

2.2 Allotment of UG stations' in activities in the Red line

NTA, through a series of former decisions and actions had aggregated the above activities in the following packaging/tenders:

- i. **TBM + Stations Boxes**: to include activities a. "BOXES" and b. STRUCTURAL INNER LINNING".
* These agreements are Build-only type for the stations.
- ii. **Station Fit Out**: to include activity c. "FIT OUT"
* This agreement was Build-only type, now suggested as Design-Build type.

3. Procurement strategy analysis

3.1 Design methodology

initial concern

A design and construction an Underground Station of a mass transit system is an ultra-complex process. In the Red line's reality, the complexity is amplified due the fact that the stations are designated as Civil Defence shelters which imposes a further set of constraints, interfaces and permitting.

A design process of such a complicated structure must be done with a top-down integrated approach that matches all constraints and assures the function of the station in its main use (as a mass transit station) and its secondary uses as well (Civil defence etc.) that sometime contradict one another.

It should be noted that by setting the assumptions of each phase and accepting constraints by the permitting authorities, many of the specifications and sizing of features of the former stage of construction are fixed. Some fundamental examples would be openings, ducts, embedded-in-concrete preparatory elements, etc.


Determining finishes and its systems also have a major impact of the former phase as it will most always will impact the sizing and methods of construction.

answer

It is indeed agreed that an Integrated Top - Down approach is required and it should be noted that [redacted] in terms of underground stations, has completed the high level integrated design. This design was already verified by [redacted] and the station structures have been validated in particular from a smoke and ventilation perspective. Further, the Fit Out design, under D&B concept, simply taking [redacted] high level reference design and producing a detailed finishing design, after

Monitoring Services for the Tel Aviv Mass transit Network

receiving all the needed inputs from SDAG and Branding. This ensures that all constrains are matched. Moreover, it should be noted that having DB for Fit Out is a very common approach that has been successfully used by Hong Kong MTR, Singapore LTA, Qatar Rail and Delhi Metro. In fact, in fast track metro projects it is the preferred solution with most International Clients which enables civil construction to start before the fit out has been designed.

 **final position**

EMC has nothing to oppose to last NTA assessments.

3.2 Timeline Analysis








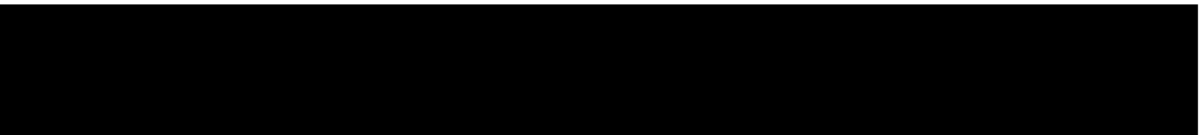








Fit - Out design requires many inputs and cannot be completed until SDAG design is fully completed. It shall be noted that in a DBB concept, a design must be fully completed and flawless before issuing the tender. IBI will receive SDAG's full design by NOV 2017 and the Branding information by mid 2017. 



-

By developing NTA's answer, excess cost arising from late information of interfacing design will be incurred anyway. Putting this cost nested under a DB type agreement does not evade it. Financial repercussions should be studied by NTA and effect on project budget assessed and presented to GOI (see item 4 below).

Nevertheless as soon as last version of Ref Line master schedule (Rev 10.6) will be released by NTA, EMC could check NTA assessment that change of strategy is for benefit of project schedule.

3.3 risks



Assuming that NTA's current approach will be following risks arise:

i.

[Redacted]
[Redacted]

[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]

The comment is not relevant as no permits for the Inner box have been attained yet.

[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted].

Despite of dedicated RFI, EMC have never been updated by NTA regarding permit status and was never informed of any change in matter of permit strategy for stations to a three stage one. The last change proposed by NTA: splitting permit process in 3 phases (1 : outer, 2 : Inner and 3 : Fit Out) instead of 2 initially planned (1: outer and 2: Inner/Fit Out) could have a positive impact in current level of risk regarding permit issue but EMC is doubtful as to the consent of the three municipalities (Tel Aviv, Ramat Gan, Bnei Brak) to this strategy

Thus EMC has nothing to oppose to last NTA's assessments.

Nevertheless EMC is expecting to see all permit tasks clearly identified in 10.6 schedule in order to check NTA's assessments.

[Redacted]

[Redacted]
[Redacted]

The comment is not relevant as the permitting of the structural inner lining is progressing without the Fit-Out permit. |

[Redacted text block]

|

|

|

|

Anyway EMC has nothing to oppose to NTA's last assessments, |

|

|

|

Nevertheless EMC is expecting

1. to receive from NTA/PB ASAP more information regarding change in SOW boundaries between TBM and fit out contractors.
2. To see all permit tasks clearly identified in 10.6 schedule in order to check demonstration of NTA assessments.
3. |

4. Further question

4.1 Fit Out design budget

|

|

|

|

|



Other factors that are relevant to the decision to move to Design Build and should ultimately save NTA money include:

commercial leverage they could gain through later SBAG driven design changes. By making Fit Out Design and Build it denies IBI this opportunity;

4.2 quality for IBI design



5. Conclusion



[Redacted]

[Redacted]

[Redacted]

[Redacted]

EMC "Reviewer" did his analysis with all information/material transmitted by NTA. [Redacted]

[Redacted]

[Redacted]

Recommendations

EMC doesn't see any severe reason to object to NTA proposal to change "again" fit out tender strategy from DBB to D&B. Nevertheless, EMC recommends that NTA will study in detail the budget and schedule repercussions arising from this change and report to GOI/EMC accordingly.