



STAFF REPORT INFORMATION ONLY

Presentation: Scarborough Subway Extension – Project Overview

Date:	May 27, 2015
To:	TTC Board
From:	Chief Executive Officer

Summary

Staff will provide a power point presentation entitled: Scarborough Subway Extension – Project Overview.

Contact

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Attachments:

Presentation will be distributed at the meeting



SCARBOROUGH SUBWAY – TTC BOARD BRIEFING

Presented by: Rick Thompson
Chief Project Manager – SSE

Date: May 27, 2015





Address Motions from February 25, 2015 Board Meeting:

- 1. Overall governance structure for project delivery; and**
- 2. A high level Gantt Chart, recognizing that it is very preliminary.**

Also address:

- Background**
- Budget**
- Environmental Assessment**
- Board Reports**
- 2015 Expenditures**
- Management of Consultant Contracts**
- Organization**
- Project Delivery**
- Station Design Consultants**





BACKGROUND





- **October 8, 2013 – Council confirmed support for extension of Bloor-Danforth Subway, up McCowan Road to Sheppard Avenue.**

Funding Source	Escalated	
Federal Funding	\$660	19%
Provincial Transfer ¹ (\$1.48B in \$2010)	\$1,990	56%
City	\$910	26%
Total Funding for Scarborough Subway	\$3,560	100%

1. Provincial Contribution net of sunk costs.



SCARBOROUGH SUBWAY EXTENSION FACT SHEET



Length (McCowan*)	7.6 km
Number of Stations*	3 - Lawrence - Scarborough Centre - Sheppard
Additional Trains	7
Travel Time – Kennedy to Sheppard	10 minutes
Start Construction	2018
Scheduled Completion	Late 2023
Budget (escalated)	\$3.56B

* Recommended alignment and stations to be confirmed through Transit Project Assessment Process (TPAP)



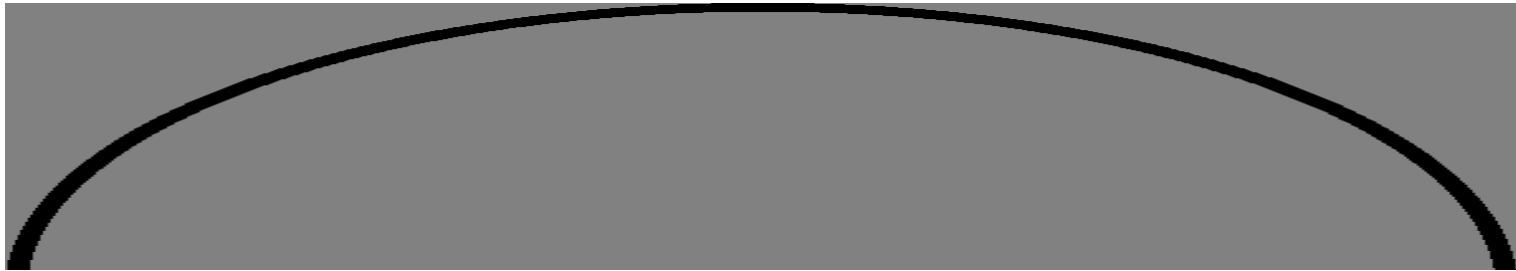


ENVIRONMENTAL ASSESSMENT





Environmental Assessment



September
2014



January 2016

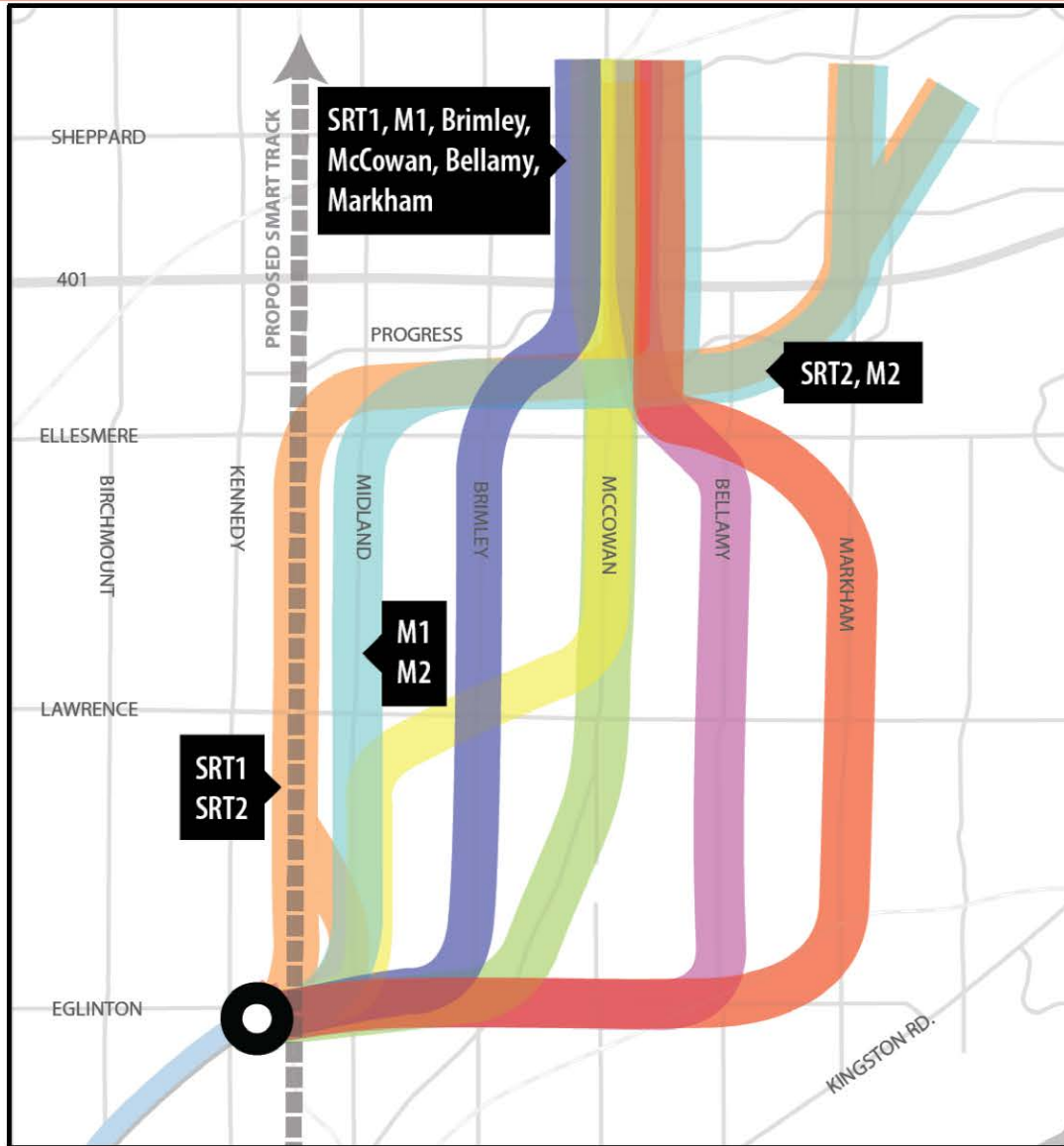


June 2016

- Project Assessment Study
 - Identify
 - Evaluation criteria
 - Corridors
 - Alignments
 - Consultation
 - Public – PIC #1-3
 - Stakeholders (e.g. BICs)
 - Engineering
 - Estimating
 - Property
 - Seek approval
 - TTC Board
 - PG&M
 - Council
- Transit Project Assessment Process (TPAP)
 - PIC #4
 - Submit final report and request approval from Minister of Environment



STUDY AREA





- **7.6 km running structure**
- **3 Stations**
- **Longer route – approximately \$180M/km (2015 \$)**
- **Additional station – approximately \$200 M (2015 \$)**



PROJECT ASSESSMENT / TPAP



September 2014	EA Technical Consultant began
December 18, 2014	Briefing with local Councillors
January 31/ February 2, 2015	Phase 1 Public Consultation on: <ul style="list-style-type: none">• Terms of Reference for EA<ul style="list-style-type: none">– Study Area and Evaluation Criteria– Draft Public Consultation Plan– Long List of Subway Corridors
Spring 2015	Phase 2 Public Consultation on: <ul style="list-style-type: none">• Evaluation of Long List of Corridor Options• Short List of Corridors• Alignment Options in Short Listed Corridors
September 2015	Phase 3 Public Consultation on: <ul style="list-style-type: none">• Evaluation of Corridor and Alignment Options from Phase 2• Recommended Corridor, Alignment and Station Concepts
Fall 2015	Seek approval of Recommended Alignment from TTC Board, Planning and Growth Management Committee, and City Council
January 2016	Initiate 6-month Transit Project Assessment Process (TPAP)
June 2016	Project Approval from the Minister of Environment





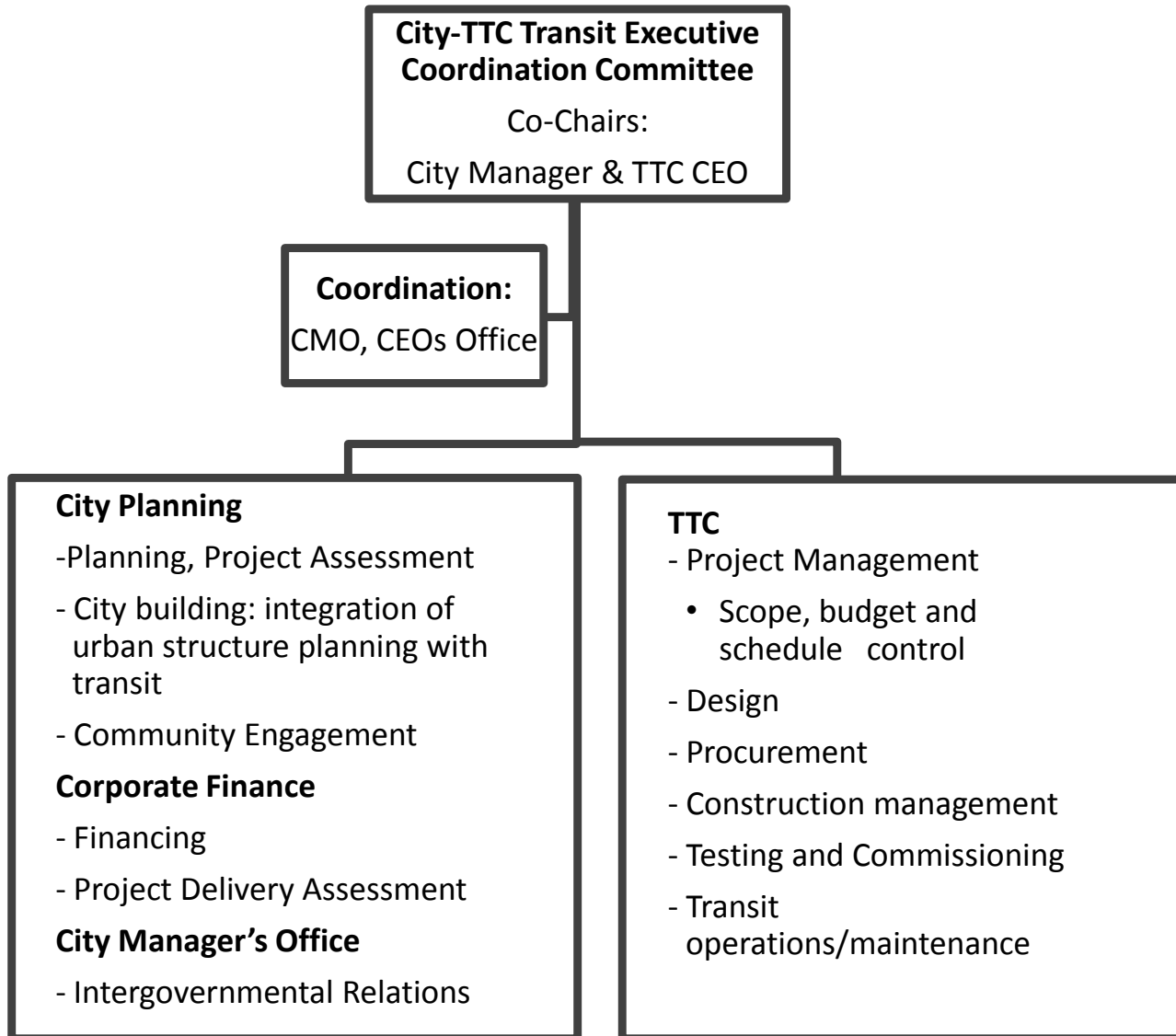
GOVERNANCE





- **Joint City/TTC undertaking under City/TTC Transit Executive Committee**
- **City**
 - EA Lead – responsible for delivery of the EA
 - Project delivery assessment
 - City Council approvals
- **TTC - overall responsibility for implementing Council approved scope, budget, schedule, design and construction**







PRELIMINARY SCHEDULE



PRELIMINARY SCHEDULE



- **Schedule is very preliminary and based on historical information**
- **Completion of EA is first critical path activity**
- **Intent is to perform early tasks in parallel to the EA, wherever possible**
- **Goal – enable team to hit ground running once alignment is determined**
 - Issue RFPs
 - Award consultant contracts (project team and design)
 - Develop work plans
 - Perform studies
 - Hire TTC staff
 - Acquire office space
 - Develop project plans/procedures





- **Unknowns**
 - Corridor
 - Alignment
 - Number of stations
 - Constructability challenges (e.g. property, utilities)
 - Project delivery strategy, e.g.:
 - Design Build
 - Design Bid Build
- **Once alignment is determined through EA, confirm:**
 - Budget
 - Schedule



PRELIMINARY SCHEDULE



2014 – 2016	<ul style="list-style-type: none">➤ Develop Project Plans – staffing, contracting strategies, implementation➤ Recruiting/Consultant Procurement➤ Preliminary Engineering and Transit Project Assessment Process (TPAP)
2016 – 2018	<ul style="list-style-type: none">➤ Property Acquisition➤ Design
2018 – 2023	<ul style="list-style-type: none">➤ Construction

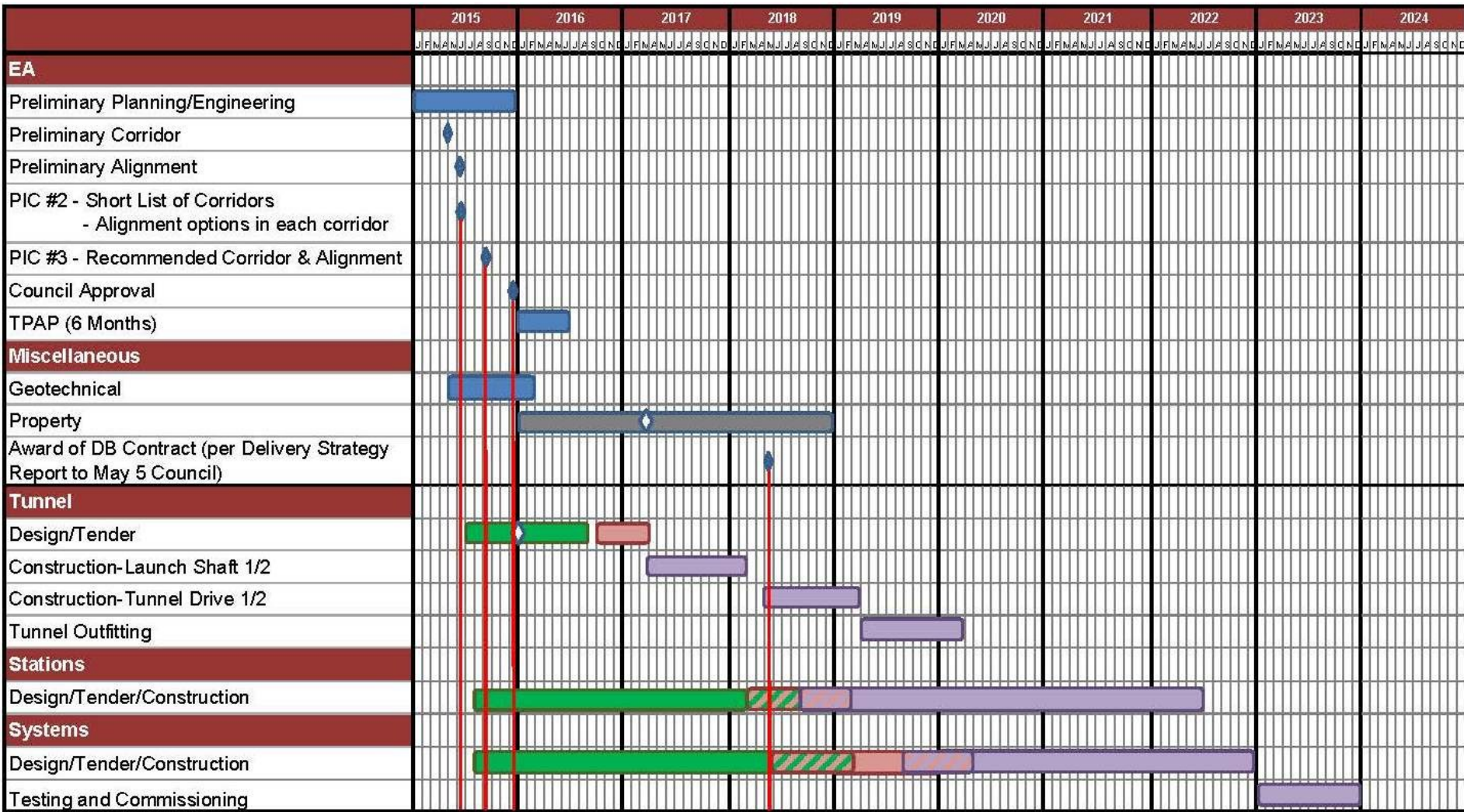




- **Draft preferred alignment will be known in the summer**
- **With the restructuring of the PICs, draft preferred corridor/alignment will be presented in September**
- **To maintain schedule, proceed with tunnel and station design, once the draft preferred alignment is determined**
- **As a result, some design will proceed ahead of the PICs**
- **Measured risk in the event of changes from the public engagement, or the approval process (TTC Board, PG&M, Council, MOE)**



PRELIMINARY SCHEDULE





BOARD REPORTS





<u>Scope</u>	<u>Upset Limit</u>	<u>TTC Board</u>
Tunnel Design	\$30 M	December 2014 (approved)
Project Management	\$80 M	February 2015 (approved)
Station Design	\$95 M	May 2015
Systems Design/Management	\$50 M	May 2015
Geotechnical	\$11 M	June 2015
Project Controls	TDB	Fall 2015





2015 – FORECAST EXPENDITURES



CONSULTANT SERVICES



<u>Scope</u>	<u>Upset Limit</u>	<u>Duration</u>	<u>2015 Forecast</u>	<u>Approximate Status December 31, 2015</u>
Environmental Assessment	\$2 M	28 Months	\$1 M	90%
Tunnel Design/ Construction Support	\$30 M	6 years	\$5 M	30%
Project Management	\$80 M	10 years	\$2 M	NA
Station Design/ Construction Support	\$95 M	7 years	\$5 M	10%
Systems Design/Management	\$50 M	10 years	\$0.7 M	1%
Geotechnical	\$11 M	3 years	\$8 M	85%
Total	\$268 M		\$21.7 M	



2015 FORECAST EXPENDITURES



Consultants	\$21.7 M
TTC/City Staff	\$ <u>3.0 M</u>
Total	\$24.7 M
Council approved budget	\$33.8 M





- **Project Controls**
- **Construction Management**
- **Value Engineering**
- **Others TBD**





CONSULTANT CONTRACTS



MANAGEMENT OF CONSULTANT CONTRACTS



- **Approval requests are for an upset limit**
- **Upset limits are calculated based on construction estimates (design consultants) or based on duration and organization (project management consultants)**
- **Work is managed on a work release basis**
 - After award, work plans are developed by the consultant
 - Work plans reflect scope of work, resourcing, schedule and costs
 - Once a work plan is approved, portions of the upset limit are released
 - Work plans are generally based on
 - Milestones/deliverables – e.g. 30% design
 - Specific task/study
 - Annual staffing plan
- **Number of work releases is tied to scope/duration of the contract**



MANAGEMENT OF CONSULTANT CONTRACTS



- **Alternative**
 - Do not seek approval for upset limit
 - Only seek approval for the scope of the initial release
 - Seek approval to increase the contract for each subsequent release
- **Retendering**
 - Not cost effective
 - Learning curve
 - Lost knowledge
- **Will not attract large, resourced and experienced firms**
- **Attracting more proponents reduces conflict of interest situations**





Contracts include the following:

- 1. TTC reserves the right, at its sole discretion, to amend the Scope of Work should the project delivery method change.**
- 2. The project delivery method might impact the Consultant's ability to participate on a design-build (for example) proponent team.**
- 3. The Commission shall have the right at any time whether for cause or convenience to suspend or terminate further performance of all or any portion of the Work by notice in writing to the Consultant. On the date of such notice the Consultant shall immediately discontinue the Work as instructed whether being performed by itself or its Subconsultants and shall preserve and protect all Work in progress and all completed Work.**





ORGANIZATION





- **Project will be at peak staffing requirement in 2019 – everything in construction**
- **Requires approximately 150 full time staff at peak**
 - Project Management
 - Project Controls
 - Design Management
 - Systems Design
 - Third Party
 - Procurement
 - Construction
- **Transit properties typically do not maintain internal resources for expansion projects**
- **Options**
 1. Retain consultants
 2. Retain TTC staff
 3. Combination of TTC and consultants





- **Option 3 – combination of TTC and consultants**
- **Mix of approximately 30% TTC and 70% consultants**
- **30% allows TTC to fill key positions at most levels which will:**
 - Bring knowledge of TTC:
 - Process
 - Standards
 - Operating requirements
 - Avoid conflict of interest





PROJECT DELIVERY STRATEGIES



PROJECT DELIVERY STRATEGIES



- **City to lead project delivery review (City staff report submitted to May 5 Council)**
- **Options**
 - Private Public Partnership (P3)
 - Design Build (DB)
 - Design Bid Build (DBB)
 - A key consideration is that SSE is an extension of existing L2
- **P3**
 - Comes in various forms:
 - Design Build Maintain (DBM)
 - Design Build Operate (DBO)
 - Design Build Operate Maintain (DBOM)
 - Finance (F) can be combined with all the above
 - Typically contractor funds the work
 - Owner pays back over extended period





- **Design Build (DB)**
 - Owner develops designs to approximately 30%
 - Owner develops requirements document
 - Contractor completes design and builds based on fixed price contract
- **Design Bid Build (DBB)**
 - Owner develops designs to 100%
 - Contractor builds based on fixed price contract
- **Combination**
 - Project does not have to be either/or
 - For example, stations can be DB and tunnels DBB
 - Eglinton Crosstown uses DBB (tunnels) and DBFM (track, systems and stations)



IMPACT OF PROJECT DELIVERY ON ORGANIZATION



- **Structure currently based on DBB – historical TTC approach**
- **Contracts allow for scope change based on delivery strategy**
- **If DB, project team impacted as follows:**





- **Project Management Team – minimal impact**
 - **Project Management – no impact**
 - Manage scope, budget, schedule and delivery into service
 - **Third Party – minimal impact**
 - Maintain responsibility for property acquisitions, utility agreements, construction access, permitting, etc.
- **Project Controls Staff – moderate impact**
 - Provides cost and schedule monitoring/reporting, as well as estimating services
 - Impact determined by number of construction contracts
 - Fewer contracts require less administration and reporting re: cost and schedule
 - Number of contracts and their structure could also reduce estimating team





- **Design Consultants – significant impact**
 - Design curbed at 10-30%, plus development of output specifications
 - Consultant continues in part-time role as owner's engineer
 - Contracts include wording to address this potential change
- **Construction Staff – medium impact**
 - Typically significant coordination between contractor and designer (shop drawings, clarifications)
 - As contractor is the designer, less coordination required
 - Staff still required to monitor quality of construction





- **Systems Staff– minimal impact**
 - SSE is an extension of existing L2
 - All systems must operate seamlessly
 - Communications
 - Signals
 - SCADA
 - Transit Control Centre
 - Systems team must be integral to all design development, installation, testing and commissioning





STATION DESIGN CONSULTANTS





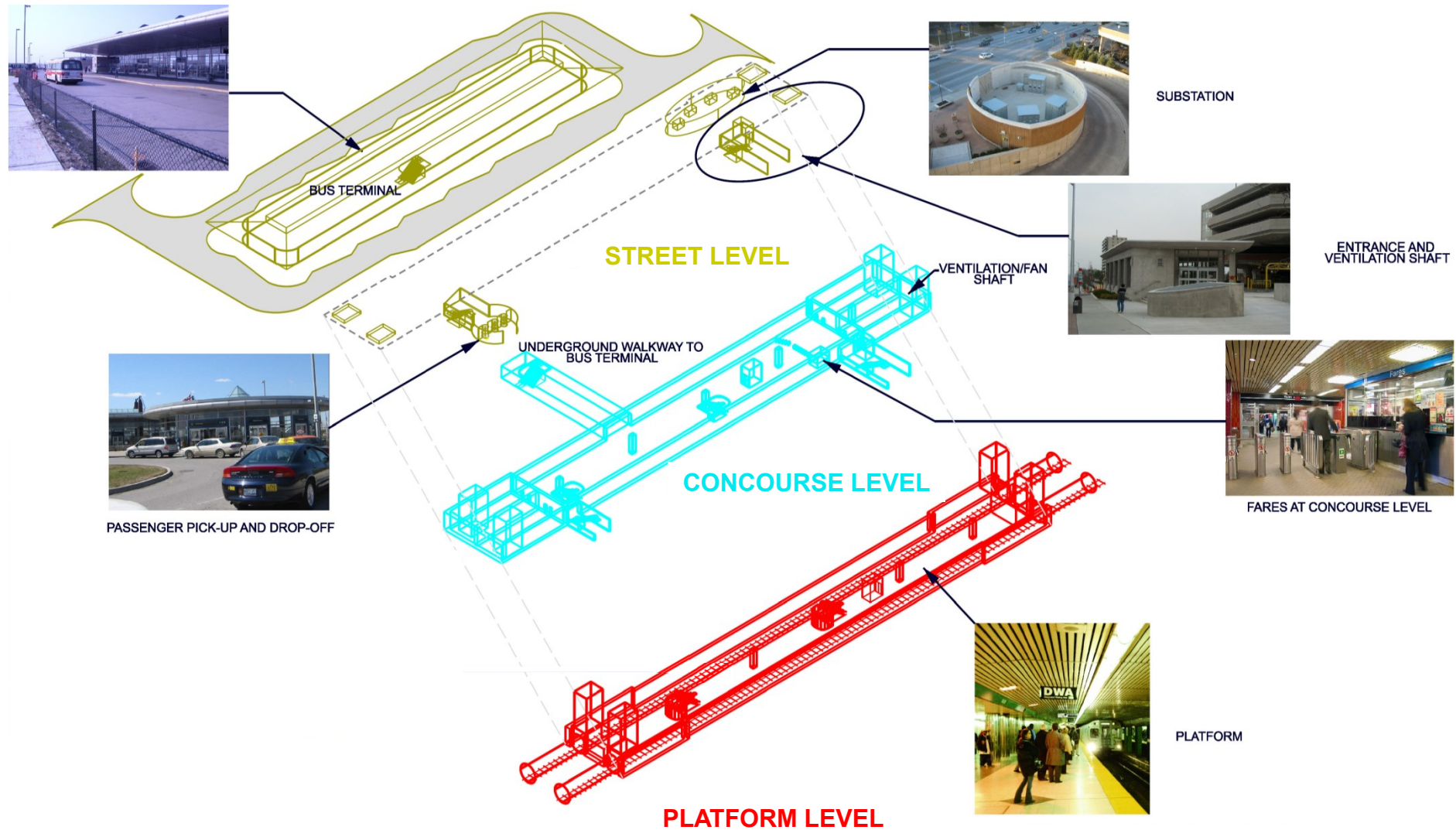
Facilities included in original estimate, for each station.

	Bus Terminal	PPUDO ⁽¹⁾	Parking	Crossover	Tail Track	Storage Track	Estimated Construction Cost (2015 \$)
Lawrence	✓	✓					\$160 M
Scarborough Centre	✓	✓	✓	✓			\$250 M
Sheppard	✓	✓	✓	✓	✓	✓	\$500 M

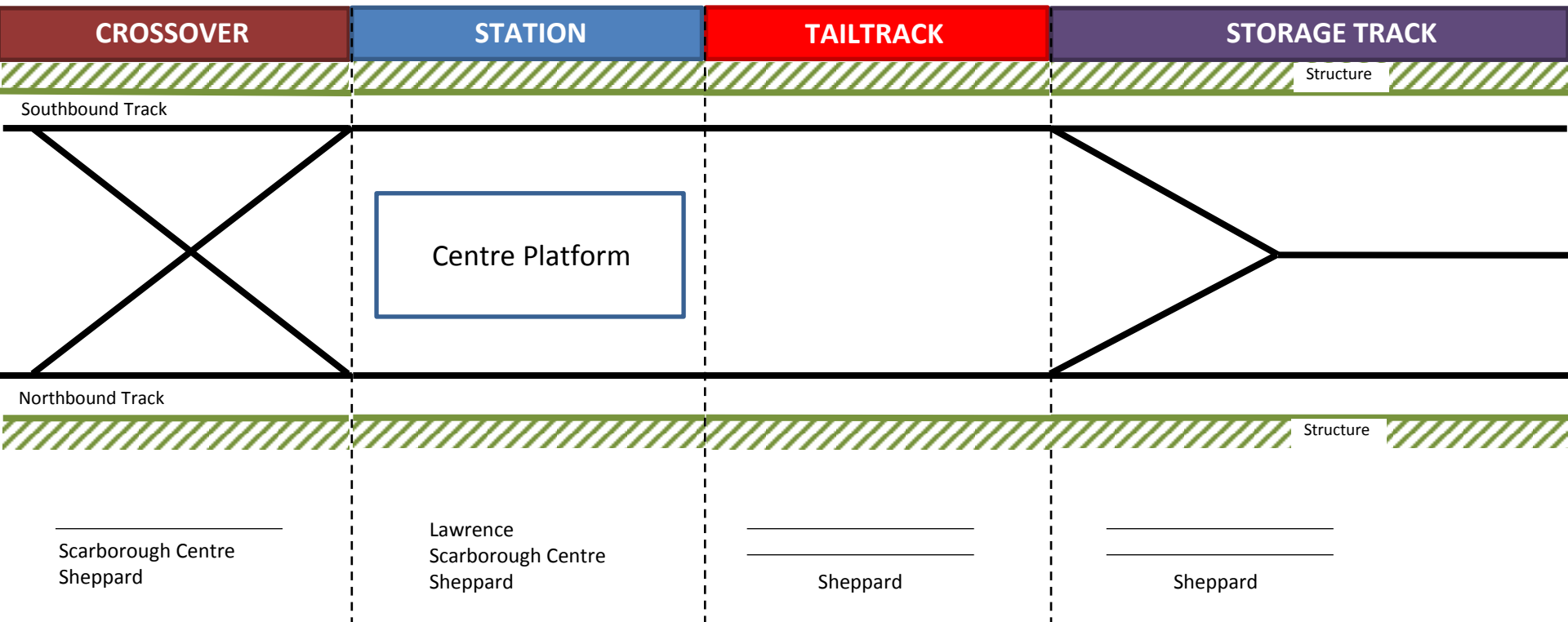
(1) PPUDO – Passenger Pick Up and Drop Off



COMPONENTS INCLUDED IN STATION DESIGN CONTRACTS



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- **QUESTIONS**





Budget	(\$millions)
Subway Extension	\$3,305
SRT Life Extension	\$132
SRT Decommissioning & Demolition	\$123
Total Budget (escalated)	\$3,560



STAFFING – TTC VS. CONSULTANTS



More TTC		More Consultants	
+	-	+	-
<ul style="list-style-type: none"> • More cost effective 			<ul style="list-style-type: none"> • More costly
<ul style="list-style-type: none"> • Retains/develops corporate knowledge 			<ul style="list-style-type: none"> • No corporate knowledge
	<ul style="list-style-type: none"> • Long recruitment schedule 	<ul style="list-style-type: none"> • Resources readily available 	
	<ul style="list-style-type: none"> • Difficult for TTC to attract specialist resources <ul style="list-style-type: none"> • Pay scales • Duration of project 	<ul style="list-style-type: none"> • Consultants can be more competitive when recruiting 	
	<ul style="list-style-type: none"> • Difficult to recruit for several month assignment 	<ul style="list-style-type: none"> • Greater flexibility of term 	
<ul style="list-style-type: none"> • Knowledge of TTC standards and procedures 			<ul style="list-style-type: none"> • No knowledge (unless previously worked for TTC)
<ul style="list-style-type: none"> • Avoids conflict of interest 			<ul style="list-style-type: none"> • Difficult to avoid conflict of interest

