Contract Ref: LTC-21-092

Pipeline ID: 28555

TTS Authoring and Technical Support for the Tram Rolling Stock Replacement Programme

Volume 1 – Form of Agreement

Between Tramtrack Croydon Ltd (branded London Trams) and SNC Lavalin-Atkins Limited

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SCHEDULE 7A
(Form of Agreement - Long Form Call-Off Contract)

FORM OF AGREEMENT

THIS AGREEMENT i mad the ● ay of ● 2022

BETWEEN:

(1) **Tra track C oydon Limite** whose reg stered of ic s at 5 En eavour Square, Londo , United Kin dom E20 1JN ("the *Empl yer"* which expre sion sh ll include it su cesso s i title an assigns); a d

(2) At ins L mited whos regis er d ffice is at Woo cote G ove, Ashley Road, psom, urrey, U ited Kin dom, KT18 5BW ("the *Consultant*").

WHEREAS:

(A) This Agreement is made pursuant to a framework agreement between the Parties relating to the provision of TfL PSF2 – 94203 – Engineering Consultancy professional services dated 04 January 2021 ("the Framework Agreement").

(B) The *Employer* wishes to have provided Provision of suitably qualified consultant to develop the TRRS technical specification and provide support during the SSQ and ITN period. ("the *services*").

(C) The *Employer* has accepted a tender by the *Consultant* for the design of the *services* and correction of Defects therein in accordance with the *conditions of contract* (in the form of the Long Form as set out in Schedule 2A of the Framework).

NOW IT IS AGREED THAT:

1. Terms and expressions defined in (or definitions referred to in) the *conditions of contract* have the same meanings herein.
2. The *Consultant* Provides the Services in accordance with the *conditions of contract*.
3. The *Employer* pays the *Consultant* the amount due in accordance with the *conditions of contract*.
4. The documents forming the contract are:

4.1 this Form of Agreement duly executed by the Parties as a deed;

4.2 the *conditions of contract;*

4.3 the attached Call-Off Contract Data Part 1;

4.4 the attached Call-Off Contract Data Part 2; and

4.5 the following documents:

- the Scope;
- Schedules 1 to 20 inclusive of the Framework Agreement;
- The programme
- Schedule of Rates
- Technical and commercial proposals

5. Where there is any discrepancy or conflict within or between the documents forming the contract the order of priority shall be as follows:

5.1.1	First	:	This Form of Agreement;
5.1.2	Second	:	The *conditions of contract*;
5.1.3	Third	:	The Scope and any other documents included in this Contract.

6. Notwithstanding the manner of execution of this Agreement it is agreed that:

6.1 the limitation period within which any claim may be brought by the *Employer* for breach of this Agreement by the *Consultant* is 12 years from the date of breach; and

6.2 the *Consultant* agrees not to raise in defence of any such claim a shorter limitation period whether pursuant to the Limitation Act 1980 (as the same may be amended or re-enacted from time to time) or otherwise.

IN WITNESS whereof this Agreement has been signed for and on behalf of the *Employer* and the *Consultant* the day and year written above.

Signed by)
for and on behalf of)
The *Employer*)

[redacted]

Signature

Print name and position

Matiur Choudhury - Lead Commercial Manager

Date: 19 January 2022

Signed by)
for and on behalf of)
The *Consultant*)

[redacted]

Signature

Print name and position

Authorised Signatory
Date

18th January 2021:

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Volume 2 – Contract Data part 1 & 2

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Proforma Call-Off Contract Data

CALL OFF CONTRACT DATA

Part One - Data provided by the *Employer*

Completion of the data in full, according to the chosen options, is essential to create a complete contract.

Statements given in all contracts

1 General

- The *conditions of contract* are the core clauses as may be amended or supplemented by the clauses for Main Option E and Secondary Options X10 X18 X20 each as may be amended or supplemented by [the LUL Requirements] all as attached to the Transport for London Professional Services Framework Agreement).

- The *Employer* is

  Name . . . Tramtrack Croydon Limited . . . . . .

  Address Floor 10, Knollys House, 17 Addiscombe Rd Croydon CR0 6SR

- The *Employer's Agent* is

  Name .Josh Ramsey . . . . . .

  Address . 5 Endeavour Square, London, UK E201JN . . . . . .

- The authority of the *Employer's Agent* is

  .as set out in Option X10 . . . . . .

- The *services* are

  Provision of suitably qualified consultant to develop the TRRS technical specification and provide support during the SSQ and ITN period TTS Drafting and provision for technical evaluators . . . . . .

- The Scope is in

  LTC-21-092 Technical Evaluator Scope of Works v2.1 (002). . . . . .

- The *language of this contract* is **English**
- The *law of the contract* is **the law of England and Wales**
- The *period for reply* is 2 **weeks.**
- The *period for retention* is **12 years following Completion or earlier termination**.

- The *tribunal* is **the courts of England and Wales**
- The following matters will be included in the Risk Register

Risk ID Status	Folder	Risk Name	Cause	Description	Effect
TRRS-007 Emerging	LR86.001 - Tram Replacement Rolling Stock	**Business and Stakeholder requirements are not fully captured**	Due to the multidisciplinary nature of procuring new trams	there is a risk that not all Business and Stakeholder requirements are correctly captured	resulting in a tram technical specification that does not fully address business/ stakeholder needs.
TRRS-001 Emerging	LR86.001 - Tram Replacement Rolling Stock	**Infrastructure constraints may not be fully defined and this leads to the new Trams fleet performing**	Due to incorrect operating environment information	there is a risk that infrastructure constraints may not be fully defined	network alterations may be required.
TRRS-097 Emerging	LR86.001 - Tram Replacement Rolling Stock	**Insufficient permanent and temporary stabling available for new trams**	Existing depot facilities are insufficient for the new tram fleet	there will be insufficient temporary stabling in the transition period and there is also a permanent constraint on stabling the current number of trams that should be alleviated by mitigation of the temporary risk	resulting in delays to deliver stabling solutions at depots or provide an out stabling solution which may in turn have additional enabling and software requirements.
TRRS-016 Emerging	LR86.001 - Tram Replacement Rolling Stock	**Technical requirements may change during the programme**	Due to the lengthy procurement, design, manufacturing and testing programme associated with new trams	there is a risk that technical requirements may change during the programme	resulting in modifications being required after the tram arrives at Therapia Lane at additional cost, resource demand and programme delay.
TRRS-008 Emerging	LR86.001 - Tram Replacement Rolling Stock	**Tram technical specification may not be realistically deliverable leading to sub-optimal performance or be missing important new technologies.**	Due to a lack of tram procurement experience in the recent history	there is a risk that the tram technical specification may not be realistically deliverable or miss opportunities for enhancement via new technologies since	resulting in a tram that may not be optimised for performance and be missing new technologies.

TRRS-076 Emerging	LR86.001 - Tram Replacement Rolling Stock	**Market unable to meet tram technical specification**	Due to the number of Client requirements and technical and economic constraintsFor example the additional systems requirements may stretch suppliers	market unable to meet tram technical specification	resulting in a product that does not meet business needs. resulting in the tram market being unable to meet tram technical specification resulting in the release of a specification that has to be reduced at a later date and leads to negative reputational
TRRS-082 Emerging	LR86.001 - Tram Replacement Rolling Stock	**Implementation of technical requirements may result in costs that exceed tram unit max budget price**	Due to the requirements around technologies on the new fleet	there is a risk that implementation of these requirements may result in costs that exceed tram unit max budget price	resulting in requests for additional funding or reduction in specification to stay within budget (dependant on individual system pricing).
TRRS-092 Emerging	LR86.001 - Tram Replacement Rolling Stock	**Modifications to existing Trams Network Infrastructure occur prior to roll-out of the new fleet that lead to asset clashes which may impact new Trams fleet performance**	The Tram network has to be continually maintained and there is a potential for the Operator/ Maintainer to modify existing assets without taking account of any impact to the new Tram fleet.	There is a risk that modifications to the existing Trams Network Infrastructure occur prior to roll-out of the new fleet that lead to asset clashes which may impact new Trams fleet performance. This risk would cover multiple assets and infrastructure types, examples include: gauging, canopies, structures, trackside assets	Increased costs to fund re-work r asset re-location. In a worst case this could see a tram fleet that is not optimised for the London Trams Network and will perform poorly.

. . . . . .

. . . . . .

. . . . . .

2 The Parties' main responsibilities

- The *Employer* provides access to the following persons, places and things

access to	*access date*
Asite.	As required. . . . .
. . . . .	. . . .
Therapia Lane Depot	From Contract Award if required. . . . .
. . . . .	. . . . .
. . . . .	. . . .
. . . . .	. . . . .
. . . . .	. . . .
. . . . .	. . . . .
. . . . .	. . . .

3 Time

- The *starting date* is . . .17 January 2022 . . . . . .

- The *Consultant* submits revised programmes at intervals no longer than **4 weeks.**

4 Quality

- The quality policy statement and quality plan are provided within **2 weeks** of the Contract Date, or as stated here . . . . . .
- The *defects date* is **52 weeks** after Completion of the whole of the *services*.

5 Payment

- The *assessment interval* is 4 **weeks**
- The *currency of this contract* is **pounds Sterling (£)**
- The *interest rate* is 2 **% per annum above the base rate of the Bank of England**.

8 Indemnity, insurance and liability

- The amounts of insurance and the periods for which the *Consultant* maintains insurance are

Event	**cover**	**Period following Completion of the whole of the *services* or earlier termination**
Liability of the *Consultant* for claims made against him arising out of his failure to use the degree of reasonable skill, care and	[redacted] . . . . . for each and every claim and in the	[redacted] . . . . .

diligence normally used by competent professionals experienced in providing services similar to the *services* in connection with works of a similar size, scope and complexity to the Works (professional indemnity insurance)	aggregate per annum	
Liability for death of or bodily injury to a person (not an	[redacted]	. . . . .

employee of the *Consultant*) or loss of or damage to property resulting from an action or failure to take action by the *Consultant*	. . . . in respect of each claim, without limit to the number of claims [with financial loss extension cover]	. . .
Liability for death of or bodily injury to employees of the *Consultant* arising out of and in the course of their employment in connection with this contract.	[redacted] . . . . in respect of each claim, without limit to the number of claims	. . . .

- The *Employer* provides the following insurances
  . . . . . .
  . . . . . .
  . . . . . .
  . . . . . .
  . . . . . .
  . . . . . .

- The *Consultant's* total liability to the *Employer* for all matters arising under or in connection with this contract, other than the excluded matters, is [redacted]
  . . . . . .
  . . . . . .

Optional statements

If the *Employer* has decided the *completion date* for the whole of the *services*

- The *completion date* for the whole of the *services* is . not used. . .
  . . . . . .

If no programme is identified in part two of the Contract Data

- The *Consultant* is to submit a first programme for acceptance within **2 weeks** of the Contract Date.

DELIVERY GENERIC KPIs	EXAMPLE KPI METRIC 8	RED	AMBER	GREEN	FREQUENCY OF REPORTING (i.e. Weekly, Periodically / Monthly / Quarterly)	Data Source - Enter the origin of the data to measure each KPI (i.e. system / report)	Owner - name who owns the reporting of each KPI
PROJECT/PROGRAMME	No. Of milestones due by the supplier in the period versus the number actually achieved. *Milestones to be completion of assurance reviews for TTS & TIIS; completion of SSQ & ITN evaluations as well as responding to TQ's within an agreed timeframe.*	R < 100%	No amber	G = 100%	Periodically	Supplier to provide data on a periodic basis	Consultant Lead
PROJECT/PROGRAMME	Project Cost Variance (PCV) = SPC (Scheduled Project Costs) - APC (actual Project Costs) (Project Cost Variance is an indicator of the extent to which projects are delivered within budget)	Variance is > 5 %	Variance is between 2.5% and 5%	Variance is <= 2.5%	Periodically	Supplier to provide data on a periodic basis	Consultant Lead

If Option C or E is used

- The *Consultant* prepares forecasts of the total Time Charge and *expenses* at intervals no longer than **4** weeks.

If Option X20 is used (but not if Option X12 is also used)

- The *incentive schedule* for Key Performance Indicators is outlined below

  . . . .

  . . . . . .

- A report for performance against each Key Performance Indicator is provided at intervals of . . . . . [redacted]

CALL OFF CONTRACT DATA PART TWO

Data provided by the *Consultant*

Statements given in all contracts

Completion of the data in full, according to the Options chosen, is essential to create a complete contract.

- The *Consultant* is **Atkins Limited**

  .

  Name **Steven Fraser**

  . . .

  Address **Woodcote Grove, Ashley Road, Epsom KT18 5BW**

  . . . .

- The *key persons* are

(1) Name **Mike Burgess**

. . .

Job **Project Manager**

. . . .

Responsibilities **Overall Responsible for all Atkins resources involved in the project.**

. . . .

Qualifications **MEng**

. . . .

Experience **30+ years**

. . . .

(2) Name **Chris Riley**

. . . .

Job . . **Technical Lead**

. . . .

Responsibilities **Engineering lead for the project and primary technical point of contact for SME's**

. . . .

Qualifications . . **CEng, BTEC (Hons), IMechE**

. . . .

Experience . **30+ years**

. . . .

- The *staff rates* are

Name / designation rate

Name	Grade	Rate
Ambrose, Neil	Director	[redacted]
Bell, Alastair	Principal Consultant	
Bolton, Phil	Senior Consultant	
Broughton, Ian	Principal Consultant	
Bullivant, Adam	Principal Consultant	
Burgess, Mike	Director	
Cassidy, Philip	Principal Consultant	
Cavanagh, Shaun, R	Principal Consultant	
Chitham, John, W	Principal Consultant	
Clarkson Webb, Richard	Principal Consultant	
Clouston, Amy, N	Senior Consultant	
Cohen, Russel	Director	
Cranmer, Phil	Senior Consultant	
Dack, Graham, J	Director	
Davis, Tim	Senior Consultant	
Derbyshire, Daniel	Senior Consultant	
Edgar, Mike	Principal Consultant	
Evans, Alexandra	Senior Consultant	
Evans, Owen, D	Principal Consultant	
Firth, Daniel	Senior Consultant	
Fox, Mark, A	Director	
Gibbs, Stuart, P	Principal Consultant	
Girod, Yves	Senior Consultant	
Gratton, Stephen	Senior Consultant	
Hayes, Darren	Director	
Isam, Dennis	Principal Consultant	
Jackson, Elizabeth	Principal Consultant	
Johnson, Pete	Senior Consultant	
Kendall, Richard	Principal Consultant	
Kind, David	Principal Consultant	
Kay, Jim	Senior Consultant	
Laxton, Phil	Principal Consultant	
Lepatourel, Alan	Senior Consultant	
Molyneux-Berry, Paul, B	Principal Consultant	
Mayoh, Stephen	Senior Consultant	
McNamara, Shane	Principal Consultant	
Newton, Jonathan, P	Senior Consultant	
Norris, Beverley, J	Principal Consultant	
O'Connor, Owen	Senior Consultant	
Page, Dick	Director	
Peter, James	Director	
Randell, Nigel	Senior Consultant	
Rintoul, Keith	Principal Consultant	
Riley, Chris	Director	
Rogers, Philip, J	Principal Consultant	
Rouse, Nigel, P	Principal Consultant	
Salt, Thomas, A	Principal Consultant	
Shirtcliffe, Ian	Director	
Simpson, John, M	Director	
Willers, Grant	Director	
Wright, Dan	Senior Consultant	

- The following matters will be included in the Risk Register
  Refer to the document titled “LTC-21-092 Risk Register Items”. . . .. Risks submitted as part of bid submission are proposed as the basis of our risk register; with joint discussions to be held as part of project commencement to identify and agree and additional risks we jointly believe need tracking in relation to the project.

  We will work to collectively agree any additional risks as we progress through the programme.

Optional statements

If the *Consultant* is to decide the *completion date* for the whole of the *services*

- The *completion date* for the whole of the *services* is . . 15th April 2024 (in line with updated programme submitted on 7th January 2022)
  . .

If a programme is to be identified in the Contract Data

- The programme identified in the Contract Data is . . TfL Bid - T4 Programme - Revised with 10th January start date.mpp

. . .

If the *Consultant* states any expenses

- The *expenses* stated by the *Consultant* are

item	amount
. . . . .	. . . . .
. . . .	. . . . .
. . . . .	
. . . .	

If the *Consultant* requires additional access

- The *Employer* provides access to the following persons, places and things

access to	*access date*
. . . . .	. . . . .
. . . .	.
. . . . .	. . . . .
. . . .	.

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Appendix 1 – SME Rates_v1 (Provided in the Commercial Proposal)

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Technical Specification Authoring						
1	2	3	4	5	6	8
SME Sub-Criteria	Main Attributes (components)	SME 1 / Fwk Grade	Rate	SME 2 / Fwk Grade	F	SME 3 / Fwk Grade	Rate
Project Management		Burgess, Mike (Director)					
Engineering Management		Riley, Chris (Director)					
Door Systems Engineer		Bell, Alastair (Principal Consultant)		Davis, Tim (Senior Consultant)		Wright, Dan (Senior Consultant)	
Car Bodies Engineer		Randell, Nigel (Principal Consultant)		Kendall, Richard (Principal Consultant)		Simpson, John (Director)	
Bogies Engineer		Cassidy, Philip (Principal Consultant)		Bell, Alastair (Principal Consultant)		Randell, Nigel (Principal Consultant)	
Crashworthiness Engineer		Randell, Nigel (Principal Consultant)		Johnson, Pete (Senior Consultant)		Simpson, John (Director)	
Auxiliary systems & electrical design Engineer		Davis, Tim (Senior Consultant)		Chitham, John (Principal Consultant)		Gibbs, Stuart (Principal Consultant)	
Pneumatic system design Engineer		Bolton, Phil (Senior Consultant)		O'Connor, Owen (Senior Consultant)		Bell, Alastair (Principal Consultant)	
Fire performance of materials Engineer		Kind, David (Principal Consultant)		Edgar, Mike (Principal Consultant)		Cavanagh, Shaun (Principal Consultant)	
Tram Performance Engineer		Salt, Thomas (Principal Consultant)		Cranmer, Phil (Senior Consultant)		Rogers, Philip (Principal Consultant)	
Wheel Interface Engineer		Molyneux-Berry, Paul (Principal Consultant)		Rogers, Philip (Principal Consultant)		Evans, Owen (Principal Consultant)	
Rolling stock Maintenance Engineer		Page, Dick (Director)		Peter, James (Director)		Dack, Graham (Director)	
Rolling Stock testing & commissioning Engineer		Laxton, Phil (Principal Consultant)		McNamara, Shane (Principal Consultant)		Kay, Jim (Senior Consultant)	
Energy Consumption and load bearing engineer		Derbyshire, Daniel (Senior Consultant)		Cranmer, Phil (Senior Consultant)		Firth, Daniel (Senior Consultant)	
Power Systems engineer		Shirtcliffe, Ian (Director)		Broughton, Ian (Principal Consultant)		Hayes, Darren (Director)	
Tram Safety systems engineer		Chitham, John (Principal Consultant)		Gibbs, Stuart (Principal Consultant)		Fox, Mark (Director)	
HVAC Engineer		Cranmer, Phil (Senior Consultant)		Lepatourel, Alan (Senior Consultant)		Girod, Yves (Senior Consultant)	
Tram disposal engineer		Ambrose, Neil (Director)		Salt, Thomas (Principal Consultant)		Evans, Alexandra (Senior Consultant)	

SSQ – Technical Questionnaire:						
1	2	3	4	5	7	
Technical Assessment	Subject Matter	SME 1 / Fwk Grade		SME 2 / Fwk Grade		SME 3 / Fwk Grade	Rate
Capability & Experience	Design	Riley, Chris (Director)		Newton, Jonathan (Senior Consultant)		Rintoul, Keith	
	Manufacture	Simpson, John (Director)		Newton, Jonathan (Senior Consultant)		Riley, Chris (Director)	
	Supply Chain Management	Willers, Grant (Director)		McNamara, Shane (Principal Consultant)		Simpson, John (Director)	
	Testing, Commissioning & Customer acceptance	Laxton, Phil (Principal Consultant)		McNamara, Shane (Principal Consultant)		Kay, Jim (Senior Consultant)	
	Disposal & Decomissioning of the fleet	Ambrose, Neil (Director)		Salt, Thomas (Principal Consultant)		Evans, Alexandra (Senior Consultant)	
	Reliability & Maintainability Management	Peter, James (Director)		Page, Dick (Director)		Dack, Graham (Director)	

ITN Technical Tram Works Criteria:						
1	2	3		5		
Technical Assessment	Subject Matter	SME 1 / Fwk Grade		SME 2 / Fwk Grade	R	SME 3 / Fwk Grade	Ra
Tram Construction	Configuration, construction, features, couplers, design life	Simpson, John (Director)		Riley, Chris (Director)		Johnson, Pete (Senior Consultant)	
Tram Performance	Journey times, environmental conditions, Steerability, Axle Load	Salt, Thomas (Principal Consultant)		Cranmer, Phil (Senior Consultant)		Rogers, Philip (Principal Consultant)	
Energy Consumption & Unit Weight	Energy consumption, unit weight targets	Derbyshire, Daniel (Senior Consultant)		Cranmer, Phil (Senior Consultant)		Firth, Daniel (Senior Consultant)	
Tram Physics	Gauging, track interaction (Wheel rale interface), wear, stability, noise, vibration, lubrication	Evans, Owen (Principal Consultant)		Derbyshire, Daniel (Senior Consultant)		Molyneux-Berry, Paul (Principal Consultant)	
Fire	Fire performance	Kind, David (Principal Consultant)		Edgar, Mike (Principal Consultant)		Wright, Dan (Senior Consultant)	
Power Systems	Traction power supply, auxillary power systems	Shirtcliffe, Ian (Director)		Broughton, Ian (Principal Consultant)		Bullivant, Adam (Principal Consultant)	
Brakes	Braking system, wheel slip/slide protection systems	Bolton, Phil (Senior Consultant)		O'Connor, Owen (Senior Consultant)		Bell, Alastair (Principal Consultant)	
Door Systems	Doors systems, operation and control	Bell, Alastair (Principal Consultant)		Davis, Tim (Senior Consultant)		Wright, Dan (Senior Consultant)	
Signalling	Tram control and protection, radio systems, TMS, DCS, EMC	Chitham, John (Principal Consultant)		Gibbs, Stuart (Principal Consultant)		Bullivant, Adam (Principal Consultant)	
Passenger Environment	Saloon, CCTV, Lighting, HVAC, PIS, PCF	Cranmer, Phil (Senior Consultant)		Clarkson Webb, Richard (Principal Consultant)		Lepatourel, Alan (Senior Consultant)	
Reliability	Rescue, functionality, resilience	Peter, James (Director)		Page, Dick (Director)		Dack, Graham (Director)	
Industrial Design	Exterior, livery, Cab environment, Length etc.	Rouse, Nigel (Senior Consultant)		Isam, Dennis (Principal Consultant)		Gratton, Stephen (Senior Consultant)	
Other	Human factors, standards, mock-ups, simulator, Safety Systems and devices	Newton, Jonathan (Senior Consultant)		Norris, Beverley (Principal Consultant)		Clouston, Amy (Senior Consultant)	

ITN Technical Tram Deliverability Criteria:						
1	2	3	4	5	6	
SME Sub-Criteria	Main Attributes (components)	SME 1 / Fwk Grade	[redacted]	SME 2 / Fwk Grade	Rate	SME 3 / Fwk Grade	Rate
Engineering & Design	Organisation, strategy, competencies, manufacture, testing, commissioning, design risk, simulator	Riley, Chris (Director)	[redacted]	Newton, Jonathan (Senior Consultant)	[redacted]	Rintoul, Keith (Principal Consultant)	[redacted]
Technical Assurance	Change control, systems integration, interfaces, life cycle, design verification and validation, gate reviews, strategy resources.	Riley, Chris (Director)	[redacted]	Fox, Mark (Director)	[redacted]	Simpson, John (Director)	[redacted]
Supplier Selection & Management	Strategy, subcontract arrangements, expertise, competence, capacity, security of supply chain, supplier management	Millers, Grant (Director)	[redacted]	McNamara, Shane (Principal Consultant)	[redacted]	Simpson, John (Director)	[redacted]
Manufacturing	Assembly plants, capability, capacity, order book, business continuity, resilience	Simpson, John (Director)	[redacted]	Newton, Jonathan (Senior Consultant)	[redacted]	Riley, Chris (Director)	[redacted]
Testing	[illegible], facilities, strategy, acceptance, standards, organisation, training,	Laxton, Phil (Principal Consultant)	[redacted]	McNamara, Shane (Principal Consultant)	[redacted]	Kay, Jim (Senior Consultant)	[redacted]
Disposal & Decomissioning of the fleet		Ambrose, Neil (Director)	[redacted]	Salt, Thomas (Principal Consultant)	[redacted]	Evans, Alexandra (Senior Consultant)	[redacted]
Relevant Approvals	NoBo / DeBo/ AsBo / ISA, regulation, engagement, derogations strategy	Jackson, Elizabeth (Principal Consultant)	[redacted]	Mayoh, Stephen (Senior Consultant)	[redacted]	Green, Peter (Principal Consultant)	[redacted]
Unit & Equipment Deliverability, Commissioning, Acceptance	Logistics, commissioning, pre-provisional acceptance provisional acceptance	McNamara, Shane (Principal Consultant)	[redacted]	Millers, Grant (Director)	[redacted]	Davis, Tim (Senior Consultant)	[redacted]
Manuals, Equipment and Training	Spares & special tools delivery & acceptance, manuals, Training, Maintainability, Technical support.	Fox, Mark (Director)	[redacted]	Page, Dick (Director)	[redacted]	Dack, Graham (Director)	[redacted]
Final & Fleet Acceptance	Management strategy, reliability growth strategy	Peter, James (Director)	[redacted]	Dack, Graham (Director)	[redacted]	Page, Dick (Director)	[redacted]
Programmes	Design, assurance, approvals, subcontracting, type testing, route compatibility, assembly, acceptance	McNamara, Shane (Principal Consultant)	[redacted]	Millers, Grant (Director)	[redacted]	Davis, Tim (Senior Consultant)	[redacted]

Appendix 2 - LTC-21-092 Technical Evaluator Scope of Works v2.1 (002)

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Refer to the document provided as part of the tender titled “LTC-21-092 Technical Evaluator Scope of Works v2.1 (002)”.

LTC-21-092
Technical Evaluator S

Scope & Specification

TRRS – Technical Evaluator Support

TABLE OF CONTENTS

0. DOCUMENT CONTROL

0.1 Document History

Version	Date	Changes since previous issue
V0.1		
V1.0		
V2.0		
V2.1	30/07/21	Addition of Technical Infrastructure Interface Specification Support

0.2 Final Version Approval

Authors

Name	Signature	Date	Title
Marc Stearne	[redacted]	30/07/2021	Commercial Manager

Reviewed by

Name	Signature	Date	Title
Joshua Ramsey	[redacted]	02.08.21	Project Manager

Approved by

Name	Signature	Date	Title
Esther Olorunfemi			Head of Engineering

1. ORGANISATIONAL OVERVIEW

1.1 Transport for London (TfL)

TfL was created in 2000 as the integrated body responsible for London's transport system. TfL is a functional body of the Greater London Authority. Tramtrack Croydon Limited (branded as London Trams) is a 100% owned subsidiary of TfL and is based in Croydon Tram Depot, Therapia LaneCoomber Way, Croydon London CR0 4TQ.

1.2 Business Unit

London Trams control tram passenger services along 28km of track delivered through the Third Party Operator named Tram Operations Limited (TOL). London Trams is the Infrastructure Controller for the overall network and maintains the track, systems, power and civils assets. London Trams owns and maintains the tram fleet of 23 Bombardier CR4000series trams and 12 Stadler Variobahn series trams.

2. INTRODUCTION

2.1 Background

London Trams (LT) has recently seen a number of incidents which initially might be considered to be isolated. The impact however, that these incidents have had on interacting infrastructure, and the vehicle checks and adjustments, which have been carried out, has lead London Trams to the conclude that the incidents are all linked to vehicle height and alignment parameters on the Stadler Variobahn Tram.

2.2 Background

London Trams' (LT) original fleet of 24 Bombardier trams is coming to the end of its design life. Now over 20 years old, they only run between 7,000km to 10,000km between failures which is very low by rolling stock standards. This in turn means a lot of resource is spent keeping reliability ontrack. The condition of the trams will only deteriorate without significant investment.

The Tram Replacement Rolling Stock (TRRS) Programme has a core scope of providing 24 new trams, minor network modifications if necessary to enablethe new trams to operate, depot and stabling upgrades to allow LT to receive and test new trams and establishment of a set of spares to support the new vehicles.

The new trams will be introduced commencing Summer 2025, with the firsttram being introduced into service in Autumn 2025 and the Final tram beingdelivered in Spring 2027.

The Tram Technical Specification (the 'TTS') for the new trams is currently being developed by LT, in parallel to the Technical Infrastructure InterfaceSpecification (the 'TIIS').

3. SCOPE

3.1 General Requirement

The TRRS Programme requires suitably qualified and experienced professionals as technical Subject Matter Experts (SMEs) to review and assist in the development of the TTS & TIIS, as well as support the technical evaluation of the SSQ and ITN submissions when received.

3.2 Principal Accountabilities

The Consultant shall:

- Carry out Authoring of the TRRS developed Tram Technical Specification (TTS) & Technical Infrastructure Interface Specification and assist in the implementation of the recommendations.
- Provide suitably qualified and experienced Subject Matter Experts to assist in the development of questions and carry out the technical evaluation of the SSQ responses received as a result of the publication of TRRS OJEU Notice and the Invitation to Pre-qualify.
- Provide suitably qualified and experienced Subject Matter Experts to carry out the technical evaluation of the ITN proposals received from Pre-qualified Bidders. It is envisaged that the Consultant will need attend some or all of the ITN negotiations and clarification meetings.

3.3 Services to be provided

The Consultant shall provide a suitably qualified and experienced team consisting of a number of SMEs to deliver the Service. The Service will comprise the delivery of the Principal Accountabilities as outlined above. Refer to the SME rates document which contains a list SME competencies required for the production of the TTS and evaluations of the SSQ and ITN.

The Services will be delivered in three separate 'Phases' as follows:

Phase 1 – Assurance Review of Technical Specification & TIIS (October 2021)

LT is in process of developing a Tram Technical Specification (TTS) & Technical Infrastructure Interface Specification (TIIS) for the London Tramsfleet. The Consultant will be required to initially assist in developing the first issue of the specification in readiness for market engagement and following subsequent updates, undertake a comprehensive technical assurance review of the TTS & TIIS.

The assurance review shall review all aspects of the TTS & TIIS with a viewto providing LT with the confidence that the documents capture all of the

programme & project requirements, infrastructure constraints and issuitable for issue to tender.

Following the market review and subsequent updates to the specification, the updated TTS & TIIS will be released to the market for the second time and a final assurance review will occur should there be any further change,prior to entering the internal approvals cycle.

The details of the brief for this assurance review is subject to agreement with the appointed Consultant but is expected to cover the following areas:

- A check for quality and completeness
- Consistency check
- Identification of requirements that may necessitate infrastructure enhancements on the Croydon network based on the existing constraints.
- Review for passive bias, where the specification as written may inadvertently mean that only a limited number of manufacturers may be able to comply.
- Over specification, e.g. where the requirements are such that the cost of compliance will be significant and may not necessarily provide valuefor money.
- Buildability where the specification may significantly increase the riskof extending the build time and/or increase the complexity of the build and in so doing inadvertently add to the cost.
- Deliverability/Reliability/Maintainability; review for requirements which may make it difficult to comply
- Identification of conflicting requirements and assistance in the subsequent prioritisation and rationale for each decision, based on achievable benefits.

Phase 2 - Standard Selection Questionnaire (SSQ) Evaluation (Q2 2022)

Following LT's receipt of SSQ responses, the Consultant's SMEs will be required to evaluate and score the Supplier responses in an impartial and consistent manner in accordance with the technical questions and scoring guidelines contained in the published Standard Selection Questionnaire. TheConsultant's will be required to attend a consensus meeting and submit queries for prospective Tenderers as part of the evaluation process. All evaluations should be carried out in line with Utilities 2016 contract regulations. Bidders should demonstrate knowledge of this throughout their proposals.

Phase 3 - Invitation to Negotiate (ITN) Evaluation (Q4 2022 to Q3 2023)

The Consultant will support TRRS in reviewing and responding to anytechnical queries raised by Bidders during the tender period.

On receipt of Bidder responses the Consultant will evaluate and score thetechnical submissions received in accordance with the Technical Works Criteria and scoring guide lines set out in the ITN.

When carrying out the evaluation, the Consultant will be required to identify and bring to the attention of the TRRS Procurement Manager for resolution any perceived areas of risk that may be presented by aspects of aBidder's Proposal.

Where the Consultant considers technical clarification of a particular pointwithin a Bidder's Proposal is required in order to provide clear understanding of the Bidders offer prior to completion of scoring, the Consultant will document the clarification required and provide details of the clarification sought to the TRRS Procurement Manager for consideration.

The Consultant will be required to attend tender clarification meetings todiscuss clarifications with internal and external stakeholders and attend aconsensus meeting to gain consensus of final scores.

Scoring of Bidders ITN Proposals may be undertaken on an e.tendering system. LT will provide the Consultant's SMEs involved in the evaluation ofProposals with training necessary with regard to the system and will grant remote access in order for the SMEs to access Bidder response documents and to record their technical scores.

All evaluations should be carried out in line with Utilities 2016 contract regulations. Bidders should demonstrate knowledge of this throughouttheir proposals.

3.4 Reporting

Day to day reporting will be to the Programme/Project Manager, withfunctional reporting to the TRRS Lead Engineer.

3.5 Working with Others

The Consultant will proactively liaise with the TRRS Procurement Team and LT programme engineers to ensure the TTS, TIIS, SSQ & ITN documentation facilitate the successful delivery whilst meeting the programme and projectrequirements being achieved.

The Consultant will be required to provide the services of its proposed SMEs in accordance with the TRRS programme requirements such that the

scoring of tendered proposals and participation in moderation of scores is carried out in a timely manner, meeting with the LT programme dates. LT will involve the Consultant in establishing a detailed schedule for carrying out the scoring and moderation activities for both SSQ and ITN submissionsat a later stage in the procurement process.

3.6 Location of Services

The Consultant is expected to use its own offices for delivery of this commission. However, SMEs may on occasion be required to attend LT's Croydon office and Depot where the TRRS Programme is based for project briefings and meetings.

When working in its own offices, the Consultant will be required to establish a secure area only accessible to those SMEs engaged in the evaluation process in order to ensure confidentially of bidder information is maintained.

4. CONTACT WITH EXTERNAL PARTIES

It is important that the TRRS programme maintains good relationships withall stakeholders and “neighbours” and they are communicated and consulted with in a manner which maintains the relationship. To ensure good relationships are maintained:

- No contact either formal or informal shall be made with any external party without the express permission of the TRRS Project Manager and Procurement Manager; and
- No investigation, either visual or intrusive on network or off network shall be undertaken without the express permission of the TRRS Project Manager.

5. HEALTH & SAFETY STATEMENT

All employees (and Consultants) have a general duty in law to take reasonable care for the health and safety of themselves and of otherpersons who may be affected by their acts or omissions.

All employees (and Consultants) must understand and be committed toTransport for London's Health and Safety Policy statement and the Company's safety priorities and be aware of their contribution to such priorities.

All employees (and Consultants) must also be aware of and comply with the current health and safety legislation and other Company requirementsthat are relevant to their job.

All employees (and Consultants) share the following universal safetyresponsibilities:

- Avoid taking unjustifiable risks
- Avoid causing harm
- Be prepared to work safely.

In performing the Services the Consultant shall ensure their solutions consider safety in respect of all stages of the project lifecycle including;development, implementation, bringing in to use, operation and maintenance.

6. EQUALITY STATEMENT

Transport for London values the diversity which exists in our city, and ouraspiration is to reflect this diversity in our workforce. All employees mustbe aware of and committed to the Equality Policy Statement of Transportfor London.

All employees (and Consultants) must also be aware of and comply with other Company requirements associated with Equality and Diversity issuesrelevant to their duties.

7. KNOWLEDGE & EXPERIENCE

- The Consultant's team shall possess the following skills and experience;
- Experience and knowledge of the relevant disciplines and specialisations in the context of trams/light rail.
- Experience of evaluating complex bids in a systematic and consistent manner.
- Experience and knowledge of OJEU processes and procedures and evaluation of submissions in a fair and impartial manner.
- Understanding of tramway safety-related standards regime and processes.
- Ability to appreciate the complexities and interdependencies of a major programme on an operational tramway.
- Good understanding and practical experience of; London Trams, LUL, National Rail or Network Rail standards.
- Highly developed, analytical, interpersonal and communications skills (both verbal and written).
- Influencing skills, with ability to manage stakeholder relationships and expectations.
- Experience in influencing a range of professionals including project managers, other discipline leads, internal and external stakeholders.
- Professional Engineer or equivalent with a relevant degree or equivalent level qualification in an appropriate engineering discipline and/or membership of a relevant Professional Institution.

In carrying out this commission, the Consultant is expected to be able to advise on or should retain knowledge on the following subject matter areas toensure that they can carry out the scope of works effectively. Please note thislist is not comprehensive;

- Tram Construction
- Loading Gauge
- Length in relation to tram stops
- Kinematic Envelope
- Axle Load
- Tram Performance
- Steerability
- Energy Consumption & Unit Weight
- Tram Physics
- Wheel / Rail Interface
- Current Collection and Protection
- Fire
- Power Systems
- Brakes
- Door Systems
- Signalling

- Warning Devices
- Safety Systems (prevention of overspeed, fatigue/attention monitoring, obstacle detection etc.)
- Passenger Environment
- HVAC
- Cab Environment
- Reliability
- Industrial Design
- Environmental Concerns in Construction
- Environmental Concerns in Eventual Disposal
- Maintainability
- Warranty
- Technical Support
- Material and Spares requirements
- Training
- Depot Requirements
- Compatibility with SVT (coupler heights for assistance etc)
- Recoverability
- Ethical Sourcing
- Other

8. DELIVERABLES / MILESTONES

Noted below are the suggested deliverable milestone, the list is not intended to be exhaustive; the supplier is expected to produce all the necessary deliverables, to ensure the LT can receive as much useful information as early as possible (to act upon).

- Stakeholder meeting & WI review
- TTS review
- TIIS review
- SSQ review
- ITN review

9. PROJECT PLAN/TIMESCALES

The key programme requirements are outlined below;TTS

Specification draft – March 2022

SSQ Launch – May 2022

ITN Launch – November 2022

Contract Award – January 2024

Appendix 3 – Programme

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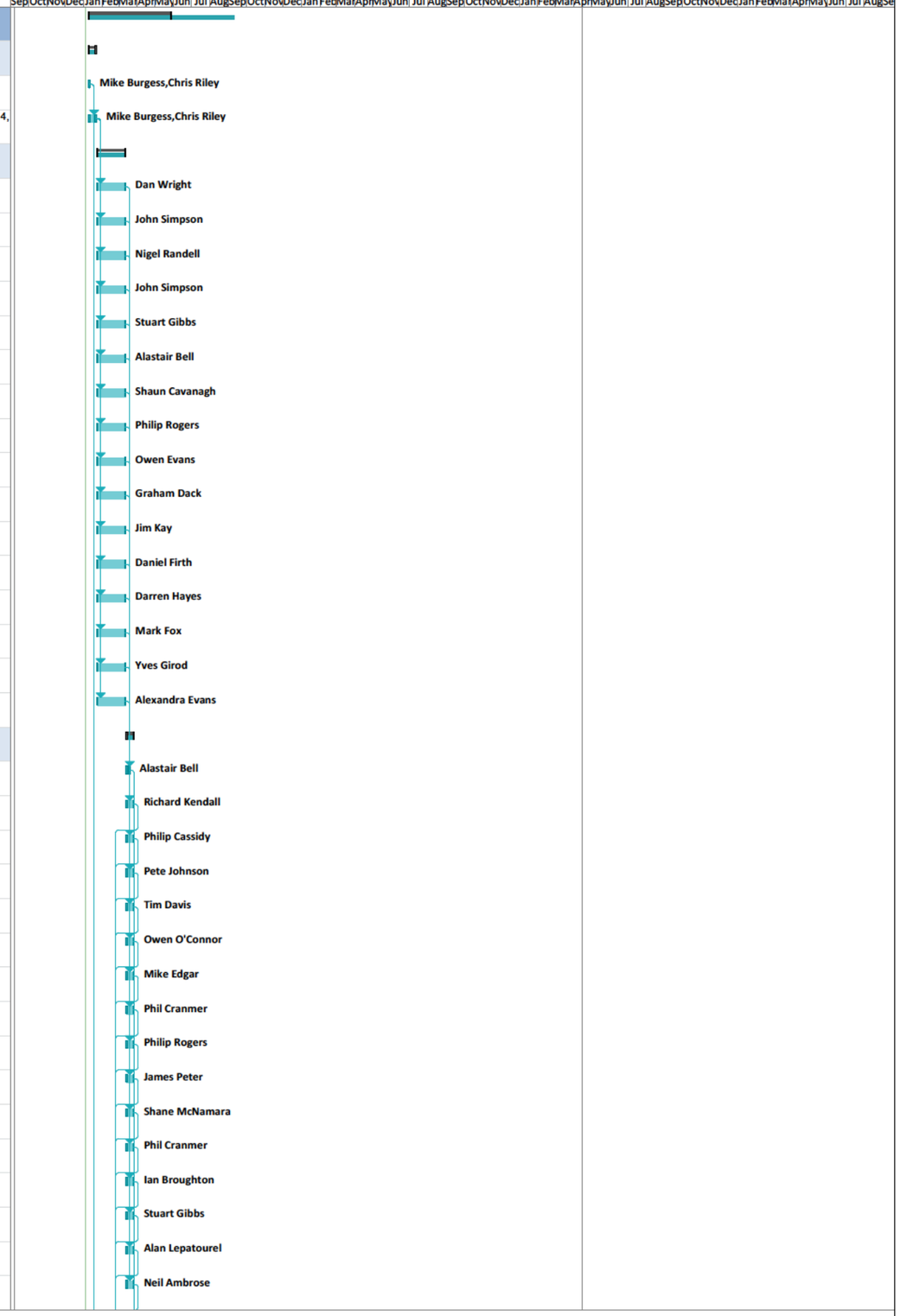
ID	Task Name	Duration	Start	Finish	Resource Names	Resource Grades	Effort Days	Predecessors	Successors
1	**Phase 1 - Assurance Review of TTS & TIIS**	**100 days**	**Mon 10/01/22**	**Fri 27/05/22**					
2	**Kick-off**	**10 days**	**Mon 10/01/22**	**Fri 21/01/22**					
3	Kick-off session	1 day	Mon 10/01/22	Mon 10/01/22	Mike Burgess,Chris Riley	Director, Director	1.0		4,44
4	Joint gap analysis of TTS & TIIS	9 days	Tue 11/01/22	Fri 21/01/22	Mike Burgess,Chris Riley	Director, Director	4.0	3	6,7,8,9,10,11,12,13,14,
5	**Specification development**	**35 days**	**Mon 24/01/22**	**Fri 11/03/22**					
6	Door System	35 days	Mon 24/01/22	Fri 11/03/22	Dan Wright	Senior Consultant	5.0	4	23
7	Car Bodies	35 days	Mon 24/01/22	Fri 11/03/22	John Simpson	Director	5.0	4	24
8	Bogies	35 days	Mon 24/01/22	Fri 11/03/22	Nigel Randell	Senior Consultant	5.0	4	25
9	Crashworthiness	35 days	Mon 24/01/22	Fri 11/03/22	John Simpson	Director	5.0	4	26
10	Auxiliary systems & Electrical design	35 days	Mon 24/01/22	Fri 11/03/22	Stuart Gibbs	Principal Consultant	5.0	4	27
11	Pneumatic systems design	35 days	Mon 24/01/22	Fri 11/03/22	Alastair Bell	Principal Consultant	5.0	4	28
12	Fire performance of materials	35 days	Mon 24/01/22	Fri 11/03/22	Shaun Cavanagh	Principal Consultant	5.0	4	29
13	Tram performance	35 days	Mon 24/01/22	Fri 11/03/22	Philip Rogers	Principal Consultant	5.0	4	30
14	Wheel interface	35 days	Mon 24/01/22	Fri 11/03/22	Owen Evans	Principal Consultant	5.0	4	31
15	Rolling stock maintenance	35 days	Mon 24/01/22	Fri 11/03/22	Graham Dack	Director	5.0	4	32
16	Rolling stock testing & commissioning	35 days	Mon 24/01/22	Fri 11/03/22	Jim Kay	Senior Consultant	5.0	4	33
17	Energy consumption and load bearing	35 days	Mon 24/01/22	Fri 11/03/22	Daniel Firth	Senior Consultant	5.0	4	34
18	Power systems	35 days	Mon 24/01/22	Fri 11/03/22	Darren Hayes	Principal Consultant	5.0	4	35
19	Tram safety systems	35 days	Mon 24/01/22	Fri 11/03/22	Mark Fox	Director	5.0	4	36
20	HVAC	35 days	Mon 24/01/22	Fri 11/03/22	Yves Girod	Senior Consultant	5.0	4	37
21	Tram disposal	35 days	Mon 24/01/22	Fri 11/03/22	Alexandra Evans	Senior Consultant	5.0	4	38
22	**Assurance review (Pre-market review)**	**10 days**	**Mon 14/03/22**	**Fri 25/03/22**					
23	Door System	5 days	Mon 14/03/22	Fri 18/03/22	Alastair Bell	Principal Consultant	0.5	6	39
24	Car Bodies	10 days	Mon 14/03/22	Fri 25/03/22	Richard Kendall	Principal Consultant	0.3	7	39
25	Bogies	10 days	Mon 14/03/22	Fri 25/03/22	Philip Cassidy	Principal Consultant	1.0	8	39
26	Crashworthiness	10 days	Mon 14/03/22	Fri 25/03/22	Pete Johnson	Senior Consultant	0.5	9	39
27	Auxiliary systems & Electrical design	10 days	Mon 14/03/22	Fri 25/03/22	Tim Davis	Senior Consultant	1.0	10	39
28	Pneumatic systems design	10 days	Mon 14/03/22	Fri 25/03/22	Owen O'Connor	Senior Consultant	0.5	11	39
29	Fire performance of materials	10 days	Mon 14/03/22	Fri 25/03/22	Mike Edgar	Principal Consultant	0.3	12	39
30	Tram performance	10 days	Mon 14/03/22	Fri 25/03/22	Phil Cranmer	Senior Consultant	1.0	13	39
31	Wheel interface	10 days	Mon 14/03/22	Fri 25/03/22	Philip Rogers	Principal Consultant	0.3	14	39
32	Rolling stock maintenance	10 days	Mon 14/03/22	Fri 25/03/22	James Peter	Principal Consultant	0.5	15	39
33	Rolling Sstock testing & commissioning	10 days	Mon 14/03/22	Fri 25/03/22	Shane McNamara	Principal Consultant	0.5	16	39
34	Energy consumption and load bearing	10 days	Mon 14/03/22	Fri 25/03/22	Phil Cranmer	Senior Consultant	0.5	17	39
35	Power systems	10 days	Mon 14/03/22	Fri 25/03/22	Ian Broughton	Principal Consultant	0.5	18	39
36	Tram safety systems	10 days	Mon 14/03/22	Fri 25/03/22	Stuart Gibbs	Principal Consultant	1.0	19	39
37	HVAC	10 days	Mon 14/03/22	Fri 25/03/22	Alan Lepatourel	Senior Consultant	0.5	20	39
38	Tram disposal	10 days	Mon 14/03/22	Fri 25/03/22	Neil Ambrose	Director	0.5	21	39



Project: TfL Bid - T4 Programme R
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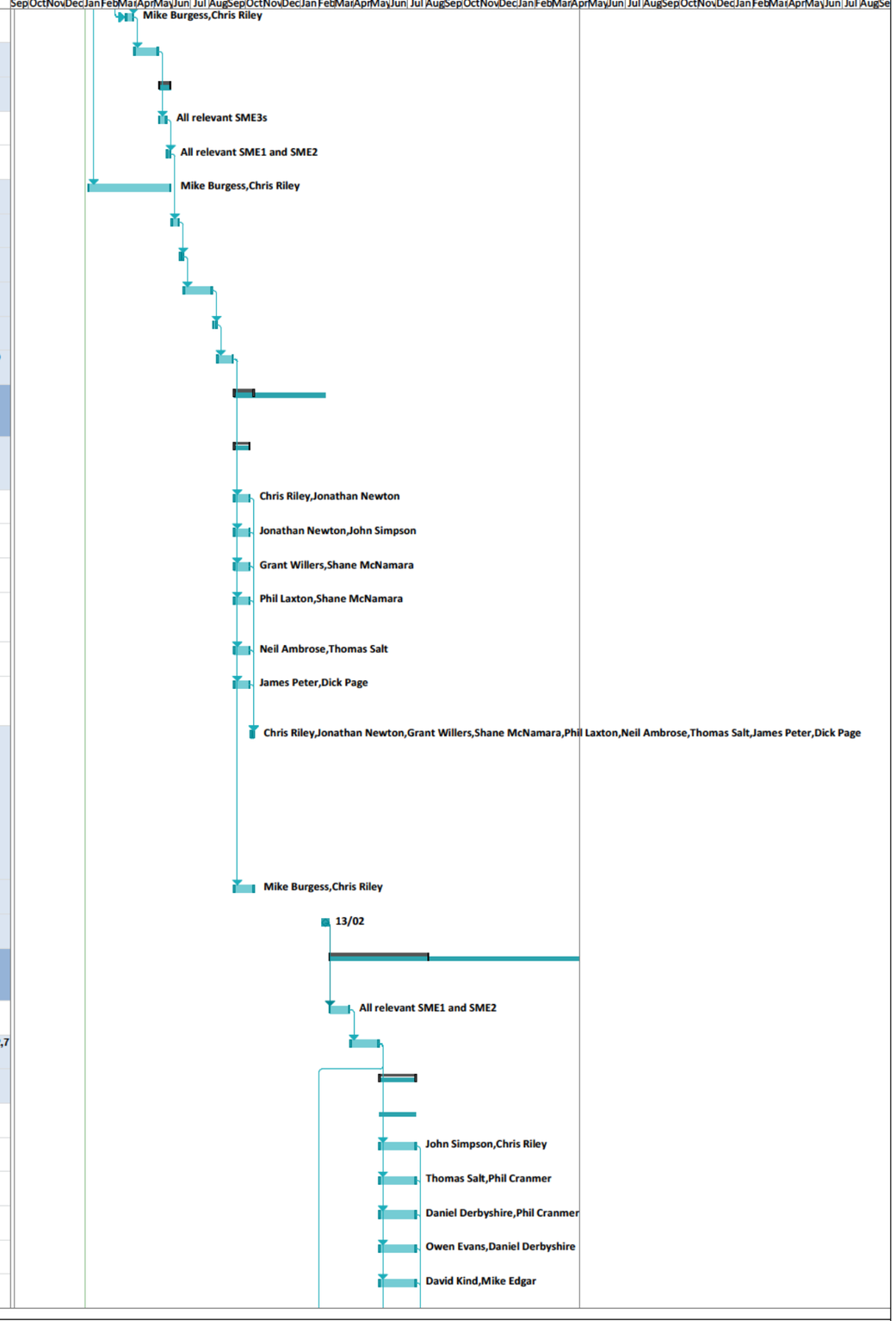
Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Progress | Manual Progress

ID	Task Name	Duration	Start	Finish	Resource Names	Resource Grades	Effort Days	Predecessors	Successors
39	Collate Assurance Review Findings and share with London Tram	10 days	Mon 14/03/22	Fri 25/03/22	Mike Burgess,Chris Riley	Director, Director	5.0	23,24,25,26,27,2	40
40	**Market Review - LT**	**30 days**	**Mon 28/03/22**	**Fri 06/05/22**				**39**	**42**
41	**Finalisation Post-Market Testing**	**15 days**	**Mon 09/05/22**	**Fri 27/05/22**					
42	Support to LT in updating TTS and TIIS	10 days	Mon 09/05/22	Fri 20/05/22	All relevant SME3s	As per above	16.0	40	43
43	Final Assurance Review	5 days	Mon 23/05/22	Fri 27/05/22	All relevant SME1 and SME2	As per above	4.0	42	45
44	**Project Management and Technical Management - Phase 1**	**100 days**	**Mon 10/01/22**	**Fri 27/05/22**	**Mike Burgess,Chris Riley**	**Director, Director**	**20.0**	**3**	
45	**Internal approvals cycle - LT**	**10 days**	**Mon 30/05/22**	**Fri 10/06/22**				**43**	**46**
46	**Specification draft**	**5 days**	**Mon 13/06/22**	**Fri 17/06/22**				**45**	**47**
47	**Preparation of SSQ for launch - LT**	**35 days**	**Mon 20/06/22**	**Fri 05/08/22**				**46**	**48**
48	**SSQ Launch**	**5 days**	**Mon 08/08/22**	**Fri 12/08/22**				**47**	**49**
49	**SSQ Responses submission**	**20 days**	**Mon 15/08/22**	**Fri 09/09/22**				**48**	**52,53,54,55,56,57,59**
50	**Phase 2 - Standard Selection Questionnaire (SSQ) Evaluation**	**25 days**	**Mon 12/09/22**	**Fri 14/10/22**					
51	**Independent evaluation of SSQ responses**	**20 days**	**Mon 12/09/22**	**Fri 07/10/22**					
52	Design	20 days	Mon 12/09/22	Fri 07/10/22	Chris Riley,Jonathan Newton	Director, Senior Consultant	12	49	58
53	Manufacture	20 days	Mon 12/09/22	Fri 07/10/22	Jonathan Newton,John Simpson	Senior Consultant, Director	8	49	58
54	Supply chain management	20 days	Mon 12/09/22	Fri 07/10/22	Grant Willers,Shane McNamara	Director, Principal Consultant	8	49	58
55	Testing, commissioning & customer acceptance	20 days	Mon 12/09/22	Fri 07/10/22	Phil Laxton,Shane McNamara	Principal Consultant, Principal Consultant	8	49	58
56	Disposal & decomissioning of the fleet	20 days	Mon 12/09/22	Fri 07/10/22	Neil Ambrose,Thomas Salt	Director, Principal Consultant	4	49	58
57	Reliability & maintainability management	20 days	Mon 12/09/22	Fri 07/10/22	James Peter,Dick Page	Director, Director	4	49	58
58	**Consensus moderation meetings**	**5 days**	**Mon 10/10/22**	**Fri 14/10/22**	**Chris Riley,Jonathan Newton,Grant Willers,Shane McNamara,Phil Laxton,Neil Ambrose,Thomas Salt,James Peter,Dick Page**	**Director, Senior Consultant, Director, Principal Consultant, Principal Consultant, Principal Consultant, Director, Principal Consultant, Principal Consultant, Director**	**5.0**	**52,53,54,55,56,5**	
59	**Project Management and Technical Management- Phase 2**	**25 days**	**Mon 12/09/22**	**Fri 14/10/22**	**Mike Burgess,Chris Riley**	**Director, Director**	**5.0**	**49**	
60	**ITN Launch**	**0 days**	**Mon 13/02/23**	**Mon 13/02/23**					**62**
61	**Phase 3 - Invitation to Negotiate (ITN) Evaluation**	**120 days**	**Mon 20/02/23**	**Fri 04/08/23**					
62	Support to LT in reviewing and responding to bidders' technical que	25 days	Mon 20/02/23	Fri 24/03/23	All relevant SME1 and SME2	As per above	10.0	60	63
63	**ITN Submission**	**35 days**	**Mon 27/03/23**	**Fri 12/05/23**				**62**	**66,67,68,69,70,71,72,7**
64	**Independent evaluation of ITN Responses**	**45 days**	**Mon 15/05/23**	**Fri 14/07/23**					
65	Technical Tram Works Criteria	1 day							
66	Tram construction	45 days	Mon 15/05/23	Fri 14/07/23	John Simpson,Chris Riley	Director, Director	7.5	63	92
67	Tram performance	45 days	Mon 15/05/23	Fri 14/07/23	Thomas Salt,Phil Cranmer	Principal Consultant, Senior Consultant	10.0	63	92
68	Energy consumption & unit weight	45 days	Mon 15/05/23	Fri 14/07/23	Daniel Derbyshire,Phil Cranmer	Senior Consultant, Senior Consultant	7.5	63	92
69	Tram physics	45 days	Mon 15/05/23	Fri 14/07/23	Owen Evans,Daniel Derbyshire	Principal Consultant, Senior Consultant	7.5	63	92
70	Fire	45 days	Mon 15/05/23	Fri 14/07/23	David Kind,Mike Edgar	Principal Consultant, Principal Consultant	5.0	63	92



Project: TfL Bid - T4 Programme R
Date: Wed 05/01/22

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Progress | Manual Progress

ID	Task Name	Duration	Start	Finish	Resource Names	Resource Grades	Effort Days	Predecessors	Successors
71	Power systems	45 days	Mon 15/05/23	Fri 14/07/23	Ian Shirtcliffe,Ian Broughton	Director, Principal Consultant	7.5	63	92
72	Brakes	45 days	Mon 15/05/23	Fri 14/07/23	Phil Bolton,Owen O'Connor	Senior Consultant, Senior Consultant	7.5	63	92
73	Door systems	45 days	Mon 15/05/23	Fri 14/07/23	Alastair Bell,Tim Davis	Principal Consultant, Senior Consultant	7.5	63	92
74	Signalling	45 days	Mon 15/05/23	Fri 14/07/23	John Chitham,Stuart Gibbs	Principal Consultant, Principal Consultant	10.0	63	92
75	Passenger environment	45 days	Mon 15/05/23	Fri 14/07/23	Phil Cranmer,Richard Clarkson-Webb	Senior Consultant, Principal Consultant	7.5	63	92
76	Reliability	45 days	Mon 15/05/23	Fri 14/07/23	James Peter,Dick Page	Director, Director	5.0	63	92
77	Industrial design	45 days	Mon 15/05/23	Fri 14/07/23	Nigel Rouse,Dennis Isam	Principal Consultant, Principal Consultant	5.0	63	92
78	Other	45 days	Mon 15/05/23	Fri 14/07/23	Jonathan Newton,Beverley Norris	Senior Consultant, Principal Consultant	7.5	63	92
79	Technical Tram Deliverability Criteria								
80	Engineering & design	45 days	Mon 15/05/23	Fri 14/07/23	Chris Riley,Jonathan Newton	Director, Senior Consultant	7.5	63	93
81	Technical assurance	45 days	Mon 15/05/23	Fri 14/07/23	Chris Riley,Mark Fox	Director, Director	2.5	63	93
82	supplier selection & management	45 days	Mon 15/05/23	Fri 14/07/23	Grant Willers,Shane McNamara	Director, Principal Consultant	5.0	63	93
83	Manufacturing	45 days	Mon 15/05/23	Fri 14/07/23	John Simpson,Jonathan Newton	Director, Senior Consultant	5.0	63	93
84	Testing	45 days	Mon 15/05/23	Fri 14/07/23	Phil Laxton,Shane McNamara	Principal Consultant, Principal Consultant	5.0	63	93
85	Disposal & decomissioning of the fleet	45 days	Mon 15/05/23	Fri 14/07/23	Neil Ambrose,Thomas Salt	Director, Principal Consultant	2.5	63	93
86	Relevant approvals	45 days	Mon 15/05/23	Fri 14/07/23	Elizabeth Jackson,Stephen Mayoh	Principal Consultant, Senior Consultant	7.5	63	93
87	Unit & equipment deliverability, commissioning, acceptance	45 days	Mon 15/05/23	Fri 14/07/23	Shane McNamara,Grant Willers	Principal Consultant, Director	5.0	63	93
88	Manuals, equipment & training	45 days	Mon 15/05/23	Fri 14/07/23	Mark Fox,Dick Page	Director, Director	2.5	63	93
89	Final & fleet acceptance	45 days	Mon 15/05/23	Fri 14/07/23	James Peter,Graham Dack	Director, Director	5.0	63	93
90	Programmes	45 days	Mon 15/05/23	Fri 14/07/23	Shane McNamara,Grant Willers	Principal Consultant, Director	7.5	63	93
91	**Consensus moderation meetings**	**15 days**	**Mon 17/07/23**	**Fri 04/08/23**					
92	Technical Tram Works Criteria	15 days	Mon 17/07/23	Fri 04/08/23	All relevant SME1 and SME2	As per above	25	66,67,68,69,70,7	95
93	Technical Tram Deliverability Criteria	15 days	Mon 17/07/23	Fri 04/08/23	All relevant SME1 and SME2	As per above	15	80,81,82,83,84,8	95
94	**Project Management and Technical Management - Phase 3**	**120 days**	**Mon 20/02/23**	**Fri 04/08/23**	**Mike Burgess,Chris Riley**	**Director, Director**	**24.0**	**63**	
95	**Contract Award**	**0 days**	**Mon 15/04/24**	**Mon 15/04/24**				**92,93**	

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Date: Wed 05/01/22

Task	Summary	External Milestone	Inactive Summary	Manual Summary Rollup	Finish-only	Manual Progress		
Split	Project Summary	Inactive Task	Manual Task	Manual Summary	Deadline			
Milestone	External Tasks	Inactive Milestone	Duration-only	Start-only	Progress			