



Railhead Profiling Machine Technical Solution

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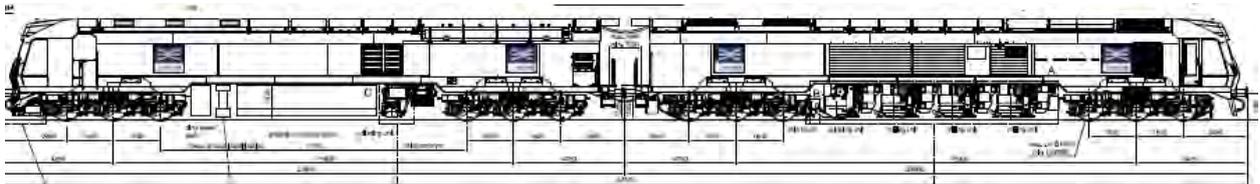
1 Purpose

The purpose of this document is to bind the technical information necessary to describe the selected Railhead Profiling Machine into one document for incorporation into the Manufacture and Supply Agreement.

2 Scope

The scope is for the railhead profiling machine required for railhead treatment of Crossrail infrastructure.

The chosen machine is a Linsinger MG31 Rail Milling Machine, as shown in the drawing "Layout MG 31 Cross Rail" and below:



The machine will be compliant with the TRS in accordance with the agreed technical solutions listed in the table below.

3 Agreed Technical Response

ID	Requirement Text	Supporting Information	Compliance Status	Evidence Reference
TRS-RHP-1	Function			
TRS-RHP-2	The railhead profiling machine shall be capable of delivering a rail roughness 3dB lower than the combined wheel/rail roughness stated in IPD10 up to a wavelength of 500mm or the rail TSI, whichever is more onerous.	<p>Rail roughness is quoted in microns at differing wavelengths as follows:</p> <p>████████████████████</p> <p>████████████████████</p> <p>████████████████████</p> <p>████████████████████</p> <p>Wavelengths of greater than 500mm are considered to be addressed through track alignment rather than profiling.</p>	Fully Compliant	LinsingerPartTRS-RHP-2-Rail roughness.pdf.pdf
TRS-RHP-64	The railhead profiling machine shall be capable of reprofiling across the railhead between -10 degrees on the field side and 70 degrees on the gauge side.	<p>The 0° point is the point at which a tangent to both (the left and right) rails would touch</p> <p>the target profile.</p> <p>The x° point on the of the target rail is the point at which the normal to a</p> <p>tangent on the target rail profile lies at an angle of x° to the plane of</p> <p>the track (or the line that is tangent to both rails).</p>	Fully Compliant	LinsingerPartTRS-RHP-64-Reprofiling range.pdf.pdf
TRS-RHP-20	The finished rail profile shall be within a tolerance of +/-0.1mm of the target profile.		Fully Compliant	LinsingerPartTRS-RHP-20-Tolerance.pdf

ID	Requirement Text	Supporting Information	Compliance Status	Evidence Reference
TRS-RHP-22	The railhead profiling machine shall be capable of changing profiles on each side without need to change tools during the shift and without need to leave the vehicle.	A minimum of two profiles are required for plain line. One for straight track and low rails and an alternative profile for high rails. Profiles to be instructed. The transition between profiles should be configurable by the operator.	Fully Compliant	LinsingerPartTRS-RHP-22-Changing profiles.pdf
TRS-RHP-21	The railhead profiling machine shall be capable of reprofiling S&C, including the entire stock rail, entire crossing and to a rail width of 30mm (or less) toward the point tips.		Fully Compliant	LinsingerPartTRS-RHP-21-Reprofiling S&C.pdf
TRS-RHP-23	The railhead profiling machine shall collect 98% of removed metal and debris from the track prior to handback.		Fully Compliant	LinsingerPartTRS-RHP-23-Removed metal.pdf
TRS-RHP-24	The railhead profiling machine shall be capable of removing 0.3mm of metal from the top of rail (or less) without affecting finish quality or output.		Fully Compliant	LinsingerPartTRS-RHP-24-Removing 0,3mm of metal.pdf
TRS-RHP-27	The railhead profiling machine shall be capable of re-profiling a minimum of 2km within a 3 hour working shift, with a metal removal of at least 0.5mm from the rail crown.	Allowing for transit to site, an average 3 hours of working (spark) time is available per night.	Fully Compliant	LinsingerPartTRS-RHP-27-Reprofiling minimum.pdf
TRS-RHP-25	The railhead profiling machine shall be capable of removing up to 3.5mm of metal from the rail crown over 1200m of track (plus additional work to blend to the adjacent unprofiled rail) in a three hour working shift without affecting finish quality.	Average curve length on Crossrail is 500m. A system capable of reprofiling over 1.2km will be preferred to ensure that the longest curve can be rectified.	Fully Compliant	LinsingerPartTRS-RHP-25-Removing.pdf

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TRS-RHP-66	The railhead profiling machine shall be capable of powering small plant and power tools outside the vehicle.	Hand grinding units will be required in complicated areas such as S&C. Electrical/hydraulic power to these pieces of equipment (110V DC) removes the need to have petrol powered tools in the tunnels.	Fully Compliant	LinsingerPartTRS-RHP-66-Small plant outside vehicle.pdf
TRS-RHP-67	The railhead profiling machine shall contain a workshop area for the storage and use of tools and equipment.	Hand grinding units, measurement equipment, lighting etc.	Fully Compliant	LinsingerPartTRS-RHP-67-Workshop area.pdf
TRS-RHP-140	The railhead profiling machine shall be capable of transporting at least 5 workers to site in addition to the driver.		Fully Compliant	LinsingerPartTRS-RHP-140-Transporting workers.pdf
TRS-RHP-170	The operation of the railhead profiling machine shall not be capable of causing track geometry limits to be exceeded.	Ramping in and out, as well as differences in operation between rails must not result in a track profile that is not compliant with the variability limits specified in NR/L2/TRK/2102 Appendix A.	Fully Compliant	LinsingerPartTRS-RHP-170-Track geometry limits.pdf
TRS-RHP-106	3.1 Monitoring & Reporting			
TRS-RHP-107	The railhead profiling machine shall be capable of measuring transverse rail profile before and after working to an accuracy of +/-0.05mm of the actual profile.	Measurements should be capable of being taken every [redacted] up to a vehicle speed of 5km/h, and every [redacted] at running speed.	Partially Compliant	LinsingerPartTRS-RHP-107-Measuring transverse rail profile.pdf Partial compliance due to sampling frequency being below that stated in the supporting information.

ID	Requirement Text	Supporting Information	Compliance Status	Evidence Reference
TRS-RHP-108	The railhead profiling machine shall be capable of measuring and reporting longitudinal rail profile before and after working to an accuracy of +/-0.05mm of the actual profile.	Measurements should be capable of being taken every [REDACTED] up to a vehicle speed of 5km/h, and every [REDACTED] at running speed.	Fully Compliant	LinsingerPartTRS-RHP-108-Reporting longit. rail profile.pdf
TRS-RHP-109	The railhead profiling machine shall be capable of detecting and reporting surface cracks up to 2.7 mm below the surface of the rail following work across a width of 30mm cross the railhead.	[REDACTED] is the depth at which speed restrictions will need to be applied.	Fully Compliant	LinsingerPartTRS-RHP-109-Surface cracks.pdf
TRS-RHP-110	Recordings shall be tagged with positional information derived from the signalling system (or alternative system where signalling information is unavailable) to allow each measurement to be placed on the track to an accuracy of +/-0.5m.	The format of the data to be received from the signalling system has not yet been defined.	Fully Compliant	LinsingerPartTRS-RHP-110-Signalling system.pdf
TRS-RHP-115	All recordings shall be tagged with the time, date, vehicle speed at the time of measurement and equipment from which the measurement was taken.		Fully Compliant	LinsingerPartTRS-RHP-115-Measurement.pdf
TRS-RHP-120	Data output shall be displayed to the operator in the cab.		Fully Compliant	LinsingerPartTRS-RHP-120-Data output.pdf
TRS-RHP-112	Infrastructure data shall be capable of being transmitted via Wifi (and/or 4G) to the RfL Data Warehouse following completion of the work/shift.		Fully Compliant	LinsingerPartTRS-RHP-112-Infrastructure data wifi.pdf

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TRS-RHP-158	Data shall be presented in a common format, capable of interpretation by the RfL asset management system.	RSSB are producing guidance to describe a common data format that can be interpreted by different Infrastructure Managers. This requirement could be achieved through translation of the data once uploaded from the machine.	Fully Compliant	LinsingerPartTRS-RHP-158-RFL asset management system.pdf
TRS-RHP-90	Secondary means of removing data from the vehicle shall be provided through physical connection.		Fully Compliant	LinsingerPartTRS-RHP-90-Removing data.pdf
TRS-RHP-180	The monitoring and reporting system shall be capable of assigning a work order reference to the data captured.		Fully Compliant	A reference in the monitoring and reporting system to a work order is possible with little effort. No cost implication
TRS-RHP-114	The sampling rate for data capture shall be configurable to maintain the distance between samples.	Above 10km/h sampling distances can be up to every ████	Fully Compliant	LinsingerPartTRS-RHP-114-Sampling rate.pdf
TRS-RHP-116	The monitoring and reporting system shall have the capability to provide a printout of the completed work to facilitate handback.		Fully Compliant	LinsingerPartTRS-RHP-116-Monitoring and reporting system.pdf
TRS-RHP-118	Monitoring systems shall display and report before, after and target measurements, where available.		Fully Compliant	LinsingerPartTRS-RHP-118-Monitoring system display.pdf
TRS-RHP-119	Monitoring systems shall provide alarms/alerts where measurements exceed a pre-configured tolerance.	Tolerances will initially be set based on standards, but should be configurable to enable future change.	Fully Compliant	LinsingerPartTRS-RHP-119-Monitoring system alarms.pdf
TRS-RHP-3	Performance			

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TRS-RHP-28	The machine shall be capable of operating in transit (running mode) at a speed of at least 80km/h.		Fully Compliant	LinsingerPartTRS-RHP-028-Transit(Running mode)_Option1-MG31.pdf
TRS-RHP-69	The railhead profiling machine shall provide traction performance sufficient to operate between passenger trains without impacting services, as described in C620-XRL-R2-RSP-CRG03-Z-50005.	Timetable information indicates an acceleration rate of 0.35m/s/s is necessary to operate between passenger trains with acceptable impact on service.	Fully Compliant	LinsingerPartTRS-RHP-69-Traction performance_Option 1-MG31.pdf
TRS-RHP-126	The railhead profiling machine shall have a guaranteed emergency brake rate of at least 6%g.	This is the rate on straight and level track with good rail adhesion.	Fully Compliant	LinsingerPartTRS-RHP-126-Emergency brake_Option 1-MG31.pdf
TRS-RHP-157	Sanding equipment shall be installed in accordance with GMRT2461.	GMRT2461 is currently under review. The design solution must account for any changes to the standard.	Fully Compliant	LinsingerPartTRS-RHP-157-Sanding equipment.pdf
TRS-RHP-161	A WSP systems shall be fitted complying with BS EN 15595 and taking account of the guidance in the national foreword regarding UK adhesion levels, shall be provided on all axles to control the level of traction and braking during conditions of reduced wheel to rail adhesion.		Fully Compliant	LinsingerPartTRS-RHP-161-WSP system_Option 1-MG31.pdf
TRS-RHP-174	The vehicle start-up procedure shall allow the vehicle to be moved within 2 minutes of opening the cab.	Start-up of the CBTC signalling system should not be considered in the scope of this requirement.	Fully Compliant	LinsingerPartTRS-RHP-174-Vehicle start-up procedure.pdf
TRS-RHP-4	Interfaces			
TRS-RHP-11	Signalling			

ID	Requirement Text	Supporting Information	Compliance Status	Evidence Reference
TRS-RHP-58	<p>The railhead profiling train shall be fitted with Crossrail central section CBTC signalling equipment in accordance with the interface specifications:</p> <p>C620-SIC-R2-RSP-CR001-50088 (Airlink radio)</p> <p>C620-SIC-R2-RSP-CR001-50089 (TMS)</p> <p>C620-SIC-R2-RSP-CR001-50090 (DMI)</p> <p>C620-SIC-R2-RSP-CR001-50091 (ETCS - where provided)</p> <p>C620-SIC-R2-RSP-CR001-50098 (RST Interface)</p> <p>C620-XRL-R2-RSP-CRG03-Z-50005 (applicable requirements)</p>	<p>Technical information as necessary relating to the vehicle and its control systems must be provided to be input into the signalling system, for all anticipated train configurations.</p>	Fully Compliant	LinsingerPartTRS-RHP-58-Crossrail central section_Option 1-MG31.pdf
TRS-RHP-175	<p>An indication light shall be provided in the cab to report the health status of the onboard CBTC equipment.</p>	<p>The indication must be physically separate to the DMI and only needs to indicate CBTC health by displaying a light.</p>	Fully Compliant	<p>Listed in TRS but not assessed in AWARD</p> <p>Additional detail required</p>
TRS-RHP-124	<p>Driving vehicles shall be designed to be retrofitted with ETCS onboard equipment.</p>	<p>ETCS will be required on the vehicles in order to run on Network Rail managed parts of Crossrail by 2026.</p>	Fully Compliant	<p>LinsingerPartTRS-RHP-124-ETCS.pdf</p> <p>Additional detail required</p>
TRS-RHP-60	<p>The railhead profiling trains shall be fitted with Automatic Warning System (AWS) and Train Protection and Warning System (TPWS).</p>		Fully Compliant	LinsingerPartTRS-RHP-60-AWS automatic warning system.pdf
TRS-RHP-71	<p>Signalling systems shall not prevent vehicles operating in reverse at slow speed in possessions.</p>		Fully Compliant	LinsingerPartTRS-RHP-71-Signalling systems.pdf

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TRS-RHP-53	A train integrity wire shall be provided between cabs, compatible with the signalling system, with an associated input into the onboard signalling system.		Fully Compliant	LinsingerPartTRS-RHP-53-TI signal for signalling system.pdf
TRS-RHP-177	<p>The on train data recorder, provided to meet the requirements of GM/RT2472, shall additionally be capable of recording the following information:</p> <p>CBTC signalling indications to the driver</p> <p>CBTC signalling transmissions between the unit and the trackside infrastructure</p> <p>Information appropriate to support fault allocation between the trackside and onboard CBTC signalling equipment.</p>	The onboard signalling equipment does not have recording equipment compliant with the requirements of GMRT2472.	Fully Compliant	Listed unde #58 in reference document but not explicit in TRS. Not detailed in response to #58, additional confirmation required.
TRS-RHP-72	A speed display, showing primarily mph, shall be provided in the cab, becoming active upon isolation of the onboard signalling equipment.		Fully Compliant	LinsingerPartTRS-RHP-72-Speed display.pdf
TRS-RHP-163	The train shall be capable of limiting speed to a speed configurable by the maintainer in the event of signalling failure or operation in possession.	The speed limit in possessions is likely to be between 25 and 40km/h.	Fully Compliant	LinsingerPartTRS-RHP-163-Limiting speed.pdf
TRS-RHP-12	Track			
TRS-RHP-38	The railhead profiling machine shall be capable of working on gradients of 4%.		Fully Compliant	LinsingerPartTRS-RHP-38-Gradients of 4%.pdf

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TRS-RHP-39	The vehicle shall achieve route availability (RA) 5 as defined in GE/RT8006 where possible.	If not possible, a worst case axle load of ■ tonnes can be accepted.	Fully Compliant	LinsingerPartTRS-RHP-39-Route availability_Option 1-MG31.pdf
TRS-RHP-40	<p>Reprofiling shall be achieved through the following trackside equipment without need to remove or make adjustment to it, and without affecting finish quality:</p> <ul style="list-style-type: none"> Check rails & derailment containment Track Crossings & RRV access points Axle counters Track lubricators Friction Modifiers Balises 		Fully Compliant	LinsingerPartTRS-RHP-40-Reprofiling.pdf - LinsingerPartTRS-RHP-40-Reprofiling Appendix.zip
TRS-RHP-45	Reprofiling shall be achieved without need to clean the rail before reprofiling.	Railhead lubrication will be used throughout Crossrail.	Fully Compliant	LinsingerPartTRS-RHP-45-Clean rail before reprofiling.pdf
TRS-RHP-46	The railhead reprofiling machine shall be capable of reprofiling rails with a hardness range of 260-450 HB without need to reconfigure or change tools and without loss of performance below the levels stated in this specification.	Differing rail hardness is installed in different areas. The same setup must be capable of machining both types to increase productiveness and minimise the opportunity for error. The standard plain line rail in the tunnel sections will be 350LHT rail. 450 HB rail will only be used for crossings.	Fully Compliant	LinsingerPartTRS-RHP-46-Hardness range.pdf.
TRS-RHP-138	The railhead profiling machine shall be capable of meeting the functional requirements on the resilient track formation used on Crossrail.	The track for the central section id described in C122-OVE-R4-RGN-CRG01-00004 v3.0 Track & Alignment - RIBA Stage E Reference Design Report	Fully Compliant	LinsingerPartTRS-RHP-138-Resilient track formation.pdf

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TRS-RHP-141	The total length of the railhead profiling train shall be no more than 80m.		Fully Compliant	LinsingerPartTRS-RHP-141-Total length_Option 1-MG31.pdf
TRS-RHP-13	Tunnels & Gauge			
TRS-RHP-73	All vehicles shall provide a minimum 100mm dynamic clearance to the upper sector of the Crossrail structure gauge (detailed in C122-OVE-R4-RGN-CRG01-50003), and 50mm to the lower sector in transit mode, based on an operational speed of 80km/h.	The KE for the Unit must be provided in electronic 'Vampire' KE format, for evaluation in ClearRoute™ or equivalent software in addition to drawings. Reduced clearances may be tolerated on condition that the vehicle can operate without impacting passenger services.	Fully Compliant	LinsingerPartTRS-RHP-73-Dynamic clearance_Option 1-MG31.pdf
TRS-RHP-31	Vehicles shall be compatible with the national W6a gauge defined in GE/RT 8073.	The KE for the Unit must be provided in electronic 'Vampire' KE format, for evaluation in ClearRoute™ or equivalent software in addition to drawings. Reduced clearances may be tolerated on condition that the vehicle can operate without impacting passenger services.	Fully Compliant	LinsingerPartTRS-RHP-31-National W6a gauge.pdf
TRS-RHP-32	The railhead profiling machine shall be capable of reprofiling through platforms and other structures without compromise to finish quality.		Fully Compliant	LinsingerPartTRS-RHP-32-Finish Quality.pdf
TRS-RHP-104	Under vehicle lighting shall be provided to illuminate the walking surface around the vehicle and the track in front and behind.	Walkway lighting will be required around the vehicle.	Fully Compliant	LinsingerPartTRS-RHP-104-Vehicle lighting.pdf
TRS-RHP-14	Power			

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TRS-RHP-137	Railhead profiling shall be achievable in third and fourth rail areas.	Crossrail does not have any conductor rails, but the vehicle may be deployed on parts of the southern region or LU infrastructure in future. Conductor rails are not expected to be live during operation.	Fully Compliant	LinsingerPartTRS-RHP-137-Profiling achievable.pdf
TRS-RHP-144	Railhead profiling shall be achievable under live or isolated overhead electrification.		Fully Compliant	LinsingerPartTRS-RHP-144-Electrification.pdf
TRS-RHP-15	Ventilation			
TRS-RHP-34	Engine emissions and airborne debris produced by the re-profiling operation shall not cause air quality around the vehicle to breach the COSHH 8 hour exposure limits, either in working or running modes.	The Crossrail ventilation system can be assumed to provide a flow of at least 35 cubic metres of fresh air per second.	Fully Compliant	LinsingerPartTRS-RHP-34-Engine emissions.pdf
TRS-RHP-74	Engine emissions shall, as a minimum meet the European category 3b (Euro 3b) limits defined in the European emissions standards.	Additionally, for newly built vehicles, engine emissions shall meet Euro 4 regulations.	Fully Compliant	LinsingerPartTRS-RHP-74-Engine emission.pdf
TRS-RHP-75	Newly built vehicles shall be capable of being upgraded to cat 5 engines without significant modification to the vehicle.	As standards are revised, existing engines may become obsolete.	Fully Compliant	LinsingerPartTRS-RHP-75-Cat 5 engines.pdf
TRS-RHP-16	Rolling Stock			

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TRS-RHP-35	The railhead profiling machine shall be fitted with a standard screw coupler, drawhook and side buffers.	Defined in GN/GM 2690	Fully Compliant	LinsingerPartTRS-RHP-35-Screw coupler, drawhook, side buffer.pdf - LinsingerPartTRS-RHP-35-drawing 700-00300-01.pdf - LinsingerPartTRS-RHP-35-drawing 710-00043-00.pdf - LinsingerPartTRS-RHP-35-drawing 740-00006-00.pdf - LinsingerPartTRS-RHP-35-drawing 740-00008-02.pdf
TRS-RHP-160	The railhead profiling machine shall be capable of 80km transit prior to starting a shift.		Fully Compliant	LinsingerPartTRS-RHP-160-Transit prior shift.pdf
TRS-RHP-17	Comms			
TRS-RHP-37	The vehicle shall be fitted with GSM-R voice radio.		Fully Compliant	LinsingerPartTRS-RHP-37-GSM-R voice radio.pdf
TRS-RHP-167	The Unit shall have provision for future fitment of two AVI tags per Unit fitted on opposite sides	maximum dimensions of [redacted] m long x [redacted] wide x [redacted] m deep; and maximum weight [redacted]	Fully Compliant	LinsingerPartTRS-RHP-167-AVI tags_Option 1-MG31.pdf
TRS-RHP-168	The Unit's AVI tags shall be located so they are not shielded or obstructed by any body side fittings, vinyl livery film or body side sacrificial coatings		Fully Compliant	LinsingerPartTRS-RHP-168-Unit AVI tags_Option 1-MG31.pdf
TRS-RHP-19	Drainage			

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TRS-RHP-55	The vehicle shall not use water or other fluid as a coolant, fire prevention or to reduce dust contamination.	The regular use of water spraying in the tunnel environment is likely to contaminate the sleeper mountings.	Fully Compliant	LinsingerPartTRS-RHP-55-Cooling, fire prevention, dust contamination.pdf
TRS-RHP-5	Safety			
TRS-RHP-103	Common Safety Methods Risk Assessment shall be undertaken at the design stage, verified by an accredited Assessment Body, to demonstrate the safety of the vehicle for both operation and maintenance activities in the intended environment.		Fully Compliant	
TRS-RHP-105	The supplier shall support Rail for London in developing a safe system of work for both operations and maintenance.	The railway undertaking and plant operator is not yet in place, and therefore no safety management system exists for the vehicle to fit into. As such, safety requirements may emerge during the design process that must be taken into account. Additionally, hazards identified during the design process may need to transfer to the operator to manage where not mitigated by design.	Fully Compliant	
TRS-RHP-136	The machine shall be designed to minimise the number of people required to work on the track outside the vehicle.	For plain line operation, the vehicle should be capable of completing a normal shift (4 hours working time) without need for operatives to leave the vehicle.	Fully Compliant	LinsingerPartTRS-RHP-136-Number of people.pdf
TRS-RHP-18	Fire			

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TRS-RHP-42	The vehicle shall be fitted with a fire suppression system NOT using White Powder or CO ₂ .	AFFF or water are preferred fire suppression agents.	Fully Compliant	LinsingerPartTRS-RHP-42-Fire suppression system Model.pdf
TRS-RHP-61	Fire detection systems shall provide an input into the signalling system.	Format of the interface to be agreed with the CBTC signalling supplier.	Fully Compliant	LinsingerPartTRS-RHP-61-Fire detection system.pdf - LinsingerPartTRS-RHP-61-8K40 relay coupler description.pdf
TRS-RHP-143	The railhead profiling machine shall be fitted with fire suppression systems for any external (trackside) fires that may be caused as a result of the operation.	The solution to the requirement should be determined through risk assessment.	Fully Compliant	LinsingerPartTRS-RHP-143-Fire suppression system external.pdf - LinsingerPartTRS-RHP-143-Fire suppression system Model.pdf
TRS-RHP-165	Systems to restrict the volume of fuel carried by the machine shall be provided where practicable.	Risk assessment should identify whether special measures should be put in place to limit the fuel carried by the vehicle for shorter work packages. The solution may be procedural or hardware based. Capability to carry a 'standard' volume of fuel is still required for infrastructure compatibility purposes and in the even of longer transits to other work sites.	Fully Compliant	LinsingerPartTRS-RHP-165-Volume of fuel.pdf

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TRS-RHP-166	Adequate protection shall be provided to the fuel tank (and other fluid tanks) in the event of derailment.	This requirement has been specifically included because of the emergency walkway, which in the event of a derailment could increase the risk of damage/puncture of fuel tanks. Risk assessment should identify any necessary modifications.	Fully Compliant	LinsingerPartTRS-RHP-166-Fuel tank.pdf
TRS-RHP-171	Any outbreak of fire shall be prevented from exceeding 8.8MW output within 30 minutes of detection.	Risk assessment should demonstrate that the probability of the fire exceeding this rate is tolerably low.	Fully Compliant	LinsingerPartTRS-RHP-171-Outbreak of fire_Option 1-MG31.pdf
TRS-RHP-6	Human Factors			
TRS-RHP-48	The railhead profiling machine shall provide welfare facilities including toilet and rest area suitable for consumption of food and drink for the crew capacity of the vehicle.		Fully Compliant	LinsingerPartTRS-RHP-48-Welfare facilities_Option 1-MG31.pdf
TRS-RHP-56	Welfare/toilet facilities shall be fitted with retention tanks with sufficient storage to operate for 5 shifts between emptying/filling.	It is expected that toilets and basins will be emptied at Plumstead sidings using road tankers no more frequently than weekly. One shift should be assumed to consist of 5 operations.	Fully Compliant	LinsingerPartTRS-RHP-56-Welfare facilities retention tanks_Option 1-MG31.pdf
TRS-RHP-54	Noise levels measured 7.5m from the track centreline during working shall not exceed 75dB.	This requirement should be demonstrated in accordance with section 5 of EN ISO 3095	Fully Compliant	LinsingerPartTRS-RHP-54-Noise levels.pdf
TRS-RHP-79	Operating tasks designed in accordance with HF principles, allowing for 5th percent female to 95th percent male usage.		Fully Compliant	TRS-RHP-79.pdf.

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TRS-RHP-80	A driver training position shall be provided in driving cabs, with sufficient visibility and access to emergency stop functions.	The driver/operator training positions can be interchangeable i.e. the operators position in working mode can function as the driver trainers position in running mode and vice versa.	Fully Compliant	LinsingerPartTRS-RHP-80-Driver training position.pdf
TRS-RHP-7	RAM			
TRS-RHP-151	The railhead profiling machine shall undertake self test upon start up and report any issues with the vehicle that may prevent successful completion of the task.		Fully Compliant	LinsingerPartTRS-RHP-151-Fault messages.pdf LinsingerPartTRS-RHP-151-Self test.pdf
TRS-RHP-81	No single point of failure shall prevent completion of maintenance tasks or handback into passenger service, where practicable.		Fully Compliant	LinsingerPartTRS-RHP-81-Maintenance matrix.pdf LinsingerPartTRS-RHP-81-Maintenance tasks.pdf
TRS-RHP-83	Failure of railhead profiling equipment shall not prevent vehicle operation in transit or recovery.	For example, equipment fouling the gauge must be capable of being returned to the stowed position in the event of power or other failure to enable the vehicle to transit to a repair site.	Fully Compliant	LinsingerPartTRS-RHP-83-Failure in transit or recovery.pdf LinsingerPartTRS-RHP-83-Chapter_M02.6_Emergency Recovery_E_S10003.pdf
TRS-RHP-84	Technical support shall be provided for maintenance and operations queries.		Fully Compliant	Covered under the TSSSA
TRS-RHP-85	Maximum Active Repair Time for any line replaceable unit (LRU) shall not exceed 13 hours.		Fully Compliant	LinsingerPartTRS-RHP-85-Max. active repair time.pdf

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ID	Requirement Text	Supporting Information	Compliance Status	Evidence Reference
TRS-RHP-153	Line replaceable units shall be capable of being replaced at the Plumstead maintenance facility.	The Plumstead shed contains a maintenance pit, overhead crane, various manipulators, jacks and fork-lift access to the sides.	Fully Compliant	LinsingerPartTRS-RHP-153 Lifting the machine in the workshop.pdf LinsingerPartTRS-RHP-153-Line replaceable units.pdf
TRS-RHP-87	The railhead profiling machine shall have a minimum availability of 280 operating shifts per year.	To facilitate this, all maintenance short of overhaul shall be undertaken at the Plumstead maintenance facility to minimise loss of availability due to transit. Specific maintenance facilities necessary to achieve this should be defined at an early design stage to enable this. Average availability figures must consider unavailability due to heavy overhaul activities.	Fully Compliant	LinsingerPartTRS-RHP-87-Minimum availability of shifts.pdf
TRS-RHP-173	The railhead profiling machine shall have a minimum shift completion rate of 98%.	The shift completion rate allows failures to occur more frequently, so long as they do not affect passenger services.	Fully Compliant	LinsingerPartTRS-RHP-173-Min. shift completion rate.pdf
TRS-RHP-169	The railhead profiling machine shall have a mean time between service affecting failure of 2400 hours.	This is based on an 8 hour operating shift and includes failures relating to the signalling system.	Fully Compliant	LinsingerPartTRS-RHP-169-Service affecting failure.pdf
TRS-RHP-88	The supplier shall minimise the need for special tools and equipment, and shall provide any necessary for maintenance or operation.		Fully Compliant	LinsingerPartTRS-RHP-88-Need of special tools.pdf
TRS-RHP-49	The railhead profiling machine shall have a minimum design life of 25 years.		Fully Compliant	LinsingerPartTRS-RHP-49-Min. Design Life.pdf

ID	Requirement Text	Supporting Information	Compliance Status	Evidence Reference
TRS-RHP-154	The supplier shall provide an obsolescence management service and document this in a Post-manufacture support plan.	<p>The Post Manufacture Support Plan shall assess the expected useful life of the equipment.</p> <p>Identify support items associated with the equipment that will present potential problems due to inadequate sources of supply after shutdown of manufacturing lines.</p> <p>Develop and analyse alternative solutions for anticipated support difficulties during the remaining life of the equipment.</p> <p>Develop a plan that ensures effective support during its remaining life along with the estimated funding requirements to implement the plan.</p> <p>As a minimum, this plan shall address manufacturing, hardware and software support, repair centre, data modifications, supply management, configuration management and obsolescence.</p>	Fully Compliant	<p>LinsingerPartTRS-RHP-49-Min. Design Life.pdf</p> <p>LinsingerPartTRS-RHP-154-Example Obsolescence Management Plan.pdf</p>
TRS-RHP-89	Vehicle health status data shall be transmitted via wifi (and/or 4g) to the RfL asset management system.	RSSB are producing guidance to describe a common data format that can be interpreted by different Infrastructure Managers. This requirement could be achieved through translation of the data once uploaded from the machine.	Fully Compliant	LinsingerPartTRS-RHP-89-Wifi RfL.pdf
TRS-RHP-131	Regular Maintenance regimes shall not prevent a vehicle being available for more than 4 consecutive days.	Allowance for heavy overhaul off site every 8 years or more should not be included in this requirement.	Fully Compliant	LinsingerPartTRS-RHP-131-Reg. maintenance regimes.pdf

ID	Requirement Text	Supporting Information	Compliance Status	Evidence Reference
TRS-RHP-142	Secondary means of removing vehicle data shall be provided through USB connection.		Fully Compliant	LinsingerPartTRS-RHP-142-Secondary means of removing data.pdf
TRS-RHP-130	Systems shall be designed to be modular and use commonly available (COTS) parts where practicable.	The design should permit removal and replacement of modules to ensure part supply is available and that the vehicle can be upgraded to ensure continued supply	Fully Compliant	LinsingerPartTRS-RHP-130-COTS.pdf
TRS-RHP-8	EMC			
TRS-RHP-51	The railhead profiling machine shall be compatible with the electromagnetic environment of the Crossrail Central Operating Section and any other routes over which the machine is expected to run.	This must be demonstrated through the EMC processes defined in this contract.	Fully Compliant	EMC test report.pdf
TRS-RHP-91	Environment			
TRS-RHP-92	All lubricants and hydraulic oils shall have a minimal environmental impact and where possible shall be biodegradable or have long life properties to minimise disposal of oils and lubricants.		Fully Compliant	LinsingerPartTRS-RHP-92-Lubricants, hydraulic oils.pdf LinsingerPartTRS-RHP-92-Appendix A.pdf LinsingerPartTRS-RHP-92-Appendix B.pdf LinsingerPartTRS-RHP-92-Appendix C.pdf LinsingerPartTRS-RHP-92-Appendix D.pdf LinsingerPartTRS-RHP-92-Appendix E.pdf LinsingerPartTRS-RHP-92-Appendix F.pdf LinsingerPartTRS-RHP-92-Appendix G.pdf

ID	Requirement Text	Supporting Information	Compliance Status	Evidence Reference
TRS-RHP-148	Where practical, vehicles shall be capable of providing auxiliary power without use of the main engine when stabling.	During service, the train may be required to operate between passenger trains and hold in sidings to wait for the end of service.	Fully Compliant	LinsingerPartTRS-RHP-148-Vehicle battery 2 x Sonnenschein A512 200Ah.pdf
TRS-RHP-150	Means of detecting and preventing leaking fluid shall be provided in the event of a hydraulic failure.	<p>The operator should be made aware of potential loss of fluid as soon as practicable, with affected areas automatically isolated to prevent further loss to minimise the risk of fluid loss within the tunnels.</p> <p>Spill kits should be available to enable spilled fluids to be contained and removed.</p>	Fully Compliant	<p>LinsingerPartTRS-RHP-150-Detecting, preventing leaking fluid.pdf</p> <p>- LinsingerPartTRS-RHP-150-Diesel level.pdf</p> <p>- LinsingerPartTRS-RHP-150-Oil level.pdf</p>
TRS-RHP-9	O&M Requirements			

ID	Requirement Text	Supporting Information	Compliance Status	Evidence Reference
TRS-RHP-52	Training shall be provided for maintenance and operation of the vehicle.	Details of the level of training required are provided in CRL1-RFL-O8-RSW-CR001-50001	Fully Compliant	LinsingerPart6.10.1-Training Services.pdf LinsingerPart6.10.1-Training_Matrix.pdf LinsingerPart6.10.1-Example DB Working Approval.pdf LinsingerPart6.10.1-Example Documentation Chapter 00.pdf LinsingerPart6.10.1-Example Documentation Chapter A01.pdf LinsingerPart6.10.1-Example Documentation Chapter M01.pdf LinsingerPart6.10.1-Example Documentation Chapter M02.pdf LinsingerPart6.10.1-Example Documentation Chapter S1.pdf LinsingerPart6.10.1-Example Documentation Chapter S2.pdf LinsingerPart6.10.1-Example Training Certificate.pdf LinsingerPart6.10.1-Example Training HKMTR.pdf LinsingerPart6.10.1-Template Training Attendance Sheet.pdf LinsingerPart6.10.1-Template Training Certificate.pdf
TRS-RHP-93	Operations and Maintenance information shall be provided (where applicable) in accordance with the Crossrail Operation & Maintenance (O&M) Information Requirements (CRL1-XRL-K2-ZTM-CR001-50001).	Documentation should be provided in xml format (printable to pdf) and compatible with portable readers compliant with Raildex (see http://www.raildex.com/)	Fully Compliant	

ID	Requirement Text	Supporting Information	Compliance Status	Evidence Reference
TRS-RHP-98	A recovery/rescue manual shall be provided.	Documentation should be provided in xml format (printable to pdf) and compatible with portable readers compliant with Raildex (see http://www.raildex.com/)	Fully Compliant	
TRS-RHP-68	Vehicles shall be finished with Crossrail livery.	Details of the required livery are not yet available, but will be primarily yellow in accordance with RIS-1702-PLT.	Fully Compliant	LinsingerPartTRS-RHP-68-Crossrail Livery.pdf
TRS-RHP-10	Standards and Procedures			
TRS-RHP-101	Design and build of all vehicles shall comply with relevant TSIs.	Compliance will be determined by the Notified Body who will provide certification to demonstrate compliance.	Fully Compliant	LinsingerPart6.9.1-Compliance.pdf
TRS-RHP-156	Design and build of all vehicles shall comply with relevant NNTRs.	Compliance will be determined by the Designated Body who will provide certification to demonstrate compliance.	Fully Compliant	LinsingerPart6.9.1-Compliance.pdf
TRS-RHP-149	Design and build of the vehicles shall be compliant with the European Machinery Directive for both operation and maintenance.		Fully Compliant	LinsingerPart6.9.1-Compliance.pdf
TRS-RHP-99	Design and build of the vehicles and equipment shall comply with RIS-1702-PLT.	Evidence of compliance must be provided in the form of certification from the appropriate accredited body (A Plant Acceptance Body - PAB) The process is described in RIS-1710-PLT	Fully Compliant	LinsingerPart6.9.1-Compliance.pdf

ID	Requirement Text	Supporting Information	Compliance Status	Evidence Reference
TRS-RHP-102	Compatibility files shall be produced in accordance with GMRT8270 to demonstrate compatibility with the Crossrail Central Operating Section infrastructure.	The manufacturer will act as the 'bringer of change'.	Fully Compliant	LinsingerPart6.9.1-Compliance.pdf
TRS-RHP-100	Vehicles shall be demonstrated to be compatible with Network Rail over the Network Rail Crossrail routes in running mode as a minimum.	The manufacturer will act as the 'Proposer' as defined in GE/RT8270. Compatibility files must be produced and signed off by the relevant IM representative. "Introducing new vehicles or changes to vehicles" provides guidance on the Network Rail process for demonstrating compatibility. Additional considerations beyond Crossrail compatibility include signal sighting and track circuit compatibility.	Fully Compliant	LinsingerPart6.9.1-Compliance.pdf

Reference Documents

List of reference documents called up in the scope:

Ref	Document Number	Title	Paragraph referenced
1	RIS-1702-PLT issue 1	Rail Industry Standard for the Design of On-track Machines in Working and Travelling Modes	Assurance 2.4
2	CRL1-RFL-O-GPD-CR001-50001	Railway Approvals Board Crossrail – Terms of Reference	Assurance 3.8
3	CRL1-XRL-O8-GPD-CR001-50002	Hazard Management Procedure	Assurance 3.9
4	CR-MS-102-02-0002	Rolling Stock Hazard Review Panel Terms of Reference	Assurance 3.10
5	CR-MS-103-02-0046	Rail for London Product Acceptance Procedure	Assurance 3.11
6	NR/L2/TRK/2102	Design and Construction of Track	TRS-RHP-170
7	C620-SIC-R2-RSP-CR001-50088	Interface Specification Yellow Fleet Airlink / RST	TRS-RHP-58
8	C620-SIC-R2-RSP-CR001-50089	Yellow Plant - TMS Interface	TRS-RHP-58
9	C620-SIC-R2-RSP-CR001-50090	Yellow Plant DMI Interface	TRS-RHP-58
10	C620-SIC-R2-RSP-CR001-50091	Yellow Plant ETCS Interface	TRS-RHP-58
11	C620-SIC-R2-RSP-CR001-50098	Yellow Plant RST Interface	TRS-RHP-58
12	C620-XRL-R2-RSP-CRG03-Z-50005	Engineering Train & Onboard S&CS Interface Specification	TRS-RHP-58
13	C122-OVE-R4-RGN-CRG01-00004	Trackwork Design Report	TRS-RHP-138
14	C122-OVE-R4-RGN-CRG01-50003	Central Section Structure Gauge	TRS-RHP-73
15	CRL1-RFL-RSWO8-CR001-00001	Rail For London Yellow Plant Minimum Training Requirements	TRS-RHP-52
16	CRL1-XRL-K2-ZTM-CR001-50001	Operation & Maintenance (O&M) Information Requirements	TRS-RHP-93
17	CRL1-RFL-O8-XWI-CR001-50002	Railhead Profiling Machine Technical Solution	TRS section 1.2

Document uncontrolled once printed. All controlled documents are saved on the CRL Document System

SCHEDULE 1A: SPECIFICATION

Appendix 1: CBTC Signalling Installation Instructions

SCHEDULE 1B: MANAGEMENT OF DELIVERY

1. Project Management

1.1 Overview

The Purchaser will collaborate with the Manufacturer in the safe and controlled introduction of new or modified Units onto the Crossrail Infrastructure (as such term is defined in Schedule 1A (*Specification*)) in a timely manner.

1.2 Project Start Meeting

Within 10 Working Days of the Commencement Date, the Purchaser will convene a project start meeting with the Manufacturer. The purpose of this meeting is to establish how this Agreement will be delivered. The Purchaser shall issue an agenda in advance of the meeting which shall include inter alia:

- Definition of stakeholders, roles and responsibilities;
- Approach to health & safety;
- Routes and forms of communication;
- Project meetings structure and attendees;
- Planning and programme management;
- Project deliverables; and
- Change control.

1.3 Programme

1.3.1 The Manufacturer shall provide a detailed Contract Programme for the delivery of the Plant and Machinery within the time scales defined in this Agreement. The Contract Programme should be in Primavera or MS Project format covering the full scope of the works contemplated by this Agreement and any supporting services e.g. supply of Spares, training, etc.

1.3.2 The Contract Programme shall:

- show a robust, identifiable and deliverable critical path, with logical sequencing covering the full specification. The Contract Programme must be in logic linked CPM network format showing the critical path(s), early start and finish dates, late start and finish dates and total float. The Manufacturer must submit the Contract Programme in both hardcopy and electronic formats (either XER or MS Project (2010 version or later)).
- not contain any activities that last longer than 60 Working Days, with the exception of submission review/acceptance, material fabrication/procurement activities.

- show achievable activity durations aligned to the productivity assumptions stated;
- include activity and total time risk allowances/floats which demonstrate adequate provision;
- show achievable activity durations aligned to stated productivity assumptions;
- show design, testing and commissioning and handover, acceptance activities and interdependencies (including activities carried out by others where there are interdependencies) are all identified, allowed for and compliant with all programme constraints; and
- include, but not be limited to, the following activities and milestones:
 - Key Dates;
 - Payment application Milestones;
 - Third party dependencies;
 - Mobilisation;
 - Design requirement affirmation;
 - Preliminary Unit Design commencement and completion;
 - Technical compliance confirmation;
 - Preliminary Unit Design submitted to the Purchaser;
 - Preliminary Unit Design approval;
 - Detailed Design commencement and completion;
 - Design integration with signalling systems;
 - Interdisciplinary reviews and checks, as applicable;
 - Detailed Design submitted to the Purchaser;
 - Detailed Design approval;
 - Procurement of material and long lead items (including critical Spares);
 - Technical Assurance Plan (to include all test plans);
 - Component testing;
 - Completion of Static Tests and factory acceptance tests;
 - Delivery to Dynamic Test site;
 - Completion of Dynamic Tests (SAT on proxy test facility);

- Pre-delivery acceptance test (fault free mileage and operation);
- Plant and Machinery available for delivery to allow commencement of Infrastructure Testing;
- Delivery including delivery methods to Purchaser's specified site;
- production of training documentation, training of staff in the use and maintenance of the rail head profiling machine;
- Submission of operations and maintenance manual;
- Completion of Dynamic Testing and Infrastructure Testing on Crossrail Infrastructure (as such term is defined in Schedule 1A (Specification));
- Authorisation to place into service (APIS) – approved by the Office of Rail and Road;
- Take Over Certificate / Qualified Take Over Certificate; and
- Fleet Acceptance Certificate.

1.4 Progress Monitoring

1.4.1 Progress Meetings

Both Parties shall review progress every four weeks at an agreed location. These meetings will be recorded by the Purchaser with meeting minutes agreed, circulated to appropriate stakeholders and filed for project reference.

Where appropriate the Manufacturer may be requested to take part in intermediate review meetings with the Purchaser during the project. This may range from a brief review phone call, a video conference, or a face to face meeting.

1.4.2 Progress Report

Five days in advance of a progress review meeting, the Manufacturer shall provide the Purchaser with a progress report containing details of the Design, manufacture, testing and commissioning, approval and acceptance phases of the project as appropriate, including:

- the up to date Contract Programme;
- commentary on any variances against previous programme submission;
- early warning notices issued by either party regarding any issues that may affect safety, the Contract Programme, quality or cost;
- risks and/or issues that have emerged related to the project; and
- narrative describing progress since the previous report including photos, where appropriate.

1.5 Communication

1.5.1 General Correspondence

The Purchaser shall provide the Manufacturer with templates for project communication and early warning notification between both parties.

Unless instructed otherwise, the Manufacturer shall submit all written documents (including programmes and drawings) to be provided pursuant to this Agreement:

- (i) in English;
- (ii) in electronic form;
- (iii) in good legible quality;
- (iv) where applicable , with incorporated definitions, a graphic scale, and/or any
- (v) other appropriate guide for interpretation; and
- (vi) under cover of a document transmittal.

All correspondence from either Party should be given a unique project communication reference number whenever issued. Project correspondence, technical queries and early warning notices are to be treated as everyday communication and should be sent via email. The address for such communication is [x].

1.6 Other Documentation

The Purchaser shall provide the Manufacturer with access to the Purchaser's preferred method of sharing this information, which will be online via an internet based method which is currently SharePoint.

1.7 Change Management

The following provide a link between the process for identification and resolution of technical issues and the formal variation procedure set out in Clause 23 of this Agreement.

1.7.1 Technical Queries

Requests for technical guidance, clarification etc. raised by the Manufacturer will be logged and attended to the Purchaser in a timely manner. The Purchaser will seek to respond within 10 Working Days of receipt of such requests.

1.7.2 Early Warning Mechanism

Where either party identifies a concern with regard to safety, the Contract Programme, quality or cost associated with delivery of the project then the relevant party shall issue an early warning notice. Such notices will be recorded and subject

to regular review to enable issues to be evaluated, prioritised and ultimately resolved or mitigated in a timely manner.

1.8 Risk Management

The Purchaser will apply a formal risk management process, recording any risks. The Manufacturer shall support the Purchaser with the identification, evaluation and development of mitigation actions and with the regular formal review of risks.

2. Pathway Templates

2.1 The Appendices to this Schedule 1B (*Management of Delivery*) include templates to be used by the Parties in respect of the following matters contemplated by this Schedule 1B (*Management of Delivery*):

2.1.1 Technical Query (Appendix 1 of Schedule 1B (*Management of Delivery*)); and

2.1.2 Early Warning Notice (Appendix 2 of Schedule 1B (*Management of Delivery*)).

Appendix 2 – Early Warning Notice Form

Purchaser _____ Manufacturer _____ Purchaser Representative _____		
EARLY WARNING NOTICE	EW No.	
Issued by Purchaser Representative to Manufacturer <input type="checkbox"/> Manufacturer to Purchaser Representative <input type="checkbox"/> Tick box as appropriate		
Description of Early Warning 		
Is the matter referred to above likely to		
	Yes	No
Increase the Contract Price	<input type="checkbox"/>	<input type="checkbox"/>
Delay Take Over	<input type="checkbox"/>	<input type="checkbox"/>
Impair the performance of the Plant and Machinery in use	<input type="checkbox"/>	<input type="checkbox"/>
Is a meeting required	<input type="checkbox"/>	<input type="checkbox"/>
Tick box as appropriate		
Signed _____	(Purchaser Representative / Manufacturer*) <i>*delete as necessary</i>	Date _____

SCHEDULE 2: CONTRACT PROGRAMME

Within the period stated in the Contract Particulars the Manufacturer shall, in accordance with Clause 8.1, submit a programme to the Purchaser Representative for his acceptance.

SCHEDULE 3: SPARES AND SPECIAL TOOLS

PART A: MAINTENANCE SPARES

The information forming Part A of Schedule 3 is to be provided by bidders in Tender Form 3.

Maintenance Spare	Quantity

PART B: ADDITIONAL SPARES

The information forming this Part B of Schedule 3 is to be provided by bidders in Tender Form 3.

Spares	Price per item (£)

PART C: SPECIAL TOOLS

The information forming this Part C of Schedule 3 is to be provided by bidders in Tender Form 3.

Spares	Price per item (£)	Quantity

SCHEDULE 3A: CONTINUING SUPPORT

The information forming this Schedule 3A is to be provided by bidders in Tender Form 3.

SCHEDULE 4: CONTRACT PRICE

PART 1 – PRICING PREAMBLES

1. PRICING INTRODUCTION

1.1 This Part 1 provides further details with respect to the Contract Price.

2. PRICING CONCEPT

2.1 The Contract Price is a fixed sum, for the duration of the Agreement, adjusted in accordance with the contractual Variation procedure. The VAT treatment of supplies pursuant to this Agreement shall be as set out in Clause 21 of this Agreement.

2.2 The Manufacturer will be provided facilities by the Purchaser for Infrastructure Tests, rectification of Defects during the Defect Rectification Period and for compliance with Schedule 3A (*Continuing Support*). Examples of facilities provided include, but are not limited to:

2.2.1 Temporary accommodation;

2.2.2 Health, welfare and safety equipment; and

2.2.3 Admin facilities at the Purchaser's Ruislip's depot, such as desks.

2.3 The Contract Price shall be inclusive of all costs and charges whatsoever and shall be deemed to include all costs, overheads, profit, risk allowances and the like required for the Manufacturer's performance of this Agreement.

3. PRICING APPROACH

3.1 The Contract Price shall be in Sterling and shall include all applicable taxes including any import/export taxes and all other statutory costs and the like but excluding VAT (which shall be dealt with pursuant to Clause 21 of this Agreement).

3.2 Notwithstanding paragraph 2.2 above, the rates and prices for all items and activities required for the Manufacturer's performance of this Agreement are deemed to be fully inclusive, and shall include (without limitation) the following:

3.2.1 Preliminaries

- i) Head Office, Branch Office and Manufacturer's Works Support - All Head Office, Branch Office and Manufacturer's Works costs directly related to this Agreement including, supervisory, liaison, engineering, planning, quality assurance and administrative staff including all associated overheads, communications and data costs, stationery, printing, postage, etc. not included in the percentage addition for overheads and profit.

- ii) All costs of temporary accommodation and sanitary facilities necessary for site staff including all associated costs including heating, lighting, furniture, first aid, associated consumables and all other safety, health and welfare facilities.
- iii) Site Communications - All costs in connection with the provision of telephones and portable telephones including installation costs, rental and calls, costs of usage of public telephones and other communication equipment and consumables in connection with performing the Agreement.
- iv) Training Requirements - Course and examination fees and all costs of staff attending medical examinations and training courses in connection with performing the Agreement. All costs of Manufacturer run courses and licensing of staff.
- v) Insurance - All costs of complying with the insurance requirements as set out in the Agreement

3.2.2 Mobilisation

The mobilisation costs shall include (without limitation) staff costs, costs of training, recruitment, establishment of facilities, purchase of equipment, establishment of process and procedures etc and all other items necessary for the successful commencement of the performance of the Agreement. All costs in connection with mobilisation, set-up and the like and management thereof are deemed to be included.

3.2.3 Overheads and Profit - For the avoidance of doubt, overheads shall be deemed to include (without limitation):-

Corporate overhead contribution, profit recovery, headquarters staff costs, Manufacturer offices, yards, depots and other buildings and associated plant, Manufacturer's equipment and vehicles. rents, rates, insurances, running, maintenance and replacement costs for the above, general and administrative head and branch office staff salaries and wages, emoluments, expenses and allowances and all other costs of employment, including costs of and allowance for motor cars, subsistence, hotels, accommodation and the like, travel and associated expenses for directors and general and administrative head and branch office staff, legal and accountancy fees and costs, any financing costs and depreciation associated with all of the above, other non-job related costs and other indirect costs associated with the Agreement.

3.2.4 Attendance and Reporting

The Contract Price is deemed to be fully inclusive of the costs of the Manufacturer's recording and provision of information in accordance with this Agreement including as requested by the Purchaser Representative. The Contract Price is also deemed to include the costs of the Manufacturer's personnel attending any meetings.

3.2.5 Administration of Change

The Contract Price is deemed to be fully inclusive of the costs of the Manufacturer's recording and provision of information in accordance with any Variation Quote, the costing or administration of the Variation Procedure.

PART 2 – PAYMENT

1. CONTRACT PRICE

- 1.1 The Manufacturer will be entitled to submit a payment application in respect of a Milestone upon completion of all of the stated criteria, as set out in Part 4 (Payment Milestones) for each relevant Milestone.

2. VARIATIONS

- 2.1 Where a Variation varies the Contract Price, the Variation will be paid by varying the amount due at the relevant Milestone to which the Variation relates. Where the Variation relates to two or more Milestones, the value of the Variation will be divided between those Milestones, based on allocating the value of the Variation between the Milestones in proportion to the value of the Variation related to each Milestone.
- 2.2 Where a Variation varies the Contract Price and the Milestone to which the Variation relates has been paid, payment will be made by varying the amount due in respect of the subsequent Milestone.
- 2.3 Otherwise Variations will be paid once the instructed Variation has been fully completed, unless it is set out in the Variation that payment may be applied for on an interim basis.
- 2.4 Where a Variation does not relate to a Milestone, the Manufacturer will be entitled to apply for payment in respect of Variations at intervals of not less than a month. The Manufacturer may apply for payment of one or more Variations at the same time.

3. CONTINUING SUPPORT

- 3.1 The Manufacturer will be entitled to payment for Schedule 3A (*Continuing Support*) upon completion of its obligations under Schedule 3A (*Continuing Support*) in accordance with the terms of this Agreement.

PART 3 – CONTRACT PRICE BREAKDOWN

The information forming this Part 3 of Schedule 4 is to be provided by bidders in Tender Form 3.

PART 4 - PAYMENT MILESTONES

The information forming Column 4 of this Part 4 of Schedule is to be provided by bidders in Tender Form 3.

The Payment Milestones for the Fixed Price Element of the Contract Price are:

Payment Number	Milestone	Evidence supporting milestone attainment	Milestone amount
1	Commencement Date	<ol style="list-style-type: none"> 1 The date specified as such in the Contract Particulars having occurred, or if no date is specified, the date specified in a written notice by the Purchaser to the Manufacturer instructing it to commence the provision of works and services under this Agreement having occurred; and 2 Receipt by the Purchaser of: <ol style="list-style-type: none"> (vii) the original Performance Bond, duly executed by the parties thereto; and (viii) (ii) the Manufacturer Guarantee, duly signed and dated by the Manufacturer Guarantor; 	[]%
2	Upon order of major components and/or subsystems for the vehicles and/or the modules	<p>Major components comprising of but not limited to :-</p> <ul style="list-style-type: none"> - wheelsets & bogies - engines / power units / gearbox - underframe / body shell - working module 	[]%
3	Preliminary Unit Design phase complete (Key Date)	Complete in accordance with paragraph 16.6a of the Assurance section of Schedule 1A (<i>Specification</i>). Submission of the signed certificate from the Purchaser of Assurance Acceptance confirming that Preliminary Unit Design phase is complete.	[]%

4	Build commencement demonstrated by completion of main frames (welding & painting) for the vehicles and/or the modules)	Completion of main frames (welding & painting) for the vehicles and/or the modules).	[]%
5	Detailed Design Phase complete	Detailed Unit Design stage gate review complete in accordance with paragraph 16.7 of the Assurance section of Schedule 1A (<i>Specification</i>). Submission of the signed certificate from the Purchaser of Assurance Acceptance confirming that Detailed Design Phase is complete.	[]%
6	Agreed Technical Assurance Plan	Technical Assurance Plan agreed with the Purchaser in accordance with paragraph 2.4 of the Assurance section of Schedule 1A (<i>Specification</i>).	[]%
7	Start of Factory acceptance testing of the Units	As defined by the Technical Assurance Plan and paragraph 13 of the Assurance section of Schedule 1A (<i>Specification</i>).	[]%
8	Factory acceptance testing test complete	As defined by the Technical Assurance Plan and paragraph 13 of the Assurance section of Schedule 1A (<i>Specification</i>).	[]%
9	Qualified Take Over	The Qualified Take Over by the Purchaser of any Plant and Machinery which does not comply in all respects with the Take Over Criteria pursuant to Clause 12.4.3 of this Agreement, as evidenced by the issue of a signed QTOC.	[]%
10	Take Over	(a) In respect of any Plant and Machinery, that the Plant and Machinery complies fully with the Take Over Criteria as evidenced by and occurring upon the issue by the Purchaser's Representative of a TOC for that Plant and Machinery; and	[]%

		(b) In respect of any other item of Goods, that it has been delivered to the Purchaser in accordance with the provisions of this Agreement.	
17	Final "Fleet" Acceptance	The Plant and Machinery complies with the Fleet Acceptance Criteria as evidenced by and occurring upon the issue of a Fleet Acceptance Certificate for the Plant and Machinery.	[]%

PART 5 – VALUATION OF VARIATIONS

1. SCHEDULE OF RATES AND PRICES

1.1 The rates and prices that shall be used to determine the value of Variations in accordance with Clause 23.3 are set out in Part 6 of this Schedule 4.

1.2 In respect of costs incurred / to be incurred by a third party, the basis of the valuation of this element of the Variation shall be a dated quotation from the third party, to which a ■■■ addition, to cover all overheads and profit, may be added. Where the Variation relates to goods, works or services which are significant in value and may be provided by a number of different organisations, the Purchaser Representative may request that the Manufacturer provide three dated quotations and for the value of the Variation to be based on the one that provided best value.

2. CONVERSION OF SUMS INTO STERLING

2.1 Where a sum forming part or all of the value of a Variation is not in Sterling, the following will apply:

2.1.1 A dated invoice / quotation from the third party will form the basis of the valuation.

2.1.2 A currency conversion will be applied based on the Bank of England's Sterling foreign exchange reference rates as published at:

<http://www.bankofengland.co.uk/boeapps/iadb/Rates.asp>

or such other address as may be used by the Bank of England or other body which takes over its function, as at the same date as that on the invoice / quotation.

PART 6 – SCHEDULE OF RATES AND PRICES

The information forming this Part 6 of Schedule is to be provided by bidders in Tender Form 3.

SCHEDULE 5: KEY PERSONNEL

The information forming this Schedule 5 is to be provided by bidders in Tender Form 6.

SCHEDULE 6: FORM OF CERTIFICATES

PART A: FORM OF QUALIFIED TAKEOVER CERTIFICATE

QUALIFIED TAKE OVER CERTIFICATE		
TAKE OVER CERTIFICATE	TO No.	
In accordance with Clause 12.4 (Take Over) I hereby certify: <ul style="list-style-type: none"> • The Plant and Machinery to which this certificate relates can be operated safely and in accordance with all Applicable Laws and the terms of all Relevant Consents • That the following Take Over Criteria have not been satisfied: 		
Take Over Criterion (as Clause 12.4.1)	Reason(s) not met	
(B)		
(C)		
(D)		
(E)		
(F)		
(H)		
(I)		
Actual completion was	Day	Month
		Year
In accordance with clause 12.5 (Qualified Take Over) the Manufacturer shall satisfy the following conditions and complete the following tasks:		
	Condition to be satisfied / task to be performed	Timetable completion for
1		
2		
3		
4		
5		
6		
7		
All the above must be complete on or before [date on which Fleet Acceptance is scheduled to occur pursuant to the Contract Programme]		
Signed _____ Purchaser Representative Date _____		

Purchaser	_____
Manufacturer	_____
Purchaser Representative	_____

TAKE OVER CERTIFICATE, FOLLOWING QTOC

TO No.

In accordance with clause 12.5 (Qualified Take Over) of the above contract I hereby certify that following conditions have been satisfied / tasks have been performed:

--

Take Over was achieved on **Day Month Year**

Signed _____ Purchaser Representative Date _____

PART B: FORM OF TAKE OVER CERTIFICATE

Purchaser		
Manufacturer		
Purchaser Representative		
TAKE OVER CERTIFICATE	TO No.		
In accordance with Clause 12.4 (Take Over) of the above contract we hereby certify that the Goods specified in the schedule below was completed and has passed all Tests required by the Test Plan required to be performed prior to Take Over and the Take Over Criteria have been satisfied.			
<p>SCHEDULE</p> <p>[Plant and Machinery to which this certificate applies]</p>			
Planned completion was	Day	Month	Year
Signed	For the Manufacturer	Date	
Signed	Purchaser Representative	Date	

PART C: FORM OF FLEET ACCEPTANCE CERTIFICATE

Purchaser	
Manufacturer	
Purchaser Representative	
FLEET ACCEPTANCE CERTIFICATE	
In accordance with Clause 12.6 (Fleet Acceptance) of the above contract we hereby certify that the Fleet Acceptance Criteria have been satisfied.	
<p>SCHEDULE</p> <p>[Plant and Machinery to which this certificate applies]</p>	
Planned completion was	Day Month Year
Signed _____	For the Manufacturer Date _____
Signed _____	Purchaser Representative Date _____

SCHEDULE 7: FORM OF MANUFACTURER GUARANTEE²

THIS GUARANTEE is made the day of 201

BETWEEN:

- (1) [Linsinger Maschinenbau Gesellschaft m.b.H.] a company registered in Austria under number [FN 383993x] and having its registered office at [Dr. Linsinger Strasse 23-24, 4662 Steyrermuehl, Austria] (the "**Guarantor**");
- (2) [] a company registered in England and Wales under number [] and having its registered office at Windsor House, 42-50 Victoria Street, London SW1H 0TL (the "**Company**" which expression shall include its successors in title and assigns); and
- (3) [Linsinger Maschinenbau Gesellschaft m.b.H.] a company registered in Austria under number [FN 383993x] and having its registered office at [Dr. Linsinger Strasse 23-24, 4662 Steyrermuehl, Austria] (the "**Supplier**").

WHEREAS:

- (A) This Guarantee is supplemental to a contract (the "**Contract**") for the carrying out of [] at [] made between (1) the Company and (2) the Supplier.
- (B) The Guarantor has agreed to guarantee to the Company the due and punctual performance of the Contract by the Supplier in the manner hereinafter appearing.
- (C) The Supplier is a party to this Guarantee in order to confirm its request that the Guarantor provide this Guarantee on the terms set out herein.

NOW IT IS HEREBY AGREED as follows:

1. The Guarantor unconditionally guarantees to the Company the proper and punctual performance and observance by the Supplier of all its obligations, warranties, duties, undertakings and responsibilities under the Contract and shall forthwith make good any default thereunder on the part of the Supplier and the Guarantor shall pay or be responsible for the payment by the Supplier to the Company of all sums of money, liabilities, awards, losses, damages, costs, charges and expenses that may be or become due and payable under or arising

² Consider whether a legal opinion is or may be required. This is required where the Guarantor providing the PCG/Bond is a foreign entity. Depending on the identity/standing of the Guarantor you may wish to consider whether it is necessary to insist on requiring the opinion as it is an added form of protection in respect of the Guarantor's obligations under the PCG/Bond. The form of opinion can be found as a standalone document and added as necessary.

out of the Contract in accordance with its terms or otherwise by reason or in consequence of any such default on the part of the Supplier.

2. This Guarantee shall be a continuing guarantee and indemnity and accordingly shall remain in full force and effect until all obligations, warranties, duties and undertakings now or hereafter to be carried out or performed or observed by the Supplier under or arising out of the Contract have been duly and completely performed and observed in full.
3. The Guarantee is in addition to and not in substitution for any other security or warranty which the Company may at any time hold for the performance of any obligations, warranties, duties and undertakings under the Contract and may be enforced by the Company without first taking any proceedings or exhausting any right or remedy against the Supplier or any other person or taking any action to enforce any other security, bond or guarantee.
4. The Guarantor shall be under no greater obligation or greater liability under this Guarantee than it would have been under the Contract if it had been named as the Supplier in the Contract.
5. The obligations and liabilities hereunder shall remain in full force and effect and shall not be affected, lessened, impaired or discharged by:
 - (a) any alteration or variation to the terms of the Contract;
 - (b) any alteration in the extent or nature or sequence or method or timing or scope of the works, services or supplies to be carried out under the Contract;
 - (c) any extension of time being given to the Supplier or any other indulgence or concession to the Supplier or any forbearance, forgiveness or any other thing done, omitted or neglected to be done under the Contract;
 - (d) any other bond, security or guarantee now or hereafter held for all or any part of the obligations of the Supplier under the Contract;
 - (e) the release, modification, exchange or waiver of any such bond, security or guarantee;
 - (f) any amalgamation or reconstruction or dissolution including liquidation of the Supplier;
 - (g) the making of a winding up order, the appointment of a provisional liquidator, the passing of a resolution for winding up, liquidation, administration, receivership or insolvency of the Supplier;
 - (h) any legal limitation, disability or incapacity relating to the Supplier (whether or not known to you);

- (i) any invalidity in, irregularity affecting or unenforceability of the obligations of the Supplier under the Contract;
 - (j) the termination of the Contract; or
 - (k) anything the Company or the Supplier may do or omit or neglect to do including, but without limitation, the assertion of or failure or delay to assert any right or remedy of the Company or the pursuit of any right or remedy by the Company.
6. Until all amounts which may be or become payable and all liabilities, obligations, warranties, duties and undertakings in respect of the Supplier's obligations have been irrevocably paid, performed or discharged in full, the Guarantor shall not, after a claim has been made or by virtue of any payment, performance or discharge by it under this Guarantee:
- (a) be subrogated to any rights, security or moneys held, received or receivable by the Company or be entitled to any right of contribution or indemnity in respect of any payment made or moneys received on account of the Guarantor's liability under this Guarantee;
 - (b) claim, rank, prove or vote as a creditor of the Supplier or its estate in competition with the Company unless the Company so directs; or
 - (c) receive, claim or have the benefit of any payment distribution or security from or on account of the Supplier, or exercise any right of set-off against the Supplier unless the Company so directs.
7. This Guarantee is irrevocable.
8. The benefit of this Guarantee may be assigned by the Company at any time to any assignee of the benefit of the whole of the Contract. No further or other assignments shall be permitted.
9. The Guarantor:
- (a) gives the guarantee contained in this Guarantee as principal obligor and not merely as surety;
 - (b) agrees to indemnify the Company on written demand against any loss or liability suffered by it if any provision set out in the Contract guaranteed by the Guarantor becomes unenforceable, invalid or illegal, and

- (c) waives any right it may have of first requiring the Company to proceed against, or enforce any other rights or security or claim payment from, any person before claiming from the Guarantor under this Guarantee.
10. Until all amounts which may be or become payable in respect of the Supplier's obligations have been irrevocably paid in full by the Guarantor, the Company may:
- (a) refrain from applying or enforcing any other moneys, security or rights held or received by the Company in respect of those amounts, or apply and enforce the same in such manner and order as it sees fit (whether against those amounts or otherwise) and the Guarantor shall not be entitled to the benefit of the same; and
- (b) hold in a suspense account any moneys received from the Supplier on account of these Supplier's obligations or on account of the Guarantor's liability under this Guarantee.
11. The Company is entitled to make any number of demands under this Guarantee.
12. The invalidity, illegality or unenforceability in whole of or in part of any provisions of this Guarantee shall not affect the validity, legality and enforceability of the remaining part or provisions of this Guarantee.
13. This Guarantee may be executed in any number of counterparts each of which shall be an original and all of such counterparts taken together shall be deemed to constitute one and the same instrument.
14. No person other than TfL (as such term is defined in the Contract) and its subsidiaries (as defined in section 1159 of the Companies Act 2006) shall have any right to claim or remedy under or pursuant to this Guarantee and the provisions of the Contracts (Rights of Third Parties) Act 1999 are hereby excluded.
15. This Guarantee, executed and delivered as a deed, shall be governed by and interpreted according to the laws of England and the Courts of England shall have exclusive jurisdiction save that the Company shall have the right to bring proceedings in the courts of any other jurisdiction in which any of the Guarantor's assets may be situated.
16. *[For non-UK resident Guarantors only:*
- For the purposes of this Guarantee the Guarantor hereby appoints of..... [to be a London address] to accept service of process on its behalf, and service on the said at the said address shall be deemed to be good service on the Guarantor; and the Guarantor hereby irrevocably agrees not to revoke or terminate such appointment].*

Executed as a deed by the parties and delivered on the date of this Guarantee

Executed as a Deed by [GUARANTOR] Linsinger Maschinenbau Gesellschaft m.b.H.)

acting by)  Managing Director

) Authorised Signatory

and

).....

) Authorised Signatory

Executed as a deed by affixing the Common Seal of)

[])

in the presence of: -)

.....

[Authorised Signatory]

Executed as a Deed by [SUPPLIER] Linsinger Maschinenbau Gesellschaft m.b.H.)

acting by)  Managing Director

) Authorised Signatory

and

).....

) Authorised Signatory

SCHEDULE 9: INSURANCE

The Manufacturer shall procure and maintain the insurances as listed below with reputable insurers. The Manufacturer shall ensure any Subcontractors also maintain adequate insurance having regard to their obligations under the relevant Subcontract. Such insurances shall be in effect for the duration of the contract unless otherwise specified. Evidence that such insurance is in effect shall be provided in the form of a broker's letter or similar, within fourteen (14) days of the Commencement Date and at the time of each renewal of such policies. If the Manufacturer fails to maintain the insurance policies as provided in this Schedule 9 (*Insurance*), the Purchaser may effect and keep in force any such insurance and pay such premium or premiums at commercially competitive rates as may be necessary for that purpose and from time to time deduct the amount so paid from any monies due or which become due to the Manufacturer or recover the same as a debt due from the Manufacturer.

- 1.1 Insurance to cover liability for death of or bodily injury or illness sustained by employees of the Manufacturer arising out of or in the course of their employment. Such insurance shall be of an amount and on terms that comply with the appropriate statutory obligations in each country in which the Manufacturer operates.
- 1.2 Public Liability insurance of not less than [REDACTED] per incident or series of incidents arising out of one event; such insurance to cover sums for which the Manufacturer shall be legally liable to pay as damages in respect of death or injury or illness or disease to third parties and/or loss of or damage to third party property. Such insurance shall extend to indemnify the Purchaser as principal, and shall be endorsed such that any care, custody or control exclusion shall not apply to property belonging to the Purchaser or for which the Purchaser is responsible.
- 1.3 Product Liability insurance of not less than [REDACTED] per incident or series of incidents arising out of one event; such insurance to cover sums for which the Manufacturer shall be legally liable to pay as damages in respect of death or injury or illness or disease to third parties and/or loss of or damage to third party property arising as a result of a defect, fault or flaw in the goods supplied. Such insurance shall extend to indemnify the Purchaser as principal, and shall be endorsed such that any care, custody or control exclusion shall not apply to property belonging to the Purchaser or for which the Purchaser is responsible.
- 1.4 Erection All Risk Insurance to cover risks of physical loss or damage to the Goods until Take Over; such insurance shall extend to cover any damage to the Goods by the Purchaser after delivery and prior to Take Over.
- 1.5 Insurance to cover all risk of loss or damage (including theft) to property, the Goods, Plant and Machinery whilst in transit from one place to another or being stored during a journey, whether by land, rail, sea or air.
- 1.6 In the event that the Infrastructure Tests require the Goods to be tested and operated on Network Rail infrastructure, the Purchaser shall use reasonable endeavours to ensure that sufficient public liability insurance is maintained in order to comply with the requirements of the Office of Rail and Road and Network Rail. The Manufacturer shall co-operate with any requests for information to enable such insurance to be effected or with respect to compliance with the terms of the Purchasers' insurances.

SCHEDULE 10: DISPUTE RESOLUTION PROCEDURE

For the purposes of this Dispute Resolution Procedure the following terms have the meanings set out below:

"Adjudicator" means an independent person appointed to act as an adjudicator in accordance with paragraph 8 of this Schedule 10 (*Dispute Resolution Procedure*).

"Dispute" means any dispute, controversy or claim arising out of or in connection with this Agreement.

"Nominating Authority" means the President or Vice President or other duly authorised officer of the London Court of International Arbitration;

"Notice of Adjudication" means any notice given by a Party to the other party or parties to the Dispute requiring reference of a Dispute to the Adjudicator in accordance with paragraph 7. The Notice of Adjudication shall include:

- (i) the nature and a brief description of the Dispute;
- (ii) details of where and when the Dispute arose; and
- (iii) the nature of the redress which is sought.

"Referral Notice" means a notice referring a Dispute to the Adjudicator in accordance with paragraph 11;

"Senior Representative" means a representative of a Party at senior executive level.

- 1 The Purchaser and the Manufacturer shall follow the procedure set out in this Schedule 10 (*Dispute Resolution Procedure*) for the management and resolution of Disputes.
- 2 Subject to paragraph 7, any Dispute may in the first instance be referred in writing from the referring Party to the Senior Representatives by notice in writing to the other Party. The written notice from the referring Party shall give brief written particulars of the Dispute, the relief sought and the basis for claiming the relief sought (including the provisions of this Agreement that are relevant to the Dispute). The written notice shall also identify the referring Party's Senior Representative.
- 3 Within fourteen (14) days of receipt of the notice pursuant to paragraph 2, the responding Party provides the referring Party with a brief written response. The response includes identification of the responding Party's Senior Representative.
- 4 The Senior Representatives shall meet and try to reach agreement to resolve the Dispute referred to them pursuant to paragraph 3.
- 5 If the Senior Representatives are unable to, or fail to, reach agreement to resolve the Dispute within fourteen (14) days after the date of the response under paragraph 3, court proceedings shall not be commenced unless and until the Dispute has first been referred to adjudication (and an Adjudicator's decision has been obtained) in accordance with the

procedure in paragraphs 7–28 and notice has been given in accordance with paragraph 29.

6 Each Party bears its own costs and expenses in relation to any reference of a Dispute to the Senior Representatives. Discussions amongst the Senior Representatives and any documents prepared or exchanged in relation to the reference of the Dispute to the Senior Representatives (including, for the avoidance of doubt, the notice under paragraph 2 and any response under paragraph 3) are without prejudice and the Parties shall not make use of or rely upon any without prejudice statements in any proceedings.

7 Notwithstanding the provisions of paragraphs 1, 2, 3, 4, 5 and 6, either Party may give notice at any time of its intention to refer a Dispute to adjudication under the procedure set out in paragraphs 7–29 by giving a Notice of Adjudication to the other parties to the Dispute.

8 Should either Party give a Notice of Adjudication then immediately thereafter the parties to the Dispute shall endeavour to agree upon a person whom they would consider suitable to act as the Adjudicator.

In the event of the parties to the Dispute failing to agree upon a suitable person who is able to act as the Adjudicator, the referring Party shall request the Nominating Authority to select a person to act as the Adjudicator.

The Nominating Authority communicates the selection of the Adjudicator to the Parties within four (4) days of receiving a request to do so.

9 Any person requested or selected to act as the Adjudicator in accordance with paragraph 8:

9.1 shall be a natural person acting in his personal capacity; and

9.2 shall not be an employee of any of the parties to the Dispute, and shall declare any interest, financial or otherwise, in any matter relating to the Dispute

10 The terms of remuneration of the Adjudicator shall be agreed by the parties to the Dispute and the Adjudicator with the object of securing the appointment of the Adjudicator within seven (7) days of the Notice of Adjudication. If any party to the Dispute (but not all parties to the Dispute) rejects the terms of the remuneration of the Adjudicator the same shall be settled (and binding upon the parties to the Dispute) by agreement between the Nominating Authority and the Adjudicator (provided that the level of the Adjudicator’s remuneration does not exceed the level originally proposed to the parties to the Dispute by the Adjudicator). If all the parties to the Dispute reject the terms of remuneration proposed by an Adjudicator another person shall be selected as an Adjudicator in accordance with paragraph 8.

11 Where the Adjudicator has been selected in accordance with paragraph 8 the referring Party shall refer the Dispute in writing to the Adjudicator by the Referral Notice in accordance with paragraph 12 within seven (7) days of the date of the Notice of Adjudication or within two (2) days of the date of appointment of the Adjudicator, whichever is later. Upon receipt of the Referral Notice, the Adjudicator must inform

every Party to the dispute of the date that it was received.

12 The Referral Notice shall:

- 12.1 include the facts relied upon by the referring Party in support of its claim(s);
- 12.2 include a statement of the contractual and/or other basis relied upon by the referring Party in support of its claim(s);
- 12.3 include a calculation of the specific monetary amount (if any) that the referring Party is seeking to recover in relation to each and every claim that is the subject matter of the Dispute;
- 12.4 be accompanied by copies of, or relevant extracts from, this Agreement and such other documents on which the referring Party relies; and
- 12.5 include the addresses of all Parties to the Dispute.

The referring Party shall send copies of the Referral Notice and the documents referred to in this paragraph 12 to the other Party at the same time as he sends them to the Adjudicator.

13 If a matter disputed by the Manufacturer under or in connection with a Subcontract is also a matter disputed under or in connection with this Agreement, the Manufacturer may, with the consent of the Purchaser, refer the Subcontract dispute to the Adjudicator at the same time as the main Agreement referral. The Adjudicator shall then decide the disputes together and references to the parties for the purposes of the Dispute are interpreted as including the Subcontractor. The parties to the Dispute agree to consider and endeavour to agree in good faith any reasonable request by the Adjudicator for additional time to decide the main Agreement and Subcontract disputes.

14 The parties to the Dispute may jointly terminate the Adjudicator's appointment at any time. In such a case, or:

- 14.1 if the Adjudicator fails to give notice of his decision within the period referred to in paragraph 17 and the parties to the Dispute do not jointly extend time for his decision to be made in accordance with paragraph 17, or
- 14.2 if the period referred to in paragraph 17 is extended in accordance with paragraph 18 or by agreement by the parties to the Dispute and the Adjudicator fails to give notice of his decision within such extended period, and the parties to the Dispute do not jointly extend time for his decision to be made in accordance with paragraph 17, or
- 14.3 if at any time the Adjudicator declines to act or is unable to act as a result of his death, disability, resignation or otherwise,

a person shall be appointed to replace the Adjudicator in accordance with the provisions of paragraph 8. In the event of the parties to the Dispute failing to jointly appoint a person willing and suitable to act as replacement Adjudicator within three (3) days, any party to the Dispute may apply to the Nominating Authority to appoint a replacement

Adjudicator. In any case where the Adjudicator is appointed as a replacement pursuant to this paragraph 14, the parties to the Dispute shall each send to the Adjudicator, as soon as reasonably practicable, copies of all documents supplied by them to the Adjudicator he replaces.

15 The Nominating Authority and its employees and agents shall not be liable to any Party for any act or omission unless the act or omission is in bad faith. The Parties also agree that any employee or agent of the Nominating Authority shall be similarly protected from liability.

16 The Party not making the referral may send to the Adjudicator within fourteen (14) days of the date of the referral, with a copy to the other Party, a written statement of the contentions on which it relies and any materials it wishes the Adjudicator to consider.

17 The Adjudicator shall reach his decision and give notice of the decision to the parties to the Dispute within twenty eight (28) days of the date of receipt of the Referral Notice mentioned in paragraph 11, or such longer period as is agreed by the parties to the Dispute after the Dispute has been referred to him. Notice of the Adjudicator's decision (stating that it is given under this Schedule 10 (*Dispute Resolution Procedure*)) shall be in writing and shall include a summary of the Adjudicator's findings and a statement of the reasons for his decision.

18 The Adjudicator may extend the period of twenty eight (28) days referred to in paragraph 17 by up to fourteen (14) days, with the consent of the Party by whom the Dispute was referred.

19 The Adjudicator's decision shall be binding upon the parties to the Dispute and the Adjudicator unless and until the Dispute is finally determined by legal proceedings, by arbitration (if the parties otherwise agree to arbitration) or by agreement. The Adjudicator may on his own initiative or on the application of a Party correct his decision so as to remove a clerical or typographical error arising by accident or omission. Any correction of a decision must be made within five days of the delivery of the decision to the parties to the dispute. As soon as possible after correcting a decision in accordance with this paragraph, the Adjudicator must deliver a copy of the corrected decision to each of the Parties to this Agreement. Any correction of a decision shall form part of the decision. The Adjudicator may in his decision allocate his remuneration and expenses between the Parties in accordance with paragraph 26. If the Adjudicator's decision changes any payment which is due under this Agreement, payment of the sum decided by the Adjudicator shall be due not later than seven days from the date of the decision or the date on which such payment is due in accordance with the provisions of this Agreement, whichever is the later.

20 The Adjudicator:

20.1 shall act impartially and as an expert (not as an arbitrator) in the conduct of the reference and in reaching his decision;

20.2 shall consider any relevant information submitted to him by any of the parties to the Dispute and make available to them any information to be taken into account in reaching his decision provided in accordance with the procedure (if any) which

- the Adjudicator may decide;
- 20.3 shall reach his decision in accordance with the law applicable to this Agreement;
- 20.4 may take the initiative in ascertaining the facts and the law in relation to the Dispute;
- 20.5 may with the consent of the parties to the Dispute seek legal or technical advice from consultants whose appointment by the Adjudicator (including terms of remuneration) is subject to the approval of the parties to the Dispute;
- 20.6 shall, where a translation of any document is required, decide by whom it should be provided in the event that the parties to the Dispute do not agree.
- 21 The Adjudicator shall decide in his discretion on the procedure to be followed in the adjudication. In particular he may, but is not obliged to:
- 21.1 convene meetings upon reasonable notice to the parties to the Dispute at which such parties and their representatives are entitled to be present;
- 21.2 submit lists of questions to the parties to the Dispute to be answered in such meetings or in writing within such reasonable time as he requires;
- 21.3 require the parties to the Dispute to provide him with such information and other facilities as he reasonably requires for the determination of the Dispute;
- 21.4 otherwise take such action and adopt such procedures as do not conflict with any of the provisions of this Agreement and are reasonable and proper for the just, expeditious and economical determination of the Dispute;
- 21.5 inspect any part of the Railway Infrastructure, the Manufacturer's Works or the facilities of any relevant Subcontractor.
- 22 The Adjudicator shall not be liable for anything done or omitted in the discharge or purported discharge of his functions as an adjudicator unless the act or omission is in bad faith. The Parties also agree that any employee or agent of the Adjudicator shall be similarly protected from liability.
- 23 All meetings are private and save as required by law the Adjudicator and the Parties shall keep confidential the Dispute, all information of whatever nature provided to him by or on behalf of any Party and his decision.
- 24 The Parties to a contract to which the Dispute relates shall continue to observe and perform all the obligations contained in such contract, notwithstanding any reference to the Adjudicator, and insofar as the same is consistent with any safety review procedures to which the parties to the Dispute are bound, give effect forthwith to the Adjudicator's decision in every respect unless and until as hereinafter provided the Dispute is finally determined by a court in any legal proceedings, by arbitration (if the parties otherwise agree to arbitration) or by agreement. Any party to the Dispute may apply to any appropriate court for enforcement of the Adjudicator's decision. Neither any form of enforcement of the Adjudicator's decision nor any form of challenge to the enforcement

of the Adjudicator's decision nor any dispute arising out of or in connection with such enforcement or challenge are regarded and treated as a Dispute for the purposes of this Schedule 10 (*Dispute Resolution Procedure*).

- 25 After the giving of a Notice of Adjudication, the Parties may seek to agree how the Adjudicator allocates the costs and fees excluding his remuneration and expenses which are dealt with in paragraph 26 below of the adjudication as between the Parties. If such an agreement is reached between the Parties, they shall notify the Adjudicator, who shall allocate costs and fees in accordance with such agreement. The Parties agree to be bound by the Adjudicator's allocation of costs and fees and to pay such costs and fees in accordance with the Adjudicator's direction unless and until the direction of the Adjudicator is set aside or revised by a court pursuant to any legal proceedings.
- 26 Subject to any agreement of the Parties, the Adjudicator shall allocate payment of his remuneration and expenses as between the Parties. Unless the Parties otherwise agree, the Adjudicator awards the payment of his remuneration and expenses on the general principle that costs should follow the event, except where it appears to the Adjudicator that in the circumstances this is not appropriate in relation to the whole or part of his remuneration or expenses. The Parties agree to be bound by the Adjudicator's allocation of payment of his remuneration and expenses and pay such remuneration and expenses in accordance with the Adjudicator's direction unless and until the direction of the Adjudicator is set aside or revised by a court pursuant to any legal proceedings.
- 27 All notices, written submissions and any other written communications between the parties to the Dispute and the Adjudicator shall either be delivered by hand, sent by facsimile or sent by first class pre-paid post or recorded delivery (airmail if posted to or from a place outside the United Kingdom) and, in each case, copied simultaneously (delivered or sent as aforesaid) to the other Parties. Copies by way of confirmation of all communications by facsimile between the parties to the Dispute and the Adjudicator shall also be sent by first class post (airmail if posted to or from a place outside the United Kingdom) not later than the next following Working Day the date of the original facsimile transmission.
- 28 All information of whatever nature provided to the Adjudicator by any party to the Dispute shall be copied to the other parties simultaneously.
- 29 If any party to a Dispute is dissatisfied with the Adjudicator's decision on that Dispute, that party may commence court proceedings for the final determination of the Dispute.

SCHEDULE 11: FORM OF PERFORMANCE BOND

[REDACTED]

SCHEDULE 12: NOT USED

Single Licensee Escrow Agreement³

Date: []

Owner: []

Agreement Number: []

Notice: The parties to this Agreement are obliged to inform NCC Group of any changes to the Escrow Materials or in their circumstances (including change of name, registered office, contact details or change of owner of the intellectual property in the Escrow Materials)

³ This agreement has been negotiated with the NCC Group. Any proposed amendments should be agreed with the Legal team prior to being sent to either the Owner or NCC Group.

Escrow Agreement Dated:

Between:

- (1) [] whose registered office is at [] (Company Registration Number: 01139050) ("**Owner**");
- (2) **TRANSPORT FOR LONDON**, a statutory corporation established under the Greater London Authority Act 1999 of Windsor House, 42-50 Victoria Street, London SW1H 0TL ⁴ ("**Licensee**"); and
- (3) **NCC GROUP ESCROW LIMITED** a company registered in England whose registered office is at Manchester Technology Centre, Oxford Road, Manchester M1 7EF, ENGLAND (CRN: 3081952) ("**NCC Group**").

Background:

- (A) The Licensee has been granted a licence to use the Software which comprises computer programs.
- (B) Certain technical information and/or documentation relating to the Software is the confidential information and intellectual property of the Owner or a third party.
- (C) The Owner acknowledges that in certain circumstances, such information and/or documentation would be required by the Licensee in order for it to continue to exercise its rights under the Licence Agreement.
- (D) The parties therefore agree that such information and/or documentation should be placed with a trusted third party, NCC Group, so that such information and/or documentation can be released to the Licensee should certain circumstances arise.

Agreement:

In consideration of the mutual undertakings and obligations contained in this Agreement, the parties agree that:

1 Definitions and Interpretation

1.1 In this Agreement the following terms shall have the following meanings:

"**Agreement**" means the terms and conditions of this escrow agreement set out below, including the schedules hereto.

"**Confidential Information**" means all technical and/or commercial information not in the public domain and which is designated in writing as confidential by any party together with all other information of any party which may reasonably be regarded as confidential information.

"**Escrow Materials**" means the Software and Source Code.

"**Full Verification**" means the tests and processes forming NCC Group's Full Verification service and/or such other tests and processes as may be agreed between the parties for the verification of the Escrow Materials.

"**Independent Expert**" means a suitably qualified and independent solicitor or barrister.

"**Integrity Testing**" means those tests and processes forming NCC Group's Integrity Testing service, in so far as they can be applied to the Escrow Materials.

"**Intellectual Property Rights**" mean any copyright, patents, design patents, registered designs, design rights, utility models, trademarks, service marks, trade secrets, know how, database rights, moral rights, confidential information, trade or business names, domain names, and any other rights of a similar nature including industrial and proprietary rights and other similar protected rights in any country or jurisdiction together with all registrations, applications to register and rights to apply for registration of any of the aforementioned rights and any licences of or in respect of such rights.

"**Licence**" means the licence granted to the Licensee to use the Software.

"**Licence Agreement**" means the agreement listed in schedule 3 under which the Licensee was

⁴ Where the contracting party is a different TfL Group company then these details will need to be amended accordingly.

granted the Licence.

"Order Form" means the order form setting out the details of the order placed with NCC Group for setting up this Agreement.

"Release Purposes" means the purposes of understanding, maintaining, modifying and correcting the Software exclusively for and on behalf of the Licensee together with such other purposes (if any) as are permitted under the Licence Agreement.

"Release Events" has the meaning given to it in Clause 6.1 of this Agreement.

"Software" means the software package together with any updates and upgrades thereto and new versions thereof licensed to the Licensee under the Licence Agreement.

"Source Code" means the computer programming code of the Software in human readable form and such other material and documentation (including updates and upgrades thereto and new versions thereof) as are necessary to be delivered or deposited to comply with clause 2 of this Agreement.

"Third Party Material" means Source Code which is not the confidential information and intellectual property of the Owner or the Licensee.

1.2 This Agreement shall be interpreted in accordance with the following:

1.2.1 headings are for ease of reference only and shall not be taken into consideration in the interpretation of this Agreement;

1.2.2 all references to clauses and schedules are references to clauses and schedules of this Agreement; and

1.2.3 all references to a party or parties are references to a party or parties to this Agreement.

2 Owner's Duties and Warranties

2.1 The Owner shall:

2.1.1 deliver a copy of the Escrow Materials each time there is a change to such item of Escrow Materials;

2.1.2 ensure that each item of the Escrow Materials deposited with the NCC Group comprises the latest version of such item of information or documentation used by the Licensee and, where such item comprises the Source Code, ensure that each copy of the Source Code comprises the Source Code of the latest version of the Software used by the Licensee;

2.1.3 deliver to NCC Group a replacement copy of the relevant Escrow Materials within 30 days after the anniversary of the last delivery of the relevant Escrow Materials to ensure that the integrity of the Escrow Material media is maintained;

2.1.4 deliver a replacement copy of the Escrow Materials to NCC Group within 14 days of a notice given to it by NCC Group under the provisions of clause 4.1.3;

2.1.5 deliver with each deposit of the Escrow Materials the following information:

2.1.5.1 details of the deposit including, where applicable, the full name of the relevant Escrow Material (i.e. the original name as set out under schedule 1 together with any new names given to the Escrow Materials by the Owner), version details, media type, backup command/software used, compression used, archive hardware and operating system details; and

2.1.5.2 password/encryption details required to access the Escrow Materials;

2.1.5.3 any other information or documentation required to be disclosed under any Licence Agreement or to facilitate the use of any of the Escrow Materials.

2.1.6 deliver with each deposit of the Source Code the following technical information (where applicable):

- 2.1.6.1 documentation describing the procedures for building, compiling and installing the software, including names and versions of the development tools;
- 2.1.6.2 software design information (e.g. module names and functionality); and
- 2.1.6.3 name and contact details of employees with knowledge of how to maintain and support the Source Code; and
- 2.1.7 if required by the Licensee, deposit a backup copy of the object code of any third party software package and any other information or documentation required to access, install, build or compile or otherwise use the Source Code.
- 2.2 The Owner warrants to both NCC Group and the Licensee at the time of each deposit of the Escrow Materials with NCC Group that:
 - 2.2.1 other than any third party object code referred to in clause 2.1.8, any Third Party Material or any Escrow Materials owned by the Licensee by virtue of the provisions of the Licence Agreement, it owns the Intellectual Property Rights in the Escrow Materials;
 - 2.2.2 in respect of any Third Party Material, it has been granted valid and ongoing rights under licence by the third party owner(s) thereof to deal with such Third Party Material in the manner anticipated under this Agreement and that the Owner has the express authority of such third party owner(s) to deposit the Third Party Material under this Agreement as evidenced by a signed letter of authorisation in the form required by NCC Group;
 - 2.2.3 in entering into this Agreement and performing its obligations under it, it is not in breach of any of its ongoing express or implied obligations to any third party(s);
 - 2.2.4 the Source Code deposited under clause 2.1 contains all information in human-readable form (except for any third party object code deposited pursuant to clause 2.1.8) and is on suitable media to enable a reasonably skilled programmer or analyst to understand, maintain, modify and correct the Software; and
 - 2.2.5 in respect of any third party object code that the Owner, at its option, or, at the request of the Licensee, deposits with NCC Group in conjunction with the Source Code pursuant to clause 2.1.8, it has the full right and authority to do so.

3 Licensee's Responsibilities and Undertakings

- 3.1 The Licensee shall notify NCC Group of any change to the Escrow Materials that necessitates a replacement deposit of the Escrow Materials.
- 3.2 In the event that the Escrow Materials are released under clause 6, the Licensee shall, subject to the terms of the Licence Agreement:
 - 3.2.1 keep the Escrow Materials confidential at all times and ensure that any other person to whom the Escrow Materials is disclosed pursuant to clause 3.2.3 does the same;
 - 3.2.2 use the Escrow Materials only for the Release Purposes;
 - 3.2.3 not disclose the Escrow Materials to any person save as permitted under the terms of any relevant Licence Agreement or as otherwise required for the Release Purposes;
 - 3.2.4 hold all media containing the Escrow Materials in a safe and secure environment when not in use; and
 - 3.2.5 forthwith destroy the Escrow Materials should the Licensee cease to be entitled to use the Escrow Materials under the terms of the Licence Agreement.
- 3.3 In the event that the Escrow Materials are released under clause 6, it shall be the responsibility of the Licensee to obtain the necessary licences to utilise the object code of any third party material deposited by the Owner pursuant to clause 2.1.8.

4 NCC Group's Duties

- 4.1 NCC Group shall:
- 4.1.1 at all times during the term of this Agreement, retain the latest deposit of the Escrow Materials in a safe and secure environment;
 - 4.1.2 inform the Owner and the Licensee of the receipt of any deposit of the Escrow Materials by sending to both parties a copy of the Integrity Testing report or Full Verification report (as the case may be) generated from the testing processes carried out under clause 10; and
 - 4.1.3 notify the Owner and the Licensee if it becomes aware at any time during the term of this Agreement that the copy of the Escrow Materials held by it has been lost, damaged or destroyed so that a replacement may be obtained.
- 4.2 In the event of failure by the Owner to deposit any Escrow Materials with NCC Group, NCC Group shall not be responsible for procuring such deposit and may, at its sole discretion, notify the Licensee of the Owner's failure to deposit any Escrow Materials.
- 4.3 NCC Group may appoint agents, contractors or sub-contractors as it deems fit to carry out the Integrity Testing and the Full Verification processes. NCC Group shall ensure that any such agents, contractors and sub-contractors are bound by the same confidentiality obligations as are contained in clause 8.
- 4.4 NCC Group has the right to make such copies of the Escrow Materials as may be necessary solely for the purposes of this Agreement.

5 Payment

- 5.1 The parties shall pay NCC Group's standard fees and charges as published from time to time or as otherwise agreed, in the proportions set out in schedule 2. NCC Group's fees as published are exclusive of value added tax.
- 5.2 NCC Group shall be entitled to review and vary its standard fees and charges for its services under this Agreement from time to time but no more than once a year and only upon 45 days written notice to the parties.
- 5.3 All invoices are payable within 30 days from the date of invoice. NCC Group reserves the right to charge interest in respect of the late payment of any sum due under this Agreement (both before and after judgement) at the rate of 2% per annum over the prevailing base rate of HSBC Bank Plc accruing on a daily basis from the due date therefor until full payment.

6 Release Events

- 6.1 Subject to: (i) the remaining provisions of this clause 6 and (ii) the receipt by NCC Group of its release fee and any other fees and interest (if any) outstanding under this Agreement, NCC Group will release the Escrow Materials to a duly authorised officer of the Licensee if any of the following events ("**Release Event(s)**") occur:
- 6.1.1 if the Owner is a company:
 - 6.1.1.1 an order is made for the winding up of the Owner, the Owner passes a resolution for winding up (other than for the purposes of a solvent reconstruction or amalgamation) or a liquidator of the Owner is appointed; or
 - 6.1.1.2 an order is made for the appointment of an administrator of the Owner or an administrator of the Owner is appointed; or
 - 6.1.1.3 the Owner enters into a compromise or arrangement with creditors; or
 - 6.1.1.4 the Owner has a receiver, administrative receiver or manager appointed over all or any part of its assets or undertaking; or
 - 6.1.1.5 the Owner is dissolved; or
 - 6.1.2 if the Owner is an individual:

- 6.1.2.1 the Owner enters into a compromise or arrangement with creditors; or
 - 6.1.2.2 the Owner is declared bankrupt; or
 - 6.1.2.3 the Owner dies; or
 - 6.1.3 if the Owner is a partnership:
 - 6.1.3.1 any of the partners in the Owner are declared bankrupt or enter into a compromise or arrangement with creditors; or
 - 6.1.3.2 the Owner is wound up or dissolved; or
 - 6.1.3.3 the Owner enters into a compromise or arrangement with creditors; or
 - 6.1.3.4 a partnership administration order is made in respect of the Owner; or
 - 6.1.4 any similar or analogous proceedings or event to those in clauses 6.1.1 to 6.1.3 above occurs in respect of the Owner within any jurisdiction outside England; or
 - 6.1.5 the Owner ceases to carry on its business or the part of its business which relates to the Escrow Materials; or
 - 6.1.6 the Owner assigns its rights to the Intellectual Property Rights in the Escrow Materials to a third party ("**Assignee**") and the Assignee fails, within 60 days of all parties' knowledge of such assignment, to continue escrow protection for the benefit of the Licensee by failing to enter into either:
 - 6.1.6.1 a novation agreement with the Licensee and NCC Group for the assumption of the Owner's rights and obligations under this Agreement by the Assignee; or
 - 6.1.6.2 a new escrow agreement with the Licensee for the Escrow Materials which offers the Licensee substantially similar protection to that provided by this Agreement without significantly increasing the overall cost to the Licensee,

provided that if the Assignee offers to enter into a novation or new escrow agreement within 60 days of all parties' knowledge of the assignment and the Licensee fails to accept the Assignee's offer within 30 days of such offer being notified to the Licensee, there shall be no Release Event under this clause; or
 - 6.1.7 the Owner or, where relevant, its agent, parent, subsidiary or associated company is in material breach of its obligations under the relevant Licence Agreement or any maintenance agreement entered into in connection with the Escrow Materials and has failed to remedy such default as required by the terms of the Licence Agreement or such maintenance agreement.
- 6.2 The Licensee must notify NCC Group of the Release Event specified in clause 6.1 by delivering to NCC Group a statutory or notarised declaration ("**Declaration**") made by an officer of the Licensee declaring that such Release Event has occurred, setting out the facts and circumstances of the Release Event, that the Licence Agreement and any maintenance agreement, if relevant, for the Escrow Materials was still valid and effective up to the occurrence of such Release Event and exhibiting such documentary evidence in support of the Declaration as NCC Group shall reasonably require.
- 6.3 Upon receipt of a Declaration from the Licensee claiming that a Release Event has occurred:
- 6.3.1 NCC Group shall submit a copy of the Declaration to the Owner by courier or other form of guaranteed delivery; and
 - 6.3.2 unless within 14 days after the date of despatch of the Declaration by NCC Group, NCC Group receives a counter-notice signed by a duly authorised officer of the Owner stating that in their view no such Release Event has occurred or, if appropriate, that the event or circumstance giving rise to the Release Event has been rectified as shown by documentation in support thereof,

NCC Group will release the Escrow Materials to the Licensee for its use for the Release Purposes.

- 6.4 Upon receipt of the counter-notice from the Owner under clause 6.3.2, NCC Group shall send a copy of the counter-notice and any supporting evidence to the Licensee by courier or other form of guaranteed delivery.
- 6.5 Upon receipt by the Licensee of the counter-notice from NCC Group or, in any event, within 90 days of despatch of the counter-notice by NCC Group, the Licensee may give notice to NCC Group that they wish to invoke the dispute resolution procedure under clause 7.
- 6.6 If, within 90 days of despatch of the counter-notice by NCC Group to the Licensee, NCC Group has not been informed by the Licensee that they wish the dispute resolution procedure under clause 7 to apply, the Declaration submitted by the Licensee will be deemed to be no longer valid and the Licensee shall be deemed to have waived their right to release of the Escrow Materials for the particular reason or event specified in the original Declaration.
- 6.7 For the avoidance of doubt, where a Release Event has occurred under clauses 6.1.1 to 6.1.5, a subsequent assignment of the Intellectual Property Rights in the Escrow Materials shall not prejudice the Licensee's right to release of the Escrow Materials and its use for the Release Purposes.

7 Disputes

- 7.1 NCC Group shall notify the Owner of the Licensee's request for dispute resolution. Unless the Owner or the Licensee objects, NCC Group's Chief Executive Officer for the time being will appoint an Independent Expert to resolve the dispute. If the Owner or the Licensee objects to this appointment, they shall endeavour to appoint a mutually acceptable Independent Expert within 7 days of registering their objection. If they fail to appoint an Independent Expert within this 7 day period, NCC Group shall request that the President of The Law Society appoints an Independent Expert to resolve the dispute. Any appointment of an Independent Expert under this clause shall be binding upon the parties.
- 7.2 Within 5 working days of the appointment of the Independent Expert, the Owner and the Licensee shall each provide full written submissions to the Independent Expert together with all relevant documentary evidence in their possession in support of their claim.
- 7.3 The Independent Expert shall be requested to give a decision on the matter within 14 days of the date of referral or as soon as practicable thereafter and to send a copy of that decision to the Owner, Licensee and NCC Group. The Independent Expert's decision shall be final and binding on all parties and shall not be subject to appeal to a court in legal proceedings except in the case of manifest error.
- 7.4 If the Independent Expert's decision is in favour of the Licensee, NCC Group is hereby authorised to release and deliver the Escrow Materials to the Licensee within 5 working days of the decision being notified by the Independent Expert to the parties.
- 7.5 The parties hereby agree that the costs and expenses of the Independent Expert shall be borne by the party against whom the decision of the Independent Expert is given.

8 Confidentiality

- 8.1 The Escrow Materials shall remain at all times the confidential and intellectual property of its owner.
- 8.2 Subject to the terms of the Licence Agreement, in the event that NCC Group releases the Escrow Materials to the Licensee, the Licensee shall be permitted to use the Escrow Materials only for the Release Purposes.
- 8.3 NCC Group agrees to keep all Confidential Information relating to the Escrow Materials that comes into its possession or to its knowledge under this Agreement in strictest confidence and secrecy. NCC Group further agrees not to make use of such information and/or documentation other than for the purposes of this Agreement and, unless the parties should agree otherwise in writing, will not disclose or release it other than in accordance with the terms of this Agreement.

9 Intellectual Property Rights

- 9.1 The release of the Escrow Materials to the Licensee will not act as an assignment of any Intellectual Property Rights that the Owner or any third party possesses in the Escrow Materials.

- 9.2 The Intellectual Property Rights in the Integrity Testing report and any Full Verification report shall remain vested in NCC Group. The Owner and the Licensee shall each be granted a non-exclusive right and licence to use such report for the purposes of this Agreement and their own internal purposes only.

10 Integrity Testing and Full Verification

- 10.1 NCC Group shall bear no obligation or responsibility to any party to this Agreement or person, firm, company or entity whatsoever to determine the existence, relevance, completeness, accuracy, operation, effectiveness, functionality or any other aspect of the Escrow Materials received by NCC Group under this Agreement.
- 10.2 As soon as practicable after the Escrow Materials has been deposited with NCC Group, NCC Group shall apply its Integrity Testing processes to the Material.
- 10.3 Any party to this Agreement shall be entitled to require NCC Group to carry out a Full Verification. Subject to clause 10.4, NCC Group's prevailing fees and charges for the Full Verification processes and all reasonable expenses incurred by NCC Group in carrying out the Full Verification processes shall be payable by the requesting party.
- 10.4 If the Escrow Materials fail to satisfy NCC Group's Full Verification tests as a result of being defective or incomplete in content, NCC Group's fees, charges and expenses in relation to the Full Verification tests shall be paid by the Owner.
- 10.5 Should the Escrow Materials deposited fail to satisfy NCC Group's Integrity Testing or Full Verification tests under clauses 10.2 or 10.3, the Owner shall, within 14 days of the receipt of the notice of test failure from NCC Group, deposit such new, corrected or revised Escrow Materials as shall be necessary to ensure its compliance with its warranties and obligations in clause 2. If the Owner fails to make such deposit of the new, corrected or revised Escrow Materials, NCC Group will issue a report to the Licensee detailing the problem with the Escrow Materials as revealed by the relevant tests.

11 NCC Group's Liability

- 11.1 Nothing in this clause 11 excludes or limits the liability of NCC Group for:-
- 11.1.1 fraud or fraudulent misrepresentation;
 - 11.1.2 death or personal injury caused by NCC Group's (or its employees', agents' or sub-contractors') negligence; or
 - 11.1.3 any matter for which it is not permitted by law to exclude or limit, or to attempt to exclude or limit, its liability.
- Without prejudice to clauses 11.1.1 to 11.1.3 (inclusive), the following provisions set out the entire financial liability of NCC Group (including any liability for the acts or omissions of its employees, agents and sub-contractors) arising out of or in connection with this Agreement, whether in contract, tort, misrepresentation, under statute or otherwise, howsoever caused including (without limitation) by negligence and also including (without limitation) any liability arising from a breach of, or a failure to perform or defect or delay in performance of, any of NCC Group's obligations under this Agreement.
- 11.2 NCC Group shall not be liable for any loss or damage caused to the other parties except to the extent that such loss or damage is caused by the negligent acts or negligent omissions of or a breach of any contractual duty by NCC Group, its employees, agents or sub-contractors in performing its obligations under this Agreement and in such event NCC Group's maximum aggregate liability arising out of or in connection with this Agreement, whether in contract, tort, misrepresentation, under statute or otherwise, howsoever caused including (without limitation) by negligence and also including (without limitation) any liability arising from a breach of, or a failure to perform or defect or delay in performance of, any of NCC Group's obligations under this Agreement, shall be limited to £2,500,000 (two million five hundred thousand pounds).
- 11.3 Subject to clause 11.1 NCC Group shall not be liable to the other parties for any:
- 11.3.1 indirect, consequential and/or special loss or damage;
 - 11.3.2 loss of profit (direct or indirect);
 - 11.3.3 lost of revenue, loss of production or loss of business (in each case whether direct or indirect);

- 11.3.4 loss of goodwill, loss of reputation, or loss of opportunity (in each case whether direct or indirect);
- 11.3.5 loss of anticipated saving or loss of margin (in each case whether direct or indirect); and/or
- 11.3.6 loss or damage arising out of any failure by the Owner to keep full and up to date back-ups and security copies of any Escrow Materials delivered under this Agreement,

arising out of or in connection with this Agreement, whether in contract, tort, misrepresentation, under statute or otherwise, howsoever caused including (without limitation) by negligence and also including (without limitation) any liability arising from a breach of, or a failure to perform or defect or delay in performance of, any of NCC Group's obligations under this Agreement.

- 11.4 NCC Group shall not be liable in any way to the Owner or the Licensee for acting in accordance with the terms of this Agreement and specifically (without limitation) for acting upon any notice, written request, waiver, consent, receipt, statutory declaration or any other document furnished to it pursuant to and in accordance with this Agreement.
- 11.5 NCC Group shall not be required to make any investigation into and shall be entitled in good faith without incurring any liability to the Owner or the Licensee to assume (without requesting evidence thereof) the validity, authenticity, veracity and due and authorised execution of any documents, written requests, waivers, consents, receipts, statutory declarations or notices received by it in respect of this Agreement.

12 Indemnity

- 12.1 Save for any claim falling within the provisions of clause 11.1.1, the Owner and the Licensee jointly and severally agree at all times to indemnify and hold harmless NCC Group in respect of all of its legal and all other costs, fees and expenses incurred directly or indirectly as a result of being brought into or otherwise becoming involved in any form of dispute resolution proceedings or any litigation of any kind between the Owner and the Licensee in relation to this Agreement to the extent that this Agreement does not otherwise provide for reimbursement of such costs.
- 12.2 The Owner shall assume all liability and shall at all times indemnify and hold harmless NCC Group and its officers, agents, sub-contractors and employees from and against any and all liability, loss, damages, costs, legal costs, professional and other expenses and any other liabilities of whatever nature, awarded against or agreed to be paid or otherwise suffered, incurred or sustained by NCC Group, whether direct, indirect or consequential as a result of or in connection with any claim by any third party(s) for alleged or actual infringement of Intellectual Property Rights arising out of or in connection with all and any acts or omissions of NCC Group in respect of the Escrow Materials as contemplated under this Agreement.

13 Term and Termination

- 13.1 This Agreement shall continue until terminated in accordance with this clause 13.
- 13.2 If the Owner or the Licensee, as the case may be, fails to pay an invoice addressed to it for services under this Agreement within 30 days of its issue, NCC Group reserves the right to give that party written notice to pay the outstanding invoice within 30 days. If the Licensee has not paid its invoice by the expiry of the 30 day notice period, this Agreement will automatically immediately terminate. If the Owner has not paid its invoice by the expiry of the 30 day notice period, NCC Group will give the Licensee a period of 15 days to pay the Owner's invoice. If the Owner's invoice has not been paid by the expiry of the 15 day optional payment period given to the Licensee, this Agreement will automatically immediately terminate. Any amounts owed by the Owner but paid by the Licensee will be recoverable by the Licensee direct from the Owner as a debt and, if requested, NCC Group shall provide appropriate documentation to assist in such recovery.
- 13.3 Upon termination under the provisions of clause 13.2, for 30 days from the date of termination NCC Group will make the Escrow Materials available for collection by the Owner or its agents from the premises of NCC Group during office hours. After such 30 day period NCC Group will destroy the Escrow Materials.
- 13.4 Notwithstanding any other provision of this clause 13, NCC Group may terminate this Agreement by giving 30 days written notice to the Owner and the Licensee. In that event, the Owner and the Licensee shall appoint a mutually acceptable new custodian on similar terms

and conditions to those contained herein. If a new custodian is not appointed within 14 days of delivery of such notice, the Owner or the Licensee shall be entitled to request the President for the time being of the British Computer Society (or successor body) to appoint a suitable new custodian upon such terms and conditions as he/she shall require. Such appointment shall be final and binding on the Owner and the Licensee. If NCC Group is notified of the new custodian within the notice period, NCC Group will forthwith deliver the Escrow Materials to the new custodian. If NCC Group is not notified of the new custodian within the notice period, NCC Group will return the Escrow Materials to the Owner.

- 13.5 The Licensee may terminate this Agreement at any time by giving written notice to NCC Group. Upon such termination, NCC Group will return the Escrow Materials to the Owner.
- 13.6 If NCC Group discovers that a Release Event has occurred and the Licensee has failed to exercise its right to claim for release of the Escrow Materials under clause 6.2, NCC Group shall have the right to terminate this Agreement upon 30 days written notice to the Owner and the Licensee. The Licensee shall have the option of applying for release in accordance with clause 6 during this notice period, but if it fails to do so, upon the expiry of this notice period, this Agreement shall automatically terminate and, unless otherwise instructed by the Owner or the Assignee prior to expiry of the notice period, NCC Group shall destroy the Escrow Materials.
- 13.7 If the Intellectual Property Rights in the Escrow Materials have been assigned to a third party and the proviso in clause 6.1.6 applies such that there has been no Release Event under that clause, NCC Group shall be entitled to terminate this Agreement immediately by written notice to the Owner and the Licensee and upon such termination, unless otherwise instructed by the Owner or the Assignee, NCC Group shall destroy the Escrow Materials.
- 13.8 If the Licence has expired or has been lawfully terminated, then the Licensee shall give notice to NCC Group within 14 days thereof to terminate this Agreement, failing which, the Owner shall be entitled to give written notice to NCC Group to terminate this Agreement. Upon receipt of such a notice from the Owner, NCC Group shall notify the Licensee of the Owner's notice to terminate. Unless within 14 days of NCC Group giving such notice to the Licensee, NCC Group receives a counter-notice signed by a duly authorised officer of the Licensee disputing the termination of the Licence Agreement, then the Licensee shall be deemed to have consented to such termination and this Agreement shall immediately automatically terminate. Any disputes arising under this clause shall be dealt with in accordance with the dispute resolution procedure in clause 7. Upon termination under this clause, NCC Group shall return the Escrow Materials to the Owner.
- 13.9 **Subject to clause 13.8**, the Owner may only terminate this Agreement with the written consent of the Licensee.
- 13.10 This Agreement shall automatically immediately terminate upon release of the Escrow Materials to the Licensee in accordance with clause 6.
- 13.11 If this Agreement is superseded and replaced by a new agreement in respect of the Escrow Materials, this Agreement shall, upon the coming into force of the new agreement, automatically terminate. The relevant party or parties shall request NCC Group to either transfer the Escrow Materials to the new agreement or ask the owner under the new agreement to deposit new material. If new material is deposited, upon its receipt, NCC Group shall, unless otherwise instructed, destroy the Escrow Materials.
- 13.12 The provisions of clauses 1, 3.2, 3.3, 5, 8, 9, 10.1, 11, 12, 13.12 to 13.14 (inclusive) and 14 shall continue in full force after termination of this Agreement.
- 13.13 On and after termination of this Agreement, the Owner and/or the Licensee (as appropriate) shall remain liable to NCC Group for payment in full of any fees and interest which have become due but which have not been paid as at the date of termination.
- 13.14 The termination of this Agreement, however arising, shall be without prejudice to the rights accrued to the parties prior to termination.

14 General

- 14.1 A party shall notify the other parties to this Agreement, within 30 days of its occurrence, of any of the following:
- 14.1.1 a change of its name, registered office, contact address or other contact details; and

- 14.1.2 any material change in its circumstances that may affect the validity or operation of this Agreement.
- 14.2 Within 14 days of any assignment or transfer by the Owner of any part of its Intellectual Property Rights in the Escrow Materials, the Owner shall notify:
- 14.2.1 NCC Group and the Licensee of such assignment and the identity of the Assignee; and
- 14.2.2 the Assignee of the provisions of clause 6.1.6.
- 14.3 The formation, existence, construction, performance, validity and all other aspects of this Agreement shall be governed by and construed in accordance with the laws of England and the parties submit to the exclusive jurisdiction of the English courts.
- 14.4 This Agreement, together with the Order Form and any relevant NCC Group standard terms and conditions represent the whole agreement relating to the escrow arrangements between NCC Group and the other parties for the Escrow Materials and shall supersede all prior agreements, discussions, arrangements, representations, negotiations and undertakings. In the event of any conflict between any of these documents, the terms of this Agreement shall prevail.
- 14.5 Unless the provisions of this Agreement otherwise provide, any notice or other communication required or permitted to be given or made in writing hereunder shall be validly given or made if delivered by hand or courier or if despatched by first class recorded delivery (airmail if overseas) addressed to the address specified for the parties in this Agreement (or such other address as may be notified to the parties from time to time) or if sent by facsimile message to such facsimile number as has been notified to the parties from time to time and shall be deemed to have been received:
- (i) if delivered by hand or courier, at the time of delivery;
- (ii) if sent by first class recorded delivery (airmail if overseas), 2 business days after posting (6 days if sent by airmail);
- (iii) if sent by facsimile, at the time of completion of the transmission of the facsimile with facsimile machine confirmation of transmission to the correct facsimile number of all pages of the notice.
- 14.6 The Owner and the Licensee shall not assign, transfer or subcontract this Agreement or any rights or obligations thereunder without the prior written consent of the other parties.
- 14.7 NCC Group shall be entitled to transfer or assign this Agreement upon written notice to both the Owner and the Licensee.
- 14.8 This Agreement shall be binding upon and survive for the benefit of the successors in title and permitted assigns of the parties.
- 14.9 If any provision of this Agreement is declared too broad in any respect to permit enforcement to its full extent, the parties agree that such provision shall be enforced to the maximum extent permitted by law and that such provision shall be deemed to be varied accordingly. If any provision of this Agreement is found by any court, tribunal or administrative body of competent jurisdiction to be wholly or partly illegal, invalid, void or unenforceable, it shall, to the extent of such illegality, invalidity or unenforceability, be deemed severable and the remaining part of the provision and the rest of the provisions of this Agreement shall continue in full force and effect.
- 14.10 Save as expressly provided in this Agreement, no amendment or variation of this Agreement shall be effective unless in writing and signed by a duly authorised representative of each of the parties to it.
- 14.11 The parties shall not be liable to each other or be deemed to be in breach of this Agreement by reason of any delay in performing, or failure to perform, any of their obligations under this Agreement if the delay or failure was for a reason beyond that party's reasonable control (including, without limitation, fire, flood, explosion, epidemic, riot, civil commotion, any strike, lockout or other industrial action, act of God, war or warlike hostilities or threat of war, terrorist activities, accidental or malicious damage, or any prohibition or restriction by any governments or other legal authority which affects this Agreement and which is not in force on

the date of this Agreement). A party claiming to be unable to perform its obligations under this Agreement (either on time or at all) in any of the circumstances set out above must notify the other parties of the nature and extent of the circumstances in question as soon as practicable. If such circumstances continue for more than six months, any of the other parties shall be entitled to terminate this Agreement by giving one month's notice in writing.

- 14.12 No waiver by any party of any breach of any provisions of this Agreement shall be deemed to be a waiver of any subsequent or other breach and, subject to clause 6.6, no failure to exercise or delay in exercising any right or remedy under this Agreement shall constitute a waiver thereof.
- 14.13 This Agreement is not intended to create any right under the Contracts (Rights of Third Parties) Act 1999 which is enforceable by any person who is not a party to this Agreement and the rights of any third party under the said act are hereby expressly excluded.
- 14.14 This Agreement may be executed in any number of counterparts and by different parties in separate counterparts. Each counterpart when so executed shall be deemed to be an original and all of which together shall constitute one and the same agreement.

Signed for and on behalf of []⁵

Name: |

Position: | (Authorised Signatory)

Signed for and on behalf of **TRANSPORT FOR LONDON**

Name: |

Position: | (Authorised Signatory)

Signed for and on behalf of **NCC GROUP ESCROW LIMITED**

Name: |

Position: | (Authorised Signatory)

⁵ Insert company name of Owner

Schedule 1
NOT USED

Schedule 2
NCC Group's Fees

	DESCRIPTION	OWNER	LICENSEE
1	Annual Fee (payable on completion of this Agreement and in advance of each anniversary thereafter)	100%	Nil
2	Scheduled Update Fee (2 nd and subsequent scheduled deposits in any one year, payable on completion of this Agreement and in advance of each anniversary thereafter)	100%	Nil
3	Unscheduled Update Fee (per unscheduled deposit)	100%	Nil
4	Release Fee (plus NCC Group's reasonable expenses)	100%	Nil

Additional fees will be payable to NCC Group by the Licensee (unless otherwise agreed between the parties) for the following where applicable:

- Storage Fee for deposits in excess of 1 cubic foot;
- Any novation or replacement of this Agreement at the request of the Owner or the Licensee;
- Integrity Testing Fee for deposits consisting of more than 5 media items.

Schedule 3
Licence Agreement

[Insert full details of the agreement related to the Escrow Materials.]

SCHEDULE 14: NOT USED

SCHEDULE 15: FORM OF SUBCONTRACTOR WARRANTY

THIS DEED is made on ● 201●

BETWEEN:

- (1) **TRANSPORT FOR LONDON** whose registered office is Windsor House, 42-50 Victoria Street, London SW1H 0TL (the "**Purchaser**" which expression shall include its successors and assigns);
- (2) ● whose registered office is situate at ● (the "**Subcontractor**"); and
- (3) ● whose registered office is situate at ● (the "**Manufacturer**").

WHEREAS:

- (A) The Manufacturer has entered into a contract dated ● (the "**Contract**") with the Purchaser for the manufacture and supply of a modular points and crossings delivery and installation system (the "**Works**").
- (B) The Subcontractor [**has entered**] [**will shortly enter**] into a subcontract (the "**Subcontract**") with the Manufacturer for the design and carrying out of certain parts (the "**Subcontract Works**") of the Works more particularly defined in Annex ● hereto⁶.

NOW IT IS AGREED:

1. Terms and expressions defined in the Subcontract shall where the context so permits have the same meanings in this Deed. The following expressions have the meanings set out herein:
 - (a) "Completion" means [];⁷
 - (b) "Connected Persons" means of any of the Subcontractor's employees, directors, consultants, agents, subcontractors, subconsultants, suppliers, shareholders, professional advisers (including lawyers, auditors, financial advisers, accountants and technical consultants) or underwriters;
 - (c) "Documents" means documents, items of information, data, reports, drawings, specifications, plans, software, designs, inventions and any other materials provided by or on behalf of the Subcontractor in connection with the Subcontract Works (whether in existence or to be made);
 - (d) "Minimum Records" means all records relating to the Subcontractor's operations, method statements, costs and expenses, subcontracts, claims relating to compensation events and financial arrangements and any document referred to

A description of the works should be provided in the Annex.

therein or relating thereto and any similar records which the Purchaser may reasonably request;

- (e) "Operator" means a person with statutory duties to provide or secure the provision for Greater London of public passenger services by railway who secures the provision of such services either through contractual arrangements in the terms of the PPP Contracts or otherwise;
- (f) "Prohibited Act" means:
 - (i) offering or agreeing to give to any servant, employee, officer or agent of the Purchaser or the Manufacturer any grant, gift or consideration of any kind as an inducement or reward for doing or not doing (or for having done or not having done) any act in relation to the obtaining or performance of the Subcontract or any other contract with the Purchaser or the Manufacturer or for showing or not showing favour or disfavour to any person in relation to the Subcontract or any other contract with the Purchaser or the Manufacturer;
 - (ii) entering into the Subcontract or any other contract with the Purchaser or the Manufacturer in connection with which commission has been paid or has been agreed to be paid by the Subcontractor or on his behalf or to his knowledge unless, before the relevant contract or document is entered into, particulars of any such commission and the terms and conditions of any such contract or document for the payment thereof have been disclosed in writing to the Purchaser or the Manufacturer;
 - (iii) committing any offence under the Prevention of Corruption Acts 1889-1916 and/or the Bribery Act 2010, under any law or legislation creating offences in respect of fraudulent acts, or at common law in respect of fraudulent acts in relation to the Subcontract or any other contract with the Purchaser or the Manufacturer; or
 - (iv) defrauding or attempting to defraud the Purchaser or the Manufacturer;
- (g) "Safety Breach" means a material breach of the Subcontract caused by the gross incompetence, wilful default or reckless disregard to safety of the Subcontractor (or anyone employed or acting on behalf of the Subcontractor) which has materially affected (or which had the potential to materially affect) the safe provision of the Subcontract Works, the safe operation of the Railway Infrastructure and/or the safety of the Purchaser's employees, or the public or any other persons;
- (h) "TfL Group" means Transport for London, a statutory body set up by the Greater London Authority Act 1999 and any of its subsidiaries and their subsidiaries;
- (i) ["Crossrail Network" means the stations and depots (wherever situate), assets, systems, track and other buildings, which are used in the maintenance and provision of the Crossrail Services].

2. The Subcontractor warrants and undertakes to the Purchaser that:
 - (a) he has exercised and will continue to exercise all the reasonable skill, care and diligence to be expected of a competent Subcontractor experienced in carrying out works of a similar scope, size and complexity to the Subcontract Works; and
 - (b) he has complied with and will continue to comply with the terms of the Subcontract.
3. The Subcontractor warrants and undertakes to the Purchaser that it has not selected or specified for use, and that it will not select or specify for use or allow to be used any substance or material which are not in accordance with the TfL Standards, general good building and engineering practice and the requirements of the Specification ⁸.
4. The Subcontractor further warrants and undertakes to the Purchaser that:
 - (a) the Subcontract Works will on Completion satisfy all performance or output specifications and other requirements contained or referred to in the Subcontract;
 - (b) the Subcontract Works and all materials comprised in them will correspond as to description, quality and condition with the requirements of the Subcontract and will be of sound manufacture and workmanship;
 - (c) the Subcontract Works are integrated with the designs of the Purchaser, the Manufacturer and others as specified in the Subcontract;
 - (d) he has exercised and will continue to exercise all reasonable skill, care and diligence in the design of the Subcontract Works insofar as they have been or will be designed by or on behalf of the Subcontractor;
 - (e) the Subcontract Works will on Completion comply with all applicable law and all relevant TfL Standards;
 - (f) he shall not commit a Prohibited Act and/or Safety Breach; and
 - (g) the Subcontract Works will be carried out and completed timeously in accordance with the time constraints set out in the Subcontract.
5. The Subcontractor warrants and undertakes to the Purchaser that he has maintained and will continue to maintain all insurances required to be maintained pursuant to the terms of the Subcontract and that insofar as he is responsible for the design of the Subcontract Works, he has professional indemnity insurance with a limit of indemnity of not less than £[] in respect of each and every claim which may be made against the Subcontractor in relation to the Subcontract Works. The Subcontractor shall maintain such professional indemnity insurance for a period of 12 years from Take Over (as defined in the Contract) provided such insurance remains available at commercially reasonable rates and shall notify the Purchaser forthwith if such insurance ceases to be so available. When deciding whether such insurances are available at commercially reasonable rates, no account shall be

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taken of any increase in the premium or imposition of terms which arise as a result of the Subcontractor's insurance claims record.

6. As and when reasonably requested by the Purchaser, the Subcontractor shall produce for inspection documentary evidence that the insurances referred to in Clause 5 are being properly maintained and that payment has been made of the last premiums due in respect of such insurances.
7. To the extent that the intellectual property rights in any and all Documents have not already vested in the Purchaser or the Manufacturer, the Subcontractor grants to the Purchaser an irrevocable non-exclusive, non-terminable, royalty-free licence to copy and make full use of any and all Documents and all amendments and additions to them and any works, designs or inventions of the Subcontractor incorporated or referred to in them for the following purposes:
 - (a) understanding the Works;
 - (b) operating, maintaining, repairing, modifying, altering, enhancing, re-figuring, correcting and replacing the works, any equipment or plant and materials;
 - (c) extending, interfacing with, integrating with, connection into and adjusting the works and/or the works of third parties;
 - (d) enabling the Purchaser to carry out the operation, maintenance, repair, renewal and enhancement of the Railway Infrastructure;
 - (e) enabling the Purchaser to perform his function and duties as Infrastructure Manager (as defined in the Railways and Other Guided Transport Systems (Safety Regulations 2006) and Operator of the Railway Infrastructure;
 - (f) executing or completing the Works; and
 - (g) designing, testing and commissioning the Works

provided always that the Subcontractor shall not be liable for the consequences of any use of the Documents as aforesaid for any other purpose. Such licence shall carry the right to grant sub-licences and shall be transferable to third parties without the prior consent of the Subcontractor.

8. The Subcontractor agrees:
 - (a) on request at any time to give the Purchaser or any persons authorised by the Purchaser access to the material referred to in Clause 7 and at the Purchaser's expense to provide copies of any such material; and
 - (b) at the Subcontractor's expense to provide the Purchaser with a set of all such material on Completion of the Subcontract Works.
9. If called upon to do so by the Purchaser, the Subcontractor shall provide the Purchaser with such information relating to the Subcontract Works as it may reasonably require including without limitation copies of and extracts from Documents prepared or provided by the

Subcontractor for the purposes of the Works provided that neither the provision of such information nor any inspection of the Works by the Purchaser nor the approval by the Purchaser of any material shall limit or discharge, or be deemed to limit or discharge the obligations of the Subcontractor under the Subcontract or relieve the Subcontractor from any liability which he has in relation to the Subcontract Works.

10. The Subcontractor warrants and undertakes to the Purchaser that he shall maintain and retain the Minimum Records for a minimum of twelve (12) years from Completion of the Works with respect to all matters for which the Subcontractor is responsible under the Subcontract. The Subcontractor further warrants and undertakes to the Purchaser that the Subcontract contains open-book audit rights in favour of the Purchaser and its authorised representatives and that he shall undertake his obligations and exercise his rights under the Subcontract on an open-book basis. The Purchaser and his authorised representatives may from time to time audit on an open-book basis and check and take copies of and extracts from any document or record of the Subcontractor including, without limitation, the Minimum Records. The Subcontractor further warrants that it shall promptly provide all reasonable co-operation in relation to any audit or checking including, without limitation, granting access to premises, equipment, systems and senior personnel and making documents available. Without prejudice to the foregoing, the Subcontractor acknowledges and agrees that the Purchaser may audit and check any and all records as are necessary in order to monitor compliance with the Subcontractor's obligations under the Subcontract with respect to Prohibited Acts and Safety Breaches at any time during performance of the Subcontract and during the 12 years thereafter.
11. The Subcontractor shall provide such assistance to the Purchaser as it may reasonably require in connection with the Subcontract Works.
12. In the event that the Contract or the employment of the Manufacturer thereunder is determined for any reason whatsoever including but not limited to the insolvency or winding-up of the Manufacturer (voluntary or otherwise), the Subcontractor shall without allowing any break or intermission to occur in the performance of his duties:
 - (a) continue to observe and carry out his obligations under the Subcontract and this Deed;
 - (b) if so required by notice in writing from the Purchaser treat the Purchaser as Purchaser under the Subcontract to the exclusion of the Manufacturer whereupon all rights and obligations of the Manufacturer under the Subcontract shall thereafter be exercisable and performed by the Purchaser; and
 - (c) accept and enter into any deeds or other documents as are required to put into legal effect any further novation of the Subcontract reasonably required by the Purchaser.
- 13.1 The Subcontractor warrants and undertakes to the Purchaser that he will promptly inform the Purchaser of any default by the Manufacturer under the Subcontract and that he will not, without first giving the Purchaser at least twenty one (21) days' notice in writing, exercise any right he may have to terminate the Subcontract or to treat the same as having

been repudiated by the Manufacturer or to suspend performance of his obligations under the Subcontract.

- 13.2 The Subcontractor's right to terminate the Subcontract or to treat the same as having been repudiated or to suspend performance of his obligations thereunder shall cease if within the period of the aforesaid notice and subject to Clause 14 hereof the Purchaser shall have given notice in writing to the Subcontractor requiring the Subcontractor to accept the instructions of the Purchaser or its appointee to the exclusion of the Manufacturer in respect of the carrying out and completion of the Subcontract Works upon the terms of the Subcontract.
14. The provisions of Clauses 12 and 13 hereof are conditional upon any notice given by the Purchaser pursuant thereto stating that the Purchaser or its appointee accepts liability for payment of the last unpaid invoice submitted by the Subcontractor. Upon the issue of any such notice by the Purchaser, the Subcontract shall continue in full force and effect as if no right of termination on the part of the Subcontractor had arisen and the Subcontractor shall be liable to the Purchaser or its appointee under the Subcontract in lieu of its liability to the Manufacturer. If any notice given by the Purchaser under Clauses 12 or 13 requires the Subcontractor to accept the instructions of the Purchaser's appointee, the Purchaser shall be liable to the Subcontractor as guarantor for the payment of all sums from time to time due to the Subcontractor from the Purchaser's appointee. For the avoidance of doubt neither the Purchaser nor his appointee shall be liable for any work carried out prior to the date of the Purchaser's notice.
15. The Manufacturer has agreed to be a party to this Deed for the purposes of acknowledging that the Subcontractor shall not be in breach of the Subcontract by complying with the obligations imposed on it by Clauses 12 or 13 hereof.
16. This Deed may be assigned by the Purchaser to any member of the TfL Group without limitation and otherwise to any other person on two occasions without the consent of the Subcontractor being required and the Subcontractor shall do all such acts, deeds and things as may be reasonably necessary to give effect to any such assignment. No further assignment shall be permitted without the consent of the Subcontractor.
17. The Subcontractor shall not be entitled to contend that any person to whom this Deed is assigned in accordance with Clause 16 is precluded from recovering under this Deed any loss incurred by such assignee resulting from any breach of this Deed (whenever happening) by reason that such person is an assignee and not a named promisee under this Deed.
18. The liability of the Subcontractor under this Deed shall cease 12 years following Completion of the whole of the Works.
19. The Subcontractor hereby covenants that if required by the Purchaser it will enter into further deeds of warranty with all and each of such persons who shall acquire or agree to acquire an interest in the whole or any part of the Subcontract Works. Each such deed of warranty shall be in the same form mutatis mutandis as this Deed or in such substantially similar form as may reasonably be required by the Purchaser.

- 20.1 Without limitation to Clause 2 above, the Subcontractor hereby warrants to the Purchaser that:
- (a) except as provided under deeds of warranty required pursuant to the Subcontract, it shall not, without the prior written approval of the Purchaser, at any time for any reason disclose to any person or publish or make any statement concerning the Subcontract, this Deed or the project to which the Subcontract Works relate;
 - (b) it shall treat all information obtained under, arising from or in connection with the Subcontract, this Deed and the project as confidential, and that other than for the purpose of providing the Subcontract Works, it shall not disclose any information or documents concerning the Subcontract to any other person; and
 - (c) it shall not, without the prior written consent of the Purchaser, disclose any information obtained by it concerning the Purchaser or the TfL Group to any other person.
- 20.2 The Purchaser may require as a precondition to the granting of such consent that any such third party provides a confidentiality undertaking in terms satisfactory to the Purchaser.
- 20.3 Clause 20.1 does not apply to the disclosure of:
- (a) any information which is already in the public domain at the time of its disclosure other than by breach of these provisions,
 - (b) any information disclosed by the Subcontractor to any Connected Persons provided that such recipients agree in writing to be bound by the terms of this confidentiality provision; and
 - (c) any information which is required to be disclosed by any applicable law or statutory requirement, the regulations of any stock exchange, any taxation authorities or by an order of a court or other tribunal of competent jurisdiction or any relevant regulatory body.
- 20.4 The Subcontractor shall procure that the Connected Persons comply with the provisions of this Clause 20 and is responsible to the Purchaser for any act or omission of any Connected Person in breach of such obligations.
- 20.5 The Subcontractor shall notify the Purchaser promptly if the Subcontractor becomes aware of any breach of confidence by a Connected Person and shall give the Purchaser all assistance the Purchaser may reasonably require in connection with any proceedings the Purchaser may bring or other steps the Purchaser may take against that Connected Person or any other person for such breach of confidence.
- 20.6 The Subcontractor acknowledges that damages would not be an adequate remedy for any breach of this Clause 20 by the Subcontractor and that (without prejudice to all other remedies to which the Purchaser may be entitled to as a matter of law) the Purchaser shall be entitled to any form of equitable relief to enforce the provisions of this Clause 20.
- 20.7 At the Purchaser's request and in any event upon the termination or expiry of the Subcontract, the Subcontractor shall promptly deliver to the Purchaser or destroy as the

Purchaser may direct all documents and other materials in the possession, custody or control of the Subcontractor (or the relevant parts of such materials) that bear or incorporate the whole or any part of the confidential information and if instructed by the Purchaser in writing, remove all electronically held confidential information, including the purging of all disk-based confidential information and the reformatting of all disks.

- 21.1 The Subcontractor shall owe no greater obligations to the Purchaser than he owes to the Manufacturer under the Subcontract.
- 21.2 The Subcontractor shall be entitled in any action or proceedings by the Purchaser to rely on any limitation in the Subcontract and to raise the equivalent rights in defence of liability as he would have against the Manufacturer thereunder.
22. The rights and benefits conferred upon the Purchaser by this Deed are in addition to any other rights and remedies the Purchaser may have against the Subcontractor including without limitation any remedies in negligence.
23. The Manufacturer agrees that he will not take any steps which would prevent or hinder the Purchaser from exercising his rights under this Deed and confirms that the rights of the Purchaser in Clauses 12 and 13 override any obligations of the Subcontractor to the Manufacturer under the Subcontract.
24. Any notice to be given hereunder shall be deemed to be duly given if it is in writing and delivered by hand at or sent by registered post to the registered office or principal place of business in the United Kingdom for the time being of the party to be served and in the case of any such notice sent by registered post shall be deemed to have been received 48 hours after being posted.
- 25.1 Any dispute or difference arising out of or in connection with this Deed may be referred to adjudication in accordance with Schedule 10 of the Contract which shall be deemed to be included in this Deed as if it were recited herein in full (with the necessary changes).
- 25.2 The Adjudicator's decision shall be binding on the parties until the dispute or difference is finally determined by the Courts in accordance with Clause 25.3.
- 25.3 The Courts of England and Wales shall have jurisdiction over any dispute or difference arising out of or in connection with this Deed. The Law of England and Wales shall be the proper law of this Deed.
26. Nothing in this Deed confers or is intended to confer on any third party any benefit or the right to enforce any term of this Deed pursuant to the Contracts (Rights of Third Parties) Act 1999.

IN WITNESS whereof this Deed has been executed and unconditionally delivered as a Deed by the parties the day and year first above written.

**THE COMMON SEAL of
TRANSPORT FOR LONDON**

was affixed to **THIS DEED**

in the presence of:

Signature of Authorised Signatory

Print name of Authorised Signatory

THE COMMON SEAL of

[THE SUB-CONTRACTOR]

was affixed to **THIS DEED**

in the presence of:

Signature of Director

Print name of Director

Signature of Director/Secretary

Print name of Director/Secretary

EXECUTED AND DELIVERED AS

A DEED by

[THE CONTRACTOR]

acting by:

Signature of Director

Print name of Director

Signature of Director/Secretary

Print name of Director/Secretary]

ANNEX
(Subcontract Works)

SCHEDULE 16: CONTRACT PARTICULARS

Items of Contract Particulars

(a) The Key Dates and Conditions are:

No	Title	Key Date	Condition
(1)	Preliminary Unit Design	█ Weeks after Commencement Date	Preliminary Unit Design certificate has been signed by the Parties as per the Assurance section of Schedule 1A (<i>Specification</i>) to demonstrate Assurance Acceptance.
(2)	Take Over	█ █	Take Over Certificate has been signed by the Parties.
(3)	Fleet Acceptance	█ weeks after Take Over	Fleet Acceptance Certificate has been signed by the Parties.

(b) The Change Date is:	1st February 2015
(c) The Commencement Date is:	1 st February 2015
The Contract Price is:	£12,198,693.00
(d) Details of the Manufacturer's insurance policy including limits on the Manufacturer's liability for insurance Losses:	– As per Tender Form 4 & Schedule 9
(e) The Delivery Location(s) is/are:	Crossrail Plumstead Depot White Hart Avenue London SE28 0GW
(f) The design life of the Plant and Machinery is:	■ Years
(g) The Fleet Acceptance Longstop Date is:	■
(h) Manufacturer Guarantee to be provided:	Yes
(i) The Manufacturer Guarantor is:	N/A
(j) The Manufacturer's Works are:	[●] – As per Tender Form 10
(k) Performance Bond to be provided:	Yes
(l) The Performance Period Targets are:	■ % of shifts successfully completed in the Performance Period in line with the RAMS target (as detailed in Schedule 1A (<i>Specification</i>))
(m) The Plant and Machinery is:	Set out in Schedule 1A (<i>Specification</i>)
(n) The Purchaser Representative is:	Howard Smith
(o) The Railway Infrastructure is:	The Crossrail Infrastructure (as such term is defined in Schedule 1A (<i>Specification</i>))
(p) The Relevant CBTC Signalling Date is	31 st January 2017
(q) If a programme is not included in Schedule 2 (<i>Contract Programme</i>), the Manufacturer shall submit the programme under Clause 8.1.1 within this many days of the date of this Agreement:	2 weeks from the Commencement Date
(r) The other information which the Specification requires the Manufacturer to show on the Contract Programme is:	Such information detailed in Appendix 1 (<i>Contract Programme Information Requirements</i>) to this Schedule 16 (<i>Contract</i>

	<i>Particulars</i>
(s) Under Clause 8.2 the programme should be in the following form:	Primavera P6 (version 6.2.1 or later) or MS Project (2010 onwards), or such other form as may be reasonably required by the Purchaser
(t) The Infrastructure Testing Deliverables under Clause 12.3.3 are:	<ul style="list-style-type: none"> (a) track access; (b) diesel fuel; (c) pilotmen (to allow access over the Crossrail Infrastructure (as such term is defined in Schedule 1A (<i>Specification</i>))); (d) safety related staff to create safe testing locations; and (e) geometry information and ALC files.
(u) The period for the Purchaser Representative to respond to the Manufacturer under Clause 12.4.2 is the following number of Working Days following receipt by the Purchaser Representative of a Take Over Certificate from the Manufacturer in accordance with Clause 12.4.2:	20 Working Days
(v) The amount of liquidated damages payable per week under Clause 13.1 is:	<p>██████████ per week for Late Take Over; and</p> <p>██████████ per week for Late Design Approval</p>
(w) The maximum amount of liquidated damages payable under Clause 13.1 in the aggregate (expressed as a percentage of the Contract Price) is:	██████████ of the Contract Price
(x) The amount of liquidated damages under Clause 13.3 is:	██████████ per Performance Failure
(y) The maximum amount of liquidated damages payable under Clause 13.3 (expressed as a percentage of the Contract Price) is:	██████████ of the Contract Price
(z) The Purchaser's UK VAT registration number under Clause 21.3.2 is:	GB 756277008
(aa) The amount of the Performance Bond under Clause 22.2 is:	██████████ of the Contract Price

(bb) The Manufacturer's total aggregate liability to the Indemnified Parties under Clause 29.4.1 is:	[REDACTED] of the Contract Price
(cc) The notice details for the Purchaser / Purchaser Representative under Clause 36.1.2 are:	<p>30th Floor - Crossrail 25 Canada Square, Canary Wharf, London E14 5LQ</p> <p>Attention: [REDACTED]</p> <p>Email [REDACTED]</p>
(dd) The notice details for the Manufacturer under Clause 36.1.2 are:	<p>Address: Dr. Linsinger Strasse 23-24, 4662 Steyrermuehl, Austria</p> <p>Facsimile: [REDACTED]</p> <p>Attention: [REDACTED]</p> <p>Email [REDACTED]</p>

Appendix 1 – Contract Programme Information Requirements

The Contract Programme shall include (without limitation) the following activities and milestones:

- 1 Key Dates (as defined in Clause 1.1).
- 2 Payment application Milestones.
- 3 Third party dependencies.
- 4 Mobilisation.
- 5 Design requirement affirmation.
- 6 Preliminary Unit Design commencement & completion.
- 7 Technical compliance confirmation.
- 8 Preliminary Unit Design submitted to the Purchaser.
- 9 Preliminary Unit Design approval.
- 10 Detailed Design commencement & completion.
- 11 Design Integration with signalling systems.
- 12 Interdisciplinary reviews and checks as applicable.
- 13 Detail Unit Design submitted to the Purchaser.
- 14 Detail Unit Design Approval.
- 15 Procurement of material & long lead items (including critical Spares).
- 16 Technical Assurance Plan (to include all test plans).
- 17 Component Testing.
- 18 Completion of Static Tests and factory acceptance tests.
- 19 Delivery to Dynamic Test site.
- 20 Completion of Dynamic Testing (SAT on proxy test facility).
- 21 Pre-delivery acceptance test (fault free mileage & operation).
- 22 Plant & Machinery available for delivery to allow commencement of Infrastructure Testing.
- 23 Delivery including delivery methods to Purchaser's specified site.
- 24 The production of training documentation, training of staff in the use & maintenance of the rail head profiling machine.
- 25 Submission of operations and maintenance manual.

- 26 Completion of Dynamic Testing & Infrastructure Testing on Crossrail Infrastructure (as such term is defined in Schedule 1A (*Specification*)).
- 27 Authorisation to place into service (APIS) – approved by the Office of Rail and Road.
- 28 Take Over Certificate / Qualified Take Over Certificate.
- 29 Fleet Acceptance Certificate.